# Social support in later life

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# Wave 9

# The Dynamics of Ageing

## Evidence from the English Longitudinal Study of Ageing 2002-2019

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ELSA

# The Dynamics of Ageing

## EVIDENCE FROM THE ENGLISH LONGITUDINAL STUDY OF AGEING 2002–19
### (WAVE 9)

## October 2020

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# 1. Introduction

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Older age is a period of immense importance from the perspectives of biomedicine, economics, social science, and public policy. Older people have a major positive impact on society and are central to decision-making at the highest levels. The political leaders of many countries, for instance, are over 60 years of age, as are the average ages of senior court judges in the USA and UK. Older people also make important contributions to business, the voluntary sector, research, and other fields, with those over 50 holding up to 70% of all household wealth in the UK. These crucial roles notwithstanding, with population ageing, there are simultaneously considerable demands on society, not least economic challenges. Around 71% of total health care expenditure in the UK occurs in people aged 65 and older, with adult social care costs estimated to be 1.3% of GDP by 2022–23 (Office for Budget Responsibility, 2018).

This report was compiled in the summer of 2020 when the current pandemic of COVID-19 and the acute vulnerability of older age groups have brought into sharp focus myriad issues around their health and social care. Consistent with existing knowledge about the risk of infectious disease in older persons, estimates suggest that older men and women experience increased rates of hospitalisation with the infection (Batty et al., 2020), and, once hospitalised, the risk of death in which COVID-19 is implicated is 150-fold greater in people aged 70–79 years relative to the 18–39 age group (Williamson et al., 2020). Other concerns raised by the pandemic include the impact on mortality of transitions from hospital to nursing or care homes and the social and emotional influence of shielding of older individuals in the community. In work funded by the Economic and Social Research Council, within a few weeks of lockdown, the English Longitudinal Study of Ageing (ELSA) team has collected new data to explore the social, economic, and health consequences of infection with COVID-19 and, more generally, the lockdown period itself. These surveys are on-going and findings will be released in a series of reports in the autumn of 2020.

Beyond this body of work, robust evidence related to multiple aspects of ageing is required for sound policy, and ELSA plays a pivotal role in providing such data. ELSA was initiated almost two decades ago when, in 2002, it was generated as a counterpart to the well-established Health and Retirement Study. Both investigations are closely linked in their content and harmonisation, and now many other studies from diverse populations across around 40 countries comprise this stable of ageing surveys (Gateway to Global Aging Data, https://g2aging.org). The guiding conceptual framework of ELSA is that the experiences of ageing, and moving through work and retirement into older age involve a wide range of social, cultural, economic, psychological, biological, medical, and genetic processes, and are strongly impacted by socioeconomic status. An understanding of these trajectories and the ways they interact requires

a multidisciplinary perspective with contributions from several disciplines, applied to longitudinal data collected from the same population-representative sample of individuals over many years. As befits the study material and the scientific steering group, ELSA data users represent an array of disciplinary backgrounds.

# New data collection

In the present report, we produce selected new results from the ninth wave of data collection which took place between July 2018 and July 2019. In this latest wave, a total of 8,736 individuals participated in ELSA, representing 7,289 'core' members (age-eligible sample members who participated the first time who were approached to join the study), and 1,447 partners who are not denoted as 'core sample' members because they were not in the age range of 50 and older when they were first interviewed, or are new partners.

In ELSA, we typically include a nurse visit to participants' homes on alternate waves for the collection of biomarkers and measures of physical function. Wave 8 was a designated nurse visit wave, but unfortunately financial constraints prevented us from funding a nurse visit to all households. We therefore conducted a nurse visit with just under 50% of the sample (3,479). In wave 9, we carried out nurse assessments with individuals who did not have a visit in wave 8, together with people in the refreshment sample, and measures were obtained from 3,047 core members and 22 non-core partners. Table 1.1 provides an overview of data collection for all existing waves of data collection in ELSA.

In wave 9, we included a series of new, innovative measures that have broadened the scope of the study, including:

An online dietary assessment, providing detailed information about food choice, caloric intake and macro- and micro-nutrients. This is an innovation for ELSA in that the module has provided detailed dietary data for the first time, facilitating investigations of nutrition, well-being, and health. It is also the first foray of the study into Internet-based data collection. Use of the Internet may drive down costs, and become increasingly important in the present era of high infection risk that is affecting face-to-face data collection. These benefits must be balanced by costs, however, such as the reduction in personal contact with ELSA respondents, and failure to engage with important sectors of the older population who are digitally isolated.

New assessments of food insecurity, expectations of retirement and working beyond age 70, details of care received at home, and citizenship.

We have also reintroduced content from previous waves that was not included in wave 8, and have rotated other items off the study for wave 9. The topics that have been brought back into the study include measures of oral health, dizziness and balance, time use, religious attendance and spirituality. Data that have not been collected in wave 9 include sleep, generativity, and attitudes to risk.

In the present report we can only touch the surface of the rich historical and contemporary data available for analyses in ELSA. As in previous ELSA reports, we have structured the report around three substantive chapters that

address important issues in the economic (chapter 2), social (3), and health domains (4). These are coupled with a detailed set of tables (Chapters E, S and H) that summarise data collected in these domains, including cross-sectional analyses of wave 9 and longitudinal analyses of the study members who completed all nine waves of assessment. This is a convenient way of presenting more results than is possible within the discrete chapters, though there are still important topics that we have not been able to include.

The topics of the three thematic chapters were selected during discussion with the representatives of the government departments that contribute to the funding of ELSA, and with our International Advisory Board, and were chosen because of their importance to both policy and research. These are knowledge of state pension age; social support trajectories; and estimates of the burden of cognitive impairment and dementia.

**Table 1.1. Data collection in waves 1–9 of ELSA**

| Year | Modality | Sample size | | | Source of sample |
|------|----------|-------------|---|---|------------------|
| | | Full sample | Core sample | Nurse visit | |
| Wave 1 (2002/03) | CAPI | 12,100 | 11,391 | | Original sample from HSE 1998, 1999 and 2001 |
| Wave 2 (2004/05) | CAPI + nurse visit | 9,432 | 8,780 | 7,666 | |
| Wave 3 (2006/07) | CAPI | 9,771 | 8,810 | | Refreshment from HSE 2001–2004 |
| Wave 4 (2008/09) | CAPI + nurse visit | 11,050 | 9,886 | 8,643 | Refreshment from HSE 2006 |
| Wave 5 (2010/11) | CAPI | 10,274 | 9,090 | | |
| Wave 6 (2012/13) | CAPI + nurse visit | 10,601 | 9,169 | 7,721 | Refreshment from HSE 2009–2011 |
| Wave 7 (2014/15) | CAPI | 9,666 | 8,249 | | Refreshment from HSE 2011–2012 |
| Wave 8 (2016/17) | CAPI + nurse visit | 8,445 | 7,223 | 3,479 | |
| Wave 9 (2018/19) | CAPI + nurse visit | 8,736 | 7,289 | 3,069 | Refreshment from HSE 2013–2015 |

CAPI = computer-assisted personal interview; HSE = Health Survey for England

## State pension age entitlements

Given its importance, analyses around state pension age and entitlements using ELSA data have featured previously in these pages. ELSA is unusually well-placed to examine such issues because it was initiated some years prior to changes in the state pension age that began in 2010 with the transition from 60 to 65 years in women, and subsequently the increase to 66, 67 and then 68 for both women and men.

The system has been complicated by repeated changes in the scheme through the Pensions Acts of 2007, 2011, and 2014. Nonetheless, an understanding of the expected income provided by the state pension and when these funds become available is crucial to an individual's financial planning. However, analyses by Crawford and Karjalainen indicate this knowledge is patchy in ELSA participants, such that only 59% correctly reported the age at which they were eligible for the state pension within a 3-month period. Perhaps unsurprisingly, there was variation in the accuracy of reporting according to personal characteristics. There was little evidence of gender differences, unlike the situation a few years ago when women were rather less accurate than men. However, the more affluent, as indexed by housing tenure and possession of a private pension, had better knowledge than individuals without such assets. More than a third of study members could not give a value for the minimum and maximum amounts they could expect from their state pension.

## Social support across the middle- and older-aged life course

Social relationships are central to human life, and there has been a growing recognition of the importance of social isolation and loneliness to health and well-being from successive governments over the past decade. There are two important dimensions to social relationships: the structural component, namely the number and density of relationships we have with family, friends, and other contacts within our social network; and the qualitative component, notably the extent to which these relationships provide emotional and material support, or are a source of stress and irritation. Typically, these two components have been studied separately. But Chapter 3 takes a novel approach of combining several aspects of social relationships using latent class analysis. This is a data-driven method of summarising the interconnections between the quality of different relationships and networks.

The analyses indicated that the pattern of these interrelationships between measures was best captured in three classes (high, medium, and low support) that varied in the frequency and quality of social interactions and closeness of relationships. Allocation to the three classes was relatively stable between wave 4 (2008/9) and wave 9 (2018/19) of ELSA. People in the high support group were less depressed and enjoyed greater quality of life than those in other groups, and also suffered from less disability. Perhaps not surprisingly, married individuals were more likely to be in the high than medium or low support groups, further supporting the importance of close personal bonds at older ages.

## Estimating the burden of, and risk factors for, cognitive impairment and dementia in older adults

With trials of treatment for dementia revealing disappointing results, there has been much investment in recent years in the primary prevention of this pernicious condition; that is, risk factor discovery. By contrast, relatively few new studies have estimated the contemporary prevalence of dementia and mild cognitive impairment, an intermediate phase between normal cognitive ageing and the neuropathological changes that characterise dementia. Present day data on disease burden are crucial to guiding governments and policy makers in terms of service provision and the development of prevention programmes (Livingston et al., 2020).

ELSA has a longstanding interest in cognitive function, and has included measures of memory, executive function, and fluid intelligence in previous waves. However, the study has not previously included a battery of tests designed to identify probable mild cognitive impairment or dementia. In 2018 we therefore carried out an intensive cognitive substudy called the Harmonised Cognitive Assessment Protocol (HCAP). This involved a comprehensive neuropsychological battery of cognitive tests coupled with measures completed by informants to assess changes in the participants' cognitive function. The protocol was first utilised by colleagues in the Health and Retirement Study, and was administered to over one thousand individuals in ELSA aged ≥65 years in 2018, as outlined in Chapter 4. Because data collection was nested within the full ELSA cohort, extrapolation was possible to more than 6,000 wave 9 study members, revealing that around one quarter were cognitively impaired, with a further 4.6% having probable dementia. These estimates were unsurprisingly elevated at the upper end of the age continuum, with around 70% of participants aged 80 and older suffering from some cognitive impairment.

One of the advantages of a long-running and carefully curated cohort study like ELSA is that it facilitates the exploration of the predictive capacity of variables collected many years prior to dementia diagnosis. As such, people who had a modest educational achievement, low levels of physical exertion, depression symptoms, and reported being lonely at wave 4 (2008/09) experienced an elevated risk of dementia and/or cognitive impairment at wave 9. It is plausible that some of these factors such as depression may be a proxy for the early stages of dementia, while other factors were not strongly related to risk of dementia or cognitive impairment such as high blood pressure or diabetes. Analyses of this kind have important implications for dementia prevention strategies, as outlined in Chapter 4.

# Methodology

The fieldwork, sample design, response proportions, content of the ELSA interviews, and weighting strategies used in wave 9 are described in Chapter 5. A brief summary of the design is given here and in Table 1.1. The original ELSA sample was drawn from households whose head was a participant in the Health

Survey for England (HSE) in the years 1998, 1999, and 2001. Conducted in 2002–03 (wave 1), individuals were eligible if they were born before 1 March 1952 (i.e., ages 50 years or over) and still living in a private residential address in England. In addition, we interviewed partners under the age of 50, and new partners who had moved into the household since the original HSE interview. The participants who were recruited for the first wave of ELSA or have since become partners of such people are known as Cohort 1.

Wave 2 of ELSA took place in 2004–05, and the core members and their partners were eligible for interview provided they had not refused any further contact after the first interview. In the third wave, in an effort to address the problem of selection bias in longitudinal surveys due to study member attrition (for reasons of death, illness, or lack of interest), we supplemented the original cohort with people born between 1 March 1952 and 29 February 1956 so that the ELSA sample would again cover ages 50 and over. The new recruits were sourced from the 2001–04 HSE years. Wave 4 took place in 2008–09 and the original cohort was supplemented with another refreshment sample of HSE respondents born between 1 March 1933 and before 28 February 1958, taken from HSE 2006. The fieldwork for wave 5 was carried out in 2010/11.

Data collection for wave 6 took place in 2012–13. In addition to the cohorts included in previous waves, we again added a refreshment sample of individuals born between 1 March 1956 and 28 February 1962. They had previously participated in the HSE in 2009, 2010, or 2011. Again, both core members and their partners were interviewed.

The study sample for wave 7 was also augmented by new participants to ensure that we had adequate representation of people aged 50–52. These volunteers had taken part in HSE 2011 and 2012 and were born between 1 March 1962 and 29 February 1964. There was no refreshment for wave 8, so the total sample was somewhat smaller than in previous waves.

In wave 9, we added a refreshment cohort of participants aged 50–53, drawn from the HSE in 2013, 2014, and 2015. The new core members and their partners represented 15.5% of all individuals in wave 9.

We carried out face-to-face interviews and self-completion assessments in all waves. In waves 2, 4, 6, 8, and 9, study nurses visited the homes of ELSA participants in order to collect blood samples and to take physical measurements.

The broad topics that have been covered in every wave include household composition, employment and pension details, housing, income and wealth, self-reported doctor-diagnosed diseases and symptoms, tests of cognitive performance and of gait speed, health behaviours, social contacts and selected activities, and measures of quality of life. The new measures added in wave 9 will allow researchers and policy analysts to address a number of new issues.

Academic researchers, policy analysts and others interested in ageing research who are registered with the UK Data Service can access the ELSA data sets via https://ukdataservice.ac.uk/, DOI: 10.5255/UKDA-SN-5050-18. This includes data documentation and data files for all waves of ELSA.

# Reporting conventions

The data collected during wave 9 feature in the present report, and the analyses in this report mostly use information from the core members of ELSA. The remaining data come from interviews with the partners of core members. Proxy interviews have been excluded, mainly because a much-reduced set of information is available for these people.

The cross-sectional analyses in the reference tables in Chapters E, S, and H have been weighted for non-response so that estimates should reflect the situation among people aged 50 and over in England as a whole. The longitudinal analysis tables use longitudinal weights, as described in Chapter 5. Care should be taken in interpreting the nurse-collected biomarker data in wave 9, since the subsample assessed is not yet representative of ELSA as a whole.

Statistics in cells with between 30 and 49 observations are indicated by the use of square brackets. Statistics that would be based on fewer than 30 observations are omitted from the tables; the number eligible is given but a dash is placed in the cell where the statistic would otherwise be placed.

# Future opportunities using ELSA data

The study is at the leading edge in both survey methodology and content, with new forms of data collection and new topics being introduced as the study progresses. The value of ELSA to research and policy increases as the longitudinal aspect is extended. Ultimately, however, the value of the study depends on its use by research and policy analysts, and their exploration of ELSA's rich multidisciplinary data set. For a list of publications and reports and other documentation concerning ELSA, please go to our web site: http://www.elsa-project.ac.uk/.

# Acknowledgements

Data collection in ELSA would not take place without the efforts of a large number of people. Chaired by Professor Andrew Steptoe, the study is managed by a small committee which comprises Professors James Banks, David Batty, Sir Richard Blundell, Sir Michael Marmot, James Nazroo, and Nicholas Steel, Dr Paola Zaninotto, Zoë Oldfield, Rowena Crawford, Pete Dangerfield, and Martin Wood. The study manager is Kate Coughlin. We would like to express our gratitude to Sheema Ahmed and Amber Simpson for their careful administrative work on the study. In the preparation of this report, particular thanks are due to Ian Tuttle for his fastidious copy-editing of the final manuscript.

We recognise and greatly appreciate the support we have received from a number of different sources. We are particularly indebted to those people who have given up their time and welcomed interviewers and nurses into their homes

on so many occasions. We hope that our participants will continue to commit to ELSA in the future, helping us to understand further the dynamics in health, wealth, and lifestyle of the ageing population. Another vital ingredient to the success of the study is the dedication of the more than 300 interviewers and nurses involved in collecting the data.

ELSA is coordinated by four main institutions: University College London (UCL), the Institute for Fiscal Studies (IFS), the University of Manchester, and NatCen Social Research. There is also close collaboration with colleagues at the University of East Anglia who provide important input on health care issues. The ELSA research team has been guided by a group of leading national and international consultants who have provided specialist advice. We are very grateful to this group, which comprises David Bell (University of Stirling), Lisa Berkman (Harvard University), Axel Börsch-Supan (Munich Center for the Economics of Aging), Elaine Douglas (University of Stirling), Emily Grundy (University of Essex), Ruth Hancock (University of East Anglia), Hideki Hashimoto (University of Tokyo), Michael Hurd (RAND), Arie Kapteyn (University of Southern California), Rose Anne Kenny (Trinity College Dublin), Kenneth Langa (University of Michigan), Jinkook Lee (University of Southern California), Maria Fernanda Lima e Costa (Oswaldo Cruz Foundation), David Llewellyn (University of Exeter), Bernadette McGuinness (Queen's University Belfast), John Phillips (National Institute on Aging), James Smith (RAND), Anthea Tinker (King's College London), Robert Wallace (University of Iowa), David Weir (University of Michigan), and Robert Willis (University of Michigan). We are also grateful to the representatives from the UK government funding departments, the ESRC, the Centre for Ageing Better, as well as Carol Brayne from the University of Cambridge for their input and advice.

Finally, the study would not be possible without the support of funders to the study. Funding for all eight waves of ELSA has been provided by the US National Institute on Aging and several UK government departments. The departments that contributed to wave 9 included the Department of Health and Social Care, Department for Transport, and Department for Work and Pensions. The UK government funding has been coordinated during this period by the National Institute for Health Research. Members of the UK Government Departments funding the study have provided helpful comments on drafts of this report, but the views expressed in this report are those of the authors and do not necessarily reflect those of these funding organisations.

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# 2. Awareness of state pension entitlements

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It is important for individuals to understand what pension income they can expect from the government, and from what age, if they are to make appropriate private saving and labour supply decisions over their lives. In this chapter we conduct a timely assessment of individuals' current awareness of their State Pension Age (SPA) and the income they can expect from the state pension, and explore how knowledge of these has changed over the past decade as the state pension system has been reformed.

The key findings are the following.

- Individuals' knowledge of their SPA is far from perfect. Among those aged between 55 and the SPA in 2018/19, 59% correctly reported their SPA (to within 3 months), 22% overestimated their SPA, 7% underestimated their SPA, and 12% reported that they did not know.

- Knowledge improves as individuals get closer to their SPA. Among those aged 55 to 58 in 2018/19 whose SPA is 67, only 55% were correct about their SPA, while 12% overestimated, 12% underestimated, and 21% reported that they did not know.

- Knowledge is better, at an equivalent age, among those born more recently than among those born earlier who have also been affected by SPA reforms. This suggests awareness of the consequences of SPA reforms is improving over time.

- Knowledge is similar among men and women in 2018/19 (who by this point have mostly the same SPA). However, knowledge remains associated with other socio-demographic characteristics. In particular, those in employment are more likely to be accurate than the self-employed and those not in paid work, and those who are owner-occupiers or have a private pension are more likely to know their SPA than those without these assets.

- When asked about the minimum and maximum amounts individuals were expecting from the state pension, 36% of those aged between 55 and SPA in 2018/19 could not give a value for one or both of these, 28% reported the same value for the maximum and minimum, while 36% gave a range.

- Whether individuals could report an expected range for their future pension income is correlated with their characteristics. In particular, those who scored less well on the cognitive recall tests were less likely to be able to provide income expectations than those who scored better. Those with no formal qualifications were less likely than those with qualifications to provide income expectations.

- The levels of pension income reported are positively correlated with subsequent state pension income received and many individuals are quite accurate – as would be expected if many of these individuals were basing their answers on state pension forecasts from the government. Not everyone who reports a range for their expected income is accurate, however. Sixteen per cent of individuals reaching SPA in waves 7–9 received less than the minimum amount they reported expecting in the previous wave (in real terms), while 55% received more than the maximum they reported expecting.

- There does not appear to be a significant increase in 2016/17 in individuals' ability to report an expected range for their future state pension income, as might have been hoped for given the introduction of the new state pension in that year. There has been an improvement in individuals' ability to report a range over time, and tentative evidence that awareness improved between 2016/17 and 2018/19.

- There has been a greater increase in the maximum amounts of state pension income expected by women as compared to men since 2016, even after flexibly controlling for time trends in both men's and women's income expectations. This could be indicative of women expecting greater pension entitlements due to the introduction of the new state pension.

## 2.1 Introduction

If individuals want to maintain their standards of living when they retire from paid work, then they need an alternative source of income to replace their earnings. One important source for most individuals is the state pension – the income paid to older individuals by the government in respect of national insurance contributions paid (or credited) during working life. While most individuals can expect to get a state pension, for many the amounts paid are not particularly generous relative to their working age earnings. For example, in 2019–20 the full 'new state pension' provided £168.60 per week (£8,767 per year) to those with full contribution records (35 years of national insurance contributions or credits for other activities such as childcare or receipt of out-of-work benefits). This was equivalent to just under 30% of median full-time earnings. Individuals therefore need to save privately if they want a reasonable replacement of their earnings in retirement. This is particularly the case for middle and high earners, for whom state pension benefits would replace a lower proportion of their earnings.

Individuals must choose for themselves how much to save privately for retirement (although since 2012 automatic enrolment into workplace pensions has provided a strong nudge for most employees to make some private pension provision). They can also choose (subject to being able to find appropriate employment) how to change their paid work as they get older, and when and how to retire. However, making the best decisions possible given their circumstances will depend on their being aware of their entitlements under the state pension system. In particular, at what age they can start to receive a state pension and how much they are going to get. If individuals are uncertain or

incorrect in their expectations, then they may save too much or too little, or plan to retire from work too early or too late.

There are reasonable grounds for concern that individuals are not informed. The age at which individuals can start to receive a state pension (the State Pension Age, SPA), having stood at 60 for women and 65 for men for nearly 50 years (and longer for men), has now been reformed several times since 1995. Previous analysis using ELSA (Bank and Tetlow, 2008) showed that even by 2006/07 many women were unaware of the change to their SPA that had been legislated in 1995, and lots of popular campaigning (most notably by the Women Against State Pension Age Inequality (WASPI)) has long argued that women were inadequately informed about the changes to their SPA.

The amounts that individuals can expect to receive from the state pension have also historically been difficult for individuals to calculate, since entitlements have depended not just on what earnings individuals have had or what activities they have done over their working lives, but also in which years they had those earnings or did those activities. The concern that individuals could not understand their state pension entitlements was part of the motivation for the introduction of the 'new state pension' from 2016. The intention with the new flat rate pension is that with a simpler system, the financial incentives for private saving become clearer and people can thus make better financial decisions (DWP, 2013a, 2013b). The calculation of benefits under the new system is intended to be simpler and therefore easier for individuals to understand (DWP, 2016).

In this chapter we provide descriptive evidence on the extent to which individuals' knowledge of their state pension entitlements is of ongoing concern. ELSA is well placed to provide the data for such analysis: respondents have been asked about the income they expect to receive from their state pension since 2006/07, and about their state pension age since 2006/07 (if female) or 2012/13 (if male). We therefore have access to both recent data, from which we can draw a timely assessment of individuals' current knowledge, and over a decade of longitudinal data, which we can use to examine how knowledge has evolved over time and to compare expectations to outcomes.[1]

Specifically, in Section 2.2 we describe individuals' knowledge of their SPA, how this varies across individuals, and the extent to which individuals have learned about the effects of recent reforms to the SPA over time. In Section 2.3 we examine individuals' uncertainty with regard to their future state pension income, and how expectations map to reality for those ELSA respondents who have reached their SPA over the past decade. We also examine the potential effects of the introduction of the new state pension on individuals' expectations. We conclude in Section 2.4 with some implications for policy.

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[1] It is possible that participation in ELSA actually improves individuals' awareness, since (repeatedly) being asked questions about their SPA and expected future income may influence individuals to look up this information. (In a similar vein, Crossley et al. (2017) found survey participation altered household savings behaviour.) To the extent that this is the case, the results presented in this chapter would overstate awareness among the general population.

## 2.2 Knowledge of their SPA

### Recent reforms to the SPA

When the contributory state pension system for all workers was introduced in the UK in 1948, the SPA was set at 60 for women and 65 for men. The first reform to SPA was legislated in 1995 in order to equalise the SPA for men and women. This provided for the female SPA to increase gradually from 60 to 65, with women born in March 1950 the last to have an SPA of 60, and women born in March 1955 the first to have an SPA of 65. The female SPA by date of birth, as legislated in 1995, is shown by the yellow line in Figure 2.1.

Before the increases legislated by the 1995 Pensions Act started coming into effect (which happened from April 2010 onwards), further increases in the SPA for later-born generations were also legislated. The 2007 Pensions Act increased the SPA for both men and women from 65 to 66, then to 67 and then to 68. The first two of these increases are shown by the green lines in Figure 2.1, the latter affected those born from April 1977 onwards.

In the June 2010 budget the government announced that SPA increases to 66 would be brought forward. The subsequent 2011 Pensions Act accelerated the increase in the female SPA to 65, and brought forward the increase in the male and female SPA to 66. This is shown by the blue line in Figure 2.1. This reform resulted in large differences in the SPA for women who were born not long apart – for example, a woman born in March 1953 had a SPA of 63, while a woman born a year later had a SPA of 65½.

Following a longer period of consultation, the 2014 Pensions Act brought forwards the increase in the SPA to 67 by eight years, such that men and women born in March 1961 would have an SPA of 67. This is illustrated by the purple line in Figure 2.1. The government also announced an intention to increase the SPA in future in line with improvements in life expectancy. The increase in the SPA to 68 under either the current legislation (set by the 2007 Pensions Act) or the government's stated plans is not illustrated in Figure 2.1 as it does not affect individuals born prior to 1970.

In summary, the past decade has seen the implementation of the first increase in the SPA, and multiple further increases to SPAs being announced, one of which has been implemented.

**Figure 2.1. Reforms to the SPA affecting those born prior to January 1970**

**Women**
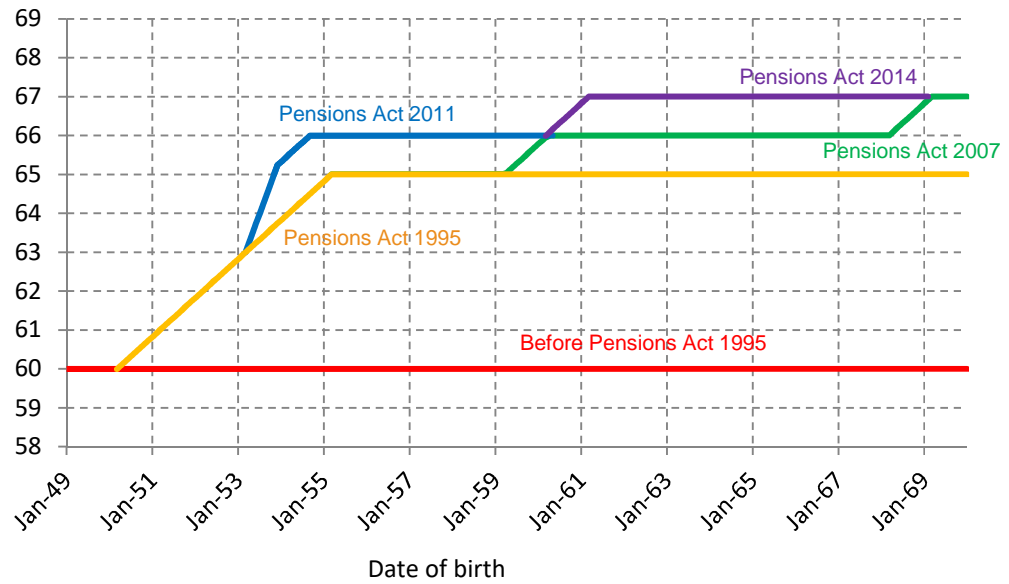


**Men**
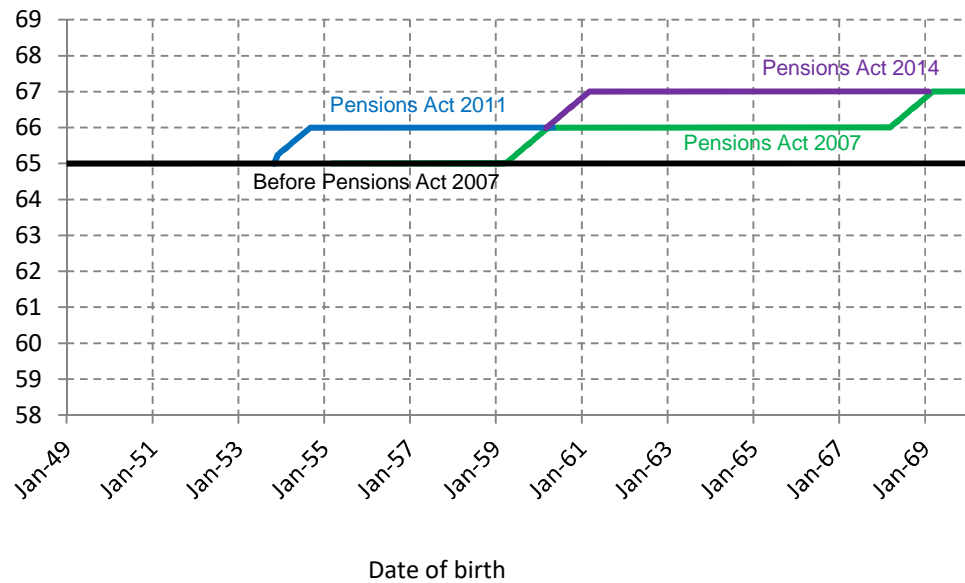


## Awareness of reforms to the SPA

Awareness of these changes to the SPA has been a politically contentious issue, with many women arguing that they were inadequately informed about the increases to their SPA. High profile campaign groups such as WASPI have been formed, and mounted legal challenges against the government. The 2011 acceleration of the SPA was also particularly unpopular since it delayed the SPA of women who were already close to reaching it.

Previous research has identified widespread lack of awareness of the reforms. Banks and Tetlow (2008) found that a third of women whose SPA was between 60 and 65 thought that their SPA was still 60, while a quarter of those whose

SPA was actually 65 thought it was still 60. Holman et al. (2020) found that there were important socio-demographic associations with awareness that the female SPA was changing, with those not in paid work, and those with worse numeracy, executive function, and memory being particularly unlikely to be aware of the reform. They also found that general awareness that the female SPA was changing increased over the period 2006/07 to 2010/11, with virtually all women aged below the SPA in 2010/11 reporting they were aware that the female SPA was changing.

We build on this existing analysis by providing an updated assessment of individuals' knowledge of their own SPA in 2018/19 – thereby covering several years in which the female SPA had risen above age 60 – including how this varies according to individuals' characteristics. We also examine how awareness has changed over time – both as individuals had time to learn their SPA, and as new reforms changed the 'right answer'. In contrast to Holman et al. (2020), we focus on individuals' self-report of their own SPA (which ELSA elicits in years and months), and how that compares to what their SPA was according to contemporaneous legislation, rather than whether or not the individual reported being aware that the SPA was changing. We also examine changes in knowledge over time for both women and men, with the latter having been newly affected by the reforms introduced in 2011 and 2014.

## Current levels of awareness

Figure 2.2 describes, for the sample of individuals who were aged 55-SPA in 2018/19, the proportions of people who were correct about their SPA (within 3 months), who overestimate, who underestimate, or who responded 'don't know' when asked what their SPA was. The sample includes both men and women, since, for anyone reaching the SPA after March 2019 (virtually all of the ELSA sample aged under the SPA in wave 9), the SPA among men and women is the same. The sample is grouped according to their legislated SPA.

Among those with an actual SPA below the age of 66, three-quarters (75%) of this group were correct about their SPA within 3 months. These respondents were very close to their SPA at the time of the survey; everyone in this group will reach SPA by September 2020.

The second group in the chart is those with an SPA of 66 (those born between October 1954 and April 1960, aged 58–64 when interviewed. Their SPA was increased from 65 to 66 as a result of the Pensions Act 2011. Just under 60% of this group knew their SPA within 3 months. Interestingly, about a quarter of people in this group overestimate their SPA, which may indicate that they thought they are affected by other increases in the SPA when in reality they are not.

The next two groups are those with an SPA between 66 and 67 (born between April 1960 and March 1961) and those with SPA of 67 (born after March 1961). These individuals were affected by the 2007 and the 2014 Pensions Acts. We can see that 45% of the 'transition group' were correct about their SPA, with 37% overestimating their SPA, potentially unaware of the transition period that they are affected by, or 'rounding up' their SPA to the nearest whole year. In the last group 55% of people knew their currently legislated SPA, while 11% and 12% overestimated and underestimated respectively. The last group has the

highest proportion of those saying they do not know their SPA, at 21%; which of course could be due to those in this group being younger and therefore further from reaching their SPA.

Overall, the majority of respondents in 2018/19 either knew their SPA correctly, or overestimated it by more than three months and therefore may be pleasantly surprised when they receive their state pension. However, among those with an SPA of 67, who are currently furthest from retirement, one in five individuals reported they did not know their SPA.

**Figure 2.2. Knowledge of SPA among those aged 55 to SPA in 2018/19, by actual SPA**
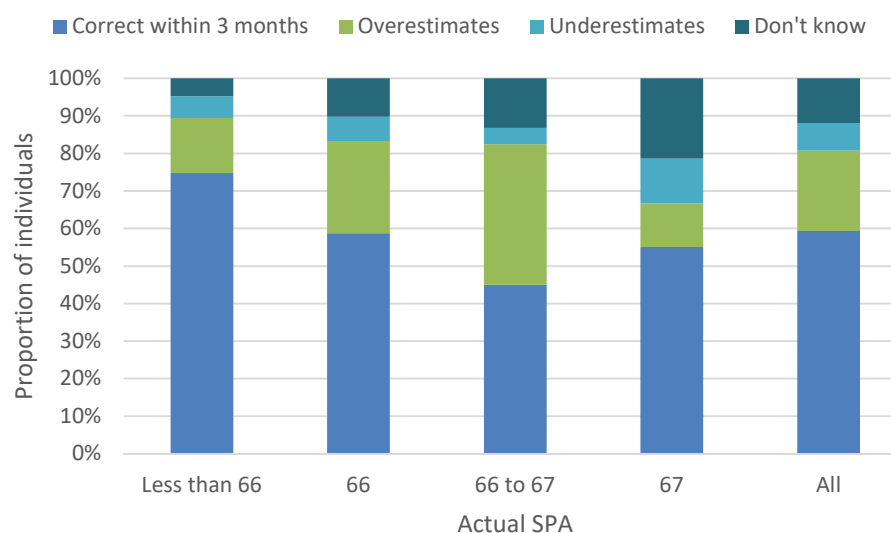


Notes: Individuals aged 55 to SPA in ELSA wave 9. Those with an SPA of less than 66 were born 1953–1954 (aged 63-65 in 2018/19), those with an SPA of 66 were born 1954–1960 (aged 58–64 in 2018/19), those with an SPA of 66–67 were born 1960–1961 (aged 57–58 in 2018/19) and those with an SPA of 67 were born 1961–1964 (aged 55–58 in 2018/19). 1,379 observations (190, 822, 91, and 276 for those with an SPA less than 66, 66, 66–67, and 67 respectively).

We examine the association between individuals' awareness of their SPA and their characteristics using multivariate regression analysis. Table 2.1 shows the results of such analysis, where data are pooled for waves 7–9 to increase sample size and precision.[2] The coefficients in a linear probability model can be interpreted as a percentage point[3] increase in the likelihood of the dependent variable (in this case the SPA knowledge) being 1 (which in this case implies correct knowledge). For example, in the first column in Table 2.1, being female is associated with a 3.1 percentage point increase in the likelihood of knowing their SPA, although this effect is not statistically significant. For variables such as income, wealth, and the word recall categories, each observation falls into

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[2] This invokes the assumption that the association between individual characteristics and awareness of the SPA is constant over time.

[3] Here the coefficients are scaled such that they can be interpreted as Percentage point/100.

**Table 2.1. Association of whether SPA is correctly known with individual characteristics**

| | | All | Couples only |
|---|---|---|---|
| | | **Knows SPA within 3 months (1=yes, 0=no)** | **Knows SPA within 3 months (1=yes, 0=no)** |
| | Female | 0.031 | 0.027 |
| Word recall | Group 2 | 0.055 | 0.034 |
| Ref: worst | Group 3 | −0.007 | −0.026 |
| | Group 4 | −0.006 | −0.009 |
| | Group 5 (highest) | 0.016 | 0.012 |
| | Distance from spouse age (couple's age gap) | 0.003 | 0.002 |
| | Couple | −0.014 | . |
| | Distance from SPA | **0.036***** | **0.035***** |
| Education | No qualifications | 0.004 | 0.024 |
| Ref: degree | A-levels or equivalent | **0.062**** | 0.032 |
| | Private pension member | **0.089***** | **0.080**** |
| | Owns home | **0.093***** | **0.067*** |
| BU income quintile | 2 | **0.071**** | 0.029 |
| Ref: poorest | 3 | **0.090**** | 0.053 |
| | 4 | 0.049 | −0.001 |
| | 5 (richest) | −0.046 | **−0.089**** |
| Wealth quintile | 2 | 0.035 | 0.034 |
| Ref: poorest | 3 | **0.106***** | **0.077*** |
| | 4 | **0.131***** | **0.088**** |
| | 5 (wealthiest) | **0.154***** | **0.097**** |
| Economic activity | Self-employed | **−0.093**** | **−0.092**** |
| Ref: employee | Inactive | **−0.067**** | **−0.079***** |
| | Working part-time | −0.032 | −0.031 |
| Wave | 8 | 0.004 | 0.005 |
| Ref: 7 | 9 | **0.038*** | 0.024 |
| | Spouse knows SPA correctly | | **0.189***** |
| | Spouse above SPA | | **0.085**** |
| | *R*-squared | 0.111 | 0.127 |
| | *N* | 3,519 | 2,601 |

*p*-value: * 10%, ** 5%, *** 1%

Notes: Individuals aged 55–SPA in ELSA waves 7–9. Standard errors are clustered at the individual level. 'Word recall score' groups individuals into five groups according to how many of a list of words they could recall after around a ten-minute delay. Income quintile divides individuals into five equally sized groups based on total household income (adjusted to take account of the number of individuals in the household). Wealth quintile divides individuals into five equally sized groups based on total household wealth (excluding that held in private pensions and the primary residence, and adjusted to take account of the number of adults in the household).

one of the five categories. We have denoted which one of the categories is a reference category, and the coefficients on the other four categories can be interpreted relative to that reference category. For example, the reference category for the word recall variable (from the cognitive function assessment) is Group 1, which is the worst scoring group. Thus, for example, those in Group 2 are 5.5 percentage points more likely to know their SPA than those in Group 1, although this effect again is not statistically significant from zero.

Focusing on the statistically significant coefficients in the first column of Table 2.1, we can see that these results re-iterate that knowledge is better among those closer to the SPA. We also find, consistent with the findings of Holman et al. (2020), that current employment is an important predictor of individuals having correct knowledge of their own SPA. Correct knowledge is also more likely among those with A-level qualifications than those with less education. Wealth is also positively correlated with better knowledge: those who are a private pension member, own their home or have higher levels of financial wealth are also more likely to be correct about their SPA than those without those assets or who have lower levels of wealth.

The second column of Table 2.1 shows the results of a multivariate regression analysis where the sample is restricted to only include individuals who are part of a couple. The additional controls in this regression are two dummy variables, which indicate whether the spouse knows their SPA correctly within 3 months and whether the spouse is above their SPA. The estimated coefficients for both these variables are statistically significant. Those whose spouse knows their own SPA correctly are 18.9 percentage points more likely to know their own SPA correctly than those whose partner was incorrect about their SPA. Those with a spouse above SPA are 8.5 percentage points more likely to know their SPA than those with a spouse aged below SPA. Thus knowledge of SPA is correlated within couples. This might be because the couples learn from each other, or because of some other unobserved characteristics at the household level that affects the knowledge of both members of the couple.

## Changes in awareness over time

Since ELSA has asked respondents what their SPA is since 2006/07 in the case of women, and since 2010/11 in the case of men, it is interesting to examine how individuals' awareness of their SPA changes over time. In particular, how the awareness is affected by the introduction of reforms, and how long it takes individuals to update their knowledge to their new circumstances.

In Figure 2.3 we examine, for specific birth cohorts of women, how awareness has changed between waves 3 and 9 of ELSA. Figure 2.4 does the equivalent for men, since wave 6 of ELSA. The cohorts are defined in such a way that we can assess the change in SPA knowledge for a group who were affected by policy reforms in a similar way. Due to the changes in legislation, the 'correct' SPA changes over time for most of the birth cohorts. The dotted lines illustrate a change in the legislated SPA between waves. For each cohort, for each wave of ELSA, we document the proportion of individuals were correct about their SPA (within 3 months), who overestimated, who underestimated, or who responded 'don't know' when asked what their SPA was.

*Women*

The first birth cohort of interest is women born between 6 April 1950 and 5 April 1953.[4] These women were directly affected by Pensions Act 1995, but not by the later reforms – their SPA was the same throughout the period (between 60 and 63 years). In 2006/07, only 28% of the respondents correctly reported their SPA within 3 months, with over a third underestimating their SPA. Interestingly, just over a fifth of the women in this cohort overestimated their SPA, implying that they were aware of the increase in women's SPA but were not aware of the correct age for their birth cohort. There was not much change in knowledge between waves 3 and 4 for this cohort, but in wave 5 there is a large increase in the portion of women who correctly report their SPA, and a corresponding decline in the proportion of people underestimating their SPA. What is notable is that this updating in SPA knowledge took place despite the fact that there was no actual change in SPA for this birth cohort at this point in time. However, the timing of this increase in correct knowledge coincided with the first women turning 60 and not being eligible for a state pension (in April 2010), and the development of the 2011 Pensions Act (and the associated media attention around both of these).

The second panel of Figure 2.3 shows the cohort born between 6 April 1953 and 5 October 1954. This is the birth cohort most affected by the 2011 reform (as shown in Figure 2.1). Knowledge of their SPA among this group of women was very low in 2006/07, with 47% underestimating their SPA by more than 3 months, and less than 1 in 7 getting it right. The change in legislation brought about by Pensions Act 2011 increased the SPA for this group (by between 1 and 16 months), and led to a further decline in the accuracy of individuals' knowledge – in 2010/11 a majority (over 60%) of women in this cohort were underestimating their SPA, with less than 1 in 10 having correct knowledge within 3 months. However, similarly to the earlier birth cohort, in the years after 2010/11, there is a large increase in the proportion of people knowing their SPA correctly, accompanied by a large decrease in those underestimating their SPA. Moreover, by the end of the period the proportion of people overestimating their SPA is higher than the proportion of people underestimating, suggesting that some of these women were over-adjusting the estimate of their SPA.

The third group of interest are women born between 1954 and 1960. Before the 2011 Pensions Act the SPA was 65 for most of this group, and rose to 66 after the reform. Before the reform a third of this cohort correctly knew their SPA. The trend after the 2011 reform is very similar to the previous transition cohort – correct knowledge at the time of the reform decreases to 10%, but knowledge of the correct SPA improves over time and reaches 54% by 2016/17.

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[4] The charts exclude two cohorts available in ELSA: those born before 6 April 1950 (because they reached SPA in 2010 and had high and stable levels of awareness as Figure 2.2 shows) and the transition cohort 1960–1961 because of the small sample size of that group.

## Figure 2.3. Women's legislated and self-reported SPA, by year and cohort

Legend: Does not know — Correct — Mean self-reported SPA — Underestimates — Overestimates — (Mean) Legislated SPA
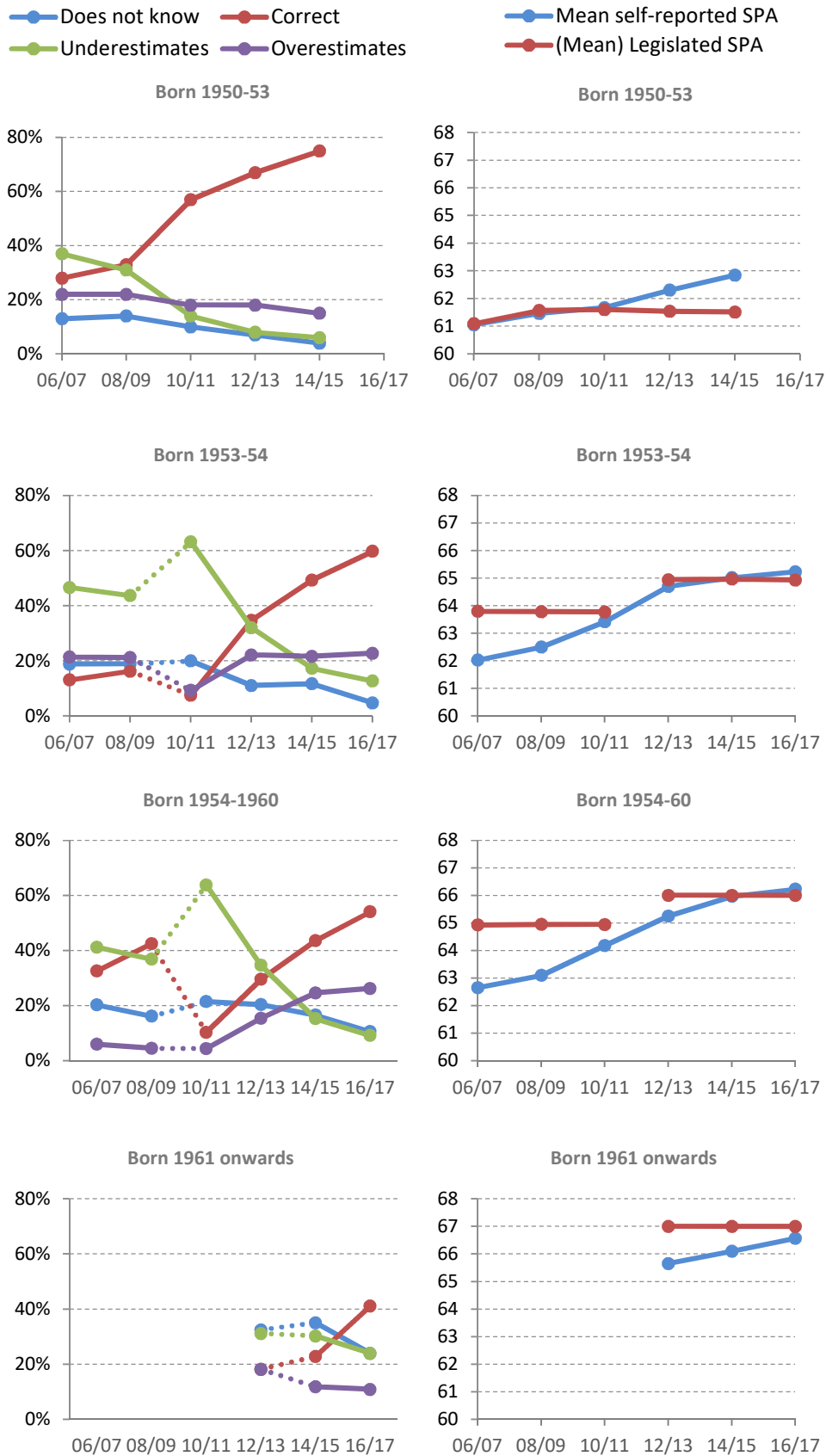


Note: Cohort splits based on the exact dates from Pensions Act 1995, 2011, and 2014.

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The last birth cohort shown are those affected by the latest reform, the 2014 Pensions Act, where the SPA for this group increased from 66 to 67. This cohort was too young to be included in earlier waves of ELSA and thus were first asked the question in 2012/13. Interestingly, there is very little change between the split of knowledge before and after the reform, and relatively little updating in the final wave.

Looking across the birth cohorts, it is clear that regardless of whether or not the cohort was affected by the 2011 reform, women became more aware of their SPA from 2010/11 onwards. Another common trend across the cohorts is the gradual increase in accuracy of knowledge over time. These charts suggest that while the legislated SPA changes very suddenly, the updating of knowledge takes place more gradually. This is also likely due to the age effects already documented, that the closer to SPA an individual is, the more likely they are to be correct about their SPA. In the following section we show explicitly the difference between cohorts' knowledge conditional on age.

A final aspect worth noting is that both under- and overestimating of SPAs is common. This means that the *average* self-reported SPA hides a large amount of the detail available in Figure 2.3. The right-hand graph for each cohort shows that the average self-reported SPA in 2016/17 is very close to the actual current SPA. However, the average hides that for all the cohorts affected by the 2011 or 2014 Pensions Acts the proportion of women who are correct about their SPA is never above 60%. This means that despite knowledge being correct on average, 1 in 4 women are either underestimating or overestimating their SPA, or admit to not knowing.

### *Men*

We turn now to a similar analysis for men. Male ELSA respondents have been asked about their SPA since 2012/13. Figure 2.4 is in other respects analogous to Figure 2.3 for women.

The first cohort, those born before 1953, was not directly affected by any of the reforms. Their knowledge of their SPA is stable over time, with around 80% reporting the correct SPA of 65. In other words, 20% of this cohort did not get their SPA right within 3 months, despite the fact that the SPA had been 65 years for men since the late 1940s.

For the next two birth cohorts, who were affected by the Pensions Act 2011, there is a slight increase in correct levels of awareness over time, but this improvement in knowledge is less dramatic than it is for women in the same cohorts. Notably, the proportion of men who correctly report their SPA does not reach the same level as for the equivalent female cohorts, and in 2016/17 more than a quarter overestimate their SPA.

For the final cohort, the timing of the Pensions Act 2014 makes interpretation of the chart slightly more difficult. While the higher SPA was legislated in 2014, the planned change was first announced in November 2011. This shows that in 2012/13, many of the cohort had already updated their knowledge, which in the graph shows as 'overestimation'. Approximately 40% correctly report their SPA by the end of the period, which is very similar to the equivalent cohort of women.

### Figure 2.4. Men's legislated and self-reported SPA, by year and cohort
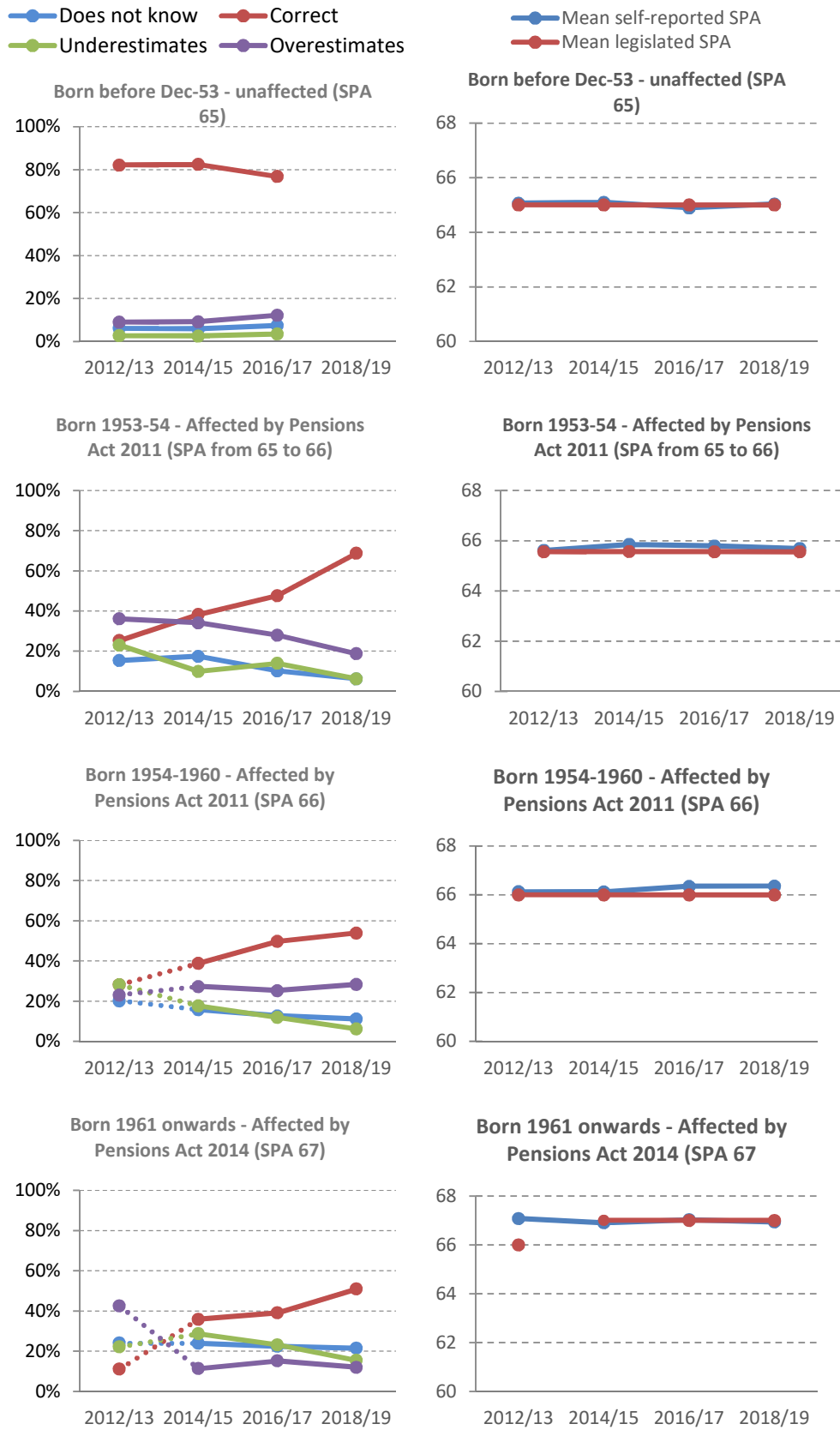


Note: Cohort splits based on the exact dates from Pensions Act 2011 and 2014.

As with women, the right-hand side panels of Figure 2.4 show that the average self-reported SPAs for men were very close to the actual state pension age, thus hiding the variation in levels of knowledge among each of the cohorts.

## Comparing awareness between generations

While it is tempting to compare the levels of knowledge of different generations at a given point in time (e.g. comparing panels within Figure 2.3 or Figure 2.4), this is not necessarily an appropriate comparison. Knowledge may improve as individuals get closer to the SPA, and generations born more recently are further from the SPA at any point in time.

To facilitate such a comparison, Figure 2.5 (for women and men in Panels A and B respectively) illustrates the proportion of individuals in each birth cohort who were correct about their SPA at each age. In both charts we denote cohorts in different colours based on which reforms they were affected by. The cohorts coloured grey were either unaffected by reforms (men) or affected by the 1995 Pensions Act (women). Cohorts coloured red were affected by the 2011 reform and cohorts coloured blue were affected by the 2014 reform. The dashed line denotes cohorts that faced a 'transition' period where the SPA among this cohort born within 12 months of each other was increased by one year.

Among women we can see that all cohorts saw an increase in knowledge as they get older. Unsurprisingly, the transition cohorts (who have an SPA that is not an age defined in whole years) have lower levels of knowledge than those with an SPA of exactly 66 or 67. There is some suggestion that the most recently born generation (born 1961–64) have a better level of knowledge at a given age than previous generations who were affected by the SPA reforms.

For men it is clear that knowledge is substantially lower among cohorts who have seen an increase in their SPA than it was for cohorts for whom the SPA remained at age 65. The trends for more recently born generations, however, are similar to women: there is increasing knowledge as individuals get closer to the SPA, the transition cohorts have lower levels of knowledge, and knowledge appears to be better among more recently born generations. In particular, over half of those born 1961–64 were correct about their SPA when aged around 56, compared to under 30% of those born 1954–60.

These figures suggest that there are differences in knowledge between cohorts that are not only driven by their current age, and that those born more recently have better knowledge conditional on age than previous generations who were affected by SPA reforms. However, the proportion of individuals who are correct about their SPA is arguably still low, with only around half of those born 1961–64 currently correct in their knowledge. It will be important to monitor whether awareness continues to improve over time, as fewer reforms to the SPA are enacted and as past reforms become more embedded in the public consciousness. Correct awareness of the age at which a state pension can first be received is important for appropriate financial and labour supply decisions throughout working life, not just at the point of retirement.

**Figure 2.5. Proportion correct about their SPA by birth cohort and age**
**Panel A: Women**
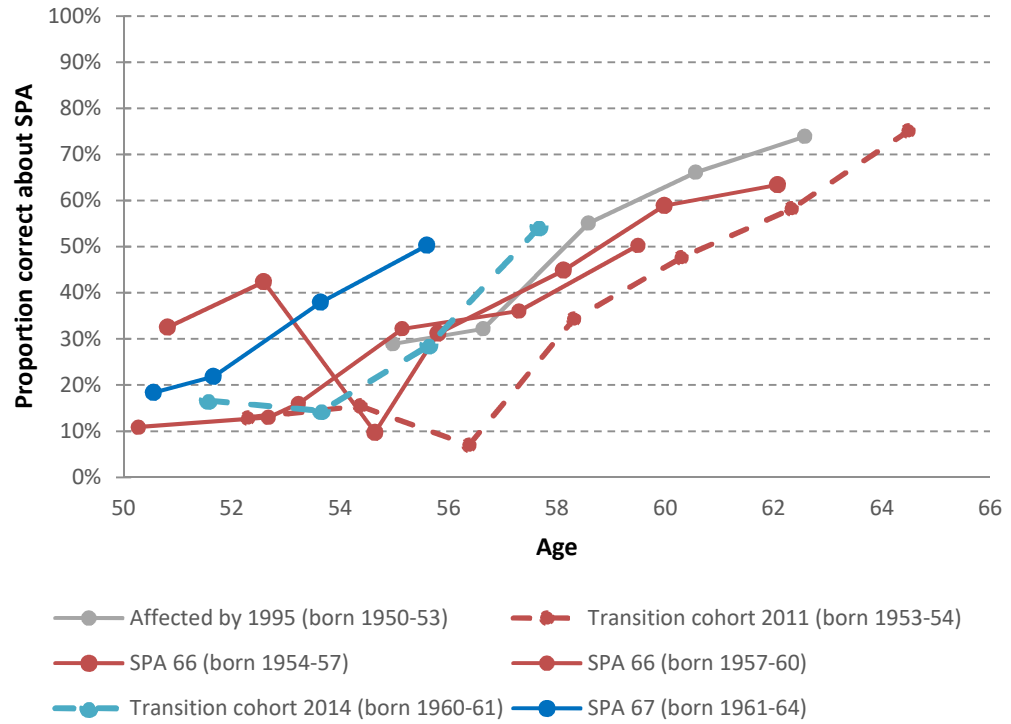


**Panel B: Men**
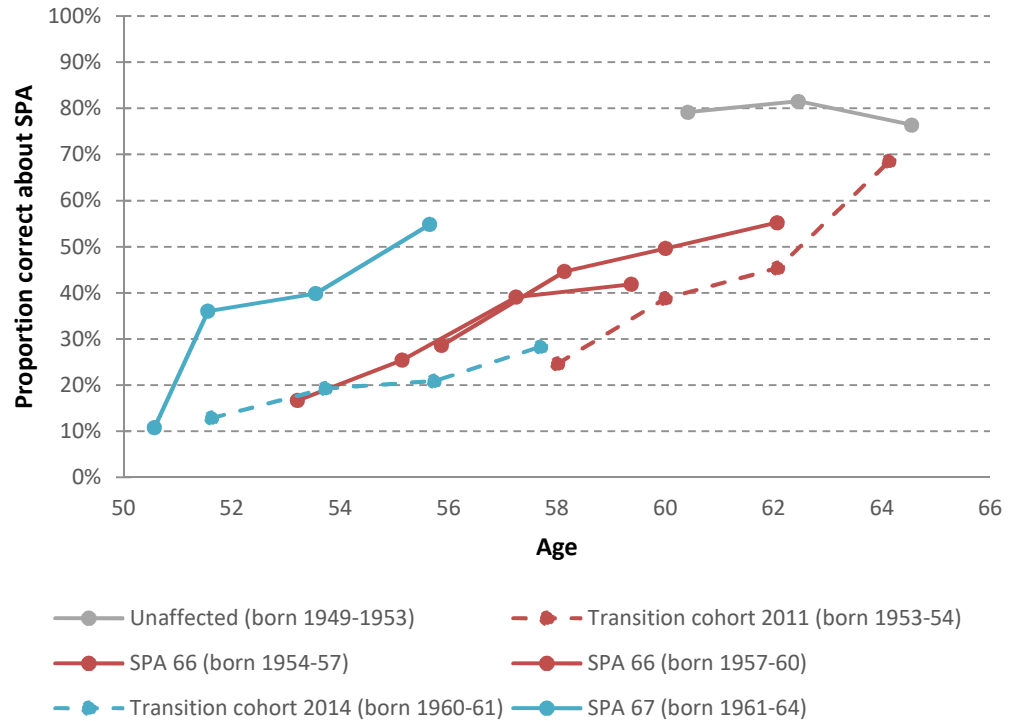


Notes: Correct is defined as correct within 3 months.

## 2.3 State pension income expectations

The amount of income that an individual can expect to receive from the state pension in future is uncertain. First, entitlement may depend on future activity (e.g. how many years in the future an individual works) which has not yet been determined. Second, there is always the possibility of policy changes before an individual reaches retirement, which could affect the benefits that will be paid.

Furthermore, individuals may be uncertain about their future state pension income – even if their future entitlement were already set and there was no risk of policy change. For example, if individuals do not understand the rules of the pension system and how entitlements are calculated on the basis of contributory activity, or if they do not remember what activities they have undertaken throughout their working lives.

Reflecting this uncertainty, ELSA asks questions that attempt to elicit a range in which individuals believe their state pension income will lie, and the chances that the income will be in different parts of that range. Specifically, anyone aged under the SPA when interviewed is asked "*Thinking about your future income from the state pension system, what is the most [least] income you could expect to receive at state pension age in the best [worst] case scenario*". Throughout this chapter we will refer to the answers to these questions as the maximum and minimum reported values. Given that the question asks about 'income from the state pension system', we assume that respondents who will receive their state pension income based on the rules of the pre-2016 system will report both the basic State Pension and the Additional State Pension amounts.

Depending on the difference between the maximum and minimum reported values (i.e. the size of the range given), individuals are then asked between one and three follow-up questions of the form "*What are the chances that you will receive more than £X*?" where the amount X asked about depends on the maximum/minimum values reported, but broadly speaking divides the range given equally.

We use these questions to examine how certain individuals are about their future state pension income – in particular, whether they are able to report a maximum and minimum expected amount, and the size of the range given, and how this varies with individual characteristics. We then explore the levels of income expected, how these compare to what they might expect to receive, and how expectations compare to reality for those ELSA respondents we later observe reaching their SPA and receiving a state pension. Finally, we explore whether expectations have changed over time in a way that would be expected given the introduction of the new state pension.

## Levels of 'certainty'

We start examining how 'certain' individuals are about their future state pension income by grouping individuals into three categories:

- **Reports with a certain value**[5]: Individuals who give the same income as their maximum and minimum expected amount.
- **Responds with a range**: Individuals who report different incomes for the maximum and minimum expected amounts, thus giving a range.
- **Does not know**: Individuals who responded 'I don't know' or refused to respond when asked either the maximum or minimum expected income question (or both).

In 2018/19, 27% of individuals reported with a certain value, 38% reported with a range and 34% did not know (of whom around 2% only did not report a minimum amount, 2% only did not report a maximum amount, and 30% reported neither).

The proportion of individuals responding with a certain value may seem surprisingly high. These individuals are on average 5.6 years below the SPA and, for most individuals, future state pension entitlements would be affected by further economic activity. There are likely two factors at play.

First, individuals may have received (on request, or unsolicited) a forecast from the government of how much they can expect to receive from their state pension in retirement. These take into account an individual's past activity, and make assumptions about their future activity, to give a forecast of what someone could be entitled to in retirement. Individuals may interpret the headline figure given as the amount they will receive without any uncertainty. In 2006/07, ELSA respondents were asked whether they had received a state pension forecast. Of those aged 50 to the SPA, 37% reported having received one. Of those in 2006/07 reporting the same value for the minimum and maximum expected state pension income, 64% reported having received a state pension forecast (while out of those reporting a range, 42% said they had received a letter). Out of those who were unable to report a range, only 18% reported receiving the letter. It is worth noting that the majority of those who reported receiving the forecast and gave a certain answer had requested the letter themselves. Thus we cannot directly say that receiving the letter increased certainty as it is possible that there are characteristics that make both requesting the letter and giving a certain answer more likely.

Second, in the wider context of behavioural economics, over-precision is less surprising. Starting with Alpert and Raiffa (1982), a number of studies have found that when asked to provide a confidence interval for a numerical question (for example 'in what year was the first flight of a hot air balloon?'), individuals give answers that give much too narrow ranges. For example, in the study by Alpert and Raiffa, when people were asked to give 90% confidence intervals,

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[5] It is worth stressing that here we do not consider the actual accuracy of answers (i.e. whether an individual's certain expectation is correct), only whether the respondent gives the same minimum and maximum value.

they estimate ranges where the right answer only falls within it 60% of the time (for more information on over-precision in judgement, see Moore et al., 2015).

What is perhaps also surprising is that 30% of individuals were unable to report either a minimum or a maximum expected state pension income. We cannot distinguish whether this is because respondents just perceive these questions as too difficult to answer, or whether it genuinely reflects a total lack of knowledge about how much state pension income an individual might receive.

We turn next to examine whether individuals' 'certainty' with respect to their future state pension income varies systematically according to their characteristics – in other words, whether certain types of people are more likely to respond to these questions in a certain way. We have done this by using a multinomial probit model to examine the association between a range of characteristics and a dependent variable which takes one of three values based on whether the respondent gave (i) a certain value, (ii) a range, and (iii) did not know at all. For those who reported a range we use ordinary least squares regression to estimate the association between individual characteristics and the average (mean) size of the reported range (measured as % of mid-point). To increase the sample size, and thus precision of our estimates, we have pooled together data from waves 7, 8, and 9.

The results of this analysis are reported in Table 2.2. Instead of showing coefficients of the multinomial probit regression, we show the average marginal effects of varying each of the covariates on the probability of the three outcomes.[6] The marginal effects can be interpreted as the increase in the probability of the response in question (similar to how the coefficients of the linear probability model were interpreted). For example, the probability that individuals report expected amounts is higher among those who score more highly on word recall tests: those in the top scoring group are 6 percentage points less likely to report 'don't know' than those in the lowest scoring group, and around 7 percentage points more likely to give a range. We find those closer to their SPA are less likely to report 'don't know' and more likely to report a maximum and minimum that are the same, than those further from the SPA. This is intuitive, since individuals closer to the SPA have a shorter period over which their entitlement to state pension income could change. Education is also strongly associated with certainty. Those with no qualifications are around 10 percentage points less likely to report a certain expectation (being more likely to answer 'don't know' than those with some qualifications).

Analogous to the final column of Table 2.1, we also ran this analysis focusing only on those in couples, adding the response categories of the spouse as well as whether the spouse is above SPA as independent variables to the regressions. The results are not shown here (for brevity), but the results indicate a significant correlation between couples' certainty about their future state pension income.

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[6] By definition the marginal effects across the three possible values of the dependent variables sum to zero, but in order to aid interpretation we show marginal effects for all three values of the dependent variable.

**Table 2.2. Association of 'certainty' with individual characteristics**

| | | Knows exactly | Knows range | Does not know | Size of range (% of mid-point of range) |
|---|---|---|---|---|---|
| | Female | −0.02 | −0.014 | 0.034 | **0.065**\*\* |
| Word recall | Group 2 | −0.028 | **0.084**\*\* | −0.056 | −0.013 |
| Ref: worst | Group 3 | 0.003 | 0.043 | −0.046 | −0.033 |
| | Group 4 | 0.029 | 0.021 | −0.049 | 0.011 |
| | Group 5 (highest) | −0.01 | **0.071**\*\* | **−0.061**\* | −0.035 |
| | Distance from spouse age (couple's age gap) | **0.004**\*\* | −0.003 | −0.001 | −0.001 |
| | Couple | 0.016 | −0.026 | 0.01 | 0.04 |
| | Distance from SPA | **0.018**\*\*\* | **−0.007**\*\* | **−0.011**\*\*\* | **−0.019**\*\*\* |
| Education | No qualifications | **−0.099**\*\*\* | 0.008 | **0.091**\*\*\* | 0.009 |
| Ref: degree | A-levels or equivalent | −0.027 | 0.017 | 0.009 | 0.007 |
| | Private pension member | 0.018 | 0.034 | **−0.052**\* | −0.012 |
| | Owns home | 0.027 | 0.017 | −0.043 | −0.052 |
| BU income quintile | 2 | −0.004 | 0.04 | −0.036 | **0.073**\* |
| Ref: bottom | 3 | **0.071**\*\* | 0.00 | **−0.071**\*\* | 0.029 |
| | 4 | 0.003 | 0.034 | −0.037 | 0.007 |
| | 5 (highest) | 0.015 | 0.022 | −0.037 | 0.071 |
| Wealth quintile | 2 | −0.027 | 0.019 | 0.008 | 0.018 |
| Ref: bottom | 3 | 0.011 | 0.016 | −0.027 | −0.011 |
| | 4 | 0.01 | 0.039 | −0.049 | −0.015 |
| | 5 (highest) | 0.034 | 0.015 | −0.05 | 0.013 |
| Economic activity | Self-employed | 0.009 | −0.006 | −0.003 | 0.023 |
| Ref: employee | Inactive | −0.028 | 0.025 | 0.002 | 0.039 |
| | Working part-time | 0.02 | 0.005 | −0.025 | −0.013 |
| Wave | 8 | 0.022 | −0.01 | −0.012 | 0.036 |
| Ref: 7 | 9 | **0.032**\* | 0.015 | **−0.047**\*\* | 0.008 |
| | *N* | 3,996 | 3,996 | 3,996 | 1,493 |

*p*-value: * 10%, ** 5%, *** 1%
Notes: The sample consists of individuals aged 55–SPA in ELSA waves 7–9. Individual characteristics are as described in the notes to Table 2.1.

Those whose spouse reports a range are more likely to report a range and those whose spouse cannot answer the question are also more likely not to answer, and much less likely to give an exact amount. Those whose spouse is above SPA are more likely to give a range or an exact answer, and less likely to respond 'don't know'. (The estimated relationships between other individual characteristics and individuals' 'certainty' about their state pension income are relatively unaffected by the restriction to couples and the inclusion of these additional controls.)

In order to assess whether access to different sources of information affects people's certainty of their future state pension income, we also ran an alternative specification where we add dummies for internet usage and sources of information for retirement saving. We used two variables related to internet

usage, one that asks whether the person has an internet connection, and another one that asks about frequency of use. We have included both variables as dummies, one for having an internet connection and one for using the internet at least once a week. The frequency of internet usage is included in the self-completion questionnaire only and thus these data are available for the subset of the ELSA sample who fill in the self-completion questionnaire (which is why these variables are not included in the main regression specifications).

Since wave 8, ELSA has also contained a question asking people to list from whom they have got information or advice about saving for retirement. Options include various parties such as independent financial advisor (IFA), accountant, bank, the pension service, family or friends, and no one. The most popular answers are 'IFA' and 'no one', so we have also included those as dummies in our alternative regression. As the question was introduced in wave 8, this further narrows our sample to individuals in waves 8 and 9 only.

The results in Table 2.3 show the estimated marginal effects for the additional controls of interest (the other controls are not shown here for brevity, but the estimated relationships are broadly unchanged from those reported in Table 2.2). Using the internet at least once a week is associated with greater certainty over future state pension income: these internet users were nearly 11 percentage points less likely to respond 'don't know' to the questions about state pension income (and around 6 percentage points more likely to know exactly and 4 percentage points more likely to give a range). This could indicate that those who use the internet are more able to inform themselves about their future state pension income, for example using the government's online tool.[7]

**Table 2.3. Role of internet usage and other sources of information**

|  | **Knows exactly** | **Knows range** | **Does not know** |
|---|---|---|---|
| Has internet connection | −0.046 | 0.031 | 0.015 |
| Uses internet at least once a week | 0.064 | 0.042 | **−0.106\*\*** |
| Has used an IFA for retirement saving advice | 0.034 | −0.024 | −0.01 |
| Has had no retirement saving advice | **−0.060\*** | 0.041 | 0.019 |
|  | 2,223 | 2,223 | 2,223 |

*p-value*: * 10%, ** 5%, *** 1%

Notes: The sample consists of individuals aged 55–SPA in ELSA waves 8–9 who responded to the self-completion questionnaire. The regressions additionally control for individual characteristics included in Table 2.2 and described in the notes to Table 2.1.

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[7] We also examined the association between individuals' knowledge of their SPA and internet use (in other words, running the analysis reported in Table 2.1 with these additional regressors). The results suggested that using the internet more than once a week was associated with a 3 percentage point greater probability of knowing one's SPA, but this relationship was not statistically significant.

## How accurate are expected incomes?

We turn now to examine the levels of income individuals expect to receive from the state pension, and the accuracy of those expectations.

For those who report the same value for their expected maximum and expected minimum income (we call this 'reported with certainty'), we have one value for their expected state pension income. For those who report a range, we have an expected maximum and an expected minimum, but we are also interested in their 'best guess'. To estimate this for each individual, we use their expected maximum and expected minimum amounts, and their responses to the follow-up questions asking about their chances of receiving more than £X (where the number of questions asked, and the value of X, depend on the maximum and minimum expected income). Taken together we have up to five data points for each individual, with a level of income and the associated probability of receiving more than that amount.[8] Following work on similar survey questions (e.g., Manski, 2004) we fit a normal distribution to each individual's expectations, and find the implied mean expected income.[9] For those individuals for whom we cannot find an implied mean in this way (either because the algorithm cannot fit a normal distribution to their expectations, or the implied mean lies outside the range given, or we have too few data points), we simply take the implied mean to be the mid-point of the minimum and maximum expected amounts.

Table 2.4 shows the distribution of expected state pension income reported in 2018/19. For those reporting a certain value we report the distribution of those answers. For those giving a range we report the distribution of the implied mean expectation (following our calculations described above), and the distribution of the maximum and minimum expected amounts.

The median expected income among men who gave a certain answer was £153 per week, and half of answers were between £132 per week and £163 per week. For women who gave certain answers the expected amounts were similar: the median was £150 per week, and half lay between £133 and £160 per week. The majority of expected amounts are therefore clustered around similar levels.

To put these expectations into context, the average state pension income among people aged 65 in 2019 was £158; £164 for men and £153 for women (DWP Stat-Xplore, n.d.). Thus we can see that on average expectations are similar, albeit slightly lower than the amounts that people aged 65 were receiving at the time.

Among those who reported a range for their expected state pension income, the levels of the implied expected mean amount are typically lower than the

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[8] For some people we have fewer than five data points, either because their expected maximum and minimum amounts were close together, or because they answer 0% or 100% to one of the follow-up amounts asked about (which updates the minimum or maximum amount expected), or because they did not answer one or more of the questions asked.

[9] We do this using non-linear least squares estimation, with an algorithm that iterates over the mean and standard deviation to find the values of those that minimise the difference between the implied normal distribution and the actual distribution given by the respondent. There are a small number for whom the implied mean is outside the range they reported; we discard those results as they are driven by unusual answers to the questions.

amounts expected by those who reported a certain value. Among men the median implied 'best guess' was £137 per week, with 50% lying between £104 and £158 per week. For women the equivalent figures are lower at £128, £102, and £147 per week. While the characteristics of those responding with certainty are different from those who report a range (as described above, they are on average closer to their SPA, and have higher wealth), this could suggest that those who are more unsure of their state pension income on average underestimate it.

**Table 2.4. Distribution of minimum and maximum amounts expected to receive from state pension**

| | Expected state pension income (£ per week) | | | | |
|---|---|---|---|---|---|
| | 25th percentile | Median (50th percentile) | 75th percentile | Mean | *N* |
| *Those who were certain* | | | | | |
| Men | 132 | 153 | 163 | 147 | 181 |
| Women | 133 | 150 | 160 | 144 | 220 |
| | | | | | |
| *Those who gave a range* | | | | | |
| Men – Implied mean | 104 | 137 | 158 | 131 | 224 |
| – Min | 81 | 112 | 145 | 111 | 224 |
| – Max | 120 | 153 | 168 | 145 | 224 |
| Women – Implied mean | 102 | 128 | 147 | 122 | 237 |
| – Min | 76 | 102 | 134 | 105 | 233 |
| – Max | 119 | 147 | 162 | 138 | 233 |

Notes: The sample consists of individuals aged 55–SPA in ELSA wave 9, who reported both a maximum and a minimum expected state pension income. The 1% of individuals reporting the highest and lowest expected incomes in wave 9 have been dropped to reduce measurement error. The implied mean expectation for those reporting a range is calculated by fitting a normal distribution to the reported expectations (described in more detail in the main text).

Assessing the accuracy of individuals' state pension expectations contemporaneously is difficult, as calculating individuals' accrued entitlements requires knowledge of the economic activities they have done over their working lives, while future accruals will depend on their future activities. However, using the panel aspect of the ELSA survey, we can identify individuals whom we observe reaching their SPA and compare the state pension income they then report receiving with the expectations they reported in previous waves. We compare all reported values in real terms. In other words,

we interpret people as giving their expectations in current prices,[10] and adjust them for inflation based on the year in which they were reported.

Figure 2.6 takes the sample of individuals who were first observed above the SPA in waves 7, 8, or 9, and illustrates for each individual (represented by a dot) how their state pension income in that wave compares to their expectation in the previous wave. Observations on the 45-degree line mean that people were exactly correct about their expectation, observations above it mean that people underestimated their future income, and observations below mean that people overestimated it.

The blue dots in the first panel show values for individuals who reported a certain value. Many observations are clustered on the 45-degree line (implying accurate knowledge), with 30% of individuals being accurate to within 5%, and the correlation coefficient is +0.34. However, there is also dispersion in responses, showing that not all those who reported a certain value were perfectly accurate in their expectations. Individuals were, however, more likely to have underestimated their pension income than overestimated it: 46% expected an income 5% or more lower than their state pension turned out to be (in real terms), while 24% expected an income 5% or higher than it turned out to be.

The green dots in the second panel illustrate how state pension income compared to the implied mean expectation (in the previous wave) for those individuals who reported a range. Expectations are again clustered close to the 45-degree line, but less so than among individuals who reported with certainty, with the mean expectation being within 5% of the eventual income received in 14% of cases. The correlation between implied mean income expectation and the subsequent income received among these individuals is +0.33. Again individuals are more likely to have underestimated their pension income than overestimated it: 63% expected an income 5% or more lower than their state pension turned out to be (in real terms), while 23% expected an income 5% or more higher than it turned out to be.

Another way to assess the accuracy of expectations for those reporting a range is to examine for what proportion their actual state pension income lay inside the expected range. Across those reaching SPA in waves 7, 8, and 9, 72% of individuals received a state pension income that did not fall within the range they expected in the previous wave (when figures are compared in real terms) – 55% received state pension income greater than the maximum amount they were expecting, while 16% received less than the minimum they were expecting.

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[10] This is in line with how the government State Pension Forecast is presented (not including any increases for future inflation)

**Figure 2.6. Comparison of state pension income received with expected state pension income reported in the previous wave**
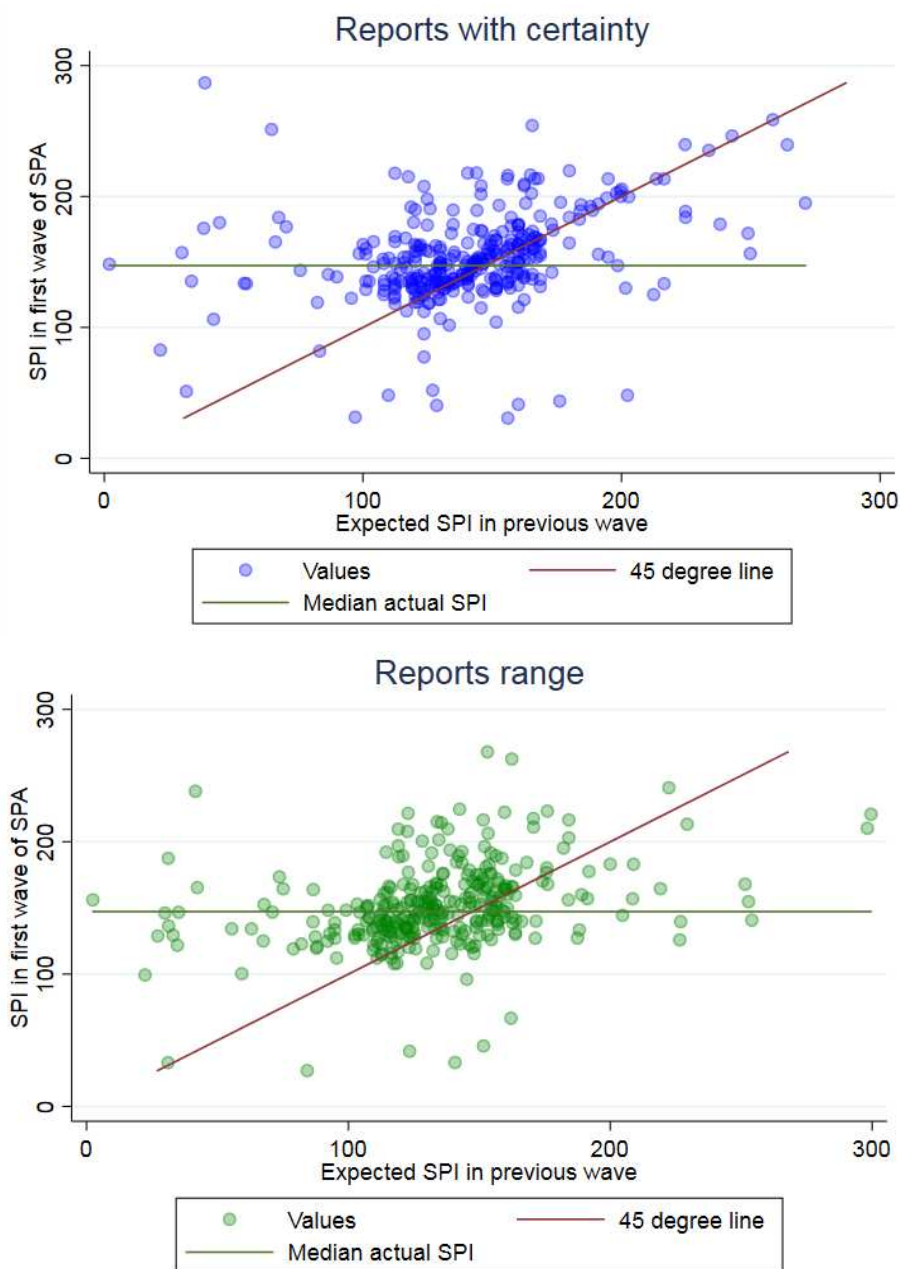


Notes: This sample consists of individuals observed above the SPA for the first time in wave 7, 8, or 9, who reported both a minimum and maximum expected value for their state pension income. Sample size 344 in the first panel, 330 in the second. Comparisons are made after adjusting for inflation. Monetary amounts are £ per week (expressed in real 2019 prices).

One reason why individuals may systematically underestimate their future state pension income is the indexation of state pension benefits. When comparing expectations to subsequent state pension income, we adjust for inflation (using the Consumer Price Index, CPI), whereas over this period the level of state pension benefits was increased in line with either CPI, earnings growth, or 2.5%, whichever is the highest. Thus, for individuals to be exactly correct in their

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expectations in our comparison would require them to understand how state pension benefits are increased over time in relation to inflation. If we instead compare state pension income received to expected state pension income uprated in line with nominal earnings growth, 2.5%, or CPI, whichever is the highest, we find that fewer underestimate and more overestimate their state pension income. Of those who reported a certain expected income, 38% expected an income 5% or more lower than their state pension turned out to be, while 34% expected an income 5% or higher than it turned out to be. For those reporting a range, the equivalent figures are 52% and 29%. Across those reporting a range and a certain value, 43% received more than the maximum amount they were expecting, while 24% received less.

In Figure 2.6 we have compared state pension income received with expected state pension income reported in the wave immediately before reaching SPA. There may a great deal of learning that occurs in terms of knowledge of state pension income in the year or years immediately before reaching SPA, in particular if individuals receive a state pension forecast in the run-up to reaching their SPA. However, it is also important whether individuals have accurate knowledge of their state pension entitlements in advance, as this could help them make better decisions, for example over their retirement planning. We therefore look at how individuals' expectations, on average, evolve in the years leading up to their SPA.

Figure 2.7 shows how median expectations have changed over time among people reaching their SPA in different waves. For example, the blue dot shows the median state pension income of those first observed above the SPA in wave 9, and the blue line shows the median expectation of those individuals in waves 3–8. The first panel shows the comparison when expectations are uprated in line with prices, while the second shows the comparison when expectations are updated in line with the actual uprating of state pension benefits. This figure does not suggest that expectations suddenly get much more accurate in the wave immediately before individuals reach the SPA. In other words, the comparisons in Figure 2.6 are unlikely to be driven by individuals informing themselves of the amount of their impending state pension income immediately prior to the SPA. Rather the improvement in accuracy is more gradual as individuals approach the SPA.

**Figure 2.7. Median state pension income in the wave first reaching SPA compared to median 'best guess' expectation in previous waves**
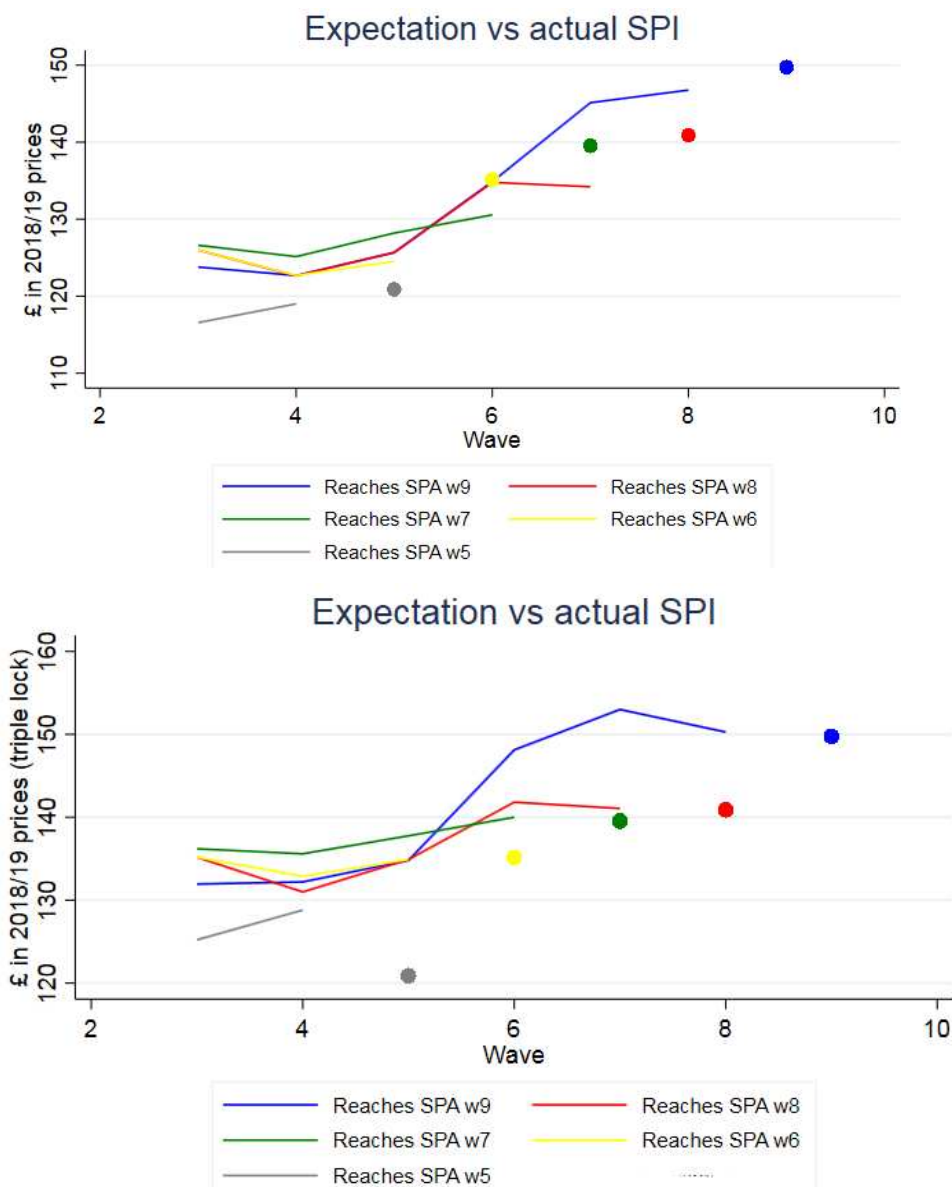


Notes: Expectation is the median of the 'best guess' expectation. The sample is ELSA core members aged 50 to SPA.

