



Wealth in Great Britain

**Main Results from the Wealth and Assets Survey:
2008/10**

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Editor: **Ole Black**

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This Office for National Statistics publication draws on information provided by individuals in the randomly selected private dwellings in Great Britain. As participation in the survey was voluntary their continued cooperation was very much appreciated; without it, the wide range of statistics published by the Office for National Statistics would not be available. The valuable conceptual and methodological contributions made by members of the survey Technical Group were also greatly appreciated as were the ongoing efforts of the panel of ONS interviewers. All information received by the Office for National Statistics from the survey was treated in strict confidence as required by the National Statistics Code of Practice Protocol on Data Access and Confidentiality.

Symbols and Conventions

Online availability of results For the web version of this report users can access the data used to create the figures and tables by clicking on any figure or chart. This will access a spreadsheet containing the data and any additional information relevant to the figure or table.

Rounding and accuracy Figures presented in the analytical text and tables of this report have been rounded and discrepancies may occur between sums of the component items and totals. This will also occur where variables allow more than one response to be reported. Published percentages were calculated prior to rounding and therefore discrepancies may also exist between these percentages and those that could be calculated from the rounded figures.

Billion This represents one thousand million

Trillion This represents one million million

Symbols The following symbols have been used in tables:

- .. not available or suppressed due to possible disclosure or not of publishable quality
- .
- negligible (less than half the final digit shown)
- 0 nil

Chapter 1

Introduction

Introduction

Wealth is an important component of the economic well-being of households, as a household's resources can be influenced by its stock of wealth. However, data on wealth is sparse and consequently measures of household income are often used as the sole gauge of economic well-being. The increase in home ownership, the move from traditional roles and working patterns, a higher proportion of the population now owning shares and contributing to investment schemes as well as the accumulation of wealth over the life cycle, particularly through pension participation, have all contributed to the changing composition of wealth. To understand the economic well-being of households it is increasingly necessary to look further than a simple measure of household income.

The Wealth and Assets Survey (WAS) is a longitudinal household survey, which aims to address gaps identified in data about the economic well-being of households by gathering information on, among other things, level of savings and debt, saving for retirement, how wealth is distributed among households and factors that affect financial planning.

Background

It has long been recognised that there was a need for data on household or individual wealth. The WAS is the culmination of studies and developments over a number of years.

There have been a number of previous investigations into collecting data about personal wealth, for example a series of savings surveys conducted in the 1950s and early 1960s for the University of Oxford. These were, however, not comprehensive enough to define net personal wealth and, therefore, further feasibility work was undertaken.

Studies carried out in 1976 and 1977 by the Office of Population Censuses and Surveys (OPCS) concluded that the response rate to a national wealth survey would be unacceptably low. The indications were that non-response would be higher among those groups with higher incomes and substantial investment income. This confirmed the findings from earlier work and international studies.

Since the 1970s