While the correlation between expected state pension income and actual income received is relatively high, there is still dispersion; many are not accurate in their expectations. We turn now to examine whether the accuracy of individuals' expectations varies systematically with their characteristics. We define individuals as being 'correct' if the difference between their latest expectation and their subsequent state pension income was less than 5% of the value of their actual state pension income.[11] We then use a linear probability model and examine the association of being correct with a range of characteristics. As for Figure 2.6, we pool data for individuals observed above the SPA for the first

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[11] The results are unaffected if accuracy is defined as being correct within 5% or £5.

time in waves 7, 8, and 9. We do this first for the group who reported with certainty, then for those who report a range, and finally for both these groups combined, where we include a dummy for those who report with certainty. The results are presented in Table 2.5.

**Table 2.5. Association of expectations accuracy with characteristics**

| | | Correct within 5% | | |
|---|---|---|---|---|
| | | Reports with certainty | Reports range | All |
| | Reports with certainty | | | **0.147*** |
| | Female | 0.033 | −0.137 | −0.03 |
| Word recall | Group 2 | 0.057 | −0.117 | −0.017 |
| Ref: worst | Group 3 | −0.038 | −0.102 | −0.063 |
| | Group 4 | −0.04 | −0.054 | −0.042 |
| | Group 5 (highest) | 0.008 | 0.008 | **0.007*** |
| | Distance from spouse age (couple's age gap) | 0.124 | 0.055 | 0.063 |
| | Couple | **0.092**** | −0.009 | 0.038 |
| | Age | −0.081 | 0.06 | 0.009 |
| Education | No qualifications | −0.03 | **0.089*** | 0.032 |
| Ref: degree | A-levels or equivalent | **0.258**** | 0.038 | **0.143*** |
| | Private pension member | 0.079 | −0.049 | 0.013 |
| | Owns home | −0.023 | 0.003 | 0.002 |
| BU income quintile | 2 | **−0.209*** | 0.022 | −0.083 |
| Ref: bottom | 3 | **−0.237**** | 0.043 | **−0.112*** |
| | 4 | **−0.193*** | −0.052 | **−0.121**** |
| | 5 (highest) | **−0.245**** | 0.084 | −0.091 |
| Wealth quintile | 2 | 0.168 | −0.02 | 0.082 |
| Ref: bottom | 3 | **0.220**** | −0.071 | 0.086 |
| | 4 | **0.199*** | −0.013 | 0.116 |
| | 5 (highest) | 0.068 | −0.079 | 0.024 |
| Economic activity | Self-employed | −0.052 | 0.053 | 0.016 |
| Ref: employee | Inactive | −0.093 | 0.006 | −0.037 |
| | Working part-time | **−0.126*** | −0.081 | **−0.091*** |
| Wave | 8 | −0.084 | 0.011 | −0.045 |
| Ref: 7 | 9 | 0.095 | **0.117*** | **0.089*** |
| | R-squared | 0.142 | 0.089 | 0.097 |
| | *N* | 268 | 276 | 544 |

*p*-value: * 10%, ** 5%, *** 1%

Notes: The sample consists of individuals observed above the SPA for the first time in wave 7, 8, or 9, who reported both a minimum and maximum expected value for their state pension income. Comparisons are made after adjusting for inflation. Monetary amounts are £ per week (expressed in real 2019 prices).

We find that among those who report with certainty, those living as a couple were more likely to be accurate, as were those who had A-level educational qualifications. Perhaps counterintuitively, those with higher incomes were less likely to be correct about their future state pension income than the bottom quintile. This may be due to the fact that those with higher earnings are more likely to have accrued Additional State Pension, the amount of which is more difficult to estimate accurately.

When we look at the group who report a range, most of the associations are no longer statistically significant. When combining the two groups, we can see that those who report their future state pension with certainty are on average more likely to be correct about their income than those who reported a range. This could well be driven by a greater proportion of those reporting an expectation with certainty having obtained a state pension forecast, which should be relatively accurate and especially so for those who are close to the SPA.

## Has the new state pension affected certainty and levels of expected retirement income?

We turn now to examine how expectations regarding future state pension income have changed over time. One reason why we might expect individuals' expectations – in particular, how certain they are about their future income – to have changed, is the introduction of the 'new state pension'.

The 'new state pension' was a reform legislated in 2014, which changed the way that state pension benefits would be calculated for individuals reaching their SPA after April 2016. In other words, it applied to men born on or after 6 April 1951 and women born on or after 6 April 1953. There were three main objectives of the reform. First, the reform explicitly aimed to reduce complexity and individuals' consequent uncertainty over what their state pension would be. Second, the reform greatly reduced the scope of means-tested support for those in retirement, in order to encourage private saving. Finally, the reform aimed to address perceived inequalities, by moving to a system where all creditable activities (such as earning over a certain amount or having certain caring responsibilities) accrued the same state pension entitlement as opposed to one that could be greater for those with higher earnings.

A detailed description of the reform can be found in DWP (2013a) or Crawford et al. (2013). A broad summary is that in 2016 the government calculated what state pension income everyone aged under the SPA was entitled to given the rules of the old state pension, and what state pension income they would have been entitled to given the rules of the new state pension (which were more generous to low earners, the self-employed and those not in employment). Individuals were then allocated the greater of these two entitlements (known as their 'starting amount'). From 2016 onwards, all individuals either working or doing alternative 'creditable activities' for a year would accrue entitlement to the same extra amount of pension income in retirement. Individuals accrue entitlement until they reach the full amount of the new state pension (under transitional rules, if an individual was already entitled to a pension greater than the full amount of the new state pension before 2016, then they would remain entitled to the higher amount).

This reform might therefore be expected to affect two dimensions of state pension income expectations. First, as this was an explicit objective, we might expect the reform to have increased individuals' awareness of their future state pension income. This could result in part from the simplification of the way benefits are calculated under the new state pension. (However, it is worth noting that given that existing entitlements were protected if these were beneficial for an individual, the calculation of an individual's entitlement is still complex for those close to SPA.) Perhaps more important, it could result from media attention surrounding the introduction of the reform, which in particular highlighted the level of the new state pension, and government communication strategies. In particular, in 2016 the Department for Work and Pensions made available an online tool which individuals could use to look up a forecast of their future state pension income.[12] This has made it easier for individuals to find out how much state pension they are likely to receive in retirement.[13]

Second, the reform will have increased the amounts of income that some types of individuals can expect to get. This will particularly be the case for those who have spent long periods out of the labour market with caring responsibilities (most commonly women with children), or those who have spent a long period of time self-employed.

### Changes in certainty over time

We first examine how individuals' 'certainty' with regard to their future state pension income has evolved over time. To do so we run a multivariate regression model, and examine the association between whether someone is unable to give a range for their expected income and the wave of ELSA interview – after controlling for a range of individual characteristics (as in The results of this analysis are reported in Table 2.2. Instead of showing coefficients of the multinomial probit regression, we show the average marginal effects of varying each of the covariates on the probability of the three outcomes. The marginal effects can be interpreted as the increase in the probability of the response in question (similar to how the coefficients of the linear probability model were interpreted). For example, the probability that individuals report expected amounts is higher among those who score more highly on word recall tests: those in the top scoring group are 6 percentage points less likely to report 'don't know' than those in the lowest scoring group, and around 7 percentage points more likely to give a range. We find those closer to their SPA are less likely to report 'don't know' and more likely to report a maximum and minimum that are the same, than those further from the SPA. This is intuitive, since individuals closer to the SPA have a shorter period over which their entitlement to state pension income could change. Education is also strongly associated with certainty. Those with no qualifications are around 10 percentage points less likely to report a certain expectation (being more likely to answer 'don't know' than those with some qualifications).

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[12] According to one online source, the tool was used 10 million times between 2016 and 2018 https://www.moneysavingexpert.com/news/2018/10/10-million-state-pension-forecasts-have-been-checked---here-s-ho/

[13] Prior to this, individuals had to contact the DWP for a state pension forecast.

Analogous to the final column of Table 2.1, we also ran this analysis focusing only on those in couples, adding the response categories of the spouse as well as whether the spouse is above SPA as independent variables to the regressions. The results are not shown here (for brevity), but the results indicate a significant correlation between couples' certainty about their future state pension income.

**Table 2.2**) and a set of dummies for year of birth. The estimated wave effects are illustrated by the green dots in Figure 2.8 (the bars give the 95% confidence intervals). These illustrate that, relative to wave 3, the proportion of individuals unable to give a range declined over time – the difference between wave 3 and wave 9 is estimated to be a decline of 15 percentage points after controlling for changes in the characteristics of individuals over time. There does not, however, appear to be any particular change in the trend between wave 7 (2014/15) and 8 (2016/17), between which the new state pension was introduced. There is some suggestion that the proportion of individuals not being able to give a maximum and/or minimum expected amount declined particularly in wave 9, but this could be due to sampling variation.

Similar models are estimated for the proportion of individuals reporting a certain value (blue dots in Figure 2.8) and those reporting a range (red dots). The proportion of individuals answering in both of these ways is estimated to have increased over time, all else equal, but the exact size of the time effects can unfortunately only be imprecisely estimated.

**Figure 2.8. Estimated changes over time in certainty regarding future pension income**
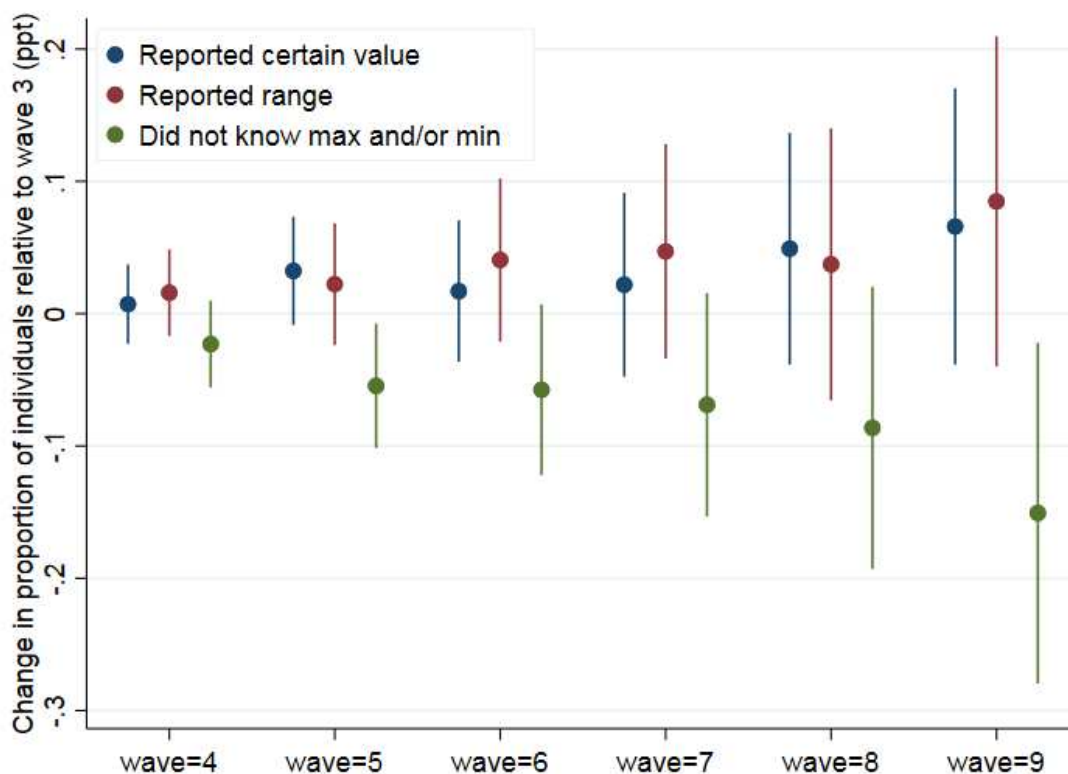
Notes: 'Reported certain value' are individuals who give the same income as their maximum and minimum expected amount, 'Reported range' are individuals who report different incomes for the maximum and minimum expected amounts, thus giving a range, and 'Did not know max and/or min' are individuals who responded 'I don't know' or refused to respond when asked either the maximum or minimum expected income question (or both). The sample is ELSA respondents aged 55–SPA, born 1944–61. Dots give the estimated difference in the proportion of individuals who did not know (green dots), knew exactly (blue dots) or reported a range (red dots) in any given wave as compared to in wave 3. The bars give the 95% confidence intervals around the estimated wave effects.

We turn now to examine briefly changes in the levels of expected pension income over time. Figure 2.9 shows how the mean of men and women's expected state pension income has changed over time (using the expected amount for those who reported a certain value, and the implied mean for those who reported a range). There is a strong increase in average expected pension income among women, especially those women who report their expectations with certainty for whom the expected amount increased from £106 in 2006/07 to around £150 per week in 2018/19. For men expected pension income has been relatively stable over time. This is consistent with the greater increase in average state pension income for women than men, which arises from both the greater labour market attachment of successive generations of women, and that the state pension has been reformed over time to be more generous to those with periods not in paid work (who are disproportionately women), which will also benefit those born more recently to a greater degree. Those reaching the SPA after 2010, in particular, required fewer years of contributory activity to be entitled to a full state pension than those reaching the SPA before 2010.

**Figure 2.9. Mean expected state pension income over time**
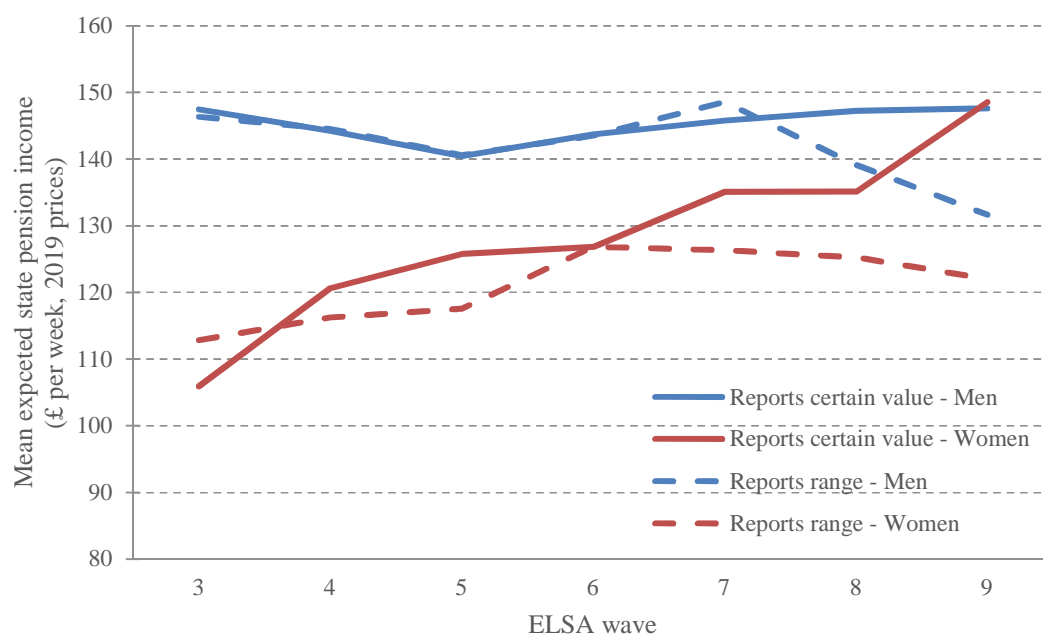


Notes: The sample consists of individuals aged 55–SPA who reported both a maximum and a minimum expected state pension income. Expected state pension income for those who gave a range is the 'implied mean', calculated as described in the text.

To examine whether the income expectations of men and women were affected differently by the reform, we use a multivariate model. Specifically, we run a

regression model where we regress the expectation $y_{it}$ (where this is either the maximum, minimum, or implied mean/certain value) on a range of characteristics $X_{it}$, wave dummies, and interaction terms of being affected by the reform (i.e. reaching SPA 2016 onwards), being female and being in a period post-reform, as shown below.

$$y_{it} = \alpha + \beta_1 (Affected_i * Female_i * Post_t) + \beta_2(Affected_i * Female_i) \\ + \beta_3 Affected_i + \beta_4 Post_t + \beta_5 Female_i + \gamma' X_{it} + \delta \, Wave_t \\ + \epsilon_{it}$$

The coefficient of interest is $\beta_1$, which shows whether women who reported state pension income expectations after 2016 (who were by definition affected by the reform) had expectations that were more different compared to previous periods than men reporting after 2016.

The results are shown in the first three columns of Table 2.6. Looking at the coefficient of interest $\beta_1$, we find that after 2016 the women affected by the new state pension increased their expected state pension income by more than the men who were affected. The average maximum expected amount increased by £13 per week more for women than men, the minimum increased by around £7 more on average, and the implied mean increased by around £8 per week more. (These differences are after controlling for the pre-reform difference between men and women who would subsequently be affected by the reform.)

One concern with this approach is that the composition of the 'affected' group – anyone reaching SPA after April 2016 – is changing over time. For example, in wave 4 the affected group was women born between 1953 and 1954, but by wave 9 it is women born between 1953 and 1963. Thus we might be concerned that the difference between men and women among the affected group is not constant over time even in the absence of the reform.

To overcome this concern, we adjust our specification to control explicitly for expectations that vary by date of birth, and differently so for men and women. In other words, in addition to our individual characteristics $X_{it}$, we also include a separate set of year of birth dummies for men and women. The results of this model are presented in columns (4), (5) and (6) of Table 2.6. Controlling flexibly for cohort differences in female income expectations in this way reduces the precision with which we can estimate $\beta_1$. However, the size of the estimated effects of being observed after 2016 are still similar, suggesting that women did increase their income expectations by more than men after the introduction of the new state pension.[14]

**Table 2.6. Estimated change in income expectations in 2016 for women as compared to men**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Maximum | Mean | Minimum | Maximum | Mean | Minimum |

---

[14] Another potential sensitivity test for these results is to test a different way of defining the 'post-reform' period. The new state pension affected cohorts since 2016, but it was legislated in 2014. Testing the regressions for post-reform defined as 2014 and onwards yields similar point estimates for $\beta_1$, with the mean still statistically significantly higher after female birth year cohort controls are introduced.

| | | | | | | |
|---|---|---|---|---|---|---|
| *Affected * Post * Female* ($\beta_1$) | **13.36***** | **8.48**** | **6.98*** | **10.27**** | 6.49 | 6.39 |
| *Affected * Female* | 6.22 | 6.20* | 3.08 | −4.55 | −5.01 | −1.84 |
| *Female* | **−23.37***** | **−21.24***** | **−16.11***** | 11.72 | 18.15 | 18.03 |
| YOB * Female effects | No | No | No | Yes | Yes | Yes |
| *R*-squared | 0.035 | 0.050 | 0.052 | 0.042 | 0.057 | 0.059 |
| *N* | 8,470 | 8,034 | 8,309 | 8,470 | 8,034 | 8,309 |

Notes: The sample consists of individuals aged 55–SPA, born between 1944 and 1961. Regressions are OLS regressions where the outcome of interest is the maximum expected state pension income (columns 1 and 4), implied mean expected state pension income (columns 2 and 5) and the minimum expected state pension income (columns 3 and 6). Regressions additionally include controls for individual characteristics (as described in the notes to Table 2.1), wave dummies, and dummies for being in an affected cohort (i.e. reaching SPA after 2016) and being observed after 2016. Standard errors are in parenthesis. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels.

## 2.4  Conclusions

If individuals are to make appropriate decisions about private saving for retirement, and when and how they leave the labour market, they need to understand what their state pension entitlements are. Specifically, they need to have reasonably accurate knowledge of what state pension income they will receive, and from what age.

This chapter has provided an updated assessment of individuals' awareness of their SPA, after a decade of reforms, and a first assessment of the extent to which individuals understand how much income they will get from their state pension.

The analysis shows that while individuals' knowledge of their SPA is greater at a given age among more recently born generations than among older generations who were also affected by SPA reforms, knowledge is still far from complete. Among those aged 58–64 in 2018/19 whose SPA was 67, 59% were correct about their SPA but 11% overestimated, 12% underestimated, and 22% reported that they did not know their SPA. Important socioeconomic differences in knowledge that have previously been identified still remain: those with lower levels of education, and those with lower levels of wealth are less likely to know their SPA. That is despite these individuals being more likely to be reliant on the state pension for a majority of their income in retirement.

Awareness of future state pension income also varies markedly across individuals. A third of individuals aged 55–SPA in 2018/19 were unable to give a value for the maximum and/or minimum that they expected to receive. Awareness is lower among women, among those with lower levels of education, among those with lower levels of wealth, and among those who score less highly on recall tests. Among individuals who did report maximum and minimum expected income amounts, many are quite accurate – as might be expected if they have informed themselves using forecasts from the government – while others are not.

The new state pension was introduced in 2016 with an explicit objective of improving individuals' awareness of what they would get from the state. Rules for future entitlement were simplified, there was considerable press attention of the reforms, and the government made available an online tool for obtaining state pension forecasts. Despite this, there is no strong evidence that knowledge improved significantly from 2016.

Going forwards, over a period when we might reasonably expect fewer reforms to the state pension system, policy makers should focus on increasing individuals' awareness of what they will be entitled to and from when. Given the differences across individuals that we have highlighted, targeted approaches might be required to reach particular groups, such as those who are not frequent users of the internet.

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# 3. Social support in later life: Patterns, transitions and associated factors, findings from a Latent Transition Analysis

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Key findings are the following:

- Information on ELSA members' social relationships with their spouses, children, other family, and friends was used to identify latent classes of social support in order to classify participants into three groups labelled as: high social support, moderate social support, and low social support.

- The prevalence of being in these classes was 65% for high social support, 22% for moderate social support, and 13% for low social support.

- ELSA members in the high social support latent class were married, had children, and had close and high-quality relationships with their spouse and children. Those in the moderate social support class had close relationships with their children but were less likely to be married and more likely to have poor quality relationships with their spouses if they were married. The low social support class were less likely to have children and, if they had spouses and children, were more likely to have poor relationships with them.

- The majority of participants remained in the same social support latent class over time. The highest rate of change was a move from high social support to moderate social support, which occurred for 13% of those in the high social support category between wave 4 and wave 9 of ELSA.

- ELSA participants in the high social support class had lower scores on symptoms of depression (CES-D), higher scores for quality of life (CASP-19), and higher scores for life satisfaction, compared with those in the moderate social support and the low social support classes.

- Compared with employed participants, those retired or unemployed were more likely to be in the low social support latent class. However, employment status did not predict change in social support class membership over time.

- Single and never married participants, as well as those divorced and separated had lower odds than their married counterparts of being in the high social support latent class. Single and never married participants were also

less likely than their married counterparts to make the transition into the high social support class between wave 4 and wave 9 of ELSA.

- Poorer health and having difficulties with activities of the daily living (ADL) or instrumental activities of daily living (IADLs) were both related to a lower likelihood of being in the high social support class, and those with better health and no disability were also more likely to move to a better social support latent class over time.

## 3.1 Introduction

Relationships are a central element of social life and a key dimension of well-being. They are known to be determinants of physical and mental health over the life course (Fiori and Consedine, 2013; Iob et al., 2018; Melrose et al., 2015; Siedlecki et al., 2014; Stafford et al., 2011). Crucial to the importance of these relationships is the access to social support, which has been variously described as social bonds, social networks, and social contact, as well as human companionship (Turner, 1983). It has also been described as an expression of mutuality and affection that is characteristic of the relationship between individuals (Gottlieb and Bergen, 2010). Indeed, Gottlieb and Bergen (2010) describe how close relationships offer a wider range of support than casual acquaintances. However, capturing the complexity of social relations and social support is far from straightforward, requiring both the application of theoretical approaches to understand a complex set of concepts and statistical techniques that can synthesise complex data to reveal underlying patterns.

The convoy model of social relationships provides a theoretical framework for both understanding the nature of social networks and social support, and for examining how these change over time (Antonucci and Akiyama, 1987; Antonucci et al., 2014; Kahn and Antonucci, 1980; Levitt et al., 1985). According to the convoy model, individuals go through life embedded in a social network made up of family and friends, and with whom they both give and receive social support. Relationships within the convoy vary in their closeness, quality, and function, and this variation relates to demographic characteristics and context (Antonucci et al., 2014). In addition, these relationships are both dynamic and multidimensional, so who is in the convoy and how the relationships function are likely to change over time and across the life course. However, despite such changes, a convoy model approach suggests that overall the perceived level of support remains stable, perhaps because these changes in relationships, be that content, closeness, quality, or function, compensate for one another (Bossé et al., 1990, 1993).

To capture changes in social support requires an analytical approach that can parsimoniously accommodate the complex and multidimensional nature of social relationships and ensuing social support. Proponents of the convoy model argue that this can be best achieved by moving from a variable-centred approach to analysis – one that focuses on describing the associations between variables – to a pattern-centred approach that identifies categories, or classes, of people in a population on the basis of similarities and difference between them (Antonnuci et al., 2014). In the case of social relationships, such an approach allows people to be classified according to several domains of their social

relationships (who is in the network, the closeness of ties within a network, the quality of social support that is provided, and the density, or frequency of contact, of the relationships in the network). Such a classification can then be used to identify factors that correlate with membership of a category of social support and factors that might predict movement from one category to another.

A pattern-centred approach, then, has the potential to address two core issues. The first is moving beyond focusing on one dimension of social support, such as the number of close connections a person has, or their participation in various groups to engage in social networks (Berkman et al., 2000), or one that focuses only on the positive and negative dimensions of social support relations (Fiori and Consedine, 2013; Iob et al., 2018, Lee et al., 2019; Stafford et al., 2011). While each element is important, studying them jointly enables the multidimensional nature of social support networks to be examined. The second is the examination of the impact that social circumstances might have on social networks and support. For instance, it has been suggested that older individuals are likely to face important changes to their social networks following retirement and widowhood (Depner and Ingersoll, 1982; Gurung et al., 2003). So, after retirement, for example, people might lose important connections with colleagues (Howard et al., 1982), but strengthen the relationships with family and friends (Van Tilburg, 1992).

To address these issues, we used the longitudinal design of ELSA and its multidimensional coverage of social networks and social support to examine the dynamics of social support and the extent to which these relate to changes that occur in later life. We also examined whether these changes lead to transformations in the extent or quality of social support. To do this, we take a pattern-centred approach by employing Latent Transition Analysis (LTA) to estimate categories, or classes, of social support and the degree of transition between latent classes over time. Instead of directly defining social support using a variable approach, LTA models allow us to categorise heterogeneous subgroups of participants into more homogeneous classes of type of social support.

## 3.2  Research questions

We aim to answer the following research questions.

1.  Are there qualitatively distinct groups of ELSA participants who demonstrate particular patterns of social support from their spouses, children, family, and friends?

    *   To address this question, we use cross-sectional data from wave 4 of ELSA to examine how participants might be categorised according to the type of social support that they report receiving.

2.  To what extent does the nature of the social support that individuals receive change over time?

    *   We use longitudinal data from wave 4 and wave 9 to identify changes over time in membership of categories that summarise the type of social support that participants report receiving.

3. Is the nature of the social support received by ELSA participants related to their well-being?

- We examine the relationship between the type of social support that participants report receiving at wave 4 of ELSA and three measures of well-being: symptoms of depression (CES-D (Radloff, 1977)), quality of life (CASP-19 (Hyde et al., 2003)) and life satisfaction (the satisfaction with life scale (Diener et al., 1985)).

4. How are different patterns of social support associated with employment status, marital status, and health characteristics?

- We examine the cross-sectional and longitudinal relationship between category of social support received and each of employment status, marital status, and health.

# 3.3 Methods

## 3.3.1 Sample participants

We included participants aged 55 and older who responded to the self-completion questionnaire (which contains the measures of social support) in both waves 4 and 9 of ELSA ($N = 5,388$). Participants were included in our study regardless of whether or not they reported having a spouse, any children, any other family, or friends as potential sources of social support.

## 3.3.2 Measurements

### Social support

We characterise social support using the items administered in a self-completion questionnaire to produce variables that captured the dimensions of closeness, quality (positive and negative), and density (frequency of contact). Each dimension was assessed across four types of relationship: marital, children, other relatives, and friends.

Closeness was defined using a binary variable that denoted either not having the relationship (spouse/children/family/friends), or not reporting the relationship as close, in contrast to reporting having a close relationship.

Quality of social support was measured using two scales. The first scale captured the presence of positive social support by combining three items: how much the participant can rely on each of their spouse, children, other family and friends; how much they can open up to them; and how much they understand their feelings. The second scale captured the presence of negative social support by combining the three items: how much the spouse, children, other family and friends criticise the participant; get on her/his nerves; and let the participant down. Positive and negative quality of social support variables were binary. For positive support the categories were not having the relationship (spouse/children/family/friends), or not having a positive relationship, compared with having a positive relationship. For negative quality support the categories were having a negative relationship, compared with not having a negative relationship or not having the relationship (spouse/children/family/friends).

Density of social support was defined by items measuring the frequency of meeting, speaking on the phone and writing emails to children/family/friends. These items were not collected for spouses, who were presumed to cohabit. We combined these three types of contact to produce binary variables of not having the relationship (children/family/friends), or low frequency of meetings/ speaking/writing, compared with high frequency of meeting/speaking/writing.

We also included the indicator variables of whether participants had a spouse, children, family, and friends in order to separately identify the effects of this.

Having derived measures of closeness, quality, and density across the different types of relationships that participants had, we then allocated individuals into distinct classes of social support, using a Latent Transition Analysis approach, as described in Section 3.3.3.

**Well-being**

Symptoms of depression were measured with an eight-item version of the Centre for Epidemiologic Studies Depression Scale (CES-D), a widely used self-report measure of depression (Radloff, 1977). The items were answered using binary yes/no responses which can be summed to give summary scores ranging from 0 to 8. Those with higher scores are considered to have higher levels of depression.

Quality of life was measured using the CASP-19 scale, which was designed to provide a multidimensional measure of quality of life for those with older ages, covering the four domains of control, autonomy, self-realisation, and pleasure (Hyde et al., 2003). Items were measured using a four-point Likert scale and an overall quality of life index was constructed by summing the scores to give a scale range from 4 to 57, where a higher score denoted a better quality of life.

Life satisfaction was measured using the five-item Satisfaction With Life Scale (SWLS) (Diener et al., 1985). Responses were recorded on a seven-point Likert scale where answers ranged between strongly disagree to strongly agree, which resulted in summary scores from 5 to 35, with higher scores indicating greater overall life satisfaction.

**Predictors**

*Employment status*

Participants were classified into three categories: employed or self-employed; retired; and unemployed, or permanently sick and disabled, or looking after home or family. The few participants with additional responses, such as "other not codeable" and "semi-retired", were excluded from the analytical sample. Semi-retired participants comprised only 0.9% of the sample.

*Marital status (marital/cohabitation)*

Participants were categorised into four groups: married (including those in civil partnership) or cohabiting; single and never married; widowed; and divorced or separated.

*Health status*

We used the self-report general health variable, for which participants reported their health as being in one of five categories: excellent; very good; good; fair; and poor.

*Activities of daily living and instrumental activities of daily living*

Participants were asked to report whether they have any difficulty with the following activities of daily living (ADLs): dressing; walking across a room; bathing or showering; eating; getting out of bed; and using the toilet. Difficulties with instrumental activities of daily living (IADLs) were also collected and included: using a map; preparing a hot meal; making phone calls; managing money; shopping for groceries; taking medications; and doing work around the house. The number of difficulties with ADLs and IADLs were used as a dichotomous variable, where having no difficulties was contrasted with having one or more difficulty.

### 3.3.3 Statistical analyses

To address the research questions provided in Section 3.2, we fit Latent Transition Analyses (LTA) using the social support measurements. The LTA model was specified using a four-step process to address each of the research questions described above:

1) Define the latent class structure and allocate participants into classes using Latent Class Analysis. Latent Class Analysis is a measurement model that identifies unmeasured class membership among participants by grouping them together into mutually exclusive, and exhaustive, categories, or classes, based on their observed characteristics. As such, it allows complex and multidimensional data to be combined using a pattern-centred, rather than variable-centred, approach.

2) Modelling and testing transition probabilities for participants to change class membership over time.

3) Examining the relationship between social support class membership and well-being outcomes at wave 4 of ELSA.

4) Testing the relationship between membership of social support class and change in social support class and each of employment status, marital status, and health.

All models were adjusted for gender and age. All analyses and results were based on STATA 16/MP and Mplus 8.0 (Muthén and Muthén, 2012).

## 3.4 Results

### Descriptive characteristics

Table 3.1 describes the distribution of participants across different characteristics. In wave 4, a large proportion of participants (47.6%) were retired, and this percentage had considerably increased by wave 9 (81.3%). Two-fifths (40.8%) of participants were employed in wave 4, but this proportion had decreased by wave 9 (12.9%). The number of unemployed participants,

long-term sick or disabled, or looking after home decreased by half between wave 4 and wave 9.

The vast majority of the sample (69.8%) were married or cohabiting at wave 4, and this percentage decreased only slightly by wave 9 (62.1%). Mirroring this, the number of participants who were widowed increased from 11.1% at wave 4 to 19.3% at wave 9. In contrast, the percentage of participants who were single, or divorced or separated, remained stable across the two waves.

**Table 3.1. Descriptive information of covariates (*N* = 5388)**

|  | ELSA Wave 4 | | ELSA Wave 9 | |
|---|---|---|---|---|
| *Employment status* | *N* | *%* | *N* | *%* |
| Employed | 2,196 | 40.8 | 693 | 12.9 |
| Retired | 2,564 | 47.6 | 4,374 | 81.3 |
| Unemployed and other | 626 | 11.6 | 312 | 5.8 |
| *Marital status* | | | | |
| Married and cohabiting | 3,766 | 69.8 | 3,348 | 62.1 |
| Single and never married | 342 | 6.4 | 329 | 6.1 |
| Widowed | 595 | 11.1 | 1,040 | 19.3 |
| Divorced and separated | 685 | 12.7 | 6.71 | 12.45 |
| *Self-assessed health* | | | | |
| Excellent | 799 | 14.9 | 499 | 10.3 |
| Very good | 1,750 | 32.8 | 1,455 | 27.0 |
| Good | 1,733 | 32.6 | 1,793 | 34.0 |
| Fair | 807 | 15.1 | 1,010 | 20.0 |
| Poor | 235 | 4.6 | 417 | 8.7 |
| *ADLs-IADLs* | | | | |
| Yes (at least one) | 1,116 | 20.7 | 1,610 | 29.9 |
| No (none) | 4,272 | 79.3 | 3,778 | 70.1 |
| *Well-being* | *Mean* | *SD* | *Mean* | *SD* |
| CES-D | 0.95 | 1.40 | 1.01 | 1.30 |
| CASP-19* | 42.30 | 8.16 | 41.22 | 9.38 |
| SWLS† | 25.50 | 6.15 | 26.00 | 6.11 |

Notes: * indicates different sample size. *N* = 4,224 participants had information on CASP-19 in both waves 4 and 9. † indicates different sample size. *N* = 4,264 participants had information on SWLS in both waves 4 and 9.

At wave 4, almost 15% of participants described their health as excellent, with an additional two-thirds of the sample reporting that their health was very good and good (32.8% and 32.6%, respectively). These percentages dropped by wave 9, where just over 10% of participants reported their health as excellent, and just over 60% as either very good or good. In contrast, the proportion of participants who described their health as fair increased from about 15% at wave 4 to 20% at wave 9, and while only 4.6% of participants reported having poor health at the wave 4 assessment, almost 9% did so at wave 9. Similarly, while just over 20% of participants reported having one or more ADL or IADL difficulties at wave 4, this percentage increased to almost 30% at wave 9.

Symptoms of depression (CES-D) had a mean of 0.95 (SD = 1.4) in wave 4, CASP-19 had a mean of 42.3 (SD = 8.16), and SWLS had a mean of 25.50 (SD = 6.15). In wave 9 these values changed hardly at all, with CES-D having a mean of 1.01 (SD = 1.3), CASP-19 having a mean of 41.22 (SD = 9.38), and SWLS having a mean of 26 (SD = 6.11).

## Latent Class Analysis of social support data

At the first stage of the analysis we set out to identify the number of latent classes that best summarised the types of social support reported by participants across the four types of relationship (marital, children, other family, and friends) and the three social network dimensions (closeness, quality, and density). To do this we fitted three models to identify the number of classes that could describe the data best. As seen in Table 3.2, a four-class solution provides the best statistical fit (the lowest values in AIC and BIC[1]) and therefore appears to be preferable. However, fit statistics are not a strict statistical test, but rather provide guidelines to help to decide the most appropriate number of classes. Fit statistics are meant to be used in conjunction with theoretical considerations. In this case, compared with a three-class solution the four-class solution added a class that did not make a substantive contribution beyond those in the three-class solution, and the added class contained only 5% of the sample. Consequently, we opted for three classes, which produced a solution that was empirically suitable.

**Table 3.2. Summary of information for selecting number of latent classes of social support**

| Number of classes | Number of parameters estimated | AIC | BIC | Entropy | Log likelihood |
|---|---|---|---|---|---|
| 2 | 39 | 78647 | 78905 | 0.933 | −39284 |
| 3 | 59 | 75312 | 75700 | 0.800 | −37597 |
| 4 | 79 | 73586 | 74107 | 0.887 | −36714 |

The characteristics of the three classes are shown in Table 3.3, which is based on cross-sectional analysis of wave 4. The first class, labelled as *high social support*, contained participants who all had a spouse and children and who reported being very close with their spouse (marginal probability of 0.98 on a 0–1 scale), their children (0.99), their other family (0.82), and their friends (0.87). These participants also had high positive quality relationships with their spouses (0.96) and children (0.99) and high frequency of interaction (density of the relationship) with their children. However, their relationships with spouses and children also had observable levels of negative quality (spouse 0.83, children 0.92). In addition, the quality of their relationships with other family and friends were not as strong, with relatively low levels of positive quality (0.58 for other family, and 0.74 for friends), meaningful levels of negative quality (0.91 for other family, and 0.96 for friends), and low density.

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[1] AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion) are estimators for prediction error and estimate the quality of statistical models. The lower the value the better.

**Table 3.3. Three-latent-class model of social support ($N = 5,388$); all scores are 0–1**

| | Latent classes | | |
| --- | --- | --- | --- |
| | *High social support* | *Moderate social support* | *Low social support* |
| *Spouse* | | | |
| Whether you have a spouse | 1.00 | 0.05 | 0.52 |
| Closeness with your spouse | 0.98 | 0.00 | 0.49 |
| Positive support from spouse | 0.96 | 0.00 | 0.48 |
| Negative support from spouse | 0.83 | 0.96 | 0.93 |
| *Children* | | | |
| Whether you have children | 1.00 | 1.00 | 0.10 |
| Closeness with your children | 0.99 | 0.98 | 0.00 |
| Positive support from children | 0.90 | 0.88 | 0.00 |
| Negative support from children | 0.92 | 0.88 | 0.96 |
| Frequency of contact with children | 0.84 | 0.84 | 0.00 |
| *Other family* | | | |
| Whether you have family | 0.93 | 0.91 | 0.84 |
| Closeness with your family | 0.82 | 0.82 | 0.67 |
| Positive support from family | 0.58 | 0.60 | 0.54 |
| Negative support from family | 0.91 | 0.91 | 0.87 |
| Frequency of contact with family | 0.50 | 0.51 | 0.38 |
| *Friends* | | | |
| Whether you have friends | 0.94 | 0.94 | 0.94 |
| Closeness with your friends | 0.87 | 0.90 | 0.87 |
| Positive support from friends | 0.74 | 0.79 | 0.74 |
| Negative support from friends | 0.96 | 0.94 | 0.94 |
| Frequency of contact with friends | 0.69 | 0.74 | 0.73 |

The second class, labelled as *moderate social support*, contained participants who all had children, but very few had spouses and for those who did, their relationship with their spouses was not close, they had low levels of positive quality of support and had high levels of negative quality of support. Nevertheless, these participants had high levels of closeness with their children (0.98), had both high levels of positive quality and negative quality of support in their relationships with their children (both 0.88), and high frequency of contact (density) with their children (0.84). Their relationships with other family and friends were very similar to those in the *high social support* class.

The third class, labelled as *low social support*, included participants among whom just over half (0.52) had a spouse and only 10% had children. These participants were much less likely than those in the *high social support* class to feel close to their spouse and to have positive quality of support in their relationship, and much more likely to have negative quality of support in their relationship. They also did not feel close to their children, did not regularly have contact with their children and characterised their relationships with their

children as negative. They were also less likely to feel close to other members of their family and less likely to have regular contact with other members of their family, but otherwise their relationships with other family, and with friends, were very similar to those in both the *high social support* and *moderate social support* classes.

Table 3.4 shows the prevalence of the social support latent classes in the population. At wave 4, the majority of the participants belonged to the *high social support* class (65%), with 22% in the *moderate social support* class and 13% in the *low social support* class. This changed a little by wave 9, with the proportion in the *high social support* class decreasing to 58% and the proportions in both the *moderate social support* and *low social support* classes increasing, to 26% and 15% respectively.

**Table 3.4. Prevalence of latent classes of social support**

|  | Latent class | | |
|---|---|---|---|
|  | ***High social support*** | ***Moderate social support*** | ***Low social support*** |
|  | *N* (%) | | |
| Wave 4 | 3,463 (65) | 1,222 (22) | 703 (13) |
| Wave 9 | 3,125 (58) | 1,400 (26) | 808 (15) |

Table 3.5 shows the rate of transition between social support classes from wave 4 to wave 9, in effect giving the probability of latent class membership at wave 9 conditional on the wave 4 latent class membership. This transition probability matrix shows that those who were in *high social support* latent class in wave 4 had a high probability (0.86) of remaining there at wave 9. If they did transition, they were most likely to transition to the *moderate social support* latent class (0.13), with it being very unlikely for those in the *high social support* class at wave 4 to transition to the *low social support* class (0.01) at wave 9. Those in the *moderate social support* latent class in wave 4 had a 0.91 probability of being in the same class in wave 9, with their next most likely transition being to the *high social support* latent class (0.08), with, again, very few moving to the *low social support* class (0.01). Those in the *low social support* latent class in wave 4 had a very high probability (0.96) of remaining in this class in wave 9, and they were less likely to transition to the *moderate social support* latent class (0.015) than they were to transition to the *high social support* latent class (0.03) in wave 9.

**Table 3.5. Transition matrix estimates over two time points on social support**

|  | Latent class at wave 9 | | | |
|---|---|---|---|---|
|  | ***High social support*** | ***Moderate social support*** | ***Low social support*** | ***Total*** |
| **Latent class at wave 4** | | | | |
| High social support | **0.858** | 0.131 | 0.011 | 1 |
| Moderate social support | 0.076 | **0.913** | 0.011 | 1 |
| Low social support | 0.03 | 0.015 | **0.955** | 1 |

Table 3.6 shows the associations between latent class membership and the three measures of well-being. Participants in the *high social support* class had the lowest levels of symptoms of depression (CES-D), the highest levels of quality of life (CASP-19), and the highest level of overall satisfaction (SWLS). Perhaps surprisingly, those in the *moderate social support* latent class had higher levels of symptoms of depression, lower levels of quality of life, and lower levels of life satisfaction than those in the *low social support* class.

**Table 3.6. Latent classes of social support and well-being in wave 4 ($N = 5,388$)**

| | High social support (HSS) | Moderate social support (MSS) | Low social support (LSS) |
|---|---|---|---|
| | Latent class in wave 4 | | |
| | Model mean (SE) | | |
| CES-D | 0.781 (0.02) | 1.522 (0.06) | 0.981 (0.06) |
| CASP-19* | 43.18 (0.15) | 39.47 (0.32) | 42.24 (0.35) |
| SWLS† | 26.71 (0.10) | 22.50 (0.25) | 24.38 (0.29) |

Note: three different models, one for each well-being measurement. All models adjusted for gender and age.

*CASP-19 – class prevalence – *N* (%): HSS 2,829 (66) – MSS 792 (19) – LSS 643 (15).

†SWLS – class prevalence – *N* (%): HSS 2,816 (67) – MSS 776 (18) – LSS 632 (15).

Table 3.7 shows the results of analyses of four different models using employment status, marital status, self-reported health, and presence of limitations in ADLs or IADLs as covariates to predict membership of social support latent classes. Details on how the variables are structured can be found in Section 3.3.2. All models were adjusted for gender and age in wave 4, and the wave 9 models also adjust for latent class membership at wave 4, so in effect model movement between latent classes.

The table shows the odds ratios for each category of employment status, marital status, self-assessed health, and number of difficulties (ADLs and IADLs) to predict membership of a class, compared with the reference category of both class and predictor characteristic.

For the employment status model, the *high social support* latent class and being in employment serve as the reference categories. Table 3.7 shows that in wave 4, the odds of being in the *moderate social support* latent class relative to the *high social support* latent class for retired participants was approximately 1.24 ($p < 0.05$), the corresponding odds of employed participants. Unemployed and other participants also had higher odds compared with employed participants of being in the *moderate social support* class relative to the *high social support* latent class [1.32 ($p < 0.05$)]. Retired participants were also more likely than employed participants to be in the *low social support* latent class relative to the *high social support* latent class [1.53 ($p < 0.001$)]. Similarly, unemployed and other participants were more likely than employed participants to be in the *low social support* latent class compared with the *high social support* latent class [1.63 ($p < 0.001$)]. However, at wave 9 employment status did not predict latent

class membership conditional on latent class membership at wave 4, so, in effect, employment status did not predict change in social support class membership.

**Table 3.7. Employment status, marital status, and health variables as predictors of membership in latent classes of social support in wave 4 and wave 9 (*N* = 5,388)**

| | Latent classes in wave 4 | | | Latent classes in wave 9 | | |
|---|---|---|---|---|---|---|
| | *High social support* | *Moderate social support* | *Low social support* | *High social support* | *Moderate social support* | *Low social support* |
| *Employment status* | | ORs† | | | ORs | |
| Employed | ref | ref | ref | ref | ref | ref |
| Retired | ref | **1.24*** | **1.53*** | ref | 1.05 | 0.95 |
| Unemployed or other | ref | **1.32*** | **1.63*** | ref | 0.85 | 1.98 |
| | | | | | | |
| *Marital status* | | | | | | |
| Married or cohabiting | ref | ref | ref | ref | ref | ref |
| Single and never married | **0.01*** | **0.02*** | ref | **0.25*** | **0.27*** | ref |
| Widowed | 0.75 | 0.73 | ref | 0.58 | 0.48 | ref |
| Divorced or separated | **0.63*** | 0.77 | ref | 0.73 | 0.73 | ref |
| | | | | | | |
| *Self-assessed health* | | | | | | |
| Excellent | ref | ref | ref | ref | ref | ref |
| Very good | 1.4 | 0.61 | ref | 0.47 | 0.32 | ref |
| Good | 1.28 | **0.57*** | ref | **0.28*** | **0.18*** | ref |
| Fair | 1.14 | **0.58*** | ref | 0.33 | **0.27*** | ref |
| Poor | 0.93 | 0.79 | ref | **0.24*** | **0.22*** | ref |
| | | | | | | |
| *ADLs and IADLs (any difficulties)* | | | | | | |
| Yes | ref | ref | ref | ref | ref | ref |
| No | **1.23*** | **0.71*** | ref | **1.96*** | 1.54 | ref |

\*\*\* $p < 0.001$ \*\*$p < 0.01$ \* $p < 0.05$
† ORs in multinomial logistic regression analysis are also referred as relative risk ratio and/or multinomial odds ratio.
Note: Different models were produced for each predictor. Each model was adjusted for gender and age.

For the marital status model, being married or cohabiting and *low social support* latent class serve as the reference categories. In wave 4, single and never married participants had lower odds compared with their married counterparts of being in the *high social support* class and the *moderate social support* class, rather than the *low social support* latent class [0.01 ($p < 0.001$) and 0.02 ($p < 0.001$)], respectively. Divorced and separated participants also had lower odds than their married counterparts of being in the *high social support* latent

class compared with the *low social support* latent class [0.63 ($p < 0.001$)], although differences for this group in relation to the *moderate social support* latent class were not statistically significant. The table also shows that there were no differences overall between widowed participants, who might be presumed to be at highest risk of low social support, compared with married participants. In the wave 9 analysis, single and never married participants, compared with those who were married or cohabiting, had lower odds of being in both the *high social support* latent class [0.25 ($p < 0.001$)] and the *moderate social support* latent class [0.27 ($p < 0.001$)] relative to the *low social support* class conditional on latent class membership at wave 4. In effect, this means that the single and never married were less likely to make the transition into the *high social support* or *moderate social support* classes. There is a suggestion of a similar effect for widowed participants, although in this case the odds ratios of 0.58 and 0.48 were not statistically significant.

Table 3.7 also shows that in wave 4, participants who reported their health as being 'fair' compared with those who reported their health as 'excellent' had a lower odds of being in the *moderate social support* latent class relative to the *low social support* latent class [0.58 ($p < 0.05$)], but were not different compared with those in the *high social support* class. Similarly, those participants with 'good' health had lower odds than those with 'excellent' health of being in the *moderate social support* latent class relative to the *low social support* latent class [0.57 ($p < 0.05$)], with again no difference in relation to the *high social support* latent class. Beyond this, self-assessed health was not related to social support latent class membership.

A similar pattern was found for the presence of ADLs or IADLS, with the odds of being in the *high social support* latent class relative to the *low social support* latent class for those participants who reported no ADL or IADL difficulties in wave 4 being higher compared with those participants with more than one difficulty [1.23 ($p < 0.01$)]. However, surprisingly, for those with no ADL or IADL difficulty, the odds of being in the *moderate social support* latent class compared with the *low social support* latent class were lower for those who reported a difficulty [0.71 ($p < 0.05$)].

At wave 9, poorer health was related to a lower likelihood of being in the *moderate* or *high social support* classes conditional on latent class membership of social support class at wave 4. Five of the six coefficients comparing those with good, fair, or poor health with those with excellent health were statistically significant, indicating a strong effect, although not a clearly graded one. Although findings were not statistically significant for the very good health category compared with the excellent health category, these results strongly suggest that the relative chance to move from the *low social support* class to the *moderate social support* or *high social support* classes is strongly and negatively graded by poorer self-assessed health. Similarly, at wave 9, participants with no ADL or IADL difficulties had higher odds compared with those with one or more difficulty of being in the *high social support* latent class relative to the *low social support* latent class, conditional on wave 4 latent class membership. This again suggests that the move to a better social support latent class is enabled by better health.

# 3.5 Conclusion

Previous research has shown the importance of social relationships and social support to people's lives, including to their well-being and health. However, the study of social networks is complicated by their multidimensional nature, both in terms of who is in the network (spouse, children, other family, and friends) and in terms of the characteristics of relationships (how close, their positive and negative qualities, and frequency of contact). Adequately capturing this multidimensional nature is a challenge, and a challenge that is amplified when studying changing social relationships over time and the factors that are associated with it. The research presented in this chapter builds on the convey model of social relations to address this complexity (Antonucci et al., 2014). First, it uses a latent class approach to categorise people into groups according to the type of social support they received. Second, it uses Latent Transition Analysis to model change in membership of social support latent classes over time. Third, it shows the relationship between latent class membership and well-being. And, fourth, it examines the relationship between social support latent class membership, and changes in this, and employment, marital status, and health.

The Latent Class Analysis used the multidimensional data available from ELSA that covered the characteristics of participants' relationships with their spouse, children, other family, and friends. Responses to these questions were used to group participants into three classes of social support experience. At wave 4 of ELSA, almost two-thirds (65%) of participants were categorised into the *high social support* latent class, which included those who had close, high quality, and high density (frequency of contact) relationships with their spouse and children. In addition, they had close connections with family and friends. Just over one fifth (22%) of participants were classified in the *moderate social support* latent class at wave 4 of ELSA. These participants had close and high-quality relationships with their children, but were unlikely to be married and, if they were, had poor quality relationships with their spouses. However, they had close relationships with family and friends. The remaining participants (13% at wave 4 of ELSA) were classified in the *low social support* class, which included those who were less likely to have children and had poor relationships with both spouses and children if they had them. They also did not have close and positive relationships with other family members but they did with friends.

Interestingly, the findings suggest that only a small proportion of older people change the latent class of social support that they are in over time, even if they experienced other, more detailed, changes in their social relationships that were not captured in the ELSA data. The biggest change was that 13% of the participants who were in the *high social support* class at wave 4 of ELSA had moved to the *moderate social support* class by wave 9. Movements out of the *moderate social support* and *low social support* classes between waves 4 and 9 were infrequent, with just under 9% of those in the *moderate social support* class moving and just under 5% of those in the *low social support* class moving (in both case most moved to the *high social support* class.

In line with previous research, the analysis presented in this chapter showed a strong relationship between social support and well-being. ELSA members in

the *high social support* class had lower scores on symptoms of depression (CES-D), higher scores for quality of life (CASP-19), and higher scores for overall life satisfaction (SWLS), compared with those in the moderate social support and the low social support classes. Perhaps surprisingly, those in the *low social support* class had lower scores for depression and higher levels of quality of life and overall life satisfaction than those in the *moderate social support* class. Our findings suggest that participants with spouses, but without children, had better scores for depressive symptoms, quality of life, and life satisfaction compared to those without a spouse, but with children.

Our findings suggest that employment, adjusted for age and gender, is strongly related to social support class membership in later life. Participants in the retired group, and in the unemployed and other group, were more likely than employed participants to be in the *moderate social support* and *low social support* latent classes, rather than in the *high social support* class. Nevertheless, a perhaps surprising finding given that large numbers of participants retired between wave 4 and wave 9 of ELSA, employment status did not predict change in social support class membership between these waves. This suggests a need to investigate this relationship further, and perhaps to focus particularly on differences between different types of retirement transition (Matthews and Nazroo, 2016).

Also consistent with existing literature, the findings in this chapter suggest that marital status is related to social support in later life. In particular, the analysis demonstrates that those who are either single and never married, or who are divorced and separated, had lower odds than their married counterparts of being in the *high social support* latent class. Single and never married participants were also less likely than their married counterparts to make the transition into the *high social support* or the *moderate social support* class between wave 4 and wave 9 of ELSA, suggesting that they were particularly vulnerable to an ongoing lack of social support and potentially social isolation. Interestingly, the analysis did provide a suggestion that those who were widowed were also at risk of an ongoing lack of social support, although the comparisons between this group and those who were married or cohabiting were not statistically significant.

Health, as measured by self-assessed health and having an ADL or IADL difficulty, was also related to social support. Participants who reported their health as being 'good' or 'fair' were less likely to be in the *moderate social support* class rather than the low social support class compared with those who reported their health as 'excellent', and, although findings were not statistically significant, there was a suggestion that this was also the case for others whose health was less than 'excellent'. Interestingly, however, there were no differences in relation to the *high social support* class. In addition, poorer health was also related to a reduced likelihood to transition from the *low social support* class to the *moderate social support* class or the *high social support* class. In this analysis five of the six coefficients comparing those with good, fair, or poor health with those with excellent health were statistically significant, and, although findings were not statistically significant, results for the very good health category compared with the excellent health category were similar. This indicates that in later life poorer health is related to a higher likelihood of having poor social support and for this increased risk to be ongoing.

The analytical sample of our study included participants with full information on social support in both waves 4 and 9. Similar to other longitudinal ageing studies, ELSA is susceptible to non-random drop-out and attrition due to death. Selective loss of follow-up of unhealthy or overall vulnerable participants needs to be taken into consideration when our results are interpreted. Social relationships and social isolation have strong influence on likelihood of mortality. Particularly, individuals with strong social relationships are likely to remain alive longer compared to those with poor social relations (Holt-Lunstad et al., 2010).

Further examination of the relationship between transitions to retirement, widowhood, and ill-health and transitions to different social support classes across ELSA waves is necessary to capture comprehensively how the dynamic and multidimensional social relationships change over time and the magnitude of the effect these changes have on well-being in later life.

Taken together, these findings indicate relative stability in access to social support in later life, the importance of social support to later life well-being, and that social support, and, when they occur, the changes in levels of social support, are strongly related to central elements of older people's lives, their marital status, economic activity, and health.

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# 4. Cognitive impairment and dementia in older English adults: Risk factors and diagnostic algorithms

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Key points arising from this chapter are:

- With an increase in the number of older people living in the UK, early diagnosis of cognitive impairment and dementia are significant public health priorities.

- The Harmonised Cognitive Assessment Protocol (HCAP) is a sub-study of the English Longitudinal Study of Ageing (ELSA), administered to 1,273 individuals aged ≥65 years in 2018, including a comprehensive neuropsychological battery of cognitive tests.

- A diagnostic algorithm was developed to ascertain cognitive impairment and dementia in the ELSA-HCAP, which classified participants according to their medical records, overall cognitive performance, subjective memory complaints and functional impairments.

- In ELSA-HCAP, 43% of the sample was classified with cognitive impairment and 13% with dementia. These proportions are higher than in the general population aged 65 and older because people with low cognition were selectively recruited into the sub-study.

- We found an increased prevalence of neurocognitive disorders (cognitive impairment and dementia) with age and lower socioeconomic position.

- A cross-walk prediction algorithm was derived between ELSA-HCAP cognitive groups and ELSA wave 9 indicators (age, sex, education and all cognitive measures available). The highest probability score was selected for each participant, and a group diagnostic probability was assigned to each ELSA participant at wave 9.

- In ELSA wave 9, 72.4% of the diagnostic algorithm sample aged 60 and older ($N = 6,669$) was classified with no cognitive impairment, 23% with cognitive impairment and 4.6% with dementia.

- Participants classified with dementia and cognitive impairment were older than those with no cognitive impairment. Fewer than 30% of the older individuals (aged 80+) had no cognitive impairment at wave 9.

- A large proportion of those classified with cognitive impairment or dementia at wave 9 had no formal educational qualifications, and only a few had completed a degree.

- We examined the longitudinal association between emerging cardiovascular (high blood pressure, diabetes and physical inactivity), psychosocial (loneliness, depression) and socioeconomic/neighbourhood risk factors (geographical region) at wave 4 (2008/09) in relation to cognitive impairment and dementia at wave 9 (2018/19).

- A higher proportion of participants classified with cognitive impairment and dementia at wave 9 had worse health (high blood pressure, diabetes) and higher levels of both depressive symptoms and loneliness at wave 4.

- We found an increased risk for cognitive impairment at wave 9, for those with elevated depressive symptoms 10 years earlier.

- Physical inactivity at wave 4 was a strong determinant of dementia risk at wave 9.

- Greater loneliness at baseline was predictive of an increased risk of cognitive impairment and dementia almost a decade later.

- The longitudinal structure of ELSA allows medical and psychosocial risk factors to be assessed many years before neurocognitive disorders develop, and demonstrate that these factors precede the occurrence of cognitive impairment and dementia.

# 4.1 Introduction

The UK population is ageing, and projections by the Office for National Statistics (2015) estimate that by 2050 one in four people will be aged 65 years and over. With this demographic change indicating an increase in the number of older people, neurocognitive disorders such as dementia constitute a public health challenge in the UK (Department of Health and Social Care, 2019). Dementia can be defined as an umbrella term for a variety of conditions characterised by severe deterioration of the brain, resulting in memory loss, changes in behaviour and communication problems. The most common forms of dementia are Alzheimer's disease (AD) and vascular dementia (VaD) (Prince et al., 2016). Despite being a prominent global challenge, dementia is often underdiagnosed, since its identification can be challenging. With age being amongst the key determinants, there is a grey area between the 'normal ageing process' and 'Mild Cognitive Impairment' (MCI) – an intermediate phase between the normal cognitive ageing and abnormal neuropathological changes associated with dementia (Petersen, 2004; Langa and Levine, 2014). MCI is often considered a prodromal stage of AD, and an important target for early diagnosis and therapeutic interventions. Recent studies show that individuals with MCI tend to progress to probable AD at a rate of approximately 10–15% per year, compared with controls who develop dementia at a rate of 1–2% per year (Petersen et al., 2014). Early detection of MCI is of paramount importance for possible delay of the transition from MCI to AD. Still, questions can be raised regarding the diagnostic criteria and diagnostic algorithms for MCI. The

importance of risk reduction across the life course is crucial for delaying the onset and the progression of cognitive impairment and dementia. Indeed, prevention techniques and tailored interventions have been estimated to have the potential to delay or prevent up to 40% of dementia cases (Livingston et al., 2020). Population policies previously targeted at some of these risk factors may explain why certain countries, including the UK, have found a lower incidence of dementia than predicted from previous projections (Wu et al., 2016). With these key policy priorities in mind: (1) early diagnosis of cognitive impairment and dementia and (2) increased awareness about the modifiable risk factors which could improve brain health, we explored data drawn from wave 9 of the English Longitudinal Study of Ageing (ELSA) (Steptoe et al., 2013) to provide further clarity about this public health priority.

In this chapter, we aim to examine the prevalence of cognitive impairment and dementia in England using data drawn from a sub-study of ELSA, named the Harmonised Cognitive Assessment Protocol (HCAP). Section 4.2 describes the HCAP sub-study and the algorithm for estimating MCI and dementia. In Section 4.2.2, we describe the prevalence of MCI and dementia in ELSA-HCAP in relation to age, gender and education. Section 4.3 explains how the results from the HCAP sub-study were extrapolated to the rest of the ELSA study sample and details the levels of MCI and dementia in wave 9 of ELSA based on these calculations. Finally, in Section 4.4 we examine the longitudinal associations between predictors of cognitive impairment and dementia status at wave 9, linking factors measured in wave 4 (2008/09) with cognitive function in 2018/19. We endeavoured to confirm the association between several well-established behavioural and intermediate-risk factors, as described by the Blackfriars Consensus, e.g. smoking, poor diet, physical inactivity, excessive alcohol intake, raised blood pressure, blood cholesterol and diabetes (Lincoln et al., 2014). In addition, we also examined the association between cognitive impairment and dementia with a number of social and psychosocial risk factors for which there is emerging evidence (depression, social isolation, loneliness, social support, socioeconomic risk factors).

## 4.2 HCAP and dementia diagnosis algorithm

Identifying individuals with cognitive impairment and dementia is crucial for early intervention, care planning and treatment. From the early 2000s, there has been a growing focus on prioritising the study of prodromal stages of the neurodegenerative disease before dementia syndromes emerge (i.e., mild cognitive impairment). While the current decade has seen a significant improvement in terms of imaging techniques and biomarker assessment to characterise preclinical stages of the disease, the diagnostic criteria remain controversial in population-based studies.

The HCAP is linked to the family of studies associated with the Health and Retirement Study (Sonnega et al., 2014) and offers an opportunity for investigating harmonised measures relevant to dementia diagnosis including cognitive and sensory performance, as well as psychological well-being and functional abilities in large representative population samples of older adults in both high and middle-income countries. The overall aim of HCAP was to ascertain and investigate MCI and dementia across general populations

worldwide. The HCAP employed multiple cognitive and other tests to evaluate the prevalence of neurocognitive disorders in individuals aged 65 years and older within each participating country. By being embedded within the ongoing longitudinal studies of ageing, HCAP has provided the potential to improve the understanding of the evolution of cognition and day-to-day function as people live and age in vastly diverse settings. The design and administration of the HCAP protocol within the English Longitudinal Study of Ageing (ELSA) are described elsewhere (Cadar et al., 2020). In this section, we explain the derivation of MCI and dementia using a diagnosis algorithm based on the HCAP battery of tests.

### 4.2.1 Methods

#### HCAP data

Data are from the Harmonised Cognitive Assessment Protocol (HCAP), a sub-study of the ELSA, administered to 1,200 individuals aged ≥65 years in 2018. This sub-study was implemented between waves 8 (2016/17) and 9 (2018/19) of the ELSA. The HCAP includes an in-person interview with the ELSA-HCAP study member, which lasted approximately one hour, and a second interview with an informant nominated by the respondent, which lasted about 20 minutes. Invitations to participate were stratified on the basis of cognitive performance in earlier waves of ELSA, so as to oversample people with moderate or low cognition.

#### Study variables

The ELSA-HCAP respondent interview consisted of a neuropsychological test battery which was implemented objectively to measure a wide range of critical cognitive domains that are known to be sensitive to the ageing process. These include memory, language, attention, executive function and processing speed. The full description of the tests included is presented in the Appendix.

#### HCAP global score

A summary global cognition score was derived from all the standardised cognitive tests included in the HCAP battery presented above, except the Mini-Mental State Examination (MMSE). Trail Making A and B scores were log-transformed to improve normality.

#### Functional impairment

Functional impairment was defined as at least two self-reported limitations on either 'Basic Activities of Daily Living' (ADL) and 'Instrumental Activities of Daily Living' (IADL). ADL included six activities: dressing, walking across a room, bathing or showering, eating, getting in or out of bed, using the toilet. IADL included seven activities: using a map to get around in a strange place, preparing a hot meal, shopping for groceries, making telephone calls, taking medications, doing work around the house or garden and managing money. ADL and IADL were both measured in ELSA-HCAP and each ELSA wave.

#### Informant Questionnaire on Cognitive Decline in the Elderly

The Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE) (Jorm and Jacomb, 1989) uses informant reports to measure the change in

cognitive abilities (e.g. memory) based on the pre-morbid level of functioning. Each item was scored on a 1 (much improved) to 5 (much worse) range. The validity of this scale was previously examined, and the threshold used has both high specificity (0.84) and sensitivity (0.82).

*HCAP sample groups and weights*

A weighting procedure was derived for the ELSA-HCAP sub-study in order to adjust for the low response rate of individuals identified with low cognition at the previous ELSA wave 8 (2016/17). The weighting procedure combined three different components: (i) design weights, (ii) non-response weights and (iii) a calibration procedure to account for differential selection probabilities and to adjust for non-response. The weights were calibrated by age and sex within each sample selection cognition group and by housing tenure, education, ethnicity, and marital status across groups. The HCAP sample selection groups procedure was based on cognitive performance (wave 8, or 7 if missing at the latest wave) on various tests contributing to the modified Telephone Interview Cognitive Screening (mTICS) (Brandt et al., 1988; Welsh et al., 1993) and/or a diagnosis of Alzheimer's disease or dementia reported in previous ELSA interviews. Three sampling cognition groups were defined using the following thresholds on the mTICS 27-item scale (Crimmins et al., 2011): Group 1: low cognition (≤6 mTICS27 score) and/or a previously reported diagnosis of Alzheimer's disease or dementia; Group 2: moderate cognition (7–11 mTICS27 score) and had never reported a diagnosis of Alzheimer's disease or dementia; Group 3: normal cognition (≥ mTICS27 score) or unknown for those with missing data on mTICS scores at ELSA wave 8 or 7. Reports of physician diagnosis of Alzheimer's disease or dementia were taken from the previous ELSA waves 1–8. Any eligible study member who had ever reported a diagnosis of Alzheimer's disease or dementia was assigned to group 1 (low cognition), regardless of their score on mTICS. The overall calibration adjustment for ELSA-HCAP was minimal, meaning that the distributions of other variables used in the non-response weighting were very close to population estimates.

### *Dementia diagnosis algorithm*

Cognitive impairment and dementia were ascertained using scores on the MMSE, subjective memory evaluation, low performance on a global score of cognitive functioning derived from the sum of all the objective cognitive tests included in the HCAP battery, and functional impairment on ADL and IADL. The diagnosis algorithm to ascertain MCI and dementia implemented in the ELSA-HCAP was based on the diagnostic algorithm implemented in the Cognitive Functioning and Ageing Study (CFAS) (Richardson et al., 2019). This algorithm was designed to classify the entire cognitive spectrum of cognitive function from normal cognition, through mild cognitive impairment and dementia, taking into consideration the subjective memory complaints and the level of functional disability according to Diagnostic and Statistical Manual (DSM) criteria. To achieve this, we categorised the overall HCAP sample into seven categories: no cognitive impairment, MCI (defined using consensus criteria), other cognitive impairment no dementia (OCIND) without functional impairment, OCIND with functional impairment, cognitive impairment (MMSE <24 and no functional impairment), mild dementia (MMSE <24 and functional impairment) and dementia using a triangulation method based on

three sources (physician diagnosis of dementia or Alzheimer's disease, a score equal or higher than 3.38 on the IQCODE, and a dementia record from the Hospital Episode Statistics (HES)), either before or at the time of the HCAP study. Figure 4.1 describes the algorithm used to derive each cognitive outcome.

**Figure 4.1. Flow chart describing diagnostic criteria used in ELSA-HCAP for each cognitive spectrum outcome**
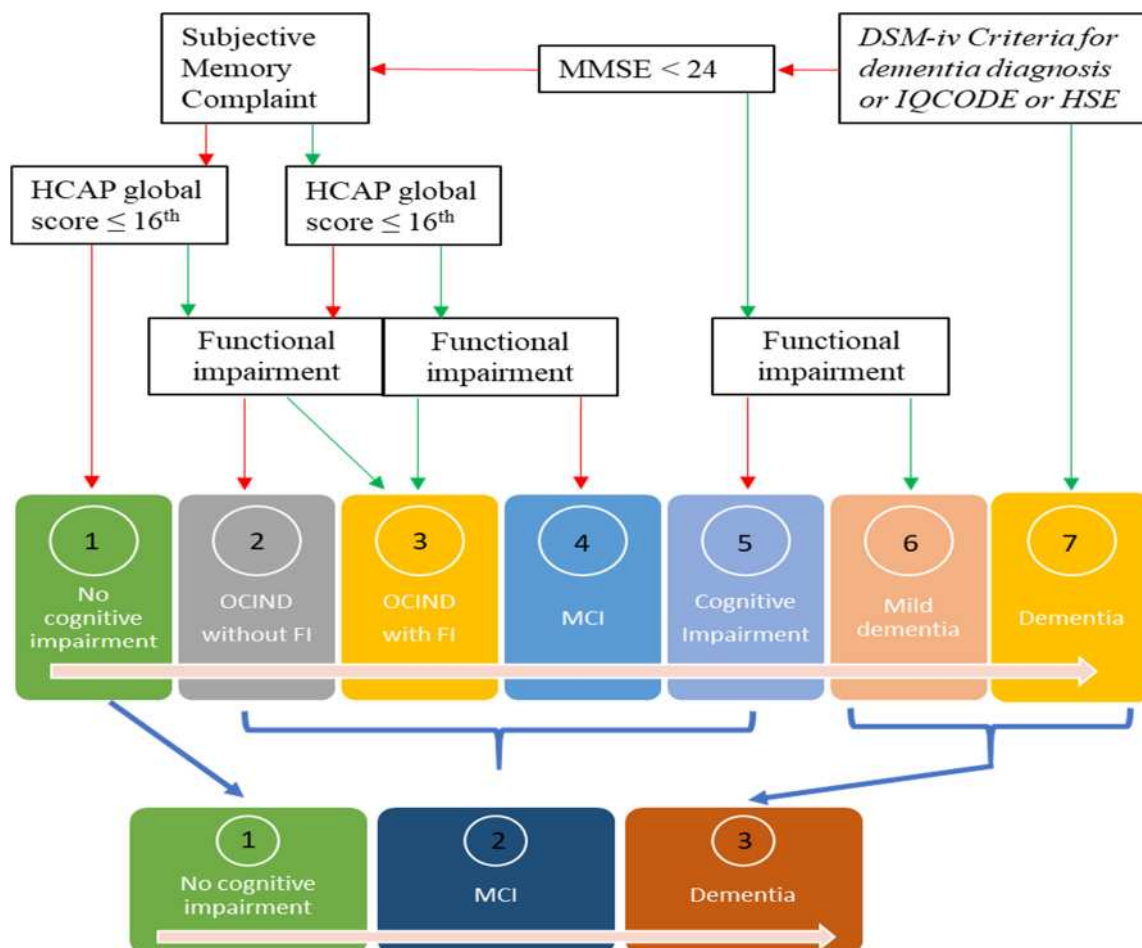


## 4.2.2 Prevalence of MCI and dementia in ELSA-HCAP

The weighted prevalence of cognitive impairment and dementia in ELSA-HCAP are presented by age groups, gender and education in an overall sample of 1,270 participants with data available. Of these, 560 individuals (44%) were classified with no cognitive impairment, 545 (43%) with cognitive impairment and 165 (13%) with dementia.

Figure 4.2 shows the percentages of respondents within each cognitive status by age groups in 2018. Around 70% of all participants aged 65–69 had no cognitive impairment, and only 6% of them were classified with dementia. Half of those aged 70–79 had no cognitive impairment, 38% were cognitively impaired, and 12% had dementia. The majority (63%) of older participants (aged 80+) were classified with cognitive impairment, and 20% with dementia at the time of the ELSA-HCAP sub-study.

**Figure 4.2. Cognitive status in ELSA-HCAP by age groups**
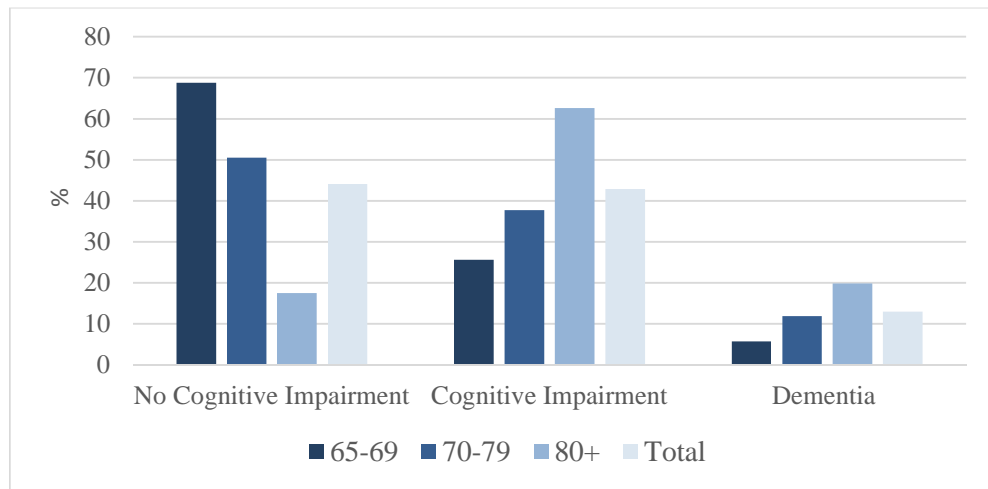


Figure 4.3 shows the percentages of ELSA-HCAP respondents within each of the three cognitive groups by gender. Among men, 45% had no cognitive impairment, 43% were cognitively impaired, and 13% had dementia. The proportion of women with no cognitive impairment was similar to those classified with cognitive impairment (43%), and 14% of them were classified with dementia. The lack of gender difference was not related to age.

**Figure 4.3. Cognitive status in HCAP by gender**
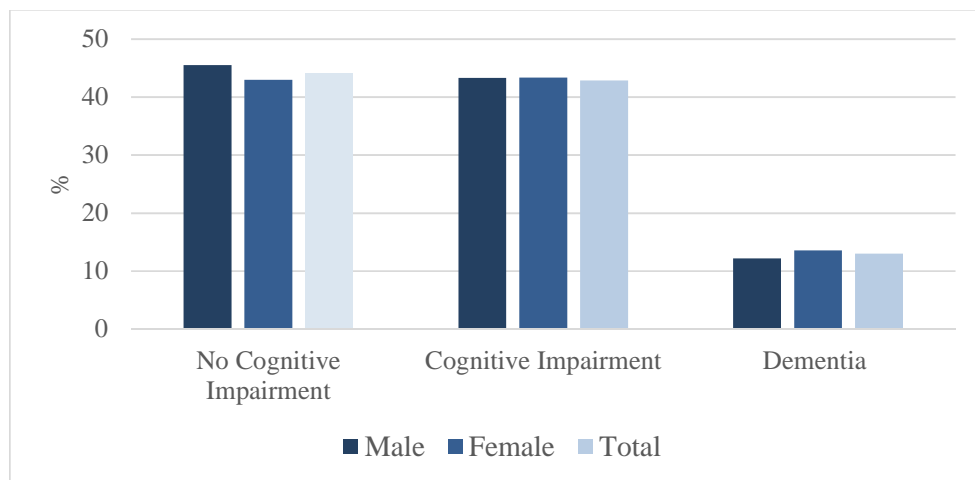


Figure 4.4 shows the percentages of respondents within each cognitive group by their highest educational qualification. Most of the participants with a higher degree (67%) had no cognitive impairment, 27% were classified with cognitive impairment, and 6% with dementia. Half of those with intermediate levels of education showed no cognitive impairment, 37% were cognitively impaired, and 12% had dementia. Of those with no formal qualifications, more than half (57%) were classified with cognitive impairment and 17% with dementia.

**Figure 4.4. Cognitive status in HCAP by education groups**
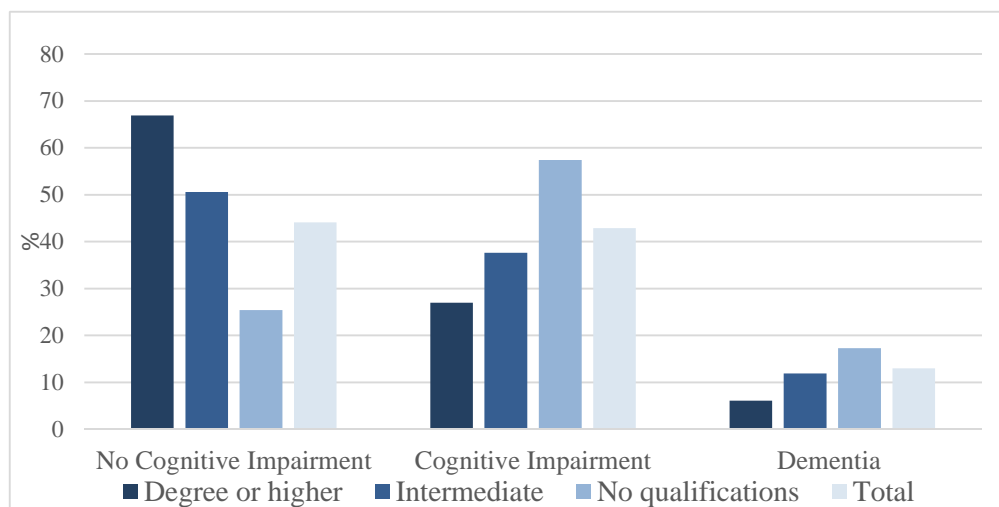


Our analyses confirm an increased prevalence of neurocognitive disorders (cognitive impairment and dementia) with age and lower socioeconomic position, as indicated by the increased prevalence of cognitive impairment and dementia in those with no formal educational qualification.

### 4.2.3 Strengths and limitations

The diagnostic algorithm used for these analyses was derived from a published protocol implemented in CFAS that took into account a detailed examination of both objective and subjective measures of cognition, as well as the level of functional disability according to DSM criteria. However, a diagnosis of MCI or dementia has profound psychological, social and financial impacts, not only on the individual but also on their family and friends. Therefore, it is important to note that diagnostic algorithms such as the one used here cannot replace clinical diagnoses and that they carry a risk of false positive or false negative conclusions. Nonetheless, they are useful in the context of population studies, and these estimates enable international comparisons of the prevalence of cognitive impairment and dementia around the world.

### 4.2.4 Conclusions

In this section, we identified and described the prevalence of cognitive impairment and dementia in the ELSA-HCAP sample. The results indicated that 43% of this sub-study population aged 65 and older were classified with cognitive impairment and 13% with dementia. Our findings support existing epidemiological evidence that age is an important factor in neurocognitive disorders. More than half of the participants aged 80 and over were classified with cognitive impairment, and we also observed the highest prevalence of dementia in this age group. There were no significant gender differences in these results. However, we found a protective association with education which is thought to be a marker of cognitive reserve, building brain resilience to neurodegenerative damage at older ages. It is notable that most of the participants with a university degree had no cognitive impairment, while the

highest prevalence of neurocognitive disorders was observed in those with lower levels of education.

# 4.3 HCAP – Wave 9 cross-walk diagnosis

The ELSA-HCAP sub-study was carried out with a relatively small number of participants, but the data can be used as a basis for extrapolation to the entire ELSA population. Reliable national data on incidence and prevalence of dementia and cognitive decline are vital for service planning, the prediction of future needs, estimating the costs of dementia care, and understanding the impact of these conditions on individuals and their families. Although the number of people with dementia is increasing throughout the world because of the demographic shift towards rising numbers of older people, estimates of future prevalence are complicated by the assumptions underlying different modelling methods (Norton et al., 2013). Indeed, there is evidence that prevalence has remained stable or even declined over recent decades in the USA and Europe (Manton et al., 2005), with strong indications of an apparent decline in prevalence in England reported by ELSA (Ahmadi-Abhari et al., 2017) and the two phases of the CFAS (Matthews et al., 2013).

## 4.3.1 Methods

**ELSA wave 9 data**

Data from wave 9 (2018/19) of ELSA were used as the basis for extrapolation. By linking the cognitive groups derived with the dementia algorithm in the ELSA-HCAP sub-study to the standard demographics (age, sex and education) and cognitive tests completed in wave 9 of ELSA, we calculated a probability score that linked the diagnosis of mild cognitive impairment and dementia in HCAP to the full ELSA sample.

**Study variables**

We used the range of cognitive measures administered at wave 9, which included tests of memory, orientation, language, attention, and executive function. The cognitive measures used for this cross-walk diagnostic algorithm are presented below.

*Self-reported memory*

This measure provides a self-evaluation of memory. Participants were asked to rate their memory at the present time as excellent, very good, good, fair or poor. They were also asked to say whether compared with two years ago, their memory is now better, the same, or worse than it was then.

*Self-reported mental abilities*

This measure provides a self-evaluation of their overall mental abilities. Participants were asked to rate their overall mental abilities at the present time as excellent, very good, good, fair or poor. They were also asked to say whether compared with two years ago, their mental ability is now better, the same, or worse.

*Orientation in time*

Time orientation was assessed by standard questions about the date (day, month, year) and the day of the week. These questions are also part of the Mini-Mental State Examination (MMSE), which was used in the ELSA-HCAP.

*Verbal memory*

The word list learning and recall task is a verbal memory test in which ten common words were presented aurally by a computer, using a taped voice. The participants were asked to recall them both immediately and after a short delay during which other cognitive tests were administered.

*Backwards count*

Backwards digit recall is often employed as a measure of working memory. In this test, the participants were asked to count backwards for 10 consecutive numbers beginning with the number 20.

*Serial subtraction*

Serial 7's or serial subtraction test is also a test of mental processing. The interviewer asked the respondent to subtract 7 from 100 and continue subtracting 7 from each subsequent number for a total of five trials.

**Cross-walk diagnostic algorithm**

The cross-walk diagnostic algorithm between ELSA-HCAP and ESLA wave 9 was computed using a multinomial logistic regression model, which predicted the probability of participants belonging to each diagnostic group within the cognitive spectrum derived in ELSA-HCAP (e.g. normal cognition, MCI and dementia). For this cross-walk prediction algorithm, we used a weighted multinomial logistic regression in which we predicted the HCAP cognitive groups by age, sex, education, all the cognitive measures available at wave 9. The highest probability group was then selected for each participant, and a group diagnostic probability was assigned to each ELSA participant at wave 9, taking into consideration any previous or new dementia diagnosis at wave 9, using the three sources available in ELSA (physician diagnosis of dementia or Alzheimer's disease, a score equal or higher than 3.38 on the IQCODE and a dementia record from the Hospital Episode Statistics (HES)). The physician diagnosis or HES took precedent in this diagnostic algorithm, and corrections ($n = 37$) were made for any misclassifications generated by the probability score diagnostic algorithm.

## 4.3.2  Prevalence of MCI and dementia in ELSA wave 9

The weighted prevalence of cognitive impairment and dementia at wave 9 were calculated for an overall sample of 6,669 participants aged 60 and older with data available for all the measures presented in Section 4.3.1. Of these, 4,829 were classified as having no cognitive impairment (72.4%), 1,532 as having a cognitive impairment (23%) and 308 individuals were classified with dementia (4.6%). The prevalence of cognitive impairment and dementia are presented below by age groups, gender and education. Although these factors were used as demographic inference tools in our diagnostic prediction algorithm, they

were also investigated in this context as a method of validation that the prediction model yielded sensible results.

Figure 4.5 shows the percentages of ELSA respondents within each cognitive status at wave 9 by age groups. The majority (93%) of younger participants (65–69 years) had no cognitive impairment, 5% were cognitively impaired, and 1.4% were classified with dementia at wave 9. Among the 70–79 age group, 73% had no cognitive impairment, 23% were classified as cognitively impaired, and 4% with dementia. Among the older participants (80+ years), 58% were classified as cognitively impaired, and 13% with dementia.

**Figure 4.5. Cognitive status at wave 9 by age groups**
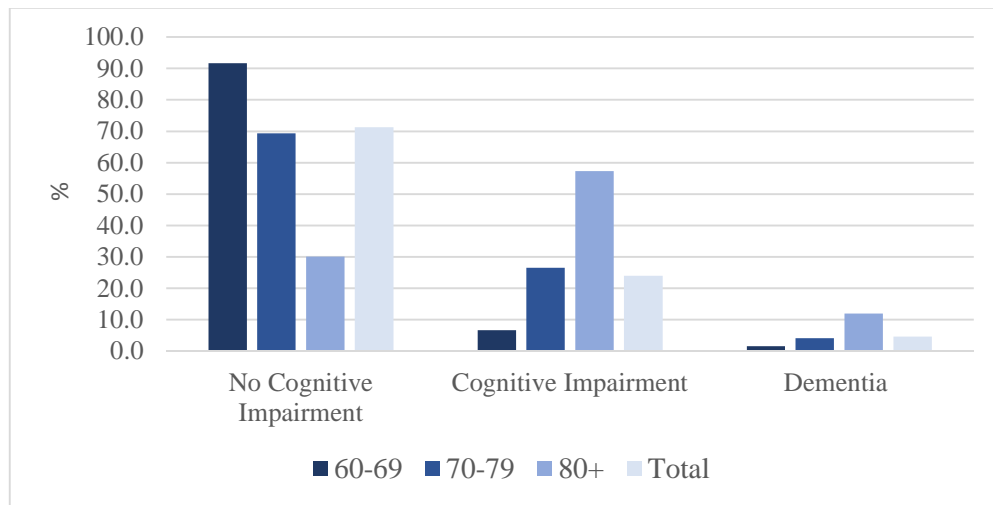


Figure 4.6 presents the percentages of ELSA respondents at wave 9 within each cognitive group by gender. Among men, 75% had no cognitive impairment and 21% were cognitively impaired. Among women, 71% had no impairment and 25% were classified as cognitively impaired. The percentage of men of women classified with dementia was similar (4.7%).

**Figure 4.6. Cognitive status at wave 9 by gender**
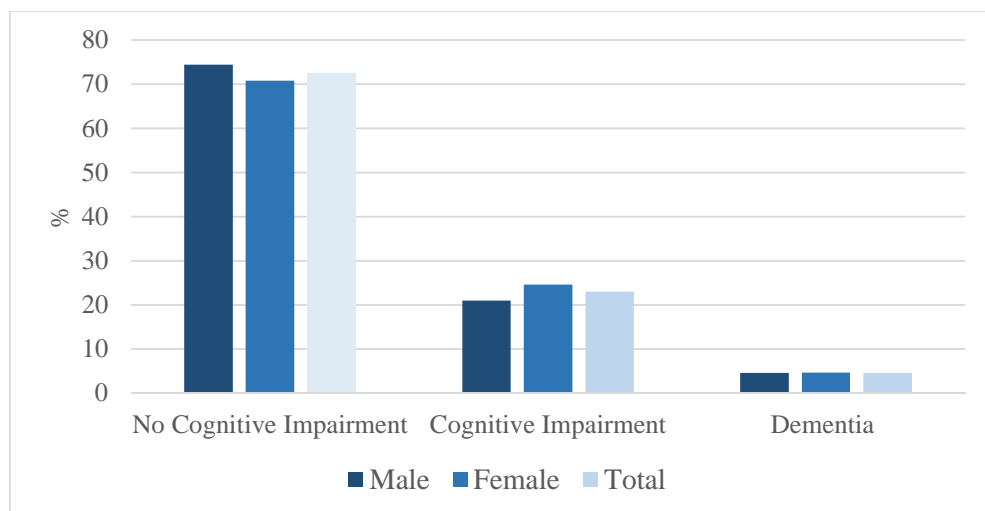
Figure 4.7 shows the percentages of ELSA participants at wave 9 in each cognitive group by the level of education. Among those with higher education or educated to degree level, a large proportion (90%) had no cognitive impairment, 7% were classified with cognitive impairment and 3% with dementia. For those with intermediate levels of education, 76% had no impairment, 20% were classified as cognitively impaired, and 4% with dementia. In contrast, among those with no formal qualification, half of the participants were classified as cognitively impaired, and almost 10% were classified with dementia.

**Figure 4.7. Cognitive status at wave 9 by education groups**
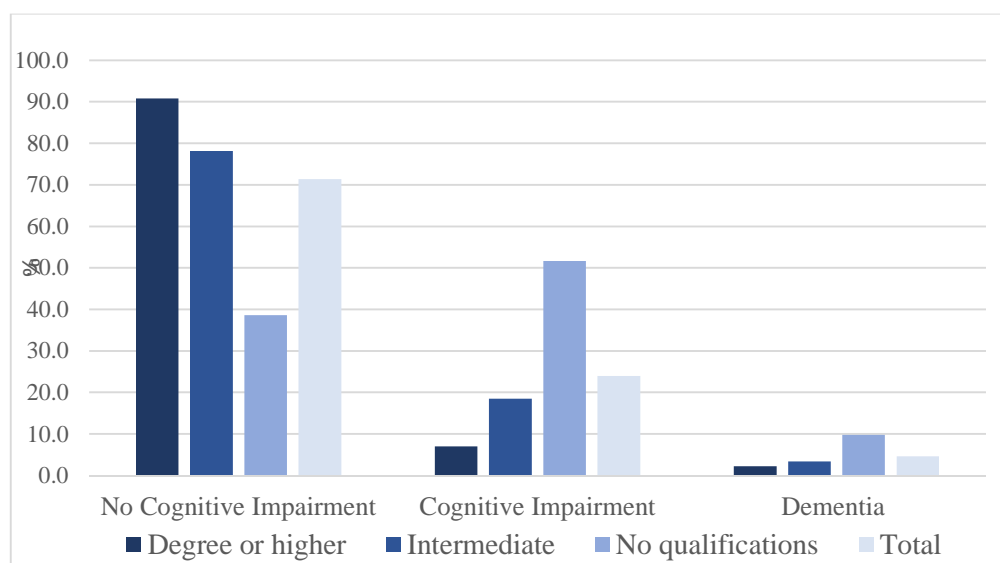


### 4.3.3 Conclusions

Based on the most recent wave of data collection in ELSA, we found that among individuals aged 60 years and above, the prevalence of cognitive impairment was 23% while dementia was present in 4.6%. The prevalence of dementia in CFAS II was somewhat higher (Matthews et al., 2013), with age-standardised estimates of 4.9% in men and 7.7% in women. There may be several reasons for this. The fieldwork for CFAS II was carried out between 2008 and 2011, whereas our data were collected in 2018–19. Differences may, therefore, reflect trends of decline in dementia prevalence. Moreover, the CFAS II was carried out in three areas – Cambridgeshire, Nottingham and Newcastle – while the ELSA sample comes from all regions of England. However, the percentage of ELSA participants that were institutionalised is very small (under 1%), and therefore our findings are only representative of the English population aged 60 and older, living in the community.

# 4.4 Determinants of cognitive impairment and dementia at wave 9

Biological and psychosocial risk factors, particularly those that are malleable across the life course, are important determinants of neurocognitive health in later life. There has been increased interest in identifying which modifiable risk factors to target since potential treatments of dementia will not reduce the need for effective prevention. The longitudinal nature of ELSA presents several opportunities for the investigation of precursors and consequences of neurocognitive disorders spanning over 16 years of data from wave 1 to wave 9.

In this section, we conduct a longitudinal investigation of a number of risk factors in relation to neurocognitive impairment ascertained at wave 9. We examine a range of predictors, selected to represent determinants from several domains of risk factors including cardiovascular risk factors (high blood pressure, diabetes, and physical inactivity), psychosocial determinants (loneliness, depression) and socioeconomic/neighbourhood risk factors (geographical region). These factors were measured in wave 4 (2008/09), 10 years before the ascertainment of dementia and cognitive impairment.

## 4.4.1 Determinants of neurocognitive health

*High blood pressure (Biomarkers)*
High blood pressure is a known risk factor for cardiovascular diseases (e.g. heart disease and stroke) and has been found to be associated with dementia in later life (Prince et al., 2014). Potential biological mechanisms for this association include cerebral small vessel disease that is linked with vascular dementia (Coca et al., 2016). It has been suggested that the critical time for treatment of hypertension to reduce risk of dementia and improve brain health is midlife (Livingston et al., 2017, 2020), but raised blood pressure is a significant risk factor across the life course.

*Type 2 diabetes (Pre-existing medical conditions)*
Type 2 diabetes is a chronic disease that causes an increase in the risk of cardiovascular diseases and dementia among the older population aged 65 and older (Winblad et al., 2016; Livingston et al., 2017, 2020). Raised glucose levels could damage small blood vessels that contribute to the risk of vascular dementia. In addition, vascular dysfunction may interrupt blood flow to the brain, contributing to AD (Prince et al., 2014).

*Physical inactivity (Lifestyle factors)*
Dementia risk is known to be influenced by physical activity, particularly in older age (Norton et al., 2014; Winblad et al., 2016; Livingston et al., 2017, 2020), although it has been suggested that this relationship is not due to a protective effect of physical activity (Sabia et al., 2017). However, the relationship may be indirect, with physically inactive people having a higher risk for vascular risk factors in older age (Livingston et al., 2020). Factors like atherosclerosis and endothelial dysfunction could mediate the relationship between physical activity and dementia risk (Rovio et al., 2005).

### Loneliness (Social engagement)

Evidence is growing that a lack of social contact in later life may be a risk factor for dementia. The relationship may be indirect, through increasing the risk of cardiovascular problems such as hypertension (Holt-Lunstad and Smith, 2016). However, there is also evidence that reduced social contact, and especially loneliness, is directly associated with poorer cognitive functioning and an increased risk of dementia (Shankar et al., 2013; Rafnsson et al., 2020).

### Depression (Mental health)

Depressive symptoms in later life have been found to be associated with risk of dementia (Dotson et al., 2010; Saczynski et al., 2010). Several plausible, biological mechanisms for this association have been suggested, such as stress hormones, neuronal growth factors, and hippocampal volume (Alexopoulos, 2003). However, the direction of the association is unclear, and studies have suggested that depressive symptoms could be an early symptom of the disease progression (Singh-Manoux et al., 2017).

### Regional variation and neighbourhood deprivation (Socioeconomic)

It has been suggested that there are regional variations across the UK in dementia prevalence and diagnosis (Matthews et al., 2013; Walker et al., 2017). Furthermore, socioeconomic inequalities have been observed in the UK for both dementia risk and dementia-related mortality (Sharp and Gatz, 2011; Russ et al., 2013). For example, living in an area or neighbourhood with high levels of deprivation is associated with poorer cognitive function in later life (Lang et al., 2008). Furthermore, an association between other indicators of socioeconomic position, such as household wealth and risk of dementia has been found, even after educational status is taken into account (Cadar et al., 2018).

## 4.4.2 Methods

### Cognitive status at wave 9 (Outcome)

To examine the longitudinal association between predictors of cognitive impairment and dementia, we used a sample of 4,639 older people who had participated in both wave 4 (2008/09) and wave 9. Exclusions were made for those who reported a doctor diagnosis of dementia at wave 4, those who had missing data on predictors at wave 4 and those who were younger than 60 years of age at wave 9.

As described in Section 4.3.1, cognitive status at wave 9 was categorised into three diagnostic groups (e.g. normal cognition, MCI and dementia) using a cross-walk diagnostic algorithm between ELSA-HCAP and ELSA wave 9. This cross-walk was carried out using a multinomial logistic regression model, which used age, sex, education and all the cognitive measures available at wave 9 to predict the probability of participants belonging to each diagnostic group.

### Covariates in ELSA (wave 4)

*High blood pressure/hypertension*: defined as doctor-diagnosed hypertension or directly measured blood pressure, with systolic blood pressure/diastolic blood pressure $\geq 140/90$ mmHg. Systolic (SBP) and diastolic (DBP) blood pressure was measured using standardised methods.

*Physical activity*: measured using responses to questions about the frequency of vigorous, moderate and light leisure-time physical activities. In this analysis, we used a binary variable to indicate whether the participants had once a week participated in any vigorous or moderate physical activity. Those who had not were counted as having low levels of physical activity.

*Long-term conditions*: respondents were asked whether a physician had ever told them that they suffered from any of the following conditions: diabetes, coronary heart disease (angina or myocardial infarction), stroke; which were recoded to indicate a history of cardiovascular disease (CVD).

*Depressive symptoms*: assessed using the eight-item version of the Centre for Epidemiologic Study Depression (CES-D) scale administered in the face-to-face interview (Radloff, 1977). We used a binary variable to define a high level of depressive symptoms as those reporting four or more (White et al., 2016).

*Loneliness*: assessed by three items of the UCLA loneliness scale (lack companionship, feeling left out, feeling isolated), with a response for each item from 'hardly ever or never', 'some of the time' or 'often' (Hughes et al., 2004). The total score ranges from 3 to 9, with higher scores indicating greater loneliness and a binary variable to indicate a high level of loneliness (>5) was used.

*Geographical region*: the regional indicators used in this chapter divide England into nine regions: North East, North West, Yorkshire and the Humber, East Midlands, West Midlands, East of England, London, South East, and South West. The small number of households in the ELSA sample who live outside England (either Scotland or Wales) were excluded from the analyses. These were firstly recoded into seven regions, which match the NHS England regions. However, due to a small number of participants in certain areas, these regions were grouped into four categories based on the mean household wealth (excluding pension wealth) of each region in 2006–08: (1) North East/Yorkshire/North West (<£190k); (2) East/West Midlands (£190k–£225k); (3) East of England/London (£226–£255k); (4) South West/South East (£255k+) (Office for National Statistics, 2008).

*Educational level*: ascertained with the participant's highest reported educational qualification at wave 4; grouped into five categories: (1) Degree or equivalent, (2) A-level or equivalent, (3) O-level or equivalent, (4) CSE/other, (5) No qualifications.

*Household wealth*: assessed with an overall measure that includes savings, investments, and value of property or business assets, but excludes pension assets.

*Mobility status*: respondents were asked to report any difficulty with the following mobility-related activities: walking 100 yards, sitting for two hours, getting up from a chair after sitting for long periods, climbing one flight of stairs, climbing several flights stairs, stooping, kneeling or crouching, reaching or

extending arms above shoulder level, pulling or pushing large objects, lifting or carrying weights over 10 pounds, and picking up a five-pence coin from a table.

*Statistical analysis*

Firstly, we present the prevalence (percentages) of each predictor at wave 4 by cognitive status at wave 9. We used multinomial regression models to examine the association between each potential determinant at wave 4 and cognitive status at wave 9. Multinomial logistic regression can be used to model outcome variables which consisted of more than two categories. We present relative risk ratios (RRR) which can be interpreted as the ratio of the probability of being classified with one of the outcome categories (dementia or cognitive impairment) over the likelihood of being classified as being in the reference category (no cognitive impairment) for a unit change in the predictor variable. We estimate three models: The first model includes each predictor and age, age$^2$, gender, education, and household wealth, as these demographic factors may influence both cognitive status and also many of these socially patterned risk factors. The second model also takes into account mobility status, as physical functioning in later life is associated with both cognitive status and also several of these predictors. The final model takes a history of cardiovascular disease into account as well, because lifestyle factors and social engagement may be particularly affected by these underlying health conditions.

## 4.4.3 Distribution of predictors (wave 4) by cognitive status at wave 9 (2018/19)

Table 4.1 shows the prevalence of each of the predictors used in the longitudinal analysis by the cognitive status groups in wave 9 (normal cognition, cognitive impairment and dementia). Overall, there were fewer men than women in the sample, although there was a similar proportion of men in each of the three cognitive status groups. Those classified with dementia and cognitive impairment were older than those with no cognitive impairment at wave 9. The cognitive impairment and dementia groups also included a higher proportion of people with worse health (high blood pressure, diabetes) and higher levels of both depressive symptoms and loneliness. However, among those not classified with cognitive impairment or dementia at wave 9, a lower percentage reported no formal educational qualifications at baseline. There was also some evidence of geographical variation, with fewer dementia cases in the South West of England and a higher number of dementia cases in the Midlands. However, it is also clear that in this analytical sample, capturing geographical regions divided into seven categories reveals results in small cell numbers (<20).

**Table 4.1. Prevalence of predictors at wave 4, by cognitive status at wave 9**

| Predictors *N* (%) | Normal cognition (*N* = 3,199) | Cognitive impairment (*N* = 1,242) | Dementia (*N* = 198) | Total (*N* = 4,639) |
|---|---|---|---|---|
| Age; mean (SD) | 60.6 (6.6) | 69.0 (6.1) | 70.9 (7.5) | 63.2 (7.6) |
| Sex (% male) | 1,454 (45.5%) | 487 (39.2%) | 87 (43.9%) | 2,028 (43.7%) |
| Hypertension (Yes) | 1,475 (46.1%) | 755 (60.8%) | 131 (66.2%) | 2,361 (50.9%) |
| Physical activity (Low) | 247 (7.7%) | 172 (13.9%) | 45 (22.7%) | 464 (10.0%) |
| Diabetes (Yes) | 192 (6.0%) | 123 (9.9%) | 22 (11.1%) | 337 (7.3%) |
| Depressive symptoms (High) | 312 (9.8%) | 172 (13.9%) | 30 (15.2%) | 514 (11.1%) |
| Loneliness (High) | 571 (17.9%) | 254 (20.5%) | 54 (27.3%) | 879 (18.9%) |
| Education (No qualifications) | 374 (11.7%) | 534 (43.0%) | 72 (36.4%) | 980 (21.1%) |
| Wealth (Lowest quintile) | 330 (10.3%) | 209 (16.8%) | 41 (20.7%) | 580 (12.5%) |
| **Geographical region** | | | | |
| North East/Yorkshire | 502 (15.7%) | 233 (18.8%) | 35 (17.7%) | 770 (16.6%) |
| North West | 360 (11.3%) | 112 (9.0%) | 20 (10.1%) | 492 (10.6%) |
| Midlands | 680 (21.3%) | 268 (21.6%) | 56 (28.3%) | 1,004 (21.6%) |
| East of England | 456 (14.3%) | 168 (13.5%) | 24 (12.1%) | 648 (14.0%) |
| London | 282 (8.8%) | 102 (8.2%) | 15 (7.6%) | 399 (8.6%) |
| South West | 536 (16.8%) | 207 (16.7%) | 23 (11.6%) | 766 (16.5%) |
| South East | 383 (12.0%) | 152 (12.2%) | 25 (12.6%) | 560 (12.1%) |

## 4.4.4 Association between predictor wave 4 and cognitive status wave 9

In Table A.4.1, the results of the multinomial regression models are presented. We have estimated each predictor separately, adjusting for the covariates discussed. The results are presented as relative risk ratios (RRR); these indicate the risk of an adverse outcome when exposed to a risk factor versus the risk when not exposed. In general, an RRR > 1 indicates that the outcome is more likely in the group with the risk factor. The results for the high blood pressure results in Model 1 show the RRR for having raised blood pressure in a model which takes into account age, age$^2$, gender, education and wealth. The relative risk ratio for having elevated blood pressure was 1.25 (0.90, 1.72) of being classified with dementia compared to those with no cognitive impairment. In other words, the expected risk of being in the dementia group at wave 9 was higher for those who have raised blood pressure at wave 4. This effect size is slightly smaller than reported elsewhere for the relative risk of hypertension for dementia (Norton, 2014; Livingston et al., 2020). However, due to the restrictions of this sample, we were not able to distinguish between midlife and later life hypertension, known to be a noteworthy difference for this particular risk factor.

There is an association between physical inactivity and an increased risk of dementia, but not cognitive impairment in this sample. In Model 3 when the estimates have been adjusted for demographic characteristics, mobility status and also cardiovascular disease history, those who report low levels of physical activity were more likely to be in the dementia group (RRR = 1.61 (CI 95%; 1.04, 2.49)). This effect size is similar to the RRR for physical inactivity and dementia reported elsewhere (Livingston et al., 2020). The relative risk for reporting diabetes (RRR = 1.46 (0.89, 2.42)) was also a similar size to that reported elsewhere (Norton, 2014), although we cannot rule out a null effect

size. The magnitude of this effect was attenuated when mobility status and cardiovascular disease history were taken into account.

We also found an association between reporting a high number of depressive symptoms and risk for both cognitive impairment and dementia 10 years later at wave 9. The risk of dementia for individuals with higher depressive symptoms was again similar to those reported elsewhere (Norton, 2014), although these were attenuated when models were adjusted for mobility and cardiovascular disease. However, the risk of a high level of depressive symptoms for cognitive impairment remained in the final model (RRR = 1.53 (0.96, 2.44)). There was also an association between a high level of loneliness and the risk of cognitive impairment (RRR = 1.38 (1.12, 1.71)) and dementia (RRR = 2.01 (1.40, 2.87)). These effects remained significant when other markers of physical functioning and cardiovascular health were taken into account. We also saw some indications that the risk of dementia was greater for those living in regions with a lower mean household wealth (North East/Yorkshire/North West) and East/West Midlands when compared to those living in the East of England/London., This was independent of individual household wealth which was accounted for the in the analysis, suggesting that other factors may be involved. However, the small numbers of dementia cases in each region resulted in wide confidence intervals.

# 4.5  Conclusions

In this chapter, we introduced the Harmonised Cognitive Assessment Protocol (HCAP), which was implemented in 1,200 ELSA participants aged 65 and older. This specialised sub-study offered for the first time an opportunity to examine in detail the full spectrum of cognition from normal functioning to cognitive impairment and dementia. Capitalising on this new battery of neuropsychological tests, we developed a research diagnostic algorithm, which classified the overall HCAP sample into various diagnostic groups such as dementia, mild dementia, cognitive impairment, MCI, OCIND with and without functional impairment and no cognitive impairment. This initial categorisation was regrouped into no cognitive impairment, cognitive impairment, and dementia. In ELSA-HCAP, we found that a significant proportion (43%) was classified with cognitive impairment, and 13% with dementia. These estimates are somewhat higher than expected in the general population, and the reason for this is that we oversampled individuals with low cognitive performance prior to this specific sub-study.

In the second section of this chapter, we presented the population prevalence of cognitive impairment and dementia in ELSA at wave 9, by extrapolating the diagnosis algorithm derived in the HCAP sub-study to the rest of the ELSA sample using a prediction algorithm. Using this algorithm, we predicted the probability of participants belonging to each HCAP cognitive group. We calculated these probabilities using education levels, basic demographics, and cognitive performance on all the available measures at wave 9. Here we present the first population-based prevalence estimate, ascertained in a representative sample of the English population aged 60 and older ($N = 6,669$). From this overall sample, 23% were classified with cognitive impairment and 4.6% with

dementia. These prevalences are slightly lower than those reported by CFAS II, where 6.6% of their overall sample were classified with dementia; however, their study population ($N = 7,762$) were aged 65 and older at the recruitment in 2011 and involved only three areas of the country (Richardson et al., 2019).

In the final section of this chapter, we examined the longitudinal associations between predictors of cognitive impairment and dementia status at wave 9, by looking at various social and psychosocial risk factors for which there is emerging evidence (depression, social isolation, loneliness, social support, socioeconomic risk factors). Our findings provide further support for evidence on the impact of the psychosocial risk factors on neurocognitive disorders in later life. We found positive prospective associations between increased loneliness or depressive symptoms at wave 4 in relation to subsequent cognitive impairment and dementia at wave 9. These risk factors are amongst those where the evidence is less well established (Lincoln et al., 2014), and it is unclear whether these represent early symptoms of cognitive impairment or causal risk factors. The longitudinal structure of ELSA allows medical and psychosocial risk factors to be assessed almost a decade before neurocognitive disorders would develop and demonstrate that these factors precede the occurrence of cognitive impairment and dementia. The role of social isolation and loneliness in elevating dementia risk (Rafnsson et al., 2020) has been described previously with significant implications for shorter life expectancy and mortality (Holt-Lunstad et al., 2010). Moreover, the evidence regarding depression is somewhat mixed, suggesting that it may represent a risk factor associated with cognitive impairment, but the relationship could also be bidirectional, and therefore depression may constitute a prodromal stage of the clinical manifestation of the neurocognitive disorders.

Previous ELSA work has confirmed some of the associations presented in this chapter, such as depressive symptoms (Zheng et al., 2018) and loneliness (Yin et al., 2019) in relation to cognitive performance and changes in cognitive performance over time. Moreover, a large body of evidence conducted in ELSA has shown significant variability in the modifiable risk factors associated with dementia, such as socioeconomic differentials (Cadar et al., 2018), social support (Khondoker et al., 2017), loneliness (Rafnsson et al., 2020), social and cultural engagement (Fancourt et al., 2018), cognitive reserve (Almeida-Meza et al., 2020), and obesity (Ma et al., 2020) despite the fact that these studies were based on a less precise and comprehensive assessment of cognitive impairment and dementia than the ones developed here.

The findings reported in this chapter support previous evidence on the common risk factors linking the cardiovascular, metabolic and psychiatric risk factors, via socioeconomic status and social context, smoking, and sedentary behaviours, and extend some of these effects in relation to cognitive impairment. It is important to acknowledge that many of these modifiable risk factors co-exist or are part of the same pathways, as in the case of stroke and microvascular infarcts for both vascular dementia and AD. Our findings confirm the direction and effect size of several well-established risk factors (high blood pressure, low levels of physical activity, diabetes), which suggests that the cross-walk groups established for wave 9 cognitive status were satisfactory.

We also noted some variation by geographical region. However, these geographic and neighbourhood characteristics may not be independent of individual-level socioeconomic factors, which are known to be significant predictors of cognition status in later life.

### 4.5.1 Study strengths and weaknesses

There are numerous strengths in the context of the present analyses, including the specialised neuropsychological HCAP assessment that allowed the development of a diagnostic algorithm to ascertain cognitive impairment and dementia, which further permitted extrapolation to the rest of ELSA. Given the harmonisation framework of these data, there are several opportunities for cross-cohort investigations of cognitive impairment or dementia prevalence in different countries around the world. In addition, the wide range of data collected in ELSA, capturing various domains including biological, psychological, physical, cognitive, economic, social, and behavioural factors, opens up possibilities for fruitful longitudinal investigations of the determinants and outcome of cognitive impairment. Our analyses also have limitations. The operationalisation of diagnostic criteria for the ever-changing concepts of MCI and dementia, as well as their diagnostic boundaries, are varied. There is a lack of standardised diagnostic criteria for the ascertainment of neurocognitive disorders in population studies. More work is needed to further explore the agreement between self-reported physician diagnosis of dementia, the records from Hospital Episode Statistics, and routinely collected clinical data. The sample of participants selected in this study was relatively small, and any HCAP analyses must be weighted using the sample weights in the data set in order to make the findings more representative of the English population. Furthermore, we were not able to investigate dementia subtypes (Alzheimer's disease, vascular dementia).

### 4.5.2 Policy implications

The current work suggests important avenues for developing appropriate public health messages and policy implications in terms of early identification and dementia prevention.

The cognitive performance data collected every two years since 2002 in ELSA, coupled with the ELSA-HCAP sub-study, have allowed us to develop algorithms for the identification of cognitive impairment and possible dementia at the population level. These assessments confirm that many cases in the community are not identified through current clinical channels. Underdetection could be related to the availability of specialised services in various geographical areas, the waiting times for clinical consultations, to the reluctance of older people to come forward with problems, or lack of awareness (for example, thinking that impairments are part of normal ageing). Other challenges of developing policy in this context are related to our limited knowledge of the biological mechanisms underlying vascular causes of cognitive impairment and its clinical manifestations in those at risk or prodromal stages.

With respect to dementia prevention, several actions are supported by this study: notably maintaining physical activity, preventing and treating cardiovascular risk factors (e.g., hypertension, diabetes mellitus, smoking) and remaining

socially and intellectually engaged in order to avoid loneliness. This is consistent with international evidence about these risk processes (Livingston et al., 2020). It has been estimated that the potential for Alzheimer's disease prevention through modification of seven risk factors – diabetes, hypertension in midlife, midlife obesity, smoking, depression, low educational attainment, and physical inactivity – is around 30% (Norton et al., 2014). The reality is that it will take some time for these risk factors to be fully incorporated into public awareness and policy, though a vigorous evidence-based public health awareness campaign could accelerate this process. The future provision of modifiable interventions and care will require a national response and integration across all societal levels, taking into consideration the marked socioeconomic differentials in risk.

# 4.6  Acknowledgements

# Appendix

### *Cognitive tests included in the HCAP sub-study*

*Self-reported Memory*

This measure provided an indication of whether the respondent was worried about their memory. Participants were asked to rate their memory at the present time as excellent, very good, good, fair or poor. They were also asked to say whether compared with two years ago, their memory is now better, the same, or worse.

*Mini-Mental State Examination*

The Mini-Mental State Examination (MMSE) or Folstein test (Folstein et al., 1975) is a 30-point questionnaire that is used extensively in clinical and research settings to measure cognitive impairment. This is a multipart test and includes questions that assess multiple cognitive domains such as memory, language, repetition, and orientation to time and place, registration, attention and calculation. The maximum MMSE score of 30 is computed by assigning one point for each correct response for orientation to time (5 points), orientation to place (5 points), registration (3 points), attention to calculation (5 points), recall (3 points), language (2 points), repetition (1 point) and complex demands (6 points).

*People and Objects Naming (Telephone Interview for Cognitive Status)*

The HRS-TICS (Telephone Interview for Cognitive Status) is a very brief global mental status test based on a set of questions, which are similar to those in the MMSE, that has been adapted from the full Telephone Interview for Cognitive Status (Brandt et al., 1988). This provides information about language and factual knowledge. In ELSA-HCAP, the test included questions to identify two words, e.g. scissors, cactus (vocabulary) and naming the Prime Minister of the United Kingdom (factual knowledge). The score for HRS-TICS recorded in the ELSA-HCAP data was computed by assigning one point for each correct response with scores ranging from 0 to 3.

*CERAD Word List Learning and Recall*

This is a simple memory test comprised of three distinct parts, testing immediate recall, delayed recall and recognition as described below.

CERAD Word List Immediate Recall: The respondent was shown ten words in the CERAD flipbook and was asked to read them aloud in turn. They were then asked to immediately recall as many of the ten words as they could. They were shown the same words in a different order and asked to read them aloud in turn, and they were asked again to recall the words. They were shown the words in a different order a third time and asked again to read them aloud and then remember them (making a total of three immediate recalls). The immediate recall score was computed by summing the total number of words correctly recalled for each of the three trials with a maximum score of 30.

CERAD Word List Delayed Recall: After completing several other tests that were part of the HCAP interview (Animal naming, Ps and Ws Letter Cancellation, Backwards Counting, and Naming Items (10/66)), the respondent was asked to recall as many of the ten words as they could. The Delayed Recall score was the number of words correctly recalled after the delay, with a maximum score of 10.

CERAD Word List Recognition: This was a recognition trial of the CERAD 10-word list, in which the respondent was visually presented with a series of 20 words including 10 from the original list and 10 that were not part of that list. Participants were asked whether they could recognise each word from the original list (Yes/No). The task was administered after completing another test of the HCAP interview (Story recall – immediate recall). The Recognition score was computed by summing the number of words that were correctly identified as from the original 10-word list, with a maximum score of 20.

*Verbal Fluency (Animal Naming)*

This is a typical neuropsychology test of retrieval fluency that was also administered in the ELSA Core survey. Respondents were asked to name as many animals as they could think of in 1 minute. The score for verbal fluency was computed by subtracting the estimated number of incorrect or repeated responses (if applicable) from the total number of responses provided.

*Processing Speed (Letter Cancellation)*

This is a timed test measuring attention and processing speed that was also administered in the ELSA Core survey. Respondents were asked to search a grid

of letters and cross out any 'Ps' or 'Ws' they saw, and then underline how far down the grid they got in the 1-minute time allowed. The score for the Letter Cancellation test was calculated from a combination of speed (how far through the grid they got in the time), and processing accuracy (the number of mistakes made, or letters missed).

*Backwards Counting*

The backwards counting span task is a mental tracking test, associated with working memory and executive function. The respondent was asked to count backwards from 100 as fast as possible, for 30 seconds. The interviewer recorded the number they get to in the time allowed and the number of mistakes they made. The score was calculated by subtracting from 100 the final number the respondent reached, taking into account the number of errors made.

*Naming Items*

These questions were initially derived from the 10/66, and Community Screening Interview for Dementia (CSI-D) surveys to assess cognitive impairment and dementia. The questions evaluate language, knowledge and the ability to follow directions. The respondent was asked four questions: to name an object the interviewer points to, to describe how to use an object, to explain how to get to a nearby shop, and to point to a window and then a door. The score was calculated by assigning one point for each correct response, with scores ranging from 0 to 4.

*Logical Memory (Story recall)*

This test involved the reading of two different stories ('Brave Man' and 'Anna Thompson' from the WMS-IV Logical Memory) and assessed the logical memory recall of various story points that the respondent could remember after hearing each story. The scores were based on the number of the story points correctly named. Three aspects of logical memory were examined as described below.

Immediate Recall: After reading the first story (Brave Man), the respondent was asked to recall as much detail about the story as they could, and the interviewer scored them on the details they remembered. The interviewer then read the second story (Anna Thompson) and again asked participants to recall as much detail about the second story as they could. Separate scores were computed as a sum of the information immediately recalled per each story, with respective maximum scores of 6 and 25.

Delayed Recall: After completing other tests of the HCAP interview (Word List Recognition, Shape Drawing (Constructional Praxis), Symbol Digit Modalities Test (SDMT), and Shape Drawing Recall), the respondent was invited to recall as much detail as they could about both stories. The delayed recall scoring was identical to the immediate recall.

Recognition: After the delayed recall of the two stories, the respondent was presented with a series of 15 statements about the second story (Anna Thompson). They were asked to confirm whether each statement was true or false, based on what they were able to remember and recognise as part of the original story. The recognition score was based on the number of correct responses given with a maximum score of 15.

*CERAD Constructional Praxis (Shape Drawing)*

The CERAD Constructional Praxis test involves drawing four geometric shapes, with each drawing assessed against specific criteria. The shapes were a circle, a diamond, two overlapping rectangles, and a 3D cube. Two aspects of constructional praxis were examined as described below.

Constructional Praxis – immediate: The respondent was given a worksheet containing the first geometric shape (the circle) and asked to copy the shape on the same sheet of paper. They were then given a worksheet containing the second geometric shape (the diamond) and again asked to copy the shape. This was repeated for the third (the overlapping rectangles) and fourth shape (the 3D cube). The final score represented the sum of various aspects that met the precision criteria set, with a maximum score of 11.

Constructional Praxis – recall: After completing one other test of the HCAP interview (Symbol Digit Modalities Test), the respondent was asked to redraw the shapes from memory on a blank piece of paper. The score was calculated based on the individual criteria used in the immediate score of constructional praxis.

*Symbol Digit Modalities Test*

The Symbol Digit Modalities Test (SDMT) measures processing speed and attention. The test was administered with the official SDMT paper form (a pre-printed carbon-backed worksheet) and required the respondent to substitute a number for randomised presentations of geometric figures. The respondent was presented with a set of number-symbol pairings at the top and a large grid of symbols underneath. The task was to accurately write down the corresponding number for each symbol on the grid. The respondent was given 90 seconds to complete as many of the symbols as they could. The score computed represents the number of attempted pairings minus the number of mistakes or skipped pairings.

*Number Series*

The Number Series measures problem-solving ability and numeric reasoning by presenting a set of six individual series of numbers, where one or two numbers in the series are missing. The interviewer read out a series of numbers with a gap for a missing number. The respondent was asked to write down the sequence of numbers and work out the missing number that would go in the gap. The task was not timed. Respondents were given a set of three number series questions of varying difficulty. Based on the number of correct responses in the first set of three (score range = 0 to 4), respondents were then assigned to the second set of three questions, for which the difficulty level was adapted on the number correct on the first set. There were two versions of the Number Series questions available, and each respondent was assigned to the version that had not been completed in a previous wave of ELSA (wave 8, 2016/17).

*Raven's Standard Progressive Matrices*

This is a general intelligence test that evaluates picture-based pattern reasoning of varying difficulty. The respondent was shown a matrix of shapes or patterns, with the final shape or pattern in the series being missing. The respondent was asked to indicate which of several options given underneath would be the next

shape or pattern in the series. ELSA-HCAP used only a subset of 17 questions out of the 60 from the full standard test, including one practice question. The test was not timed, and the score is calculated by summing the number of correct responses, with scores ranging from 0 to 17.

*Trail Making (A and B)*

This task requires the respondent to track numeric and alpha-numeric characters on a grid that looks like a dot-to-dot puzzle. The test was administered in two parts, A and B. Trail Making A involves numbered circles (from 1 to 18), and the respondent was asked to draw a line linking the circles in numeric order (1, 2, 3, etc.). Trail Making B involves numbered circles and circles containing letters, and the respondent was asked to draw a line linking the numbers and letters alternately (1, A, 2, B, 3, C, etc.). The task was timed. The interviewer watched the respondent as they were completing each task, and if they made a mistake, the interviewer stopped them and asked them to go back and correct the error made. The scores for A and B were based on the time it took to complete each task, with the time spent going back to correct mistakes included. The score represents the time that an individual took to finish the task in each test, with a higher score indicating a lower performance on these particular tests.

An assessment of depression (Center for Epidemiological Studies-Depression) and an olfaction test were also administered at the end of the ELSA-HCAP respondent interview, but these were not used as part of the dementia algorithm.

**Table A.4.1. Multinomial logistic regression for the association between demographic characteristics and cognitive impairment**

| N = 4,853 | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| | *Cognitive impairment* | *Dementia* | *Cognitive impairment* | *Dementia* | *Cognitive impairment* | *Dementia* |
| | RRR (95% CI) | RRR (95% CI) | RRR (95% CI) | RRR (95% CI) | RRR (95% CI) | RRR (95% CI) |
| **High blood pressure** | | | | | | |
| No | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Yes | 1.10 (0.93, 1.30) | 1.25 (0.90, 1.72) | 1.08 (0.92, 1.28) | 1.19 (0.86, 1.65) | 1.07 (0.91, 1.27) | 1.17 (0.84, 1.62) |
| **Low physical activity** | | | | | | |
| No | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Yes | 1.16 (0.89, 1.51) | 2.09 (1.39, 3.12) | 1.03 (0.78, 1.36) | 1.60 (1.04, 2.48) | 1.03 (0.78, 1.36) | 1.61 (1.04, 2.49) |
| **Diabetes history** | | | | | | |
| No | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Yes | 1.30 (0.96, 1.75) | 1.46 (0.89, 2.42) | 1.24 (0.92, 1.67) | 1.29 (0.78, 2.15) | 1.21 (0.89, 1.64) | 1.23 (0.74, 2.06) |
| **Depression (case)** | | | | | | |
| No | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Yes | 1.68 (1.30, 2.19) | 1.93 (1.23, 3.02) | 1.56 (1.19, 2.05) | 1.54 (0.97, 2.46) | 1.56 (1.19, 2.05) | 1.53 (0.96, 2.44) |
| **Loneliness (high)** | | | | | | |
| No | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| Yes | 1.38 (1.12, 1.71) | 2.01 (1.40, 2.87) | 1.33 (1.07, 1.65) | 1.81 (1.26, 2.61) | 1.33 (1.07, 1.64) | 1.81 (1.26, 2.61) |
| **Geographical region** | | | | | | |
| North East/Yorkshire/North West | 1.15 (0.91,1.45) | 1.30 (0.83, 2.03) | 1.13 (0.89,1.42) | 1.23 (0.79, 1.93) | 1.12 (0.89,1.42) | 1.23 (0.78, 1.93) |
| East/West Midlands | 1.04 (0.81, 1.33) | 1.48 (0.94, 2.32) | 1.02 (0.80, 1.31) | 1.40 (0.89, 2.21) | 1.03 (0.80, 1.32) | 1.41 (0.90, 2.22) |
| East of England/London | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) | 1.00 (ref) |
| South West/South East | 1.18 (0.94, 1.49) | 1.03 (0.65, 1.63) | 1.18 (0.94, 1.49) | 1.02 (0.65, 1.62) | 1.18 (0.93, 1.49) | 1.03 (0.65, 1.63) |

Model 1: predictor, age, age2, gender, education, and household wealth.
Model 2: Model 1 further adjusted for mobility status.
Model 3: Model 2 further adjusted for a history of cardiovascular disease.

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# 5.  Methodology

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This chapter presents a summary of the survey methodology for the ninth wave (2018–19) of the English Longitudinal Study of Ageing (ELSA). It includes a brief account of the sample design, the content of the interview and the approach to fieldwork. It also provides basic information about survey response rates, and the weighting strategies used in this report. Further detail is provided in the ELSA technical report, which can be accessed via the ELSA website (http://www.elsa-project.ac.uk).

A summary of the key points relating to wave 9 is given below:

- The wave 9 (2018–19) core questionnaire was similar to that used in the previous waves. Some content was rotated back on and some off the questionnaire, but the structure and the majority of content was the same.

- As in previous waves, participants who completed the main ELSA interview were asked to complete a self-completion questionnaire. The content was broadly the same as in previous waves.

- At wave 9 all ELSA participants who completed the main interview in person (i.e. not proxies) were also asked to complete an Online Dietary Questionnaire. In order to ensure a range of completion days, people were asked to complete the online dietary questionnaire on two days in the week following their interview (allocated randomly by CAPI) – one day following a week day and one following a weekend day. On their allocated days, the participant was asked to log in to the questionnaire and record what they ate and drank on the previous day.

- A nurse visit was offered to a sub-sample of core members who took part in an interview in person at wave 9. At wave 8 a sub-sample was selected to oversample respondents who had taken part in all previous nurse waves where they had been eligible. At wave 9 the remaining part of the sample, plus the refreshment sample, were offered a nurse visit.

- People from five existing ELSA cohorts made up the ELSA sample issued at wave 9. In addition, there was a refreshment (new) sample issued at wave 9.

  **Cohort 1**[1] born on or before 29 February 1952. Selected from Health Survey for England (HSE) 1998, 1999 and 2001. First interviewed at

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[1] All longitudinal analysis in this report is based on Cohort 1 Core Members interviewed at every wave of ELSA.

ELSA wave 1 (2002–03) aged 50 and over. Cohort 1 core members and their partners represented 44.6% of all issued cases at wave 9.

**Cohort 3** born between 1 March 1952 and 1 March 1956. Selected from four years of HSE (2001–04). First interviewed at ELSA wave 3 (2006–07). Cohort 3 core members and their partners represented 10.4% of all issued cases at wave 9.

**Cohort 4** born between 1 March 1933 and 28 February 1958. Selected from HSE 2006. First interviewed at ELSA wave 4 (2008–09) aged 50–74. Cohort 4 core members and their partners represented 16.7% of all issued cases at wave 9.

**Cohort 6** born between 1 March 1956 and 28 February 1962. Selected from HSE 2009, 2010 and the first half of 2011. First interviewed at ELSA wave 6 (2012–13) aged 50–55. Cohort 6 core members and their partners represented 9% of all issued cases at wave 9.

**Cohort 7** born between 1 March 1962 and 28 February 1964. Selected from HSE 2011 and 2012. First interviewed at ELSA wave 7 (2014–15) aged 50–51. Cohort 7 core members and their partners represented 3.9% of all issued cases at wave 9.

**Cohort 9** born between 1 March 1964 and 29 February 1968. Selected from HSE 2013, 2014 and 2015. The wave 9 'refresher' cohort, i.e. first interviewed at ELSA wave 9 (2018–19) aged 50–53. Cohort 9 core members and their partners represented 15.3% of all issued cases at wave 9.

- A total of 8,736 main interviews were completed at wave 9 across these six cohorts. Much of the analysis in this chapter focuses on core members. Core members are defined as age-eligible (50+) sample members selected from HSE who participated the first time they were approached to join the ELSA study. They represent the core element of the continuing ELSA sample. At wave 9, a total of 7,289 interviews (83%) were conducted with core members. Specifically, 3,660 interviews were with Cohort 1 core members from the original wave 1 sample, 688 were with core members from Cohort 3, 1,307 were with core members from Cohort 4, 523 were with core members from Cohort 6, 212 were with core members from Cohort 7, and 899 were with core members from Cohort 9. The remaining 1,447 interviews (17%) were with partners of core members (which can be further categorised into core, young, old or new partners).

# 5.1  Sample design

The ELSA sample is selected to be representative of people aged 50 and over, living in private households in England. It was drawn from households that had previously responded to the HSE so that the study could benefit from data that had already been collected. Some background information about the HSE is provided below.

## Health Survey for England

The HSE is an annual cross-sectional household survey that gathers a wide range of health data and biometric measures. Each of the main HSE samples for ELSA was originally drawn in two stages. First, postcode sectors were selected from the Postcode Address File, stratified by health authority and the proportion of households in the non-manual socioeconomic groups. Addresses were then selected systematically from each sector and up to ten adults and two children in each household were deemed eligible for interview.

Eligible individuals at HSE were asked to participate in a personal interview, followed by a nurse visit. Further details about the HSE years used to select the ELSA sample are available from the HSE Methodology Reports (Erens and Primatesta, 1999; Erens, Primatesta and Prior, 2001; Prior et al., 2003; Sproston and Primatesta, 2003, 2004; Sproston and Mindell, 2006; Craig and Mindell, 2008, 2011, 2012, 2013; Craig and Hirani, 2010).

## ELSA Cohort 1

The original cohort at wave 1 (persons born on or before 29 February 1952) were selected from households who had previously responded to the HSE in 1998, 1999 and 2001. The ELSA wave 1 interview took place in 2002–03, providing the baseline for the study. Overall, there were 12,099 achieved interviews at wave 1, and of these 11,391 became Cohort 1 core members. Interviews with Cohort 1 core members and their partners were attempted every two years following wave 1 (wave 2 in 2004–05, wave 3 in 2006–07, wave 4 in 2008–09, wave 5 in 2010–11, wave 6 in 2012–13, wave 7 in 2014–15, wave 8 in 2016–17 and wave 9 in 2018–19).

## ELSA Cohort 3

At wave 3, a 'refresher' cohort of people just entering their 50s (born between 1 March 1952 and 1 March 1956) was introduced (Cohort 3). The sample used to form Cohort 3 was selected from four survey years of the HSE (2001 to 2004). There were 1,733 Cohort 3 interviews at wave 3 and, of these, 1,275 became core members. The majority of Cohort 3 core members (87%) came from HSE households issued for the first time at ELSA wave 3; the remaining were mainly younger partners in Cohort 1 households who were reclassified as Cohort 3 core members because they now met the age criteria. There are now seven waves of interviews with Cohort 3 core members and their partners (wave 3 in 2006–07, wave 4 in 2008–09, wave 5 in 2010–11, wave 6 in 2012–13, wave 7 in 2014–15, wave 8 in 2016–17 and wave 9 in 2018–19).

## ELSA Cohort 4

A cohort of people born between 1 March 1933 and 28 February 1958 (aged 50–74) was added to the wave 1 and wave 3 cohorts in 2008–09 (Cohort 4). The main wave 4 cohort was selected from HSE 2006. There were 2,590 interviews at wave 4 and, of these, 2,291 became Cohort 4 core members. The group of Cohort 4 core members includes 248 people who were mistakenly not issued at wave 3 (as part of Cohort 3) and were followed up for interview at wave 4 instead. Wave 9 represents the sixth wave of interviews with Cohort 4 members and their partners (wave 4 in 2008–09, wave 5 in 2010–11, wave 6 in 2012–13, wave 7 in 2014–15, wave 8 in 2016–17 and wave 9 in 2018–19).

## ELSA Cohort 6

At wave 6, a cohort of people born between 1 March 1956 and 28 February 1962 (aged 50–55) was added to the waves 1, 3 and 4 cohorts in 2012–13 (Cohort 6). Cohort 6 was selected from participating individuals in HSE 2009, 2010 and 2011. There were 1,154 Cohort 6 interviews at wave 6 and, of these, 825 became core members. Wave 9 represents the fourth wave of interviews with Cohort 6 members and their partners (wave 6 in 2012–13 and, wave 7 in 2014–15, wave 8 in 2016–17 and wave 9 in 2018–19).

## ELSA Cohort 7

At wave 7 in 2014–15, a cohort of people born between 1 March 1962 and 28 February 1964 (aged 50–51) was added to the waves 1, 3, 4 and 6 cohorts (Cohort 7). Cohort 7 was selected from participating individuals in HSE 2011 and 2012. There were 456 Cohort 7 interviews at wave 7 and, of these, 301 became core members. Wave 9 is the third wave of interviews with Cohort 7 members.

## ELSA Cohort 9

At wave 9 in 2018–19, a cohort of people born between 1 March 1964 and 29 February 1968 (aged 50–53) was added to the waves 1, 3, 4, 6 and 7 cohorts. Cohort 9 was selected from participating individuals in HSE 2013, 2014 and 2015. There were 1248 interviews at wave 9 and, of these, 899 became core members.

## Eligibility and sample member types

The ELSA sample is made up of ELSA 'core members' as well as non-core member 'partners'. The partners can be further categorised into core partners, younger partners, older partners and new partners.

Figure 5.1 provides a visual summary of the sample types and their assignation rules on ELSA.

At the heart of eligibility to take part in ELSA are core members. As the figure illustrates, ELSA core members have each met three criteria:

1. fitted the age eligibility criteria of a given ELSA cohort;
2. participated in the sample-origin HSE survey;[2]
3. participated in the first wave of ELSA when invited to join the study.

Core members remain eligible for an ELSA interview (personal or proxy) over the waves, as long as they have not died or moved outside of Great Britain. Core members remain eligible if they have moved to Wales or Scotland, or if they have moved to an institution from their original residential address (within Great Britain).

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[2] There are a small number of exceptions to this rule, i.e. in early ELSA waves a small number of age-eligible people became core members even though they had not completed the baseline HSE interview.

**Figure 5.1. ELSA sample type assignation rules**
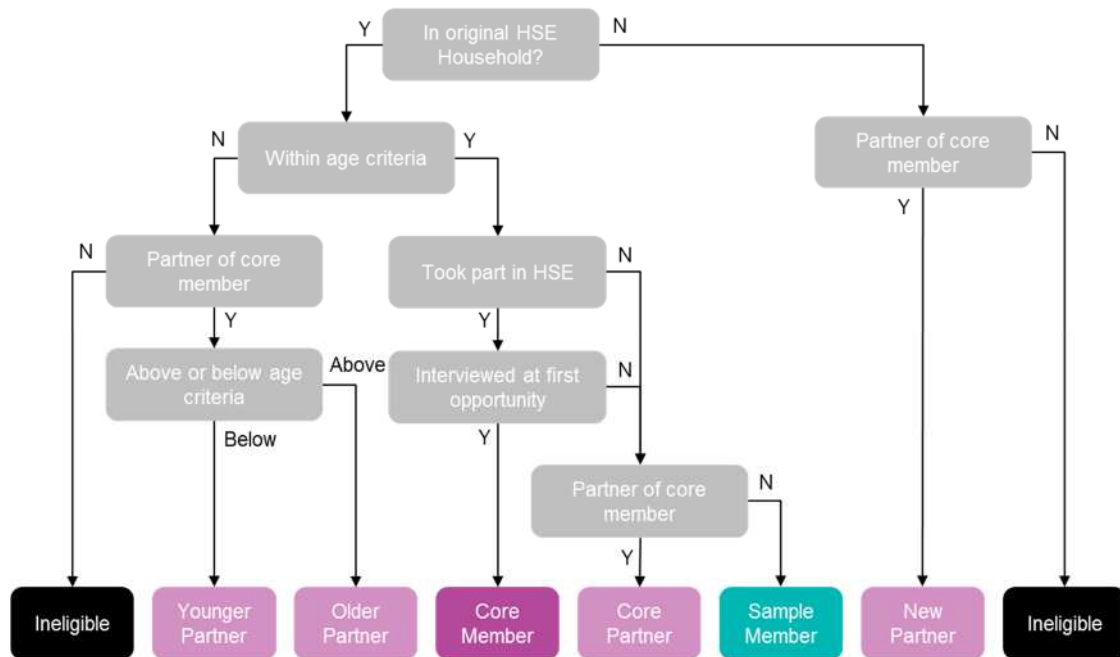


In addition to core members, all cohabiting partners of core members (who are not core members themselves) are also always eligible to take part. These ELSA partners are further categorised into four different types to illustrate their relative age range and duration of co-habitation with the core member:

partners already present at the time of the HSE interview are categorised as either 'core partners' (age-eligible but missed the baseline HSE and/or initial wave ELSA interview), 'young partners' (younger than the eligible age range at initial wave) or 'old partners' (older than the eligible age range at initial wave);

partners of any age who joined the household after the initial HSE interview are called 'new partners', with the 'finstat' variable indicating the wave at which they started cohabitation with the core member (e.g. C3NP5 finstat value represents a Cohort 3 new partner joining at wave 5).

Finally, people who were age-eligible to become core members, but were not productive nor cohabiting with a participating core member at the initial wave of contact, became ineligible to take part in ELSA and not contacted again for an interview after the initial wave. They are called ELSA 'sample members'. (As a non-participating, ineligible group, sample members do not feature in the archived productive ELSA data.)

## Eligibility criteria for wave 9 main interview

The eligibility criteria for a wave 9 interview are as follows:

- Individuals were not eligible for follow-up if they had since died, asked not to be revisited, or moved out of Great Britain.[3]

- Core members who later move into a care home or institution, or into Scotland or Wales, after their first ELSA interview (baseline wave) remain eligible for all future ELSA interviews. A total of 54 productive institutional interviews were conducted at wave 9.

- An interview was attempted at wave 9 with all ELSA 'partners' found to be living without a core member at wave 9, due to having separated, divorced or widowed from an ELSA core member since wave 8, so that we could understand their circumstances after this event had occurred.

## 5.2 Development of wave 9 interview (2018–19)

Extensive discussion took place with ELSA collaborators about what changes were needed for the wave 9 interview and what new topics were to be included.

A dress rehearsal was conducted in January and February 2018 to test changes to the main interview and overall survey process. Given that the nurse visit in wave 9 mirrored the content of that conducted in wave 8, this element was not tested during the dress rehearsal.

The research team collected feedback from interviewers working on the dress rehearsal for the overall survey content and all associated procedures. The insights collected were used to identify final improvements to implement for the main stage of wave 9, and to develop a plan for interviewer training.

## 5.3 Structure and content of the wave 9 interview (2018–19)

As at previous waves, the wave 9 main survey comprised a personal face-to-face interview and a 'core' self-completion questionnaire. Wave 9 also included, for the first time in ELSA, the administration of an Online Dietary Questionnaire for those who completed an ELSA interview in person.

Box 5.1 summarises the questionnaire contents.

The structure of the main interview was the same as it had been at previous waves. In brief:

*CAPI questionnaire administration*

- In households with one respondent, or where two respondents were interviewed separately, each interview followed the course set out in Box 5.1, though some flexibility was given in the order of the weight and walking-speed, income and assets, and housing modules.

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[3] Note that sample members are followed if they move to Scotland or Wales but not if they move to Northern Ireland.

- In households where more than one eligible respondent agreed to take part, two individuals could be interviewed in a single session (unless they kept their finances separately and were not prepared to share this information). In these 'concurrent' sessions, the two respondents were interviewed alongside each other, but were separated during the course of the interview so that the later modules – assessing cognitive function and collecting information about expectations for the future, psychosocial health, demographic information and consents for linkages to administrative data – could be administered in private.

- Where two or more eligible individuals lived in a household, one was nominated as the respondent for the housing module. Similarly, one individual was asked to be the respondent to report on income and assets on behalf of each benefit unit. However, if two individuals in the same benefit unit kept their finances separately, the data for each financial unit were collected separately.

*Self-completion questionnaire administration*

- In single-person households, the core self-completion questionnaire was provided in advance of the interview (in person by the interviewer or by post) to give respondents an opportunity to complete it before the interview.

- In households containing more than one potential respondent, the core self-completion questionnaires were never given in advance. In concurrent interviews, the self-completion questionnaires were completed while the other respondent in the concurrent session was completing the 'private' modules, or at the end of the interview, or after the interview. In multi-person households where interviews were conducted separately, the respondents could complete the self-completion questionnaire while the other person was being interviewed, or at the end of the interview, or after the interview.

- Completed questionnaires were returned by the interviewer (if they had been completed before or during the interview) or posted back by the respondent in a Freepost envelope provided by the interviewer.

Overall, the intention at wave 9 was to collect data about the same topics as at the previous waves, but some changes to the questionnaire were made. The new topics introduced at wave 9 are included in Box 5.1, as well as key questions chosen to be omitted for this wave (e.g. due to wave rotation).

The interview ended with a request to confirm or amend consent to link the respondent's survey answers to administrative data sources: Hospital Records, Economic Records, Primary Care Records and Cancer and Death Records. None of these consents was collected from or confirmed with individuals for whom a proxy respondent was needed. Contact details were requested for a stable address and for a nominated individual who might respond if a proxy, institutional or end-of-life interview were needed in the future.

**Box 5.1. Content of the ELSA interview at wave 9 (2018–19)**

**Household demographics:** Collected or updated demographic information about everyone living in the household, including gender, age and relationships to each other, and collected or updated information about children living outside the household.

**Individual demographics:** Collected or updated details about respondents' legal marital status, parents' age and cause of death, and number of living children. Includes questions on proximity to where children and grandchildren live.

**Health:** Collected or updated self-reported general health, long-standing illness or disability, eyesight, dental health, hearing, specific diagnoses and symptoms, pain, difficulties with daily activities, smoking and e-cigarette use, mental health, urinary and bowel incontinence, falls and fractures, perceived weight and cancer screening. Questions on balance and dizziness were reintroduced in wave 9. Questions on quality of care for cardiovascular disease, depression, diabetes, falls and osteoarthritis, and questions on sleep disturbance were removed from wave 9.

**Social care:** Topics included the nature of care received, who it was received from, the amount received, payments made for care and short stays in residential/nursing homes. New questions about care received at home that was not provide by family or friend were introduced in wave 9.

**Social participation:** Covered the use of different types of transport.

**Work and pensions:** Collected or updated current work activities, current and past pensions, reasons for job change, health-related job limitations, working beyond the state pension age and state pension deferral, as well as questions about additional payments into a pension. Question on expected retirement age moved from the self-completion questionnaire to the CAPI module.

**Income and assets:** Assessed the income that respondents received from a variety of sources over the last 12 months: wages, state pensions, private pensions, other annuity income and state benefits; also collected financial and non-financial assets. Routing to questions about lifetime receipt of gifts and inheritances that were included in wave 6 was changed at wave 7 to ensure that the questions were asked of respondents not asked at wave 6.

**Housing**: Collected or updated current housing situation (including size and quality), housing-related expenses, adaptations to accommodation for those with physical impairments, ownership of durable goods and cars, consumption including food in and out of home, fuel, durables and clothing.

**Cognitive function**: Measured different aspects of the respondent's cognitive function, including memory, speed and mental flexibility. Elements included were memory and concentration, word list recall, animal naming, backwards counting from 20, serial 7s, naming objects and people, and word list recall repeat. The fluid intelligence (number series) task was moved from the interviewer to the nurse visit in wave 8 and remained part of the nurse visit in wave 9.

**Expectations**: Measured expectations for the future in a number of dimensions, financial decision-making and relative deprivation. New questions on expectations of working past age 70 and future social care needs were added. Questions on the knowledge of the funding system of paying for care were removed from wave 9.

**Effort and reward**: Assessed the relationship between effort and reward in relation to voluntary and caring activities and includes questions on care provided to grandchildren.

**Psychosocial health**: Measured how the respondent viewed his or her life across a variety of dimensions. For wave 9, a question about perceived age was added.

**Walking speed**: For respondents aged 60 and over, a 'timed walk' with the respondent walking a distance of 8 feet (244 cm) at their usual walking pace.

**Weight measurement:** Weight measurement was moved from the nurse visit to the main interview in wave 8 and remained part of the main interview in wave 9.

**Final questions**: Collected any missing demographic information and updated contact details and consents. New questions on citizenship were introduced in wave 9.

**Self-completion questionnaire**: Covered quality of life, social participation, religious feelings and behaviour, control at work, life satisfaction, food poverty, time-use questions, social networks and alcohol consumption.

## 5.4  Wave 9 nurse interview

### Eligibility criteria for wave 9 nurse interview

After carrying out the interview, for respondents eligible for a follow-up nurse visit, the interviewer asked whether they would be willing to have a nurse visit, and if yes, made an appointment for the nurse or set up contact between the nurse and respondent.

While on previous ELSA waves all core members who completed a personal CAPI interview were eligible for a follow-up nurse visit across wave 8 and wave 9, two mutually exclusive subsets of members were pre-selected (prior to fieldwork): one to be offered a nurse visit at wave 8 and the other to be offered a nurse visit in wave 9. The subsample at wave 8 was selected to oversample respondents who had taken part in all previous nurse waves where they had been eligible. The remaining cohort members were flagged for a nurse visit in wave 9, thus ensuring that all cohort members were eligible for a nurse visit in wave 8 or wave 9. Finally, all respondents from Cohort 9 were flagged as eligible for a nurse visit in wave 9

The full eligibility criteria for a wave 9 nurse interview were:

- Only core members who completed a main interview in person at wave 9 and marked as eligible for a nurse visit at wave 9 were eligible, i.e. offered a nurse visit at the end of their interview.

- No ELSA partners were eligible for nurse visits.

- However, a small number of partners and non-eligible core members were given a nurse visit if someone else in their household was completing a nurse interview, if they specifically requested it and if it was believed it would assist with their future participation in the survey.

- Individuals who completed an interview by proxy were not eligible for a nurse visit.

- There were specific eligibility criteria for each measure conducted by the nurse. These are outlined briefly below and in more detail in the ELSA Nurse User Guide (available at the UK Data Service website).

### Structure and content of the wave 9 nurse interview (2018–19)

The nurse visited the respondent to carry out a series of measurements listed in Box 5.2. These were only obtained if the appropriate consents were given and the respondent was able to respond to relevant safety and eligibility questions.

**Box 5.2. Content of the ELSA nurse interview at wave 9 (2018–19)**

The nurse visit included several standard measures including:

**Blood pressure**

**Blood sample:** most respondents under the age of 80 were asked to fast before giving the sample. A list of the uses to which the sample was put is listed in Box 5.3.

**Grip strength:** a measure of upper body strength, during which the respondent was asked to squeeze a grip gauge up to three times with each hand.

**Cognitive function:** numerical problem-solving task aimed at assessing fluid intelligence.

Questions about **prescribed medication** were introduced at wave 6 and again included at waves 8 and 9, collecting the details of up to 40 prescribed medications currently being taken.

As described above, a blood sample was collected from respondents who gave consent for this in order to examine the following the factors outlined in Box 5.3.

**Box 5.3. Purpose of the blood measurements at wave 9 (2018–19)**

**Factors increasing risk of heart disease:** total cholesterol, LDL cholesterol, triglycerides, C-reactive protein, fibrinogen, white blood cell count (the latter three as markers for inflammation).

**Risk of diabetes:** fasting glucose, glycated haemoglobin.

**Protective factors against heart disease:** apolipoprotein E, HDL cholesterol.

**Checks on iron levels and anaemia:** ferritin and haemoglobin, and mean corpuscular haemoglobin.

**Other health:** Vitamin D for bone health and IGF-1 for digestion, immune system, etc.

**Genetics:** the expressions of a number of genes through collection of RNA samples (with a PAXgene blood tube).

# 5.5 Fieldwork

Each eligible individual was sent an advance letter inviting them to take part in wave 9. Interviewers then contacted the household by phone or in person to arrange an appointment for the face-to-face interview. A number of approaches were used to encourage participation among the sample, many of which were similar to those described in the first ELSA report (Marmot et al., 2003). Interviewer fieldwork for the ninth wave of ELSA began in June 2018 and spanned a year, finishing in June 2019.

# 5.6 Number and type of completed interviews

In this section, we present summary information about the number of interviews completed in wave 9 (2018–19) for the face-to-face interview.

## Overall response

Survey response and quality of fieldwork were carefully monitored throughout the study period. Ultimately, the ELSA wave 9 fieldwork produced 8,736 productive interviews (including both proxy and partial interviews).

Table 5.1 shows the number of interviews conducted at wave 9, broken down by interview type. There were 8,146 full interviews in person and 496 full interviews by proxy. At wave 9, 54 interviews were conducted with individuals who had originally been interviewed in a private household and had since moved into an institution and were therefore still eligible for follow-up (see Section 5.1).

Table 5.2 shows the number of interviews conducted at wave 9, broken down by cohort.

**Table 5.1. Respondents, by type of interview wave 9 (2018–19): all cohorts**

|  | **Number of respondents** | **%** |
|---|---|---|
| Full interview in person | 8,146 | 93 |
| Full interview by proxy | 496 | 6 |
| Partial interview in person | 36 | <1 |
| Partial interview by proxy | 4 | <1 |
| Institutional interview in person | 9 | <1 |
| Institutional interview by proxy | 45 | <1 |
|  |  |  |
| *Unweighted N* | *8,736* | *100* |

Note: Respondents in 2018–19. Columns may not add up to 100% because of rounding.

**Table 5.2. Respondents, by cohort: all cohorts**

|  | **Number of respondents** | **%** |
|---|---|---|
| Cohort 1 | 4,034 | 46 |
| Cohort 3 | 941 | 11 |
| Cohort 4 | 1,473 | 17 |
| Cohort 6 | 725 | 8 |
| Cohort 7 | 315 | 4 |
| Cohort 9 | 1,248 | 14 |
|  |  |  |
| *Unweighted N* | *8,736* | *100* |

Note: Respondents in 2018–19. Columns may not add up to 100% because of rounding.

## Response by cohort

### Cohort 1

Table 5.3 shows the number of interviews conducted for Cohort 1, broken down by sample type. A total of 4,034 interviews were achieved with members of Cohort 1 at wave 9, and 3,660 of these were with core members.

Table 5.4 presents the pattern of response over time for the 4,034 Cohort 1 core members who were interviewed at wave 9 and gives a breakdown of the type of wave 9 interview conducted with them. Eighty-three per cent of those interviewed at wave 9 had completed an interview at every wave since wave 1. Ninety-four per cent of Cohort 1 core members interviewed at wave 9 were interviewed in person.

**Table 5.3. Respondents, by sample type: Cohort 1**

|  | Number of respondents |
|---|---|
| Core member[a] | 3,660 |
| Core partner[b] | 77 |
| Younger partner | 202 |
| New partner | 95 |
| | |
| *Unweighted N* | *4,034* |

Note: Respondents in 2018–19, including proxies.
[a] Born on or before 29 February 1952.
[b] Core Partners are individuals sampled as core members in wave 1 but who did not respond in wave 1 and so were only interviewed in wave 9 by virtue of being the partner of a core member.

**Table 5.4. Core member respondents, by situation in wave 9 (2018–19): Cohort 1**

|  | Number of respondents | % |
|---|---|---|
| **Pattern of response** | | |
| All eight waves | 3,048 | 83 |
| Missed one or more waves | 612 | 17 |
| **Type of interview** | | |
| Full interview in person | 3,440 | 94 |
| Full interview by proxy | 154 | 4 |
| Partial interview in person | 15 | <1 |
| Partial interview by proxy | 2 | <1 |
| Institutional interview in person | 9 | <1 |
| Institutional interview by proxy | 40 | 1 |
| | | |
| *Unweighted N* | *3,660* | *100* |

Note: Core member respondents in 2018–19. Columns may not add up to 100% because of rounding.

### Cohort 3

Table 5.5 gives a breakdown of the number of achieved interviews by each sample type for Cohort 3. A total of 941 interviews were conducted overall and 688 of these were with core members.

Table 5.6 shows the pattern of response over time for the 688 Cohort 3 core members interviewed at wave 9, and the type of interview conducted at wave 9. Eighty-three per cent of Cohort 3 core members interviewed at wave 9 also took part in the six preceding waves for which they were eligible (waves 3, 4, 5, 6, 7 and 8). Ninety-seven per cent of Cohort 3 core members interviewed at wave 9 were interviewed in person.

**Table 5.5. Respondents, by sample type: Cohort 3**

|  | Number of respondents |
|---|---|
| Core member[a] | 688 |
| Core partner[b] | 8 |
| Younger partner | 135 |
| Older partner | 67 |
| New partner | 43 |
|  |  |
| *Unweighted N* | *941* |

Note: Respondents in 2018–19, including proxies.
[a] Born between 1 March 1952 and 1 March 1956.
[b] Core partners are individuals sampled as core members in wave 3 but who did not respond in wave 3 and so were only interviewed in wave 9 by virtue of being the partner of a core member.

**Table 5.6. Core member respondents, by situation in wave 9 (2018–19): Cohort 3**

|  | Number of respondents | % |
|---|---|---|
| **Pattern of response** |  |  |
| All six waves (waves 3, 4, 5, 6, 7, 8) | 568 | 83 |
| Missed one or more waves | 120 | 17 |
| **Type of interview** |  |  |
| Full interview in person | 665 | 97 |
| Full interview by proxy | 18 | 3 |
| Partial interview in person | 4 | <1 |
| Partial interview by proxy | 0 | 0 |
| Institutional interview in person | 0 | 0 |
| Institutional interview by proxy | 1 | <1 |
|  |  |  |
| *Unweighted N* | *688* | *100* |

Note: Core member respondents in 2018–19. Columns may not add up to 100% because of rounding.

## *Cohort 4*

Table 5.7 presents the breakdown of achieved interviews by sample type for Cohort 4. A total of 1,473 interviews were conducted, and 1,307 of these were with core members.

Table 5.8 shows the type of wave 9 interview conducted with the 1,307 core members from Cohort 4. Eighty-nine per cent of Cohort 4 core members interviewed at wave 9 also took part in the five preceding waves for which they were eligible (waves 4, 5, 6, 7 and 8). Ninety-six per cent of Cohort 4 core members interviewed at wave 9 were interviewed in person.

**Table 5.7. Respondents, by sample type: Cohort 4**

| | Number of respondents |
|---|---|
| Core member[a] | 1,307 |
| Core partner[b] | 10 |
| Younger partner | 61 |
| Older partner | 63 |
| New partner | 32 |
| | |
| *Unweighted N* | *1,473* |

Note: Respondents in 2018–19, including proxies.
[a] Born between 1 March 1933 and 28 February 1958.
[b] Core partners are individuals sampled as core members in wave 4 but who did not respond in wave 4 and so were only interviewed in wave 9 by virtue of being the partner of a core member.

**Table 5.8. Core member respondents, by situation in wave 9 (2018–19): Cohort 4**

| | Number of respondents | % |
|---|---|---|
| **Pattern of response** | | |
| All five waves (wave 4, 5, 6, 7, 8) | 1,169 | 89 |
| Missed one or more waves | 138 | 11 |
| **Type of interview** | | |
| Full interview in person | 1,260 | 96 |
| Full interview by proxy | 42 | 3 |
| Partial interview in person | 2 | <1 |
| Partial interview by proxy | 0 | 0 |
| Institutional interview in person | 0 | 0 |
| Institutional interview by proxy | 3 | <1 |
| | | |
| *Unweighted N* | *1,307* | *100* |

Note: Core member respondents in 2018–19. Columns may not add up to 100% because of rounding.

## *Cohort 6*

Table 5.9 presents the breakdown of achieved interviews by sample type for Cohort 6. A total of 725 interviews were conducted, and 523 of these were with core members.

Table 5.10 shows the type of wave 9 interview conducted with the 523 core members from Cohort 6. Ninety-three per cent of Cohort 6 core members interviewed at wave 9 also took part in the three preceding waves for which they were eligible (waves 6, 7 and 8). Ninety-seven per cent of Cohort 6 core members interviewed at wave 9 were interviewed in person.

**Table 5.9. Respondents, by sample type: Cohort 6**

| | Number of respondents |
|---|---|
| Core member[a] | 523 |
| Core partner[b] | 19 |
| Younger partner | 81 |
| Older partner | 85 |
| New partner | 17 |
| | |
| *Unweighted N* | *725* |

Note: Respondents in 2018–9, including proxies.

[a] Born between 1 March 1956 and 28 February 1962.

[b] Core partners are individuals sampled as core members in wave 6 but who did not respond in wave 6 and so were only interviewed in wave 9 by virtue of being the partner of a core member.

**Table 5.10. Core member respondents, by situation in wave 9 (2018–19): Cohort 6**

| | Number of respondents | % |
|---|---|---|
| **Pattern of response** | | |
| All three waves (6, 7, 8) | 484 | 93 |
| Missed one or more waves | 39 | 7 |
| **Type of interview** | | |
| Full interview in person | 510 | 97 |
| Full interview by proxy | 12 | 2 |
| Partial interview in person | 1 | <1 |
| Partial interview by proxy | 0 | 0 |
| Institutional interview in person | 0 | 0 |
| Institutional interview by proxy | 0 | 0 |
| | | |
| *Unweighted N* | *523* | *100* |

Note: Core member respondents in 2018–19. Columns may not add up to 100% because of rounding.

### *Cohort 7*

Table 5.11 presents the breakdown of achieved interviews by sample type for Cohort 7. A total of 315 interviews were conducted, and 212 of these were with core members.

Table 5.12 shows the type of wave 9 interview conducted with the 212 core members from Cohort 7. Ninety-three per cent of Cohort 7 core members interviewed at wave 9 also took part in the two preceding waves for which they were eligible (waves 7 and 8). Ninety-seven per cent of Cohort 7 core members interviewed at wave 9 were interviewed in person.

**Table 5.11. Respondents, by sample type: Cohort 7**

|  | **Number of respondents** |
|---|---|
| Core member[a] | 212 |
| Core partner[b] | 2 |
| Younger partner | 49 |
| Older partner | 48 |
| New partner | 4 |
|  |  |
| *Unweighted N* | *315* |

Note: Respondents in 2018–19, including proxies.
[a] Born between 1 March 1962 and 28 February 1964.
[b] Core partners are individuals sampled as core members in wave 7 but who did not respond in wave 7 and so were only interviewed in wave 9 by virtue of being the partner of a core member.

**Table 5.12. Core member respondents, by situation in wave 9 (2018–19): Cohort 7**

|  | **Number of respondents** | **%** |
|---|---|---|
| **Pattern of response** |  |  |
| All two waves (7 and 8) | 197 | 93 |
| Missed one wave | 15 | 7 |
| **Type of interview** |  |  |
| Full interview in person | 206 | 97 |
| Full interview by proxy | 6 | 3 |
| Partial interview in person | 0 | 0 |
| Partial interview by proxy | 0 | 0 |
| Institutional interview in person | 0 | 0 |
| Institutional interview by proxy | 0 | 0 |
|  |  |  |
| *Unweighted N* | *212* | *100* |

Note: Core member respondents in 2018–19. Columns may not add up to 100% because of rounding.

## *Cohort 9*

Table 5.13 presents the breakdown of achieved interviews by sample type for Cohort 9, for which wave 9 was their first interview. A total of 1,248 interviews were conducted, and 899 of these were with core members.

Table 5.14 shows the type of wave 9 interview conducted with the 899 core members from Cohort 9. As wave 9 was the first wave of fieldwork for this cohort, no pattern of response across waves is shown. Ninety-six per cent of Cohort 9 core members interviewed at wave 9 were interviewed in person.

**Table 5.13. Respondents, by sample type: Cohort 9**

|  | Number of respondents |
|---|---|
| Core member[a] | 899 |
| Core partner[b] | 13 |
| Younger partner | 151 |
| Older partner | 164 |
| New partner | 21 |
|  |  |
| *Unweighted N* | *1248* |

Note: Respondents in 2018–19, including proxies.

[a] Born between 1 March 1962 and 28 February 1964.

[b] In wave 9, only people who took part in HSE and were interviewed at first opportunity on ELSA were classed as core members. Core partners in wave 9 are those who were age-eligible for ELSA but who either had not taken part in HSE or they were not interviewed on ELSA at their first opportunity.

**Table 5.14. Core member respondents, by situation in wave 9 (2018–19): Cohort 9**

|  | Number of respondents | % |
|---|---|---|
| **Type of interview** |  |  |
| Full interview in person | 865 | 96 |
| Full interview by proxy | 26 | 3 |
| Partial interview in person | 8 | 1 |
| Partial interview by proxy | 0 | 0 |
| Institutional interview in person | 0 | 0 |
| Institutional interview by proxy | 0 | 0 |
|  |  |  |
| *Unweighted N* | *899* | *100* |

Note: Core member respondents in 2018–19. Columns may not add up to 100% because of rounding.

# 5.7 Response rates

There is no universally accepted definition of 'response rate'. An important distinction exists between *field* and *study* response rates. Fieldwork response rates are based on the subset of individuals actually issued for interview at any particular wave. Study response rates for longitudinal surveys are broader in that they relate back to the originally selected sample, irrespective of whether eligible cases were issued to field at any particular wave.

Both field and study rates exclude cases not belonging to the target population through 'terminating events' which make a person ineligible for further participation. For ELSA sample members, these events include deaths and moves out of Great Britain. In what follows, we first cover fieldwork response rates and then present key study response rates. Respondents are defined as those who gave a full or partial interview, including institutional interviews, either in person or in proxy.

# Fieldwork response rates

Three fieldwork response rate measures, commonly used to evaluate the quality of fieldwork, are presented in this section for ELSA wave 9: household contact rates, individual cooperation rate, and individual response rate. In addition, for Cohorts 1, 3, 4, 6 and 7 where the issued sample at wave 9 consisted of a mixture of core members who were and who were not interviewed at the preceding round (wave 8), two additional figures are also presented, which provide the response rate separately for these two groups: individual re-interview rate (i.e., response rate among those interviewed at wave 8) and individual conversion rate (i.e., response rate among those not interviewed at wave 8) (Box 5.4).

All individual-level field response analysis is conducted among core members at wave 9. Core members in issued households who had previously asked no longer to be contacted again were not actively issued. However, they remain eligible so that, for instance, if they change their mind, they can still take part. The following field response rates include the handful of cases who completed an interview despite not having been actively issued.

### Box 5.4. Definition of fieldwork response rate measures

**Contact rate:** the proportion of attempted survey units where a contact was made. That is, in this section, the household contact rate gives the total wave 9 households where contact was made by an interviewer with at least one member of the sample, divided by total eligible households.

**Cooperation rate:** the proportion of eligible respondents who, having been contacted, agree to participate in a research study (as opposed to refusing or otherwise indicating inability to participate). That is, in this section, the individual cooperation rate gives the total individual wave 9 respondents, divided by the total (still eligible) individuals contacted by the interviewer. Non-contacts and those untraced are therefore also treated as ineligible in this response rate.

**Response rate:** the proportion of eligible survey units who participate in a research study. For ELSA, 'eligible' means not having been found to be ineligible through death or moving out of Great Britain. Those with outcomes indicating unknown/unconfirmed eligibility (e.g. non-contacts, untraced movers) are assumed to be eligible for the response rate calculation. That is, in this section, the individual response rate gives the total individual wave 9 respondents, divided by total individuals who have not been confirmed as ineligible for a wave 9 interview.

**Re-interview rate:** in a longitudinal survey, this gives an indication of the success in 'keeping' previously productive respondents in the study at the latest wave. In this section, the re-interview rate gives the proportion of issued ELSA cohort members interviewed at wave 8 who were also interviewed at wave 9.

**Conversion rate:** this gives an indication of how many respondents the interviewers succeeded in 'bringing back' to the study after a wave (or more) or non-response. In this section, the conversion rate gives the proportion of issued ELSA cohort members who were not interviewed at wave 8 but were interviewed at wave 9.

## Household contact rates

Table 5.15 summarises the household contact rates for the wave 9 issued sample overall and broken down by cohort.

Overall, looking at all cohorts together, 94.6% of the wave 9 issued and eligible households were contacted. Comparable levels of contact rates (around 95% to 98%) were found among all cohorts, with the somewhat expected exception of Cohort 9, for whom wave 9 was their first ELSA interview, and whose household contact rate is lower at 84.4%.

**Table 5.15. Household contact rate, by cohort**

|  | Number of households | % |
|---|---|---|
| Cohort 1 | 2,548 | 98.2 |
| Cohort 3 | 661 | 97.1 |
| Cohort 4 | 1,005 | 98.0 |
| Cohort 6 | 563 | 95.4 |
| Cohort 7 | 254 | 94.8 |
| Cohort 9 | 1,224 | 84.4 |
| All cohorts | 6,255 | 94.6 |
| *Unweighted N* | *6,611* | *100* |

Note: Core members contacted at wave 9.

## Individual cooperation rates

Table 5.16 shows the individual cooperation rates at wave 9, overall and by cohort.

Across all cohorts, the overall individual cooperation rate upon contact was 83.6%. The highest cooperation rates of between 86.1 and 88.7% were found among the three oldest cohorts, Cohorts 1, 3 and 4, with the cooperation rate among Cohort 6 and 7 core members somewhat lower at around 80%. As expected, since wave 9 was their first ELSA interview, the cooperation rate for Cohort 9 core members was the lowest at 66.5%.

**Table 5.16. Individual cooperation rate, by cohort**

|  | Number of respondents | % |
|---|---|---|
| Cohort 1 | 3,660 | 88.0 |
| Cohort 3 | 688 | 88.7 |
| Cohort 4 | 1,307 | 86.1 |
| Cohort 6 | 523 | 80.2 |
| Cohort 7 | 212 | 79.7 |
| Cohort 9 | 899 | 66.5 |
| All cohorts | 7,289 | 83.6 |
| *Unweighted N* | *8,721* | *100* |

Note: Core members contacted at wave 9.

### *Individual response rates*

Table 5.17 shows the response rates overall and by cohort. Across all cohorts, the individual response rate upon eligibility at wave 9 was 79.5%. The highest rates were again found among the three oldest cohorts, with response rates above 84% found among Cohorts 1, 3 and 4. Cohort 6 and Cohort 7 response rate was just above 75%. The lowest response rate, at 55.6%, was among Cohort 9; again, as with cooperation rates, this is expected due to wave 9 being the first ELSA interview for this cohort.

**Table 5.17. Individual response rate, by cohort**

|  | **Number of respondents** | **%** |
|---|---|---|
| Cohort 1 | 3,660 | 86.3 |
| Cohort 3 | 688 | 86.0 |
| Cohort 4 | 1,307 | 84.4 |
| Cohort 6 | 523 | 76.6 |
| Cohort 7 | 212 | 75.7 |
| Cohort 9 | 899 | 55.6 |
| All cohorts | 7,289 | 79.5 |
| *Unweighted N* | *9,172* | *100* |

Note: Core members eligible at wave 9.

### *Re-interview and conversion rates*

Response rates can also be looked at separately for those who were and those who were not productive at the preceding wave (wave 8), for a good indication of the ability of the interviewers to retain people in the study, and convert non-responders back to respondents.

As shown in Table 5.18 overall, around 9 in 10 issued sample members who took part in wave 8 responded again at wave 9: the overall individual re-interview rate at wave 9 across all cohorts was 91.2%. As we might expect, the highest continuing response levels were found among the longest-standing participants in Cohorts 1, 3 and 4, with re-interview rates around 90%. Core members in Cohorts 6 and 7, invited to participate for the fourth and third time respectively, had somewhat lower levels of continuing 'survey loyalty' with re-interview rates around 87%.

As for core members issued at wave 9 who were not interviewed at wave 8, around one in three were converted back to the study at wave 9 (Table 5.19). The overall conversion rate across Cohorts 1, 3, 4 and 6 was above 30%, reaching almost 40% for Cohort 3. Cohort 6 presented the lowest conversion rate among all cohorts, just above 21%, whilst Cohort 7 had a somewhat higher conversion rate at around 27% (Table 5.19).

**Table 5.18. Re-interview rate, by cohort**

| | Number of respondents | % |
|---|---|---|
| Cohort 1 | 3,509 | 92.3 |
| Cohort 3 | 655 | 92.1 |
| Cohort 4 | 1,260 | 90.1 |
| Cohort 6 | 501 | 87.0 |
| Cohort 7 | 197 | 87.2 |
| All cohorts | 6,122 | 91.2 |
| | | |
| *Unweighted N* | *6,712* | *100* |

Note: Core members productive at wave 8 and eligible at wave 9.

**Table 5.19. Conversion rate, by cohort**

| | Number of respondents | % |
|---|---|---|
| Cohort 1 | 131 | 36.2 |
| Cohort 3 | 33 | 39.8 |
| Cohort 4 | 42 | 32.3 |
| Cohort 6 | 22 | 21.4 |
| Cohort 7 | 15 | 27.8 |
| All cohorts | 243 | 33.2 |
| | | |
| *Unweighted N* | *732* | *100* |

Note: Core members unproductive at wave 8 and eligible at wave 9.

### Online Dietary Questionnaire

For the first time at wave 9, all those who completed an ELSA interview in person were invited, towards the end of the interview, to complete an Online Dietary Questionnaire in two randomly allocated (by CAPI) days in the week following their interview. Expressed as a proportion of all eligible, 61% of eligible people throughout fieldwork completed at least one diary day.

### Reasons for non-response by cohort

Tables 5.20–5.24 present the reasons for non-response at wave 9 for issued core members in Cohorts 1, 3, 4, 6 and 7 in turn.[4] A judgement of the impact of any differential non-response is reserved for Section 5.8 where bias is examined.

Across all cohorts, and as in previous waves, the largest component (ranging from 59% in Cohort 1 to 77% in Cohort 6) of field non-response within each of the cohorts was a result of refusals.

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[4] All core members had an interview at the first wave, but their pattern of response at subsequent waves differs amongst this group.

Other reasons for non-response, which include reasons such as ill health/away in hospital, are the most common among Cohort 1, accounting for around a third of non-response. This is not unexpected given that Cohort 1 includes the oldest sample members of all the cohorts, among whom an increasing number of age-related circumstantial reasons for not participating can be expected at each successive wave.

**Table 5.20. Reasons for non-response: core members in Cohort 1**

|  | **Frequency** | **%** |
| --- | --- | --- |
| Non-contact | 39 | 7 |
| Refusal | 309 | 59 |
| Moved – unable to trace | 39 | 7 |
| Other | 136 | 26 |
|  |  |  |
| *Unweighted N* | *523* | *100* |

Note: Eligible core members but non-respondents in 2018–19. Columns may not add up to 100% because of rounding.

**Table 5.21. Reasons for non-response: core members in Cohort 3**

|  | **Frequency** | **%** |
| --- | --- | --- |
| Non-contact | 9 | 8 |
| Refusal | 73 | 69 |
| Moved – unable to trace | 14 | 13 |
| Other | 10 | 9 |
|  |  |  |
| *Unweighted N* | *106* | 100 |

Note: Eligible core members but non-respondents in 2018–19. Columns may not add up to 100% because of rounding.

**Table 5.22. Reasons for non-response: core members in Cohort 4**

|  | **Frequency** | **%** |
| --- | --- | --- |
| Non-contact | 15 | 7 |
| Refusal | 161 | 71 |
| Moved – unable to trace | 13 | 6 |
| Other | 37 | 16 |
|  |  |  |
| *Unweighted N* | *226* | *100* |

Note: Eligible core members but non-respondents in 2018–19. Columns may not add up to 100% because of rounding.

**Table 5.23. Reasons for non-response: core members in Cohort 6**

|  | Frequency | % |
|---|---|---|
| Non-contact | 15 | 10 |
| Refusal | 121 | 78 |
| Moved – unable to trace | 14 | 9 |
| Other | 6 | 4 |
|  |  |  |
| *Unweighted N* | *156* | *100* |

Note: Eligible core members but non-respondents in 2018–19. Columns may not add up to 100% because of rounding.

**Table 5.24. Reasons for non-response: core members in Cohort 7**

|  | Frequency | % |
|---|---|---|
| Non-contact | 9 | 13 |
| Refusal | 50 | 73 |
| Moved – unable to trace | 5 | 7 |
| Other | 4 | 6 |
|  |  |  |
| *Unweighted N* | *68* | *100* |

Note: Eligible core members but non-respondents in 2018–19. Columns may not add up to 100% because of rounding.

## Study response rates

As with the field response rates, study response rates exclude cases not belonging to the target population through 'terminating events' such as deaths and moves out of Great Britain. In contrast to the field response rates, the base for the study response rates is all cohort members not known to be ineligible (dead or moved out of Great Britain),[5] while field response rates report rates of response among eligible respondents issued to the interviewer at the given wave.

Two key types of study response rates are presented here for each cohort (see Box 5.5): the cross-sectional wave 9 study response rates illustrating the wave 9 respondents as a proportion of eligible people in each cohort, and the longitudinal wave 9 study response rates illustrating the proportion of eligible respondents in each cohort who have taken part in every wave of ELSA since joining the study.

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[5] Particularly for the oldest cohorts, many respondents in the 'non-respond' category have not been issued to interviewers in the most recent wave(s) due to them having indicated to us previously that they would not wish to take part again. It is likely that some of these cohort members have, in fact, become ineligible since then through death or moving out of Great Britain, without us having been notified of this change in circumstances.

**Box 5.5. Definition of study response rate measures**

**(Cross-sectional) study response rate**

The 'study response rate' at a given wave of a longitudinal study is the proportion of the remaining eligible longitudinal cohort who were interviewed at that wave. The inclusion as a 'respondent' in this measure is not conditional upon response in any other earlier wave, i.e. the total number of respondents in wave 9 includes those who returned to the ELSA study at wave 9 after missing any of the prior waves. That is, in this section, the (cross-sectional) study response rate gives the total number of wave 9 respondents, divided by the total number of people still eligible (i.e. not confirmed as dead or moved outside of Great Britain) in a given cohort.

**Longitudinal study response rate**

'Longitudinal study response rate' is the proportion of a remaining eligible longitudinal cohort who have been interviewed at every wave of a study. That is, in this section, the longitudinal study response rate gives the total number of ELSA cohort members interviewed at each wave since they joined ELSA (including wave 9), divided by the total number of people still eligible (i.e. not confirmed as dead or moved outside of Great Britain) in a given cohort.

*(Cross-sectional) study response rates*

*Cohort 1*

A total of 11,391 original core members were interviewed at wave 1. Table 5.25 shows the status of these core members at wave 9.

The wave 9 cross-sectional study response rate reflects the proportion of still eligible core members from Cohort 1 with a wave 9 interview. A study response rate of 53.5% was achieved at wave 9.

**Table 5.25. Status of original Cohort 1 core members at wave 9**

|  | **Frequency** | **%** |
|---|---|---|
| Died | 4,423 | 39 |
| Moved out of Great Britain | 123 | 1 |
| Respond at wave 9 | 3,660 | 32 |
| Non-respond at wave 9 | 3,185 | 28 |
|  |  |  |
| *Unweighted N* | *11,391* | *100* |
| *Total C1CMs eligible at wave 9* | *6,845* | |
| *Total C1CMs ineligible at wave 6* | *4,546* | |
|  |  |  |
| ***Study response rate*** | ***3,660/6,845*** | ***53.5*** |

## Cohort 3

Wave 3 represents the baseline wave of ELSA for core members belonging to Cohort 3. A total of 1,275 Cohort 3 core members took part in wave 3. Table 5.26 shows the status of these core members at wave 9.

The wave 9 (cross-sectional) study response rate reflects the proportion of still eligible core members from Cohort 3 with a wave 9 interview. A study response rate of 58.2% was achieved for Cohort 3 core members at wave 9.

**Table 5.26. Status of original Cohort 3 core members at wave 9**

|  | **Frequency** | **%** |
|---|---|---|
| Died | 75 | 6 |
| Moved out of Great Britain | 18 | 1 |
| Respond at wave 9 | 688 | 54 |
| Non-respond at wave 9 | 494 | 39 |
|  |  |  |
| *Unweighted N* | *1,275* | *100* |
| *Total C3CMs eligible at wave 9* | *1,182* |  |
| *Total C3CMs ineligible at wave 9* | *93* |  |
|  |  |  |
| ***Study response rate*** | ***688/1,182*** | ***58.2*** |

## Cohort 4

Wave 4 represents the baseline wave for Cohort 4 core members. A total of 2,291 Cohort 4 core members took part in wave 4. Table 5.27 shows the status of these core members at wave 9.

The wave 9 (cross-sectional) study response rate reflects the proportion of still eligible core members from Cohort 4 with a wave 9 interview. A study response rate of 65.4% was achieved for Cohort 4 core members at wave 9.

**Table 5.27. Status of original Cohort 4 core members at wave 9**

|  | **Frequency** | **%** |
|---|---|---|
| Died | 265 | 12 |
| Moved out of Great Britain | 27 | 1 |
| Respond at wave 9 | 1,307 | 57 |
| Non-respond at wave 9 | 692 | 30 |
|  |  |  |
| *Unweighted N* | *2,291* | *100* |
| *Total C4CMs eligible at wave 9* | *1,999* |  |
| *Total C4CMs ineligible at wave 9* | *292* |  |
|  |  |  |
| ***Study response rate*** | ***1,307/1,999*** | ***65.4*** |

## *Cohort 6*

Wave 6 represents the baseline wave for Cohort 6 core members. A total of 825 Cohort 6 core members took part in wave 6. Table 5.28 shows the status of these core members at wave 9.

The wave 9 (cross-sectional) study response rate reflects the proportion of still eligible core members from Cohort 6 with a wave 9 interview. A study response rate of 64.8% was achieved for Cohort 6 core members at wave 9.

**Table 5.28. Status of original Cohort 6 core members at wave 9**

|  | **Frequency** | **%** |
|---|---|---|
| Died | 14 | 2 |
| Moved out of Great Britain | 4 | <1 |
| Respond at wave 9 | 523 | 63 |
| Non-respond at wave 9 | 284 | 34 |
|  |  |  |
| *Unweighted N* | *825* | *100* |
| *Total C6CMs eligible at wave 9* | *807* |  |
| *Total C6CMs ineligible at wave 9* | *18* |  |
|  |  |  |
| ***Study response rate*** | ***523/807*** | ***64.8*** |

## *Cohort 7*

Wave 7 represents the baseline wave for Cohort 7 core members. A total of 301 Cohort 7 core members took part in wave 7. Table 5.29 shows the status of these core members at wave 9.

The wave 9 (cross-sectional) study response rate reflects the proportion of still eligible core members from Cohort 7 with a wave 9 interview. A study response rate of 71.9% was achieved for Cohort 7 core members at wave 9.

**Table 5.29. Status of original Cohort 7 core members at wave 9**

|  | **Frequency** | **%** |
|---|---|---|
| Died | 4 | 1 |
| Moved out of Great Britain | 2 | 1 |
| Respond at wave 9 | 212 | 70 |
| Non-respond at wave 9 | 83 | 27 |
|  |  |  |
| *Unweighted N* | *301* | *100* |
| *Total C7CMs eligible at wave 9* | *295* |  |
| *Total C7CMs ineligible at wave 9* | *6* |  |
|  |  |  |
| ***Study response rate*** | ***212/295*** | ***71.9*** |

### *Longitudinal study response rates*

The longitudinal response rates show the core members that have been interviewed at every wave of the study (as presented in Tables 5.4, 5.6, 5.8 and 5.10) as a proportion of those that are still eligible (as presented in Tables 5.25–5.29). This is the 'constant sample' of respondents available for longitudinal analysis. The longitudinal study response rate for core members at wave 9 was 44.5% for Cohort 1, 48.1 for Cohort 3, 58.5% for Cohort 4, 60% for Cohort 6, and 66.8% for Cohort 7 (Table 5.30).

**Table 5.30. Longitudinal wave 9 study response rate, by cohort**

|  | Interviewed all waves/eligible | % of eligible |
|---|---|---|
| Cohort 1 | 3,048/6,845 | 44.5 |
| Cohort 3 | 568/1,182 | 48.1 |
| Cohort 4 | 1,169/1,999 | 58.5 |
| Cohort 6 | 484/807 | 60.0 |
| Cohort 7 | 197/295 | 66.8 |
| | | |
| *Unweighted N* | *11,128* | *100* |

Note: Core members eligible at wave 9

# 5.8 Profile of main interview respondents at wave 9

This section presents profiles of wave 9 respondents in terms of age and gender broken down by cohort. The tables exclude core members living in an institution at wave 9.

## Cohort 1

The profile of core member respondents belonging to Cohort 1 (born on or before 29 February 1952) is presented in Table 5.31; this includes respondents who took part in all nine waves plus some who returned to wave 9 after missing waves 2, 3, 4, 5 6, 7 or 8.[6] The distribution shows that the sample contains more women than men.

Table 5.32 is based on Cohort 1 core members who took part in all waves (waves 1–8) and shows their main interview response at wave 9. Amongst those who were still eligible at wave 9 (i.e. had not died or moved out of Great Britain), the propensity to participate at wave 9 decreased with age for both men and women.

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[6] Interviewers are not asked to follow up sample members who have repeatedly refused, or if comments recorded at their last visit suggest it would be unwise to return.

**Table 5.31. Achieved sample of core members: Cohort 1, by age in 2018–19 and by gender**

|  | Men | Women | Total | Men | Women | Total |
|---|---|---|---|---|---|---|
|  |  |  |  | % | % | % |
| **Age in wave 9** |  |  |  |  |  |  |
| 65–69 | 298 | 376 | 674 | 19 | 18 | 19 |
| 70–74 | 496 | 624 | 1120 | 32 | 30 | 31 |
| 75–79 | 311 | 392 | 703 | 20 | 19 | 19 |
| 80–84 | 253 | 368 | 621 | 16 | 18 | 17 |
| 85 and over | 197 | 296 | 493 | 13 | 14 | 14 |
|  |  |  |  |  |  |  |
| *Unweighted N* | *1,555* | *2,056* | *3,611* | *43* | *57* | *100* |

Note: Respondents in 2018–19, including proxies but excluding those in institutions. Columns may not add up to 100% because of rounding.

**Table 5.32. Wave 9 (2018–19) main interview response for core members: Cohort 1, who took part in waves 1–8, by age in 2002–03 and by gender**

|  | 50–59 | 60–74 | 75+ | All |
|---|---|---|---|---|
|  | % | % | % | % |
| **Men** |  |  |  |  |
| Respondents | 93 | 86 | 63 | 89 |
| Non-respondents | 7 | 14 | 37 | 11 |
| **Women** |  |  |  |  |
| Respondents | 93 | 87 | 67 | 89 |
| Non-respondents | 7 | 13 | 33 | 11 |
| **All** |  |  |  |  |
| Respondents | 93 | 87 | 65 | 89 |
| Non-respondents | 7 | 13 | 35 | 11 |
| *Unweighted N* | *1784* | *1,491* | *145* | *3,420* |
| *Men* | *799* | *625* | *48* | *1,472* |
| *Women* | *985* | *866* | *97* | *1,948* |

Note: Eligible core members in 2018–19 who took part in waves 1–8. Columns may not add up to 100% because of rounding.

## Cohort 3

The profile of the core member respondents belonging to Cohort 3 is presented in Table 5.33. As with Cohort 1, the achieved sample of Cohort 3 core members at wave 9 contains more women than men. The age distribution of the Cohort 3 core member sample is not evenly distributed across the ages represented, with fewer sample members being in the youngest and oldest age category.

**Table 5.33. Achieved sample of core members: Cohort 3, by age in 2018–19 and by gender**

| | Men | Women | Total | Men % | Women % | Total % |
|---|---|---|---|---|---|---|
| **Age in wave 9** | | | | | | |
| 62 | 22 | 24 | 46 | 7 | 6 | 7 |
| 63 | 89 | 125 | 214 | 28 | 33 | 31 |
| 64 | 104 | 102 | 206 | 33 | 27 | 30 |
| 65 | 77 | 97 | 174 | 25 | 26 | 25 |
| 66 | 21 | 26 | 47 | 7 | 7 | 7 |
| | | | | | | |
| *Unweighted N* | *313* | *374* | *687* | *46* | *54* | *100* |

Note: Respondents in 2018–19, including proxies but excluding those in institutions. Columns may not add up to 100% because of rounding.

## Cohort 4

The profile of the core member respondents belonging to Cohort 4 is presented in Table 5.34. As with other cohorts, the achieved sample at wave 9 includes more women than men.

**Table 5.34. Achieved sample of core members: Cohort 4, by age in 2018–19 and by gender**

| | Men | Women | Total | Men % | Women % | Total % |
|---|---|---|---|---|---|---|
| **Age in wave 9** | | | | | | |
| 60–64 | 90 | 122 | 212 | 15 | 17 | 16 |
| 65–69 | 169 | 232 | 401 | 29 | 32 | 31 |
| 70–74 | 130 | 164 | 294 | 22 | 23 | 22 |
| 75–79 | 113 | 110 | 223 | 19 | 15 | 17 |
| 80 and over | 80 | 94 | 174 | 14 | 13 | 13 |
| | | | | | | |
| *Unweighted N* | *582* | *722* | *1,304* | *45* | *55* | *100* |

Note: Respondents in 2018–19, including proxies but excluding those in institutions. Columns may not add up to 100% because of rounding.

## Cohort 6

The profile of the core member respondents belonging to Cohort 6 is presented in Table 5.35. As with other cohorts, the achieved sample at wave 9 includes more women than men.

**Table 5.35. Achieved sample of core members: Cohort 6, by age in 2018–19 and by gender**

| | Men | Women | Total | Men % | Women % | Total % |
|---|---|---|---|---|---|---|
| **Age in wave 9** | | | | | | |
| 56 | 7 | 10 | 17 | 3 | 3 | 3 |
| 57 | 37 | 57 | 94 | 17 | 19 | 18 |
| 58 | 39 | 52 | 91 | 18 | 17 | 17 |
| 59 | 36 | 37 | 73 | 16 | 12 | 14 |
| 60 | 42 | 57 | 99 | 19 | 19 | 19 |
| 61 | 28 | 46 | 74 | 13 | 15 | 14 |
| 62 | 33 | 41 | 74 | 15 | 14 | 14 |
| 63 | 0 | 1 | 1 | 0 | <1 | <1 |
| | | | | | | |
| *Unweighted N* | *222* | *301* | *523* | *42* | *58* | *100* |

Note: Respondents in 2018–19, including proxies. Columns may not add up to 100% because of rounding.

## Cohort 7

The profile of the core member respondents belonging to Cohort 7 is presented in Table 5.36. Again, the achieved sample at wave 9 includes a greater number of women than men.

**Table 5.36. Achieved sample of core members: Cohort 7, by age in 2018–19 and by gender**

| | Men | Women | Total | Men % | Women % | Total % |
|---|---|---|---|---|---|---|
| **Age in wave 9** | | | | | | |
| 54 | 7 | 11 | 18 | 7 | 9 | 8 |
| 55 | 49 | 55 | 104 | 51 | 47 | 49 |
| 56 | 39 | 48 | 87 | 41 | 41 | 41 |
| 57 | 0 | 3 | 3 | 0 | 3 | 1 |
| | | | | | | |
| *Unweighted N* | *95* | *117* | *212* | *45* | *55* | *100* |

Note: Respondents in 2018–19, including proxies. Columns may not add up to 100% because of rounding.

## Profile of proxy respondents

Proxy interviews were carried out if an ELSA panel member could not be interviewed in person because of a physical or cognitive impairment, if they were away in hospital or temporary care, or if they had refused a personal interview but were happy for a proxy to answer for them. Not including institutional interviews, a total of 260 proxy interviews were carried out at wave 9 with core members across all cohorts. Of these, 156 were with Cohort 1 members. Table 5.37 shows the proxy sample in 2018–19 for Cohort 1 core members, by age and gender. There were slightly more proxy interviews for men in the sample than for women (52% and 48% respectively).

**Table 5.37. Proxy interview sample: Cohort 1, by age in 2018–19 and by gender**

|  | Men | Women | Total | Men % | Women % | Total % |
|---|---|---|---|---|---|---|
| **Age in wave 9** |  |  |  |  |  |  |
| 65–69 | 8 | 11 | 19 | 10 | 15 | 12 |
| 70–74 | 22 | 15 | 37 | 27 | 20 | 24 |
| 75–79 | 20 | 11 | 31 | 25 | 15 | 20 |
| 80–84 | 23 | 13 | 36 | 28 | 17 | 23 |
| 85 and over | 8 | 25 | 33 | 10 | 33 | 21 |
|  |  |  |  |  |  |  |
| *Unweighted N* | *81* | *75* | *156* | *52* | *48* | *100* |

Note: Core members requiring a proxy in 2018–19, excluding those in institutions.

## Profile of nurse interview respondents

In total, 3,069 nurse visits were completed at wave 9. ELSA core members were eligible for the nurse visit if they had completed an ELSA wave 9 main interview in person (and not by proxy) and marked as being part of the subsample eligible for a wave 9 nurse visit. A small number of nurse visits were completed by non-eligible core members at the nurses' discretion, in households where another core member was being visited by a nurse. Similarly, although not strictly eligible, a small number of partners were allowed a nurse visit in cases where it was believed it would facilitate their future participation in the study.

In total, at wave 9, 3,047 nurse visits were carried out with core members, and 22 were carried out with partners. The overall response rate to the nurse visit among core members marked eligible for a nurse visit and who completed a wave 9 in-person interview was 84%.

The age–gender profile of this group of nurse visit respondents (eligible and also completed an in-person interview) is shown in Table 5.38 and achieved nurse visits by age are shown in Table 5.39.

**Table 5.38. Achieved nurse visits with core members from all cohorts, in 2018–19, by age and gender**

| | Men | Women | Total | Men | Women | Total |
|---|---|---|---|---|---|---|
| **Age in wave 9** | | | | % | % | % |
| 50–54 | 298 | 413 | 711 | 23 | 24 | 23 |
| 55–59 | 91 | 108 | 199 | 7 | 6 | 6 |
| 60–64 | 96 | 122 | 218 | 7 | 7 | 7 |
| 65–69 | 245 | 365 | 610 | 19 | 21 | 20 |
| 70–74 | 252 | 318 | 570 | 19 | 18 | 19 |
| 75–79 | 169 | 175 | 344 | 13 | 10 | 11 |
| 80–84 | 120 | 158 | 278 | 9 | 9 | 9 |
| 85+ | 39 | 75 | 114 | 3 | 4 | 4 |
| *Unweighted N* | *1,310* | *1,734* | *3,044[7]* | *43* | *57* | *100* |

**Table 5.39. Achieved nurse visits with core members from all cohorts as a proportion of wave 9 interviews (2018–19) by age**

| Age in wave 9 | Productive wave 9 interview (excluding proxies) | Productive wave 9 nurse visit | % of wave 9 interviews resulting in a nurse visit |
|---|---|---|---|
| 50–54 | 884 | 711 | 80 |
| 55–59 | 230 | 199 | 86 |
| 60–64 | 274 | 218 | 80 |
| 65–69 | 697 | 610 | 87 |
| 70–74 | 662 | 570 | 86 |
| 75–79 | 410 | 344 | 84 |
| 80–84 | 332 | 278 | 84 |
| 85+ | 151 | 114 | 75 |
| *Unweighted N* | *3,640* | *3,044[7]* | *84* |

A number of reasons were given for not taking part in the nurse visit. The main reason was refusal (see Table 5.40). Of those that were eligible but did not take part, 12.6% were because the nurse was unable to contact the household. This may reflect some people's circumstances, but in other cases this could be interpreted as an implicit refusal despite the fact that consent had been given to be visited by the nurse at the end of the main interview. Other reasons for non-response include being too ill or away at the time period available to complete the nurse visit.

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[7] This table excludes the small number of core members (3) who completed a wave 9 nurse visit despite not being actively issued.

**Table 5.40. Reasons for non-response to nurse visit for core members from all cohorts**

| Reason for non-response | Frequency | % |
|---|---|---|
| Non-contact | 20 | 12.6 |
| Refusal | 106 | 66.7 |
| Other | 33 | 20.8 |
| *Unweighted N* | *159* | *100* |

Note: Core members eligible for a nurse visit who responded to wave 9 interview in person, but had no nurse visit.

# 5.9  Implications for analyses: weighting

This section describes the weighting strategies used to create the wave 9 weights: the adjustments made for non-response and the process of combining Cohorts 1, 3, 4, 6 and 7. The longitudinal weights are covered first, followed by the cross-sectional weights, the nurse and blood weights and finally the self-completion weights.

## Longitudinal weights (wave 1 base)

A longitudinal weight was created for the 2,959 Cohort 1 core members who responded to all nine waves of ELSA and have remained living in private households. The purpose of the weight is to make those receiving it as representative as possible of all people who:

- were aged 50+ and living in England in 2002 (when wave 1 was conducted);
- remain living in private households.

These respondents are now aged 66 and over.

For the 3,222 Cohort 1 core members who were eligible for the main interview in wave 9 and responded at all previous waves, response to wave 9 was modelled using logistic regression analysis on a range of household- and individual-level information collected at wave 8 (supplemented by information taken from waves 1–7). The analysis was conducted using the wave 8 longitudinal weight (to ensure that the wave 9 weight did not replicate the adjustments made by the wave 8 weight).

The results showed significant differences between respondents and non-respondents on the following characteristics (after controlling for age (at wave 1) by gender and region which were also included in the final model):

- housing tenure;
- self-reported general health

Taking the inverse of the estimated probability of response (from the logistic regression model) created a non-response weight for wave 9. This was then trimmed at the 99th percentile and multiplied by the wave 8 longitudinal weight (scaled to an average of 1 afterwards) to produce the wave 9 longitudinal weight.

The sequential nature of the weighting means that we have adjusted for non-response to HSE and each of the eight waves of ELSA.

## Longitudinal weights (wave 4 base)

A longitudinal weight was created at wave 9 for all core members from Cohorts 1, 3 and 4 who were eligible for the main interview in wave 9, and who responded to all of waves 4–9. The purpose of the weight is to make those receiving it as representative as possible of all people who:

- were aged 50+ and living in England in 2008 (when wave 4 was conducted);
- remain living in private households.

These respondents are now aged 60 and over.

There were 4,848 such core members with 3,116 coming from Cohort 1, 567 from Cohort 3 and 1165 from Cohort 4. This weight will provide a larger base for longitudinal analyses which utilise data from any subset of waves 4–9 (and do not include waves 1–3).

For the 5,297 core members from Cohorts 1, 3 and 4 who were eligible for the main interview in wave 9 and responded at all of waves 4–8, response to wave 9 was modelled using logistic regression analysis on a range of household- and individual-level information collected at wave 8 (supplemented by information taken from waves 1–7). Separate models were created for each cohort (1, 3 and 4); however, for consistency (and parsimony), characteristics that were predictive of response for any one of the three cohorts were included in all three models.

The analysis was conducted using the wave 8 longitudinal weight (wave 4 base) constructed after wave 8; this weight was based on a sequence of non-response models which adjust for non-response since wave 4.

The results showed significant differences between respondents and non-respondents on the following characteristics (after controlling for age/gender and region, which were also included in the final model):

- marital status;
- housing tenure;
- self-reported health status;
- number of people in household;
- National Statistics Socio-economic Classification (NS-SEC).

Taking the inverse of the estimated probability of response (from the logistic regression model) created a non-response weight for wave 9. This was then trimmed at the 99th percentile and multiplied by the wave 8 longitudinal weight (wave 4 base), afterwards scaled to have an average of 1 to produce the final wave 9 longitudinal weight (wave 4 base). The sequential nature of the weighting means that we have adjusted for non-response to HSE and each of the eight waves of ELSA.

## Cross-sectional weights

A cross-sectional weight was created for analysis of the full set of core members responding at wave 9. This allows for the inclusion of core members from

Cohorts 3, 4, 6, 7, and 9 including 'wave non-responders' (core members from Cohorts 1, 3, 4, and 6 who returned to the study at wave 8 after missing one or more previous waves). The aim of the cross-sectional weight is to make the sample representative of people living in private households in England (in 2018). Those living in Scotland or Wales therefore receive a zero cross-sectional weight.

Core members from Cohorts 1, 3, 4, 6, and 7 who responded at wave 9 can be described as the *combined sample*. For weighting purposes, this combined sample was split into two main groups by age (at interview): those aged 67+ and those aged 50–66. The cross-sectional weight was calculated using the following steps:

1. A non-response weight was derived for Cohort 3 core members who had responded to all of waves 3–9. This involved analysis of those who had responded to all previous waves (3–8) to adjust for non-response at wave 9.

2. A non-response weight was derived for Cohort 4 core members who had responded to all of waves 4–9. This involved analysis of those who had responded to all previous waves (4–8) to adjust for non-response at wave 9.

3. A non-response weight was derived for Cohort 6 core members who had responded to all of waves 6–9. This involved analysis of those who had responded to waves 6–8 to adjust for non-response at wave 9.

4. A non-response weight was derived for Cohort 7 core members who had responded to all of waves 7–9. This involved analysis of those who had responded to waves 7 and 8 to adjust for non-response at wave 9.

5. A non-response weight was derived for Cohort 9 core members to adjust for non-response at wave 9.

6. Population estimates (of highest educational qualification, tenure, ethnicity and marital status) for those aged 67+ (at wave 9 interview)[8] were derived from the longitudinal groups, i.e. Cohort 1 core members responding to all nine waves of ELSA and Cohort 4 core members aged 67+ responding to all waves since wave 4.

7. The non-response weights for <u>all</u> core members aged 67+ at wave 9 (i.e. the two groups mentioned above in point 6 *plus* wave non-responders from both cohorts) were then calibrated to these population estimates plus estimates of age/gender and region from 2018 household population estimates.

8. The non-response weights for all core members aged 50–66 (at wave 9) were calibrated to 2018 population estimates of age/gender and region.

9. Finally, the calibration weights from steps 7 and 8 above were combined and scaled so that the average weight was equal to 1.

These steps are discussed in turn. A more detailed description is provided in the wave 9 technical report.

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[8] The Methods chapter in the main report incorrectly stated that the cut-off was 64 and that age was defined here as at 1 March 2016. In fact, the cut-off age was 65 and age was based on age at wave 8 interview.

### Non-response weights for Cohort 3

For the 559 Cohort 3 core members eligible for the main interview in wave 9 who responded to (all of) waves 3–8 (and remaining in private households in England), response to wave 9 was modelled on a range of household- and individual-level information collected at wave 8. The analysis was conducted using the non-response weight derived at wave 8 to ensure that the wave 9 weight did not replicate any adjustment made by the wave 8 weight.

The results showed significant differences between respondents and non-respondents on the following characteristics (after controlling for gender and region which were also included in the model):

- highest educational qualification;
- marital status.

Taking the inverse of the estimated probability of response created a non-response weight to adjust for non-response bias between waves 8 and 9 for a total of 524 respondents.

### Non-response weights for Cohort 4

For the 1,320 Cohort 4 core members[9] eligible for the main interview in wave 9 who responded to all waves 4–8 (and remaining in private households in England), response to wave 9 was modelled on a range of household- and individual-level information collected at wave 8. The analysis was conducted using the non-response weight derived in wave 8 to ensure that the wave 9 weight did not replicate any adjustment made by the wave 8 weight.

The results showed significant differences between respondents and non-respondents on the following characteristics (after controlling for age/gender and region which were also included in the final model):

- whether they have a long-term limiting illness;
- number of people in household;
- NS-SEC.

Taking the inverse of the estimated probability of response created a non-response weight to adjust for non-response bias between waves 8 and 9 for a total of 1,206 respondents.

### Non-response weights for Cohort 6

For the 552 Cohort 6 core members eligible for the main interview in wave 9 (and remaining in private households in England), response to wave 9 was modelled on a range of household- and individual-level information collected at wave 8. The analysis was conducted using the non-response weight derived in wave 8 to ensure that the wave 9 weight did not replicate any adjustment made by the wave 8 weight.

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[9] A small number of these were Cohort 3 core members who were not issued until wave 4. As described elsewhere in this report, such cases are considered to be part of Cohort 4.

*Methodology*

The results showed significant differences between respondents and non-respondents on the following characteristics (after controlling for age/gender and region which were also included in the final model):

- self-reported health status;
- whether covered by private health insurance.

Taking the inverse of the estimated probability of response created a non-response weight to adjust for non-response bias between waves 8 and 9 for a total of 484 respondents.

### Non-response weights for Cohort 7

For the 226 Cohort 7 core members eligible for the main interview in wave 9 (and remaining in private households in England) response to wave 9 was modelled on a range of household- and individual-level information collected at wave 8. The analysis was conducted using the non-response weight derived in wave 8 to ensure that the wave 9 weights did not replicate any adjustment made by the wave 8 weight.

The results showed significant differences between respondents and non-respondents for gender and region only.

Taking the inverse of the estimated probability of response created a non-response weight for the 197 respondents to adjust for non-response bias between waves 8 and 9.

### Non-response weights for Cohort 9

A cohort of people born between 1 March 1964 and 29 February 1968 was added to the ELSA sample at wave 9. They were selected from the HSE 2013, 2014 and 2015 and are collectively referred to as Cohort 9.

Their response to wave 9 was modelled on a range of household- and individual-level information collected from HSE, using the HSE personal level weight as input. The results showed significant differences between respondents and non-respondents on the following characteristics (after controlling for gender which was also included in the model):

- housing tenure;
- self-reported health status;
- highest educational qualification;
- whether they have a long-term limiting illness.

Taking the inverse of the estimated probability of response created a non-response weight[10] for the 899 respondents to adjust for potential non-response bias between HSE and ELSA.

### Cross-sectional weights for those aged 67+

Core members aged 67+ responding at wave 9 belonged to one of three groups:

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[10] Note, this was multiplied by HSE weight.

1) Cohort 1 core members who had taken part in all nine waves of ELSA;[11]

2) Cohort 4 core members who had taken part in (all of) waves 4–9;

3) Wave non-responders, i.e. core members from Cohorts 1 and 4 who had returned to the study at wave 9 after missing one or more previous waves.[12]

At wave 3, it was found that the following socio-demographic variables were predictive of wave non-response when compared with response to all waves:

- housing tenure;
- white/non-white ethnicity;
- highest educational qualifications;
- marital status.

To create a representative sample of persons aged 67+, it was necessary to ensure, as far as possible, that the characteristics of the combined sample (of all three groups) matched those of the population. The first two groups already had weights to adjust for non-response at wave 9, previous waves of ELSA and HSE:

- wave 9 longitudinal weight (2,916 Cohort 1 core members);
- Cohort 4 non-response weight (750 Cohort 4 core members).

Combining these groups therefore provided a basis from which to estimate the population characteristics of those aged 67+.

Before these estimates could be derived, two adjustments were necessary:

i) the weights of those aged 67–84 (who come from Cohorts 1 and 4) were scaled down so that this group were in the correct proportion as compared with those aged 85 and over (who come from Cohort 1 only);

ii) these weights were then calibrated to mid-2018 household population estimates of age/gender and region.

Estimates of housing tenure, white/non-white ethnicity, highest educational qualification and marital status were then derived from the combined groups weighted by the resulting weights (the same characteristics were used as in waves 3–8 for consistency).

The non-response weights for *all* core members aged 67+ at wave 9 (i.e. the two groups already combined plus the third group of wave non-responders) were then adjusted using calibration weighting so that the resulting weights, when applied to the three groups combined, provide a sample profile that matches the population estimates on the four socio-demographic characteristics plus estimates of age/gender and region of those aged 67+ (from mid-2018 household population estimates; see Table 5.41).

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[11] A small number of these respondents had moved to Scotland or Wales and were therefore given a zero cross-sectional weight.

[12] A small number of respondents from each group had moved to Scotland or Wales and were therefore given a zero cross-sectional weight.

**Table 5.41. Household population estimates**

| Age | Men | Women | Total | Men | Women | Total |
|---|---|---|---|---|---|---|
| 50-53 | 1,546,988 | 1,588,775 | 3,135,763 | 15.7 | 14.6 | 14.6 |
| 54-57 | 1,480,667 | 1,519,084 | 2,999,751 | 15.1 | 14.0 | 14.0 |
| 58-61 | 1,296,961 | 1,336,192 | 2,633,153 | 13.2 | 12.3 | 12.3 |
| 62–66 | 1,410,200 | 1,479,011 | 2,889,211 | 14.3 | 13.6 | 13.6 |
| 67–71 | 1,427,183 | 1,533,488 | 2,960,671 | 14.5 | 14.1 | 14.1 |
| 72–76 | 1,082,689 | 1,204,035 | 2,286,724 | 11.0 | 11.1 | 11.1 |
| 77–81 | 759,197 | 910,720 | 1,669,917 | 7.7 | 8.4 | 8.4 |
| 82-86 | 500,183 | 678,455 | 1,178,638 | 5.1 | 6.2 | 6.2 |
| 87+ | 332,617 | 625,962 | 958,579 | 3.4 | 5.8 | 5.8 |
| Total | 9,836,685 | 10,875,722 | 20,712,407 | 100 | 100 | 100 |

Note: Mid-2018 England household population (aged 50 and over).

Source: Calculated from the Office for National Statistics (ONS), Annual Mid-Year Population Estimates for England and Wales, 2018[13]

### Cross-sectional weights for those aged 50–66

Responding core members aged 50–66 at wave 9 came from all cohorts.[14] They were combined, and their non-response weights were adjusted using calibration weighting so that the resulting weights provide a sample profile that matches population estimates of age/gender and region (from mid-2018 household population estimates; see Table 5.41) for those aged 50–66.

The pre-calibration weights were as follows:

- Core members who responded to all waves to which they were invited were given their respective cohort non-response weight (the derivations of which were described above).
- wave non-responders from Cohorts 1, 3, 4, 6 and 7 were given the cross-sectional weight from the last wave in which they took part, e.g. anyone who missed wave 8 but took part in wave 7 was given the cross-sectional weight from wave 7.

Use of these weights ensured that appropriate non-response adjustments had been made to each group prior to calibration.

### Putting the cross-sectional weights together

The final step in the calculation of the cross-sectional weights was to take the calibrated weights from the two groups (50–66 and 67+) combined and to scale them so that they are in the correct proportion in the final weighted sample. The final weights were then scaled so that the average weight was equal to 1.

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[13] ELSA is weighted to the household population in England, excluding those in institutions. As the ONS no longer produces household population estimates, these are calculated by adjusting the latest ONS mid-year residential population estimates. The adjustment is based on the ratio between the (2011) census residential and household population figures for each age and gender grouping within each region.

[14] A small number of these respondents had moved to Scotland or Wales and were therefore given a zero cross-sectional weight.

The profile of the combined core member respondents, weighted by the cross-sectional weight, is presented in Table 5.42.

**Table 5.42. Achieved (combined) sample of core members, by age at wave 9 interview and by gender**

| Age at wave 9 interview | Men | Women | Total | Men | Women | Total |
|---|---|---|---|---|---|---|
| | | | | % | % | % |
| 50-53 | 538 | 552 | 1090 | 15.7 | 14.6 | 15.1 |
| 54-57 | 515 | 528 | 1043 | 15.1 | 14.0 | 14.5 |
| 58-61 | 451 | 464 | 915 | 13.2 | 12.3 | 12.7 |
| 62–66 | 490 | 514 | 1004 | 14.3 | 13.6 | 13.9 |
| 67–71 | 496 | 533 | 1029 | 14.5 | 14.1 | 14.3 |
| 72–76 | 376 | 419 | 795 | 11.0 | 11.1 | 11.0 |
| 77–81 | 264 | 317 | 580 | 7.7 | 8.4 | 8.1 |
| 82-86 | 174 | 236 | 410 | 5.1 | 6.2 | 5.7 |
| 87+ | 116 | 218 | 333 | 3.4 | 5.8 | 4.6 |
| *Weighted N* | 3,419 | 3,781 | 7,200 | 100 | 100 | 100 |
| *Unweighted N* | 3,122 | 4,078 | 7,200 | 100 | 100 | 100 |

Note: Respondents to wave 9, including proxies but excluding those in institutions. Columns may not add up to 100% because of rounding.

## Self-completion weights

For the 7,200 core members living in private households in England who completed a full or partial wave 9 main interview, response to the main self-completion questionnaire was modelled on a range of household- and individual-level information collected from the ELSA wave 9 main interview. The weighting strategy aimed to minimise any bias arising from differential non-response to each self-completion questionnaire. The analyses were conducted on data weighted by the wave 9 cross-sectional weight.

The results showed significant differences between (core member) respondents to the self-completion questionnaire and non-respondents on a number of characteristics:

- age by gender;
- region;
- IMD quintile
- highest educational qualification;
- white/non-white ethnicity;
- housing tenure;
- self-reported general health;
- whether they have a long-term limiting illness;
- number of people in household;
- whether they have children (and whether they live with them);
- current work/activity status;
- whether they had help with showcards.

A non-response weight for the 6,356 respondents to the self-completion questionnaire was created by taking the inverse of the estimated probability of

response. The final self-completion weight was a product of this non-response weight and the wave 9 cross-sectional weight (scaled so that the average weight was equal to 1).

## Nurse weights

Unlike in previous waves where all core members responding to the main interview were eligible for a nurse visit in that wave, across wave 8 and wave 9, two mutually exclusive subsets of members were pre-selected (prior to fieldwork): one to be offered a nurse visit at wave 8 and the other to be offered a nurse visit at wave 9.

The selection was carried out in two stages. The first stage, prior to wave 8 fieldwork, used purposive sampling (within cohort) and prioritised those who had responded to all previous nurse visits from Cohorts 1–6 to be issued for a nurse visit at wave 8.[15] The remaining cohort members were flagged for a nurse visit at wave 9, thus ensuring that all cohort members were eligible for a nurse visit in wave 8 or wave 9, conditional on completing the mainstage interview at the wave to which they were eligible for a visit. All respondents from Cohort 9 were flagged as eligible for a nurse visit in wave 9.

This change in the sampling approach for nurse visits had several implications:

- Cohort 7, the youngest of the wave 8 respondents, could not receive a nurse visit until wave 9.
- The two Cohort 1–6 subsamples were selected on the basis of their response pattern to previous nurse visits which are likely to be correlated with other factors beyond the usual weighting variables used in the standard nurse weighting procedure; this and the absence of Cohort 7 from the subgroup eligible for a wave 8 nurse visit renders any 'separate' analysis of the wave 8 and wave 9 nurse visits subject to an unknown degree of bias on key outcome measures.
- An approach therefore needed to combine the bases for those receiving a nurse visit in wave 8 and wave 9, ensuring that core members receiving a nurse visit in either wave were included, whilst weighting to minimise bias due to non-response to the nursing visit.
- The task had additional complexity because of the two-year gap between the waves, as well as by the mismatched base between wave 8 to wave 9 mainstage: members of Cohorts 1–6 allocated for a wave 9 nurse visit prior to wave 8 fieldwork may not have completed mainstage wave 9, whereas others in Cohorts 1–6 may have been allocated and completed a nurse visit at wave 9, but skipped wave 8.
- Analysis of the combined wave 8 and 9 nurse visits data set requires that the appropriate wave's mainstage and nurse visit variables (e.g. age) are combined into the one set of variables for analysis, conditional on in which wave the nurse visit was completed.

Note that, for practical reasons, in wave 8 a nurse weight was created treating those respondents who were not selected for a nurse visit in wave 8 as non-

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[15] Cohort 7 was excluded from this first group (presumably) on the basis that the non-response patterns across waves was unknown for this group which had only completed one prior wave

respondents. This means that the weighted sample remains unbiased with respect to the measures used to construct the weight. However, the risk of bias with respect to other unmeasured characteristics is somewhat higher than it would have been had everyone been given a chance to respond. This weight covered the 3,471 core members completing a nurse visit at wave 8.

Following wave 9, a more robust approach was adopted, leading to a weight covering the full combined base of the wave 8 and wave 9 nurse visits. Recombining the participating members of Cohorts 1–6 ensured that any bias resulting from the initial split of this group by past response pattern was minimised in the new approach. The new combined base of 6,493 for wave 8 and wave 9 nurse visits replaces the base of 3,471 wave 8 nurse visits described in the last paragraph and covers participation of all cohorts from 1 to 9.

The process had a greater level of complexity than the approach adopted in previous waves, involving combining and recoding data from across different cohorts and waves, as well as a multi-stage non-response modelling process. A more detailed description is provided in the wave 9 technical report.

## Blood weights

For the 6,493 core members living in private households in England who responded to the nurse visit, response to the blood sample was modelled on a range of household- and individual-level information collected from the ELSA wave 8 and 9 main interviews. The weighting strategy aimed to minimise any bias arising from differential non-response and non-random selection process. The analysis was conducted on data weighted by the wave 8 and 9 nurse weight.

The results showed significant differences on a number of characteristics between (core member) respondents who provided a useable blood sample and those who did not and/or were not selected to receive one:

- age by gender;
- region;
- IMD quintile;
- highest educational qualifications;
- housing tenure;
- marital status;
- white/non-white ethnicity;
- self-reported general health;
- whether they have a long-term limiting illness;
- whether they have children (and whether they live with them);
- current work/activity status;
- level of participation in mild physical activity;
- level of participation in moderate physical activity;
- level of participation in vigorous physical activity;
- self-assessed eyesight condition.

A non-response weight for the 4,347 respondents who provided a useable blood sample was created by taking the inverse of the estimated probability of response. The final blood weight was a product of this non-response weight and the wave 8 and 9 nurse weight (scaled so that the average weight was equal to 1).

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# 5.10 Conclusions

This chapter aimed to provide an overview of the survey methodology for ELSA wave 9. The main topics included sample design, interview content, field and study response rates, and weighting of the data.

The format of the ELSA interview itself has remained relatively unchanged over time, with interviews every two years and nurse visits every four years. However, as aforementioned, at wave 8 and wave 9 two mutually exclusive subsets of members were pre-selected (prior to fieldwork): one to be offered a nurse visit at wave 8 and the other to be offered a nurse visit at wave 9. Over the waves, ELSA interviewers have consistently worked hard to maintain the panel of ELSA sample members. At wave 9, field household contact rates of around 95% were achieved for all five existing ELSA cohorts, with Cohorts 1, 3 and 4 achieving around 98%.

The prior experiences of sample members within each cohort need to be considered when interpreting response rates at wave 9. For Cohort 1 members, this was the ninth ELSA interview they had been asked to do. Cohort 3 members joined ELSA at wave 3 (so wave 9 represented their seventh wave of ELSA interviewing), for Cohort 4 members, wave 9 was their sixth interview, for Cohort 6 members, it was their fourth interview, and for Cohort 7 their third one. Levels of non-response do tend to accumulate over time as further waves of interviewing are conducted and, as expected, highest study response rates were found at wave 9 amongst those existing members who joined ELSA most recently (Cohort 7). For example, the study response rate among core members still believed to be eligible at wave 9 were 53.5% for Cohort 1, 58.2% for Cohort 3, 65.4% for Cohort 4, 64.8% for Cohort 6 and 71.9% for Cohort 7. In contrast, the field response rates, among cases issued to interviewers, tend to be the highest among the most established cohorts, as compared with those who have joined ELSA more recently. It was therefore important to present the field and particularly study response rates separately for each cohort rather than just producing combined rates.

Of all wave 9 interviews, 46.2% were with those belonging to Cohort 1 and 41.9% were with Cohort 1 core members. Original core members from wave 1 are still found to be highly committed to the study. Their fieldwork response rate showed that 86.3% of those issued to field (and still found to be eligible) had a wave 9 interview. The Cohort 1 individual re-interview rate at wave 9 among those also interviewed at the previous wave was 92.3%. There is a wealth of data accumulating for this group, with 44.5% of still eligible Cohort 1 core members having been interviewed at every wave (the longitudinal study response rate).

Cohort 3 sample members made up 10.8% of the total achieved sample at wave 9 and Cohort 3 core members made up 7.9% of the achieved sample at wave 9. Their introduction to ELSA at wave 3 was to 'refresh' the younger age group and to help ensure the study remained representative of all those aged 50 and over. The individual fieldwork response rate and re-interview rates for Cohort 3 core members (86.0% and 92.1% respectively) were at levels similar to Cohort 1. Of eligible Cohort 3 members who took part in an initial interview at wave 3, 48.1% have taken part in every wave since they joined the study.

Cohort 4 accounts for 17% of achieved interviews at wave 9 (and core members from Cohort 4 account for 15% of the achieved interviews) covering core members aged 60–85 at wave 9. This cohort had a comparable fieldwork response and re-interview rates to Cohorts 1 and 3 (84.4% and 90.1% respectively). Of the eligible Cohort 4 members who took part in an initial interview at wave 4, 58.5% have taken part in every wave since they joined the study.

Cohort 6 accounts for 8.3% of the achieved interviews at wave 9 (core members from Cohort 6 account for 6% of the achieved interviews). This cohort was introduced to refresh the younger end of the sample. For this less established cohort, at its fourth wave of contact, the fieldwork response and re-interview rates (76.6% and 87% respectively) were somewhat lower than that of the oldest cohorts. In terms of longitudinal study response rates, of eligible Cohort 6 members who took part in an initial interview at wave 6, 60% also took part in an interview at waves 7, 8 and 9.

Cohort 7 was introduced at wave 7 and accounts for 3.6% of the achieved interviews at wave 9 (with core members from Cohort 7 accounting for 2.4% of the achieved interviews). As with Cohort 6, this cohort was introduced to refresh the younger end of the sample. The individual fieldwork response rate among issued Cohort 7 core members was 75.7%, whilst the re-interview rate was 87.2%, i.e. they were at similar levels to Cohort 6. Expressed in terms of study response rates, 66.8% of the still eligible original Cohort 7 core members who joined in wave 7 took part again in waves 8 and 9.

Finally, Cohort 9, for whom wave 9 was their first ELSA interview, accounts for 14.3% of the achieved interviews at wave 9. As with other cohorts, this cohort was introduced to refresh the younger end of the sample. The individual fieldwork response rate among issued Cohort 9 core members was 55.6%.

For all the cohorts, refusals made up the biggest component of non-response at wave 9.

The response rates in this chapter provide useful indicators of the success of panel maintenance. However, it was also important to investigate the impact of any differential non-response (i.e. whether those with certain characteristics were more likely to respond than others). The section on weighting highlights how we attempt to minimise any bias arising from sample loss after each wave. Key characteristics of non-respondents and respondents are presented, and a summary is given of how the longitudinal and cross-sectional weights at wave 9 were constructed. It also covers the process of combining Cohorts 1, 3, 4, 6, and 7 to facilitate cross-sectional analysis of all core members at wave 9. Of particular note is the different approach taken for creating the nurse and blood weights for wave 8 and wave 9.

Over time, the information about differential non-response can help inform fieldwork practices to maximise participation by those groups most at risk of attrition, as well as strategies for sample refreshment to further help keep the ELSA sample representative of the 50+ population in England.

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# E. Economics domain tables

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## Introduction

E.1     This chapter presents selected data tables from the Economics domain of the English Longitudinal Study of Ageing (ELSA). The tables are split into two main sections. The first section presents cross-sectional data from wave 9 of ELSA, which took place from July 2018 to July 2019. The second section presents results that make use of the longitudinal aspect of the ELSA data.

E.2     Both main sections are further divided into three subsections, each containing information on income, pensions, wealth and other measures of resources, and labour market participation.

E.3     The variables included in each table have been selected to provide a broad picture of the data available from the Economics domain of ELSA. A glossary of the measures is provided in the annex to this chapter.

E.4     The unit of observation in all tables is the individual. All cross-sectional tables are based on the cross-section of ELSA sample members aged 50 and over in each wave of data.

E.5     In this report, all longitudinal tables are based on individuals who have responded in all of waves 4–9 unless otherwise specified. Tables containing all individuals who have responded in all waves since wave 1 will be made available on the ELSA website but are not included in this report because the cohort of wave 1 sample members is getting increasingly smaller – particularly those who were in older age groups at wave 1. Wave 4 is the first wave where the full age range was refreshed, which is the reason for choosing this as our baseline wave.

E.6     All numbers are based on weighted data. Both unweighted and weighted frequencies (*N*) are reported. For cross-sectional analyses, cross-sectional weights are used. For longitudinal analyses, appropriate longitudinal weights are used. All values are expressed in January 2019 prices using the Consumer Prices Index including mortgage interest payments, ground rent and dwelling insurance.[1]

## Cross-sectional tables

### Income

E.7     Table E1a shows mean *unequivalised* net weekly family income by age and family type. As with all tables in this report, the unit of observation is the individual but each individual is assigned the income level of their family (where a family is defined

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[1]https://www.ons.gov.uk/economy/inflationandpriceindices/adhocs/11357consumerpriceindicesseriese
xcludingrentsmaintenancerepairsandwaterchargesfortheperiodjanuary1996todecember2019

as a couple or a single person and any children aged under 18 they may have). Table E1b shows mean *equivalised* net weekly family income by age and gender.

E.8    Equivalising income is one way to compare income across different family types. A couple will need more income than a single person to be equally well off, but because of economies of scale involved with sharing, they will not need twice as much income to be as well off. Although equivalising is useful in making comparisons across different family types, the process of equivalising means that assumptions have to be made about the extent of economies of scale and there are many different equivalence scales that could be used. For this reason, Table E1a shows numbers that are unequivalised so that it is possible to see the actual level of income unadjusted for household size.

E.9    The unequivalised numbers in Table E1a are grouped into family types so that comparisons can be made across age groups *within* household types. Tables E1a and E1b look at mean total income and also aggregate income into some broad components: employment income, self-employment income, private pension income, state pension income, state benefit income, asset income and other income. Table E1b groups individuals into groups defined by age and gender.

E.10    Looking at all family types, Table E1a reveals that mean net unequivalised income is £631.72 per week. Converting all values to an equivalent adult basis, Table E1b reveals that mean net equivalised income is £427.84 per week. At younger ages, employment income is the biggest component of total income, whereas at older ages private and state pension income become much more important.

E.11    Tables E2a and E2b look at the distribution of total net weekly family income. In a similar way to Tables E1a and E1b, Table E2a looks at the distribution of total *unequivalised* income by age and family type and Table E2b looks at the distribution of total *equivalised* income by age and gender. The first column of numbers reports the mean income level and the remaining columns report various percentile points including the median level.

## Pensions, wealth, and other measures of resources

E.12    Income is just one way to measure financial resources and, particularly in the older population, other resources may be important. This section looks at financial wealth, household spending, private pension membership and a measure of adequacy of financial resources in the future.

E.13    Table E3 looks at average (mean and median) wealth by age and family type. Total net (non-pension) wealth is reported along with some broad components of wealth: net financial wealth, net physical wealth (including secondary housing) and net primary housing wealth. Table E4 looks at the mean of total (non-pension) wealth along with various percentile points by age and family type. Primary housing wealth makes up the largest component of total (non-pension) wealth for all groups. There is a large amount of dispersion in the total wealth distribution. Looking at single women aged 60–64, for example, Table E4 reveals that 25% of this group have total wealth of £1900 or less, while 25% have £348,000 or more. The wealth distribution is much more unequal than the total income distribution. The ratio of the 75th percentile to the 25th percentile of income for all individuals (Table E2b) is 2.1, meaning that the 75th percentile is 2.1 times larger than the 25th percentile. In contrast, the ratio of the 75th percentile to the 25th percentile of total wealth for all individuals (Table E4) is 4.7.

E.14    Tables E5a and E5b look at private pension membership (pensions from all non-state sources). Private pension wealth can be an important potential source of resources for the older population and private pension membership is a useful proxy for private pension wealth. Table E5a looks at private pension membership by age and gender for all workers and non-workers below the state pension age (SPA) and Table E5b reports similar numbers for workers only. The first column of numbers in Tables E5a and E5b report the percentage of individuals who are members of a private pension scheme. The next three columns of numbers break this figure down into those who are currently contributing to a private pension scheme, those who are receiving income from a private pension scheme and those who have retained rights in a private pension scheme. Because individuals can have multiple pensions at different stages of contribution, receiving income and retaining rights, the second, third and fourth columns of numbers do not sum to the total percentage of individuals who are members of a private pension scheme. The numbers show, for example, that 81% of men (workers and non-workers) aged 50–SPA are currently a member of at least one private pension scheme. Breaking that down further, the numbers show that 58% of men aged 50–SPA are currently contributing to at least one private pension scheme, 19% are receiving an income from at least one private pension scheme and 36% have retained rights in at least one private pension scheme.

E.15    The next measure of resources that we report is household spending. Household spending may be a more useful indication of the level of resources available for a household because consumption tends to be smoothed across time. A retired household may have low income but may be drawing down assets in order to fund its consumption. Table E6 looks at the level of spending on some very broad types of goods and services by age and family type. Note that there are some large outliers in the level of spending on transfers outside the home, which, combined with relatively small sample sizes, push up the level of the mean in some groups so any patterns in transfer expenditure should be interpreted with caution.

E.16    Current resources give us a useful picture of economic well-being, but respondents may be aware of other issues that might determine how well off they feel or how well off they expect to be in the future. For example, a respondent may have health issues that might affect their future expected resources; or they may be expecting to help in the care of elderly parents, which again might reduce their future expected resources. Using the expectations question methodology (see definitions in the annex to this chapter), respondents are asked to report the chances that they will, at some point in the future, have insufficient resources to meet their needs, where a higher number indicates a higher chance of having insufficient resources. The results are reported by age, gender and income group in Table E7. Because expectations are asked on an individual basis, we split couples into 'partnered men' and 'partnered women' so that we can look at differences between men and women in couples. On average, across the whole age range, partnered women and men have similar expectations but there are differences between age groups with younger partnered women being less pessimistic than younger partnered men and older partnered women (below age 80) being more pessimistic. This is despite partnered women and partnered men having access to the same resources. Single women and single men share similar expectations on average but again there are differences between age groups with older women being more pessimistic on average than their male counterparts. Older women may have good reason to expect to have insufficient resources given that they have lower incomes on average, as Table E1a shows.

## Labour market participation

E.17    The tables in this section look at different aspects of labour market participation. Table E8 looks at the percentage of respondents working full-time, part-time and either full- or part-time by age, gender and wealth group. We restrict our sample to those aged 74 or below.

E.18    Using the expectations question methodology (see definitions), Table E9 reports the mean chances of working at future ages. The age that respondents are asked to consider when thinking about their chances of working depends on their current age. The first column of numbers shows the 'target age' for each age group; men and women aged 50–59 are asked about the chances of working at age 60, while men and women aged 60–64 are asked about the chances of working at age 65. The second column of numbers reports the mean chances within each age and gender group. The five columns on the right-hand side report the mean chances within each age, gender and wealth group.

E.19    Health is an important factor in an individual's ability to work. Respondents are asked whether they have a health problem that limits the kind or amount of work they can do. If respondents are currently working and they report that they do have a health problem that limits the kind or amount of work they can do, they are asked a follow-up question about whether this health problem limits the kind or amount of work they can do in their current job. The results in Table E10a (men) and E10b (women) combine the information from these two questions. The first column of numbers shows the percentages of individuals (by age, gender and wealth group) who do not report that they have a limiting health problem and the second column of numbers shows the percentage who do. The next three columns of numbers further break down the group with a health limitation into those who have a limiting health problem but are not currently working, those who have a limiting health problem that does not limit them in their current job and those who have a limiting health problem that does limit them in their current job.

E.20    For example, 25% of men aged 60–64 have a health problem that limits the kind or amount of work they can do. This 25% can be further broken down into 16% who are not working, 3% who are working but whose health problem does not limit them in their current job and 6% who are working and whose health problem does limit them in their current job. The numbers in Table E10a and E10b also reveal a stark difference between the lowest and highest wealth groups. Looking at all men aged 50–64, the table shows that of the 44% of men in the lowest wealth group who have a limiting health problem, only 23% ((3%+7%)/44%) are in work. This contrasts with the highest wealth group, where a much lower proportion have a limiting health problem (10%) and, of those who do, 40% ((1%+3%)/10%) are in work. A similar pattern is found for women.

E.21    As well as current health problems, respondents' expectations about the effect of their health on their ability to work in the future may be an important factor in their decision making. Table E11 reports the mean chances that health will limit respondents' ability to work at age 65 by age, gender and wealth group, where a higher number indicates a higher chance that health will limit the respondent's ability to work. This information was collected using the expectations questions methodology (see definitions) for workers aged below 65 only.

# Longitudinal tables

## Income

E.22    Cross-sectional tables using a series of data from different time periods combine the effect of age, time and differential mortality. For example, looking at cross-sectional data on income over time, it would not be possible to isolate the effect of age on income because we cannot strip out the effect of time or differential mortality (i.e. the observation that higher-income individuals tend to live longer than lower-income individuals). Because longitudinal data follow the same individuals over time, by selecting a sample of individuals who are interviewed in every wave we can eliminate the effect of differential mortality.

E.23    Table EL1a takes the set of individuals who have responded in every wave from waves 4 to 9 and tracks average total family income by age, gender and family type in 2008–09 (the 'baseline' year) across time (waves). Tables EL1b–EL1e are identical in structure to Table EL1a but look at the broad components of income instead of total income. 'Earnings' is the sum of employment income and self-employment income. Note that family type may change over time as couples form or dissolve, but an individual is defined in terms of their couple status at baseline. Although income is measured at the family level, because family structure may change we look separately at partnered men and partnered women. Partnered women are more likely to see a change in their family structure due to widowhood.

E.24    Tables EL2a–EL2e are similar to Tables EL1a–EL1e but track income by age and education. Education can be a useful proxy for social status or permanent income.

E.25    Table EL3 looks at a measure of inequality. The measure chosen is the interquartile ratio, which is defined as the size of the 75th percentile of income relative to the 25th percentile of income (p75/p25). An interquartile ratio of 2.00 would mean that the 75th percentile point was twice as large as the 25th percentile point of income. A larger number implies a more dispersed distribution of income and higher inequality. In general, Table EL3 shows declining inequality over time for this balanced panel.

## Pensions, wealth and other measures of resources

E.26    Tables E5a and E5b in the cross-sectional tables look at private pension membership. However, private pension membership at a particular point in time is only part of the story. It is the amount that individuals accumulate in that pension fund that determines its value. As individuals move into or out of employment or their circumstances change, their pension contributions may vary. Table EL4a shows how persistently individuals contribute to their private pensions. The table takes the groups of men and women who are below the SPA at baseline and reports the percentage of men and women who never contribute to a private pension in any of the waves in which they are below the SPA (taking into account the changes to SPA that came into effect over the period), the percentage who contribute in some waves in which they are below the SPA and the percentage who contribute in all waves in which they are below the SPA. For example, a man aged 60 at baseline would be observed to be below the SPA at waves 5 and 6 (he would be 62 and 64, respectively) but above the SPA in wave 7 (he would be 66). If this individual were observed to be contributing to a private pension in waves 4 and 5 but not in wave 7 (when he is above the SPA), then he would be counted as 'always' contributing to a private pension. The reason for doing this is to reduce the extent to which not contributing to a private pension is due to leaving the

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labour market. The table is based on individuals who are aged below the SPA at baseline and who are employed or self-employed at baseline, and the proportions are reported by age, gender and (baseline) wealth group.

E.27    Table EL4a shows that a rather low proportion of men contribute to a private pension in all waves in which they are aged below the SPA. Amongst all men aged 50–64 at baseline, only 30.2% always contribute. Amongst women aged 50–59 at baseline, 36.1% always contribute. To reduce the effect that leaving the labour market has on pension contributions, we have not included years in which the individual is above the SPA when calculating how many waves an individual has contributed to a private pension. However, it is still the case that some of the dynamics of pension contributions may be due to exits out of the labour market before the SPA. So, for example, although a man aged 60 at baseline may have a full contribution history, if he retires at age 62 and therefore stops contributing to his pension, he will be counted in Table EL4a as only 'sometimes' contributing to a private pension.

E.28    Table EL4b shows an alternative way of looking at the persistency of making private pension contributions that attempts to eliminate employment dynamics as an explanation for private pension contribution dynamics. This table is calculated on a similar basis to Table EL4a except that only those individuals who are in work (employed or self-employed) in all waves in which they are below the SPA are included. This means that if an individual is observed not contributing, it is not simply due to the fact that they have left employment or self-employment. Table EL4b shows that even conditioning on being in work in all waves, the proportion who contribute to a private pension in every wave is rather low (45.5% for men aged 50–64 and 49.5% for women aged 50–59).

E.29    An alternative way to assess how well off individuals are is to ask them directly how well they are managing financially. Respondents in ELSA are asked which phrase best describes how they (and their partner) are getting along financially. The question is asked once per family and the response categories are 'manage very well', 'manage quite well', 'get by alright', 'don't manage very well', 'have some financial difficulties' and 'have severe financial difficulties'. Looking at the first three columns of data in Table EL5, anyone who puts themselves into any of the bottom three categories ('don't manage very well', 'have some financial difficulties', 'have severe financial difficulties') is defined as 'Reports having financial difficulty'. These columns report the percentage of single men, single women and couples who never report having financial difficulty, the percentage who sometimes report having financial difficulty and the percentage who report having financial difficulty in every wave (4–9). For example, 79.6% of single men did not report having financial difficulty in any of the seven waves, 16.7% sometimes reported having financial difficulties and none reported having financial difficulty in every wave.

E.30    The numbers in columns five to seven of Table EL5 use the same financial difficulties question but, instead of looking at families who report financial difficulties, they look at how many people report that they are managing very well (those putting themselves into the highest category). Again, the columns report the percentage of single men, single women and couples who never report that they manage very well, the percentage who sometimes report that they manage very well and the percentage who report that they manage very well in every wave (4–9). For example, 10.6% of single men reported in every wave that they manage very well, 56.4% sometimes reported managing very well and 33.1% never reported that they manage very well.

E.31    Tables EL6a, EL6b and EL6c look at another measure of well-being and resources. In wave 2 onwards, respondents were asked whether having too little money stops them from doing  any of the following things: buying your first choice of food items, having your family and friends round for a drink or meal, having an outfit to wear for social or family occasions, keeping your home in a reasonable state of decoration, replacing or repairing broken electrical goods, paying for fares or other transport costs to get to or from places you want to go, buying presents for friends or family once a year, taking the sorts of holidays you want, and treating yourself from time to time. An index of material deprivation can be created by counting the number of items that respondents report that they cannot afford.

E.32    The question is asked once per individual, which means that even if members of a couple have access to the same financial resources, they may feel differently about whether they have too little money. For this reason, we split couples into 'partnered men' and 'partnered women', so any potential differences between men and women can be seen.

E.33    Tables EL6a–EL6c look at the persistence of reporting having too little money to do three or more items on the list described above. The numbers show the percentage of men or women who never report three or more items on the list (in waves 4–9), the percentage who report three or more items on the list in some waves (at least one wave but not all of waves 4–9) and the percentage who report three or more items on the list in every wave (waves 4–9). Table EL6a looks at the percentages by education for single men, single women, partnered men and partnered women aged 50–SPA at baseline. Table EL6b is similar but shows the percentages for those aged SPA–74 and Table EL6c shows the percentages for those aged 75 or above.

## Labour market participation

E.34    Tables EL7a and EL7b show labour market participation by wealth group and age for men and women, respectively. The first column of numbers reports the percentage of the baseline (wave 4) longitudinal sample aged 50–74 who are employed (or self-employed) full- or part-time. The next five columns take the sample of individuals employed at baseline and report the percentage of those individuals who are employed in waves 5–9. By definition, 100% of the samples are employed in wave 4, but as we move further through time the percentage employed in each of the subsequent waves falls. For example, of the group of men who were aged 50–54 and in work in 2008–09 (wave 4), 65.6% are still in work approximately ten years later (wave 9).

E.35    Table EL8 also looks at labour market participation but it considers transitions back into the labour market. The first column of numbers reports the percentage of individuals who are not in employment at baseline (2008–09). The next five columns take the sample of people out of employment at baseline and report the percentage in employment at subsequent waves (by definition, 0% are employed in wave 4).

E.36    Tables EL9a and EL9b look at the persistency of health limiting an individual's ability to work, by wealth group and age. Respondents are asked whether they have a health problem that limits the kind or amount of work that they can do. As well as looking at the percentage of men (Table EL9a) and women (Table EL9b) who never report a limiting health problem and the percentage who always report a limiting health problem in waves 4–9, the tables also split those who sometimes report a limiting health problem into two distinct groups. The first is a 'transitory' group, for which we define a transitory limiting health problem as one that comes and goes throughout the five-

wave period (a period spanning ten years). For example, if an individual reported that they had a limiting health problem in waves 4, 6 and 7, we would define that as transitory. We define a limiting health problem as 'onset' if an individual starts the five-wave period without a limiting health problem but then reports a limiting health problem at some point during the period and reports it in all subsequent waves. For instance, an individual who reported a limiting health problem in waves 7, 8 and 9 would be classed as having an 'onset' limiting health problem.

E.37    For example, Table EL9a shows that 65.7% of men aged 50–74 never had a limiting health problem in waves 4–9 and only 0.9% had a limiting health problem in every wave (waves 4–9). The second column of numbers in the table shows that 27.0% of men aged 50–74 sometimes had a limiting health problem that came and went over the six-wave period. The third column shows that 6.4% of men aged 50–74 sometimes had a limiting health problem but, unlike the group whose problem came and went, this group experienced the onset of the limiting health problem at some time in the six-wave period and it was not subsequently observed to go away during that time.

# Annex AE. Definitions

AE.1  *Asset income*: Net income from any financial savings or investments (current and deposit accounts, ISAs, premium bonds, National Savings, shares, trusts, bonds, other savings income not covered elsewhere) and any rental income from property (second homes, farm or business property) expressed in January 2019 prices.

AE.2  *Balanced panel*: The set of individuals who are interviewed in all waves of interest.

AE.3  *Baseline*: The wave of data that is chosen to be the starting point for characteristics in longitudinal analysis that may change over time.

AE.4  *Earnings*: The sum of employment income and self-employment income.

AE.5  *Education*: Low education is defined as leaving full-time education at or before compulsory school-leaving age. Medium education is defined as leaving full-time education after compulsory school-leaving age and before age 19. High education is defined as leaving full-time education at age 19 or above.

AE.6  *Employment income*: Net income from main and subsidiary jobs expressed in January 2019 prices.

AE.7  *Equivalisation*: Equivalising is a way of adjusting household resources to take account of different household sizes and the economies of scale involved in living with additional people in a household. An equivalence scale estimates how much expenditure or income different household types need to be equivalently well off, and it enables comparisons to be made across different family or household types. The equivalence scale used is the OECD scale, in which a single person with no children is taken as the benchmark. Secondary adults contribute 0.5 to the scale, meaning that a couple needs 50% more income than a single person in order to be assessed as equally well off. Children aged 13 and below contribute 0.3 to the scale and older children contribute 0.5. To convert the numbers to the equivalent amount that a childless couple spends, numbers should be multiplied by 1.5. Income is equivalised using a family-level equivalence scale and expenditure is equivalised using a household-level equivalence scale. Wealth is not equivalised. This is because there is no single accepted way to equivalise wealth. It is also not clear that it is sensible to equivalise wealth because the point at which wealth is used to fund consumption is likely to be in the future, when family composition may have changed compared with the current situation.

AE.8  *Expectations questions methodology*: ELSA includes a number of questions that ask respondents about their expectations of future events. Respondents are asked to report the chances from 0 to 100 that an event will happen in the future, where a higher number indicates a higher chance.

AE.9  *Family*: A couple or a single person and any children aged below 18 they may have who are living at home.

AE.10 *Income group*: To form income groups, we order all ELSA sample members according to the value of their total equivalised family income and divide the sample into five equal-sized groups. Where analysis is carried out using all ELSA sample members, the groups are equal in size and can be referred to as quintiles. Much of the analysis in this chapter is carried out using subsamples of the ELSA population. Where

analysis does not use the whole ELSA sample, the groups are unequal in size and are more accurately referred to as 'income groups'. For consistency reasons, we use the term 'income group' rather than 'income quintile' throughout the chapter. The cut-off points for the income groups are shown in the following table, reported in January 2019 prices and rounded to the nearest £10.

|  | **Income group definition, wave 4 (2008–08)** | **Income group definition, wave 9 (2018–19)** |
| --- | --- | --- |
| Lowest | Less than £190 | Less than £230 |
| 2nd | Between £190 and £280 | Between £230 and £310 |
| 3rd | Between £280 and £390 | Between £310 and £420 |
| 4th | Between £390 and £550 | Between £420 and £580 |
| Highest | More than £550 | More than £580 |

AE.11 *Net financial wealth*: Net financial wealth is reported at the family level and is defined as savings (interest-bearing current and deposit accounts, cash ISAs) plus investments (premium bonds, National Savings, shares, trusts, bonds, the saving element of life insurance, shares ISAs and life insurance ISAs) but not including pensions or housing and minus debt (outstanding balances on credit cards, loans, mail-order and other private debt but not including mortgages). Expressed in January 2019 prices.

AE.12 *Net housing wealth*: Net housing wealth is reported at the family level and is defined as the self-reported current value of primary housing (i.e. residential housing) less any debt outstanding on that house. Expressed in January 2019 prices.

AE.13 *Net physical wealth*: Net physical wealth is reported at the family level and is defined as wealth held in second homes, farm or business property, other business wealth, other land and other assets, such as jewellery, works of art or antiques. Expressed in January 2019 prices.

AE.14 *Other income*: Net income coming from individuals outside the household such as maintenance payments. Expressed in January 2019 prices.

AE.15 *Private pension income*: Net income from private pensions and annuities (from all non-state sources) expressed in January 2019 prices.

AE.16 *Self-employment income*: Net income from self-employment. This is defined as profit (converted to a weekly equivalent) for self-employed individuals who keep accounts or income from self-employment for those who do not keep accounts. Self-employment income can be negative if those keeping accounts make a loss. Expressed in January 2019 prices.

AE.17 *State benefit income*: Income from the following state benefits: incapacity benefit, employment and support allowance (wave 5 onwards), severe disablement allowance, statutory sick pay, attendance allowance, disability living allowance, industrial injuries allowance, war pensions, invalid care allowance (wave 1), carer's

allowance (wave 2 onwards), disabled person's tax credit (wave 1), universal credit (wave 7 onwards), income support, pension credit (wave 2 onwards), working families' tax credit (wave 1), working tax credit (wave 2 onwards), jobseeker's allowance, guardian's allowance, widow's pension, child benefit and child tax credit (wave 2 onwards). State benefit income does not include housing benefit or council tax benefit. Expressed in January 2019 prices.

AE.18 *State pension age*: Various changes to the SPA have been phased in and further changes have been announced or planned. Calculation of SPA in this report incorporates these changes. This means that for women and men, SPA varies according to date of birth. For the tables in this report, women and men aged up to and including age 65 can be below SPA. Further details can be found in a government document showing timetables for the SPA.[2]

AE.19 *State pension income*: Net income from state pensions (basic state pension, State Earnings-Related Pension Scheme/state second pension) expressed in January 2019 prices.

AE.20 *Total (family) income*: Total income is defined net of taxes and is the sum of employment income (including income from self-employment), private pension income, state pension income, other state benefit income (excluding housing benefit and council tax benefit), asset income and any other income. Total income is summed across family members (where a family is defined as a couple or a single person and any children aged below 18 they may have who are living at home) to obtain family income. Expressed in January 2019 prices.

AE.21 *Total non-pension wealth*: Total non-pension wealth is reported at the family level and is defined as the sum of net financial wealth, net physical wealth and net housing wealth. Expressed in January 2019 prices.

AE.22 *Wealth group*: To form wealth groups, we order all ELSA sample members according to the value of their total (non-pension) family wealth and divide the sample into five equal-sized groups. Where analysis is carried out using all ELSA sample members, the groups are equal in size and can be referred to as quintiles. Much of the analysis in this chapter is carried out using subsamples of the ELSA population. Where analysis does not use the whole ELSA sample, the groups are unequal in size and are more accurately referred to as 'wealth groups'. For consistency reasons, we use the term 'wealth group' rather than 'wealth quintile' throughout the chapter. The cut-off points for the wealth groups are shown in the following table, reported in January 2019 prices and rounded to the nearest £1,000.

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[2]https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/310231/spa-timetable.pdf.

|  | **Wealth group definition, wave 4 (2008–09)** | **Wealth group definition, wave 9 (2018–19)** |
|---|---|---|
| Lowest | Less than £66k | Less than £72k |
| 2nd | Between £66k and £208k | Between £72k and £220k |
| 3rd | Between £208k and £315k | Between £220k and £376k |
| 4th | Between £315k and £514k | Between £376k and £646k |
| Highest | More than £514k | More than £646k |

**AE.23** *Notes to all tables*

The unit of observation in all tables is the individual.

All cross-sectional tables are based on the cross-section of ELSA sample members in each wave of data. This includes refreshment sample members.

All longitudinal tables are based on individuals who have responded in all of waves 4–8 unless otherwise specified.

All numbers are based on weighted data. Both unweighted and weighted frequencies (*N*) are reported.

Results based on an unweighted sample size of less than 50 respondents are reported in parentheses. Results based on an unweighted sample size of less than 30 respondents are suppressed.

For cross-sectional analyses, cross-sectional weights are used. For longitudinal analyses, longitudinal weights are used.

Values are converted to January 2019 prices using the Consumer Prices Index including mortgage interest payments, ground rent and dwelling insurance.

The fieldwork dates are shown in the following table.

|  | **Fieldwork dates (inclusive)** |
|---|---|
| Wave 1 | March 2002–March 2003 |
| Wave 2 | June 2004–June 2005 |
| Wave 3 | May 2006–August 2007 |
| Wave 4 | June 2008–July 2009 |
| Wave 5 | July 2010–June 2011 |
| Wave 6 | May 2012–May 2013 |
| Wave 7 | June 2014–May 2015 |
| Wave 8 | May 2016–June 2017 |
| Wave 9 | July 2018–July 2019 |

**Table E1a. Mean unequivalised net weekly family income (£), by age and family type: wave 9**

| | Employ-ment income | Self-emp. income | Private pension income | State pension income | State benefit income | Asset income | Other income | Total income | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Single men** | **118.19** | **30.17** | **84.97** | **74.62** | **37.36** | **32.77** | **2.38** | **380.46** | *828* | *756* |
| 50–54 | 251.88 | 56.90 | 3.63 | 0.00 | 48.84 | 20.55 | 5.25 | 387.05 | *188* | *102* |
| 55–59 | 265.72 | 40.48 | 50.08 | 0.00 | 36.73 | 68.45 | 3.92 | 465.38 | *122* | *54* |
| 60–64 | 104.12 | 31.46 | 80.81 | 0.00 | 64.01 | 22.31 | 3.25 | 305.96 | *138* | *97* |
| 65–69 | 32.50 | 34.43 | 109.31 | 150.62 | 27.42 | 23.07 | 0.30 | 377.64 | *92* | *104* |
| 70–74 | 6.45 | 10.24 | 144.06 | 159.65 | 19.12 | 41.42 | 0.00 | 380.93 | *93* | *126* |
| 75–79 | 0.54 | 9.15 | 136.77 | 166.71 | 17.33 | 29.97 | 0.00 | 360.46 | *68* | *101* |
| 80+ | 0.35 | 2.01 | 154.96 | 171.86 | 23.20 | 30.01 | 0.19 | 382.59 | *126* | *172* |
| | | | | | | | | | | |
| **Single women** | **86.08** | **13.19** | **64.63** | **93.27** | **40.62** | **19.28** | **6.21** | **323.28** | *1,426* | *1,642* |
| 50–54 | 265.68 | 33.50 | 6.36 | 0.00 | 61.22 | 15.85 | 11.43 | 394.04 | *222* | *160* |
| 55–59 | 184.61 | 36.14 | 32.04 | 0.00 | 44.76 | 10.70 | 2.46 | 310.71 | *166* | *88* |
| 60–64 | 127.75 | 17.48 | 54.81 | 1.23 | 73.32 | 11.67 | 1.96 | 288.22 | *192* | *157* |
| 65–69 | 34.14 | 9.61 | 84.92 | 143.16 | 22.84 | 28.20 | 3.06 | 325.94 | *146* | *224* |
| 70–74 | 15.68 | 2.97 | 94.00 | 151.38 | 28.64 | 15.91 | 1.06 | 309.64 | *170* | *275* |
| 75–79 | 2.42 | 1.38 | 95.84 | 159.29 | 24.33 | 30.29 | 1.11 | 314.65 | *134* | *220* |
| 80+ | 1.23 | −0.26 | 85.14 | 163.90 | 28.66 | 22.94 | 12.04 | 313.65 | *395* | *518* |
| | | | | | | | | | | |
| **Couples** | **314.39** | **65.78** | **165.48** | **128.01** | **23.21** | **63.03** | **5.88** | **765.77** | *4,833* | *4,707* |
| 50–54 | 693.19 | 77.92 | 16.95 | 2.04 | 23.67 | 36.78 | 1.37 | 851.91 | *1,032* | *609* |
| 55–59 | 586.28 | 99.29 | 88.21 | 8.01 | 18.61 | 77.61 | 0.37 | 878.39 | *726* | *324* |
| 60–64 | 341.83 | 114.30 | 177.20 | 36.35 | 29.05 | 79.49 | 4.79 | 783.00 | *768* | *659* |
| 65–69 | 103.35 | 60.11 | 256.02 | 237.40 | 15.97 | 66.02 | 2.99 | 741.87 | *739* | *944* |
| 70–74 | 44.40 | 27.19 | 264.57 | 258.79 | 22.08 | 84.98 | 28.78 | 730.81 | *703* | *995* |
| 75–79 | 12.19 | 29.86 | 251.03 | 259.17 | 25.80 | 56.07 | 1.04 | 635.16 | *421* | *593* |
| 80+ | 7.35 | 3.34 | 227.93 | 262.07 | 30.89 | 38.60 | 0.38 | 570.57 | *444* | *583* |
| | | | | | | | | | | |
| **All family types** | **245.53** | **51.04** | **135.78** | **114.79** | **28.36** | **50.69** | **5.54** | **631.72** | *7,086* | *7,105* |
| 50–54 | 569.88 | 68.34 | 13.58 | 1.46 | 32.73 | 31.44 | 3.42 | 720.86 | *1,442* | *871* |
| 55–59 | 481.74 | 81.84 | 74.40 | 5.73 | 25.09 | 65.53 | 1.14 | 735.47 | *1,014* | *466* |
| 60–64 | 274.46 | 86.94 | 143.66 | 25.63 | 41.19 | 60.43 | 4.10 | 636.41 | *1,099* | *913* |
| 65–69 | 86.35 | 50.15 | 216.66 | 215.16 | 18.07 | 56.33 | 2.75 | 645.48 | *977* | *1,272* |
| 70–74 | 35.68 | 21.29 | 222.91 | 230.31 | 22.95 | 68.61 | 21.12 | 622.88 | *966* | *1,396* |
| 75–79 | 8.81 | 21.46 | 205.09 | 227.53 | 24.56 | 47.66 | 0.94 | 536.04 | *624* | *914* |
| 80+ | 3.93 | 1.69 | 159.94 | 210.09 | 28.97 | 31.07 | 5.13 | 440.82 | *964* | *1,273* |

For variable definitions, see AE.1, AE.6, AE.9, AE.14, AE.15, AE.16, AE.17, AE.19, AE.20, and AE.23. For related text, see E.7–E.10. All values are expressed in January 2019 prices.

**Table E1b. Mean equivalised net weekly family income (£), by age and gender: wave 9**

| | Employ-ment income | Self-emp. income | Private pension income | State pension income | State benefit income | Asset income | Other income | Total income | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|---|---|
| **Men** | **154.50** | **41.32** | **110.05** | **87.71** | **21.94** | **37.41** | **0.72** | **453.65** | *3,354* | *3,122* |
| 50–54 | 305.90 | 62.78 | 22.41 | 2.10 | 29.65 | 30.17 | 0.00 | 453.01 | *434* | *114* |
| 55–59 | 333.58 | 72.36 | 52.20 | 3.89 | 24.50 | 48.42 | 1.15 | 536.10 | *644* | *227* |
| 60–64 | 212.09 | 51.40 | 107.93 | 11.58 | 27.26 | 41.28 | 1.30 | 452.84 | *557* | *564* |
| 65–69 | 64.07 | 35.99 | 159.06 | 151.06 | 12.00 | 40.25 | 0.72 | 463.16 | *571* | *650* |
| 70–74 | 29.94 | 24.04 | 162.58 | 172.46 | 15.12 | 32.60 | 0.65 | 437.40 | *439* | *613* |
| 75–79 | 5.56 | 13.32 | 144.86 | 170.29 | 22.45 | 32.66 | 0.32 | 389.47 | *320* | *455* |
| 80+ | 2.92 | 2.00 | 146.70 | 174.11 | 23.32 | 26.90 | 0.38 | 376.34 | *389* | *499* |
| | | | | | | | | | | |
| **Women** | **122.95** | **22.95** | **102.63** | **100.00** | **23.08** | **31.62** | **1.07** | **404.31** | *3,680* | *3,935* |
| 50–54 | 338.27 | 21.38 | 30.68 | 1.45 | 23.82 | 10.84 | 1.74 | 428.16 | *440* | *132* |
| 55–59 | 274.02 | 42.78 | 63.01 | 6.39 | 28.18 | 49.48 | 1.14 | 465.01 | *652* | *307* |
| 60–64 | 151.13 | 40.31 | 115.01 | 55.64 | 25.94 | 41.29 | 1.39 | 430.71 | *575* | *711* |
| 65–69 | 42.03 | 28.63 | 147.14 | 164.26 | 16.53 | 35.13 | 0.74 | 434.47 | *607* | *873* |
| 70–74 | 17.61 | 5.66 | 145.59 | 162.60 | 17.45 | 29.32 | 1.03 | 379.25 | *480* | *672* |
| 75–79 | 8.83 | 9.11 | 125.06 | 171.36 | 17.74 | 26.04 | 0.56 | 358.70 | *369* | *527* |
| 80+ | 1.42 | 0.92 | 92.64 | 162.05 | 29.11 | 18.96 | 0.90 | 306.00 | *556* | *713* |
| | | | | | | | | | | |
| **All** | **137.99** | **31.71** | **106.17** | **94.14** | **22.54** | **34.38** | **0.90** | **427.84** | *7,034* | *7,057* |
| 50–54 | 322.19 | 41.95 | 26.57 | 1.77 | 26.72 | 20.44 | 0.87 | 440.50 | *874* | *246* |
| 55–59 | 303.61 | 57.48 | 57.64 | 5.15 | 26.35 | 48.96 | 1.14 | 500.32 | *1,296* | *534* |
| 60–64 | 181.10 | 45.77 | 111.52 | 33.98 | 26.59 | 41.29 | 1.35 | 441.59 | *1,132* | *1,275* |
| 65–69 | 52.71 | 32.20 | 152.92 | 157.86 | 14.34 | 37.61 | 0.73 | 448.38 | *1,178* | *1,523* |
| 70–74 | 23.50 | 14.44 | 153.71 | 167.31 | 16.34 | 30.89 | 0.85 | 407.03 | *920* | *1,285* |
| 75–79 | 7.31 | 11.06 | 134.26 | 170.87 | 19.93 | 29.11 | 0.45 | 372.99 | *689* | *982* |
| 80+ | 2.04 | 1.37 | 114.90 | 167.02 | 26.73 | 22.23 | 0.68 | 334.97 | *946* | *1,212* |

For variable definitions, see AE.1, AE.6, AE.7, AE.9, AE.14, AE.15, AE.16, AE.17, AE.19, AE.20, and AE.23. For related text, see E.7–E.10. All values are expressed in January 2019 prices.

**Table E2a. Distribution of total net weekly unequivalised family income (£), by age and family type: wave 9**

| | Mean | 10th percentile | 25th percentile | Median | 75th percentile | 90th percentile | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **380.46** | **115.81** | **198.29** | **315.44** | **482.65** | **659.68** | *828* | *756* |
| 50–54 | 387.05 | 116.44 | 199.78 | 295.81 | 500.10 | 651.11 | *188* | *102* |
| 55–59 | 465.38 | 17.32 | 127.12 | 366.36 | 591.22 | 804.98 | *122* | *54* |
| 60–64 | 305.96 | 72.72 | 133.18 | 250.02 | 449.16 | 595.61 | *138* | *97* |
| 65–69 | 377.64 | 174.13 | 235.18 | 304.92 | 475.04 | 700.95 | *92* | *104* |
| 70–74 | 380.93 | 173.29 | 230.45 | 304.24 | 429.63 | 578.96 | *93* | *126* |
| 75–79 | 360.46 | 171.82 | 225.24 | 309.63 | 435.02 | 558.41 | *68* | *101* |
| 80+ | 382.59 | 173.46 | 254.43 | 328.24 | 449.03 | 626.64 | *126* | *172* |
| | | | | | | | | |
| **Single women** | **323.28** | **134.73** | **197.62** | **274.44** | **369.65** | **548.53** | *1,426* | *1,642* |
| 50–54 | 394.04 | 124.88 | 242.05 | 336.51 | 437.68 | 615.84 | *222* | *160* |
| 55–59 | 310.71 | 90.70 | 144.22 | 289.52 | 361.19 | 562.40 | *166* | *88* |
| 60–64 | 288.22 | 99.89 | 171.17 | 250.07 | 324.45 | 495.13 | *192* | *157* |
| 65–69 | 325.94 | 154.25 | 193.01 | 276.77 | 385.78 | 564.08 | *146* | *224* |
| 70–74 | 309.64 | 161.37 | 201.09 | 261.76 | 361.34 | 521.98 | *170* | *275* |
| 75–79 | 314.65 | 162.37 | 192.79 | 276.10 | 361.37 | 474.16 | *134* | *220* |
| 80+ | 313.65 | 148.48 | 194.48 | 257.48 | 355.91 | 506.75 | *395* | *518* |
| | | | | | | | | |
| **Couples** | **765.77** | **307.65** | **432.62** | **628.91** | **889.51** | **1,258.10** | *4,833* | *4,707* |
| 50–54 | 851.91 | 313.88 | 469.54 | 739.50 | 1,052.57 | 1,494.29 | *1,032* | *609* |
| 55–59 | 878.39 | 302.82 | 503.98 | 725.87 | 994.34 | 1,290.79 | *726* | *324* |
| 60–64 | 783.00 | 231.97 | 424.95 | 625.90 | 887.91 | 1,335.55 | *768* | *659* |
| 65–69 | 741.87 | 346.43 | 465.59 | 615.16 | 875.59 | 1,213.57 | *739* | *944* |
| 70–74 | 730.81 | 336.89 | 423.85 | 577.90 | 797.89 | 1,135.14 | *703* | *995* |
| 75–79 | 635.16 | 307.01 | 383.08 | 518.73 | 749.72 | 1,013.96 | *421* | *593* |
| 80+ | 570.57 | 301.49 | 368.44 | 507.73 | 697.68 | 905.57 | *444* | *583* |
| | | | | | | | | |
| **All family types** | **631.72** | **191.69** | **311.26** | **498.32** | **772.75** | **1,111.16** | *7,086* | *7,105* |
| 50–54 | 720.86 | 208.02 | 352.55 | 595.42 | 905.51 | 1,344.07 | *1,442* | *871* |
| 55–59 | 735.47 | 159.28 | 340.05 | 601.55 | 863.65 | 1,149.40 | *1,014* | *466* |
| 60–64 | 636.41 | 143.77 | 270.50 | 488.97 | 784.89 | 1,170.07 | *1,099* | *913* |
| 65–69 | 645.48 | 237.66 | 363.18 | 540.09 | 784.21 | 1,133.23 | *977* | *1,272* |
| 70–74 | 622.88 | 229.50 | 335.26 | 486.39 | 725.95 | 1,045.19 | *966* | *1,396* |
| 75–79 | 536.04 | 213.58 | 307.01 | 434.98 | 631.87 | 915.67 | *624* | *914* |
| 80+ | 440.82 | 173.85 | 253.56 | 360.86 | 548.53 | 764.45 | *964* | *1,273* |

For variable definitions, see AE.9, AE.20, and AE.23. For related text, see E.11. All values are expressed in January 2019 prices.

**Table E2b. Distribution of total net weekly equivalised family income (£), by age and gender: wave 9**

| | Mean | 10th percentile | 25th percentile | Median | 75th percentile | 90th percentile | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Men** | **453.65** | **185.78** | **264.80** | **378.66** | **555.78** | **749.76** | *3,354* | *3,122* |
| 50–54 | 453.01 | 156.83 | 263.31 | 385.23 | 580.41 | 729.67 | *434* | *114* |
| 55–59 | 536.10 | 163.09 | 298.89 | 449.02 | 660.45 | 835.60 | *644* | *227* |
| 60–64 | 452.84 | 155.04 | 253.14 | 386.33 | 568.40 | 776.61 | *557* | *564* |
| 65–69 | 463.16 | 225.09 | 285.93 | 399.76 | 560.25 | 784.04 | *571* | *650* |
| 70–74 | 437.40 | 220.66 | 272.23 | 359.21 | 510.16 | 684.17 | *439* | *613* |
| 75–79 | 389.47 | 195.13 | 246.12 | 334.06 | 450.74 | 614.73 | *320* | *455* |
| 80+ | 376.34 | 191.61 | 247.77 | 317.65 | 434.48 | 596.06 | *389* | *499* |
| | | | | | | | | |
| **Women** | **404.31** | **163.62** | **234.86** | **333.82** | **486.03** | **694.64** | *3,680* | *3,935* |
| 50–54 | 428.16 | 132.74 | 235.16 | 341.77 | 486.39 | 811.06 | *440* | *132* |
| 55–59 | 465.01 | 133.02 | 257.70 | 382.01 | 570.78 | 786.65 | *652* | *307* |
| 60–64 | 430.71 | 158.92 | 240.54 | 355.97 | 541.45 | 770.98 | *575* | *711* |
| 65–69 | 434.47 | 187.14 | 267.79 | 358.41 | 516.38 | 728.28 | *607* | *873* |
| 70–74 | 379.25 | 175.99 | 234.78 | 321.49 | 456.01 | 617.32 | *480* | *672* |
| 75–79 | 358.70 | 180.75 | 222.48 | 290.77 | 420.74 | 580.26 | *369* | *527* |
| 80+ | 306.00 | 153.89 | 195.29 | 267.83 | 360.64 | 492.32 | *556* | *713* |
| | | | | | | | | |
| **All** | **427.84** | **170.93** | **249.76** | **353.56** | **519.29** | **723.46** | *7,034* | *7,057* |
| 50–54 | 440.50 | 137.81 | 254.76 | 370.18 | 555.78 | 763.86 | *874* | *246* |
| 55–59 | 500.32 | 153.14 | 281.98 | 418.55 | 612.10 | 808.63 | *1,296* | *534* |
| 60–64 | 441.59 | 156.74 | 251.52 | 371.14 | 554.06 | 771.70 | *1,132* | *1,275* |
| 65–69 | 448.38 | 205.90 | 276.61 | 378.37 | 537.20 | 751.80 | *1,178* | *1,523* |
| 70–74 | 407.03 | 191.79 | 253.93 | 337.30 | 476.25 | 644.01 | *920* | *1,285* |
| 75–79 | 372.99 | 184.72 | 232.92 | 311.96 | 435.53 | 606.83 | *689* | *982* |
| 80+ | 334.97 | 163.42 | 212.47 | 284.40 | 389.56 | 540.76 | *946* | *1,212* |

For variable definitions, see AE.7, AE.9, AE.20, and AE.23. For related text, see E.11. All values are expressed in January 2019 prices

**Table E3. Mean and median wealth, by age and family type: wave 9**

| | Net financial wealth £'000 | | Net physical wealth £'000 | | Net primary housing wealth £'000 | | Net total (non-pension) wealth £'000 | | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|---|---|
| | mean | median | mean | median | mean | median | mean | median | | |
| **Single men** | **75.3** | **10.5** | **37.6** | **0.0** | **150.1** | **95.3** | **263.0** | **133.1** | *828* | *756* |
| 50–54 | 32.2 | 0.8 | 32.9 | 0.0 | 97.3 | 0.0 | 162.4 | 49.9 | *188* | *102* |
| 55–59 | 129.8 | 18.5 | 65.9 | 0.0 | 151.4 | 130.3 | 347.1 | 161.2 | *122* | *54* |
| 60–64 | 77.3 | 5.0 | 32.6 | 0.0 | 133.9 | 0.0 | 243.8 | 47.5 | *138* | *97* |
| 65–69 | 73.0 | 25.0 | 54.7 | 0.0 | 159.8 | 79.6 | 287.5 | 148.6 | *92* | *104* |
| 70–74 | 54.0 | 16.7 | 56.6 | 0.0 | 189.1 | 149.6 | 299.8 | 204.9 | *93* | *126* |
| 75–79 | 93.9 | 17.7 | 18.2 | 0.0 | 196.4 | 140.4 | 308.5 | 192.1 | *68* | *101* |
| 80+ | 91.8 | 33.9 | 6.8 | 0.0 | 184.3 | 150.1 | 282.8 | 232.2 | *126* | *172* |
| | | | | | | | | | | |
| **Single women** | **44.8** | **6.5** | **22.6** | **0.0** | **175.7** | **125.3** | **243.1** | **152.3** | *1,426* | *1,642* |
| 50–54 | 31.5 | 0.6 | 35.2 | 0.0 | 128.4 | 5.0 | 195.1 | 58.7 | *222* | *160* |
| 55–59 | 41.0 | 0.8 | 40.6 | 0.0 | 127.9 | 70.1 | 209.5 | 103.1 | *166* | *88* |
| 60–64 | 27.2 | 3.1 | 18.9 | 0.0 | 171.4 | 120.5 | 217.6 | 156.5 | *192* | *157* |
| 65–69 | 59.7 | 7.0 | 29.5 | 0.0 | 191.5 | 129.9 | 280.7 | 151.1 | *146* | *224* |
| 70–74 | 51.0 | 14.0 | 11.8 | 0.0 | 185.2 | 150.1 | 248.0 | 181.5 | *170* | *275* |
| 75–79 | 62.2 | 15.0 | 18.1 | 0.0 | 252.0 | 199.0 | 332.2 | 261.9 | *134* | *220* |
| 80+ | 48.4 | 12.0 | 13.3 | 0.0 | 188.7 | 149.3 | 250.4 | 184.2 | *395* | *518* |
| | | | | | | | | | | |
| **Couples** | **121.7** | **36.1** | **105.9** | **0.0** | **313.1** | **250.2** | **540.6** | **359.5** | *4,833* | *4,707* |
| 50–54 | 60.7 | 9.9 | 87.5 | 0.0 | 269.6 | 207.9 | 417.8 | 268.6 | *1,032* | *609* |
| 55–59 | 86.9 | 20.2 | 142.8 | 0.0 | 296.1 | 233.0 | 525.9 | 320.3 | *726* | *324* |
| 60–64 | 124.3 | 40.7 | 136.5 | 0.0 | 327.1 | 277.6 | 587.9 | 393.5 | *768* | *659* |
| 65–69 | 165.2 | 70.1 | 90.7 | 0.0 | 343.9 | 298.8 | 599.7 | 446.0 | *739* | *944* |
| 70–74 | 177.6 | 66.2 | 107.2 | 0.0 | 351.3 | 299.7 | 636.1 | 419.5 | *703* | *995* |
| 75–79 | 155.2 | 46.0 | 108.3 | 0.0 | 326.6 | 250.2 | 590.1 | 356.3 | *421* | *593* |
| 80+ | 122.8 | 48.0 | 55.7 | 0.0 | 293.3 | 259.0 | 471.7 | 343.1 | *444* | *583* |
| | | | | | | | | | | |
| **All** | **100.8** | **24.0** | **81.1** | **0.0** | **266.4** | **209.0** | **448.3** | **292.3** | *7,086* | *7,105* |
| 50–54 | 52.5 | 5.0 | 72.3 | 0.0 | 225.4 | 171.6 | 350.2 | 208.3 | *1,442* | *871* |
| 55–59 | 84.5 | 15.9 | 116.8 | 0.0 | 251.1 | 193.8 | 452.4 | 256.8 | *1,014* | *466* |
| 60–64 | 101.4 | 24.9 | 102.9 | 0.0 | 275.6 | 224.3 | 479.8 | 319.7 | *1,099* | *913* |
| 65–69 | 140.8 | 52.4 | 78.1 | 0.0 | 303.8 | 249.3 | 522.7 | 369.4 | *977* | *1,272* |
| 70–74 | 143.4 | 48.5 | 85.5 | 0.0 | 306.4 | 259.2 | 535.3 | 361.9 | *966* | *1,396* |
| 75–79 | 128.4 | 35.9 | 79.0 | 0.0 | 296.2 | 240.6 | 503.7 | 309.1 | *624* | *914* |
| 80+ | 88.3 | 26.2 | 31.9 | 0.0 | 236.2 | 199.8 | 356.4 | 274.2 | *964* | *1,273* |

For variable definitions, see AE.9, AE.11, AE.12, AE.13, AE.21, and AE.23. For related text, see E.13. All values are expressed in January 2019 prices.

**Table E4. Distribution of total net non-pension wealth, by age and family type: wave 9**

| | Mean | 10th percentile | 25th percentile | Median | 75th percentile | 90th percentile | Wted N | Unwted N |
|---|---|---|---|---|---|---|---|---|
| | | | | £'000 | | | | |
| **Single men** | **263.0** | **0.0** | **4.0** | **133.1** | **357.9** | **671.3** | *828* | *756* |
| 50–54 | 162.4 | −5.0 | 0.0 | 49.9 | 251.7 | 550.8 | *188* | *102* |
| 55–59 | 347.1 | 0.0 | 11.6 | 161.2 | 388.3 | 817.2 | *122* | *54* |
| 60–64 | 243.8 | 0.0 | 0.3 | 47.5 | 313.1 | 595.3 | *138* | *97* |
| 65–69 | 287.5 | 0.0 | 8.4 | 148.6 | 429.6 | 767.6 | *92* | *104* |
| 70–74 | 299.8 | 0.1 | 2.0 | 204.9 | 412.5 | 654.8 | *93* | *126* |
| 75–79 | 308.5 | 2.0 | 15.0 | 192.1 | 450.8 | 688.0 | *68* | *101* |
| 80+ | 282.8 | 8.0 | 40.5 | 232.2 | 402.8 | 701.9 | *126* | *172* |
| | | | | | | | | |
| **Single women** | **243.1** | **0.0** | **5.9** | **152.3** | **349.5** | **562.8** | *1,426* | *1,642* |
| 50–54 | 195.1 | −1.0 | 0.2 | 58.7 | 227.9 | 470.6 | *222* | *160* |
| 55–59 | 209.5 | −0.8 | 0.2 | 103.1 | 264.6 | 487.8 | *166* | *88* |
| 60–64 | 217.6 | 0.0 | 1.9 | 156.5 | 348.0 | 503.2 | *192* | *157* |
| 65–69 | 280.7 | 0.0 | 5.3 | 151.1 | 361.6 | 658.0 | *146* | *224* |
| 70–74 | 248.0 | 0.7 | 8.1 | 181.5 | 367.3 | 651.5 | *170* | *275* |
| 75–79 | 332.2 | 4.0 | 120.0 | 261.9 | 414.8 | 710.3 | *134* | *220* |
| 80+ | 250.4 | 2.0 | 16.9 | 184.2 | 367.8 | 576.5 | *395* | *518* |
| | | | | | | | | |
| **Couples** | **540.6** | **43.6** | **180.1** | **359.5** | **643.2** | **1,116.6** | *4,833* | *4,707* |
| 50–54 | 417.8 | 1.0 | 128.0 | 268.6 | 512.4 | 937.5 | *1,032* | *609* |
| 55–59 | 525.9 | 9.0 | 155.0 | 320.3 | 592.5 | 947.1 | *726* | *324* |
| 60–64 | 587.9 | 34.0 | 191.2 | 393.5 | 749.0 | 1,179.1 | *768* | *659* |
| 65–69 | 599.7 | 94.4 | 217.3 | 446.0 | 755.7 | 1,212.9 | *739* | *944* |
| 70–74 | 636.1 | 114.9 | 231.9 | 419.5 | 744.7 | 1,268.0 | *703* | *995* |
| 75–79 | 590.1 | 97.6 | 202.0 | 356.3 | 618.2 | 1,075.8 | *421* | *593* |
| 80+ | 471.7 | 84.3 | 197.1 | 343.1 | 573.5 | 1,007.9 | *444* | *583* |
| | | | | | | | | |
| **All** | **448.3** | **1.1** | **115.5** | **292.3** | **547.0** | **957.8** | *7,086* | *7,105* |
| 50–54 | 350.2 | 0.0 | 59.7 | 208.3 | 441.4 | 796.7 | *1,442* | *871* |
| 55–59 | 452.4 | 0.5 | 102.5 | 256.8 | 522.5 | 827.3 | *1,014* | *466* |
| 60–64 | 479.8 | 0.4 | 104.7 | 319.7 | 575.1 | 1,054.2 | *1,099* | *913* |
| 65–69 | 522.7 | 7.0 | 160.8 | 369.4 | 689.3 | 1,114.8 | *977* | *1,272* |
| 70–74 | 535.3 | 6.9 | 173.5 | 361.9 | 643.5 | 1,106.1 | *966* | *1,396* |
| 75–79 | 503.7 | 11.2 | 161.0 | 309.1 | 565.4 | 976.2 | *624* | *914* |
| 80+ | 356.4 | 6.5 | 105.6 | 274.2 | 456.8 | 800.1 | *964* | *1,273* |

For variable definitions, see AE.9, AE.21, and AE.23. For related text, see E.13. All values are expressed in January 2019 prices.

**Table E5a. Private pension membership, by age and gender:**
**workers and non-workers under the state pension age (SPA): wave 9**

| | Member of a private pension scheme | Contributing to a private pension scheme | Receiving income from a private pension scheme | Retained rights in a private pension scheme | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|
| **Men (50–SPA)** | **81%** | **58%** | **19%** | **36%** | *1,792* | *991* |
| 50–54 | 75% | 63% | 3% | 33% | *746* | *380* |
| 55–59 | 89% | 66% | 23% | 41% | *521* | *207* |
| 60–65 | 83% | 43% | 39% | 35% | *525* | *404* |
| | | | | | | |
| **Women (50–SPA)** | **79%** | **53%** | **19%** | **32%** | *1,842* | *1,307* |
| 50–54 | 81% | 67% | 2% | 35% | *753* | *529* |
| 55–59 | 82% | 56% | 15% | 41% | *510* | *267* |
| 60–SPA | 75% | 34% | 43% | 20% | *578* | *511* |
| | | | | | | |
| **All 50–SPA** | **80%** | **56%** | **19%** | **34%** | *3,634* | *2,298* |
| 50–54 | 78% | 65% | 3% | 34% | *1,500* | *909* |
| 55–59 | 86% | 61% | 19% | 41% | *1,031* | *474* |
| 60–SPA | 79% | 38% | 41% | 27% | *1,103* | *915* |

Note: The middle three columns of the table do not sum to the first column of numbers (or to 100%) because individuals can have multiple pension schemes at different stages of contribution, receiving income and retaining rights. SPA for women varies according to date of birth (see AE.18).

For variable definitions, see AE.18 and AE.23. For related text, see E.14.

**Table E5b. Private pension membership, by age and gender:**
**workers under the state pension age: wave 9**

| | Member of a private pension scheme | Contributing to a private pension scheme | Receiving income from a private pension scheme | Retained rights in a private pension scheme | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|
| **Men (50–SPA)** | **87%** | **72%** | **14%** | **39%** | *1,386* | *738* |
| 50–54 | 81% | 71% | 3% | 35% | *646* | *330* |
| 55–59 | 93% | 78% | 20% | 44% | *419* | *167* |
| 60–SPA | 89% | 67% | 30% | 40% | *320* | *241* |
| | | | | | | |
| **Women (50–SPA)** | **87%** | **73%** | **12%** | **35%** | *1,303* | *885* |
| 50–54 | 87% | 80% | 1% | 34% | *621* | *436* |
| 55–59 | 90% | 73% | 11% | 44% | *382* | *202* |
| 60–SPA | 85% | 60% | 34% | 28% | *300* | *247* |
| | | | | | | |
| **All 50–SPA** | **87%** | **73%** | **13%** | **37%** | *2,688* | *1,623* |
| 50–54 | 84% | 76% | 2% | 34% | *1,267* | *766* |
| 55–59 | 92% | 76% | 16% | 44% | *801* | *369* |
| 60–64 | 87% | 64% | 32% | 34% | *620* | *488* |

Note: The middle three columns of the table do not sum to the first column of numbers (or to 100%) because individuals can have multiple pension schemes at different stages of contribution, receiving income and retaining rights. SPA for women varies according to date of birth (see AE.18).

For variable definitions, see AE.18 and AE.23. For related text, see E.14.

**Table E6. Mean equivalised weekly household spending (£), by age and family type: wave 9**

| | Food inside the home | Food outside the home | Clothing and footwear | Domestic fuel | Leisure | Transfers outside the home | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **46.14** | **9.63** | **6.86** | **18.15** | **13.54** | **24.67** | *757* | *695* |
| 50–54 | 43.39 | 10.45 | 7.17 | 17.08 | 12.30 | 5.47 | *176* | *95* |
| 55–59 | 42.74 | 9.43 | 8.33 | 19.26 | 25.33 | 26.82 | *111* | *50* |
| 60–64 | 40.71 | 9.74 | 6.88 | 15.76 | 11.86 | 31.28 | *128* | *90* |
| 65–69 | 48.87 | 9.48 | 5.40 | 17.90 | 13.36 | 32.01 | *84* | *96* |
| 70–74 | 46.30 | 8.79 | 7.63 | 19.19 | 11.37 | 45.43 | *89* | *121* |
| 75–79 | 51.52 | 10.62 | 8.16 | 18.38 | 9.91 | 14.66 | *63* | *94* |
| 80+ | 55.29 | 8.57 | 4.49 | 20.83 | 9.35 | 28.85 | *106* | *149* |
| | | | | | | | | |
| **Single women** | **45.52** | **7.29** | **10.56** | **18.35** | **12.31** | **26.26** | *1,293* | *1,498* |
| 50–54 | 41.91 | 8.16 | 11.82 | 16.62 | 13.87 | 17.05 | *217* | *155* |
| 55–59 | 39.17 | 9.59 | 14.51 | 16.19 | 16.34 | 18.81 | *157* | *84* |
| 60–64 | 44.14 | 7.33 | 11.36 | 17.71 | 23.24 | 30.74 | *182* | *153* |
| 65–69 | 44.65 | 7.67 | 10.58 | 18.73 | 12.12 | 29.65 | *141* | *217* |
| 70–74 | 48.67 | 7.01 | 10.95 | 19.50 | 10.64 | 18.66 | *158* | *256* |
| 75–79 | 50.13 | 8.55 | 10.57 | 21.44 | 9.69 | 22.07 | *116* | *192* |
| 80+ | 49.04 | 5.06 | 7.10 | 19.09 | 4.95 | 37.37 | *321* | *441* |
| | | | | | | | | |
| **Couples** | **53.00** | **12.55** | **15.08** | **16.58** | **14.48** | **69.54** | *4,680* | *4,531* |
| 50–54 | 49.35 | 12.33 | 17.31 | 14.87 | 14.14 | 40.92 | *1,006* | *598* |
| 60–64 | 51.83 | 14.65 | 19.37 | 16.27 | 14.62 | 23.49 | *728* | *324* |
| 65–69 | 52.55 | 11.65 | 16.43 | 17.23 | 15.95 | 48.79 | *743* | *636* |
| 70–74 | 56.01 | 14.26 | 15.24 | 17.57 | 16.00 | 189.41 | *718* | *914* |
| 75–79 | 55.67 | 13.08 | 12.46 | 17.47 | 17.28 | 78.64 | *677* | *959* |
| 80+ | 54.71 | 10.78 | 11.75 | 16.56 | 11.17 | 56.39 | *391* | *552* |
| | | | | | | | | |
| **All family types** | **50.79** | **11.21** | **13.28** | **17.10** | **13.96** | **56.17** | *6,730* | *6,724* |
| 50–54 | 47.44 | 11.45 | 15.19 | 15.42 | 13.87 | 32.76 | *1,399* | *848* |
| 60–64 | 48.81 | 13.27 | 17.37 | 16.59 | 16.09 | 23.12 | *996* | *458* |
| 65–69 | 49.66 | 10.67 | 14.40 | 17.14 | 16.71 | 43.54 | *1,053* | *879* |
| 70–74 | 53.68 | 12.85 | 13.67 | 17.77 | 15.19 | 151.53 | *942* | *1,227* |
| 75–79 | 53.57 | 11.63 | 11.74 | 17.98 | 15.57 | 65.19 | *925* | *1,336* |
| 80+ | 53.42 | 10.31 | 11.11 | 17.75 | 10.73 | 44.79 | *571* | *838* |

For variable definitions, see AE.7, AE.9, and AE.23. For related text, see E.15. All values are expressed in January 2019 prices.

**Table E7. Mean self-reported chances (%) of having insufficient resources to meet needs at some point in the future, by age, gender and income group: wave 9**

| | Total equivalised income group | | | | | | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | **All** | **Lowest** | **2nd** | **3rd** | **4th** | **Highest** | | |
| **Single men** | **32.0** | **42.3** | **33.0** | **27.0** | **27.2** | **21.2** | *792* | *727* |
| 50–54 | 42.2 | 52.2 | 49.1 | 33.8 | 36.7 | 26.7 | *182* | *100* |
| 55–59 | 30.7 | 31.1 | 45.8 | 57.6 | 32.7 | 16.7 | *117* | *51* |
| 60–64 | 41.6 | 52.0 | 38.3 | 23.5 | 38.2 | 35.2 | *129* | *93* |
| 65–69 | 31.6 | 41.6 | 32.0 | 24.2 | 31.8 | 23.8 | *88* | *100* |
| 70–74 | 23.7 | 26.3 | 28.2 | 25.2 | 19.5 | 10.7 | *90* | *123* |
| 75–79 | 24.1 | 39.1 | 24.5 | 20.1 | 12.8 | 14.9 | *64* | *95* |
| 80+ | 18.6 | 24.0 | 22.6 | 18.4 | 8.4 | 17.8 | *121* | *165* |
| | | | | | | | | |
| **Single women** | **32.7** | **36.5** | **35.5** | **29.4** | **26.9** | **23.1** | *1,350* | *1,567* |
| 50–54 | 42.1 | 49.3 | 47.3 | 36.6 | 37.0 | 30.6 | *219* | *157* |
| 55–59 | 43.2 | 57.1 | 44.9 | 33.9 | 21.8 | 33.1 | *156* | *86* |
| 60–64 | 37.9 | 41.4 | 46.5 | 27.8 | 17.1 | 17.7 | *184* | *151* |
| 65–69 | 36.5 | 40.8 | 36.0 | 33.3 | 31.6 | 34.6 | *143* | *219* |
| 70–74 | 30.9 | 36.1 | 27.7 | 29.1 | 32.1 | 22.4 | *166* | *268* |
| 75–79 | 28.1 | 35.1 | 25.2 | 25.7 | 24.4 | 15.3 | *130* | *212* |
| 80+ | 20.6 | 18.5 | 24.2 | 22.3 | 22.1 | 11.0 | *353* | *474* |
| | | | | | | | | |
| **Partnered men** | **28.5** | **37.0** | **31.8** | **29.1** | **27.5** | **23.3** | *2,404* | *2,224* |
| 50–54 | 33.7 | 42.2 | 30.2 | 42.9 | 32.4 | 28.7 | *292* | *72* |
| 55–59 | 34.6 | 50.5 | 55.5 | 34.3 | 29.5 | 28.5 | *500* | *170* |
| 60–64 | 26.9 | 34.6 | 31.2 | 26.2 | 28.7 | 19.3 | *396* | *405* |
| 65–69 | 26.7 | 30.6 | 30.8 | 28.2 | 30.2 | 18.7 | *438* | *500* |
| 70–74 | 26.0 | 36.0 | 30.1 | 26.8 | 22.0 | 21.3 | *333* | *471* |
| 75–79 | 24.1 | 30.1 | 23.4 | 26.9 | 22.3 | 16.9 | *222* | *315* |
| 80+ | 22.8 | 31.1 | 24.1 | 21.2 | 19.0 | 17.6 | *223* | *291* |
| | | | | | | | | |
| **Partnered women** | **29.1** | **33.7** | **33.7** | **29.9** | **27.6** | **23.9** | *2,157* | *2,250* |
| 50–54 | 30.6 | 30.6 | 39.8 | 34.3 | 31.5 | 24.3 | *466* | *325* |
| 55–59 | 29.7 | 39.9 | 31.5 | 25.8 | 26.4 | 28.4 | *317* | *167* |
| 60–64 | 28.1 | 29.6 | 31.5 | 30.7 | 28.8 | 22.5 | *366* | *340* |
| 65–69 | 30.3 | 32.6 | 40.0 | 32.3 | 26.7 | 24.1 | *336* | *471* |
| 70–74 | 30.4 | 43.0 | 37.3 | 28.7 | 26.3 | 20.9 | *327* | *484* |
| 75–79 | 27.2 | 33.2 | 26.6 | 30.6 | 24.6 | 18.7 | *188* | *259* |
| 80+ | 22.5 | 27.1 | 21.3 | 23.5 | 17.2 | 20.5 | *158* | *204* |

For variable definitions, see AE.7, AE8, AE.9, AE.10, and AE.23. For related text, see E.16.

**Table E8. Labour market participation, by age, gender and wealth group:
individuals aged less than 75 only: wave 9**

| | % working part-time | % working full-time | % working full- or part-time | % working full- or part-time by wealth group | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Lowest | 2nd | 3rd | 4th | Highest |
| **Men (50–74)** | **14.3** | **39.2** | **53.6** | **42.6** | **63.3** | **56.9** | **52.9** | **52.6** |
| 50–54 | 15.5 | 68.0 | 83.5 | 69.7 | 87.8 | 89.9 | 91.8 | 92.2 |
| 55–59 | 13.1 | 66.3 | 79.4 | 48.2 | 91.8 | 95.9 | 83.3 | 79.2 |
| 60–64 | 14.8 | 45.5 | 60.3 | 40.0 | 72.7 | 67.6 | 63.0 | 60.1 |
| 65–69 | 18.4 | 8.4 | 26.7 | 18.4 | 24.3 | 27.2 | 30.1 | 29.2 |
| 70–74 | 9.3 | 3.5 | 12.8 | 8.3 | 10.4 | 15.4 | 9.1 | 19.0 |
| | | | | | | | | |
| **Women (50–74)** | **27.2** | **16.0** | **43.2** | **36.1** | **48.9** | **47.7** | **43.1** | **40.0** |
| 50–54 | 47.0 | 31.0 | 78.0 | 67.3 | 88.6 | 90.5 | 70.3 | 79.2 |
| 55–59 | 41.8 | 30.8 | 72.6 | 43.5 | 82.3 | 85.1 | 80.9 | 69.8 |
| 60–64 | 28.5 | 15.6 | 44.1 | 40.0 | 45.3 | 45.6 | 45.9 | 43.6 |
| 65–69 | 13.5 | 2.8 | 16.2 | 10.9 | 19.8 | 14.9 | 15.0 | 19.5 |
| 70–74 | 6.0 | 0.4 | 6.4 | 0.9 | 1.2 | 7.2 | 9.9 | 10.7 |
| | | | | | | | | |
| **All (50–74)** | **20.9** | **27.4** | **48.3** | **39.3** | **56.0** | **51.8** | **48.0** | **46.5** |
| 50–54 | 31.2 | 49.6 | 80.8 | 68.6 | 88.2 | 90.2 | 79.6 | 86.0 |
| 55–59 | 27.4 | 48.6 | 76.0 | 45.8 | 87.6 | 89.0 | 82.2 | 74.8 |
| 60–64 | 21.9 | 30.0 | 51.9 | 40.0 | 57.5 | 56.2 | 54.0 | 52.1 |
| 65–69 | 15.8 | 5.5 | 21.3 | 14.1 | 21.8 | 20.8 | 22.8 | 24.5 |
| 70–74 | 7.6 | 1.9 | 9.5 | 4.4 | 5.4 | 10.9 | 9.5 | 14.8 |

For variable definitions, see AE.22 and AE.23. For related text, see E.17.

**Table E8N. Sample sizes for Table E8: wave 9**

| | Sample sizes by age and gender | | Sample sizes by age, gender and wealth group | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *Unwted* | *Weighted N* | | | | | *Unweighted N* | | | | |
| | *Wted N* | *N* | Lowest | 2nd | 3rd | 4th | Highest | Lowest | 2nd | 3rd | 4th | Highest |
| **Men (50–74)** | **2,579** | **2,112** | 504 | 509 | 453 | 536 | 577 | 338 | 362 | 388 | 489 | 535 |
| 50–54 | 428 | 112 | 139 | 93 | 78 | 64 | 54 | 38 | 27 | 19 | 15 | 13 |
| 55–59 | 631 | 220 | 122 | 166 | 80 | 125 | 138 | 46 | 54 | 29 | 44 | 47 |
| 60–64 | 528 | 540 | 98 | 79 | 101 | 112 | 138 | 99 | 80 | 99 | 114 | 148 |
| 65–69 | 555 | 632 | 77 | 93 | 104 | 138 | 143 | 76 | 99 | 117 | 171 | 169 |
| 70–74 | 436 | 608 | 68 | 78 | 89 | 97 | 104 | 79 | 102 | 124 | 145 | 158 |
| | | | | | | | | | | | | |
| **Women (50–74)** | **2,693** | **2,656** | 534 | 530 | 553 | 538 | 537 | 448 | 522 | 532 | 560 | 594 |
| 50–54 | 426 | 129 | 125 | 93 | 76 | 83 | 49 | 36 | 32 | 23 | 22 | 16 |
| 55–59 | 625 | 298 | 125 | 132 | 140 | 110 | 118 | 64 | 72 | 54 | 54 | 54 |
| 60–64 | 567 | 702 | 107 | 98 | 110 | 122 | 130 | 117 | 124 | 133 | 153 | 175 |
| 65–69 | 598 | 859 | 102 | 116 | 114 | 131 | 134 | 132 | 167 | 167 | 195 | 198 |
| 70–74 | 478 | 668 | 75 | 91 | 112 | 93 | 106 | 99 | 127 | 155 | 136 | 151 |
| | | | | | | | | | | | | |
| **All (50–74)** | **5,271** | **4,768** | 1,038 | 1,038 | 1,006 | 1,075 | 1,114 | 786 | 884 | 920 | 1,049 | 1,129 |
| 50–54 | 854 | 241 | 264 | 185 | 155 | 147 | 103 | 74 | 59 | 42 | 37 | 29 |
| 55–59 | 1,256 | 518 | 247 | 299 | 220 | 235 | 255 | 110 | 126 | 83 | 98 | 101 |
| 60–64 | 1,095 | 1,242 | 205 | 176 | 211 | 234 | 268 | 216 | 204 | 232 | 267 | 323 |
| 65–69 | 1,152 | 1,491 | 179 | 210 | 218 | 269 | 277 | 208 | 266 | 284 | 366 | 367 |
| 70–74 | 914 | 1,276 | 143 | 169 | 202 | 190 | 210 | 178 | 229 | 279 | 281 | 309 |

**Table E9. Mean self-reported chances (%) of working at future target ages, by age, gender and wealth: wave 9**

| | Target age | Wealth group | | | | | |
|---|---|---|---|---|---|---|---|
| | | All | Lowest | 2nd | 3rd | 4th | Highest |
| **Men (50–64)** | | | | | | | |
| 50–54 | *60* | 68.3 | 60.5 | 76.0 | 71.6 | (71.6) | (66.3) |
| 55–59 | *60* | 68.1 | (62.7) | 75.5 | (71.3) | (60.5) | – |
| 60–64 | *65* | 42.5 | 37.1 | 42.1 | 47.4 | 47.9 | 39.5 |
| | | | | | | | |
| **Women (50–64)** | | | | | | | |
| 50–54 | *60* | 60.3 | 61.0 | 70.2 | 60.7 | 54.1 | 48.9 |
| 55–59 | *60* | 62.1 | 56.4 | 74.1 | (60.4) | (60.8) | (57.5) |
| 60–64 | *65* | 33.8 | 34.1 | 35.8 | 39.6 | 30.1 | 30.4 |

For variable definitions, see AE.8, AE.22, and AE23. For related text, see E.18.

**Table E9N. Sample sizes for Table E9: wave 9**

| | Sample sizes by age and gender | | Sample sizes by age, gender and wealth group | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *Unwted* | *Weighted N* | | | | | *Unweighted N* | | | | |
| | *Wted N* | *N* | Lowest | 2nd | 3rd | 4th | Highest | Lowest | 2nd | 3rd | 4th | Highest |
| **Men (50–64)** | | | | | | | | | | | | |
| 50–54 | 344 | 344 | 115 | 82 | 60 | 49 | 38 | 115 | 82 | 60 | 49 | 38 |
| 55–59 | 199 | 199 | 42 | 56 | 32 | 41 | 28 | 42 | 56 | 32 | 41 | 28 |
| 60–64 | 388 | 388 | 86 | 58 | 84 | 67 | 93 | 86 | 58 | 84 | 67 | 93 |
| | | | | | | | | | | | | |
| **Women (50–59)** | | | | | | | | | | | | |
| 50–54 | 490 | 490 | 141 | 115 | 91 | 69 | 74 | 141 | 115 | 91 | 69 | 74 |
| 55–59 | 256 | 256 | 76 | 60 | 35 | 49 | 36 | 76 | 60 | 35 | 49 | 36 |

**Table E10a. Whether health limits kind or amount of work, by age and wealth – men: wave 9**

| Age, gender and wealth group | No limiting health problem | Has limiting health problem | Has limiting health problem and ... | | | Wted N | Unwted N |
| | | | Not working | Working but health problem doesn't limit current job | Working and health problem does limit current job | | |
|---|---|---|---|---|---|---|---|
| **Men 50–54** | **84%** | **16%** | **12%** | **0%** | **3%** | *428* | *112* |
| Lowest | (64%) | (36%) | (29%) | (1%) | (6%) | *139* | *38* |
| 2nd | – | – | – | – | – | *93* | *27* |
| 3rd | – | – | – | – | – | *78* | *19* |
| 4th | – | – | – | – | – | *64* | *15* |
| Highest | – | – | – | – | – | *54* | *13* |
| | | | | | | | |
| **Men 55–59** | **80%** | **20%** | **11%** | **4%** | **5%** | *636* | *222* |
| Lowest | (57%) | (43%) | (34%) | (7%) | (3%) | *120* | *45* |
| 2nd | 78% | 22% | 7% | 4% | 11% | *168* | *55* |
| 3rd | – | – | – | – | – | *78* | *28* |
| 4th | (92%) | (8%) | (4%) | (0%) | (4%) | *130* | *46* |
| Highest | (88%) | (12%) | (6%) | (5%) | (0%) | *139* | *48* |
| | | | | | | | |
| **Men 60–64** | **75%** | **25%** | **16%** | **3%** | **6%** | *532* | *541* |
| Lowest | 42% | 58% | 45% | 2% | 12% | *99* | *98* |
| 2nd | 72% | 28% | 13% | 4% | 11% | *79* | *80* |
| 3rd | 82% | 18% | 9% | 3% | 6% | *102* | *99* |
| 4th | 79% | 21% | 11% | 7% | 2% | *112* | *114* |
| Highest | 91% | 9% | 5% | 2% | 2% | *141* | *150* |
| | | | | | | | |
| **All men 50–64** | **80%** | **20%** | **13%** | **3%** | **5%** | *1,596* | *875* |
| Lowest | 56% | 44% | 35% | 3% | 7% | *358* | *181* |
| 2nd | 80% | 20% | 8% | 3% | 9% | *340* | *162* |
| 3rd | 87% | 13% | 5% | 3% | 5% | *258* | *146* |
| 4th | 89% | 11% | 6% | 3% | 3% | *305* | *175* |
| Highest | 90% | 10% | 6% | 3% | 1% | *335* | *211* |

For variable definitions, see AE.22 and AE.23. For related text, see E.19 and E.20.

**Table E10b. Whether health limits kind or amount of work, by age and wealth – women: wave 9**

| Age, gender and wealth group | No limiting health problem | Has limiting health problem | Has limiting health problem and ... | | | Wted N | Unwted N |
| | | | Not working | Working but health problem doesn't limit current job | Working and health problem does limit current job | | |
|---|---|---|---|---|---|---|---|
| **Women 50–54** | **81%** | **19%** | **13%** | **2%** | **4%** | *432* | *130* |
| Lowest | (68%) | (32%) | (25%) | (5%) | (2%) | *125* | *36* |
| 2nd | (88%) | (12%) | (10%) | (2%) | (0%) | *93* | *32* |
| 3rd | – | – | – | – | – | *76* | *23* |
| 4th | – | – | – | – | – | *83* | *22* |
| Highest | – | – | – | – | – | *55* | *17* |
| | | | | | | | |
| **Women 55–59** | **84%** | **16%** | **10%** | **3%** | **4%** | *628* | *298* |
| Lowest | 67% | 33% | 29% | 4% | 0% | *118* | *62* |
| 2nd | 71% | 29% | 16% | 5% | 8% | *132* | *72* |
| 3rd | 92% | 8% | 4% | 0% | 4% | *142* | *54* |
| 4th | 91% | 9% | 1% | 3% | 5% | *112* | *55* |
| Highest | 96% | 4% | 2% | 2% | 0% | *124* | *55* |
| | | | | | | | |
| **Women 60–64** | **72%** | **28%** | **21%** | **4%** | **3%** | *399* | *463* |
| Lowest | 55% | 45% | 34% | 5% | 6% | *80* | *83* |
| 2nd | 59% | 41% | 32% | 4% | 5% | *69* | *82* |
| 3rd | 76% | 24% | 19% | 3% | 2% | *80* | *90* |
| 4th | 84% | 16% | 9% | 4% | 3% | *85* | *99* |
| Highest | 84% | 16% | 12% | 3% | 1% | *85* | *109* |
| | | | | | | | |
| **All women 50–64** | **80%** | **20%** | **14%** | **3%** | **4%** | *1,459* | *891* |
| Lowest | 64% | 36% | 29% | 5% | 2% | *323* | *181* |
| 2nd | 74% | 26% | 18% | 4% | 5% | *294* | *186* |
| 3rd | 86% | 14% | 7% | 1% | 7% | *299* | *167* |
| 4th | 86% | 14% | 9% | 2% | 3% | *280* | *176* |
| Highest | 91% | 9% | 6% | 2% | 2% | *263* | *181* |

For variable definitions, see AE.22 and AE.23. For related text, see E.19 and E.20.

**Table E11. Mean self-reported chances (%) of health limiting ability to work at age 65 (workers aged under 65 only), by age, gender and wealth group: wave 9**

| | All | Lowest | 2nd | 3rd | 4th | Highest |
|---|---|---|---|---|---|---|
| | | | | Wealth group | | |
| **Men (50–64)** | **33.2** | **44.3** | **37.2** | **30.2** | **27.6** | **27.0** |
| 50–54 | 35.4 | 42.9 | 36.2 | 33.7 | 30.6 | (30.9) |
| 55–59 | 33.2 | – | (41.0) | (30.1) | (26.9) | – |
| 60–64 | 29.1 | – | (32.5) | 24.3 | (23.3) | 26.1 |
| | | | | | | |
| **Women (50–64)** | **30.9** | **38.5** | **32.3** | **27.3** | **30.8** | **24.3** |
| 50–54 | 34.1 | 38.7 | 36.4 | 28.1 | 36.3 | 28.6 |
| 55–59 | 32.6 | (42.8) | (29.4) | (31.0) | (32.7) | – |
| 60–64 | 22.8 | (31.3) | (25.3) | 23.3 | 19.4 | 16.2 |

For variable definitions, see AE.8, AE.22 and AE.23. For related text, see E.21.

**Table E11N. Sample sizes for Table E11: wave 9**

| | Sample sizes by age and gender | | Sample sizes by age, gender and wealth group | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Wted N* | *Unwted N* | *Weighted N* | | | | | *Unweighted N* | | | | |
| | | | Lowest | 2nd | 3rd | 4th | Highest | Lowest | 2nd | 3rd | 4th | Highest |
| **Men (50–64)** | **1,273** | **677** | 216 | 314 | 260 | 248 | 235 | 100 | 163 | 145 | 139 | 130 |
| 50–54 | 576 | 295 | 127 | 155 | 108 | 104 | 82 | 57 | 77 | 60 | 57 | 44 |
| 55–59 | 396 | 156 | 42 | 108 | 90 | 85 | 71 | 16 | 48 | 32 | 34 | 26 |
| 60–64 | 301 | 226 | 48 | 51 | 62 | 59 | 82 | 27 | 38 | 53 | 48 | 60 |
| | | | | | | | | | | | | |
| **Women (50–64)** | **1,213** | **835** | 244 | 285 | 249 | 238 | 197 | 148 | 195 | 181 | 168 | 143 |
| 50–54 | 568 | 400 | 125 | 148 | 113 | 95 | 86 | 78 | 103 | 87 | 72 | 60 |
| 55–59 | 357 | 191 | 73 | 86 | 59 | 83 | 56 | 35 | 48 | 33 | 46 | 29 |
| 60–64 | 289 | 244 | 46 | 52 | 77 | 59 | 55 | 35 | 44 | 61 | 50 | 54 |

**Table EL1a. Mean equivalised weekly family TOTAL income (£), by baseline (wave 4) age and family type**

| Age and family type in 2008–09 | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **354.28** | **359.99** | **370.71** | **368.84** | **352.96** | **364.40** | *435* | *396* |
| 50–54 | 354.89 | 357.87 | 389.37 | 385.24 | 298.22 | 362.01 | *78* | *67* |
| 55–59 | 358.26 | 379.20 | 402.32 | 380.59 | 371.77 | 397.16 | *106* | *83* |
| 60–64 | 332.19 | 351.13 | 307.96 | 343.05 | 325.84 | 338.23 | *91* | *92* |
| 65–69 | 379.21 | 325.25 | 384.56 | 385.25 | 388.30 | 363.69 | *64* | *65* |
| 70–74 | 335.18 | 319.89 | 350.49 | 336.41 | 349.25 | 334.30 | *50* | *56* |
| 75–79 | – | – | – | – | – | – | *29* | *23* |
| 80+ | – | – | – | – | – | – | *17* | *10* |
| | | | | | | | | |
| **Single women** | **303.90** | **296.27** | **299.76** | **306.56** | **311.34** | **325.90** | *848* | *882* |
| 50–54 | 314.83 | 331.78 | 359.72 | 375.95 | 375.83 | 414.93 | *82* | *86* |
| 55–59 | 330.36 | 308.14 | 317.00 | 323.00 | 347.09 | 323.98 | *154* | *151* |
| 60–64 | 344.61 | 354.46 | 331.68 | 318.48 | 323.32 | 331.80 | *138* | *173* |
| 65–69 | 313.15 | 287.83 | 293.28 | 309.30 | 302.57 | 328.69 | *121* | *143* |
| 70–74 | 276.08 | 284.47 | 288.55 | 289.48 | 297.68 | 311.73 | *126* | *163* |
| 75–79 | 292.11 | 267.89 | 267.68 | 267.39 | 282.36 | 294.83 | *126* | *101* |
| 80+ | 237.67 | 231.16 | 244.48 | 278.15 | 253.78 | 302.52 | *101* | *65* |
| | | | | | | | | |
| **Partnered men** | **463.40** | **471.87** | **469.61** | **450.93** | **452.24** | **465.57** | *1,760* | *1695* |
| 50–54 | 508.09 | 581.54 | 548.23 | 512.60 | 496.67 | 507.57 | *226* | *191* |
| 55–59 | 495.81 | 486.40 | 462.99 | 464.31 | 470.96 | 479.17 | *496* | *390* |
| 60–64 | 481.06 | 488.49 | 534.20 | 484.17 | 487.54 | 517.56 | *402* | *451* |
| 65–69 | 458.06 | 450.55 | 449.77 | 449.21 | 441.28 | 433.07 | *266* | *286* |
| 70–74 | 396.42 | 391.08 | 387.92 | 367.58 | 363.50 | 393.61 | *201* | *236* |
| 75–79 | 359.19 | 376.30 | 366.27 | 358.35 | 397.77 | 367.73 | *124* | *109* |
| 80+ | (345.24) | (362.61) | (346.74) | (343.98) | (324.40) | (421.64) | *46* | *32* |
| | | | | | | | | |
| **Partnered women** | **444.54** | **445.50** | **460.39** | **432.79** | **427.77** | **429.17** | *1,710* | *1,773* |
| 50–54 | 481.65 | 510.14 | 485.41 | 459.21 | 437.71 | 478.49 | *227* | *228* |
| 55–59 | 479.88 | 498.59 | 501.48 | 492.75 | 489.78 | 456.48 | *495* | *457* |
| 60–64 | 483.57 | 449.29 | 509.98 | 447.79 | 445.79 | 452.32 | *409* | *476* |
| 65–69 | 414.33 | 397.28 | 424.39 | 391.40 | 376.27 | 393.78 | *272* | *296* |
| 70–74 | 342.51 | 363.82 | 357.91 | 348.09 | 334.66 | 365.44 | *181* | *222* |
| 75–79 | 331.38 | 329.82 | 324.21 | 310.78 | 368.87 | 338.90 | *88* | *69* |
| 80+ | – | – | – | – | – | – | *36* | *25* |

For variable definitions, see AE.4, AE.7, AE.9, AE.20, and AE.23. For related text, see E.23. All values are expressed in January 2019 prices.

**Table EL1b. Mean equivalised weekly family EARNINGS (£), by baseline (wave 4) age and family type**

| Age and family type in 2008–09 | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **157.22** | **145.90** | **120.06** | **100.64** | **70.52** | **53.10** | *435* | *396* |
| 50–54 | 278.51 | 261.41 | 264.45 | 239.05 | 159.82 | 158.91 | *78* | *67* |
| 55–59 | 247.14 | 241.98 | 226.24 | 175.13 | 114.97 | 83.16 | *106* | *83* |
| 60–64 | 189.42 | 153.21 | 56.19 | 28.44 | 24.81 | 9.67 | *91* | *92* |
| 65–69 | 32.13 | 28.28 | 26.25 | 55.12 | 56.80 | 11.94 | *64* | *65* |
| 70–74 | 10.34 | 6.33 | 6.75 | 12.49 | 0.00 | 2.03 | *50* | *56* |
| 75–79 | – | – | – | – | – | – | *29* | *23* |
| 80+ | – | – | – | – | – | – | *17* | *10* |
|  |  |  |  |  |  |  |  |  |
| **Single women** | **80.66** | **67.17** | **57.82** | **45.18** | **39.16** | **33.23** | *848* | *882* |
| 50–54 | 220.48 | 231.69 | 267.00 | 234.77 | 212.01 | 212.80 | *82* | *86* |
| 55–59 | 201.33 | 156.71 | 119.05 | 80.52 | 70.85 | 49.82 | *154* | *151* |
| 60–64 | 102.40 | 80.03 | 51.19 | 36.73 | 30.63 | 19.38 | *138* | *173* |
| 65–69 | 32.42 | 21.43 | 14.10 | 16.47 | 9.04 | 3.97 | *121* | *143* |
| 70–74 | 3.80 | 2.73 | 3.58 | 0.58 | 0.94 | 0.22 | *126* | *163* |
| 75–79 | 1.43 | 1.27 | 0.00 | 0.00 | 0.00 | 0.00 | *126* | *101* |
| 80+ | 6.13 | −0.16 | 0.20 | 0.94 | 0.00 | 0.00 | *101* | *65* |
|  |  |  |  |  |  |  |  |  |
| **Partnered men** | **237.09** | **220.54** | **167.42** | **140.79** | **107.59** | **86.86** | *1,760* | *1,695* |
| 50–54 | 431.68 | 480.99 | 405.93 | 392.54 | 334.15 | 294.72 | *226* | *191* |
| 55–59 | 369.00 | 336.02 | 262.63 | 224.90 | 142.12 | 107.37 | *496* | *390* |
| 60–64 | 255.74 | 216.15 | 127.53 | 90.63 | 77.69 | 54.83 | *402* | *451* |
| 65–69 | 88.76 | 73.08 | 56.70 | 34.38 | 34.01 | 29.58 | *266* | *286* |
| 70–74 | 39.59 | 26.98 | 24.73 | 8.98 | 11.78 | 14.62 | *201* | *236* |
| 75–79 | 20.81 | 5.95 | 10.31 | 4.94 | 9.78 | 3.20 | *124* | *109* |
| 80+ | (0.48) | (0.19) | (1.25) | (0.00) | (0.00) | (0.00) | *46* | *32* |
|  |  |  |  |  |  |  |  |  |
| **Partnered women** | **205.90** | **182.54** | **140.91** | **106.88** | **77.75** | **61.82** | *1,710* | *1,773* |
| 50–54 | 378.53 | 394.84 | 334.74 | 300.40 | 220.90 | 220.28 | *227* | *228* |
| 55–59 | 338.52 | 308.01 | 220.10 | 161.57 | 108.74 | 69.54 | *495* | *457* |
| 60–64 | 190.54 | 133.77 | 103.78 | 63.45 | 52.86 | 33.24 | *409* | *476* |
| 65–69 | 58.52 | 42.16 | 39.09 | 25.54 | 21.49 | 23.69 | *272* | *296* |
| 70–74 | 23.31 | 18.65 | 17.18 | 10.58 | 6.75 | 6.37 | *181* | *222* |
| 75–79 | 1.73 | 2.53 | 1.18 | 1.03 | 6.74 | 0.33 | *88* | *69* |
| 80+ | – | – | – | – | – | – | *36* | *25* |

For variable definitions, see AE.3, AE.6, AE.7, AE.9, AE.16, and AE.23. For related text, see E.23. All values are expressed in January 2019 prices.

**Table EL1c. Mean equivalised weekly family PRIVATE PENSION income (£), by baseline (wave 4) age and family type**

| Age and family type in 2008–09 | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **80.72** | **85.19** | **102.33** | **109.69** | **105.47** | **117.30** | *435* | *396* |
| 50–54 | 16.48 | 26.41 | 27.05 | 39.96 | 50.61 | 76.67 | *78* | *67* |
| 55–59 | 36.19 | 65.08 | 85.70 | 116.27 | 110.20 | 120.90 | *106* | *83* |
| 60–64 | 76.49 | 85.50 | 99.54 | 115.25 | 102.65 | 115.79 | *91* | *92* |
| 65–69 | 124.33 | 105.06 | 139.99 | 118.21 | 108.96 | 126.98 | *64* | *65* |
| 70–74 | 145.17 | 130.21 | 150.05 | 132.65 | 138.60 | 129.71 | *50* | *56* |
| 75–79 | – | – | – | – | – | – | *29* | *23* |
| 80+ | – | – | – | – | – | – | *17* | *10* |
|  |  |  |  |  |  |  |  |  |
| **Single women** | **56.48** | **66.24** | **68.78** | **81.80** | **86.91** | **93.52** | *848* | *882* |
| 50–54 | 18.23 | 12.74 | 22.18 | 56.55 | 82.94 | 101.81 | *82* | *86* |
| 55–59 | 24.11 | 39.97 | 59.70 | 82.16 | 90.29 | 89.03 | *154* | *151* |
| 60–64 | 66.07 | 90.31 | 83.96 | 87.38 | 99.66 | 109.42 | *138* | *173* |
| 65–69 | 73.53 | 82.08 | 85.22 | 95.90 | 91.09 | 105.79 | *121* | *143* |
| 70–74 | 68.27 | 77.51 | 80.11 | 84.71 | 88.41 | 84.34 | *126* | *163* |
| 75–79 | 75.79 | 76.09 | 74.13 | 75.67 | 77.29 | 78.09 | *126* | *101* |
| 80+ | 64.62 | 70.81 | 58.44 | 80.84 | 72.66 | 88.23 | *101* | *65* |
|  |  |  |  |  |  |  |  |  |
| **Partnered men** | **103.32** | **118.62** | **134.49** | **146.79** | **159.04** | **165.30** | *1,760* | *1,695* |
| 50–54 | 26.06 | 34.88 | 59.66 | 64.66 | 101.96 | 135.88 | *226* | *191* |
| 55–59 | 60.07 | 85.95 | 118.86 | 138.44 | 161.58 | 165.98 | *496* | *390* |
| 60–64 | 125.36 | 147.47 | 163.66 | 180.83 | 186.83 | 189.18 | *402* | *451* |
| 65–69 | 159.68 | 162.75 | 161.29 | 178.61 | 174.97 | 171.07 | *266* | *286* |
| 70–74 | 154.95 | 146.36 | 149.60 | 147.26 | 151.64 | 153.54 | *201* | *236* |
| 75–79 | 126.98 | 157.54 | 152.70 | 155.90 | 152.98 | 138.54 | *124* | *109* |
| 80+ | (141.39) | (154.08) | (147.52) | (134.36) | (124.02) | (184.01) | *46* | *32* |
|  |  |  |  |  |  |  |  |  |
| **Partnered women** | **105.26** | **116.24** | **128.97** | **142.34** | **147.57** | **147.97** | *1,710* | *1,773* |
| 50–54 | 37.92 | 45.66 | 66.82 | 86.91 | 113.17 | 123.55 | *227* | *228* |
| 55–59 | 76.45 | 99.73 | 135.25 | 156.55 | 166.38 | 161.02 | *495* | *457* |
| 60–64 | 131.60 | 144.82 | 147.88 | 170.63 | 168.83 | 163.20 | *409* | *476* |
| 65–69 | 154.96 | 143.39 | 139.60 | 148.67 | 143.11 | 146.32 | *272* | *296* |
| 70–74 | 128.27 | 133.05 | 138.39 | 123.41 | 124.34 | 142.40 | *181* | *222* |
| 75–79 | 113.75 | 129.27 | 111.63 | 104.38 | 112.68 | 113.57 | *88* | *69* |
| 80+ | – | – | – | – | – | – | *36* | *25* |

For variable definitions, see AE.3, AE.5, AE.9, AE.15, and AE.23. For related text, see E.23. All values are expressed in January 2019 prices.

**Table EL1d. Mean equivalised weekly family STATE PENSION AND BENEFIT income (£), by baseline (wave 4) age and family type**

| Age and family type in 2008–09 | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **82.73** | **100.64** | **114.97** | **126.64** | **146.40** | **160.10** | *435* | *396* |
| 50–54 | 44.68 | 52.07 | 63.94 | 56.09 | 62.45 | 74.70 | *78* | *67* |
| 55–59 | 39.39 | 48.71 | 42.43 | 62.19 | 113.86 | 161.46 | *106* | *83* |
| 60–64 | 42.91 | 90.35 | 132.33 | 171.61 | 177.30 | 178.26 | *91* | *92* |
| 65–69 | 153.87 | 159.65 | 171.73 | 174.50 | 184.27 | 184.42 | *64* | *65* |
| 70–74 | 149.99 | 164.63 | 173.00 | 175.94 | 188.21 | 184.71 | *50* | *56* |
| 75–79 | – | – | – | – | – | – | *29* | *23* |
| 80+ | – | – | – | – | – | – | *17* | *10* |
| | | | | | | | | |
| **Single women** | **135.20** | **144.90** | **151.96** | **158.83** | **161.82** | **173.72** | *848* | *882* |
| 50–54 | 59.51 | 66.45 | 57.78 | 60.85 | 53.84 | 74.84 | *82* | *86* |
| 55–59 | 62.32 | 87.77 | 107.80 | 129.28 | 148.60 | 168.11 | *154* | *151* |
| 60–64 | 144.58 | 162.61 | 160.83 | 165.97 | 172.83 | 177.76 | *138* | *173* |
| 65–69 | 165.62 | 171.59 | 171.93 | 179.61 | 180.69 | 183.63 | *121* | *143* |
| 70–74 | 158.48 | 176.28 | 181.48 | 183.90 | 185.36 | 192.63 | *126* | *163* |
| 75–79 | 198.02 | 180.35 | 184.80 | 177.50 | 186.74 | 192.16 | *126* | *101* |
| 80+ | 151.12 | 154.81 | 180.01 | 191.06 | 168.53 | 197.89 | *101* | *65* |
| | | | | | | | | |
| **Partnered men** | **74.27** | **91.82** | **109.50** | **124.85** | **146.29** | **162.07** | *1,760* | *1,695* |
| 50–54 | 17.74 | 24.50 | 21.05 | 22.87 | 26.15 | 37.82 | *226* | *191* |
| 55–59 | 24.40 | 33.32 | 44.27 | 62.32 | 116.83 | 160.43 | *496* | *390* |
| 60–64 | 45.56 | 88.99 | 134.35 | 165.93 | 180.20 | 182.51 | *402* | *451* |
| 65–69 | 147.96 | 157.74 | 177.30 | 189.44 | 193.92 | 194.21 | *266* | *286* |
| 70–74 | 152.38 | 170.49 | 172.91 | 183.29 | 184.19 | 195.88 | *201* | *236* |
| 75–79 | 157.20 | 160.95 | 175.85 | 176.98 | 192.54 | 199.91 | *124* | *109* |
| 80+ | (149.22) | (169.54) | (180.30) | (171.81) | (187.24) | (177.46) | *46* | *32* |
| | | | | | | | | |
| **Partnered women** | **85.58** | **106.84** | **127.90** | **142.71** | **163.26** | **173.25** | *1,710* | *1,773* |
| 50–54 | 29.29 | 35.13 | 38.91 | 39.59 | 56.20 | 76.79 | *227* | *228* |
| 55–59 | 26.95 | 58.18 | 86.33 | 120.45 | 168.17 | 184.70 | *495* | *457* |
| 60–64 | 97.20 | 127.36 | 159.36 | 174.75 | 183.96 | 188.70 | *409* | *476* |
| 65–69 | 140.48 | 153.15 | 173.41 | 175.80 | 182.92 | 186.19 | *272* | *296* |
| 70–74 | 157.07 | 176.05 | 177.61 | 183.68 | 185.67 | 192.59 | *181* | *222* |
| 75–79 | 159.93 | 159.64 | 177.36 | 176.07 | 191.43 | 195.92 | *88* | *69* |
| 80+ | – | – | – | – | – | – | *36* | *25* |

For variable definitions, see AE.3, AE.7, AE.9, AE.17, AE.19, and AE.23. For related text, see E.23. All values are expressed in January 2019 prices.

**Table EL1e. Mean equivalised weekly family ASSET AND OTHER income (£), by baseline (wave 4) age and family type**

| Age and family type in 2008–09 | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **33.59** | **28.26** | **33.11** | **31.88** | **30.57** | **33.54** | *435* | *396* |
| 50–54 | 15.21 | 17.98 | 33.93 | 50.14 | 25.33 | 47.86 | *78* | *67* |
| 55–59 | 35.53 | 23.43 | 45.84 | 27.00 | 32.75 | 30.71 | *106* | *83* |
| 60–64 | 23.36 | 22.07 | 19.90 | 27.75 | 21.08 | 34.51 | *91* | *92* |
| 65–69 | 68.89 | 32.25 | 46.60 | 37.42 | 38.27 | 40.35 | *64* | *65* |
| 70–74 | 29.68 | 18.72 | 20.69 | 15.33 | 22.44 | 17.85 | *50* | *56* |
| 75–79 | – | – | – | – | – | – | *29* | *23* |
| 80+ | – | – | – | – | – | – | *17* | *10* |
| | | | | | | | | |
| **Single women** | **31.56** | **17.98** | **21.19** | **20.74** | **23.40** | **25.40** | *848* | *882* |
| 50–54 | 16.62 | 20.91 | 12.76 | 23.78 | 27.04 | 25.47 | *82* | *86* |
| 55–59 | 42.60 | 23.69 | 30.44 | 31.04 | 37.36 | 17.02 | *154* | *151* |
| 60–64 | 31.56 | 21.52 | 35.71 | 28.41 | 20.20 | 25.24 | *138* | *173* |
| 65–69 | 41.58 | 12.74 | 22.03 | 17.32 | 21.75 | 35.30 | *121* | *143* |
| 70–74 | 45.53 | 27.95 | 23.38 | 20.28 | 22.97 | 34.54 | *126* | *163* |
| 75–79 | 16.87 | 10.18 | 8.75 | 14.21 | 18.32 | 24.59 | *126* | *101* |
| 80+ | 15.80 | 5.70 | 5.83 | 5.31 | 12.59 | 16.40 | *101* | *65* |
| | | | | | | | | |
| **Partnered men** | **48.72** | **41.11** | **58.61** | **38.48** | **39.12** | **51.59** | *1,760* | *1,695* |
| 50–54 | 32.60 | 41.32 | 61.60 | 32.53 | 33.29 | 39.16 | *226* | *191* |
| 55–59 | 42.34 | 32.00 | 37.85 | 38.29 | 50.44 | 46.89 | *496* | *390* |
| 60–64 | 54.41 | 35.76 | 108.90 | 47.63 | 42.45 | 91.04 | *402* | *451* |
| 65–69 | 61.65 | 56.71 | 54.48 | 46.66 | 38.38 | 38.11 | *266* | *286* |
| 70–74 | 49.49 | 47.36 | 40.68 | 28.01 | 15.82 | 29.45 | *201* | *236* |
| 75–79 | 54.20 | 51.86 | 27.40 | 20.53 | 42.47 | 26.07 | *124* | *109* |
| 80+ | (54.15) | (38.79) | (17.68) | (37.81) | (13.14) | (60.17) | *46* | *32* |
| | | | | | | | | |
| **Partnered women** | **47.81** | **40.17** | **63.21** | **41.04** | **38.96** | **46.29** | *1,710* | *1,773* |
| 50–54 | 35.91 | 35.54 | 44.98 | 32.31 | 47.44 | 57.87 | *227* | *228* |
| 55–59 | 37.95 | 33.67 | 60.46 | 55.12 | 46.49 | 42.01 | *495* | *457* |
| 60–64 | 64.23 | 42.69 | 99.20 | 38.67 | 39.98 | 67.18 | *409* | *476* |
| 65–69 | 60.36 | 58.30 | 72.13 | 41.32 | 28.57 | 37.48 | *272* | *296* |
| 70–74 | 33.86 | 36.07 | 24.73 | 30.42 | 17.85 | 24.02 | *181* | *222* |
| 75–79 | 55.98 | 38.35 | 34.04 | 29.30 | 58.03 | 29.08 | *88* | *69* |
| 80+ | – | – | – | – | – | – | *36* | *25* |

For variable definitions, see AE.1, AE.3, AE.7, AE.9, AE.14, and AE.23. For related text, see E.23. All values are expressed in January 2019 prices.

*Economics domain tables*

**Table EL2a. Mean equivalised weekly family TOTAL income (£), by baseline (wave 4) age and education**

| Age in 2008–09 and education | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Aged 50–54** | **453.48** | **495.23** | **480.65** | **455.89** | **433.43** | **455.73** | *607* | *567* |
| Low education | 341.18 | 355.50 | 345.82 | 362.89 | 323.59 | 358.28 | *180* | *144* |
| Medium education | 463.65 | 466.10 | 479.25 | 456.35 | 425.94 | 437.29 | *293* | *275* |
| High education | 582.53 | 748.33 | 665.71 | 582.48 | 601.03 | 627.37 | *134* | *148* |
| | | | | | | | | |
| **Aged 55–59** | **459.02** | **461.76** | **456.37** | **451.34** | **456.69** | **449.18** | *1,224* | *1,064* |
| Low education | 334.65 | 353.44 | 347.27 | 348.08 | 346.38 | 339.27 | *444* | *327* |
| Medium education | 460.98 | 456.22 | 466.67 | 460.17 | 477.59 | 467.35 | *474* | *430* |
| High education | 636.74 | 627.34 | 600.92 | 589.78 | 586.08 | 581.68 | *306* | *307* |
| | | | | | | | | |
| **Aged 60–64** | **451.58** | **443.70** | **479.15** | **434.48** | **436.12** | **453.73** | *1,031* | *1,182* |
| Low education | 372.69 | 364.09 | 377.55 | 343.90 | 347.50 | 351.35 | *470* | *468* |
| Medium education | 467.58 | 472.51 | 506.68 | 454.15 | 453.89 | 464.27 | *397* | *487* |
| High education | 638.20 | 602.32 | 705.34 | 645.70 | 648.38 | 722.77 | *165* | *227* |
| | | | | | | | | |
| **Aged 65–69** | **410.56** | **392.12** | **408.20** | **398.48** | **389.21** | **397.97** | *719* | *788* |
| Low education | 319.65 | 298.03 | 307.21 | 312.77 | 303.02 | 316.22 | *367* | *349* |
| Medium education | 431.43 | 410.69 | 447.79 | 432.52 | 403.14 | 409.82 | *246* | *292* |
| High education | 673.70 | 668.31 | 666.12 | 616.94 | 654.31 | 651.59 | *107* | *147* |
| | | | | | | | | |
| **Aged 70–74** | **346.94** | **349.98** | **353.95** | **340.80** | **338.04** | **365.86** | *548* | *667* |
| Low education | 302.70 | 307.84 | 316.03 | 288.47 | 291.81 | 301.55 | *306* | *327* |
| Medium education | 375.05 | 383.42 | 372.48 | 377.13 | 374.45 | 425.92 | *181* | *244* |
| High education | 486.06 | 464.81 | 491.47 | 495.88 | 464.85 | 507.84 | *61* | *96* |
| | | | | | | | | |
| **Aged 75+** | **315.20** | **320.34** | **314.66** | **316.08** | **332.61** | **332.02** | *560* | *429* |
| Low education | 282.59 | 290.33 | 285.66 | 286.51 | 293.69 | 294.38 | *319* | *215* |
| Medium education | 327.71 | 335.68 | 329.14 | 321.23 | 339.54 | 347.09 | *198* | *170* |
| High education | (501.19) | (472.85) | (464.37) | (513.48) | (590.90) | (544.24) | *43* | *44* |

For variable definitions, see AE.3, AE.5, AE.7, AE.9, AE.20, and AE.23. For related text, see E.24. All values are expressed in January 2019 prices.

**Table EL2b. Mean equivalised weekly family EARNINGS (£), by baseline (wave 4) age and education**

| Age in 2008–09 and education | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Aged 50–54** | **364.22** | **389.30** | **343.72** | **314.67** | **252.10** | **236.08** | *607* | *567* |
| Low education | 278.27 | 279.21 | 264.72 | 254.66 | 208.30 | 220.67 | *180* | *144* |
| Medium education | 378.76 | 370.04 | 328.53 | 307.48 | 248.97 | 214.54 | *293* | *275* |
| High education | 448.14 | 578.33 | 484.92 | 413.17 | 318.76 | 304.17 | *134* | *148* |
| | | | | | | | | |
| **Aged 55–59** | **326.92** | **295.65** | **226.62** | **177.83** | **117.99** | **84.02** | *1,224* | *1,064* |
| Low education | 238.83 | 220.47 | 183.58 | 145.33 | 95.22 | 66.16 | *444* | *327* |
| Medium education | 317.08 | 292.74 | 218.40 | 175.12 | 120.50 | 90.40 | *474* | *430* |
| High education | 470.20 | 409.81 | 302.72 | 229.95 | 147.49 | 100.28 | *306* | *307* |
| | | | | | | | | |
| **Aged 60–64** | **203.42** | **159.61** | **101.54** | **65.23** | **56.81** | **41.83** | *1,031* | *1,182* |
| Low education | 176.38 | 142.02 | 84.31 | 53.44 | 49.17 | 31.61 | *470* | *468* |
| Medium education | 194.61 | 157.32 | 104.76 | 62.72 | 52.53 | 40.38 | *397* | *487* |
| High education | 301.87 | 215.98 | 143.21 | 104.90 | 89.41 | 74.76 | *165* | *227* |
| | | | | | | | | |
| **Aged 65–69** | **63.19** | **48.97** | **40.36** | **30.01** | **27.28** | **24.23** | *719* | *788* |
| Low education | 53.17 | 35.38 | 27.90 | 21.14 | 10.56 | 10.12 | *367* | *349* |
| Medium education | 71.01 | 47.75 | 35.05 | 27.00 | 14.20 | 12.00 | *246* | *292* |
| High education | 79.55 | 97.98 | 95.16 | 67.66 | 115.52 | 101.21 | *107* | *147* |
| | | | | | | | | |
| **Aged 70–74** | **23.50** | **16.92** | **16.02** | **7.93** | **6.61** | **7.86** | *548* | *667* |
| Low education | 20.98 | 14.90 | 15.15 | 6.58 | 5.18 | 5.73 | *306* | *327* |
| Medium education | 27.49 | 19.70 | 16.57 | 9.61 | 7.12 | 11.54 | *181* | *244* |
| High education | 24.33 | 18.88 | 18.83 | 9.76 | 12.40 | 7.70 | *61* | *96* |
| | | | | | | | | |
| **Aged 75+** | **7.52** | **5.13** | **3.58** | **1.45** | **3.25** | **0.76** | *560* | *429* |
| Low education | 3.59 | 7.84 | 4.21 | 1.65 | 3.05 | 0.65 | *319* | *215* |
| Medium education | 14.65 | 1.40 | 2.91 | 0.81 | 0.86 | 0.95 | *198* | *170* |
| High education | (3.77) | (2.05) | (1.97) | (2.83) | (15.89) | (0.69) | *43* | *44* |

For variable definitions, see AE.3, AE.5, AE.6, AE.7, AE.9, AE.16, and AE.23. For related text, see E.24. All values are expressed in January 2019 prices.

**Table EL2c. Mean equivalised weekly family PRIVATE PENSION income (£), by baseline (wave 4) age and education**

| Age in 2008–09 and education | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Aged 50–54** | **28.45** | **35.22** | **53.70** | **69.35** | **97.96** | **120.85** | *607* | *567* |
| Low education | 9.04 | 13.76 | 20.02 | 37.43 | 37.81 | 41.79 | *180* | *144* |
| Medium education | 31.11 | 39.52 | 64.89 | 75.94 | 102.12 | 128.57 | *293* | *275* |
| High education | 48.76 | 54.54 | 74.70 | 98.36 | 170.92 | 210.61 | *134* | *148* |
| | | | | | | | | |
| **Aged 55–59** | **60.60** | **84.85** | **116.21** | **137.56** | **151.86** | **152.12** | *1,224* | *1,064* |
| Low education | 35.13 | 50.05 | 62.27 | 79.71 | 80.21 | 81.79 | *444* | *327* |
| Medium education | 68.05 | 82.76 | 113.61 | 130.51 | 151.04 | 144.07 | *474* | *430* |
| High education | 86.07 | 138.54 | 199.63 | 233.67 | 258.26 | 267.28 | *306* | *307* |
| | | | | | | | | |
| **Aged 60–64** | **116.39** | **134.01** | **141.89** | **159.31** | **161.69** | **161.93** | *1,031* | *1,182* |
| Low education | 68.00 | 78.90 | 81.86 | 90.04 | 92.73 | 93.97 | *470* | *468* |
| Medium education | 139.31 | 159.98 | 168.24 | 182.25 | 182.27 | 184.42 | *397* | *487* |
| High education | 199.30 | 229.16 | 251.18 | 301.90 | 310.36 | 302.86 | *165* | *227* |
| | | | | | | | | |
| **Aged 65–69** | **140.31** | **136.56** | **138.26** | **148.02** | **142.98** | **148.20** | *719* | *788* |
| Low education | 88.45 | 79.82 | 83.80 | 87.40 | 83.69 | 96.62 | *367* | *349* |
| Medium education | 155.60 | 158.31 | 157.55 | 176.23 | 161.03 | 169.35 | *246* | *292* |
| High education | 282.66 | 279.04 | 282.08 | 293.06 | 305.77 | 276.66 | *107* | *147* |
| | | | | | | | | |
| **Aged 70–74** | **125.92** | **124.74** | **131.36** | **124.54** | **127.33** | **125.00** | *548* | *667* |
| Low education | 91.52 | 85.48 | 97.02 | 86.94 | 90.45 | 83.93 | *306* | *327* |
| Medium education | 144.62 | 148.47 | 148.31 | 147.43 | 156.27 | 144.57 | *181* | *244* |
| High education | 243.43 | 253.86 | 255.41 | 245.47 | 228.84 | 271.51 | *61* | *96* |
| | | | | | | | | |
| **Aged 75+** | **107.16** | **118.57** | **112.34** | **114.11** | **110.14** | **112.65** | *560* | *429* |
| Low education | 76.69 | 91.92 | 84.24 | 79.89 | 81.65 | 84.60 | *319* | *215* |
| Medium education | 124.64 | 135.91 | 125.40 | 130.63 | 125.32 | 124.31 | *198* | *170* |
| High education | (253.98) | (236.89) | (262.01) | (293.53) | (252.26) | (268.82) | *43* | *44* |

For variable definitions see AE.3, AE.5, AE.7, AE.9, AE.15, and AE.23. For related text see E.24. All values are expressed in January 2019 prices.

**Table EL2d. Mean equivalised weekly family STATE PENSION AND BENEFIT income (£), by baseline (wave 4) age and education**

| Age in 2002–03 and education | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Aged 50–54** | **31.36** | **37.84** | **38.30** | **38.68** | **46.04** | **61.96** | *607* | *567* |
| Low education | 47.13 | 56.95 | 55.97 | 61.17 | 66.02 | 86.62 | *180* | *144* |
| Medium education | 27.24 | 36.77 | 35.87 | 32.32 | 41.55 | 57.05 | *293* | *275* |
| High education | 19.14 | 14.49 | 19.75 | 22.08 | 28.85 | 39.44 | *134* | *148* |
| | | | | | | | | |
| **Aged 55–59** | **31.04** | **50.72** | **67.17** | **92.36** | **140.08** | **170.67** | *1,224* | *1,064* |
| Low education | 43.97 | 69.62 | 86.33 | 108.84 | 155.82 | 179.77 | *444* | *327* |
| Medium education | 27.70 | 45.66 | 63.76 | 92.62 | 141.74 | 173.60 | *474* | *430* |
| High education | 17.41 | 31.07 | 44.28 | 67.69 | 114.39 | 152.87 | *306* | *307* |
| | | | | | | | | |
| **Aged 60–64** | **79.03** | **114.23** | **147.81** | **170.28** | **180.82** | **185.41** | *1,031* | *1,182* |
| Low education | 88.34 | 120.39 | 152.12 | 176.45 | 186.40 | 190.74 | *470* | *468* |
| Medium education | 79.28 | 116.48 | 148.90 | 168.04 | 178.03 | 185.88 | *397* | *487* |
| High education | 51.86 | 91.03 | 132.76 | 158.09 | 171.52 | 168.90 | *165* | *227* |
| | | | | | | | | |
| **Aged 65–69** | **148.56** | **158.50** | **174.40** | **181.33** | **186.84** | **189.25** | *719* | *788* |
| Low education | 153.73 | 161.01 | 177.59 | 185.60 | 189.79 | 194.26 | *367* | *349* |
| Medium education | 144.46 | 157.05 | 174.64 | 180.02 | 187.09 | 185.09 | *246* | *292* |
| High education | 140.30 | 153.35 | 162.77 | 169.55 | 176.07 | 181.63 | *107* | *147* |
| | | | | | | | | |
| **Aged 70–74** | **155.17** | **171.09** | **176.47** | **182.05** | **185.06** | **191.35** | *548* | *667* |
| Low education | 156.91 | 172.87 | 177.59 | 181.28 | 185.61 | 189.62 | *306* | *327* |
| Medium education | 155.26 | 173.91 | 177.78 | 188.18 | 187.15 | 197.13 | *181* | *244* |
| High education | 146.19 | 153.57 | 166.79 | 167.73 | 176.08 | 182.86 | *61* | *96* |
| | | | | | | | | |
| **Aged 75+** | **164.32** | **165.50** | **180.39** | **180.84** | **188.46** | **194.49** | *560* | *429* |
| Low education | 174.94 | 169.40 | 184.00 | 189.49 | 189.87 | 199.11 | *319* | *215* |
| Medium education | 152.33 | 162.47 | 178.44 | 171.54 | 188.56 | 188.99 | *198* | *170* |
| High education | (140.55) | (150.53) | (162.42) | (159.26) | (177.50) | (185.29) | *43* | *44* |

For variable definitions, see AE.3, AE.5, AE.7, AE.9, AE.17, AE.19, and AE.23. For related text, see E.24. All values are expressed in January 2019 prices.

**Table EL2e. Mean equivalised weekly family ASSET AND OTHER income (£), by baseline (wave 4) age and education**

| Age in 2008–09 and education | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| **Aged 50–54** | **29.46** | **33.42** | **44.91** | **33.19** | **37.06** | **36.11** | *607* | *567* |
| Low education | 6.73 | 5.58 | 6.04 | 9.63 | 11.46 | 9.20 | *180* | *144* |
| Medium education | 26.53 | 19.77 | 49.96 | 40.61 | 33.30 | 35.76 | *293* | *275* |
| High education | 66.48 | 101.33 | 86.33 | 48.87 | 80.71 | 73.14 | *134* | *148* |
| | | | | | | | | |
| **Aged 55–59** | **40.46** | **31.40** | **46.79** | **43.82** | **46.76** | **43.19** | *1,224* | *1,064* |
| Low education | 16.73 | 14.09 | 15.88 | 14.20 | 15.13 | 11.29 | *444* | *327* |
| Medium education | 48.14 | 36.99 | 70.55 | 62.55 | 64.30 | 61.67 | *474* | *430* |
| High education | 63.06 | 47.93 | 55.35 | 58.47 | 65.94 | 61.25 | *306* | *307* |
| | | | | | | | | |
| **Aged 60–64** | **52.74** | **35.51** | **88.13** | **39.89** | **36.63** | **64.57** | *1,031* | *1,182* |
| Low education | 39.98 | 22.60 | 59.26 | 23.97 | 19.00 | 35.02 | *470* | *468* |
| Medium education | 54.39 | 38.17 | 85.21 | 41.76 | 40.88 | 53.58 | *397* | *487* |
| High education | 85.16 | 66.14 | 178.32 | 80.81 | 77.08 | 176.24 | *165* | *227* |
| | | | | | | | | |
| **Aged 65–69** | **58.50** | **47.90** | **55.13** | **39.05** | **32.02** | **36.23** | *719* | *788* |
| Low education | 24.30 | 21.65 | 17.92 | 18.59 | 18.94 | 15.16 | *367* | *349* |
| Medium education | 60.36 | 47.40 | 80.55 | 49.16 | 40.77 | 43.38 | *246* | *292* |
| High education | 171.19 | 137.95 | 125.10 | 86.66 | 56.95 | 92.09 | *107* | *147* |
| | | | | | | | | |
| **Aged 70–74** | **42.35** | **37.29** | **30.10** | **26.27** | **19.00** | **41.59** | *548* | *667* |
| Low education | 33.29 | 34.59 | 26.27 | 13.64 | 10.56 | 22.22 | *306* | *327* |
| Medium education | 47.69 | 41.50 | 29.82 | 31.92 | 23.86 | 72.69 | *181* | *244* |
| High education | 72.10 | 38.49 | 50.44 | 72.93 | 47.53 | 45.78 | *61* | *96* |
| | | | | | | | | |
| **Aged 75+** | **36.20** | **31.13** | **18.35** | **19.69** | **30.75** | **24.12** | *560* | *429* |
| Low education | 27.36 | 21.15 | 13.21 | 15.48 | 19.12 | 10.01 | *319* | *215* |
| Medium education | 36.09 | 35.90 | 22.39 | 18.25 | 24.80 | 32.84 | *198* | *170* |
| High education | (102.90) | (83.37) | (37.97) | (57.86) | (145.26) | (89.44) | *43* | *44* |

For variable definitions, see AE.1, AE.3, AE.5, AE.7, AE.9, AE.14, and AE.23. For related text, see E.24 All values are expressed in January 2019 prices.

**Table EL3. Interquartile ratio (p75/p25) of total equivalised net family income, by baseline (wave 4) age and family type**

| Age and family type in 2008–09 | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | Wted N | Unwted N |
|---|---|---|---|---|---|---|---|---|
| **Single men** | **2.70** | **2.59** | **2.23** | **2.10** | **2.24** | **1.98** | *435* | *396* |
| 50–54 | 3.57 | 4.76 | 3.09 | 2.52 | 3.41 | 2.65 | *78* | *67* |
| 55–59 | 4.41 | 3.22 | 3.25 | 3.13 | 3.01 | 2.03 | *106* | *83* |
| 60–64 | 2.95 | 2.62 | 2.06 | 1.94 | 1.92 | 2.00 | *91* | *92* |
| 65–69 | 2.22 | 1.83 | 1.72 | 2.04 | 1.93 | 1.93 | *64* | *65* |
| 70–74 | 1.98 | 2.04 | 1.75 | 1.89 | 2.20 | 2.18 | *50* | *56* |
| 75–79 | – | – | – | – | – | – | *29* | *23* |
| 80+ | – | – | – | – | – | – | *17* | *10* |
| | | | | | | | | |
| **Single women** | **2.14** | **2.10** | **2.02** | **2.06** | **2.04** | **1.87** | *848* | *882* |
| 50–54 | 2.74 | 3.15 | 2.15 | 2.91 | 2.98 | 2.48 | *82* | *86* |
| 55–59 | 2.66 | 2.37 | 2.16 | 2.21 | 2.19 | 2.05 | *154* | *151* |
| 60–64 | 2.30 | 2.08 | 2.08 | 2.12 | 2.18 | 1.98 | *138* | *173* |
| 65–69 | 2.11 | 2.06 | 1.94 | 1.91 | 1.94 | 1.80 | *121* | *143* |
| 70–74 | 1.93 | 1.89 | 1.98 | 1.88 | 1.81 | 1.77 | *126* | *163* |
| 75–79 | 1.90 | 1.89 | 1.81 | 1.88 | 2.00 | 1.96 | *126* | *101* |
| 80+ | 1.78 | 1.81 | 1.96 | 2.08 | 2.00 | 1.66 | *101* | *65* |
| | | | | | | | | |
| **Partnered men** | **2.07** | **2.17** | **2.05** | **2.03** | **1.98** | **1.98** | *1,760* | *1,695* |
| 50–54 | 2.11 | 2.05 | 2.06 | 2.26 | 2.23 | 2.02 | *226* | *191* |
| 55–59 | 2.07 | 2.13 | 1.91 | 2.00 | 2.02 | 1.96 | *496* | *390* |
| 60–64 | 2.09 | 2.17 | 2.05 | 1.94 | 1.90 | 1.85 | *402* | *451* |
| 65–69 | 1.93 | 1.99 | 2.05 | 1.94 | 1.81 | 1.91 | *266* | *286* |
| 70–74 | 2.04 | 1.84 | 1.94 | 1.89 | 1.82 | 1.90 | *201* | *236* |
| 75–79 | 1.86 | 1.64 | 1.67 | 1.77 | 1.71 | 1.76 | *124* | *109* |
| 80+ | (2.24) | (2.34) | (1.58) | (1.70) | (1.68) | (2.29) | *46* | *32* |
| | | | | | | | | |
| **Partnered women** | **2.14** | **2.17** | **2.08** | **2.03** | **1.92** | **1.96** | *1,710* | *1,773* |
| 50–54 | 2.14 | 2.17 | 2.09 | 2.04 | 2.07 | 2.17 | *227* | *228* |
| 55–59 | 1.97 | 2.30 | 2.09 | 2.06 | 1.84 | 1.89 | *495* | *457* |
| 60–64 | 2.05 | 2.05 | 2.09 | 1.90 | 1.93 | 1.91 | *409* | *476* |
| 65–69 | 1.98 | 1.97 | 2.01 | 1.84 | 1.80 | 2.01 | *272* | *296* |
| 70–74 | 1.90 | 1.82 | 1.83 | 1.85 | 1.71 | 1.86 | *181* | *222* |
| 75–79 | 1.81 | 1.87 | 1.74 | 1.68 | 1.66 | 1.94 | *88* | *69* |
| 80+ | – | – | – | – | – | – | *36* | *25* |
| | | | | | | | | |
| **All family types** | **2.28** | **2.22** | **2.15** | **2.10** | **1.99** | **2.00** | *4,752* | *4,746* |
| 50–54 | 2.30 | 2.30 | 2.31 | 2.33 | 2.25 | 2.25 | *613* | *572* |
| 55–59 | 2.24 | 2.42 | 2.20 | 2.18 | 2.07 | 2.00 | *1,250* | *1,081* |
| 60–64 | 2.21 | 2.17 | 2.10 | 1.94 | 1.92 | 1.93 | *1,040* | *1,192* |
| 65–69 | 2.03 | 2.01 | 2.01 | 1.86 | 1.84 | 1.88 | *722* | *790* |
| 70–74 | 2.05 | 1.81 | 1.92 | 1.90 | 1.84 | 1.87 | *559* | *677* |
| 75–79 | 1.93 | 1.82 | 1.79 | 1.82 | 1.87 | 1.88 | *367* | *302* |
| 80+ | 1.82 | 1.99 | 1.69 | 1.96 | 1.86 | 1.90 | *201* | *132* |

For variable definitions, see AE.3, AE.7, AE.9, AE.20, and AE.23. For related text, see E.25.

**Table EL4a. Persistency of making pension contributions in waves when observed to be under state pension age (waves 4–9), by age, gender and wealth group: aged under SPA and employed or self-employed at baseline only**

| Age and wealth group in 2008–09 | Contributes to a pension ... % | | | Weighted N | Unweighted N |
|---|---|---|---|---|---|
| | **Never** | **Sometimes** | **Always** | | |
| **All men 50–64** | **29.7** | **40.1** | **30.2** | *1,025* | *936* |
| Lowest | 45.7 | 31.7 | 22.5 | *117* | *87* |
| 2nd | 27.4 | 43.9 | 28.7 | *200* | *163* |
| 3rd | 27.9 | 33.6 | 38.5 | *226* | *204* |
| 4th | 24.7 | 42.4 | 32.9 | *220* | *216* |
| Highest | 30.0 | 44.5 | 25.5 | *263* | *266* |
| | | | | | |
| **Men 50–54** | **16.8** | **55.7** | **27.6** | *262* | *225* |
| Lowest | – | – | – | *35* | *25* |
| 2nd | 19.0 | 59.4 | 21.5 | *60* | *50* |
| 3rd | (17.3) | (51.0) | (31.8) | *59* | *49* |
| 4th | (12.6) | (47.8) | (39.6) | *50* | *42* |
| Highest | 10.4 | 62.8 | 26.9 | *58* | *59* |
| | | | | | |
| **Men 55–59** | **25.3** | **49.6** | **25.0** | *463* | *373* |
| Lowest | (44.4) | (33.6) | (22.0) | *50* | *32* |
| 2nd | 23.8 | 49.0 | 27.2 | *99* | *71* |
| 3rd | 26.3 | 41.3 | 32.4 | *88* | *69* |
| 4th | 15.9 | 59.3 | 24.8 | *98* | *88* |
| Highest | 25.6 | 54.8 | 19.6 | *127* | *113* |
| | | | | | |
| **Men 60–64** | **47.6** | **11.8** | **40.6** | *300* | *338* |
| Lowest | (66.3) | (2.0) | (31.7) | *32* | *30* |
| 2nd | (48.8) | (7.9) | (43.3) | *40* | *42* |
| 3rd | 37.7 | 11.9 | 50.3 | *78* | *86* |
| 4th | 45.1 | 15.6 | 39.3 | *72* | *86* |
| Highest | 51.7 | 14.0 | 34.3 | *78* | *94* |
| | | | | | |
| **All women 50–59** | **29.3** | **34.6** | **36.1** | *671* | *670* |
| Lowest | 35.5 | 26.7 | 37.7 | *71* | *64* |
| 2nd | 32.9 | 32.7 | 34.4 | *154* | *145* |
| 3rd | 28.3 | 30.5 | 41.2 | *129* | *126* |
| 4th | 22.2 | 41.8 | 36.1 | *157* | *163* |
| Highest | 30.9 | 36.2 | 32.9 | *160* | *172* |
| | | | | | |
| **Women 50–54** | **21.4** | **55.0** | **23.6** | *232* | *243* |
| Lowest | – | – | – | *23* | *22* |
| 2nd | 22.0 | 50.7 | 27.3 | *56* | *54* |
| 3rd | 19.9 | 49.6 | 30.5 | *53* | *52* |
| 4th | 20.4 | 63.4 | 16.2 | *50* | *56* |
| Highest | 24.7 | 58.8 | 16.5 | *51* | *59* |
| | | | | | |
| **Women 55–59** | **33.5** | **23.8** | **42.7** | *438* | *427* |
| Lowest | (43.8) | (15.0) | (41.2) | *48* | *42* |
| 2nd | 39.1 | 22.5 | 38.4 | *98* | *91* |
| 3rd | 34.2 | 17.0 | 48.8 | *75* | *74* |
| 4th | 23.0 | 31.7 | 45.3 | *107* | *107* |
| Highest | 33.8 | 25.7 | 40.5 | *109* | *113* |

For variable definitions, see AE.3, AE.18, AE.22, and AE.23. For related text, see E.26 and E.27.

**Table EL4b. Persistency of making pension contributions in waves when observed to be under state pension age (waves 4–9), by age, gender and wealth group: employed or self-employed in all waves observed below state pension age**

| Age and wealth group in 2008–09 | Contributes to a pension ... % | | | Weighted N | Unweighted N |
|---|---|---|---|---|---|
| | Never | Sometimes | Always | | |
| **All aged 50–64** | **30.4** | **24.1** | **45.5** | *1,156* | *1,087* |
| Lowest | 38.4 | 22.6 | 39.0 | *132* | *109* |
| 2nd | 29.8 | 27.9 | 42.3 | *246* | *215* |
| 3rd | 27.6 | 19.9 | 52.5 | *255* | *236* |
| 4th | 25.2 | 22.6 | 52.2 | *240* | *238* |
| Highest | 34.0 | 26.7 | 39.3 | *283* | *289* |
| | | | | | |
| **Men 50–64** | **30.0** | **27.3** | **42.7** | *681* | *627* |
| Lowest | 41.4 | 27.2 | 31.4 | *78* | *60* |
| 2nd | 27.4 | 33.0 | 39.6 | *135* | *113* |
| 3rd | 26.0 | 23.9 | 50.2 | *165* | *152* |
| 4th | 27.3 | 22.0 | 50.8 | *135* | *133* |
| Highest | 33.1 | 30.4 | 36.5 | *167* | *169* |
| | | | | | |
| **Women 50–59** | **30.9** | **19.6** | **49.5** | *475* | *460* |
| Lowest | (34.1) | (15.8) | (50.2) | *54* | *49* |
| 2nd | 32.8 | 21.6 | 45.6 | *110* | *102* |
| 3rd | 30.6 | 12.6 | 56.8 | *90* | *84* |
| 4th | 22.5 | 23.4 | 54.1 | *105* | *105* |
| Highest | 35.4 | 21.3 | 43.2 | *116* | *120* |

For variable definitions, see AE.18, AE.22 and AE.23. For related text, see E.28.

**Table EL5. Persistence of self-reported financial difficulties and persistence of managing very well financially (waves 4–9), by age and family type**

| Age and family type in 2008–09 | Reports having financial difficulty ... | | | Reports managing very well ... | | | *Wted N* | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | **%** | | | **%** | | | | |
| | **Never** | **Sometimes** | **Always** | **Always** | **Sometimes** | **Never** | | |
| **Single men** | **79.6** | **20.4** | **0.0** | **10.6** | **56.3** | **33.1** | *437* | *399* |
| 50–54 | 60.3 | 39.7 | 0.0 | 4.6 | 49.3 | 46.2 | *79* | *68* |
| 55–59 | 78.5 | 21.5 | 0.0 | 8.1 | 54.2 | 37.7 | *106* | *83* |
| 60–64 | 78.5 | 21.5 | 0.0 | 10.9 | 58.8 | 30.3 | *92* | *93* |
| 65–69 | 83.2 | 16.8 | 0.0 | 11.4 | 63.5 | 25.1 | *65* | *66* |
| 70–74 | 93.2 | 6.8 | 0.0 | 21.5 | 49.9 | 28.6 | *50* | *56* |
| 75–79 | – | – | – | – | – | – | *29* | *23* |
| 80+ | – | – | – | – | – | – | *17* | *10* |
| | | | | | | | | |
| **Single women** | **83.2** | **16.7** | **0.2** | **9.2** | **56.0** | **34.8** | *849* | *884* |
| 50–54 | 69.3 | 29.7 | 1.0 | 2.4 | 52.4 | 45.2 | *82* | *86* |
| 55–59 | 64.0 | 36.0 | 0.0 | 7.9 | 46.9 | 45.2 | *154* | *151* |
| 60–64 | 83.1 | 16.5 | 0.5 | 11.7 | 51.0 | 37.3 | *139* | *174* |
| 65–69 | 88.0 | 12.0 | 0.0 | 11.6 | 54.5 | 33.9 | *121* | *144* |
| 70–74 | 90.9 | 9.1 | 0.0 | 11.0 | 56.9 | 32.1 | *126* | *163* |
| 75–79 | 92.7 | 7.3 | 0.0 | 9.7 | 62.8 | 27.6 | *126* | *101* |
| 80+ | 96.2 | 3.8 | 0.0 | 7.4 | 72.0 | 20.7 | *101* | *65* |
| | | | | | | | | |
| **Couples** | **91.3** | **8.6** | **0.1** | **16.7** | **58.3** | **25.0** | *3,561* | *3,565* |
| 50–54 | 85.8 | 14.2 | 0.0 | 14.5 | 56.7 | 28.9 | *473* | *437* |
| 55–59 | 89.4 | 10.5 | 0.1 | 19.3 | 55.2 | 25.5 | *1,015* | *868* |
| 60–64 | 92.6 | 7.4 | 0.0 | 19.1 | 57.5 | 23.4 | *840* | *962* |
| 65–69 | 93.3 | 6.7 | 0.0 | 15.8 | 61.9 | 22.3 | *549* | *596* |
| 70–74 | 93.9 | 5.9 | 0.2 | 13.1 | 59.0 | 27.9 | *385* | *463* |
| 75–79 | 95.0 | 5.0 | 0.0 | 9.5 | 65.8 | 24.6 | *215* | *181* |
| 80+ | 98.0 | 2.0 | 0.0 | 13.5 | 68.2 | 18.3 | *84* | *58* |

Notes: The response categories are 'manage very well', 'manage quite well', 'get by alright', 'don't manage very well', 'have some financial difficulties' and 'have severe financial difficulties'. For the purposes of this table, 'having financial difficulties' includes those reporting that they 'don't manage very well', 'have some financial difficulties' or 'have severe financial difficulties'. Those 'managing very well' for the purposes of this table include only those reporting in the highest category (manage very well).

For variable definitions, see AE.9 and AE.23. For related text, see E.29 and E.30.

**Table EL6a. Persistence of having too little money to do three or more items of the material deprivation index (waves 4–9), by education and family type: aged 50–SPA**

| Education and family type in 2008–09 | Reports three or more items ... % | | | Weighted N | Unweighted N |
|---|---|---|---|---|---|
| | Never | Sometimes | Always | | |
| *Aged 50–SPA* | **75.7** | **22.6** | **1.8** | *2,368* | *2,215* |
| | | | | | |
| **Single men** | **64.9** | **30.6** | **4.5** | *274* | *242* |
| Low education | 56.8 | 38.8 | 4.4 | *124* | *97* |
| Medium education | 65.6 | 28.6 | 5.8 | *104* | *94* |
| High education | 85.5 | 12.5 | 2.0 | *46* | *51* |
| **Single women** | **42.4** | **48.6** | **9.0** | *234* | *235* |
| Low education | 34.8 | 53.9 | 11.3 | *94* | *81* |
| Medium education | 47.0 | 42.9 | 10.2 | *87* | *91* |
| High education | 48.5 | 48.8 | 2.7 | *52* | *63* |
| **Partnered men** | **83.3** | **16.4** | **0.3** | *1,131* | *1,042* |
| Low education | 76.7 | 23.3 | 0.0 | *404* | *323* |
| Medium education | 86.8 | 12.5 | 0.8 | *423* | *408* |
| High education | 87.2 | 12.8 | 0.0 | *303* | *311* |
| **Partnered women** | **78.5** | **20.8** | **0.7** | *730* | *696* |
| Low education | 70.0 | 28.8 | 1.3 | *235* | *192* |
| Medium education | 80.4 | 19.4 | 0.3 | *348* | *335* |
| High education | 87.9 | 11.4 | 0.7 | *147* | *169* |

See paragraph E.31 for the definition and description of the items on the deprivation index.
For variable definitions, see AE.4 and AE.23. For related text, see E.31–E.33.

**Table EL6b. Persistence of having too little money to do three or more items of the material deprivation index (waves 4–9), by education and family type: aged SPA–74**

| Education and family type in 2008–09 | Reports three or more items ... % | | | Weighted N | Unweighted N |
|---|---|---|---|---|---|
| | Never | Sometimes | Always | | |
| *Aged SPA–74* | **80.1** | **18.5** | **1.4** | *1,831* | *2,128* |
| | | | | | |
| **Single men** | **76.0** | **23.4** | **0.6** | *112* | *120* |
| Low education | 73.0 | 25.8 | 1.1 | *63* | *63* |
| Medium education | (81.5) | (18.5) | (0.0) | *37* | *41* |
| High education | – | – | – | *13* | *16* |
| | | | | | |
| **Single women** | **65.4** | **30.2** | **4.4** | *384* | *478* |
| Low education | 58.8 | 37.7 | 3.5 | *202* | *219* |
| Medium education | 70.1 | 23.7 | 6.2 | *142* | *191* |
| High education | 81.7 | 15.4 | 2.9 | *41* | *68* |
| | | | | | |
| **Partnered men** | **85.8** | **13.9** | **0.2** | *463* | *521* |
| Low education | 81.7 | 17.9 | 0.4 | *238* | *231* |
| Medium education | 88.3 | 11.7 | 0.0 | *146* | *180* |
| High education | 93.6 | 6.4 | 0.0 | *79* | *110* |
| | | | | | |
| **Partnered women** | **84.0** | **15.2** | **0.8** | *872* | *1,009* |
| Low education | 81.1 | 17.6 | 1.4 | *425* | *426* |
| Medium education | 85.4 | 14.4 | 0.3 | *335* | *419* |
| High education | 91.2 | 8.8 | 0.0 | *112* | *164* |

See paragraph E.31 for the definition and description of the items on the deprivation index.
For variable definitions, see AE.5 and AE.23. For related text, see E.31–E.33.

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**Table EL6c. Persistence of having too little money to do three or more items of the material deprivation index (waves 4–9), by education and family type: aged 75+**

| Education and family type in 2008–09 | Reports three or more items … % | | | | |
|---|---|---|---|---|---|
| | Never | Sometimes | Always | *Weighted N* | *Unweighted N* |
| *Aged 75+* | **80.2** | **19.5** | **0.3** | *563* | *432* |
| | | | | | |
| **Single men** | **(85.9)** | **(14.1)** | **(0.0)** | *45* | *33* |
| Low education | – | – | – | *30* | *18* |
| Medium education | – | – | – | *9* | *8* |
| High education | – | – | – | *6* | *7* |
| | | | | | |
| **Single women** | **73.4** | **26.0** | **0.7** | *222* | *163* |
| Low education | 68.8 | 30.1 | 1.1 | *133* | *86* |
| Medium education | 79.2 | 20.8 | 0.0 | *80* | *68* |
| High education | – | – | – | *9* | *9* |
| | | | | | |
| **Partnered men** | **86.6** | **13.4** | **0.0** | *172* | *143* |
| Low education | 79.8 | 20.2 | 0.0 | *89* | *65* |
| Medium education | 94.4 | 5.6 | 0.0 | *62* | *57* |
| High education | – | – | – | *21* | *21* |
| | | | | | |
| **Partnered women** | **81.6** | **18.4** | **0.0** | *123* | *93* |
| Low education | (80.3) | (19.7) | (0.0) | *68* | *47* |
| Medium education | (82.3) | (17.7) | (0.0) | *48* | *38* |
| High education | – | – | – | *7* | *8* |

See paragraph E.31 for the definition and description of the items on the deprivation index.

For variable definitions, see AE.5 and AE.23. For related text, see E.31–E.33.

**Table EL7a. Percentage of men employed or self-employed at baseline (wave 4) and, of those, percentage still in employment or self-employment at waves 5–9, by wealth group and age**

| Wealth group and age in 2008–09 | Whole sample: % in employment or self-employment in 2008–09 | Of those employed or self-employed at baseline: % still in employment or self-employment at … | | | | | | *Wted N* | *Un-wted N* |
|---|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | | |
| **All men 50–74** | **57.9** | **100** | **84.3** | **69.7** | **58.6** | **47.5** | **36.9** | *1,145* | *1,079* |
| Lowest | 43.6 | 100 | 83.5 | 70.7 | 62.3 | 45.1 | 33.9 | *130* | *100* |
| 2nd | 60.9 | 100 | 86.5 | 75.9 | 62.7 | 54.4 | 40.2 | *217* | *182* |
| 3rd | 63.3 | 100 | 87.2 | 70.3 | 60.2 | 46.8 | 40.3 | *247* | *231* |
| 4th | 59.2 | 100 | 82.3 | 66.4 | 54.4 | 39.7 | 31.3 | *250* | *253* |
| Highest | 58.8 | 100 | 82.3 | 66.9 | 56.3 | 50.7 | 37.7 | *301* | *313* |
| | | | | | | | | | |
| **Men 50–54** | **86.1** | **100** | **92.1** | **90.5** | **84.7** | **77.8** | **65.5** | *262* | *225* |
| Lowest | 62.2 | – | – | – | – | – | – | *35* | *25* |
| 2nd | 87.9 | 100 | 92.9 | 91.4 | 89.8 | 87.3 | 75.8 | *60* | *50* |
| 3rd | 96.4 | (100.0) | (94.7) | (93.8) | (88.9) | (78.0) | (65.1) | *59* | *49* |
| 4th | 93.4 | (100.0) | (97.3) | (92.6) | (82.8) | (65.0) | (58.2) | *50* | *42* |
| Highest | 89.5 | 100 | 89.6 | 84.9 | 76.1 | 76.8 | 63.9 | *58* | *59* |
| | | | | | | | | | |
| **Men 55–59** | **77.1** | **100** | **88.1** | **75.2** | **62.8** | **46.7** | **34.4** | *463* | *373* |
| Lowest | 51.3 | (100.0) | (85.4) | (78.3) | (70.7) | (43.3) | (30.1) | *50* | *32* |
| 2nd | 78.4 | 100 | 86.5 | 80.6 | 58.9 | 45.8 | 30.2 | *99* | *71* |
| 3rd | 92.6 | 100 | 92.8 | 77.1 | 70.7 | 51.1 | 45.8 | *88* | *69* |
| 4th | 82.9 | 100 | 89.7 | 72.9 | 62.3 | 46.2 | 32.6 | *98* | *88* |
| Highest | 77.9 | 100 | 86.0 | 70.1 | 57.6 | 46.2 | 32.7 | *127* | *113* |
| | | | | | | | | | |
| **Men 60–64** | **61.0** | **100** | **77.3** | **51.5** | **37.7** | **28.8** | **20.3** | *300* | *338* |
| Lowest | 45.1 | (100.0) | (83.4) | (48.6) | (34.4) | (26.6) | (19.6) | *32* | *30* |
| 2nd | 56.5 | (100.0) | (84.2) | (52.3) | (42.3) | (38.7) | (17.4) | *40* | *42* |
| 3rd | 75.6 | 100 | 81.1 | 52.3 | 35.8 | 25.7 | 22.8 | *78* | *86* |
| 4th | 61.6 | 100 | 69.7 | 51.1 | 35.0 | 19.6 | 14.6 | *72* | *86* |
| Highest | 59.9 | 100 | 74.3 | 52.0 | 40.9 | 36.3 | 24.9 | *78* | *94* |
| | | | | | | | | | |
| **Men 65–74** | **20.6** | **100** | **70.1** | **48.3** | **37.8** | **31.3** | **25.7** | *120* | *143* |
| Lowest | 17.4 | – | – | – | – | – | – | *13* | *13* |
| 2nd | 19.3 | – | – | – | – | – | – | *17* | *19* |
| 3rd | 16.2 | – | – | – | – | – | – | *21* | *27* |
| 4th | 22.5 | (100.0) | (63.5) | (38.5) | (28.6) | (24.6) | (22.5) | *30* | *37* |
| Highest | 24.9 | (100.0) | (75.4) | (59.8) | (53.5) | (55.4) | (40.5) | *39* | *47* |

For variable definitions, see AE.3, AE.9, AE.22, and AE.23. For related text, see E.34.

**Table EL7b. Percentage of women employed or self-employed at baseline (wave 4) and, of those, percentage still in employment or self-employment at waves 5–9, by wealth group and age**

| Wealth group and age in 2008–09 | Whole sample: % in employment or self-employment in 2008–09 | Of those employed or self-employed at baseline: % still in employment or self-employment at … | | | | | | Wted N | Un-wted N |
|---|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | | |
| **All women 50–74** | **43.3** | **100** | **81.1** | **66.0** | **53.3** | **40.1** | **30.4** | *954* | *1,019* |
| Lowest | 29.0 | 100 | 85.2 | 68.2 | 60.9 | 44.0 | 29.8 | *101* | *95* |
| 2nd | 50.5 | 100 | 81.9 | 66.4 | 56.7 | 41.4 | 31.1 | *204* | *203* |
| 3rd | 41.3 | 100 | 81.9 | 66.5 | 53.6 | 39.4 | 33.4 | *195* | *207* |
| 4th | 47.2 | 100 | 79.0 | 62.6 | 48.7 | 39.1 | 28.5 | *218* | *241* |
| Highest | 45.4 | 100 | 79.8 | 67.3 | 51.1 | 38.6 | 29.3 | *238* | *273* |
| | | | | | | | | | |
| **Women 50–54** | **75.1** | **100** | **93.1** | **88.2** | **80.4** | **64.6** | **56.2** | *232* | *243* |
| Lowest | 43.6 | – | – | – | – | – | – | *23* | *22* |
| 2nd | 82.1 | 100 | 93.2 | 88.9 | 77.8 | 63.6 | 57.9 | *56* | *54* |
| 3rd | 82.4 | 100 | 89.3 | 86.4 | 78.3 | 68.7 | 61.4 | *53* | *52* |
| 4th | 83.2 | 100 | 92.7 | 88.3 | 77.1 | 59.3 | 46.3 | *50* | *56* |
| Highest | 78.7 | 100 | 98.0 | 92.9 | 86.4 | 63.9 | 57.7 | *51* | *59* |
| | | | | | | | | | |
| **Women 55–59** | **67.5** | **100** | **81.9** | **63.6** | **49.5** | **34.3** | **22.6** | *438* | *427* |
| Lowest | 47.2 | (100.0) | (94.0) | (77.6) | (67.4) | (42.3) | (26.7) | *48* | *42* |
| 2nd | 77.1 | 100 | 75.1 | 58.0 | 52.5 | 37.0 | 20.6 | *98* | *91* |
| 3rd | 60.1 | 100 | 82.7 | 65.9 | 50.6 | 31.0 | 27.1 | *75* | *74* |
| 4th | 79.2 | 100 | 82.4 | 62.8 | 44.1 | 35.0 | 25.0 | *107* | *107* |
| Highest | 68.8 | 100 | 81.8 | 61.5 | 43.4 | 30.0 | 17.1 | *109* | *113* |
| | | | | | | | | | |
| **Women 60–64** | **37.7** | **100** | **71.5** | **52.1** | **38.8** | **29.9** | **22.0** | *207* | *252* |
| Lowest | 28.0 | – | – | – | – | – | – | *22* | *23* |
| 2nd | 44.5 | (100.0) | (86.4) | (67.0) | (51.5) | (30.7) | (27.9) | *38* | *44* |
| 3rd | 41.8 | 100 | 75.3 | 49.6 | 33.6 | 24.8 | 17.7 | *51* | *61* |
| 4th | 33.1 | 100 | 63.8 | 39.7 | 36.2 | 29.7 | 21.8 | *41* | *53* |
| Highest | 39.5 | 100 | 65.7 | 58.3 | 39.9 | 35.0 | 24.9 | *55* | *71* |
| | | | | | | | | | |
| **Women 65–74** | **11.0** | **100** | **65.5** | **49.6** | **31.9** | **26.0** | **19.5** | *77* | *97* |
| Lowest | 6.9 | – | – | – | – | – | – | *8* | *8* |
| 2nd | 9.0 | – | – | – | – | – | – | *11* | *14* |
| 3rd | 9.5 | – | – | – | – | – | – | *15* | *20* |
| 4th | 13.9 | – | – | – | – | – | – | *20* | *25* |
| Highest | 14.2 | (100.0) | (64.1) | (59.4) | (36.5) | (32.8) | (35.2) | *23* | *30* |

For variable definitions, see AE.3, AE.9, AE.22, and AE.23. For related text, see E.34

**Table EL8. Percentage not employed or self-employed at baseline (wave 4) and, of those, percentage in employment or self-employment at waves 4–9, by age and gender**

| Age in 2008–09 and gender | Whole sample: % not in employment or self-employment in 2008–09 | Of those not employed or self-employed at baseline: % in employment or self-employment at … | | | | | | Wted N | Un-wted N |
|---|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | | |
| **Men 50–74** | **42.1** | **0** | **4.7** | **4.0** | **4.5** | **4.1** | **3.3** | *834* | *838* |
| 50–54 | 13.9 | 0 | 10.1 | 16.9 | 17.5 | 14.1 | 10.0 | *42* | *33* |
| 55–59 | 22.9 | 0 | 13.4 | 13.1 | 13.3 | 12.7 | 11.4 | *138* | *100* |
| 60–64 | 39.0 | 0 | 3.6 | 1.9 | 3.1 | 2.3 | 1.7 | *192* | *205* |
| 65–74 | 79.4 | 0 | 2.1 | 1.0 | 1.2 | 1.3 | 0.9 | *461* | *500* |
| | | | | | | | | | |
| **Women 50–74** | **56.7** | **0** | **3.0** | **2.9** | **1.7** | **1.7** | **1.1** | *1,252* | *1,376* |
| 50–54 | 24.9 | 0 | 6.8 | 5.8 | 3.4 | 5.1 | 2.7 | *77* | *71* |
| 55–59 | 32.5 | 0 | 6.3 | 5.7 | 3.9 | 3.7 | 2.5 | *211* | *181* |
| 60–64 | 62.3 | 0 | 4.1 | 3.9 | 1.7 | 2.1 | 1.1 | *341* | *397* |
| 65–74 | 89.0 | 0 | 0.9 | 1.0 | 0.7 | 0.4 | 0.4 | *623* | *727* |

For variable definitions, see AE.3 and AE.23. For related text, see E.35.

**Table EL9a. Persistency of health problem limiting ability to work in waves 4–9, by wealth group and age: men aged <75 at baseline only**

| Wealth group and age in 2008–09 | Health limits ability to work ... % | | | | | |
| | Never | Sometimes (transitory) | Sometimes (onset) | Always | *Weighted N* | *Unweighted N* |
|---|---|---|---|---|---|---|
| **All Men 50–74** | **65.7** | **27.0** | **6.4** | **0.9** | *1,972* | *1,909* |
| Lowest | 42.9 | 42.2 | 12.4 | 2.5 | *297* | *225* |
| 2nd | 56.8 | 34.8 | 6.8 | 1.6 | *353* | *303* |
| 3rd | 67.4 | 27.2 | 5.0 | 0.3 | *390* | *375* |
| 4th | 70.2 | 24.1 | 4.7 | 1.0 | *421* | *444* |
| Highest | 79.9 | 15.1 | 5.0 | 0.0 | *511* | *562* |
| | | | | | | |
| **Men 50–54** | **72.0** | **20.4** | **7.2** | **0.4** | *304* | *258* |
| Lowest | (36.0) | (45.7) | (16.0) | (2.3) | *56* | *40* |
| 2nd | 75.9 | 17.1 | 7.0 | 0.0 | *69* | *57* |
| 3rd | 77.8 | 20.2 | 2.0 | 0.0 | *61* | *52* |
| 4th | (81.7) | (14.7) | (3.5) | (0.0) | *53* | *45* |
| Highest | 85.8 | 6.7 | 7.5 | 0.0 | *65* | *64* |
| | | | | | | |
| **Men 55–59** | **71.1** | **24.3** | **3.4** | **1.2** | *601* | *473* |
| Lowest | 45.5 | 46.3 | 6.0 | 2.2 | *97* | *59* |
| 2nd | 60.0 | 34.7 | 3.1 | 2.2 | *127* | *89* |
| 3rd | 82.6 | 14.4 | 3.0 | 0.0 | *96* | *75* |
| 4th | 79.8 | 16.1 | 2.0 | 2.1 | *119* | *106* |
| Highest | 81.8 | 14.9 | 3.3 | 0.0 | *163* | *144* |
| | | | | | | |
| **Men 60–64** | **64.4** | **26.9** | **7.8** | **1.0** | *489* | *539* |
| Lowest | 46.9 | 31.0 | 18.4 | 3.6 | *71* | *58* |
| 2nd | 43.9 | 41.9 | 12.1 | 2.1 | *68* | *70* |
| 3rd | 63.4 | 31.7 | 5.0 | 0.0 | *103* | *114* |
| 4th | 72.0 | 23.4 | 4.0 | 0.6 | *117* | *136* |
| Highest | 78.5 | 16.1 | 5.4 | 0.0 | *130* | *161* |
| | | | | | | |
| **Men 65–74** | **57.8** | **33.5** | **7.8** | **0.9** | *578* | *639* |
| Lowest | 41.0 | 44.9 | 12.4 | 1.7 | *73* | *68* |
| 2nd | 47.6 | 43.2 | 7.6 | 1.6 | *90* | *87* |
| 3rd | 54.5 | 36.5 | 7.9 | 1.0 | *129* | *134* |
| 4th | 55.3 | 35.8 | 8.1 | 0.7 | *132* | *157* |
| Highest | 76.7 | 18.0 | 5.3 | 0.0 | *153* | *193* |

For variable definitions, see AE.3, AE.9, AE.22, and AE.23. For related text, see E.36 and E.37.

**Table EL9b. Persistency of health problem limiting ability to work in waves 4–9, by wealth group and age: women aged <75 at baseline only**

| Wealth group and age in 2008–09 | Never | Sometimes (transitory) | Sometimes (onset) | Always | Weighted N | Unweighted N |
|---|---|---|---|---|---|---|
| | | | Health limits ability to work ... % | | | |
| **All Women 50–74** | **63.9** | **29.7** | **5.6** | **0.8** | *2,200* | *2,388* |
| Lowest | 43.4 | 45.9 | 9.0 | 1.7 | *347* | *316* |
| 2nd | 58.2 | 36.4 | 5.1 | 0.3 | *403* | *421* |
| 3rd | 63.6 | 30.2 | 5.5 | 0.8 | *471* | *494* |
| 4th | 70.7 | 22.5 | 6.1 | 0.7 | *457* | *525* |
| Highest | 76.1 | 19.8 | 3.6 | 0.6 | *522* | *632* |
| | | | | | | |
| **Women 50–54** | **68.3** | **26.8** | **4.7** | **0.3** | *309* | *313* |
| Lowest | (49.7) | (45.8) | (3.0) | (1.5) | *53* | *46* |
| 2nd | 61.6 | 31.7 | 6.7 | 0.0 | *68* | *65* |
| 3rd | 73.4 | 20.4 | 6.2 | 0.0 | *65* | *62* |
| 4th | 74.9 | 20.7 | 4.4 | 0.0 | *59* | *65* |
| Highest | 79.2 | 18.2 | 2.6 | 0.0 | *64* | *75* |
| | | | | | | |
| **Women 55–59** | **69.0** | **25.6** | **4.3** | **1.0** | *649* | *608* |
| Lowest | 41.7 | 41.3 | 14.3 | 2.7 | *102* | *83* |
| 2nd | 63.0 | 33.0 | 4.0 | 0.0 | *128* | *117* |
| 3rd | 67.7 | 29.8 | 1.3 | 1.1 | *126* | *116* |
| 4th | 79.2 | 15.6 | 3.7 | 1.5 | *135* | *132* |
| Highest | 83.8 | 14.8 | 1.1 | 0.3 | *159* | *160* |
| | | | | | | |
| **Women 60–64** | **65.0** | **27.7** | **6.9** | **0.5** | *545* | *647* |
| Lowest | 43.2 | 45.8 | 10.2 | 0.8 | *77* | *80* |
| 2nd | 62.3 | 32.8 | 4.9 | 0.0 | *86* | *98* |
| 3rd | 68.0 | 23.6 | 8.3 | 0.0 | *120* | *135* |
| 4th | 70.0 | 23.9 | 6.1 | 0.0 | *123* | *151* |
| Highest | 71.7 | 21.2 | 5.6 | 1.4 | *138* | *183* |
| | | | | | | |
| **Women 65–74** | **56.2** | **36.5** | **6.3** | **1.0** | *697* | *820* |
| Lowest | 42.1 | 50.0 | 6.2 | 1.6 | *115* | *107* |
| 2nd | 48.3 | 45.2 | 5.5 | 0.9 | *121* | *141* |
| 3rd | 53.0 | 39.2 | 6.4 | 1.3 | *160* | *181* |
| 4th | 61.4 | 28.6 | 9.1 | 0.9 | *140* | *177* |
| Highest | 70.9 | 24.2 | 4.5 | 0.3 | *161* | *214* |

For variable definitions, see AE.3, AE.9, AE.22, and AE.23. For related text, see E.34 and E.35.

# S. Social domain tables

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## Introduction

S.1     This chapter presents selected data tables from the Social domain of the English Longitudinal Study of Ageing (ELSA). The tables are split into two sections.

- Cross-sectional tables (Tables S1–S14) involve classification of outcomes by gender and age (divided into five-year categories) and classification of outcomes by gender and wealth group. Tables S1–S14 contain data for all core members observed at wave 9 (2018–19). These cross-sectional tables show a representative sample of people aged 50 and above in 2018–19.
- Longitudinal tables (Tables SL1–SL7) include a balanced ELSA sample who participated in all of waves 4 to 9. Again, classifications by gender and age and by gender and wealth group are presented. The longitudinal tables show the change over time in a representative sample of people aged 50 and above in 2008–09. For example, Table SL4a shows the percentage of people using public transport in wave 4 and the percentage still using public transport in every wave up to and including wave 9 (2018–19). Differences across the waves can be interpreted as a consequence of a combination of ageing and period effects.

S.2     The unit of observation in all tables is the individual. The data are weighted using either a cross-sectional (main questionnaire or self-completion questionnaire) or longitudinal weight as appropriate. The variables included in each table have been selected to provide a broad picture of the data available from the Social domain of ELSA. A glossary of the measures is provided in the annex to this chapter.

## Cross-sectional tables

### Socio-demographic

S.3     Table S1a shows the percentage of men and women by marital status and age in 2018–19. The majority of men and women reported being married. The percentage of men and women reporting as widowed rises considerably with age, and this is particularly noticeable for women. This occurs at a greater rate between the oldest age groups. Over half of women aged 80 and above are widowed (55%), compared with just over a quarter of men aged 80 and above (24%). There is a steady decline in the percentage of men who remained single with increasing age, with 4% of men aged 80 or above reporting being single. This is compared with a U-shaped relationship with age for women. The percentage of men and women reporting as divorced or separated declines with age, although this happens at a faster rate among women than men.

S.4     Table S1b shows the percentage of men and women by marital status and wealth in 2018–19. The percentage of men and women married or remarried in the two highest wealth groups is as much as double that of the lowest wealth group. Men and women

in the lowest wealth group are much more likely to be single, divorced or separated, or widowed than those in higher wealth groups. This is partially explained by the household wealth measure used in the analysis.

S.5     Table S2a shows the percentage of men and women by ethnicity and age in 2018–19. Across each age group, the vast majority of men (93%) and women (93%) identify as white. However, the percentage of white respondents increases with age particularly for men. Table S2b shows the percentage of men and women by ethnicity (white vs non-white) and wealth group in 2018–19. Of those men and women who self-identified as non-white, a higher proportion were in the lowest wealth group than in the highest wealth group.

## Internet and recreation

S.6     Table S3a shows the percentage of men and women by usage of the internet and age in 2018–19. Around four-fifths of both men (87%) and women (84%) report that they use the internet. Usage of the internet declines with age similarly for men and women, although women aged 80 and above are much less likely to use the internet than men of the same age (44% and 57%, respectively).

S.7     Table S3b shows the percentage of men and women by usage of the internet and wealth in 2018–19. There is a strong wealth gradient in internet usage among men and women. Over two-thirds of men in the lowest wealth group report using the internet (77%), compared with over nine-tenths of those in the highest wealth group (96%). These figures are 74% and 95%, respectively, for women.

S.8     Table S4a shows the percentage of men and women who have taken a holiday, in the UK or abroad, in the last year by age in 2018–19. Four-fifths, or close to four-fifths, of men and women aged between 55 and 74 have taken a holiday in the last year. Around three-quarters of men and women aged 75–79 have taken a holiday in the last year (76% and 70%, respectively), but by age 80, this is just half of men (50%) and less than half of women (46%).

S.9     Table S4b shows the percentage of men and women who have taken a holiday, in the UK or abroad, in the last year by wealth in 2018–19. Around nine-tenths of men and women in the highest wealth group report having taken a holiday within the last year (89% for both men and women), compared with around half of men and women in the lowest wealth group (49% and 56%, respectively).

## Public and private transport

S.10    Table S5a shows the percentage of men and women by the frequency of public transport use and age in 2018–19. Public transport usage declines rapidly for men and women over the age of 80, with almost half of men and women never using public transport by age 80.

S.11    Table S5b shows the percentage of men and women by the frequency of public transport use and wealth in 2018–19. Men and women in lower wealth groups are more likely to report using public transport regularly (i.e. at least once a week) than those in higher wealth groups, but those in lower wealth groups are also more likely to report never using public transport than those in higher wealth groups.

S.12    Table S6a shows the percentage of men and women who have access to a car or van when needed, by age in 2018–19. Of those who do, the table shows the percentage who drive this vehicle themselves; and of those who do not, the table shows the

percentage who have driven a vehicle in the past. The percentage of those reporting access to a car or van remains reasonably stable across age groups, but a sharp decline is reported by age 80. At age 80 and above, around three-quarters of men and three-fifths of women have access to a vehicle when needed. The majority of men of all ages drive this vehicle themselves, but among women the percentage driving themselves declines with age at a greater rate. Four-fifths of men aged 80 and above and who have access to a vehicle (79%) drive their own vehicle, compared with half of women aged 80 and above (47%). The percentage of those no longer driving in 2018–19 who have driven in the past increases with age at a greater rate for men than for women. Four-fifths of non-driving men aged 80 and above (76%) have driven in the past, which is over twice as many women aged 80 and above (42%).

S.13 Table S6b shows the percentage of men and women who have access to a car or van when needed, by wealth in 2018–19. Of those who do, the table shows the percentage who drive this vehicle themselves; of those who do not, the table shows the percentage who have driven a vehicle in the past. Almost all men and women in the highest wealth group have access to a vehicle when needed, compared with just over two-thirds of men (70%) and just over half of women (63%) in the lowest wealth group. At least nine-tenths of men and women in the highest wealth group who have access to a vehicle drive this vehicle themselves. However, in the lowest wealth group four-fifths of men drive themselves, compared with just over half of women (90% and 60%, respectively). Among those who no longer drive, rates of having driven in the past are higher among higher wealth groups. Non-driving men in the lowest wealth group are over twice as likely to have driven in the past than non-driving women in the lowest wealth group.

## Providing social support

S.14 Table S7a shows the percentage of men and women by frequency of voluntary work and age in 2018–19. The prevalence of frequent voluntary work (i.e. twice a month or more) among men and women increases with age until age 70. Around a quarter of men and women aged 70–74 (24% each) do voluntary work at least twice a month. The prevalence of volunteering declines sharply among those aged 80 and above, with only a tenth of men and women in this age group doing voluntary work on a regular basis.

S.15 Table S7b shows the percentage of men and women by frequency of voluntary work and wealth in 2018–19. Men and women in higher wealth groups are more likely to volunteer and volunteer more often than those in lower wealth groups. More than a quarter of men and women in the highest wealth group (26% and 29%, respectively) do regular voluntary work, compared with around a tenth of men and women in the lowest wealth group.

S.16 Table S8a shows the percentage of men and women who cared for someone in the last month by age in 2018–19. The prevalence of caring for someone in the last month is 11% among men and 15% among women. The percentage of men and women caring for someone in the past month declines with age, although this happens at a faster rate among women than men.

S.17 Table S8b shows the percentage of men and women who cared for someone in the last month by wealth in 2018–19. The percentage who cared for someone in the last month is similar across wealth groups for men but increases with wealth group for women.

## Receipt of social support

S.18    Table S9a shows the percentage of men and women with difficulties with activities of daily living (ADL) or instrumental activities of daily living (IADL) (see AS.9 for details of definitions) who receive help (including from their partner or other people in the household) by age. Three-tenths of men (30%) and two-fifths of women (40%) with a difficulty receive help. The proportion increases with age for both men and women. Over half of men aged 80 and above (54%) and over two-thirds of women aged 80 and above (65%) with a difficulty receive help.

S.19    Table S9b shows the percentage of men and women with an ADL or IADL difficulty who receive help (including from their partner or other people in the household) by wealth in 2018–19. The proportion of men and women with a difficulty who receive help is lower for those in higher wealth groups. Across all wealth groups, a higher percentage of women receive help than men.

S.20    Table S10a shows the mean number of close relationships with children, family and friends for men and women by age in 2018–19. On average, men and women have between six and a half and just over seven close relationships. Women have a higher number of close relationships than men, although the difference is small.

S.21    Table S10b shows the mean number of close relationships with children, family and friends for men and women by wealth in 2018–19. On average, men and women in the higher wealth groups have marginally more close contacts than those in the lower wealth groups.

## Perceived social status

S.22    Table S11a shows the percentage of men and women by self-perceived social status and age in 2018–19. Four-fifths of men and women perceive their social position to be on either the third or fourth rung of a five-point social ladder, where the fifth rung is the best-off and the first rung is the worst-off. The proportion on the lowest rung decreases with age for both men and women.

S.23    Table S11b shows the percentage of men and women by self-perceived social status and wealth in 2018–19. Men and women in the lower wealth groups are more likely to rank their status lower on the social ladder than those in the higher wealth groups.

## Expectation of life expectancy

S.24    Table S12a shows the mean self-perceived chance of living to 85 for men and women aged below 70 by age in 2018–19. Women are a little more optimistic about their chances of living to 85 than men. The average man believes that there is a 51% chance he will live to 85, compared with the average woman believing she has a 56% chance of doing so. For women, the percentage expecting to live to 85 is lower at age 60–64 than at age 55–59 (56% and 57% respectively). For men, the percentage expecting to live to 85 is lower at age 65–69 than at age 55–59 (52% and 53% respectively).

S.25    Table S12b shows the mean self-perceived chance of living to 85 for men and women aged below 70 by wealth in 2018–19. Men and women in the highest wealth group are around 10 percentage points more likely to expect to live to 85 than those in the lowest wealth group. Nonetheless, the gender difference remains, with women in the lowest wealth group, on average, believing they have a 52% chance of living to 85

and men in the lowest wealth group, on average, believing they have a 44% chance of living to 85.

## Grandchildren

S.26    Table S13a shows the mean number of grandchildren and great grandchildren by age in 2018–19. On average, men and women have almost the same number of grandchildren and great grandchildren. Women have more grandchildren at an earlier age compared to men.

S.27    Table S13b shows the mean number of grandchildren and great grandchildren by wealth in 2018–19. On average, men and women have almost the same number of grandchildren and great grandchildren. Women in the lowest wealth quintile have more grandchildren compared to men and compared to those in the highest wealth quintile.

S.28    Table S14a shows who looked after the grandchildren in the last 12 months by age in 2018–19. Women in the youngest age group looked after their grandchildren more than women over 80, whereas men aged between 65–69 looked after their grandchildren more.

S.29    Table S14b shows who looked after the grandchildren in the last 12 months by wealth in 2018–19. Women in the highest wealth quintile looked after their grandchildren more than women in the lowest wealth quintile and this is similar to men at the same wealth quintile.

# Longitudinal tables

## Marital status

S.30    Table SL1a shows the percentage of men and women married or remarried at baseline (2008–09, wave 4) and the percentage still married across each wave, by age. The majority of married men and women in 2008–09 remained in a marriage by 2018–19. However, this varies by age, particularly for women. For example, just half (54%) of married women aged 75 and above at baseline were still married by wave 9, compared with at least 88% of women aged between 50 and 69 in 2008–09. In contrast, three-quarters (75%) of men aged 75 and over at baseline were still married by wave 9.

S.31    Table SL1b shows the percentage of men and women married or remarried at baseline (wave 4) and the percentage still married across each wave, by wealth. Men and women married in 2008–09 in the lowest wealth group are less likely to remain in a marriage by 2018–19 than those in higher wealth groups. This difference is much larger for women compared with men.

## Internet

S.32    Table SL2a shows the percentage of men and women using the internet at baseline (wave 4) and the percentage still using it in subsequent waves, by age. The majority of men and women using the internet in 2008–09 continued to use the internet by 2018–19, although there is a slightly faster decline over time in both men and women with advancing age.

S.33    Table SL2b shows the percentage of men and women using the internet at baseline (wave 4) and the percentage still using it in subsequent waves, by wealth. Although men and women in higher wealth groups are more likely to be internet users

to begin with, the percentage of all internet users at baseline still using the internet in 2018–19 is high across all wealth groups.

S.34    Table SL2c shows the percentage of men and women not using the internet at baseline and, of those, the percentage using it in subsequent waves, by age. Over half of men and women aged 50–64 in 2008–09 who were not using the internet at baseline stated that they were using the internet by 2018–19, with higher rates of new internet use reported among women than men. The proportion of men and women starting to use the internet is lower for each older age group, particularly those aged 70 and above at baseline.

S.35    Table SL2d shows the percentage of men and women not using the internet at baseline and, of those, the percentage using it in subsequent waves, by wealth. Men and women in the highest wealth group are considerably more likely to start using the internet at any wave than those in the lowest wealth group, with over half of men and women in the highest wealth group using the internet by 2018–19 compared with less than a third of men and women in the lowest wealth group.

## Holidays

S.36    Table SL3a shows the percentage of men and women who had been on holiday in the last year at baseline (wave 4) and the percentage who have still been on holiday in the last year in subsequent waves, by age. In each wave up to wave 8, over four-fifths of men and women aged between 50 and 69 who had been on holiday in 2008–09 had also been on holiday in the last year. The proportion of men and women continuing to go on holiday in subsequent waves is lower for individuals in the oldest two cohorts, with the steepest decline observed among women aged 75 and above at baseline. By 2018–19, under half of men and women aged 75 and above in 2008–09 had been on holiday, after reporting they had been on holiday at baseline (46% and 45%, respectively).

S.37    Table SL3b shows the percentage of men and women who had been on holiday in the last year at baseline (wave 4) and the percentage who have still been on holiday in the last year in subsequent waves, by wealth. Men and women in the lowest wealth group are more likely to report not going on holiday in subsequent waves. By 2018–19, around a third of men and women (37% and 30%, respectively) in the lowest wealth group reported not going on holiday in the last year, having reported that they did at baseline. This compares with around one-tenth of men and women in the highest wealth group.

## Public and private transport

S.38    Table SL4a shows the percentage of men and women who used public transport at baseline (wave 4) and the percentage still using public transport in subsequent waves, by age. The majority of men and women who had already been using public transport in 2008–09 still used public transport in 2018–19. The proportion is lower for those aged 75 and above at baseline for men and women, of whom under two-thirds still used public transport in 2018–19 (59% and 45% respectively).

S.39    Table SL4b shows the percentage of men and women who used public transport at baseline (wave 4) and the percentage still using public transport in subsequent waves, by wealth. At least three-quarters of men and women in each wealth group still used public transport in subsequent waves of ELSA.

S.40    Table SL4c shows the percentage of men and women who did not use public transport at baseline (wave 4) and, of those, the percentage using public transport in subsequent waves, by age. Men and women aged 55–59 in 2008–09 are more likely to start using public transport by 2018–19 than those in other age groups. Women aged 75 and above in 2008–09 are the least likely to be using public transport by 2018–19, with two-thirds fewer women than men in this age cohort reporting the use of public transport at wave 8 (23% and 33%, respectively).

S.41    Table SL4d shows the percentage of men and women who did not use public transport at baseline (wave 4) and, of those, the percentage using public transport in subsequent waves, by wealth. Men and women in the lowest wealth group are less likely to be using public transport by 2018–19 than those in higher wealth groups. Women in the lowest wealth group are around 15% less likely to report public transport use than men in the lowest wealth group. Around half as many women in the lowest wealth group report public transport use in 2018–19 than in the highest wealth group (27% and 57%, respectively), while this gap is smaller among men in the lowest and highest wealth groups (28% and 49%, respectively).

S.42    Table SL5a shows the percentage of men and women with access to a car or van when needed at baseline (wave 4) and, of those, the percentage with a car or van when needed in subsequent waves, by age. The decline in car access for men is slight but greater among those aged 70 and above at baseline. The decline is faster among women than men. By 2018–19, under two-thirds (62%) of women aged 75 and above, who had access to a car in 2008–09, had access to a car when needed. This compares to over three-quarters (77%) of men in the same age group.

S.43    Table SL5b shows the percentage of men and women with access to a car or van when needed at baseline (wave 4) and, of those, the percentage with a car or van when needed in subsequent waves, by wealth group. There is a general decline in car access over time across all wealth groups, but the decline is greater in the lower wealth groups and again occurs more rapidly among women. By 2018–19, 80% of men in the lowest wealth group who had access to a car at baseline still had access when needed, compared with just over three-quarters (73%) of women in the lowest wealth group.

## Volunteering

S.44    Table SL6a shows the percentage of men and women volunteering at baseline (wave 4) and the percentage still volunteering in subsequent waves, by age. Men aged 60–69 at baseline are continuously more likely to still be volunteering across all waves. Only around a third of men and women aged 75 and above at baseline still reported volunteering by 2018–19 (32% and 29%, respectively), while at least half of all men and women in other age groups reported that they still volunteered by wave 9.

S.45    Table SL6b shows the percentage of men and women volunteering at baseline (wave 4) and the percentage still volunteering in subsequent waves, by wealth. Men and women in the higher wealth groups are more likely to continue volunteering across each wave of ELSA.

S.46    Table SL6c shows the percentage of men and women not volunteering at baseline (wave 4) and, of those, the percentage volunteering in subsequent waves, by age. The vast majority of men and women not volunteering in 2008–09 did not start volunteering by 2018–19. Men and women aged below 70 are more likely to have started volunteering than those aged 70 and above.

S.47    Table SL6d shows the percentage of men and women not volunteering at baseline (wave 4) and, of those, the percentage volunteering in subsequent waves, by wealth. Men and women in the highest wealth group are more likely to have started volunteering than those in lower wealth groups. Over a fifth of men and women (26% and 29%, respectively) in the highest wealth group not volunteering in 2008–09 had started to volunteer by 2018–19. This compares to less than a tenth of men and women in the lowest wealth group (10% and 8%, respectively).

## Caring

S.48    Table SL7a shows the percentage of men and women who did not care for someone in the last month at baseline (wave 4) and, of those, the percentage caring for someone in the last month in subsequent waves, by age. The vast majority of men and women in each age group did not start caring for someone by 2018–19. However, women aged 50–64 at baseline are noticeably more likely to have started caring for someone by 2018–19 than men within these age groups.

S.49    Table SL7b shows the percentage of men and women who did not care for someone in the last month at baseline (wave 4) and, of those, the percentage caring for someone in the last month in subsequent waves, by wealth. The vast majority of men and women did not start caring for someone by 2018–19. However, women in the lowest wealth group are around three times as likely to have started caring for someone by 2018–19 than those in highest wealth groups (from 5% to 15%).

# Annex AS. Definitions

AS.1   *Age* is defined as age at last birthday.

AS.2   *Baseline* is defined as wave 4 of ELSA. Fieldwork for wave 4 was conducted in 2008 and 2009. Subsequent waves have been conducted every two years, with the most recent (wave 9) conducted in 2018 and 2019.

AS.3   *Caring* is defined as whether a respondent cared for someone in the last month.

AS.4   *Close relationships* are defined as the number of close relationships a respondent has with their children, family and friends.

AS.5   *Ethnicity* is measured by a dichotomous categorisation of white and non-white. The ELSA sample is known not to be representative of the ethnic minority population aged 50 and above in England.

AS.6   *Holidays taken in the last year* are measured by whether a respondent has taken a holiday, in the UK or abroad, in the last 12 months.

AS.7   *Internet usage* is defined by whether a respondent uses the internet and/or email. Those classed as not using the internet report using it less than once every three months or never.

AS.8   *Marital status* is defined according to a respondent's legal status.

AS.9   *Mobility assistance* is defined as whether a respondent with an ADL or IADL difficulty receives assistance with these activities, including from a partner or other people in the household. ADLs include dressing, getting around inside the home, bathing or showering, eating, getting in or out of bed and using the toilet. IADLs include preparing a hot meal, shopping, making telephone calls, taking medication, doing household chores and managing personal finances.

AS.10 *Private transport usage* is measured by whether a respondent has access to a car or van when needed.

AS.11 *Public transport usage* is measured by frequency categories: every day or nearly every day; two or three times a week; once a week; two or three times a month; once a month or less; and never.

AS.12 *Self-perceived chance of living to 85* is measured by the mean of respondents' assessments of the probability (0 to 100) of them living to 85 for those aged 69 and below.

AS.13 *Self-perceived social status* is measured by respondents indicating on the rung of a ladder where they stand in society based on money, education and employment.

AS.14 *Volunteering* is defined by frequency of any voluntary work carried out: twice a month or more; about once a month; every few months; about once or twice a year; less than once a year; and never.

AS.15 *Wealth* is defined as non-pension wealth minus any debt. Net non-pension wealth is measured at the family level and includes financial wealth from savings and investments minus debts and housing wealth minus mortgages.

AS.16 *Wealth groups* are formed by ordering all ELSA sample members according to the value of their total (non-pension) family wealth and dividing the sample into five

equal-sized groups. The cut-off points for the wealth groups are shown in the following table, reported in January 2017 prices and rounded to the nearest £1,000.

|  | Wealth group definition, wave 4 (2008–09) | Wealth group definition, wave 8 (2016–17) | Wealth group definition, wave 9 (2018–19) |
|---|---|---|---|
| Lowest | Less than £60k | Less than £71k | Less than £114k |
| 2nd | Between £60k and £201k | Between £71k and £210k | Between £114k and £252k |
| 3rd | Between £201k and £303k | Between £210k and £354k | Between £252k and £411k |
| 4th | Between £303k and £496k | Between £354k and £575k | Between £411k and £700k |
| Highest | More than £496k | More than £575k | More than £700k |

### AS.17 *Notes to all tables*
The unit of observation in all tables is the individual.

All cross-sectional tables are based on the cross-section of ELSA sample members in wave 9 of data. This includes refreshment sample members.

All longitudinal tables are based on individuals who have responded in all of waves 4 to 9 (the 'balanced panel') unless otherwise specified.

All numbers are based on weighted data. Unweighted frequencies (*N*) are reported. For cross-sectional analyses, cross-sectional weights are used. For longitudinal analyses, longitudinal weights are used. The fieldwork dates are shown in the following table.

|  | Fieldwork dates (inclusive) |
|---|---|
| Wave 1 | March 2002–March 2003 |
| Wave 2 | June 2004–June 2003 |
| Wave 3 | May 2006–August 2007 |
| Wave 4 | June 2008–July 2009 |
| Wave 5 | July 2010–June 2011 |
| Wave 6 | May 2012–May 2013 |
| Wave 7 | June 2014–May 2015 |
| Wave 8 | May 2016–June 2017 |
| Wave 9 | July 2018–July 2019 |

**Table S1a. Marital status (%), by age and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | | | | **Age in 2018–19** | | | | **All** |
| **Men** | | | | | | | | |
| Single | 20.4 | 13.1 | 16.8 | 7.5 | 5.0 | 5.5 | 3.9 | 11.7 |
| Married or civil partner | 53.2 | 63.5 | 56.6 | 68.0 | 64.6 | 63.3 | 57.5 | 60.3 |
| Remarried | 8.8 | 6.5 | 10.8 | 7.8 | 10.7 | 12.4 | 9.8 | 9.3 |
| Divorced or separated | 15.5 | 15.3 | 13.7 | 12.8 | 12.8 | 7.8 | 5.0 | 12.6 |
| Widowed | 2.1 | 1.6 | 2.1 | 3.9 | 6.9 | 11.0 | 23.8 | 6.2 |
| | | | | | | | | |
| **Women** | | | | | | | | |
| Single | 14.1 | 11.2 | 8.9 | 5.4 | 3.5 | 3.2 | 4.6 | 7.9 |
| Married or civil partner | 53.9 | 51.5 | 51.4 | 57.5 | 53.1 | 52.5 | 28.2 | 49.5 |
| Remarried | 7.8 | 10.8 | 10.3 | 9.5 | 11.1 | 5.7 | 3.6 | 8.4 |
| Divorced or separated | 22.0 | 23.4 | 21.6 | 16.5 | 15.1 | 12.1 | 8.4 | 17.5 |
| Widowed | 2.3 | 3.0 | 7.8 | 11.1 | 17.2 | 26.6 | 55.2 | 16.7 |
| | | | | | | | | |
| *N (unweighted)* | | | | | | | | |
| *Men* | *380* | *210* | *408* | *563* | *626* | *424* | *530* | *3,141* |
| *Women* | *529* | *268* | *518* | *731* | *788* | *502* | *758* | *4,094* |

For variable definitions, see AS.1. AS.9. For related text, see S.3

**Table S1b. Marital status (%), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | | | **Wealth group in 2018–19** | | | **All** |
| **Men** | | | | | | |
| Single | 22.2 | 11.3 | 9.2 | 7.5 | 5.7 | 11.6 |
| Married or civil partner | 36.8 | 58.0 | 64.0 | 70.6 | 77.9 | 60.4 |
| Remarried | 8.2 | 11.1 | 10.0 | 9.4 | 7.7 | 9.2 |
| Divorced or separated | 25.3 | 12.4 | 10.7 | 6.5 | 4.7 | 12.5 |
| Widowed | 7.6 | 7.3 | 6.1 | 6.0 | 4.1 | 6.3 |
| | | | | | | |
| **Women** | | | | | | |
| Single | 13.1 | 8.7 | 5.8 | 6.9 | 3.1 | 7.9 |
| Married or civil partner | 27.2 | 46.3 | 52.3 | 59.3 | 71.2 | 49.4 |
| Remarried | 5.9 | 9.3 | 8.7 | 8.4 | 9.6 | 8.2 |
| Divorced or separated | 32.5 | 17.2 | 12.6 | 12.4 | 7.6 | 17.6 |
| Widowed | 21.3 | 18.5 | 20.6 | 13.2 | 8.5 | 16.9 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *568* | *595* | *609* | *654* | *675* | *3,101* |
| *Women* | *860* | *840* | *812* | *775* | *752* | *4,039* |

For variable definitions, see AS.8, AS.15–AS.17. For related text, see S.4

**Table S2a. Ethnicity (%), by age and gender: wave 9**

| | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | **50–54** | **55–59** | **60–64** | **65–69** | **70–74** | **75–79** | **80+** | |
| **Men** | 87.7 | 86.6 | 92.5 | 94.7 | 97.5 | 97.9 | 96.0 | 92.4 |
| White | 12.3 | 13.4 | 7.5 | 5.3 | 2.5 | 2.1 | 4.0 | 7.6 |
| Non-white | | | | | | | | |
| | | | | | | | | |
| **Women** | 84.7 | 92.9 | 89.9 | 95.3 | 97.8 | 96.6 | 97.3 | 92.8 |
| White | 15.4 | 7.1 | 10.1 | 4.8 | 2.2 | 3.4 | 2.7 | 7.2 |
| Non-white | | | | | | | | |
| | | | | | | | | |
| *N (unweighted* | | | | | | | | |
| *Men* | *378* | *210* | *408* | *564* | *626* | *424* | *530* | *3,140* |
| *Women* | *526* | *268* | *518* | *731* | *788* | *502* | *758* | *4,091* |

For variable definitions, see AS.1, AS.5 and AS.17. For related text, see S.5

**Table S2b. Ethnicity (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | **Lowest** | **2<sup>nd</sup>** | **3<sup>rd</sup>** | **4<sup>th</sup>** | **Highest** | |
| **Men** | | | | | | |
| White | 88.8 | 94.1 | 91.7 | 94.8 | 93.5 | 92.5 |
| Non-white | 11.2 | 5.9 | 8.3 | 5.2 | 6.5 | 7.5 |
| | | | | | | |
| **Women** | | | | | | |
| White | 89.3 | 95.6 | 92.6 | 93.1 | 95.5 | 93.0 |
| Non-white | 10.7 | 4.4 | 7.4 | 6.9 | 4.5 | 7.0 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *567* | *595* | *609* | *654* | *674* | *3,099* |
| *Women* | *860* | *840* | *811* | *774* | *752* | *4,037* |

For variable definitions, see AS.5 and AS.15–AS.17. For related text, see S.5

**Table S3a. Use internet and/or email (%), by age and gender: wave 9**

| | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | |
| **Men** | 95.9 | 96.2 | 91.6 | 90.2 | 87.3 | 69.7 | 56.8 | 86.7 |
| **Women** | 98.7 | 95.6 | 92.9 | 90.1 | 81.5 | 69.6 | 44.3 | 83.6 |
| | | | | | | | | |
| *N (unweighted)* | | | | | | | | |
| *Men* | *299* | *185* | *355* | *509* | *565* | *361* | *440* | *2,714* |
| *Women* | *435* | *231* | *463* | *665* | *709* | *435* | *581* | *3,519* |

For variable definitions, see AS.5 and AS.15–AS.17. For related text, see S.6

**Table S3b. Use internet and/or email (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | |
| **Men** | 77.4 | 81.9 | 86.0 | 92.5 | 95.6 | 86.6 |
| **Women** | 73.7 | 78.2 | 83.6 | 90.4 | 94.5 | 83.5 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *320* | *390* | *446* | *542* | *563* | *2,261* |
| *Women* | *487* | *528* | *577* | *624* | *637* | *2,853* |

For variable definitions, see AS.5 and AS.15–AS.17 For related text, see S.7

**Table S4a. Taken holiday (in UK or abroad) (%), by age and gender: wave 9**

| | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | |
| **Men** | 72.7 | 81.4 | 76.1 | 82.5 | 79.3 | 75.5 | 50.4 | 74.7 |
| **Women** | 84.2 | 79.4 | 79.1 | 81.6 | 80.1 | 69.7 | 46.4 | 75.1 |
| | | | | | | | | |
| *N (unweighted)* | | | | | | | | |
| *Men* | *300* | *185* | *357* | *508* | *569* | *368* | *449* | *2,736* |
| *Women* | *431* | *231* | *464* | *669* | *717* | *443* | *613* | *3,570* |

For variable definitions, see AS.5 and AS.15–AS.17. For related text, see S.8

**Table S4b. Taken holiday (in UK or abroad) (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | |
| **Men** | 49.0 | 73.6 | 76.8 | 86.6 | 88.7 | 74.6 |
| **Women** | 55.7 | 73.6 | 77.4 | 83.7 | 89.2 | 74.9 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *224* | *356* | *417* | *509* | *520* | *2,026* |
| *Women* | *388* | *517* | *556* | *582* | *602* | *2,645* |

For variable definitions, see AS.5 and AS.15–AS.17. For related text, see S.9

**Table S5a. Use of public transport (%), by age and gender: wave 9**

| | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | |
| **Men** | | | | | | | | |
| Every day or nearly every day | 9.8 | 15.6 | 10.4 | 6.7 | 5.9 | 6.8 | 5.9 | 9.1 |
| Two or three times a week | 4.1 | 5.1 | 10.7 | 12.1 | 11.1 | 15.6 | 12.5 | 9.3 |
| Once a week | 4.2 | 5.1 | 7.2 | 7.3 | 8.4 | 8.0 | 7.4 | 6.5 |
| Two or three times a month | 9.7 | 6.3 | 7.2 | 12.2 | 13.5 | 11.3 | 6.5 | 9.4 |
| Once a month or less | 37.2 | 36.8 | 28.7 | 33.2 | 33.3 | 26.9 | 23.9 | 32.3 |
| Never | 35.0 | 31.1 | 35.7 | 28.5 | 27.9 | 31.5 | 43.9 | 33.4 |
| | | | | | | | | |
| **Women** | | | | | | | | |
| Every day or nearly every day | 9.2 | 8.3 | 8.4 | 8.1 | 8.1 | 6.1 | 5.7 | 7.9 |
| Two or three times a week | 5.0 | 8.0 | 9.2 | 14.0 | 16.7 | 15.8 | 14.7 | 11.3 |
| Once a week | 5.3 | 8.0 | 5.2 | 10.4 | 10.5 | 10.5 | 7.6 | 7.8 |
| Two or three times a month | 7.7 | 8.7 | 8.4 | 14.1 | 11.8 | 11.0 | 5.5 | 9.3 |
| Once a month or less | 42.9 | 37.5 | 35.7 | 33.0 | 30.2 | 23.2 | 18.7 | 32.6 |
| Never | 29.9 | 29.5 | 33.2 | 20.4 | 22.7 | 33.4 | 47.8 | 31.1 |
| | | | | | | | | |
| *N (unweighted)* | | | | | | | | |
| *Men* | *380* | *210* | *408* | *564* | *626* | *424* | *530* | *3,142* |
| *Women* | *529* | *268* | *518* | *731* | *788* | *502* | *758* | *4,094* |

For variable definitions, see AS.1 and AS.11–AS.17. For related text, see S.10

**Table S5b. Use of public transport (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | |
| **Men** | | | | | | |
| Every day or nearly every day | 12.6 | 8.4 | 7.4 | 7.4 | 9.5 | 9.2 |
| Two or three times a week | 10.4 | 7.7 | 7.3 | 10.9 | 9.8 | 9.3 |
| Once a week | 7.1 | 5.0 | 7.0 | 6.4 | 7.3 | 6.6 |
| Two or three times a month | 6.4 | 7.7 | 10.5 | 10.5 | 11.9 | 9.3 |
| Once a month or less | 19.0 | 29.4 | 37.0 | 38.8 | 39.6 | 32.2 |
| Never | 44.5 | 41.7 | 30.7 | 26.0 | 21.8 | 33.5 |
| | | | | | | |
| **Women** | | | | | | |
| Every day or nearly every day | 12.9 | 6.7 | 6.6 | 5.4 | 5.6 | 7.8 |
| Two or three times a week | 13.6 | 10.2 | 11.7 | 11.0 | 9.1 | 11.3 |
| Once a week | 9.4 | 6.3 | 6.9 | 8.2 | 8.3 | 7.9 |
| Two or three times a month | 8.0 | 8.6 | 8.0 | 12.5 | 11.1 | 9.4 |
| Once a month or less | 20.9 | 32.3 | 34.9 | 37.8 | 41.1 | 32.5 |
| Never | 35.3 | 36.0 | 31.9 | 25.3 | 24.8 | 31.2 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *568* | *595* | *609* | *654* | *675* | *3,101* |
| *Women* | *860* | *840* | *812* | *775* | *752* | *4,039* |

For variable definitions, see AS.11 and AS.15–AS.17. For related text, see S.11

**Table S6a. Use of private transport (%), by age and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | | | | Age in 2018–19 | | | | |
| **Men** | | | | | | | | |
| Has use of car or van when needed | 89.3 | 91.5 | 85.7 | 91.7 | 92.7 | 88.9 | 78.9 | 88.7 |
| *of whom:* | | | | | | | | |
| Drives a car or van themselves | 96.5 | 96.9 | 95.9 | 94.8 | 92.6 | 92.1 | 78.5 | 93.4 |
| Drove in the past (if no longer drives) | 29.6 | 49.8 | 45.6 | 60.4 | 64.7 | 62.0 | 76.1 | 56.2 |
| | | | | | | | | |
| **Women** | | | | | | | | |
| Has use of car or van when needed | 91.1 | 83.1 | 88.3 | 87.9 | 86.5 | 85.6 | 62.5 | 83.7 |
| *of whom:* | | | | | | | | |
| Drives a car or van themselves | 92.6 | 86.0 | 78.5 | 81.0 | 75.3 | 67.2 | 46.8 | 77.8 |
| Drove in the past (if no longer drives) | 22.8 | 31.6 | 31.1 | 27.6 | 39.5 | 36.9 | 42.3 | 35.3 |
| | | | | | | | | |
| *N (unweighted)* | | | | | | | | |
| ***Men*** | | | | | | | | |
| *Has use of car or van when needed* | *380* | *210* | *408* | *564* | *626* | *424* | *530* | *3,142* |
| *Drives a car or van themselves* | *338* | *194* | *373* | *523* | *587* | *382* | *434* | *2,831* |
| *Drove in the past (if no longer drives)* | *54* | *23* | *51* | *65* | *74* | *72* | *180* | *519* |
| ***Women*** | | | | | | | | |
| *Has use of car or van when needed* | *529* | *268* | *518* | *731* | *788* | *502* | *758* | *4,094* |
| *Drives a car or van themselves* | *486* | *226* | *462* | *648* | *688* | *436* | *499* | *3,445* |
| *Drove in the past (if no longer drives)* | *76* | *68* | *141* | *196* | *255* | *193* | *492* | *1,421* |

For variable definitions, see AS.1 and AS.10–AS.17. For related text, see S.12

**Table S6b. Use of private transport (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | |
| **Men** | | | | | | |
| Has use of car or van when needed | 69.1 | 91.4 | 94.0 | 96.4 | 96.6 | 88.7 |
| *of whom:* | | | | | | |
| Drives a car or van themselves | 89.9 | 92.1 | 94.4 | 94.4 | 95.8 | 93.4 |
| Drove in the past (if no longer drives) | 45.5 | 59.6 | 65.5 | 75.0 | 78.1 | 56.3 |
| | | | | | | |
| **Women** | | | | | | |
| Has use of car or van when needed | 62.7 | 86.0 | 89.0 | 92.2 | 95.8 | 83.6 |
| *of whom:* | | | | | | |
| Drives a car or van themselves | 60.4 | 73.7 | 78.7 | 85.0 | 89.8 | 77.7 |
| Drove in the past (if no longer drives) | 24.5 | 33.7 | 47.7 | 53.2 | 53.5 | 35.4 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | | | | | | |
| *Has use of car or van when needed* | *568* | *595* | *609* | *654* | *675* | *3,101* |
| *Drives a car or van themselves* | *400* | *540* | *570* | *631* | *654* | *2,795* |
| *Drove in the past (if no longer drives)* | *214* | *106* | *79* | *61* | *52* | *512* |
| *Women* | | | | | | |
| *Has use of car or van when needed* | *860* | *840* | *812* | *775* | *752* | *4,039* |
| *Drives a car or van themselves* | *528* | *710* | *716* | *722* | *720* | *3,396* |
| *Drove in the past (if no longer drives)* | *555* | *332* | *250* | *164* | *105* | *1,406* |

For variable definitions, see AS.10 and AS.15–AS.17. For related text, see S.13

**Table S7a. Voluntary work frequency (%), by age and gender: wave 9**

| | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | |
| **Men** | | | | | | | | |
| Twice a month or more | 9.3 | 13.5 | 13.9 | 22.1 | 24.3 | 18.5 | 10.7 | 15.4 |
| About once a month | 2.5 | 3.3 | 3.5 | 3.4 | 4.2 | 5.1 | 3.5 | 3.5 |
| Every few months | 2.4 | 3.3 | 5.3 | 1.8 | 1.9 | 2.6 | 2.5 | 2.9 |
| About once or twice a year | 3.3 | 6.3 | 3.9 | 2.1 | 2.9 | 2.8 | 0.9 | 3.3 |
| Less than once a year | 4.8 | 2.4 | 3.5 | 1.4 | 0.7 | 0.8 | 1.0 | 2.4 |
| Never | 77.6 | 71.2 | 69.9 | 69.3 | 66.1 | 70.3 | 81.4 | 72.5 |
| | | | | | | | | |
| **Women** | | | | | | | | |
| Twice a month or more | 11.1 | 15.4 | 16.3 | 26.1 | 23.6 | 23.2 | 13.6 | 17.7 |
| About once a month | 3.8 | 3.1 | 5.3 | 4.2 | 4.5 | 5.4 | 2.3 | 4.0 |
| Every few months | 3.6 | 3.0 | 3.4 | 2.7 | 3.4 | 2.1 | 1.1 | 2.8 |
| About once or twice a year | 4.7 | 2.3 | 0.8 | 2.2 | 2.6 | 2.2 | 0.5 | 2.3 |
| Less than once a year | 3.6 | 2.1 | 2.8 | 1.1 | 1.2 | 0.8 | 0.6 | 1.9 |
| Never | 73.2 | 74.2 | 71.4 | 63.7 | 64.8 | 66.2 | 81.9 | 71.3 |
| | | | | | | | | |
| *N (unweighted)* | | | | | | | | |
| *Men* | *362* | *202* | *393* | *546* | *602* | *399* | *495* | *2,999* |
| *Women* | *522* | *262* | *505* | *711* | *770* | *488* | *718* | *3,976* |

For variable definitions, see AS.1 and AS.14–AS.17. For related text, see S.14

**Table S7b. Voluntary work frequency (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | |
| **Men** | | | | | | |
| Twice a month or more | 9.4 | 9.4 | 14.1 | 19.8 | 26.2 | 15.4 |
| About once a month | 1.3 | 2.3 | 2.5 | 4.6 | 6.8 | 3.4 |
| Every few months | 1.4 | 2.3 | 2.6 | 2.9 | 4.7 | 2.7 |
| About once or twice a year | 1.3 | 3.5 | 5.2 | 3.1 | 4.0 | 3.3 |
| Less than once a year | 1.2 | 2.4 | 2.7 | 3.2 | 2.9 | 2.4 |
| Never | 85.5 | 80.1 | 73.0 | 66.4 | 55.3 | 72.7 |
| | | | | | | |
| **Women** | | | | | | |
| Twice a month or more | 12.2 | 10.6 | 18.7 | 22.3 | 29.1 | 17.8 |
| About once a month | 1.8 | 3.6 | 3.8 | 5.1 | 6.6 | 4.0 |
| Every few months | 2.5 | 2.3 | 1.6 | 3.0 | 4.9 | 2.8 |
| About once or twice a year | 1.8 | 2.0 | 1.8 | 2.3 | 3.2 | 2.2 |
| Less than once a year | 1.5 | 1.7 | 3.2 | 1.9 | 1.8 | 2.0 |
| Never | 80.3 | 79.8 | 71.0 | 65.3 | 54.3 | 71.3 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *541* | *566* | *582* | *633* | *637* | *2,959* |
| *Women* | *844* | *816* | *794* | *739* | *729* | *3,922* |

For variable definitions, see AS.14–AS.17. For related text, see S.15

**Table S8a. Cared for someone in the last month (%), by age and gender: wave 9**

|  | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
|  | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ |  |
| **Men** | 9.2 | 12.5 | 12.4 | 9.7 | 11.3 | 9.7 | 8.8 | 10.5 |
| **Women** | 15.9 | 18.0 | 18.2 | 16.7 | 14.3 | 12.7 | 5.7 | 14.6 |
|  |  |  |  |  |  |  |  |  |
| *N (unweighted)* |  |  |  |  |  |  |  |  |
| *Men* | *380* | *210* | *408* | *564* | *626* | *424* | *530* | *3,142* |
| *Women* | *529* | *268* | *518* | *731* | *788* | *502* | *758* | *4,094* |

For variable definitions, see AS.1 and AS.3 and AS.17. For related text, see S.16

**Table S8b. Cared for someone in the last month (%), by wealth group and gender: wave 9**

|  | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
|  | Lowest | 2nd | 3rd | 4th | Highest |  |
| **Men** | 7.9 | 12.1 | 11.4 | 10.8 | 11.2 | 10.6 |
| **Women** | 11.2 | 13.0 | 16.2 | 17.2 | 17.1 | 14.6 |
|  |  |  |  |  |  |  |
| *N (unweighted)* |  |  |  |  |  |  |
| *Men* | *568* | *595* | *609* | *654* | *675* | *3,101* |
| *Women* | *860* | *840* | *812* | *775* | *752* | *4,039* |

For variable definitions, see AS.3 and AS.15–AS.17. For related text, see S.17

**Table S9a. Receives help with mobility (%), by age and gender: wave 9**

|  | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
|  | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ |  |
| **Men** | 23.5 | 23.1 | 21.0 | 20.9 | 24.7 | 34.3 | 54.3 | 29.8 |
| **Women** | 24.8 | 28.2 | 34.9 | 26.3 | 33.9 | 42.3 | 64.6 | 39.2 |
|  |  |  |  |  |  |  |  |  |
| *N (unweighted)* |  |  |  |  |  |  |  |  |
| *Men* | *123* | *70* | *171* | *227* | *324* | *246* | *368* | *1,529* |
| *Women* | *179* | *116* | *264* | *398* | *496* | *353* | *607* | *2,413* |

For variable definitions, see AS.1 and AS.9 and AS.17. For related text, see S.18

**Table S9b. Receives help with mobility (%), by wealth group and gender: wave 9**

|  | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
|  | Lowest | 2nd | 3rd | 4th | Highest |  |
| **Men** | 39.2 | 28.1 | 23.1 | 25.0 | 19.9 | 29.3 |
| **Women** | 46.8 | 39.9 | 39.3 | 29.0 | 32.3 | 39.2 |
|  |  |  |  |  |  |  |
| *N (unweighted)* |  |  |  |  |  |  |
| *Men* | *387* | *317* | *293* | *275* | *239* | *1,511* |
| *Women* | *612* | *525* | *491* | *415* | *341* | *2,384* |

For variable definitions, see AS.9 and AS.15–AS.17. For related text, see S.19

**Table S10a. Mean number of close relationships with children, family, and friends (%), by age and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | Age in 2018–19 | | | | | | | |
| **Men** | 6.7 | 7.0 | 6.1 | 6.4 | 7.0 | 6.7 | 6.8 | 6.6 |
| **Women** | 7.5 | 7.1 | 6.8 | 7.4 | 7.2 | 7.5 | 6.6 | 7.1 |
| *N (unweighted)* | | | | | | | | |
| *Men* | *296* | *184* | *357* | *513* | *576* | *367* | *441* | *2,437* |
| *Women* | *433* | *231* | *465* | *671* | *713* | *439* | *621* | *3,573* |

For variable definitions, see AS.1 and AS.2 and AS.17. For related text, see S.20

**Table S10b. Mean number of close relationships with children, family, and friends (%), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | Wealth group in 2018–19 | | | | | |
| **Men** | 6.3 | 6.4 | 6.5 | 6.8 | 7.3 | 6.6 |
| **Women** | 6.8 | 6.9 | 6.8 | 7.4 | 7.8 | 7.1 |
| *N (unweighted)* | | | | | | |
| *Men* | *447* | *510* | *554* | *602* | *589* | *2,702* |
| *Women* | *703* | *718* | *725* | *701* | *683* | *3,530* |

For variable definitions, see AS.4 and AS.15–AS.17. For related text, see S.21

**Table S11a. Self-perceived social status in society (%), by age and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | Age in 2018–19 | | | | | | | |
| **Men** | | | | | | | | |
| Worst-off | 4.0 | 4.7 | 4.2 | 1.6 | 1.7 | 1.6 | 1.0 | 2.9 |
| 2nd | 15.6 | 9.9 | 17.5 | 6.8 | 10.0 | 8.8 | 7.5 | 11.3 |
| 3rd | 33.2 | 25.9 | 25.5 | 28.4 | 33.8 | 30.3 | 39.5 | 30.7 |
| 4th | 39.8 | 52.1 | 43.2 | 52.3 | 46.9 | 50.4 | 44.9 | 46.7 |
| Best-off | 7.5 | 7.4 | 9.6 | 10.9 | 7.6 | 8.9 | 7.1 | 8.4 |
| **Women** | | | | | | | | |
| Worst-off | 3.7 | 3.1 | 1.2 | 1.3 | 1.3 | 0.5 | 0.8 | 1.8 |
| 2nd | 15.5 | 18.3 | 16.9 | 12.4 | 9.6 | 9.8 | 10.1 | 13.5 |
| 3rd | 34.6 | 34.7 | 34.2 | 35.7 | 41.4 | 44.4 | 48.2 | 38.5 |
| 4th | 40.2 | 37.9 | 39.5 | 41.2 | 41.7 | 39.4 | 36.2 | 39.5 |
| Best-off | 6.1 | 6.1 | 8.3 | 9.4 | 6.0 | 5.9 | 4.7 | 6.7 |
| *N (unweighted)* | | | | | | | | |
| *Men* | *287* | *181* | *346* | *513* | *571* | *364* | *443* | *2,705* |
| *Women* | *424* | *226* | *461* | *664* | *712* | *437* | *594* | *3,518* |

For variable definitions, see AS.1 and AS.13–AS.17. For related text, see S.22

**Table S11b. Self-perceived social status in society (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | |
| **Men** | | | | | | |
| Worst-off | 11.0 | 2.7 | 0.5 | 0.3 | 0.0 | 2.9 |
| 2nd | 29.1 | 13.0 | 7.0 | 5.5 | 1.4 | 11.3 |
| 3rd | 31.7 | 39.7 | 39.1 | 27.0 | 16.2 | 30.7 |
| 4th | 24.9 | 40.9 | 47.3 | 58.9 | 61.9 | 46.7 |
| Best-off | 3.3 | 3.7 | 6.1 | 8.3 | 20.5 | 8.3 |
| | | | | | | |
| **Women** | | | | | | |
| Worst-off | 6.2 | 1.6 | 0.2 | 0.2 | 0.0 | 1.8 |
| 2nd | 29.6 | 14.0 | 12.9 | 4.7 | 2.2 | 13.5 |
| 3rd | 43.4 | 47.0 | 42.2 | 37.0 | 20.0 | 38.4 |
| 4th | 18.6 | 35.4 | 40.7 | 49.9 | 59.0 | 39.6 |
| Best-off | 2.3 | 2.0 | 4.1 | 8.2 | 18.7 | 6.7 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *435* | *501* | *545* | *602* | *590* | *2,673* |
| *Women* | *689* | *703* | *712* | *699* | *669* | *3,472* |

For variable definitions, see AS.13 and AS.15–AS.17. For related text, see S.23

**Table S12a. Mean self-perceived chance (%) of living to 85, by age and gender: wave 9**

| | Age in 2018–19 | | | | All |
|---|---|---|---|---|---|
| | 50–54 | 55–59 | 60–64 | 65–69 | |
| **Men** | 50.0 | 53.3 | 50.7 | 51.9 | 51.3 |
| **Women** | 55.7 | 57.4 | 55.5 | 56.9 | 56.3 |
| | | | | | |
| *N (unweighted)* | | | | | |
| *Men* | *346* | *196* | *383* | *534* | *1,459* |
| *Women* | *506* | *256* | *494* | *693* | *1,949* |

For variable definitions, see AS.1, AS.12 and AS.17. For related text, see S.24

**Table S12b. Mean self-perceived chance (%) of living to 85, by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | |
| **Men** | 43.8 | 51.1 | 53.1 | 54.0 | 57.3 | 51.3 |
| **Women** | 51.7 | 58.5 | 55.4 | 57.3 | 60.7 | 56.4 |
| | | | | | | |
| *N (unweighted)* | | | | | | |
| *Men* | *300* | *282* | *250* | *292* | *311* | *1,435* |
| *Women* | *430* | *389* | *337* | *370* | *381* | *1,907* |

For variable definitions, see AS.12 and AS.15–AS.17. For related text, see S.25

**Table S13a. Mean number of grandchildren and great grandchildren (%), by age and gender: wave 9**

|  | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
|  | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ |  |
| **Men** | 1.0 | 2.8 | 3.3 | 3.6 | 4.5 | 5.5 | 6.0 | 4.5 |
| **Women** | 3.0 | 3.2 | 3.6 | 4.3 | 5.0 | 6.2 | 7.5 | 5.2 |
| *N (unweighted)* | | | | | | | | |
| *Men* | 1 | 58 | 190 | 365 | 473 | 335 | 452 | 1,874 |
| *Women* | 4 | 101 | 297 | 503 | 639 | 415 | 653 | 2,612 |

For related text see S.26

**Table S13b. Mean number of grandchildren and great grandchildren (%), by wealth group and gender: wave 9**

|  | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
|  | Lowest | 2nd | 3rd | 4th | Highest |  |
| **Men** | 5.8 | 4.5 | 4.4 | 3.8 | 3.8 | 4.5 |
| **Women** | 6.6 | 5.3 | 5.0 | 4.1 | 4.3 | 5.2 |
| *N (unweighted)* | | | | | | |
| *Men* | 323 | 359 | 383 | 396 | 396 | 1,857 |
| *Women* | 592 | 551 | 532 | 472 | 444 | 2,591 |

For related text see S.27

**Table S14a. Looked after the grandchildren in the last 12 months (%), by age and gender: wave 9**

|  | Age in 2018–19 | | | | | | | All |
|---|---|---|---|---|---|---|---|---|
|  | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ |  |
| **Men** | 49.9 | 62.2 | 61.8 | 68.1 | 57.3 | 37.9 | 12.8 | 49.5 |
| **Women** | 77.6 | 75.7 | 71.4 | 75.6 | 58.9 | 37.8 | 8.4 | 54.1 |
| *N (unweighted)* | | | | | | | | |
| *Men* | 58 | 65 | 203 | 361 | 465 | 312 | 417 | 1,881 |
| *Women* | 129 | 123 | 320 | 515 | 631 | 402 | 616 | 2,736 |

For related text see S.28

**Table S14b. Looked after the grandchildren in the last 12 months (%), by wealth group and gender: wave 9**

|  | Wealth group in 2018–19 | | | | | All |
|---|---|---|---|---|---|---|
|  | Lowest | 2nd | 3rd | 4th | Highest |  |
| **Men** | 35.4 | 48.8 | 46.1 | 56.5 | 64.0 | 50.0 |
| **Women** | 42.3 | 47.1 | 47.6 | 59.5 | 66.8 | 51.0 |
| *N (unweighted)* | | | | | | |
| *Men* | 299 | 340 | 360 | 378 | 370 | 1,747 |
| *Women* | 573 | 531 | 518 | 442 | 429 | 2,493 |

For related text, see S.29

**Table SL1a. Percentage married or remarried at baseline (wave 4) and, of those, percentage still married at waves 5–9, by age and gender**

| Age in 2008–09 | % married in 2008–09 | Of those married or remarried at baseline, % still married at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **77.1** | **100** | **98.3** | **96.8** | **95.4** | **93.8** | **91.0** | *1,667* |
| 50-54 | 68.9 | 100 | 98.5 | 96.9 | 95.4 | 94.2 | 94.5 | *181* |
| 55-59 | 76.5 | 100 | 99.0 | 98.1 | 97.0 | 96.8 | 94.3 | *369* |
| 60-64 | 79.3 | 100 | 97.8 | 96.5 | 95.4 | 95.2 | 91.7 | *449* |
| 65-69 | 79.8 | 100 | 99.2 | 98.0 | 95.8 | 95.5 | 92.6 | *288* |
| 70-74 | 78.3 | 100 | 98.5 | 96.7 | 96.2 | 92.2 | 89.8 | *235* |
| 75+ | 79.5 | 100 | 95.8 | 91.7 | 89.3 | 81.8 | 74.7 | *145* |
| | | | | | | | | |
| **Women** | **64.4** | **100** | **96.3** | **93.7** | **90.8** | **87.6** | **83.7** | *1,739* |
| 50-54 | 70.8 | 100 | 97.5 | 94.0 | 92.6 | 93.6 | 89.9 | *226* |
| 55-59 | 72.0 | 100 | 97.2 | 95.1 | 93.4 | 92.0 | 88.9 | *435* |
| 60-64 | 72.2 | 100 | 98.4 | 95.8 | 93.1 | 90.4 | 87.9 | *478* |
| 65-69 | 66.0 | 100 | 97.5 | 95.9 | 93.5 | 90.0 | 86.6 | *285* |
| 70-74 | 58.9 | 100 | 91.3 | 87.9 | 83.3 | 75.6 | 69.1 | *220* |
| 75+ | 35.0 | 100 | 89.1 | 84.8 | 74.6 | 63.3 | 53.9 | *95* |

For variable definitions, AS.1 AS.2 and AS.8–AS.17 For related text, see S.30

**Table SL1b. Percentage married or remarried at baseline (wave 4) and, of those, percentage still married at wave 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % married in 2008–09 | Of those married or remarried at baseline, % still married at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **77.0** | **100** | **98.4** | **96.9** | **95.6** | **94.1** | **91.2** | *1,629* |
| Lowest | 45.6 | 100 | 92.2 | 90.4 | 88.4 | 91.0 | 83.2 | *118* |
| 2nd | 77.0 | 100 | 98.0 | 96.1 | 93.3 | 93.0 | 89.4 | *259* |
| 3rd | 79.8 | 100 | 99.3 | 98.6 | 97.9 | 96.5 | 94.0 | *317* |
| 4th | 84.3 | 100 | 98.7 | 97.2 | 95.9 | 92.3 | 90.7 | *406* |
| Highest | 87.7 | 100 | 99.6 | 98.1 | 97.5 | 95.4 | 93.4 | *529* |
| | | | | | | | | |
| **Women** | **64.2** | **100** | **96.3** | **93.8** | **90.8** | **87.7** | **83.9** | *1,693* |
| Lowest | 34.5 | 100 | 89.9 | 85.7 | 81.5 | 78.1 | 68.3 | *128* |
| 2nd | 56.1 | 100 | 97.3 | 94.1 | 91.3 | 88.0 | 85.3 | *266* |
| 3rd | 66.9 | 100 | 97.0 | 95.2 | 92.4 | 88.1 | 84.7 | *345* |
| 4th | 75.6 | 100 | 95.6 | 93.1 | 90.3 | 87.4 | 83.4 | *417* |
| Highest | 82.3 | 100 | 97.8 | 95.7 | 92.8 | 90.7 | 88.1 | *537* |

For variable definitions, AS.2, A.S.8 and AS.15–AS.17. For related text, see S.31

**Table SL2a. Percentage using internet and/or email at baseline (wave 4) and, of those, percentage still using internet and/or email at waves 5–9, by age and gender**

| Age in 2008–09 | % using internet and/or email in 2008–09 | Of those using internet and/or email at baseline, % still using internet and/or email at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **70.3** | **100** | **96.1** | **98.8** | **98.4** | **98.8** | **97.9** | *1,056* |
| 50-54 | 84.4 | 100 | 95.1 | 98.6 | 100 | 100 | 100 | *144* |
| 55-59 | 80.8 | 100 | 97.0 | 98.8 | 97.9 | 99.8 | 99.6 | *286* |
| 60-64 | 73.9 | 100 | 96.4 | 99.5 | 99.3 | 98.6 | 98.9 | *303* |
| 65-69 | 60.0 | 100 | 95.8 | 98.3 | 97.6 | 96.0 | 95.5 | *155* |
| 70-74 | 52.3 | 100 | 95.3 | 97.7 | 96.1 | 97.4 | 93.8 | *113* |
| 75+ | 45.7 | 100 | 93.8 | 100 | 98.2 | 98.2 | 89.7 | *55* |
| | | | | | | | | |
| **Women** | **59.9** | **100** | **94.9** | **97.3** | **98.1** | **98.2** | **97.4** | *1,177* |
| 50-54 | 79.1 | 100 | 95.0 | 98.5 | 97.1 | 98.0 | 99.3 | *179* |
| 55-59 | 76.6 | 100 | 94.9 | 97.9 | 98.7 | 99.8 | 97.8 | *346* |
| 60-64 | 62.8 | 100 | 95.7 | 97.5 | 98.5 | 97.0 | 97.1 | *340* |
| 65-69 | 50.7 | 100 | 95.9 | 95.2 | 97.6 | 97.5 | 97.6 | *178* |
| 70-74 | 38.3 | 100 | 88.9 | 95.7 | 95.9 | 96.6 | 91.4 | *104* |
| 75+ | 19.9 | 100 | 95.7 | 96.5 | 100 | 100 | 96.5 | *30* |

For variable definitions, AS.1, AS2, AS.7 and AS.17. For related text, see S.32

**Table SL2b. Percentage using internet and/or email at baseline (wave 4) and, of those, percentage still using internet and/or email at waves 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % using internet and/or email in 2008–09 | Of those using internet and/or email at baseline, % still using internet and/or email at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **70.2** | **100** | **96.1** | **98.8** | **98.4** | **98.7** | **97.9** | *1,038* |
| Lowest | 45.1 | 100 | 93.9 | 100 | 97.2 | 100 | 98.9 | *61* |
| 2nd | 56.5 | 100 | 93.4 | 100 | 100 | 97.6 | 96.6 | *125* |
| 3rd | 65.2 | 100 | 94.2 | 97.3 | 98.4 | 98.6 | 98.3 | *187* |
| 4th | 76.2 | 100 | 96.9 | 99.0 | 98.2 | 98.5 | 97.3 | *275* |
| Highest | 86.9 | 100 | 98.1 | 98.8 | 98.2 | 99.2 | 98.4 | *390* |
| | | | | | | | | |
| **Women** | **59.4** | **100** | **94.7** | **97.5** | **98.1** | **98.2** | **97.3** | *1,141* |
| Lowest | 40.3 | 100 | 90.1 | 91.1 | 95.4 | 98.9 | 93.7 | *88* |
| 2nd | 47.5 | 100 | 91.0 | 96.6 | 97.0 | 97.0 | 95.8 | *163* |
| 3rd | 53.0 | 100 | 94.1 | 98.6 | 98.4 | 97.3 | 98.5 | *207* |
| 4th | 66.3 | 100 | 97.3 | 98.7 | 98.9 | 99.2 | 98.0 | *278* |
| Highest | 77.0 | 100 | 96.1 | 98.2 | 98.5 | 98.3 | 97.7 | *404* |

For variable definitions, AS.2, AS7 and AS.15–AS.17. For related text, see S.33

**Table SL2c. Percentage not using internet and/or email at baseline (wave 4) and, of those, percentage using internet and/or email at waves 5–9, by age and gender**

| Age in 2008–09 | % not using internet and/or email in 2008–09 | Of those using internet and/or email at baseline, % using internet and/or email at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **29.7** | **0** | **19.4** | **33.1** | **38.9** | **42.0** | **43.7** | *385* |
| 50-54 | 15.6 | 0 | 29.1 | 60.4 | 60.0 | 60.2 | 62.1 | *22* |
| 55-59 | 19.2 | 0 | 25.2 | 34.8 | 51.4 | 51.8 | 53.4 | *50* |
| 60-64 | 26.2 | 0 | 25.1 | 39.0 | 47.0 | 53.1 | 54.1 | *88* |
| 65-69 | 40.0 | 0 | 18.9 | 31.2 | 32.7 | 41.2 | 36.3 | *87* |
| 70-74 | 47.7 | 0 | 6.7 | 21.3 | 23.3 | 20.5 | 25.4 | *83* |
| 75+ | 54.3 | 0 | 15.9 | 27.4 | 30.5 | 33.5 | 41.2 | *55* |
| | | | | | | | | |
| **Women** | **40.1** | **0** | **18.0** | **34.3** | **40.9** | **45.5** | **47.8** | *671* |
| 50-54 | 20.9 | 0 | 43.8 | 56.9 | 61.3 | 70.8 | 76.4 | *42* |
| 55-59 | 23.4 | 0 | 26.8 | 40.9 | 54.1 | 61.7 | 61.2 | *91* |
| 60-64 | 37.2 | 0 | 20.9 | 43.1 | 51.3 | 58.5 | 60.2 | *161* |
| 65-69 | 49.3 | 0 | 16.1 | 39.4 | 50.2 | 49.5 | 50.3 | *141* |
| 70-74 | 61.7 | 0 | 12.0 | 25.0 | 28.0 | 29.3 | 34.4 | *143* |
| 75+ | 80.1 | 0 | 5.7 | 12.9 | 11.7 | 17.1 | 20.8 | *93* |

For variable definitions, AS.1, AS.2, AS.7 and AS.17. For related text, see S.34

**Table SL2d. Percentage not using internet and/or email at baseline (wave 4) and, of those, percentage using internet and/or email at waves 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % not using internet and/or email in 2008–09 | Of those using internet and/or email at baseline, % using internet and/or email at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **29.9** | **0** | **19.6** | **33.4** | **39.3** | **41.8** | **43.9** | *381* |
| Lowest | 54.9 | 0 | 14.7 | 20.7 | 40.6 | 36.6 | 42.6 | *63* |
| 2nd | 43.5 | 0 | 19.3 | 34.9 | 33.2 | 37.4 | 40.3 | *89* |
| 3rd | 34.8 | 0 | 13.5 | 30.9 | 34.2 | 40.8 | 40.1 | *95* |
| 4th | 23.8 | 0 | 25.2 | 34.8 | 38.6 | 41.3 | 44.7 | *81* |
| Highest | 13.1 | 0 | 30.9 | 54.2 | 60.0 | 62.2 | 59.4 | *53* |
| | | | | | | | | |
| **Women** | **40.6** | **0** | **18.1** | **34.2** | **40.9** | **45.5** | **47.7** | *663* |
| Lowest | 59.7 | 0 | 9.2 | 19.4 | 30.7 | 33.1 | 44.7 | *116* |
| 2nd | 52.5 | 0 | 15.5 | 29.0 | 30.7 | 37.0 | 37.9 | *149* |
| 3rd | 47.0 | 0 | 19.0 | 37.7 | 45.3 | 45.6 | 47.5 | *165* |
| 4th | 33.7 | 0 | 24.2 | 44.8 | 47.2 | 52.8 | 51.6 | *120* |
| Highest | 23.0 | 0 | 25.0 | 43.6 | 55.9 | 66.4 | 63.4 | *113* |

For variable definitions, AS.2, AS.7 and AS.15–AS.17. For related text, see S.35

**Table SL3a. Percentage been on holiday in the last year at baseline (wave 4) and, of those, percentage still been on holiday at waves 5–9, by age and gender**

| Age in 2008–09 | % been on holiday in 2008–09 | Of those been on holiday in the last year at baseline, % still been on holiday in the last year at... | | | | | | Unwted N |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **82.8** | **100** | **89.8** | **88.4** | **87.4** | **84.8** | **81.1** | *1,248* |
| 50-54 | 84.5 | 100 | 89.1 | 87.9 | 87.1 | 90.1 | 83.8 | *144* |
| 55-59 | 83.0 | 100 | 91.3 | 89.7 | 92.9 | 90.9 | 90.8 | *290* |
| 60-64 | 82.3 | 100 | 92.2 | 92.4 | 91.1 | 90.7 | 88.6 | *330* |
| 65-69 | 86.0 | 100 | 91.4 | 90.9 | 93.3 | 84.9 | 82.3 | *221* |
| 70-74 | 74.7 | 100 | 89.8 | 82.5 | 77.4 | 73.7 | 67.0 | *163* |
| 75+ | 85.9 | 100 | 77.6 | 78.6 | 64.9 | 58.2 | 45.6 | *100* |
| | | | | | | | | |
| **Women** | **81.6** | **100** | **90.8** | **89.1** | **86.4** | **85.3** | **80.8** | *1,617* |
| 50-54 | 83.8 | 100 | 88.0 | 92.8 | 88.5 | 91.4 | 89.6 | *188* |
| 55-59 | 81.2 | 100 | 91.7 | 91.3 | 92.7 | 95.3 | 91.4 | *370* |
| 60-64 | 86.1 | 100 | 92.2 | 91.6 | 89.9 | 89.5 | 87.5 | *442* |
| 65-69 | 83.0 | 100 | 93.4 | 87.0 | 86.3 | 82.4 | 79.4 | *290* |
| 70-74 | 77.4 | 100 | 87.0 | 87.0 | 80.3 | 73.9 | 61.9 | *220* |
| 75+ | 72.1 | 100 | 88.2 | 77.5 | 63.0 | 55.0 | 45.1 | *107* |

For variable definitions, AS1, AS.2, AS.6 and AS.17. For related text, see S.36

**Table SL3b. Percentage been on holiday in the last year at baseline (wave 4) and, of those, percentage still been on holiday at waves 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % been on holiday in 2008–09 | Of those been on holiday in the last year at baseline, % still been on holiday in the last year at… | | | | | | Unwted N |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **82.7** | **100** | **89.8** | **88.5** | **87.5** | **85.1** | **81.3** | *1,228* |
| Lowest | 61.7 | 100 | 74.1 | 74.4 | 74.2 | 66.0 | 67.2 | *83* |
| 2nd | 75.9 | 100 | 89.0 | 87.1 | 85.3 | 83.6 | 79.7 | *175* |
| 3rd | 83.3 | 100 | 91.0 | 89.9 | 88.4 | 84.4 | 77.6 | *240* |
| 4th | 85.9 | 100 | 90.8 | 88.7 | 88.5 | 85.6 | 80.5 | *313* |
| Highest | 92.2 | 100 | 93.0 | 92.0 | 91.1 | 91.0 | 89.2 | *417* |
| | | | | | | | | |
| **Women** | **81.5** | **100** | **90.9** | **89.0** | **86.3** | **85.2** | **80.6** | *1,576* |
| Lowest | 53.3 | 100 | 79.0 | 75.0 | 66.9 | 76.6 | 69.5 | *122* |
| 2nd | 77.7 | 100 | 89.2 | 87.5 | 86.0 | 81.7 | 76.6 | *270* |
| 3rd | 83.7 | 100 | 90.0 | 91.8 | 86.6 | 82.4 | 78.9 | *333* |
| 4th | 88.6 | 100 | 95.0 | 88.1 | 87.1 | 88.8 | 80.0 | *371* |
| Highest | 91.6 | 100 | 93.0 | 93.0 | 91.5 | 89.2 | 88.4 | *480* |

For variable definitions, AS.2, AS.6, AS.15–AS.17. For related text, see S.37

**Table SL4a. Percentage using public transport at baseline (wave 4) and, of those, percentage still using public transport at waves 5–9, by age and gender**

| Age in 2008–09 | % using public transport in 2008–09 | Of those using public transport at baseline, % still using public transport at... | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **65.4** | **100** | **87.2** | **86.4** | **83.9** | **83.0** | **78.3** | *1,248* |
| 50-54 | 60.7 | 100 | 84.8 | 79.3 | 78.9 | 77.8 | 77.5 | *164* |
| 55-59 | 57.2 | 100 | 82.0 | 83.3 | 82.7 | 84.5 | 86.0 | *285* |
| 60-64 | 68.1 | 100 | 88.5 | 88.4 | 87.5 | 87.0 | 84.1 | *383* |
| 65-69 | 72.9 | 100 | 89.3 | 89.8 | 82.4 | 84.4 | 75.8 | *259* |
| 70-74 | 74.2 | 100 | 93.8 | 90.9 | 88.7 | 83.0 | 72.7 | *216* |
| 75+ | 67.3 | 100 | 87.1 | 86.7 | 81.3 | 74.1 | 58.6 | *123* |
| | | | | | | | | |
| **Women** | **75.6** | **100** | **90.4** | **88.7** | **86.3** | **82.0** | **77.0** | *2,075* |
| 50-54 | 69.0 | 100 | 86.4 | 83.0 | 83.9 | 82.3 | 79.1 | *228* |
| 55-59 | 70.7 | 100 | 86.8 | 90.2 | 87.7 | 87.8 | 87.9 | *437* |
| 60-64 | 77.3 | 100 | 93.6 | 89.8 | 91.4 | 87.9 | 86.6 | *531* |
| 65-69 | 79.2 | 100 | 90.4 | 90.3 | 88.0 | 84.8 | 77.4 | *358* |
| 70-74 | 82.0 | 100 | 93.6 | 90.3 | 87.0 | 78.3 | 72.9 | *313* |
| 75+ | 78.6 | 100 | 91.4 | 85.8 | 75.1 | 63.1 | 45.3 | *208* |

For variable definitions, AS1, AS.2, AS.11 and AS.17. For related text, see S.38

**Table SL4b. Percentage using public transport at baseline (wave 4) and, of those, percentage still using public transport at waves 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % using public transport in 2008–09 | Of those using public transport at baseline, % still using public transport at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **65.1** | **100** | **87.2** | **86.5** | **84.1** | **83.5** | **78.5** | *1,395* |
| Lowest | 60.4 | 100 | 87.9 | 90.6 | 84.9 | 78.9 | 71.1 | *147* |
| 2nd | 56.6 | 100 | 86.3 | 85.0 | 85.9 | 80.5 | 74.4 | *207* |
| 3rd | 61.9 | 100 | 80.1 | 81.0 | 77.8 | 79.5 | 76.4 | *251* |
| 4th | 67.6 | 100 | 89.3 | 88.1 | 84.8 | 87.0 | 81.0 | *335* |
| Highest | 74.6 | 100 | 90.4 | 87.6 | 86.2 | 87.3 | 83.6 | *455* |
| | | | | | | | | |
| **Women** | **75.4** | **100** | **90.4** | **88.8** | **86.3** | **81.9** | **76.8** | *2,022* |
| Lowest | 77.3 | 100 | 93.2 | 88.1 | 87.5 | 82.7 | 71.4 | *296* |
| 2nd | 76.9 | 100 | 89.5 | 88.9 | 84.3 | 77.2 | 74.6 | *381* |
| 3rd | 73.3 | 100 | 89.1 | 88.2 | 84.3 | 80.2 | 77.0 | *411* |
| 4th | 73.9 | 100 | 92.5 | 90.4 | 89.4 | 86.5 | 81.6 | *423* |
| Highest | 75.9 | 100 | 88.2 | 88.4 | 86.3 | 86.5 | 78.5 | *511* |

For variable definitions, AS1, AS.2, AS.11 and AS.15–AS.17. For related text, see S.39

**Table SL4c. Percentage not using public transport at baseline (wave 4) and, of those,
percentage using public transport at waves 5–9, by age and gender**

| Age in 2008–09 | % not using public transport in 2008–09 | Of those not using public transport at baseline, % using public transport at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **34.6** | **0** | **31.0** | **35.4** | **39.1** | **41.5** | **43.0** | *707* |
| 50-54 | 39.3 | 0 | 28.9 | 26.5 | 33.0 | 33.2 | 37.5 | *100* |
| 55-59 | 42.8 | 0 | 32.3 | 39.5 | 43.1 | 48.6 | 52.0 | *197* |
| 60-64 | 31.9 | 0 | 31.2 | 37.8 | 38.9 | 43.6 | 42.6 | *175* |
| 65-69 | 27.2 | 0 | 36.4 | 37.7 | 41.2 | 41.0 | 45.3 | *98* |
| 70-74 | 25.8 | 0 | 27.6 | 32.6 | 36.1 | 35.8 | 32.9 | *81* |
| 75+ | 32.7 | 0 | 26.0 | 29.9 | 35.1 | 31.1 | 26.9 | *56* |
| | | | | | | | | |
| **Women** | **24.4** | **0** | **35.6** | **38.1** | **41.7** | **41.1** | **42.6** | *647* |
| 50-54 | 31.0 | 0 | 32.0 | 33.8 | 31.9 | 26.7 | 29.4 | *99* |
| 55-59 | 29.3 | 0 | 42.3 | 46.4 | 56.7 | 26.7 | 62.0 | *183* |
| 60-64 | 22.7 | 0 | 37.5 | 43.4 | 45.6 | 48.5 | 47.7 | *143* |
| 65-69 | 20.8 | 0 | 35.9 | 35.7 | 35.0 | 34.9 | 33.6 | *92* |
| 70-74 | 18.0 | 0 | 27.1 | 35.9 | 38.7 | 32.4 | 35.2 | *73* |
| 75+ | 21.4 | 0 | 25.6 | 17.5 | 18.9 | 13.8 | 16.8 | *57* |

For variable definitions, AS1, AS.2, AS.11 and AS.17. For related text, see S.40

**Table SL4d. Percentage not using public transport at baseline (wave 4) and, of those,
percentage using public transport at waves 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % not using public transport in 2008–09 | Of those not using public transport at baseline, % using public transport at… | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **34.9** | **0** | **30.7** | **35.3** | **39.1** | **41.6** | **43.1** | *696* |
| Lowest | 39.6 | 0 | 23.1 | 26.8 | 26.8 | 31.2 | 27.7 | *102* |
| 2nd | 43.4 | 0 | 24.0 | 27.6 | 29.3 | 28.8 | 34.6 | *139* |
| 3rd | 38.1 | 0 | 32.8 | 42.1 | 47.7 | 49.6 | 52.9 | *155* |
| 4th | 32.4 | 0 | 33.0 | 35.9 | 44.6 | 52.8 | 50.5 | *149* |
| Highest | 25.5 | 0 | 41.1 | 44.2 | 46.9 | 45.7 | 48.8 | *151* |
| | | | | | | | | |
| **Women** | **24.6** | **0** | **35.4** | **38.2** | **41.9** | **41.4** | **42.7** | *637* |
| Lowest | 22.7 | 0 | 22.8 | 24.1 | 28.8 | 21.0 | 27.0 | *89* |
| 2nd | 23.1 | 0 | 37.2 | 34.5 | 40.6 | 39.0 | 31.9 | *111* |
| 3rd | 26.7 | 0 | 40.7 | 41.0 | 43.6 | 43.6 | 42.4 | *137* |
| 4th | 26.1 | 0 | 34.7 | 43.0 | 42.8 | 50.0 | 49.9 | *143* |
| Highest | 24.1 | 0 | 38.3 | 44.4 | 50.0 | 47.7 | 56.8 | *157* |

For variable definitions, AS1, AS.2, AS.11 and AS.15–AS.17. For related text, see S.41

**Table SL5a. Percentage with access to a car or a van at baseline (wave 4) and, of those, percentage still with access to a car or van at waves 5–9, by age and gender**

| Age in 2008–09 | % with access to a car or van in 2008–09 | Of those with access to a car or van at baseline, % still with access to a car or van in the last year at... | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **93.6** | **100** | **97.6** | **97.0** | **95.9** | **94.6** | **92.9** | *2,027* |
| 50-54 | 92.8 | 100 | 97.8 | 98.3 | 97.8 | 96.6 | 97.5 | *247* |
| 55-59 | 94.7 | 100 | 97.0 | 96.6 | 96.5 | 96.6 | 93.8 | *460* |
| 60-64 | 93.7 | 100 | 98.0 | 97.8 | 97.4 | 96.6 | 95.3 | *532* |
| 65-69 | 94.3 | 100 | 98.0 | 97.6 | 96.0 | 95.5 | 95.8 | *341* |
| 70-74 | 92.0 | 100 | 97.6 | 97.7 | 97.7 | 91.9 | 89.6 | *279* |
| 75+ | 92.4 | 100 | 97.1 | 92.6 | 85.4 | 83.4 | 77.2 | *168* |
| | | | | | | | | |
| **Women** | **85.8** | **100** | **95.4** | **94.2** | **92.4** | **90.6** | **89.0** | *2,394* |
| 50-54 | 89.8 | 100 | 97.3 | 96.9 | 95.7 | 95.7 | 97.6 | *299* |
| 55-59 | 89.8 | 100 | 96.0 | 96.0 | 94.5 | 94.9 | 94.0 | *562* |
| 60-64 | 90.6 | 100 | 96.7 | 96.9 | 95.6 | 93.6 | 92.6 | *616* |
| 65-69 | 86.1 | 100 | 96.1 | 96.8 | 95.3 | 93.6 | 92.6 | *400* |
| 70-74 | 81.8 | 100 | 94.5 | 92.0 | 88.8 | 86.5 | 81.8 | *325* |
| 75+ | 68.7 | 100 | 89.1 | 79.6 | 76.4 | 67.5 | 61.5 | *192* |

For variable definitions, AS1, AS.2, AS.10 and AS.17. For related text, see S.42

**Table SL5b. Percentage with access to a car or a van at baseline (wave 4) and, of those, percentage still with access to a car or van at waves 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % with access to a car or van in 2008–09 | Of those with access to a car or van at baseline, % still with access to a car or van in the last year at... | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **93.7** | **100** | **97.5** | **96.9** | **95.8** | **94.5** | **92.8** | *1,984* |
| Lowest | 80.0 | 100 | 90.1 | 87.9 | 87.8 | 85.7 | 80.3 | *200* |
| 2nd | 92.9 | 100 | 96.2 | 95.8 | 93.2 | 92.2 | 90.7 | *324* |
| 3rd | 95.4 | 100 | 99.3 | 99.0 | 97.6 | 96.6 | 93.6 | *390* |
| 4th | 97.7 | 100 | 98.9 | 98.7 | 97.8 | 97.3 | 96.5 | *474* |
| Highest | 97.7 | 100 | 99.6 | 99.2 | 98.4 | 96.5 | 96.4 | *596* |
| | | | | | | | | |
| **Women** | **85.4** | **100** | **95.3** | **94.1** | **92.3** | **90.4** | **88.8** | *2,337* |
| Lowest | 60.8 | 100 | 87.3 | 81.6 | 77.5 | 74.3 | 73.3 | *245* |
| 2nd | 81.3 | 100 | 92.8 | 92.3 | 89.7 | 87.0 | 84.8 | *408* |
| 3rd | 89.3 | 100 | 95.3 | 95.3 | 91.9 | 90.2 | 88.5 | *493* |
| 4th | 94.3 | 100 | 97.9 | 96.5 | 96.3 | 94.8 | 93.8 | *541* |
| Highest | 97.0 | 100 | 98.9 | 98.6 | 98.5 | 97.3 | 95.3 | *650* |

For variable definitions, AS.1, AS.2, AS.10 and AS15–AS.17. For related text, see S.43

**Table SL6a. Percentage volunteering at baseline (wave 4) and, of those, percentage still volunteering at waves 5–9, by age and gender**

| Age in 2008–09 | % volunteering in 2008–09 | Of those volunteering at baseline, % still volunteering at... | | | | | | Unwted N |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **29.1** | **100** | **75.3** | **72.8** | **63.2** | **61.1** | **56.9** | *640* |
| 50-54 | 21.9 | 100 | 58.6 | 72.2 | 57.1 | 73.5 | 57.2 | *61* |
| 55-59 | 30.5 | 100 | 73.7 | 64.1 | 55.9 | 56.8 | 59.9 | *154* |
| 60-64 | 29.4 | 100 | 83.7 | 78.3 | 72.7 | 67.3 | 66.4 | *169* |
| 65-69 | 28.2 | 100 | 81.1 | 81.4 | 74.3 | 67.3 | 64.3 | *104* |
| 70-74 | 31.5 | 100 | 76.6 | 71.9 | 65.5 | 58.7 | 46.1 | *92* |
| 75+ | 33.3 | 100 | 69.1 | 74.1 | 51.9 | 42.7 | 32.1 | *60* |
| | | | | | | | | |
| **Women** | **32.4** | **100** | **69.1** | **67.8** | **63.3** | **59.0** | **56.7** | *927* |
| 50-54 | 25.0 | 100 | 77.4 | 68.0 | 58.6 | 50.3 | 58.1 | *90* |
| 55-59 | 29.8 | 100 | 73.2 | 69.4 | 64.8 | 64.2 | 63.0 | *188* |
| 60-64 | 33.5 | 100 | 77.6 | 70.1 | 68.9 | 65.0 | 67.0 | *233* |
| 65-69 | 39.1 | 100 | 77.1 | 70.0 | 68.7 | 65.2 | 62.3 | *183* |
| 70-74 | 36.4 | 100 | 79.5 | 72.5 | 67.3 | 55.2 | 45.6 | *148* |
| 75+ | 31.5 | 100 | 73.2 | 52.7 | 41.7 | 39.8 | 28.7 | *85* |

For variable definitions, AS.1, AS.2, AS.14 and AS.17. For related text, see S.44

**Table SL6b. Percentage volunteering at baseline (wave 4) and, of those, percentage still volunteering at waves 5–9, by wealth group and gender**

| Wealth group in 2008–09 | % volunteering in 2008–09 | Of those volunteering at baseline, % still volunteering at... | | | | | | Unwted N |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **28.7** | **100** | **75.4** | **73.1** | **63.3** | **60.7** | **57.4** | *619* |
| Lowest | 17.5 | 100 | 64.1 | 61.0 | 49.6 | 51.0 | 33.2 | *42* |
| 2nd | 19.1 | 100 | 73.2 | 63.7 | 64.4 | 49.9 | 44.8 | *71* |
| 3rd | 27.7 | 100 | 72.9 | 69.3 | 55.5 | 60.8 | 51.9 | *106* |
| 4th | 32.2 | 100 | 80.3 | 79.2 | 65.7 | 55.5 | 62.8 | *155* |
| Highest | 40.3 | 100 | 77.1 | 77.4 | 68.9 | 70.5 | 67.1 | *245* |
| | | | | | | | | |
| **Women** | **32.5** | **100** | **76.1** | **67.7** | **63.1** | **58.8** | **56.5** | *905* |
| Lowest | 22.9 | 100 | 65.1 | 56.4 | 57.8 | 44.4 | 41.6 | *90* |
| 2nd | 21.2 | 100 | 71.3 | 64.5 | 52.8 | 53.1 | 47.3 | *112* |
| 3rd | 33.5 | 100 | 78.0 | 64.8 | 62.3 | 58.8 | 53.2 | *190* |
| 4th | 35.8 | 100 | 78.6 | 75.3 | 68.4 | 65.0 | 61.1 | *206* |
| Highest | 46.6 | 100 | 79.3 | 70.2 | 66.4 | 62.6 | 65.4 | *307* |

For variable definitions, AS.2, AS.14 and AS15–AS.17. For related text, see S.45

**Table SL6c. Percentage not volunteering at baseline (wave 4) and, of those, percentage volunteering at waves 5–9, by age and gender**

| Age in 2008–09 | % not volunteering in 2008–09 | Of those not volunteering at baseline, % volunteering at... | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **70.9** | **0** | **10.6** | **12.9** | **14.2** | **13.9** | **15.8** | *1,383* |
| 50-54 | 78.1 | 0 | 11.3 | 13.5 | 15.9 | 15.4 | 18.3 | *190* |
| 55-59 | 69.5 | 0 | 10.6 | 10.5 | 13.0 | 13.7 | 16.1 | *304* |
| 60-64 | 70.6 | 0 | 11.1 | 16.9 | 20.0 | 18.2 | 20.4 | *360* |
| 65-69 | 71.8 | 0 | 11.5 | 14.7 | 11.5 | 14.3 | 16.6 | *234* |
| 70-74 | 68.5 | 0 | 11.4 | 8.6 | 11.9 | 10.5 | 11.7 | *183* |
| 75+ | 66.8 | 0 | 5.9 | 11.3 | 8.1 | 4.6 | 3.1 | *112* |
| | | | | | | | | |
| **Women** | **67.6** | **0** | **12.5** | **13.8** | **14.6** | **15.3** | **16.8** | *1,702* |
| 50-54 | 75.0 | 0 | 11.3 | 14.7 | 13.5 | 18.3 | 16.9 | *226* |
| 55-59 | 70.2 | 0 | 14.9 | 17.1 | 17.5 | 18.9 | 25.2 | *413* |
| 60-64 | 66.5 | 0 | 12.5 | 14.5 | 16.7 | 16.7 | 19.0 | *422* |
| 65-69 | 60.9 | 0 | 13.0 | 14.1 | 15.6 | 15.8 | 15.1 | *255* |
| 70-74 | 63.6 | 0 | 14.7 | 12.5 | 14.5 | 11.3 | 8.2 | *222* |
| 75+ | 68.5 | 0 | 7.0 | 6.1 | 5.0 | 5.1 | 5.0 | *164* |

For variable definitions, AS1, AS.2, AS.14 and AS.17. For related text, see S.46

**Table SL6d. Percentage not volunteering at baseline (wave 4) and, of those, percentage volunteering at waves 5–9, by age and gender**

| Wealth group in 2008–09 | % not volunteering in 2008–09 | Of those not volunteering at baseline, % volunteering at... | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **71.3** | **0** | **10.6** | **13.0** | **14.1** | **13.8** | **15.8** | *1,359* |
| Lowest | 82.5 | 0 | 6.7 | 9.0 | 11.0 | 8.9 | 9.8 | *191* |
| 2nd | 80.9 | 0 | 5.8 | 6.4 | 6.3 | 5.1 | 10.3 | *257* |
| 3rd | 72.3 | 0 | 12.9 | 14.1 | 14.2 | 15.9 | 14.8 | *278* |
| 4th | 67.8 | 0 | 13.3 | 14.6 | 16.1 | 13.9 | 16.8 | *303* |
| Highest | 59.7 | 0 | 13.8 | 20.2 | 22.5 | 24.3 | 26.2 | *330* |
| | | | | | | | | |
| **Women** | **67.5** | **0** | **12.6** | **13.9** | **14.6** | **15.2** | **16.6** | *1,661* |
| Lowest | 77.1 | 0 | 7.7 | 9.8 | 7.8 | 8.7 | 8.1 | *285* |
| 2nd | 78.8 | 0 | 7.5 | 9.9 | 9.7 | 10.7 | 12.0 | *367* |
| 3rd | 66.5 | 0 | 14.5 | 14.3 | 14.9 | 14.5 | 15.2 | *343* |
| 4th | 64.2 | 0 | 15.0 | 16.1 | 18.8 | 21.4 | 21.4 | *334* |
| Highest | 53.5 | 0 | 20.0 | 21.2 | 23.9 | 23.0 | 28.8 | *332* |

For variable definitions, AS.2, AS.14, AS15–AS.17. For related text, see S.47

**Table SL7a. Percentage not caring for someone at baseline (wave 4) and, of those, percentage caring for someone at waves 5–9, by age and gender**

| Age in 2008–09 | % not caring for someone in 2008–09 | Of those not caring for someone at baseline, % caring for someone at... | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **90.2** | **0** | **8.2** | **6.9** | **8.9** | **8.6** | **9.0** | *1,923* |
| 50-54 | 89.9 | 0 | 7.1 | 6.9 | 11.8 | 10.1 | 9.6 | *236* |
| 55-59 | 88.6 | 0 | 8.7 | 7.5 | 7.3 | 9.1 | 8.8 | *428* |
| 60-64 | 92.7 | 0 | 7.8 | 6.0 | 10.1 | 9.4 | 10.7 | *517* |
| 65-69 | 87.6 | 0 | 9.1 | 7.1 | 7.6 | 7.8 | 8.2 | *314* |
| 70-74 | 92.0 | 0 | 10.7 | 5.7 | 8.4 | 7.4 | 6.2 | *268* |
| 75+ | 91.2 | 0 | 5.5 | 8.8 | 8.9 | 6.3 | 8.7 | *160* |
| | | | | | | | | |
| **Women** | **83.0** | **0** | **10.6** | **12.4** | **12.9** | **11.8** | **10.9** | *2,232* |
| 50-54 | 80.4 | 0 | 15.5 | 16.9 | 15.5 | 17.1 | 18.9 | *260* |
| 55-59 | 80.5 | 0 | 11.3 | 15.2 | 17.4 | 14.7 | 12.8 | *496* |
| 60-64 | 78.2 | 0 | 11.3 | 14.4 | 14.4 | 13.1 | 12.1 | *526* |
| 65-69 | 85.8 | 0 | 10.6 | 11.9 | 12.6 | 9.0 | 10.8 | *380* |
| 70-74 | 85.8 | 0 | 7.4 | 8.9 | 9.0 | 9.0 | 8.4 | *328* |
| 75+ | 92.2 | 0 | 7.2 | 4.6 | 4.5 | 5.9 | 2.1 | *242* |

For variable definitions, AS.1, AS.2, AS.3 and AS.17 For related text, see S.48

**Table SL7b. Percentage not caring for someone at baseline (wave 4) and, of those, percentage caring for someone at waves 5–9, by age and gender**

| Wealth group in 2008–09 | % not caring for someone in 2008–09 | Of those not caring for someone at baseline, % caring for someone at... | | | | | | *Unwted N* |
|---|---|---|---|---|---|---|---|---|
| | | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | |
| **Men** | **90.3** | **0** | **8.3** | **6.8** | **8.8** | **8.6** | **9.1** | *1,885* |
| Lowest | 89.0 | 0 | 5.0 | 3.3 | 7.0 | 6.0 | 7.6 | *225* |
| 2nd | 90.4 | 0 | 9.1 | 8.6 | 7.9 | 7.4 | 6.9 | *311* |
| 3rd | 91.5 | 0 | 9.1 | 7.9 | 9.6 | 7.4 | 10.8 | *368* |
| 4th | 91.6 | 0 | 9.0 | 7.4 | 10.3 | 10.6 | 9.5 | *438* |
| Highest | 89.2 | 0 | 8.2 | 6.3 | 8.5 | 10.0 | 9.8 | *543* |
| | | | | | | | | |
| **Women** | **83.1** | **0** | **10.6** | **12.4** | **12.6** | **11.5** | **10.8** | *2,182* |
| Lowest | 85.4 | 0 | 8.6 | 9.7 | 10.0 | 6.3 | 5.2 | *324* |
| 2nd | 83.5 | 0 | 9.0 | 12.3 | 11.1 | 10.2 | 11.2 | *407* |
| 3rd | 84.1 | 0 | 10.8 | 12.9 | 13.0 | 11.9 | 11.3 | *455* |
| 4th | 82.4 | 0 | 12.5 | 12.5 | 13.3 | 14.4 | 11.2 | *458* |
| Highest | 80.8 | 0 | 11.7 | 13.9 | 14.9 | 14.2 | 14.5 | *538* |

For variable definitions, AS.2, AS.3 and AS.15–AS.17 For related text, see S.49

# H. Health domain tables

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# Introduction

H.1    This chapter presents results for the Health domain of the latest wave of the English Longitudinal Study of Ageing (ELSA). Results are presented according to six domains of health: general health, diagnosed health conditions, sensory function, physical and functional capability, cognitive function and health behaviours. As this wave also includes a nurse visit for half of the sample, we also present tables on anthropometric measures, physical function tests and blood biomarkers. Lastly, tables on ELSA participants' food and nutrient intake (macro- and micronutrients) collected via the Online Dietary Questionnaire (Oxford WebQ) for the first time at wave 9 are presented. The Oxford WebQ is a web-based method for assessment of dietary intakes over the past 24 hours, suitable for large-scale prospective studies. Where possible, results are presented as follows:

- Cross-sectional tables (H1a to H8b) based on core member respondents of wave 9 (including the refreshment sample members added in 2006–07, 2008–09, 2012–13, 2014–15, and 2018–19). Results are classified by age (divided into five-year categories) and gender and by wealth groups (quintiles) and gender. Results are weighted for non-response using cross-sectional weight.

- Nutrition tables (H9a to H11b) based on core members who completed the dietary questionnaire at wave 9 (including the refreshment sample members added in 2006–07, 2008–09, 2012–13, 2014–15, and 2018–19). Results are stratified by age (divided into five-year categories) and gender and by wealth groups (quintiles) and gender.

- Longitudinal tables (HL1a to HL11b), based on a balanced ELSA sample of core members who participated in all waves (4 to 9). Results are classified by age (divided into five-year categories) and gender at wave 4, and by wealth groups (quintiles) and gender at wave 4. Results are weighted using longitudinal weight.

- Nurse visit cross-sectional tables (N1 to N9) based on core sample member respondents of wave 9 (including the refreshment sample members added in 2006–07, 2008–09, 2012–13, 2014–15, and 2018–19) who have consented to the nurse visit. Results are shown by age (divided into five-year categories) and gender and by wealth groups (quintiles) and gender. Results are weighted for non-response using two cross-sectional weights, i.e. anthropometric and physical functioning measures are weighted by nurse visit weights, while blood sample results are weighted by blood sampling weights. Please note that a number of modules included on previous ELSA nurse waves have been omitted at wave 9, including standing height, waist and hip circumference measurements, lung function, balance,

leg rise, chair rise and hair sample. In addition, the weight module was moved from the nurse to the interviewer questionnaire at wave 9.

# Cross-sectional tables

## General health

H.2    Table H1a shows the percentage of self-rated health categories (from excellent to poor) by age and gender at wave 9. The prevalence of women and men reporting excellent self-rated health decreases with age and reaches the lowest value at the age of 80 and over. Overall, 74% of men and women report excellent, very good or good health.

H.3    Table H1b shows the percentage of self-rated health by wealth and gender at wave 9. There is a steep economic gradient in the self-rated health: men and women in the lowest wealth groups report more frequently fair or poor health than those in the highest wealth groups. Among the highest wealth group, 87% of men and women rate their health good to excellent; the corresponding figure for men and women in the lowest wealth group is 60% and 57%, respectively.

H.4    Table H2a shows the percentage of people reporting a long-standing limiting illness by age and gender at wave 9. The prevalence of men and women reporting a limiting long-standing illness increases with age, from 19% in men and 26% in women aged 55–59 to 52% in men and 55% in women aged 80 and over.

H.5    Table H2b shows the percentage of limiting long-standing illness by wealth and gender at wave 9. The prevalence of men and women in the lowest wealth group reporting a long-standing limiting illness is over 44%, which is more than twice the proportion of those in the highest wealth group.

## Health conditions

H.6    Table H3a shows the percentage of diagnosed health conditions by age and gender at wave 9. The same trends were observed for men and women. Overall, the prevalence of most health conditions peaks at age 75–79 and lowers for people aged 80 and above, except for CHD and arthritis. Depression lowers after the age of 70. At all age groups, more men than women report CHD, while more women than men report arthritis and depression. Overall, the prevalence of chronic disease, particularly for arthritis (men and women) and respiratory illnesses (women) and diabetes (men), is high in wave 9 of ELSA.

H.7    Table H3b shows the percentage of health conditions by wealth and gender at wave 9. The prevalence of all health conditions is lowest in the highest wealth group for both men and women. The prevalence of CHD, diabetes, depression and respiratory illnesses is approximately double in the lowest wealth group than in the highest for men and women.  For cancer, the trend is less marked for men, and in women, prevalence is relatively stable across all wealth groups.

## Sensory impairments

H.8    Table H4a shows the percentage of self-rated sensory impairments (eyesight, hearing, smell and taste) by age and gender at wave 9. Hearing impairment is highly prevalent overall (23% of men and 16% of women) and increases steadily with age from age 60 onwards to reach 42% of men and 34% of women aged 80 and older. A

similar trend of increase with age is observed for impairment in other senses, with the increase starting from age 65 for men and age 60 for women. Overall, in each age group, except at 55–59, more men than women reported smell impairment. More women report eyesight impairments than men. The lowest prevalence is for taste impairment in both men and women (8% of men and 7% of women across all age groups).

H.9    Table H4b shows the percentage of self-rated sensory impairments by wealth and gender at wave 9. Both men and women in the lowest wealth group report higher sensory impairments in each of the eyesight, hearing, smell and taste functions than those in the highest wealth group.

## Physical and functional capability

H.10    Table H5a shows the mean walking speed (measured in metres per second, m/s) by age and gender at wave 9. The mean walking speed decreases with age for both men and women and is lower in women than men within each age group. The largest difference between women (0.63 m/s) and men (0.72 m/s) is observed in the oldest age group.

H.11    Table H5b shows the mean walking speed (m/s) by wealth and gender at wave 9. The mean walking speed of men and women in the lowest wealth group is, on average, 0.18 m/s lower than that of people in the highest wealth group.

H.12    Table H6a reports the prevalence of limitations in one or more activities of daily living (ADLs) and instrumental activities of daily living (IADLs) by age and gender at wave 9. The prevalence of men and women reporting limitations in one or more ADLs and IADLs increases with age. At all ages, women are more likely to report difficulties with ADLs and IADLs than men.

H.13    Table H6b reports the prevalence of limitations with one or more ADLs and IADLs by wealth and gender at wave 9. There is a strong socioeconomic gradient, with more than three times the proportion of men and women having limitations with one or more ADLs and IADLs in the lowest wealth group compared with the highest wealth group. In the lowest wealth groups, there is a gender difference in the prevalence of those reporting limitations with one or more IADLs (with higher prevalence in women than men), which is relatively attenuated in the highest quintiles of wealth. There are no significant gender differences in the prevalence of reporting limitations with one or more ADLs within each wealth group.

## Cognitive function

H.14    Table H7a reports the mean cognitive performance on memory, attention and comprehension by age and gender at wave 9. Memory declines with age in both men and women, although the scores are slightly higher for women than men within each age group. A slight decline in attention capability is observed for women by age, while for men there is a stable performance in attention across the age groups. Comprehension decreases a little at older ages for both men and women.

H.15    Table H7b reports the mean cognitive function by wealth and gender at wave 9. In both men and women, all aspects of cognitive functioning – memory, attention and comprehension – are lowest in the lowest wealth group.

## Health behaviours

H.16    Table H8a shows the prevalence of several health behaviours (smoking, physical activity, and alcohol consumption) by age and gender at wave 9. In both men and women, the prevalence of current smokers decreases with age, while the prevalence of those being physically inactive increases with age. The peak prevalence of men and women reporting daily alcohol consumption is between the ages of 70 and 74 and slightly lower at older ages.

H.17    Table H8b shows the prevalence of several health behaviours by wealth and gender at wave 9. In both men and women, the prevalence of current smokers and physical inactivity is highest in the lowest wealth groups. The prevalence of daily alcohol intake is lowest in the lowest wealth group. Over a third of men and women in the lowest wealth group are physically inactive.

## Food and nutritional intake

H.18    Table H9a shows mean macronutrient intake by age and gender. Overall, men have a higher daily total energy and alcohol intake than women.

H.19    Table H9b shows mean macronutrient intake by wealth and gender. There is a socioeconomic gradient in both men and women with wealthier participants having higher mean values of energy, protein, fibre and alcohol. Participants in the lowest wealth group had higher fat, carbohydrates, sugar, saturated and polyunsaturated fat mean values than their wealthier counterparts.

H.20    Table H10a shows mean micronutrient intake by age and gender. Overall, men have more adequate intakes of micronutrients than women, and there is a gradient whereby older participants have greater vitamin and mineral intake than their younger counterparts.

H.21    Table H10b shows mean micronutrient intake by wealth and gender. Overall, wealthier participants have more adequate micronutrient intake than those in the lowest wealth group.

H.22    Table H11a shows mean food group daily intake by age and gender. There are some gender differences in relation to the main food groups. For example, women consume more fruit and vegetables than men. Men, on the other hand, consume more soft drinks and alcoholic beverages.

H.23    Table H11b shows mean food group daily intake by wealth and gender. Wealthier participants have a higher fruit and vegetable, nuts and seeds, fish, dairy and total alcoholic beverages intake than those in the lowest wealth group. Participants in the lowest wealth group report a higher intake of red and processed meat and soft drinks.

# Longitudinal tables

H.24    Cross-sectional tables using a series of data from different time periods combine the effect of age, time and differential mortality. For example, looking at cross-sectional data on income over time, it would not be possible to isolate the effect of age on income

because the effect of time or differential mortality cannot be completely stripped out (i.e. the observation that higher-income individuals tend to live longer than lower-income individuals). Because longitudinal data follow the same individuals over time, by selecting a sample of individuals who are interviewed at every wave, we can eliminate the effect of differential mortality. The tables that follow take the set of individuals who have responded at every wave from waves 4 to 9 (the 'balanced panel') and track some health conditions by age, gender and wealth in 2008–09 (the 'baseline' years) across waves over 10 years' follow-up.

## General health

H.25    Table HL1a shows the percentage of participants reporting fair or poor self-rated health by age and gender for waves 4 to 9. The prevalence of men and women reporting fair or poor health increases from wave 4 to wave 9, particularly in the older age group.

H.26    Table HL1b shows the percentage of participants reporting fair or poor self-rated health by wealth and gender for waves 4 to 9. The prevalence of men and women reporting fair or poor health is consistently higher for both men and women in the lowest wealth groups compared to the highest wealth groups. The increase across waves is, therefore, less steady in the lowest wealth groups, as the initial percentages are higher than in the highest wealth group where the proportion more than doubles over time.

## Health conditions

H.27    Tables HL2a and HL3a show the percentage of CHD and diabetes by age and gender for waves 4 to 9. The percentage of men and women reporting CHD and diabetes increases considerably from wave 4 to wave 9, particularly for older individuals.

H.28    Tables HL2b and HL3b show the percentage of CHD and diabetes by wealth and gender for waves 4 to 9. The percentage of men and women reporting CHD and diabetes is highest at every wave among individuals in the lowest wealth group.

H.29    Table HL4a shows the percentage of cancer by age and gender for waves 4 to 9. Overall, the prevalence of cancer increases from wave 4 to 9 and in all age groups and is higher in men than women. However, trends are different according to age: women aged between 50 and 64 at baseline show a higher prevalence of cancer than men (of the same age) at every wave. It is likely that a survival effect is occurring for men aged 75–79 and for women aged 70–79 at baseline (wave 4) for whom we see a particularly low prevalence of cancer at wave 4.

H.30    Table HL4b shows the percentage of cancer by wealth and gender for waves 4 to 9. There is no marked difference in the prevalence of cancer among wealth groups.

H.31    Table HL5a reports the prevalence of diagnosed depression by age and gender for waves 4 to 9. The percentage of men and women reporting depression increases significantly from wave 4 to wave 9, and at each wave is higher in women than in men. Older men and women show consistently lower percentages of diagnosed depression than younger men and women.

H.32    Table HL5b reports the prevalence of diagnosed depression by wealth and gender for waves 4 to 9. Men and women in the highest wealth groups are less likely to be depressed, and this holds across waves.

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## Physical and functional capability

H.33    Table HL6a reports the mean walking speed by age and gender for waves 4 to 9. For both men and women, mean walking speed decreases from wave 4 to wave 9 in each age group, and the decline is steeper from the age of 70 onwards for women and 75 for men. At every wave, walking speed decreases with increasing age.

H.34    Table HL6b reports the mean walking speed by wealth and gender for waves 4 to 9. For both men and women, walking speed is consistently higher in the highest wealth groups.

H.35    Table HL7a reports the prevalence of participants reporting limitations with one and more ADLs by age and gender for waves 4 to 9. In both genders, the prevalence of those reporting limitations with one or more ADLs increases over time, particularly for people aged over 60. There is also a clear gradient by age at every wave for both men and women.

H.36    Table HL7b reports the prevalence of participants reporting limitations with one and more ADLs by wealth and gender for waves 4 to 9. In both genders, the prevalence of those reporting limitations with one or more ADLs is consistently higher by twice in the lowest wealth group compared to the highest wealth group at every wave for both men and women.

## Cognitive function

H.37    Table HL8a reports the mean cognitive performance in memory by age and gender for waves 4 to 9. In women, the overall memory function score is almost constant over time, while for men there is a slight decrease from wave 4 to wave 9. No decline is observed in men and women aged 50–59 at baseline, while a steeper decline is observed in the older age groups 75 and over.

H.38    Table HL8b reports the mean cognitive performance in memory by gender and wealth for waves 4 to 9. For both men and women, the decrease in memory over time is more pronounced in the lowest wealth group.

## Health behaviours

H.39    Table HL9a shows the prevalence of smoking by age and gender for waves 4 to 9. There is an overall linear decrease in the prevalence of smoking over time for both men and women.

H.40    Table HL9b shows the prevalence of smoking by wealth and gender for waves 4 to 9. In both genders, the proportion of smokers is much higher in the lowest wealth groups compared to highest wealth groups, and the prevalence of current smokers decreases over time in all wealth groups from wave 4 onwards.

H.41    Table HL10a shows the percentage of daily alcohol consumers by age and gender for waves 4 to 9. Overall, the percentage of alcohol consumers decreases over time, particularly from wave 4 to wave 7, and then increases slightly in wave 8. This trend is observed in most age groups.

H.42    Table HL10b shows the percentage of daily alcohol consumers by wealth and gender for waves 4 to 9. The proportion of daily alcohol consumers is much higher in the highest wealth groups compared to the lowest: twice as much in men and three times as much in women.

H.43    Table HL11a shows the prevalence of physical inactivity by age and gender for waves 4 to 9. In both genders, the percentage of those physically inactive increases over time in all the age groups.

H.44    Table HL11b shows the prevalence of physical inactivity by wealth and gender for waves 4 to 9. Physical inactivity increases over time in all wealth groups. At each wave, the proportion of participants reporting physical inactivity is three to four times higher in the lowest wealth group compared to the highest wealth group.

# Nurse visit cross-sectional tables

## Anthropometry

H.45    Tables N1a and N1c show the means and body mass index (BMI) categories by gender and age at wave 9. The overall mean BMI in 2018–19 is similar for men ($27.8 \, \text{kg/m}^2$) and women ($27.8 \, \text{kg/m}^2$). Among men, mean BMI starts decreasing after the ages 65–69 years from $28.3 \, \text{kg/m}^2$ to $26.6 \, \text{kg/m}^2$ for those aged 80 years or over. In women, mean BMI decreases after 70–74 years from $28.4 \, \text{kg/m}^2$ to $26.9 \, \text{kg/m}^2$ for those aged 80 years or over. Less than one percent of men are underweight. A third of women and just over a quarter of men have BMI in the desirable category. More men (46.9%) than women (36.0%) are overweight, and this applies to all age groups, but more women (30.0%) than men (26.1%) are obese. The very oldest groups are the least likely to be obese.

H.46    Tables N1b and N1d show mean BMI and BMI categories by wealth and gender. The prevalence of elevated BMI and obesity is lower in the richest wealth groups.

## Blood pressure

H.47    Table N2a shows mean systolic (SBP) and mean diastolic (DBP) blood pressure by age and gender. SBP and DBP are higher among men than women. Among men and women, SBP increases until age 79 and then there is a small decrease. Among women there appears to be a steady increase in SBP with age. Among both men and women, increased age is associated with decreases in DBP.

H.48 Table N2b shows mean SBP and DBP by wealth and gender. Mean levels of SBP and DBP do not show a clear pattern of association with wealth.

## Lipid profile

H.49    Table N3a shows mean levels of total cholesterol, high density lipoprotein (HDL) cholesterol, low density lipoprotein (LDL) cholesterol and triglycerides by age and gender. For each of these the proportion of individuals reporting 'at-risk' values is also reported.

At every age group, men have lower levels of total cholesterol than women, and among men, these levels decrease with age. Among women, there is a small decrease in the mean cholesterol levels with age. Overall, 43% of men and 60% of women have high total cholesterol levels (greater than 5.0 mmol/l). The gender difference in raised total cholesterol is more pronounced in the older groups because the percentage with higher cholesterol declines sharply with age for men but more gradually for women.

Mean HDL-cholesterol is higher for women than for men in every age group. Overall, mean HDL-cholesterol levels do not vary appreciably with age in either gender.

Twelve per cent of men and 10% of women have 'high risk' levels of HDL (lower than 1.0 mmol/l for men and less than 1.2 mmol/l for women) and no consistent pattern of difference with age is seen in either gender.

The mean LDL-cholesterol levels are slightly lower in men (2.71 mmol/l) than in women (2.95 mmol/l). In men, LDL-cholesterol concentrations decrease with age, while there is little variation with age for women. In total 39.8% of men and 48.7% of women have elevated levels of LDL-cholesterol (greater than 3.0 mmol/l). The prevalence of high LDL levels in men and women decreases with age. Mean triglycerides concentrations are 1.23 mmol/l in women and 1.38 mmol/l in men. In men, there is a decrease in mean levels by age.

Thirty-four percent of men and 24% of women have elevated levels of triglycerides (greater than 1.7 mmol/l). The prevalence of high levels of triglyceride decreases with greater age in men, while the trend is not so evident among women. Note that values for LDL and triglycerides are available only for participants who provided fasting blood samples.

H.50    Table N3b shows lipid profile by wealth group and gender. Mean levels of total and LDL-cholesterol show a marked socioeconomic gradient that is the reverse of what might be expected. Increasing wealth is associated with higher levels of both total and LDL-cholesterol. However, fewer participants who are in the highest wealth group have low levels of 'good' cholesterol (HDL) that would indicate increased risk. Similarly, levels of triglycerides decrease with increasing wealth.

## Inflammatory markers

H.51    Table N4a shows mean concentration levels of inflammatory markers fibrinogen (g/l) and C-reactive protein (CRP) concentrations (mg/l) by age group for men and women. The mean levels of fibrinogen and CRP increase with age both in men and women.

H.52    Table N4b shows mean levels of fibrinogen and CRP by wealth and gender. With increasing wealth, both fibrinogen and CRP levels decrease.

## Glycated haemoglobin

H.53    Table N5a shows the mean glycated haemoglobin (HbA1c) levels by age and gender. There is a small increase with age in both genders.

H.54    Table N5b shows levels of glycated haemoglobin by wealth and gender. Glycated haemoglobin is inversely related to wealth such that wealthier participants have lower levels of HbA1c.

## Haemoglobin

H.55    Table N6a shows mean haemoglobin levels and the proportion of individuals who are classified as anaemic (haemoglobin below 13g/dl for men and below 12 g/dl for women) by age and gender. Mean levels of haemoglobin are higher in men than women. For both genders, there is a decrease in levels with age. Overall, 7.2% of men and 8.3% of women have low haemoglobin (anaemia). In both men and women, there is a clear upward shift in the prevalence of anaemia at the oldest age groups. In men the prevalence of anaemia increases from 3.7% in the youngest age group to 23.2% in the oldest age group, with substantial differences between those aged 75 years and over and those who are younger. Women show a similar pattern.

H.56    Table N6b shows mean levels of haemoglobin and percentage of participants with anaemia in wave 9 by wealth and gender. While mean haemoglobin levels do not differ appreciably by wealth group, the prevalence of anaemia is lower among participants in the highest wealth group.

## Insulin-like growth factor-1 (IGF-1)

H.57    Table N7a shows the mean levels of IGF-1 by age and gender. Overall, mean levels decrease with age. The prevalence of those in the lowest quintile of levels of IGF-1 increases considerably with age in both men (from just 9.2% at 55–59 age group to 43.6% at 80 years and older) and women (from 16.8% at 50–54 age group to 42.0% at 80 years and older).

H.58    Table N7b shows mean levels of IGF-1 by wealth and gender. A socioeconomic gradient is evident, with increases in mean levels and decreases in the proportion of those in the lowest quintile with increased wealth.

## Vitamin D

H.59    Table N8a shows the mean levels of Vitamin D by age and gender. Overall, the mean levels of Vitamin D are similar for both men and women. There also does not appear to be a consistent pattern of change with age.

H.60    Table N8b shows mean levels of Vitamin D by wealth and gender. A socioeconomic gradient is observed, with increases in levels among wealthier groups.

## Grip strength

H.61    Table N9a shows mean grip strength by age and gender. A marked gender difference in grip strength is seen, with men having much higher mean grip strength at every age. For both genders, there is a decrease in grip strength with increasing age.

H.62    Table N9b shows mean grip strength by wealth and gender. Wealthier participants have higher mean grip strength.

# Annex AH. Definitions

AH.1 *Activities of daily living (ADLs) and instrumental activities of daily living (IADLs)*: Respondents were asked to report whether because of a physical, mental, emotional or memory problem they have any difficulty with ADLs (dressing, walking across a room, bathing or showering, eating, getting out of bed, using the toilet) and with IADLs (using a map, preparing a hot meal, shopping for groceries, making phone calls, taking medications, doing work around the house, managing money). From the responses to these questions, two variables were derived to indicate whether the respondent had difficulties with one or more ADLs and IADLs.

AH.2 *Age*: Defined as age at last birthday

AH.3 *Alcohol consumption*: Based on the questions concerning frequency of alcohol consumption, a variable was derived to indicate whether or not the respondent was drinking alcohol three days a week or more (which was then labelled as daily alcohol consumption).

AH.4 *Balanced panel*: The set of individuals who are interviewed in all waves of interest.

AH.5 *Baseline*: The wave of data that is chosen to be the starting point for characteristics in the longitudinal analysis that may change over time.

AH.6 *Cognitive function – attention*: This is an index that combines the scores on the cognitive test on attention and calculation (counting backward and a set of subtractions). Higher scores indicate better attention and executive functioning.

AH.7 *Cognitive function – comprehension and naming*: A score that combines the results of five questions (naming objects and people) relying on comprehension and semantic memory. Higher scores indicate better comprehension and naming capability.

AH.8 *Cognitive function – memory*: This is an overall memory score that combines the scores on the two objective memory tests (immediate and delayed memory) using a 10-word list. The overall score is ranging from 0 to 20. Higher scores indicate better memory.

AH.9 *Health conditions*: Respondents were asked whether a doctor had ever told them that they suffered from any of the following conditions: coronary heart disease (angina or myocardial infarction), diabetes, cancer, respiratory illness (asthma or pulmonary disease), arthritis and depression.

AH.10 *Limiting long-standing illness*: Respondents were asked whether they suffered from any illness or disability that affected them over a long period and, if so, whether the illness limited their activities in some way.

AH.11 *Physical activity*: Based on the questions regarding frequency of leisure-time physical activity, a variable was derived to indicate whether or not the respondent was physically inactive (sedentary physical activity).

AH.12 *Self-rated hearing acuity*: Respondents were asked to rate their hearing, as excellent, very good, good, fair or poor. Self-reported hearing impairment was defined as having declared fair or poor hearing.

AH.13 *Self-rated sense of smell*: Respondents were asked to rate their sense of smell as excellent, very good, good, fair or poor. Self-reported smell impairment was defined as having reported a fair or poor sense of smell.

AH.14 *Self-rated taste*: Respondents were asked to rate their sense of taste, as excellent, very good, good, fair or poor. Self-reported taste impairment was defined as having declared a fair or poor sense of taste.

AH.15 *Self-rated general health*: Respondents were asked to rate their health as excellent, very good, good, fair or poor.

AH.16 *Smoking status*: Defined as whether the respondent was a current smoker or not.

AH.17 *Total non-pension wealth*: Total non-pension wealth is reported at the family level and is defined as the sum of net financial wealth, net physical wealth and net housing wealth.

AH.18 *Walking speed*: A walking speed test was performed among participants aged 60 and over. The test involved timing how long it took to walk a distance of 8 feet. The total score indicates the walking speed of respondents in metres per second (m/s) with higher scores indicating faster speed.

AH.19 *Wealth groups*: To form wealth groups, we order all ELSA sample members according to the value of their total (non-pension) family wealth, and we divide the sample into five equal-sized groups. Where analysis is carried out using all ELSA sample members, the groups are equal in size and can be referred to as quintiles. Much of the analysis in this chapter is carried out using subsamples of the ELSA population. Where analysis does not use the whole ELSA sample, the groups are unequal in size and are more accurately referred to as 'wealth groups'. For consistency reasons, we use the term 'wealth group' rather than 'wealth quintile' throughout the chapter.

*The nurse visit*: After carrying out the interview, for respondents eligible for a follow-up nurse visit, the interviewer asked whether they would be willing to have a nurse visit, and if yes, made an appointment for the nurse or set up contact between the nurse and respondent. While on previous ELSA waves all core members who completed a personal CAPI interview were eligible for a follow-up nurse visit, across wave 8 and wave 9 two mutually exclusive subsets of members were pre-selected (prior to fieldwork): one to be offered a nurse visit at wave 8 and the other to be offered a nurse visit in wave 9. The subsample at wave 8 was selected to oversample respondents who had taken part in all previous nurse waves where they had been eligible. The remaining cohort members were flagged for a nurse visit in wave 9, thus ensuring that all cohort members were eligible for a nurse visit in wave 8 or wave 9. Finally, all respondents from Cohort 9 were flagged as eligible for a nurse visit in wave 9.

The full eligibility criteria for a wave 9 nurse interview were:

- Only core members who completed a main interview in person at wave 9 and marked as eligible for a nurse visit at wave 9 were offered a nurse visit at the end of their interview.

- No ELSA partners were eligible for nurse visits.

- However, a small number of partners and non-eligible core members were given a nurse visit if someone else in their household was completing a nurse interview, they specifically requested it and it was believed it would assist with their future participation in the survey.

- Individuals who completed an interview by proxy were not eligible for a nurse visit.

- There were specific eligibility criteria for each measure conducted by the nurse. These are outlined briefly below and in more detail in the ELSA Nurse User Guide (available at the UK Data Service website).

AH.20 *Weight*: Weight was measured using a portable electronic scale. Respondents were asked to remove their shoes and any bulky clothing. A single measurement was recorded to the nearest 0.1 kg. Respondents who weighed more than 130 kg were asked for their estimated weights because the scales are inaccurate above this level. These estimated weights were included in the analysis.

AH.21 *Body Mass Index (BMI)*: BMI is a widely accepted measure of weight for height and is defined as weight in kilograms divided by the square of the height in metres $(kg/m^2)$. BMI was calculated for all those respondents for whom both a valid height and weight measurement were recorded. We categorised the BMI scores into three main groups:

- underweight group ($<18.5$ kg/m$^2$)
- normal ($\geq 18.5$ and $<25$ kg/m$^2$)
- overweight ($\geq 25$ and $<30$ kg/m$^2$)
- obese ($\geq 30$ kg/m$^2$)

AH.22 *Blood pressure*: All respondents were eligible for the blood pressure module, except those who were pregnant. Three readings were collected at one-minute intervals (systolic, diastolic and pulse rate) using the Omron HEM-907 equipment. It was ensured that the room temperature was between 15 and 25°C. The respondent was asked not to eat, smoke, drink alcohol or take vigorous exercise in the 30 minutes preceding the blood pressure measurement as blood pressure can be raised immediately after any of these activities. Systolic (SBP) and diastolic (DBP) blood pressure were measured using a standardised method. In adults, hypertension is defined as an SBP of at least 140 mmHg or a DBP of at least 90 mmHg or being on medication to control hypertension. The systolic arterial pressure is defined as the peak pressure in the arteries, which occurs near the beginning of the cardiac cycle. The diastolic arterial pressure is the lowest pressure at the resting phase of the cardiac cycle.

AH23 *Blood sample*: Blood samples were taken from willing ELSA core members, except those who had a clotting or bleeding disorder (e.g. haemophilia and low platelets), had ever had a fit, were not willing to give their consent in writing, were currently on anticoagulant drugs (e.g. warfarin therapy). Fasting blood samples were taken whenever possible, but for respondents over 80 years; those known to be diabetic and on treatment; had a clotting or bleeding disorder or were on anti-coagulant drugs (e.g. warfarin); had ever had fits and those who seemed frail or the nurse was concerned about their health, were not asked to fast. Subjects were considered to have fasted if they had not had food or drink except water for a minimum of 5 hours prior to the blood test. The amount of blood taken from each participant in order to analyse each biomarker is presented below:

- 1 Citrate blue tube (1.8 ml) – Fibrinogen
- 1 Plain red tube (6 ml) – Total and HDL cholesterol, triglycerides, ferritin, C-reactive protein (CRP), IGF-1 and DHEAS
- 1 Fluoride grey tube (2 ml): Fasting glucose
- 1 EDTA light purple tube (2 ml) – Haemoglobin and glycated haemoglobin
- 2 EDTA dark purple tube (4 ml) – Genetics

All the blood samples were analysed at the Royal Victoria Infirmary laboratory in Newcastle.

*Blood analytes*
These are the blood analytes measured:

- Total cholesterol: Cholesterol is a type of fat present in the blood, related to diet. Too much cholesterol in the blood increases the risk of heart disease.

- High density lipoprotein (HDL) cholesterol: This is 'good' cholesterol which is protective for heart disease.

- Low density lipoprotein (LDL) cholesterol: This is the 'bad' cholesterol and a risk factor for cardiovascular disease.

- Triglycerides: Together with total and HDL cholesterol, they provide a lipid profile which can give information on the risk of cardiovascular disease. Measures of LDL and triglycerides were only taken for participants who were asked to fast.

- Fibrinogen: This is a protein necessary for blood clotting. High levels are also associated with a higher risk of heart disease.

- C-reactive protein: The level of this protein in the blood gives information on inflammatory activity in the body, and it is also associated with risk of heart disease.

- Glycated haemoglobin: This indicates the presence or risk of type 2 diabetes, which is associated with an increased risk of heart disease.

- Haemoglobin: These are measures of iron levels in the body and are related to diet and other factors. Anaemia is defined as having a haemoglobin level below 13 g/dl for men and below 12 g/dl for women.

- Insulin-like growth factor 1 (IGF-1): This is a hormone that helps control reactions to stress and regulate various body processes including digestion, the immune system, mood, and energy usage.

- Vitamin D: It is a steroid vitamin which promotes the intestinal absorption and metabolism of calcium and phosphorus. Under normal conditions of sunlight exposure, no dietary supplementation is necessary because sunlight promotes adequate vitamin D synthesis in the skin. Deficiency can lead to bone deformity (rickets) in children and bone weakness in adults. Vitamin D comes from the diet (eggs, fish, and dairy products) and is produced in the skin. Skin production of the active form of vitamin D depends on exposure to sunlight. Active people living in sunny regions produce most of the vitamin D they need from their skin. In less sunny climes the skin production of vitamin D is markedly diminished in the winter months, especially among the elderly and the housebound. In that population, vitamin D supplements become important.

AH.24 *Grip strength*: The grip strength test is a measure of upper body strength. The test was given to all respondents who were willing to take it, with no upper or lower age limits. Participants were, however, excluded if they had swelling or inflammation, severe pain or a recent injury, or if they had had surgery to the hand in the preceding six months. If there was a problem with only one hand, measurements were taken using the other hand. After adjusting the gripometer (grip gauge) to suit the respondent's hand

and positioning the respondent correctly, the respondent was asked to squeeze the gripometer as hard as they could for a couple of seconds. Three values were recorded for each hand, starting with the non-dominant hand and alternating between hands. Any measurements carried out incorrectly were not included. The gripometer used was the 'Smedley's for Hand' Dynamo Meter, with a scale ranging from 0 to 100 kg. The average of three measurements (in kg) is reported here.

AH.25 *Nutrition*: The Oxford WebQ is a dietary questionnaire that is administered over the Internet. It has been designed for use in several large-scale prospective studies in the UK, including the European Prospective Investigation into Cancer and Nutrition (EPIC)-Oxford study (65,000 men and women), the Million Women Study (1.3 million women) and the UK Biobank (500,000 men and women). The Oxford WebQ presents participants with 21 broad food groups, with options then expanding to offer over 200 commonly consumed foods and drinks. The participants are prompted to select the amount consumed over the previous 24 hours, mostly from predefined categories offered to them. To facilitate large-scale automatic coding of nutrient information, use of free-text boxes is minimised. Upon completion of the tool, the participants are presented with a summary page of all the food and drink items they reported consuming, together with the amounts reported, and are asked to make any necessary amendments. Completed questionnaires are coded automatically through multiplication of amounts consumed by the nutrient contents specified in standard UK food composition tables, producing a profile of the intake of 21 separate nutrients, without any additional intervention required by nutritionists.

AH.26 *Notes to all tables*
The unit of observation in all tables is the individual.

All cross-sectional tables are based on the cross-section of ELSA sample members in each wave of data. This includes refreshment sample members.

All longitudinal tables are based on individuals who have responded in all of waves 4 to 9 (the 'balanced panel') unless otherwise specified.

All numbers are based on weighted data. Unweighted frequencies (*N*) are reported.

For cross-sectional analyses, the figures are weighted for non-response. For longitudinal analyses, the figures are weighted for non-response and attrition from wave 4 to wave 9 using longitudinal weights.

**Table H1a. Self-rated health (%), by age group and gender: wave 9**

|  | Age group in 2018–19 | | | | | | | |
|  | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | |
| Excellent | 15.7 | 13.7 | 16.0 | 11.4 | 9.6 | 8.5 | 5.3 | 12.2 |
| Very good | 34.9 | 36.5 | 27.7 | 33.5 | 28.1 | 21.5 | 19.8 | 30.1 |
| Good | 28.1 | 29.7 | 26.3 | 32.5 | 36.6 | 36.9 | 38.1 | 31.7 |
| Fair | 14.5 | 13.1 | 19.0 | 16.8 | 18.8 | 21.6 | 25.6 | 17.7 |
| Poor | 6.7 | 7.1 | 11.0 | 5.7 | 6.9 | 11.5 | 11.2 | 8.2 |
| **Women** | | | | | | | | |
| Excellent | 22.0 | 19.6 | 12.6 | 11.0 | 9.0 | 7.4 | 4.4 | 13.1 |
| Very good | 29.0 | 29.6 | 29.6 | 32.2 | 27.9 | 25.1 | 20.9 | 27.9 |
| Good | 31.2 | 25.7 | 32.6 | 34.9 | 35.6 | 36.0 | 34.1 | 32.6 |
| Fair | 12.2 | 16.8 | 15.7 | 15.3 | 19.4 | 20.3 | 28.3 | 17.9 |
| Poor | 5.7 | 8.2 | 9.5 | 6.6 | 8.0 | 11.3 | 12.3 | 8.5 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *362* | *203* | *393* | *545* | *602* | *399* | *497* | *3,001* |
| *Women* | *522* | *262* | *505* | *710* | *770* | *488* | *725* | *3,982* |

For variable definitions, see AH.2 and AH.15. For related text, see H.2

**Table H1b. Self-rated health (%), by wealth group and gender: wave 9**

|  | Wealth group in 2018–19 | | | | | |
|  | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| Excellent | 5.9 | 11.1 | 14.0 | 16.0 | 16.3 | 12.3 |
| Very good | 21.3 | 24.5 | 29.1 | 34.1 | 43.5 | 30.0 |
| Good | 33.0 | 33.2 | 32.1 | 32.6 | 27.5 | 31.8 |
| Fair | 22.9 | 22.6 | 16.9 | 14.0 | 11.1 | 17.8 |
| Poor | 16.9 | 8.6 | 7.9 | 3.2 | 1.6 | 8.1 |
| **Women** | | | | | | |
| Excellent | 7.8 | 10.8 | 14.4 | 15.8 | 20.3 | 13.0 |
| Very good | 17.8 | 24.5 | 31.6 | 34.8 | 37.7 | 27.9 |
| Good | 31.8 | 36.3 | 31.2 | 33.3 | 29.5 | 32.6 |
| Fair | 26.0 | 19.1 | 16.9 | 12.4 | 10.1 | 17.9 |
| Poor | 16.7 | 9.3 | 5.9 | 3.7 | 2.3 | 8.6 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *528* | *534* | *616* | *667* | *615* | *2,960* |
| *Women* | *852* | *913* | *778* | *695* | *683* | *3,921* |

For variable definitions, see AH.15, AH.17, and AH.19. For related text, see H.3

**Table H2a. Limiting long-standing illness (%), by age group and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | | | | **Age group in 2018–19** | | | | |
| Men | 20.6 | 19.2 | 32.7 | 28.2 | 34.0 | 40.4 | 52.0 | 30.4 |
| Women | 20.7 | 26.0 | 32.6 | 33.7 | 40.3 | 40.9 | 55.0 | 34.7 |
| *Unweighted N* | | | | | | | | |
| *Men* | *380* | *210* | *409* | *563* | *627* | *424* | *540* | *3,153* |
| *Women* | *529* | *268* | *518* | *730* | *789* | *504* | *791* | *4,129* |

For variable definitions, see AH.2 and AH.10. For related text, see H.4

**Table H2b. Limiting long-standing illness (%), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | | | **Wealth group in 2018–19** | | | |
| Men | 44.1 | 32.0 | 29.3 | 21.4 | 21.3 | 30.3 |
| Women | 46.6 | 37.1 | 32.9 | 28.5 | 21.7 | 34.9 |
| *Unweighted N* | | | | | | |
| *Men* | *553* | *561* | *639* | *693* | *651* | *3,097* |
| *Women* | *868* | *936* | *801* | *723* | *709* | *4,037* |

For variable definitions, see AH.10, AH.17, and AH.19. For related text, see H.5

**Table H3a. Diagnosed health conditions (%), by age group and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Age group in 2018–19** | | | | | | | | |
| **Men** | | | | | | | | |
| CHD | 3.3 | 4.0 | 7.2 | 8.9 | 12.5 | 15.6 | 19.0 | 8.9 |
| Diabetes | 10.3 | 11.6 | 12.9 | 15.4 | 15.5 | 19.3 | 16.1 | 13.8 |
| Cancer | 2.2 | 4.1 | 3.5 | 3.3 | 6.2 | 6.0 | 12.1 | 4.9 |
| Respiratory illness | 10.9 | 12.2 | 12.0 | 13.0 | 16.3 | 17.5 | 13.1 | 13.1 |
| Arthritis | 11.3 | 16.1 | 24.5 | 33.6 | 37.3 | 39.6 | 41.5 | 26.6 |
| Depression | 6.1 | 9.1 | 9.5 | 8.5 | 7.4 | 6.3 | 1.5 | 7.1 |
| **Women** | | | | | | | | |
| CHD | 0.7 | 3.7 | 3.8 | 3.9 | 6.9 | 8.7 | 14.8 | 5.7 |
| Diabetes | 4.9 | 6.7 | 13.2 | 9.6 | 13.0 | 14.6 | 13.8 | 10.4 |
| Cancer | 4.1 | 2.2 | 3.1 | 3.3 | 4.4 | 6.4 | 4.8 | 3.9 |
| Respiratory illness | 14.5 | 14.9 | 11.7 | 16.3 | 15.1 | 17.0 | 16.3 | 14.9 |
| Arthritis | 14.2 | 25.3 | 42.6 | 49.1 | 55.6 | 55.9 | 62.9 | 41.5 |
| Depression | 8.5 | 15.6 | 11.4 | 9.6 | 8.2 | 6.8 | 5.1 | 9.4 |
| *Unweighted N* | | | | | | | | |
| *Men* | *380* | *210* | *409* | *564* | *628* | *424* | *543* | *3,158* |
| *Women* | *529* | *268* | *518* | *731* | *790* | *504* | *791* | *4,131* |

For variable definitions, see AH.2 and AH.9. For related text, see H.6. Notes: Values for CHD and depression are composed of the data fed forward from waves 7 and 8 and the data on newly reported condition.

**Table H3b. Diagnosed health conditions (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| CHD | 11.2 | 10.3 | 9.91 | 5.9 | 7.0 | 9.0 |
| Diabetes | 20.6 | 14.3 | 12.0 | 11.3 | 8.7 | 13.7 |
| Cancer | 4.5 | 4.6 | 5.9 | 5.8 | 3.5 | 4.9 |
| Respiratory illness | 18.3 | 16.1 | 12.4 | 9.4 | 8.0 | 13.1 |
| Arthritis | 30.9 | 26.2 | 26.8 | 24.9 | 22.8 | 26.6 |
| Depression | 13.1 | 6.6 | 6.8 | 4.7 | 3.0 | 7.1 |
| **Women** | | | | | | |
| CHD | 7.3 | 8.2 | 5.2 | 3.2 | 3.2 | 5.8 |
| Diabetes | 14.9 | 12.2 | 8.7 | 6.4 | 6.7 | 10.4 |
| Cancer | 4.4 | 5.6 | 2.9 | 3.2 | 2.4 | 3.9 |
| Respiratory illness | 19.5 | 16.5 | 12.6 | 12.9 | 10.2 | 15.0 |
| Arthritis | 46.9 | 43.2 | 40.2 | 40.7 | 33.8 | 41.7 |
| Depression | 15.0 | 8.0 | 7.3 | 8.2 | 6.0 | 9.4 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *553* | *561* | *640* | *696* | *651* | *3,101* |
| *Women* | *868* | *937* | *801* | *724* | *709* | *4,039* |

For variable definitions, see AH.9, AH.17, and AH.19. For related text, see H.7. Notes: Values for CHD and depression are composed of the data fed forward from waves 7 and 8 and the data on newly reported condition

**Table H4a. Self-reported sensory impairments (%), by age group and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | | | | Age group in 2018–19 | | | | |
| **Men** | | | | | | | | |
| Eyesight impairment | 12.9 | 6.8 | 13.5 | 7.7 | 11.1 | 12.6 | 25.3 | 12.5 |
| Hearing impairment | 13.2 | 15.1 | 22.6 | 24.3 | 26.1 | 36.0 | 41.5 | 23.4 |
| Smell impairment | 11.0 | 9.5 | 15.9 | 16.9 | 17.4 | 19.8 | 26.9 | 15.7 |
| Taste impairment | 8.2 | 4.2 | 8.1 | 7.0 | 7.0 | 9.2 | 14.3 | 8.0 |
| **Women** | | | | | | | | |
| Eyesight impairment | 9.5 | 12.7 | 9.6 | 10.5 | 13.9 | 17.3 | 27.8 | 14.2 |
| Hearing impairment | 7.2 | 10.9 | 12.3 | 13.8 | 15.4 | 21.8 | 34.4 | 15.9 |
| Smell impairment | 7.2 | 11.0 | 8.5 | 9.5 | 12.1 | 12.4 | 16.7 | 10.8 |
| Taste impairment | 2.9 | 7.2 | 6.5 | 6.2 | 7.2 | 8.6 | 11.7 | 6.9 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | | | | | | | | |
| *Eyesight impairment* | *380* | *210* | *409* | *563* | *628* | *424* | *543* | *3,157* |
| *Hearing impairment* | *380* | *210* | *408* | *563* | *628* | *424* | *543* | *3,156* |
| *Smell impairment* | *362* | *203* | *391* | *545* | *602* | *399* | *496* | *2,998* |
| *Taste impairment* | *362* | *203* | *392* | *545* | *602* | *399* | *497* | *3,000* |
| *Women* | | | | | | | | |
| *Eyesight impairment* | *529* | *268* | *518* | *731* | *790* | *504* | *788* | *4,128* |
| *Hearing impairment* | *529* | *268* | *518* | *731* | *790* | *504* | *790* | *4,130* |
| *Smell impairment* | *522* | *262* | *505* | *711* | *770* | *488* | *725* | *3,983* |
| *Taste impairment* | *522* | *262* | *505* | *711* | *770* | *488* | *725* | *3,983* |

For variable definitions, see AH.2, and AH.12 to AH.14. For related text, see H.8

**Table H4b. Self-reported sensory impairments (%), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | **Wealth group in 2018–19** | | | | | |
| **Men** | | | | | | |
| Eyesight impairment | 19.8 | 14.0 | 10.1 | 8.4 | 7.5 | 12.3 |
| Hearing impairment | 24.8 | 27.2 | 23.7 | 23.2 | 17.8 | 23.4 |
| Smell impairment | 17.1 | 15.9 | 17.5 | 15.4 | 12.2 | 15.7 |
| Taste impairment | 10.6 | 8.4 | 7.1 | 6.8 | 6.2 | 8.0 |
| **Women** | | | | | | |
| Eyesight impairment | 22.0 | 16.5 | 11.7 | 9.0 | 6.8 | 14.2 |
| Hearing impairment | 18.4 | 17.8 | 17.8 | 12.3 | 11.6 | 16.1 |
| Smell impairment | 12.9 | 11.9 | 10.4 | 9.3 | 8.1 | 10.8 |
| Taste impairment | 9.8 | 6.6 | 7.3 | 5.6 | 3.7 | 6.9 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | | | | | | |
| *Eyesight impairment* | *553* | *561* | *640* | *696* | *651* | *3,101* |
| *Hearing impairment* | *553* | *561* | *640* | *696* | *651* | *3,101* |
| *Smell impairment* | *528* | *534* | *615* | *666* | *614* | *2,957* |
| *Taste impairment* | *528* | *534* | *615* | *667* | *615* | *2,959* |
| *Women* | | | | | | |
| *Eyesight impairment* | *868* | *936* | *801* | *724* | *709* | *4,038* |
| *Hearing impairment* | *868* | *937* | *800* | *724* | *709* | *4,038* |
| *Smell impairment* | *852* | *913* | *778* | *695* | *684* | *3,922* |
| *Taste impairment* | *852* | *913* | *778* | *695* | *684* | *3,922* |

For variable definitions, see AH.12 to AH.14, AH.17, and AH.19. For related text, see H.9

**Table H5a. Mean walking speed (m/s), by age group and gender: wave 9**

|  | Age group in 2018–19 | | | | | |
|  | **60–64** | **65–69** | **70–74** | **75–79** | **80+** | **All** |
|---|---|---|---|---|---|---|
| Men | 0.98 | 0.94 | 0.90 | 0.84 | 0.72 | 0.89 |
| Women | 0.92 | 0.92 | 0.85 | 0.77 | 0.63 | 0.83 |
| *Unweighted N* | | | | | | |
| *Men* | *351* | *493* | *549* | *356* | *412* | *2,161* |
| *Women* | *441* | *651* | *704* | *427* | *555* | *2,778* |

For variable definitions, see AH.2 and AH.18. For related text, see H.10

**Table H5b. Mean walking speed (m/s), by wealth group and gender: wave 9**

|  | Wealth group in 2018–19 | | | | | |
|  | **Lowest** | **2nd** | **3rd** | **4th** | **Highest** | **All** |
|---|---|---|---|---|---|---|
| Men | 0.80 | 0.84 | 0.90 | 0.92 | 0.97 | 0.89 |
| Women | 0.74 | 0.78 | 0.82 | 0.89 | 0.92 | 0.83 |
| *Unweighted N* | | | | | | |
| *Men* | *270* | *370* | *483* | *523* | *493* | *2,139* |
| *Women* | *474* | *640* | *579* | *529* | *536* | *2,758* |

For variable definitions, see AH.17 to AH.19. For related text, see H.11

**Table H6a. Limitations with one or more ADLs and IADLs (%), by age group and gender: wave 9**

|  | Age group in 2018–19 | | | | | | | |
|  | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | |
| ADLs | 9.9 | 8.7 | 13.6 | 12.9 | 17.1 | 21.9 | 32.0 | 15.3 |
| IADLs | 9.1 | 8.4 | 15.8 | 13.0 | 18.0 | 25.8 | 40.5 | 16.8 |
| **Women** | | | | | | | | |
| ADLs | 8.8 | 12.9 | 19.7 | 14.3 | 17.8 | 25.9 | 35.1 | 18.5 |
| IADLs | 9.9 | 15.3 | 19.8 | 15.9 | 21.8 | 28.3 | 50.2 | 22.4 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *380* | *210* | *409* | *564* | *628* | *424* | *543* | *3,158* |
| *Women* | *529* | *268* | *518* | *731* | *790* | *504* | *791* | *4,131* |

For variable definitions, see AH.1 and AH.2. For related text, see H.12

**Table H6b. Limitations with one or more ADLs and IADLs (%), by wealth group and gender: wave 9**

|  | Wealth group in 2018–19 | | | | | |
|  | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| ADLs | 25.4 | 17.8 | 13.9 | 9.3 | 6.5 | 15.1 |
| IADLs | 26.6 | 22.2 | 13.6 | 10.8 | 7.3 | 16.6 |
| **Women** | | | | | | |
| ADLs | 27.6 | 21.2 | 15.9 | 12.3 | 10.0 | 18.6 |
| IADLs | 31.4 | 24.6 | 22.0 | 16.6 | 11.4 | 22.4 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *553* | *561* | *640* | *696* | *651* | *3,101* |
| *Women* | *868* | *937* | *801* | *724* | *709* | *4,039* |

For variable definitions, see AH.1, AH.17, and AH.19. For related text, see H.13

**Table H7a. Mean cognitive function scores, by age group and gender: wave 9**

| | Age group in 2018–19 | | | | | | | |
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | |
| Memory | 11.22 | 11.97 | 10.75 | 11.10 | 10.08 | 8.80 | 7.46 | 10.47 |
| Attention | 5.87 | 6.10 | 5.92 | 5.90 | 5.97 | 5.58 | 5.58 | 5.88 |
| Comprehension | 4.76 | 4.87 | 4.81 | 4.88 | 4.83 | 4.75 | 4.47 | 4.78 |
| **Women** | | | | | | | | |
| Memory | 11.83 | 12.20 | 11.83 | 11.82 | 11.07 | 9.64 | 7.52 | 10.95 |
| Attention | 5.46 | 5.50 | 5.53 | 5.61 | 5.46 | 5.01 | 4.81 | 5.36 |
| Comprehension | 4.73 | 4.83 | 4.84 | 4.86 | 4.83 | 4.69 | 4.38 | 4.74 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | | | | | | | | |
| *Memory* | *359* | *202* | *392* | *542* | *599* | *396* | *493* | *2,983* |
| *Attention* | *354* | *201* | *386* | *537* | *593* | *390* | *479* | *2,940* |
| *Comprehension* | *359* | *202* | *391* | *543* | *597* | *394* | *492* | *2,978* |
| *Women* | | | | | | | | |
| *Memory* | *519* | *262* | *504* | *706* | *768* | *485* | *714* | *3,958* |
| *Attention* | *515* | *260* | *493* | *697* | *754* | *460* | *678* | *3,857* |
| *Comprehension* | *520* | *262* | *504* | *707* | *767* | *482* | *717* | *3,959* |

For variable definitions, see AH.2, and AH.6 to AH.8. For related text, see H.14

**Table H7b. Mean cognitive function scores, by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| Memory | 9.85 | 9.99 | 10.23 | 10.91 | 11.50 | 10.47 |
| Attention | 5.61 | 5.69 | 5.95 | 6.04 | 6.15 | 5.88 |
| Comprehension | 4.67 | 4.69 | 4.82 | 4.89 | 4.86 | 4.78 |
| **Women** | | | | | | |
| Memory | 10.13 | 10.31 | 10.96 | 11.75 | 12.27 | 10.95 |
| Attention | 5.06 | 5.21 | 5.49 | 5.61 | 5.71 | 5.36 |
| Comprehension | 4.57 | 4.64 | 4.81 | 4.89 | 4.90 | 4.74 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | | | | | | |
| *Memory* | *523* | *529* | *613* | *665* | *613* | *2,943* |
| *Attention* | *505* | *519* | *604* | *664* | *610* | *2,902* |
| *Comprehension* | *519* | *530* | *612* | *665* | *611* | *2,937* |
| *Women* | | | | | | |
| *Memory* | *846* | *907* | *774* | *692* | *679* | *3,898* |
| *Attention* | *814* | *879* | *756* | *678* | *673* | *3,800* |
| *Comprehension* | *846* | *908* | *772* | *692* | *681* | *3,899* |

For variable definitions, see AH.6 to AH.8, AH.17, and AH.19. For related text, see H.15

**Table H8a. Health behaviours (%), by age group and gender: wave 9**

| | Age group in 2018–19 | | | | | | | |
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | |
| Current smokers | 23.9 | 12.8 | 13.7 | 12.2 | 9.2 | 5.4 | 4.1 | 13.1 |
| Physically inactive | 11.8 | 7.6 | 15.5 | 13.3 | 13.1 | 21.1 | 37.8 | 15.9 |
| Daily alcohol consumption | 15.0 | 18.8 | 20.0 | 24.7 | 29.0 | 27.2 | 23.3 | 21.8 |
| **Women** | | | | | | | | |
| Current smokers | 11.2 | 14.4 | 13.4 | 11.5 | 7.8 | 5.6 | 4.0 | 9.9 |
| Physically inactive | 10.3 | 14.6 | 17.1 | 16.1 | 19.5 | 27.8 | 53.8 | 22.1 |
| Daily alcohol consumption | 9.4 | 12.9 | 11.4 | 14.8 | 14.9 | 12.7 | 11.0 | 12.3 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| ***Men*** | | | | | | | | |
| *Current smokers* | *380* | *210* | *409* | *564* | *628* | *424* | *543* | *3,158* |
| *Physically inactive* | *380* | *210* | *409* | *564* | *628* | *424* | *542* | *3,157* |
| *Daily alcohol consumption* | *300* | *187* | *361* | *516* | *574* | *371* | *450* | *2,759* |
| ***Women*** | | | | | | | | |
| *Current smokers* | *529* | *268* | *518* | *731* | *790* | *504* | *790* | *4,130* |
| *Physically inactive* | *529* | *268* | *518* | *731* | *790* | *504* | *791* | *4,131* |
| *Daily alcohol consumption* | *434* | *230* | *465* | *667* | *720* | *441* | *619* | *3,576* |

For variable definitions, see AH.2, AH.3, AH.11, and AH.16. For related text, see H.16

**Table H8b. Health behaviours (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| Current smokers | 28.7 | 14.4 | 8.4 | 5.9 | 4.5 | 13.2 |
| Physically inactive | 28.8 | 20.0 | 12.1 | 8.1 | 6.9 | 15.8 |
| Daily alcohol consumption | 14.0 | 21.0 | 18.9 | 27.5 | 28.1 | 21.7 |
| **Women** | | | | | | |
| Current smokers | 18.3 | 9.3 | 7.8 | 4.5 | 5.0 | 9.8 |
| Physically inactive | 32.4 | 27.8 | 19.5 | 16.3 | 7.8 | 22.3 |
| Daily alcohol consumption | 5.7 | 9.8 | 11.6 | 17.5 | 19.5 | 12.2 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| ***Men*** | | | | | | |
| *Current smokers* | *553* | *561* | *640* | *696* | *651* | *3,101* |
| *Physically inactive* | *553* | *561* | *640* | *696* | *651* | *3,101* |
| *Daily alcohol consumption* | *451* | *481* | *572* | *642* | *580* | *2,726* |
| ***Women*** | | | | | | |
| *Current smokers* | *867* | *937* | *801* | *724* | *709* | *4,038* |
| *Physically inactive* | *868* | *937* | *801* | *724* | *709* | *4,039* |
| *Daily alcohol consumption* | *689* | *808* | *723* | *660* | *644* | *3,524* |

For variable definitions, see AH.2, AH.3, AH.11, AH.16, AH.17, and AH.19. For related text, see H.17

**Table H9a. Mean macronutrient intake, by age group and gender: wave 9**

|  | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
|  | | | | Age in 2018–2019 | | | | |
| **Men** | | | | | | | | |
| Energy kcal/day | 2,233.8 | 2,184.3 | 2,197.4 | 2,203.0 | 2,225.0 | 2,184.2 | 2,236.2 | 2,207.0 |
| Protein % total energy | 16.3 | 16.0 | 15.9 | 15.8 | 15.8 | 15.3 | 15.3 | 15.8 |
| Carbohydrates % total energy | 44.2 | 46.2 | 44.5 | 45.2 | 45.2 | 46.4 | 47.7 | 45.4 |
| Fat % total energy | 35.3 | 34.8 | 35.0 | 35.2 | 35.4 | 35.1 | 35.8 | 35.2 |
| Alcohol % total energy | 6.5 | 5.3 | 6.9 | 6.2 | 6.0 | 5.7 | 3.8 | 5.9 |
| Sugar % total energy | 19.9 | 21.4 | 20.0 | 20.6 | 20.6 | 22.0 | 23.0 | 20.8 |
| Dietary fibre g/day | 15.4 | 15.9 | 15.4 | 16.0 | 16.6 | 16.7 | 16.6 | 16.1 |
| Saturated fat % total energy | 13.7 | 13.3 | 13.5 | 13.8 | 14.0 | 14.1 | 14.5 | 13.8 |
| Polyunsaturated fat % total energy | 6.3 | 6.5 | 6.3 | 6.2 | 6.3 | 6.1 | 6.2 | 6.3 |
| **Women** | | | | | | | | |
| Energy kcal/day | 1,870.4 | 1,911.4 | 1,880.1 | 1,883.9 | 1,869.2 | 1,894.5 | 1,927.1 | 1,882.6 |
| Protein % total energy | 16.9 | 16.5 | 16.4 | 16.5 | 16.7 | 15.9 | 15.9 | 16.5 |
| Carbohydrates % total energy | 46.3 | 45.3 | 46.5 | 46.3 | 46.6 | 47.2 | 47.8 | 46.5 |
| Fat % total energy | 35.3 | 36.3 | 35.3 | 35.6 | 35.4 | 35.9 | 36.5 | 35.6 |
| Alcohol % total energy | 3.8 | 4.2 | 4.2 | 3.9 | 3.6 | 3.4 | 2.2 | 3.8 |
| Sugar % total energy | 21.8 | 21.2 | 22.3 | 22.4 | 22.5 | 23.2 | 23.6 | 22.3 |
| Dietary fibre g/day | 15.1 | 15.0 | 15.4 | 15.7 | 16.2 | 15.8 | 15.6 | 15.5 |
| Saturated fat % total energy | 13.4 | 13.9 | 13.7 | 13.7 | 13.9 | 14.2 | 14.8 | 13.8 |
| Polyunsaturated fat % total energy | 6.6 | 6.9 | 6.5 | 6.6 | 6.4 | 6.3 | 6.1 | 6.5 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *247* | *237* | *351* | *510* | *461* | *240* | *189* | *2,235* |
| *Women* | *423* | *290* | *484* | *571* | *503* | *232* | *184* | *2,687* |

For variable definitions, see AH.25. For related text, see H.18.

**Table H9b. Mean macronutrient intake, by wealth group and gender: wave 9**

| | Wealth group in 2018–2019 | | | | |
|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest |
| **Men** | | | | | |
| Energy kcal/day | 2,111.7 | 2,130.6 | 2,215.9 | 2,220.5 | 2,226.1 |
| Protein % total energy | 15.8 | 15.8 | 15.7 | 15.6 | 16.0 |
| Carbohydrates % total energy | 45.4 | 45.5 | 46.5 | 45.6 | 44.4 |
| Fat % total energy | 36.4 | 34.7 | 35.6 | 35.2 | 35.2 |
| Alcohol % total energy | 4.7 | 6.4 | 4.6 | 6.0 | 6.7 |
| Sugar % total energy | 21.1 | 20.9 | 21.4 | 21.3 | 20.5 |
| Dietary fibre g/day | 14.4 | 14.3 | 16.4 | 16.3 | 16.8 |
| Saturated fat % total energy | 14.6 | 13.8 | 14.0 | 13.9 | 13.6 |
| Polyunsaturated fat % total energy | 6.4 | 6.1 | 6.4 | 6.2 | 6.3 |
| **Women** | | | | | |
| Energy kcal/day | 1,898.1 | 1,822.1 | 1,883.4 | 1,894.4 | 1,912.8 |
| Protein % total energy | 15.9 | 16.6 | 16.2 | 16.6 | 16.5 |
| Carbohydrates % total energy | 47.2 | 47.8 | 48.1 | 46.1 | 44.9 |
| Fat % total energy | 37.3 | 34.9 | 35.2 | 35.7 | 36.1 |
| Alcohol % total energy | 2.0 | 3.1 | 2.9 | 3.9 | 4.7 |
| Sugar % total energy | 22.0 | 22.6 | 23.3 | 22.4 | 22.0 |
| Dietary fibre g/day | 15.1 | 14.8 | 15.9 | 15.8 | 16.2 |
| Saturated fat % total energy | 14.9 | 13.6 | 13.9 | 13.8 | 13.9 |
| Polyunsaturated fat % total energy | 6.6 | 6.4 | 6.4 | 6.5 | 6.4 |
| | | | | | |
| *Unweighted N* | | | | | |
| *Men* | *145* | *211* | *333* | *444* | *496* |
| *Women* | *220* | *278* | *390* | *487* | *549* |

For variable definitions, see AH.25. For related text, see H.19.

**Table H10a. Mean micronutrient intake, by age group and gender: wave 9**

| | Age in 2018–2019 | | | | | | | |
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | |
| Calcium mg/day | 950.9 | 951.0 | 931.3 | 970.3 | 987.9 | 990.3 | 1,028.8 | 969.9 |
| Iron mg/day | 13.0 | 13.0 | 13.4 | 13.6 | 13.9 | 13.9 | 13.8 | 13.5 |
| Magnesium mg/day | 347.2 | 342.4 | 342.0 | 342.7 | 348.8 | 338.2 | 336.1 | 342.9 |
| Potassium mg/day | 3,548.1 | 3,606.7 | 3,557.8 | 3,641.5 | 3,778.3 | 3,717.9 | 3,755.0 | 3,657.5 |
| Vitamin B6 mg/day | 2.1 | 2.2 | 2.1 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Folate µg/day | 288.1 | 287.0 | 287.7 | 304.0 | 305.4 | 298.1 | 308.1 | 297.8 |
| Vitamin B12 µg/day | 6.3 | 6.2 | 6.2 | 6.6 | 6.7 | 6.6 | 7.4 | 6.6 |
| Vitamin C mg/day | 121.7 | 134.9 | 120.0 | 132.5 | 128.0 | 131.1 | 132.4 | 128.2 |
| Vitamin D µg/day | 2.7 | 2.8 | 2.6 | 2.8 | 2.9 | 3.0 | 3.5 | 2.8 |
| Vitamin E mg/day | 8.6 | 9.1 | 8.4 | 9.0 | 9.2 | 9.0 | 8.9 | 8.9 |
| Retinol µg/day | 549.8 | 399.2 | 501.9 | 629.5 | 536.2 | 573.4 | 680.6 | 557.3 |
| Carotene µg/day | 2,945.1 | 3,243.0 | 3,004.4 | 3,200.6 | 3,275.8 | 3,342.8 | 3,391.8 | 3,197.1 |
| **Women** | | | | | | | | |
| Calcium mg/day | 843.9 | 869.2 | 879.3 | 895.1 | 901.9 | 914.6 | 933.0 | 884.7 |
| Iron mg/day | 11.6 | 11.5 | 11.9 | 11.9 | 12.2 | 12.3 | 12.1 | 11.9 |
| Magnesium mg/day | 298.0 | 304.0 | 311.0 | 308.7 | 311.2 | 311.2 | 305.8 | 306.8 |
| Potassium mg/day | 3,301.7 | 3,340.1 | 3,422.8 | 3,427.9 | 3,488.3 | 3,446.9 | 3,435.2 | 3,401.6 |
| Vitamin B6 mg/day | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Folate µg/day | 260.2 | 251.0 | 269.6 | 273.5 | 278.6 | 282.1 | 289.3 | 270.6 |
| Vitamin B12 µg/day | 5.7 | 6.0 | 5.7 | 6.1 | 6.3 | 6.2 | 6.6 | 6.0 |
| Vitamin C mg/day | 137.6 | 123.5 | 139.8 | 136.3 | 142.1 | 142.5 | 135.6 | 137.3 |
| Vitamin D µg/day | 2.4 | 2.5 | 2.5 | 2.6 | 2.6 | 2.8 | 2.9 | 2.6 |
| Vitamin E mg/day | 8.6 | 8.5 | 8.7 | 9.0 | 9.0 | 9.0 | 8.6 | 8.8 |
| Retinol µg/day | 356.0 | 482.9 | 428.0 | 471.2 | 490.0 | 491.3 | 575.7 | 458.5 |
| Carotene µg/day | 3,688.7 | 3,150.8 | 3,649.1 | 3,479.3 | 3,778.5 | 3,538.7 | 3,479.4 | 3,568.5 |
| *Unweighted N* | | | | | | | | |
| *Men* | *247* | *237* | *351* | *510* | *461* | *240* | *189* | *2235* |
| *Women* | *423* | *290* | *484* | *571* | *503* | *232* | *184* | *2687* |

For variable definitions, see AH.25. For related text, see H.20.

**Table H10b. Mean micronutrient intake, by wealth group and gender: wave 9**

| | Wealth group in 2018–2019 | | | | |
|---|---|---|---|---|---|
| | **Lowest** | **2nd** | **3rd** | **4th** | **Highest** |
| **Men** | | | | | |
| Calcium mg/day | 912.9 | 911.9 | 990.2 | 995.2 | 985.5 |
| Iron mg/day | 12.3 | 12.6 | 13.4 | 13.6 | 14.4 |
| Magnesium mg/day | 308.4 | 315.3 | 338.2 | 345.6 | 359.8 |
| Potassium mg/day | 3,333.7 | 3,370.4 | 3,671.9 | 3,696.1 | 3,859.9 |
| Vitamin B6 mg/day | 2.0 | 2.1 | 2.2 | 2.2 | 2.3 |
| Folate µg/day | 279.8 | 277.0 | 300.7 | 302.8 | 309.0 |
| Vitamin B12 µg/day | 6.3 | 6.3 | 6.6 | 6.4 | 7.2 |
| Vitamin C mg/day | 113.6 | 113.6 | 127.9 | 129.3 | 140.1 |
| Vitamin D µg/day | 2.6 | 2.7 | 2.9 | 2.8 | 3.2 |
| Vitamin E mg/day | 8.2 | 7.9 | 8.9 | 9.1 | 9.4 |
| Retinol µg/day | 695.4 | 539.9 | 507.4 | 537.3 | 564.3 |
| Carotene µg/day | 2,940.1 | 2,766.2 | 3,263.7 | 3,189.6 | 3,409.1 |
| **Women** | | | | | |
| Calcium mg/day | 868.6 | 864.3 | 899.4 | 899.4 | 909.8 |
| Iron mg/day | 11.2 | 11.5 | 11.9 | 12.0 | 12.7 |
| Magnesium mg/day | 289.9 | 287.7 | 306.1 | 314.6 | 325.3 |
| Potassium mg/day | 3,162.3 | 3,262.6 | 3,435.2 | 3,478.4 | 3,565.0 |
| Vitamin B6 mg/day | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 |
| Folate µg/day | 263.9 | 258.1 | 276.8 | 269.7 | 284.8 |
| Vitamin B12 µg/day | 5.6 | 5.8 | 5.7 | 6.1 | 6.8 |
| Vitamin C mg/day | 114.5 | 123.7 | 138.7 | 139.5 | 147.4 |
| Vitamin D µg/day | 2.4 | 2.4 | 2.4 | 2.6 | 3.0 |
| Vitamin E mg/day | 8.3 | 8.0 | 8.8 | 8.7 | 9.7 |
| Retinol µg/day | 538.3 | 389.0 | 539.4 | 465.4 | 495.0 |
| Carotene µg/day | 3,060.6 | 3,111.0 | 3,592.2 | 3,503.8 | 3,886.9 |
| | | | | | |
| *Unweighted N* | | | | | |
| *Men* | *145* | *211* | *333* | *444* | *496* |
| *Women* | *220* | *278* | *390* | *487* | *549* |

For variable definitions, see AH.25. For related text, see H.21.

**Table H11a. Mean food group intake, by age group and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | | | | Age in 2018–2019 | | | | |
| **Men** | | | | | | | | |
| Fruit intake p/d | 1.51 | 1.73 | 1.61 | 1.84 | 1.93 | 2.17 | 1.98 | 1.82 |
| Vegetables intake p/d | 2.26 | 2.41 | 2.17 | 2.32 | 2.46 | 2.53 | 2.55 | 2.37 |
| Vegetables (including potatoes) p/d | 2.84 | 3.00 | 2.78 | 3.03 | 3.28 | 3.32 | 3.47 | 3.09 |
| Fruit & Vegetables intake p/d | 3.77 | 4.14 | 3.78 | 4.16 | 4.39 | 4.70 | 4.53 | 4.19 |
| Total legume intake p/d | 0.38 | 0.35 | 0.39 | 0.38 | 0.35 | 0.36 | 0.34 | 0.37 |
| Pulse intake p/d | 0.33 | 0.30 | 0.33 | 0.35 | 0.32 | 0.33 | 0.32 | 0.33 |
| Nuts and seeds unsalted no peanut p/d | 0.10 | 0.09 | 0.08 | 0.11 | 0.11 | 0.07 | 0.07 | 0.09 |
| Nuts and seeds total p/d | 0.26 | 0.17 | 0.24 | 0.21 | 0.20 | 0.13 | 0.15 | 0.20 |
| Total grain intake p/d | 3.26 | 3.15 | 3.18 | 3.38 | 3.34 | 3.30 | 3.35 | 3.28 |
| Wholegrain intake p/d | 0.87 | 0.96 | 0.84 | 0.94 | 1.04 | 1.03 | 1.07 | 0.96 |
| Fish intake p/d | 0.26 | 0.27 | 0.28 | 0.28 | 0.30 | 0.30 | 0.33 | 0.29 |
| Red and processed meat intake p/d | 1.05 | 1.10 | 1.05 | 1.16 | 0.96 | 0.90 | 0.97 | 1.04 |
| Total meat intake p/d | 1.47 | 1.45 | 1.40 | 1.42 | 1.26 | 1.15 | 1.22 | 1.35 |
| Total dairy intake p/d | 1.59 | 1.58 | 1.52 | 1.63 | 1.72 | 1.79 | 1.79 | 1.65 |
| Total egg intake p/d | 0.52 | 0.41 | 0.39 | 0.38 | 0.38 | 0.36 | 0.39 | 0.40 |
| Soft drinks g/d | 0.51 | 0.45 | 0.36 | 0.31 | 0.31 | 0.21 | 0.34 | 0.35 |
| Total alcoholic drinks intake g/d | 1.39 | 1.09 | 1.41 | 1.24 | 1.27 | 1.22 | 0.93 | 1.25 |
| Wine g/d | 0.35 | 0.44 | 0.56 | 0.52 | 0.61 | 0.73 | 0.50 | 0.54 |
| **Women** | | | | | | | | |
| Fruit intake p/d | 1.99 | 1.96 | 2.20 | 2.26 | 2.45 | 2.33 | 2.19 | 2.19 |
| Vegetables intake p/d | 3.00 | 2.54 | 2.95 | 2.80 | 3.03 | 2.74 | 2.71 | 2.86 |
| Vegetables (including potatoes) p/d | 3.53 | 3.18 | 3.54 | 3.45 | 3.72 | 3.46 | 3.47 | 3.49 |
| Fruit & Vegetables intake p/d | 4.99 | 4.50 | 5.15 | 5.06 | 5.48 | 5.08 | 4.90 | 5.05 |
| Total legume intake p/d | 0.39 | 0.35 | 0.34 | 0.34 | 0.34 | 0.31 | 0.31 | 0.34 |
| Pulse intake p/d | 0.31 | 0.29 | 0.29 | 0.31 | 0.30 | 0.28 | 0.27 | 0.30 |
| Nuts and seeds unsalted no peanut p/d | 0.09 | 0.12 | 0.13 | 0.13 | 0.15 | 0.12 | 0.08 | 0.12 |
| Nuts and seeds total p/d | 0.13 | 0.21 | 0.20 | 0.19 | 0.19 | 0.18 | 0.12 | 0.18 |
| Total grain intake p/d | 2.49 | 2.52 | 2.70 | 2.70 | 2.79 | 2.94 | 2.85 | 2.69 |
| Wholegrain intake p/d | 0.64 | 0.67 | 0.74 | 0.75 | 0.84 | 0.90 | 0.96 | 0.76 |
| Fish intake p/d | 0.32 | 0.32 | 0.26 | 0.30 | 0.32 | 0.31 | 0.33 | 0.30 |
| Red and processed meat intake p/d | 0.75 | 0.84 | 0.74 | 0.74 | 0.76 | 0.67 | 0.70 | 0.75 |
| Total meat intake p/d | 1.12 | 1.11 | 1.04 | 1.02 | 1.01 | 0.89 | 0.88 | 1.03 |
| Total dairy intake p/d | 1.36 | 1.60 | 1.56 | 1.66 | 1.69 | 1.81 | 1.82 | 1.61 |
| Total egg intake p/d | 0.38 | 0.30 | 0.34 | 0.38 | 0.32 | 0.34 | 0.34 | 0.35 |
| Soft drinks g/d | 0.34 | 0.29 | 0.31 | 0.27 | 0.19 | 0.20 | 0.23 | 0.27 |
| Total alcoholic drinks intake g/d | 0.73 | 0.89 | 0.84 | 0.79 | 0.70 | 0.69 | 0.49 | 0.75 |
| Wine g/d | 0.44 | 0.60 | 0.60 | 0.58 | 0.48 | 0.48 | 0.30 | 0.52 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *247* | *237* | *351* | *510* | *461* | *240* | *189* | *2,235* |
| *Women* | *423* | *290* | *484* | *571* | *503* | *232* | *184* | *2,687* |

For variable definitions, see AH.25. For related text, see H.22. p/d stands for 'portion per day'; g/d for 'glasses per day'.

**Table H11b. Mean food group intake, by wealth group and gender: wave 9**

| | Wealth group in 2018–2019 | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest |
|---|---|---|---|---|---|
| **Men** | | | | | |
| Fruit intake p/d | 1.47 | 1.38 | 1.94 | 2.01 | 1.99 |
| Vegetables intake p/d | 2.03 | 2.01 | 2.40 | 2.37 | 2.64 |
| Vegetables (including potatoes) p/d | 2.72 | 2.66 | 3.19 | 3.08 | 3.42 |
| Fruit & Vegetables intake p/d | 3.50 | 3.39 | 4.34 | 4.38 | 4.63 |
| Total legume intake p/d | 0.38 | 0.36 | 0.35 | 0.33 | 0.37 |
| Pulse intake p/d | 0.32 | 0.33 | 0.32 | 0.29 | 0.35 |
| Nuts and seeds unsalted no peanut p/d | 0.06 | 0.06 | 0.09 | 0.09 | 0.12 |
| Nuts and seeds total p/d | 0.15 | 0.12 | 0.18 | 0.21 | 0.23 |
| Total grain intake p/d | 3.04 | 3.25 | 3.40 | 3.34 | 3.27 |
| Wholegrain intake p/d | 0.92 | 0.90 | 1.03 | 0.90 | 0.97 |
| Fish intake p/d | 0.28 | 0.24 | 0.29 | 0.26 | 0.34 |
| Red and processed meat intake p/d | 1.17 | 1.16 | 1.03 | 0.99 | 0.99 |
| Total meat intake p/d | 1.46 | 1.50 | 1.32 | 1.28 | 1.28 |
| Total dairy intake p/d | 1.42 | 1.57 | 1.68 | 1.74 | 1.72 |
| Total egg intake p/d | 0.42 | 0.43 | 0.39 | 0.35 | 0.37 |
| Soft drinks g/d | 0.33 | 0.41 | 0.37 | 0.33 | 0.23 |
| Total alcoholic drinks intake g/d | 0.90 | 1.26 | 0.98 | 1.25 | 1.46 |
| Wine g/d | 0.27 | 0.37 | 0.38 | 0.57 | 0.84 |
| **Women** | | | | | |
| Fruit intake p/d | 1.93 | 2.04 | 2.30 | 2.37 | 2.41 |
| Vegetables intake p/d | 2.40 | 2.44 | 2.80 | 2.76 | 3.25 |
| Vegetables (including potatoes) p/d | 3.12 | 3.10 | 3.56 | 3.41 | 3.86 |
| Fruit & Vegetables intake p/d | 4.33 | 4.48 | 5.09 | 5.13 | 5.66 |
| Total legume intake p/d | 0.32 | 0.32 | 0.34 | 0.33 | 0.32 |
| Pulse intake p/d | 0.27 | 0.29 | 0.29 | 0.29 | 0.29 |
| Nuts and seeds unsalted no peanut p/d | 0.10 | 0.05 | 0.11 | 0.15 | 0.16 |
| Nuts and seeds total p/d | 0.19 | 0.10 | 0.14 | 0.22 | 0.23 |
| Total grain intake p/d | 2.82 | 2.85 | 2.75 | 2.68 | 2.73 |
| Wholegrain intake p/d | 0.82 | 0.81 | 0.86 | 0.82 | 0.76 |
| Fish intake p/d | 0.22 | 0.31 | 0.29 | 0.28 | 0.37 |
| Red and processed meat intake p/d | 0.80 | 0.77 | 0.75 | 0.74 | 0.69 |
| Total meat intake p/d | 1.07 | 1.04 | 1.00 | 1.03 | 0.95 |
| Total dairy intake p/d | 1.59 | 1.48 | 1.71 | 1.68 | 1.75 |
| Total egg intake p/d | 0.37 | 0.29 | 0.37 | 0.33 | 0.35 |
| Soft drinks g/d | 0.37 | 0.23 | 0.32 | 0.24 | 0.17 |
| Total alcoholic drinks intake g/d | 0.41 | 0.61 | 0.61 | 0.80 | 0.94 |
| Wine g/d | 0.19 | 0.36 | 0.40 | 0.60 | 0.73 |
| | | | | | |
| *Unweighted N* | | | | | |
| *Men* | *145* | *211* | *333* | *444* | *496* |
| *Women* | *220* | *278* | *390* | *487* | *549* |

For variable definitions, see AH.25. For related text, see H.23. p/d stands for 'portion per day'; g/d for 'glasses per day'.

**Table HL1a. Fair or poor self-rated health (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 19.40 | 20.05 | 24.80 | 23.89 | 27.60 | 29.35 | *2,015* |
| 50–54 | 19.47 | 18.40 | 23.73 | 23.84 | 28.44 | 26.74 | *250* |
| 55–59 | 19.06 | 18.03 | 22.88 | 20.57 | 21.57 | 23.13 | *456* |
| 60–64 | 20.74 | 22.04 | 24.66 | 21.99 | 26.79 | 27.57 | *526* |
| 65–69 | 19.71 | 17.32 | 25.67 | 28.07 | 32.96 | 34.74 | *338* |
| 70–74 | 16.91 | 22.37 | 24.10 | 24.24 | 28.82 | 36.35 | *275* |
| 75–79 | 16.22 | 23.50 | 24.88 | 29.51 | 32.38 | 37.15 | *130* |
| 80+ | 27.68 | 28.19 | 47.23 | 33.90 | 42.96 | 41.33 | *40* |
| **Women** | 22.11 | 22.87 | 25.26 | 26.59 | 27.51 | 29.84 | *2,621* |
| 50–54 | 20.47 | 22.78 | 23.84 | 20.95 | 22.86 | 25.14 | *316* |
| 55–59 | 20.78 | 19.27 | 21.28 | 22.95 | 22.45 | 23.15 | *601* |
| 60–64 | 21.17 | 19.34 | 23.80 | 23.52 | 23.22 | 25.88 | *653* |
| 65–69 | 23.35 | 21.18 | 22.17 | 26.20 | 27.99 | 30.45 | *436* |
| 70–74 | 19.82 | 26.52 | 31.01 | 33.34 | 35.58 | 35.55 | *369* |
| 75–79 | 26.69 | 31.48 | 30.93 | 40.41 | 40.52 | 48.17 | *160* |
| 80+ | 30.90 | 39.25 | 41.78 | 35.70 | 42.15 | 47.99 | *86* |

For variable definitions, see AH.2, AH.5, and AH.15. For related text, see H.25

**Table HL1b. Fair or poor self-rated health (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 19.61 | 20.20 | 24.85 | 23.99 | 27.80 | 29.54 | *1,973* |
| Lowest | 39.24 | 39.69 | 44.21 | 48.67 | 45.14 | 44.28 | *262* |
| 2nd | 26.57 | 28.63 | 31.99 | 29.06 | 38.21 | 40.32 | *279* |
| 3rd | 20.17 | 18.57 | 27.63 | 23.50 | 29.76 | 27.22 | *368* |
| 4th | 12.69 | 14.19 | 17.08 | 18.24 | 21.10 | 24.60 | *494* |
| Highest | 8.20 | 8.80 | 12.58 | 10.10 | 14.53 | 19.39 | *570* |
| **Women** | 22.18 | 22.99 | 25.28 | 26.78 | 27.55 | 30.00 | *2,561* |
| Lowest | 40.75 | 39.91 | 40.86 | 41.60 | 43.56 | 46.43 | *397* |
| 2nd | 31.18 | 31.73 | 34.01 | 36.00 | 39.43 | 39.86 | *451* |
| 3rd | 18.86 | 19.73 | 25.23 | 24.81 | 21.84 | 26.65 | *521* |
| 4th | 14.39 | 13.28 | 14.99 | 17.82 | 20.74 | 22.59 | *574* |
| Highest | 9.12 | 13.34 | 14.28 | 16.53 | 15.34 | 17.60 | *618* |

For variable definitions, see AH.5, AH.15, AH.17, and AH.19. For related text, see H.26

**Table HL2a. Diagnosed CHD (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 8.03 | 9.77 | 9.63 | 11.08 | 12.27 | 14.01 | *2,133* |
| 50–54 | 1.83 | 2.92 | 2.45 | 4.97 | 6.51 | 7.80 | *264* |
| 55–59 | 5.14 | 6.45 | 6.46 | 7.83 | 9.05 | 10.19 | *482* |
| 60–64 | 6.61 | 8.69 | 9.33 | 10.85 | 12.27 | 13.05 | *556* |
| 65–69 | 12.00 | 12.79 | 12.26 | 13.32 | 13.98 | 16.84 | *357* |
| 70–74 | 12.41 | 13.02 | 12.79 | 13.75 | 14.94 | 17.18 | *297* |
| 75–79 | 18.90 | 22.38 | 23.15 | 23.87 | 24.62 | 28.28 | *134* |
| 80+ | 12.89 | 24.07 | 18.37 | 20.29 | 21.85 | 28.40 | *43* |
| **Women** | 5.30 | 6.16 | 6.52 | 7.54 | 8.09 | 9.40 | *2,715* |
| 50–54 | 0.75 | 0.75 | 1.49 | 1.87 | 2.13 | 3.88 | *327* |
| 55–59 | 1.87 | 2.96 | 2.96 | 3.66 | 4.24 | 4.82 | *620* |
| 60–64 | 2.93 | 3.73 | 3.67 | 4.90 | 5.72 | 7.36 | *673* |
| 65–69 | 7.82 | 7.94 | 8.16 | 9.66 | 10.40 | 10.87 | *449* |
| 70–74 | 6.92 | 8.06 | 9.70 | 11.43 | 12.58 | 13.56 | *385* |
| 75–79 | 16.05 | 17.24 | 17.03 | 17.33 | 16.93 | 20.82 | *171* |
| 80+ | 14.39 | 17.40 | 18.69 | 20.08 | 19.72 | 21.38 | *90* |

For variable definitions, see AH.2, AH.5, and AH.9. For related text, see H.27. Note: Data at waves 7–9 was composed of the data fed forward from the previous wave and the data on newly reported condition

**Table HL2b. Diagnosed CHD (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 8.06 | 9.74 | 9.60 | 11.07 | 12.24 | 14.07 | *2,091* |
| Lowest | 10.90 | 12.73 | 13.48 | 15.80 | 16.76 | 18.61 | *281* |
| 2nd | 8.14 | 12.11 | 11.65 | 13.01 | 14.34 | 15.09 | *296* |
| 3rd | 10.91 | 12.97 | 11.66 | 12.93 | 14.91 | 18.34 | *385* |
| 4th | 6.69 | 7.63 | 7.94 | 9.30 | 10.13 | 11.36 | *521* |
| Highest | 5.23 | 5.78 | 5.70 | 6.94 | 7.86 | 9.67 | *608* |
| **Women** | 5.38 | 6.22 | 6.59 | 7.59 | 8.15 | 9.47 | *2,655* |
| Lowest | 8.10 | 8.41 | 8.58 | 10.13 | 11.35 | 12.77 | *410* |
| 2nd | 9.01 | 10.56 | 11.44 | 12.46 | 12.47 | 13.73 | *462* |
| 3rd | 5.23 | 6.46 | 7.16 | 8.08 | 8.12 | 9.21 | *539* |
| 4th | 3.39 | 3.91 | 3.99 | 4.63 | 5.56 | 6.65 | *593* |
| Highest | 1.95 | 2.55 | 2.59 | 3.51 | 4.14 | 5.87 | *651* |

For variable definitions, see AH.5, AH.9, AH.17, and AH.19. For related text, see H.28. Note: Data at waves 7–9 was composed of the data fed forward from the previous wave and the data on newly reported condition.

**Table HL3a. Diagnosed diabetes (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 9.35 | 11.21 | 13.03 | 15.09 | 16.17 | 16.58 | *2,133* |
| 50–54 | 7.65 | 8.24 | 11.26 | 12.45 | 13.64 | 15.00 | *264* |
| 55–59 | 5.99 | 9.09 | 10.93 | 14.10 | 15.66 | 15.48 | *482* |
| 60–64 | 9.44 | 10.55 | 12.54 | 14.29 | 15.50 | 16.76 | *556* |
| 65–69 | 13.04 | 15.35 | 16.14 | 19.03 | 19.61 | 19.89 | *357* |
| 70–74 | 13.34 | 14.32 | 15.12 | 16.84 | 16.15 | 15.65 | *297* |
| 75–79 | 11.42 | 12.77 | 15.42 | 14.82 | 16.39 | 16.29 | *134* |
| 80+ | 9.09 | 13.48 | 15.09 | 16.82 | 20.44 | 20.35 | *43* |
| **Women** | 6.92 | 8.54 | 9.82 | 11.14 | 12.57 | 12.75 | *2,715* |
| 50–54 | 4.83 | 5.55 | 7.42 | 8.00 | 10.42 | 12.09 | *327* |
| 55–59 | 4.96 | 5.75 | 6.47 | 8.72 | 9.97 | 9.90 | *620* |
| 60–64 | 6.80 | 8.47 | 9.66 | 10.84 | 12.08 | 12.79 | *673* |
| 65–69 | 6.85 | 8.52 | 9.38 | 10.20 | 12.68 | 13.82 | *449* |
| 70–74 | 8.75 | 12.04 | 12.73 | 14.50 | 15.16 | 15.42 | *385* |
| 75–79 | 9.41 | 13.32 | 18.11 | 19.45 | 19.08 | 15.04 | *171* |
| 80+ | 13.92 | 13.92 | 13.92 | 13.51 | 15.80 | 15.14 | *90* |

For variable definitions, see AH.2, AH.5, and AH.9. For related text, see H.27

**Table HL3b. Diagnosed diabetes (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 9.33 | 11.12 | 12.97 | 15.04 | 16.09 | 16.48 | *2,091* |
| Lowest | 13.89 | 16.80 | 19.83 | 23.45 | 24.99 | 27.49 | *281* |
| 2nd | 7.22 | 10.61 | 12.60 | 15.76 | 17.40 | 16.87 | *296* |
| 3rd | 10.44 | 11.35 | 13.06 | 14.80 | 15.60 | 15.89 | *385* |
| 4th | 9.23 | 9.99 | 11.27 | 12.45 | 12.91 | 12.53 | *521* |
| Highest | 6.84 | 8.48 | 10.06 | 11.45 | 12.55 | 12.85 | *608* |
| **Women** | 6.98 | 8.64 | 9.91 | 11.26 | 12.72 | 12.86 | *2,655* |
| Lowest | 10.72 | 12.90 | 13.83 | 16.97 | 18.91 | 19.32 | *410* |
| 2nd | 10.62 | 12.94 | 15.08 | 16.68 | 18.43 | 18.66 | *462* |
| 3rd | 6.31 | 7.59 | 9.47 | 10.08 | 11.55 | 11.25 | *539* |
| 4th | 4.98 | 6.20 | 7.35 | 8.40 | 9.24 | 10.31 | *593* |
| Highest | 3.20 | 4.59 | 4.91 | 5.54 | 6.93 | 6.28 | *651* |

For variable definitions, see AH.5, AH.9, AH.17, and AH.19. For related text, see H.28

**Table HL4a. Diagnosed cancer (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 2.41 | 2.95 | 3.08 | 3.62 | 4.31 | 5.82 | *2,133* |
| 50–54 | 2.23 | 0.97 | 2.46 | 0.99 | 1.76 | 2.18 | *264* |
| 55–59 | 0.68 | 0.99 | 1.31 | 2.28 | 2.90 | 2.60 | *482* |
| 60–64 | 1.95 | 3.73 | 2.91 | 3.23 | 4.79 | 6.99 | *556* |
| 65–69 | 3.85 | 4.93 | 4.60 | 5.59 | 4.15 | 6.03 | *357* |
| 70–74 | 4.81 | 5.69 | 5.63 | 8.80 | 8.77 | 11.94 | *297* |
| 75–79 | 3.57 | 3.84 | 3.38 | 1.17 | 6.60 | 9.69 | *134* |
| 80+ | 3.79 | 1.88 | 5.73 | 7.51 | 3.85 | 10.45 | *43* |
| **Women** | 3.16 | 2.81 | 2.32 | 3.39 | 3.56 | 4.22 | *2,715* |
| 50–54 | 2.21 | 1.90 | 0.99 | 0.00 | 2.58 | 1.99 | *327* |
| 55–59 | 3.74 | 2.53 | 2.64 | 4.01 | 4.00 | 3.65 | *620* |
| 60–64 | 2.92 | 2.76 | 2.40 | 3.24 | 3.10 | 4.32 | *673* |
| 65–69 | 2.72 | 3.35 | 2.02 | 4.95 | 3.50 | 5.57 | *449* |
| 70–74 | 3.87 | 3.03 | 3.49 | 3.27 | 3.65 | 4.13 | *385* |
| 75–79 | 3.51 | 3.30 | 1.25 | 3.81 | 3.78 | 6.42 | *171* |
| 80+ | 2.74 | 3.74 | 3.55 | 4.04 | 5.35 | 4.56 | *90* |

For variable definitions, see AH.2, AH.5, and AH.9. For related text, see H.29

**Table HL4b. Diagnosed cancer (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 2.43 | 3.01 | 3.11 | 3.64 | 4.39 | 5.93 | *2,091* |
| Lowest | 2.29 | 1.92 | 4.09 | 3.73 | 1.97 | 3.98 | *281* |
| 2nd | 1.60 | 2.55 | 2.96 | 4.54 | 6.26 | 9.04 | *296* |
| 3rd | 2.67 | 2.25 | 2.47 | 2.26 | 3.52 | 4.79 | *385* |
| 4th | 1.96 | 4.07 | 3.60 | 3.61 | 6.45 | 5.06 | *521* |
| Highest | 3.29 | 3.64 | 2.60 | 4.09 | 3.66 | 6.96 | *608* |
| **Women** | 3.16 | 2.78 | 2.30 | 3.46 | 3.64 | 4.20 | *2,655* |
| Lowest | 3.30 | 2.13 | 2.13 | 4.38 | 3.91 | 4.15 | *410* |
| 2nd | 3.36 | 1.36 | 3.41 | 3.40 | 4.58 | 7.01 | *462* |
| 3rd | 3.10 | 3.51 | 1.46 | 3.80 | 2.83 | 4.73 | *539* |
| 4th | 3.01 | 3.17 | 1.89 | 3.33 | 3.11 | 1.69 | *593* |
| Highest | 3.06 | 3.52 | 2.62 | 2.57 | 3.83 | 3.65 | *651* |

For variable definitions, see AH.5, AH.9, AH.17, and AH.19. For related text, see H.30

**Table HL5a. Diagnosed depression (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 5.84 | 5.73 | 5.87 | 6.68 | 6.95 | 7.24 | *2,133* |
| 50–54 | 8.06 | 8.77 | 10.16 | 9.86 | 9.86 | 9.86 | *264* |
| 55–59 | 8.60 | 7.33 | 7.42 | 8.77 | 9.30 | 9.92 | *482* |
| 60–64 | 6.17 | 6.76 | 5.95 | 6.86 | 7.01 | 7.40 | *556* |
| 65–69 | 5.11 | 5.06 | 5.51 | 7.31 | 7.46 | 7.46 | *357* |
| 70–74 | 0.84 | 0.84 | 1.30 | 0.84 | 1.50 | 1.71 | *297* |
| 75–79 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | *134* |
| 80+ | 3.66 | 4.13 | 3.51 | 5.65 | 5.65 | 5.65 | *43* |
| **Women** | 7.10 | 8.13 | 8.06 | 7.94 | 8.62 | 9.02 | *2,715* |
| 50–54 | 8.41 | 12.07 | 13.49 | 13.48 | 14.83 | 15.19 | *327* |
| 55–59 | 8.31 | 8.96 | 9.05 | 8.95 | 10.04 | 10.71 | *620* |
| 60–64 | 8.59 | 10.48 | 9.95 | 8.90 | 9.87 | 10.14 | *673* |
| 65–69 | 6.02 | 6.24 | 5.68 | 5.70 | 5.85 | 5.85 | *449* |
| 70–74 | 5.29 | 5.01 | 5.18 | 5.16 | 5.16 | 6.20 | *385* |
| 75–79 | 3.63 | 3.78 | 2.16 | 4.12 | 4.12 | 4.12 | *171* |
| 80+ | 4.61 | 4.62 | 5.45 | 4.97 | 4.97 | 4.97 | *90* |

For variable definitions, see AH.2, AH.5, and AH.9. For related text, see H.31. Note: Data at waves 8 and 9 were composed of the data fed forward from the previous wave and the data on newly reported condition

**Table HL5b. Diagnosed depression (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 5.88 | 5.70 | 5.82 | 6.67 | 6.96 | 7.25 | *2,091* |
| Lowest | 13.42 | 11.41 | 12.54 | 14.36 | 15.16 | 15.16 | *281* |
| 2nd | 4.19 | 5.72 | 8.17 | 8.31 | 8.46 | 9.31 | *296* |
| 3rd | 4.49 | 4.86 | 4.20 | 5.16 | 5.28 | 5.41 | *385* |
| 4th | 4.67 | 4.78 | 3.67 | 4.63 | 4.85 | 5.24 | *521* |
| Highest | 4.01 | 3.33 | 2.99 | 3.47 | 3.67 | 3.83 | *608* |
| **Women** | 7.15 | 8.09 | 8.07 | 7.85 | 8.54 | 8.94 | *2,655* |
| Lowest | 13.46 | 13.86 | 15.01 | 15.51 | 16.44 | 17.49 | *410* |
| 2nd | 6.58 | 7.19 | 6.65 | 7.96 | 8.61 | 9.14 | *462* |
| 3rd | 6.02 | 7.07 | 6.66 | 4.91 | 6.02 | 6.27 | *539* |
| 4th | 5.59 | 6.59 | 6.53 | 6.40 | 6.67 | 6.97 | *593* |
| Highest | 4.98 | 6.50 | 6.37 | 5.52 | 6.06 | 6.06 | *651* |

For variable definitions, see AH.5, AH.9, AH.17, and AH.19. For related text, see H.32. Note: Data at waves 8 and 9 were composed of the data fed forward from the previous wave and the data on newly reported condition

**Table HL6a. Walking speed (mean, m/s), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 0.99 | 0.98 | 0.97 | 0.92 | 0.87 | 0.84 | *970* |
| 60–64 | 1.03 | 1.02 | 1.04 | 0.99 | 0.94 | 0.92 | *405* |
| 65–69 | 1.00 | 0.98 | 0.97 | 0.93 | 0.88 | 0.87 | *258* |
| 70–74 | 0.95 | 0.94 | 0.90 | 0.86 | 0.82 | 0.78 | *202* |
| 75–79 | 0.92 | 0.90 | 0.87 | 0.79 | 0.75 | 0.70 | *86* |
| 80+ | 0.90 | 0.84 | 0.79 | 0.72 | 0.66 | 0.53 | *19* |
| **Women** | 0.94 | 0.93 | 0.89 | 0.85 | 0.82 | 0.78 | *1,205* |
| 60–64 | 0.99 | 0.99 | 0.96 | 0.92 | 0.90 | 0.88 | *501* |
| 65–69 | 0.95 | 0.94 | 0.92 | 0.86 | 0.85 | 0.79 | *323* |
| 70–74 | 0.91 | 0.89 | 0.85 | 0.82 | 0.76 | 0.71 | *252* |
| 75–79 | 0.82 | 0.81 | 0.76 | 0.72 | 0.66 | 0.61 | *91* |
| 80+ | 0.76 | 0.70 | 0.66 | 0.58 | 0.57 | 0.49 | *38* |

For variable definitions, see AH.2, AH.5, and AH.18. For related text, see H.33

**Table HL6b. Walking speed (mean, m/s), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 0.99 | 0.98 | 0.97 | 0.92 | 0.87 | 0.84 | *949* |
| Lowest | 0.94 | 0.89 | 0.84 | 0.84 | 0.72 | 0.74 | *81* |
| 2nd | 0.93 | 0.91 | 0.90 | 0.86 | 0.82 | 0.78 | *116* |
| 3rd | 0.94 | 0.94 | 0.94 | 0.89 | 0.85 | 0.85 | *183* |
| 4th | 0.99 | 0.99 | 0.97 | 0.92 | 0.88 | 0.85 | *278* |
| Highest | 1.08 | 1.06 | 1.07 | 0.99 | 0.95 | 0.91 | *291* |
| **Women** | 0.94 | 0.93 | 0.89 | 0.85 | 0.82 | 0.78 | *1,177* |
| Lowest | 0.83 | 0.81 | 0.80 | 0.75 | 0.71 | 0.68 | *120* |
| 2nd | 0.85 | 0.84 | 0.80 | 0.77 | 0.74 | 0.70 | *186* |
| 3rd | 0.93 | 0.91 | 0.88 | 0.83 | 0.81 | 0.76 | *259* |
| 4th | 0.98 | 0.96 | 0.94 | 0.89 | 0.85 | 0.81 | *309* |
| Highest | 1.02 | 1.02 | 0.98 | 0.93 | 0.91 | 0.87 | *303* |

For variable definitions, see AH.5, and AH.17 to AH.19. For related text, see H.34

**Table HL7a. At least one difficulty with ADL (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 13.51 | 12.91 | 13.96 | 14.83 | 17.43 | 19.65 | *2,133* |
| 50–54 | 10.85 | 9.75 | 9.36 | 10.85 | 13.57 | 11.98 | *264* |
| 55–59 | 10.02 | 11.59 | 11.93 | 11.55 | 14.92 | 14.11 | *482* |
| 60–64 | 13.25 | 12.07 | 12.40 | 14.98 | 14.96 | 17.35 | *556* |
| 65–69 | 14.24 | 15.24 | 13.57 | 14.98 | 17.12 | 21.95 | *357* |
| 70–74 | 13.34 | 13.27 | 13.73 | 16.11 | 17.99 | 24.72 | *297* |
| 75–79 | 24.37 | 17.13 | 22.95 | 23.76 | 28.96 | 35.95 | *134* |
| 80+ | 32.26 | 23.66 | 49.01 | 36.76 | 50.99 | 56.48 | *43* |
| **Women** | 15.88 | 16.11 | 17.75 | 17.88 | 19.57 | 22.84 | *2,715* |
| 50–54 | 14.11 | 13.62 | 14.95 | 15.41 | 15.15 | 18.44 | *327* |
| 55–59 | 10.50 | 10.61 | 12.16 | 12.13 | 14.82 | 15.15 | *620* |
| 60–64 | 13.83 | 11.07 | 14.20 | 13.78 | 17.31 | 17.40 | *673* |
| 65–69 | 15.50 | 15.82 | 17.94 | 18.54 | 15.75 | 25.41 | *449* |
| 70–74 | 17.73 | 21.63 | 23.60 | 21.28 | 24.16 | 25.70 | *385* |
| 75–79 | 27.18 | 28.54 | 25.19 | 28.38 | 29.29 | 38.64 | *171* |
| 80+ | 33.55 | 38.12 | 40.51 | 42.10 | 47.71 | 53.85 | *90* |

For variable definitions, see AH.1, AH.2, and AH.5. For related text, see H.35

**Table HL7b. At least one difficulty with ADL (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 13.56 | 12.96 | 14.05 | 14.81 | 17.34 | 19.70 | *2,091* |
| Lowest | 25.01 | 22.89 | 20.75 | 22.30 | 29.92 | 28.22 | *281* |
| 2nd | 16.57 | 17.40 | 17.06 | 18.44 | 20.77 | 26.40 | *296* |
| 3rd | 12.56 | 13.02 | 15.30 | 15.90 | 18.26 | 20.45 | *385* |
| 4th | 8.78 | 9.27 | 12.19 | 11.55 | 13.11 | 15.85 | *521* |
| Highest | 9.07 | 6.86 | 8.47 | 9.68 | 9.92 | 12.78 | *608* |
| **Women** | 15.84 | 16.19 | 17.79 | 17.95 | 19.69 | 23.05 | *2,655* |
| Lowest | 29.29 | 31.25 | 29.67 | 32.06 | 34.90 | 34.31 | *410* |
| 2nd | 22.70 | 21.63 | 26.21 | 24.43 | 25.54 | 35.43 | *462* |
| 3rd | 12.05 | 13.67 | 15.19 | 13.81 | 15.47 | 19.43 | *539* |
| 4th | 11.23 | 9.88 | 12.68 | 12.82 | 14.90 | 15.94 | *593* |
| Highest | 6.54 | 7.22 | 7.77 | 9.24 | 10.38 | 12.90 | *651* |

For variable definitions, see AH.1, AH.5, AH.17, and AH.19. For related text, see H.36

**Table HL8a. Mean memory score, by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 10.83 | 10.80 | 10.86 | 10.43 | 10.21 | 9.82 | *1,989* |
| 50–54 | 11.28 | 11.62 | 11.66 | 11.35 | 11.30 | 11.00 | *248* |
| 55–59 | 11.68 | 11.38 | 11.77 | 11.63 | 11.34 | 11.21 | *453* |
| 60–64 | 11.10 | 11.10 | 11.18 | 10.81 | 10.69 | 10.15 | *516* |
| 65–69 | 10.22 | 10.54 | 10.11 | 9.45 | 9.27 | 8.86 | *333* |
| 70–74 | 9.73 | 9.41 | 9.61 | 8.91 | 8.51 | 8.15 | *275* |
| 75–79 | 9.63 | 9.69 | 9.33 | 8.41 | 8.12 | 7.04 | *126* |
| 80+ | 8.35 | 8.22 | 8.08 | 6.89 | 6.33 | 6.02 | *38* |
| **Women** | 11.36 | 11.31 | 11.36 | 10.93 | 10.85 | 10.33 | *2,588* |
| 50–54 | 12.10 | 12.20 | 12.86 | 12.36 | 12.59 | 12.02 | *315* |
| 55–59 | 12.05 | 12.06 | 12.29 | 11.93 | 12.12 | 11.81 | *595* |
| 60–64 | 11.96 | 12.06 | 12.10 | 11.53 | 11.43 | 11.15 | *646* |
| 65–69 | 11.03 | 10.99 | 10.79 | 10.62 | 10.38 | 9.74 | *430* |
| 70–74 | 10.56 | 10.41 | 10.07 | 9.77 | 9.40 | 8.55 | *361* |
| 75–79 | 9.60 | 9.30 | 9.10 | 8.23 | 8.02 | 7.19 | *155* |
| 80+ | 9.12 | 8.40 | 8.02 | 7.64 | 6.88 | 5.97 | *86* |

For variable definitions, see AH.2, AH.5, and AH.8. For related text, see H.37

**Table HL8b. Mean memory score, by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 10.83 | 10.80 | 10.86 | 10.43 | 10.21 | 9.82 | *1,948* |
| Lowest | 10.56 | 10.35 | 10.37 | 9.83 | 9.55 | 9.24 | *258* |
| 2nd | 10.05 | 10.02 | 10.14 | 9.72 | 9.34 | 9.08 | *274* |
| 3rd | 10.36 | 10.54 | 10.46 | 10.09 | 9.81 | 9.25 | *364* |
| 4th | 10.97 | 11.05 | 11.15 | 10.54 | 10.45 | 10.09 | *491* |
| Highest | 11.63 | 11.50 | 11.60 | 11.34 | 11.18 | 10.76 | *561* |
| **Women** | 11.36 | 11.31 | 11.36 | 10.93 | 10.85 | 10.33 | *2,528* |
| Lowest | 10.64 | 10.51 | 10.53 | 9.92 | 10.21 | 9.76 | *390* |
| 2nd | 10.51 | 10.45 | 10.42 | 9.98 | 9.70 | 9.09 | *446* |
| 3rd | 11.17 | 11.11 | 11.13 | 10.78 | 10.58 | 10.04 | *518* |
| 4th | 11.66 | 11.79 | 11.91 | 11.43 | 11.37 | 10.76 | *569* |
| Highest | 12.48 | 12.36 | 12.42 | 12.17 | 12.06 | 11.57 | *605* |

For variable definitions, see AH.5, AH.8, AH.17, and AH.19. For related text, see H.38

**Table HL9a. Current smoker (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 13.37 | 12.26 | 11.18 | 10.56 | 9.78 | 9.15 | *2,097* |
| 50–54 | 19.49 | 16.30 | 17.50 | 16.24 | 15.06 | 13.89 | *259* |
| 55–59 | 17.21 | 16.88 | 14.33 | 14.23 | 12.23 | 11.91 | *474* |
| 60–64 | 14.98 | 13.02 | 11.65 | 12.13 | 10.79 | 9.61 | *545* |
| 65–69 | 9.64 | 9.37 | 8.18 | 5.64 | 6.52 | 5.95 | *352* |
| 70–74 | 7.65 | 6.35 | 7.07 | 5.83 | 6.66 | 6.95 | *291* |
| 75–79 | 3.84 | 4.57 | 2.58 | 2.58 | 2.58 | 1.76 | *133* |
| 80+ | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | *43* |
| **Women** | 13.64 | 12.47 | 11.06 | 10.25 | 9.39 | 8.39 | *2,677* |
| 50–54 | 23.35 | 22.70 | 21.23 | 18.20 | 17.19 | 16.32 | *320* |
| 55–59 | 16.32 | 14.81 | 13.21 | 12.07 | 11.84 | 10.79 | *615* |
| 60–64 | 13.79 | 11.85 | 11.17 | 10.31 | 8.95 | 7.56 | *661* |
| 65–69 | 9.83 | 9.18 | 7.65 | 6.67 | 6.42 | 5.53 | *445* |
| 70–74 | 8.80 | 6.87 | 6.18 | 5.83 | 5.34 | 3.95 | *381* |
| 75–79 | 9.46 | 9.95 | 7.52 | 9.23 | 6.81 | 6.51 | *167* |
| 80+ | 5.83 | 5.83 | 2.87 | 4.64 | 2.87 | 2.87 | *88* |

For variable definitions, see AH.2, AH.5, and AH.16. For related text, see H.39

**Table HL9b. Current smoker (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 13.28 | 12.11 | 11.05 | 10.42 | 9.63 | 8.99 | *2,055* |
| Lowest | 28.03 | 26.96 | 24.21 | 22.70 | 21.40 | 21.12 | *276* |
| 2nd | 18.11 | 15.42 | 13.58 | 13.25 | 13.20 | 11.69 | *293* |
| 3rd | 10.65 | 10.70 | 9.18 | 7.93 | 6.67 | 6.03 | *377* |
| 4th | 7.47 | 6.44 | 5.93 | 5.64 | 5.51 | 4.68 | *514* |
| Highest | 7.50 | 6.17 | 6.60 | 6.53 | 5.34 | 5.17 | *595* |
| **Women** | 13.64 | 12.51 | 11.01 | 10.19 | 9.31 | 8.36 | *2,618* |
| Lowest | 26.08 | 23.47 | 22.24 | 20.64 | 18.85 | 17.59 | *405* |
| 2nd | 17.43 | 16.24 | 14.24 | 13.87 | 11.74 | 10.75 | *451* |
| 3rd | 9.22 | 8.67 | 6.12 | 5.97 | 5.69 | 4.03 | *534* |
| 4th | 9.44 | 9.45 | 8.60 | 7.55 | 6.96 | 6.23 | *582* |
| Highest | 8.13 | 6.67 | 5.73 | 4.74 | 4.88 | 4.67 | *646* |

For variable definitions, see AH.5, AH.16, AH.17, and AH.19. For related text, see H.40

**Table HL10a. Daily alcohol consumer (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 28.58 | 27.36 | 27.13 | 25.55 | 26.91 | 24.97 | *1,472* |
| 50–54 | 22.75 | 19.62 | 20.20 | 17.41 | 19.83 | 16.54 | *166* |
| 55–59 | 23.41 | 27.83 | 26.24 | 24.10 | 26.13 | 24.66 | *343* |
| 60–64 | 34.03 | 33.94 | 32.25 | 31.54 | 30.95 | 27.03 | *392* |
| 65–69 | 32.17 | 28.25 | 29.12 | 28.49 | 28.79 | 30.61 | *258* |
| 70–74 | 25.44 | 20.51 | 23.88 | 20.62 | 22.61 | 21.33 | *205* |
| 75–79 | 37.08 | 29.40 | 27.61 | 27.29 | 30.45 | 26.99 | *85* |
| 80+ | 39.39 | 22.43 | 27.72 | 29.83 | 35.07 | 29.83 | *23* |
| **Women** | 17.33 | 16.67 | 16.79 | 15.08 | 15.07 | 14.09 | *1,911* |
| 50–54 | 19.16 | 16.15 | 15.87 | 15.04 | 12.61 | 14.93 | *226* |
| 55–59 | 15.98 | 17.27 | 17.37 | 15.82 | 16.21 | 15.30 | *449* |
| 60–64 | 17.69 | 18.35 | 18.16 | 16.68 | 16.96 | 15.09 | *498* |
| 65–69 | 17.29 | 16.03 | 18.08 | 14.23 | 13.93 | 13.69 | *332* |
| 70–74 | 15.62 | 14.32 | 13.09 | 12.24 | 11.09 | 11.29 | *266* |
| 75–79 | 19.67 | 17.04 | 18.21 | 18.91 | 20.04 | 14.81 | *94* |
| 80+ | 20.23 | 13.04 | 10.80 | 6.45 | 12.58 | 5.91 | *46* |

For variable definitions, see AH.2, AH.3, and AH.5. For related text, see H.41

**Table HL10b. Daily alcohol consumer (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 28.46 | 27.26 | 27.09 | 25.50 | 26.76 | 24.89 | *1,451* |
| Lowest | 19.82 | 19.44 | 18.83 | 13.63 | 18.93 | 13.94 | *154* |
| 2nd | 24.70 | 21.02 | 24.18 | 24.40 | 23.40 | 19.48 | *186* |
| 3rd | 22.35 | 20.95 | 21.17 | 20.91 | 21.18 | 22.16 | *261* |
| 4th | 29.88 | 27.02 | 26.47 | 24.46 | 24.51 | 23.81 | *392* |
| Highest | 37.31 | 38.60 | 37.05 | 35.82 | 37.99 | 35.71 | *458* |
| **Women** | 17.07 | 16.49 | 16.57 | 14.75 | 14.83 | 13.95 | *1,870* |
| Lowest | 8.46 | 7.43 | 7.92 | 9.09 | 6.07 | 7.90 | *236* |
| 2nd | 8.14 | 6.73 | 7.01 | 6.43 | 7.99 | 6.53 | *300* |
| 3rd | 16.18 | 16.71 | 15.75 | 12.75 | 14.05 | 12.53 | *376* |
| 4th | 19.58 | 18.60 | 19.56 | 17.69 | 16.31 | 14.90 | *449* |
| Highest | 26.68 | 26.40 | 26.15 | 22.75 | 23.97 | 22.91 | *509* |

For variable definitions, see AH.3, AH.5, AH.17, and AH.19. For related text, see H.42

**Table HL11a. Physical inactivity (%), by age and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 7.89 | 9.61 | 10.04 | 11.85 | 16.20 | 20.07 | *2,130* |
| 50–54 | 5.71 | 8.35 | 6.96 | 10.89 | 10.70 | 13.87 | *263* |
| 55–59 | 6.24 | 7.43 | 8.68 | 8.52 | 12.47 | 14.51 | *481* |
| 60–64 | 8.37 | 10.39 | 9.31 | 11.61 | 12.15 | 13.40 | *555* |
| 65–69 | 11.44 | 11.62 | 13.89 | 12.84 | 19.73 | 20.84 | *357* |
| 70–74 | 8.10 | 9.64 | 7.59 | 12.99 | 18.02 | 30.11 | *297* |
| 75–79 | 6.96 | 13.32 | 11.99 | 15.71 | 31.38 | 39.55 | *134* |
| 80+ | 13.26 | 10.66 | 28.40 | 31.11 | 47.92 | 64.38 | *43* |
| **Women** | 16.21 | 15.44 | 17.37 | 20.03 | 23.41 | 28.22 | *2,715* |
| 50–54 | 12.48 | 14.01 | 15.55 | 16.15 | 13.90 | 14.19 | *327* |
| 55–59 | 14.18 | 9.75 | 11.66 | 11.96 | 15.13 | 17.10 | *620* |
| 60–64 | 8.59 | 10.07 | 11.47 | 13.76 | 17.25 | 18.53 | *673* |
| 65–69 | 16.07 | 15.74 | 17.12 | 17.60 | 22.79 | 27.65 | *449* |
| 70–74 | 17.26 | 18.73 | 18.66 | 23.85 | 30.31 | 37.46 | *385* |
| 75–79 | 32.11 | 33.35 | 31.39 | 42.45 | 45.29 | 62.60 | *171* |
| 80+ | 39.12 | 31.94 | 49.24 | 57.13 | 62.95 | 81.39 | *90* |

For variable definitions, see AH.2, AH.5, and AH.11. For related text, see H.43

**Table HL11b. Physical inactivity (%), by wealth and gender: waves 4 to 9**

| Age | Wave 4 | Wave 5 | Wave 6 | Wave 7 | Wave 8 | Wave 9 | *Unweighted N* |
|---|---|---|---|---|---|---|---|
| **Men** | 7.92 | 9.68 | 10.24 | 11.94 | 16.35 | 20.16 | *2,088* |
| Lowest | 17.27 | 19.61 | 21.91 | 23.28 | 31.96 | 32.54 | *281* |
| 2nd | 10.43 | 16.08 | 13.53 | 17.67 | 19.52 | 28.94 | *296* |
| 3rd | 8.31 | 8.04 | 10.64 | 11.89 | 15.08 | 19.38 | *384* |
| 4th | 3.05 | 4.55 | 5.77 | 7.73 | 11.03 | 15.36 | *520* |
| Highest | 4.17 | 4.86 | 4.08 | 4.60 | 9.63 | 11.30 | *607* |
| **Women** | 16.35 | 15.53 | 17.37 | 20.09 | 23.54 | 28.48 | *2,655* |
| Lowest | 29.70 | 30.28 | 30.79 | 34.76 | 37.77 | 41.54 | *410* |
| 2nd | 23.53 | 21.24 | 25.81 | 28.93 | 35.44 | 38.58 | *462* |
| 3rd | 13.87 | 13.78 | 15.71 | 20.27 | 22.26 | 28.74 | *539* |
| 4th | 7.74 | 7.58 | 9.78 | 11.10 | 14.22 | 20.36 | *593* |
| Highest | 9.44 | 7.46 | 7.53 | 8.47 | 11.25 | 16.18 | *651* |

For variable definitions, see AH.5, AH.11, AH.17, and AH.19. For related text, see H.44

**Table N1a. Mean body mass index (BMI, kg/m$^2$), by age group and gender: wave 9**

| | Age group in 2018–19 |
|---|---|---|---|---|---|---|---|
| | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
| Men | 28.29 | 28.43 | 28.34 | 27.94 | 27.59 | 26.63 | 27.80 |
| Women | 28.35 | 28.12 | 28.13 | 28.40 | 27.12 | 26.91 | 27.80 |
| *Unweighted N* | | | | | | | |
| *Men* | *100* | *338* | *489* | *531* | *350* | *437* | *2,245* |
| *Women* | *128* | *440* | *613* | *677* | *428* | *595* | *2,881* |

For variable definitions, see AH.21. For related text, see H.45

**Table N1b. Mean body mass index (BMI, kg/m$^2$), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 |
|---|---|---|---|---|---|---|
| | Lowest | 2nd | 3rd | 4th | Highest | All |
| Men | 28.91 | 28.20 | 27.99 | 27.31 | 27.17 | 27.80 |
| Women | 29.94 | 28.37 | 27.43 | 27.33 | 25.91 | 27.80 |
| *Unweighted N* | | | | | | |
| *Men* | *310* | *393* | *476* | *545* | *496* | *2,220* |
| *Women* | *520* | *669* | *599* | *538* | *527* | *2,853* |

For variable definitions, see AH.19 and AH.21. For related text, see H.46

**Table N1c. Body mass index categories (%), by age group and gender: wave 9**

| | | | | Age group in 2018–19 | | | |
|---|---|---|---|---|---|---|---|
| | **55–59** | **60–64** | **65–69** | **70–74** | **75–79** | **80+** | **All** |
| **Men** | | | | | | | |
| Underweight | 0.0 | 0.6 | 0.6 | 0.9 | 0.3 | 0.7 | 0.6 |
| Desirable | 22.0 | 23.7 | 24.5 | 25.2 | 24.3 | 34.6 | 26.4 |
| Overweight | 54.0 | 43.8 | 44.2 | 44.4 | 54.0 | 48.3 | 46.9 |
| Obese | 24.0 | 32.0 | 30.7 | 29.4 | 21.4 | 16.5 | 26.1 |
| **Women** | | | | | | | |
| Underweight | 0.0 | 2.5 | 1.5 | 1.5 | 2.8 | 3.2 | 2.1 |
| Desirable | 35.9 | 30.9 | 32.5 | 27.6 | 33.4 | 34.8 | 31.9 |
| Overweight | 32.8 | 34.3 | 34.1 | 37.8 | 38.1 | 36.3 | 36.0 |
| Obese | 31.2 | 32.3 | 32.0 | 33.1 | 25.7 | 25.7 | 30.0 |
| | | | | | | | |
| *Unweighted N* | | | | | | | |
| *Men* | *100* | *338* | *489* | *531* | *350* | *437* | *2,245* |
| *Women* | *128* | *440* | *613* | *677* | *428* | *595* | *2,881* |

Underweight indicates BMI < 18.5; Desirable indicates BMI from 18.5 to 24.9; Overweight indicates BMI from 25 to 29.9; Obese indicates BMI 30 or more. For variable definitions, see AH.21. For related text, see H.45

**Table N1d. Body mass index categories (%), by wealth group and gender: wave 9**

| | | | Wealth group in 2018–19 | | | |
|---|---|---|---|---|---|---|
| | **Lowest** | **2nd** | **3rd** | **4th** | **Highest** | **All** |
| **Men** | | | | | | |
| Underweight | 1.6 | 1.0 | 0.2 | 0.4 | 0.4 | 0.6 |
| Desirable | 23.5 | 25.7 | 25.8 | 28.4 | 26.8 | 26.4 |
| Overweight | 38.7 | 43.5 | 45.2 | 49.7 | 53.6 | 47.0 |
| Obese | 36.1 | 29.8 | 28.8 | 21.5 | 19.2 | 26.0 |
| **Women** | | | | | | |
| Underweight | 2.1 | 1.6 | 2.0 | 2.2 | 2.8 | 2.1 |
| Desirable | 21.0 | 26.9 | 34.2 | 34.4 | 43.5 | 31.8 |
| Overweight | 31.5 | 38.6 | 37.2 | 34.8 | 36.8 | 36.0 |
| Obese | 45.4 | 32.9 | 26.5 | 28.6 | 16.9 | 30.1 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *310* | *393* | *476* | *545* | *496* | *2,220* |
| *Women* | *520* | *669* | *599* | *538* | *527* | *2,853* |

Underweight indicates BMI < 18.5; Desirable indicates BMI from 18.5 to 24.9; Overweight indicates BMI from 25 to 29.9; Obese indicates BMI 30 or more. For variable definitions, see AH.21 and AH.19. For related text, see H.46

**Table N2a. Means of systolic and diastolic blood pressure (mmHg), by age group and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | | | | Age group in 2018–19 | | | | |
| **Men** | | | | | | | | |
| Systolic BP | 128.27 | 128.94 | 131.36 | 134.58 | 132.11 | 135.80 | 130.65 | 131.74 |
| Diastolic BP | 77.96 | 77.68 | 76.56 | 76.25 | 72.00 | 71.03 | 64.92 | 73.87 |
| **Women** | | | | | | | | |
| Systolic BP | 121.34 | 125.13 | 129.44 | 130.16 | 134.91 | 136.86 | 133.83 | 129.71 |
| Diastolic BP | 75.00 | 76.03 | 74.89 | 73.86 | 73.03 | 70.96 | 66.28 | 72.89 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *271* | *82* | *87* | *222* | *232* | *158* | *146* | *1,198* |
| *Women* | *384* | *101* | *114* | *333* | *291* | *164* | *212* | *1,599* |

For variable definitions, see AH.22. For related text, see H.47

**Table N2b. Means of systolic and diastolic blood pressure (mmHg), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | | | Wealth group in 2018–19 | | | |
| **Men** | | | | | | |
| Systolic BP | 130.06 | 132.12 | 131.41 | 132.18 | 133.24 | 131.74 |
| Diastolic BP | 74.83 | 73.13 | 72.44 | 73.29 | 75.38 | 73.87 |
| **Women** | | | | | | |
| Systolic BP | 129.44 | 129.64 | 130.61 | 130.33 | 128.44 | 129.71 |
| Diastolic BP | 74.04 | 71.93 | 72.28 | 73.59 | 72.43 | 72.89 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *248* | *200* | *244* | *237* | *252* | *1,181* |
| *Women* | *352* | *368* | *295* | *279* | *274* | *1,568* |

For variable definitions, see AH.19 and AH.22. For related text, see H.48

**Table N3a. Lipid profile (mmol/l), by age group and gender: wave 9**

| | Age group in 2018–19 | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | **50–54** | **55–59** | **60–64** | **65–69** | **70–74** | **75–79** | **80+** | **All** |
| **Men** | | | | | | | | |
| Mean Total Chol | 5.33 | 4.95 | 4.94 | 4.74 | 4.49 | 4.35 | 4.20 | 4.77 |
| % ≥ 5.0 mmol/l Chol | 64.0 | 46.8 | 48.7 | 40.9 | 32.3 | 27.0 | 22.8 | 42.6 |
| Mean HDL Chol | 1.34 | 1.28 | 1.35 | 1.40 | 1.39 | 1.36 | 1.35 | 1.36 |
| % < 1.0 mmol/l HDL | 12.1 | 18.4 | 13.2 | 9.8 | 9.1 | 13.9 | 13.9 | 12.1 |
| Mean LDL Chol | 3.24 | 2.85 | 2.83 | 2.67 | 2.48 | 2.31 | 2.16 | 2.71 |
| % ≥ 3.0 mmol/l LDL | 62.6 | 48.0 | 44.6 | 37.4 | 28.0 | 24.3 | 18.8 | 39.8 |
| Mean* Trig | 1.50 | 1.60 | 1.44 | 1.33 | 1.22 | 1.36 | 1.38 | 1.38 |
| % ≥ 1.7 mmol/l Trig | 39.5 | 41.6 | 38.2 | 28.5 | 28.0 | 32.2 | 32.7 | 33.7 |
| **Women** | | | | | | | | |
| Mean Total Chol | 5.30 | 5.48 | 5.41 | 5.41 | 5.08 | 4.92 | 4.90 | 5.22 |
| % ≥ 5.0 mmol/l Chol | 62.5 | 75.9 | 68.1 | 65.7 | 53.2 | 47.7 | 45.3 | 59.4 |
| Mean HDL Chol | 1.63 | 1.64 | 1.70 | 1.65 | 1.66 | 1.66 | 1.62 | 1.65 |
| % < 1.0 mmol/l HDL | 8.7 | 12.0 | 9.6 | 12.5 | 7.6 | 14.1 | 10.8 | 10.3 |
| Mean LDL Chol | 3.09 | 3.23 | 3.09 | 3.14 | 2.80 | 2.61 | 2.57 | 2.95 |
| % ≥ 3.0 mmol/l LDL | 52.1 | 62.7 | 55.3 | 59.4 | 43.2 | 33.9 | 30.2 | 48.7 |
| Mean* Trig | 1.13 | 1.16 | 1.25 | 1.26 | 1.22 | 1.24 | 1.43 | 1.23 |
| % ≥ 1.7 mmol/l Trig | 19.2 | 25.3 | 26.6 | 24.3 | 22.8 | 25.8 | 35.3 | 24.3 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | | | | | | | | |
| *Total Chol* | *247* | *77* | *76* | *193* | *186* | *115* | *101* | *995* |
| *HDL Chol* | *247* | *76* | *76* | *193* | *186* | *115* | *101* | *994* |
| *LDL Chol* | *243* | *75* | *74* | *190* | *186* | *111* | *101* | *980* |
| *Trig* | *248* | *77* | *76* | *193* | *186* | *115* | *101* | *996* |
| *Women* | | | | | | | | |
| *Total Chol* | *333* | *83* | *94* | *280* | *250* | *128* | *139* | *1,307* |
| *HDL Chol* | *334* | *83* | *94* | *280* | *250* | *128* | *139* | *1,308* |
| *LDL Chol* | *332* | *83* | *94* | *278* | *250* | *127* | *139* | *1,303* |
| *Trig* | *333* | *83* | *94* | *280* | *250* | *128* | *139* | *1,307* |

Triglycerides and LDL cholesterol measurements were done on those who are eligible to fast according to the protocol. Chol indicates cholesterol; LDL indicates LDL cholesterol; Trig indicates triglycerides and LDL indicates LDL cholesterol. *Geometric means are reported. For variable definitions, see AH.23. For related text, see H.49

**Table N3b. Lipid profile (mmol/l), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | **Wealth group in 2018–19** | | | | | |
| **Men** | | | | | | |
| Mean Total Chol | 4.71 | 4.71 | 4.67 | 4.78 | 4.94 | 4.77 |
| % ≥ 5.0 mmol/l Chol | 41.9 | 37.4 | 39.7 | 41.3 | 50.0 | 42.2 |
| Mean HDL Chol | 1.29 | 1.36 | 1.34 | 1.43 | 1.37 | 1.36 |
| % < 1.0 mmol/l HDL | 16.7 | 13.5 | 13.9 | 9.1 | 7.5 | 12.1 |
| Mean LDL Chol | 2.67 | 2.63 | 2.62 | 2.69 | 2.87 | 2.71 |
| % ≥ 3.0 mmol/l LDL | 36.8 | 36.3 | 37.9 | 38.3 | 47.0 | 39.4 |
| Mean* Trig | 1.50 | 1.43 | 1.39 | 1.27 | 1.33 | 1.38 |
| % ≥ 1.7 mmol/l Trig | 44.4 | 33.7 | 34.4 | 26.0 | 29.7 | 33.6 |
| **Women** | | | | | | |
| Mean Total Chol | 5.14 | 5.02 | 5.35 | 5.28 | 5.35 | 5.22 |
| % ≥ 5.0 mmol/l Chol | 54.6 | 51.9 | 67.7 | 62.8 | 62.3 | 59.3 |
| Mean HDL Chol | 1.53 | 1.60 | 1.65 | 1.74 | 1.76 | 1.65 |
| % < 1.0 mmol/l HDL | 13.7 | 11.6 | 10.8 | 7.2 | 7.9 | 10.5 |
| Mean LDL Chol | 2.94 | 2.76 | 3.09 | 2.96 | 3.05 | 2.95 |
| % ≥ 3.0 mmol/l LDL | 48.1 | 39.8 | 55.0 | 51.1 | 50.4 | 48.5 |
| Mean* Trig | 1.33 | 1.28 | 1.23 | 1.16 | 1.10 | 1.23 |
| % ≥ 1.7 mmol/l Trig | 31.7 | 27.8 | 22.7 | 18.4 | 17.5 | 24.3 |
| *Unweighted N* | | | | | | |
| ***Men*** | | | | | | |
| *Total Chol* | *198* | *163* | *209* | *208* | *202* | *980* |
| *HDL Chol* | *198* | *163* | *209* | *208* | *201* | *979* |
| *LDL Chol* | *193* | *160* | *206* | *206* | *200* | *965* |
| *Trig* | *198* | *163* | *209* | *208* | *202* | *996* |
| ***Women*** | | | | | | |
| *Total Chol* | *293* | *291* | *251* | *223* | *228* | *1,286* |
| *HDL Chol* | *293* | *292* | *251* | *223* | *228* | *1,287* |
| *LDL Chol* | *293* | *289* | *249* | *223* | *228* | *1,282* |
| *Trig* | *293* | *291* | *251* | *223* | *228* | *1,307* |

Triglycerides and LDL cholesterol measurements were done on those who are eligible to fast according to the protocol. Chol indicates cholesterol; LDL indicates LDL cholesterol; Trig indicates triglycerides and LDL indicates LDL cholesterol. *Geometric means are reported. For variable definitions, see AH.19 and AH.23. For related text, see H.50

**Table N4a. Fibrinogen (g/l) and C-reactive protein (mg/l), by age group and gender: wave 9**

| | Age group in 2018–19 | | | | | | | |
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | |
| Mean fibrinogen | 2.92 | 3.03 | 3.07 | 3.21 | 3.08 | 3.10 | 3.12 | 3.07 |
| Mean* CRP | 1.06 | 1.08 | 1.24 | 1.44 | 1.03 | 1.07 | 1.24 | 1.15 |
| **Women** | | | | | | | | |
| Mean fibrinogen | 3.07 | 3.11 | 3.22 | 3.19 | 3.33 | 3.23 | 3.27 | 3.19 |
| Mean* CRP | 1.08 | 1.13 | 1.23 | 1.45 | 1.44 | 1.38 | 1.38 | 1.29 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | | | | | | | | |
| *Fibrinogen* | *237* | *74* | *75* | *183* | *183* | *111* | *95* | *958* |
| *CRP* | *248* | *77* | *76* | *193* | *186* | *115* | *101* | *996* |
| *Women* | | | | | | | | |
| *Fibrinogen* | *322* | *82* | *92* | *268* | *231* | *121* | *134* | *1,250* |
| *CRP* | *333* | *83* | *94* | *280* | *250* | *128* | *139* | *1,307* |

CRP indicates C-reactive protein. *Geometric means are reported. Participants with levels greater than 10 mg/l were excluded. For variable definitions, see AH.23. For related text, see H.51

**Table N4b. Fibrinogen (g/l) and C-reactive protein (mg/l), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| Mean fibrinogen | 3.14 | 3.14 | 3.05 | 3.03 | 3.00 | 3.07 |
| Mean* CRP | 1.41 | 1.30 | 1.22 | 0.97 | 1.00 | 1.15 |
| **Women** | | | | | | |
| Mean fibrinogen | 3.30 | 3.20 | 3.21 | 3.15 | 3.10 | 3.19 |
| Mean* CRP | 1.58 | 1.39 | 1.25 | 1.26 | 1.00 | 1.29 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | | | | | | |
| *Fibrinogen* | *189* | *158* | *202* | *202* | *193* | *944* |
| *CRP* | *198* | *163* | *209* | *208* | *202* | *996* |
| *Women* | | | | | | |
| *Fibrinogen* | *278* | *278* | *238* | *212* | *224* | *1,230* |
| *CRP* | *293* | *291* | *251* | *223* | *228* | *1,307* |

CRP indicates C-reactive protein. *Geometric means are reported. Participants with levels greater than 10 mg/l were excluded. For variable definitions, see AH.19 and AH.23. For related text, see H.52

**Table N5a. Mean glycated haemoglobin (%), by age group and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | **Age group in 2018–19** | | | | | | | |
| Men | 3.90 | 3.96 | 4.03 | 4.11 | 4.02 | 4.22 | 4.23 | 4.05 |
| Women | 3.70 | 4.00 | 3.97 | 3.97 | 4.08 | 4.08 | 4.04 | 3.94 |
| *Unweighted N* | | | | | | | | |
| *Men* | *241* | *75* | *77* | *188* | *182* | *113* | *99* | *975* |
| *Women* | *332* | *83* | *94* | *273* | *244* | *125* | *134* | *1,285* |

For variable definitions, see AH.23. For related text, see H.53

**Table N5b. Mean glycated haemoglobin (%), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | **Wealth group in 2018–19** | | | | | |
| Men | 4.23 | 3.99 | 4.04 | 4.02 | 3.93 | 4.05 |
| Women | 4.07 | 3.97 | 3.94 | 3.84 | 3.85 | 3.94 |
| *Unweighted N* | | | | | | |
| *Men* | *191* | *160* | *206* | *204* | *200* | *961* |
| *Women* | *287* | *283* | *249* | *220* | *225* | *1,264* |

For variable definitions, see AH.19 and AH.23. For related text, see H.54

**Table N6a. Mean haemoglobin (g/dl) and anaemia (%), by age group and gender: wave 9**

| | Age group in 2018–19 | | | | | | | |
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Men** | | | | | | | | |
| Mean haemoglobin | 15.02 | 15.07 | 14.73 | 14.90 | 14.67 | 14.57 | 13.78 | 14.74 |
| Anaemia (%) | 3.7 | 1.3 | 3.9 | 5.3 | 5.4 | 13.0 | 23.2 | 7.2 |
| **Women** | | | | | | | | |
| Mean haemoglobin | 13.44 | 13.52 | 13.61 | 13.51 | 13.38 | 13.09 | 12.96 | 13.38 |
| Anaemia (%) | 5.1 | 3.7 | 5.3 | 4.7 | 8.5 | 16.1 | 20.7 | 8.3 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *245* | *75* | *77* | *189* | *184* | *115* | *99* | *984* |
| *Women* | *334* | *81* | *95* | *274* | *246* | *124* | *135* | *1,289* |

Anaemia defined as haemoglobin level below 13g/dl for men and below 12 g/dl for women. For variable definitions, see AH.23. For related text, see H.55

**Table N6b. Mean haemoglobin (g/dl) and anaemia (%), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest | All |
| --- | --- | --- | --- | --- | --- | --- |
| **Men** | | | | | | |
| Mean haemoglobin | 14.80 | 14.68 | 14.58 | 14.71 | 14.90 | 14.74 |
| Anaemia (%) | 6.2 | 10.5 | 8.7 | 6.3 | 4.5 | 7.1 |
| **Women** | | | | | | |
| Mean haemoglobin | 13.29 | 13.30 | 13.45 | 13.48 | 13.40 | 13.38 |
| Anaemia (%) | 11.8 | 10.4 | 8.0 | 4.6 | 5.8 | 8.4 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *194* | *162* | *206* | *207* | *200* | *969* |
| *Women* | *288* | *288* | *249* | *219* | *224* | *1,268* |

Anaemia defined as haemoglobin level below 13g/dl for men and below 12 g/dl for women. For variable definitions, see AH.19 and AH.23. For related text, see H.56

**Table N7a. Mean levels of IGF-1 (nmol/l), by age group and gender: wave 9**

| | Age group in 2018–19 | | | | | | | |
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| **Men** | | | | | | | | |
| Mean IGF-1 | 18.13 | 18.01 | 16.30 | 16.32 | 16.16 | 15.65 | 14.55 | 16.61 |
| % in lowest quintile | 7.7 | 9.2 | 14.5 | 21.8 | 16.1 | 27.0 | 43.6 | 18.5 |
| **Women** | | | | | | | | |
| Mean IGF-1 | 17.31 | 15.58 | 15.29 | 14.56 | 14.38 | 13.52 | 13.58 | 15.14 |
| % in lowest quintile | 16.8 | 27.7 | 24.7 | 34.3 | 34.4 | 42.2 | 41.7 | 30.3 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *247* | *76* | *76* | *193* | *186* | *115* | *101* | *994* |
| *Women* | *333* | *83* | *93* | *280* | *250* | *128* | *139* | *1,306* |

For variable definitions, see AH.23. For related text, see H.57

**Table N7b. Mean levels of IGF-1 (nmol/l), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| **Men** | | | | | | |
| Mean IGF-1 | 16.73 | 16.23 | 16.52 | 16.57 | 16.89 | 16.61 |
| % in lowest quintile | 17.7 | 21.0 | 22.5 | 18.3 | 13.9 | 18.6 |
| **Women** | | | | | | |
| Mean IGF-1 | 15.18 | 14.77 | 15.07 | 15.19 | 15.43 | 15.14 |
| % in lowest quintile | 33.2 | 29.2 | 29.5 | 35.9 | 24.1 | 30.4 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *198* | *162* | *209* | *208* | *202* | *979* |
| *Women* | *292* | *291* | *251* | *223* | *228* | *1,285* |

For variable definitions, see AH.19 and AH.23. For related text, see H.58

**Table N8a. Mean levels of vitamin D (nmol/l), by age group and gender: wave 9**

| | Age group in 2018–19 | | | | | | | |
| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Men | 47.70 | 49.89 | 51.32 | 51.30 | 58.71 | 52.02 | 53.89 | 52.02 |
| Women | 54.29 | 49.57 | 55.53 | 54.24 | 53.42 | 53.27 | 50.60 | 53.41 |
| | | | | | | | | |
| *Unweighted N* | | | | | | | | |
| *Men* | *247* | *76* | *76* | *193* | *185* | *115* | *101* | *993* |
| *Women* | *334* | *83* | *93* | *279* | *250* | *128* | *139* | *1,306* |

For variable definitions, see AH.23. For related text, see H.59

**Table N8b. Mean levels of vitamin D (nmol/l), by wealth group and gender: wave 9**

| | Wealth group in 2018–19 | | | | | |
| | Lowest | 2nd | 3rd | 4th | Highest | All |
| --- | --- | --- | --- | --- | --- | --- |
| Men | 46.38 | 51.77 | 52.85 | 56.64 | 52.36 | 52.02 |
| Women | 48.02 | 54.13 | 53.04 | 54.75 | 58.95 | 53.41 |
| | | | | | | |
| *Unweighted N* | | | | | | |
| *Men* | *198* | *162* | *209* | *207* | *202* | *978* |
| *Women* | *291* | *292* | *251* | *223* | *228* | *1,285* |

For variable definitions, see AH.19 and AH.23. For related text, see H.60

**Table N9a. Mean grip strength (kg), by age group and gender: wave 9**

| | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80+ | All |
|---|---|---|---|---|---|---|---|---|
| | **Age group in 2018–19** | | | | | | | |
| Men | 42.64 | 41.10 | 38.97 | 38.44 | 36.13 | 31.78 | 27.92 | 37.04 |
| Women | 26.02 | 24.99 | 23.51 | 23.08 | 21.28 | 19.20 | 16.45 | 22.35 |
| *Unweighted N* | | | | | | | | |
| *Men* | *294* | *88* | *91* | *242* | *246* | *165* | *156* | *1,282* |
| *Women* | *400* | *104* | *119* | *350* | *307* | *172* | *214* | *1,666* |

For variable definitions, see AH.24. For related text, see H.61

**Table N9b. Mean grip strength (kg), by wealth group and gender: wave 9**

| | Lowest | 2nd | 3rd | 4th | Highest | All |
|---|---|---|---|---|---|---|
| | **Wealth group in 2018–19** | | | | | |
| Men | 37.29 | 34.79 | 36.54 | 37.35 | 38.68 | 37.04 |
| Women | 21.29 | 21.29 | 22.31 | 23.34 | 24.22 | 22.35 |
| *Unweighted N* | | | | | | |
| *Men* | *271* | *211* | *259* | *255* | *265* | *1,261* |
| *Women* | *371* | *380* | *317* | *282* | *286* | *1,636* |

For variable definitions, see AH.19 and AH.24. For related text, see H.62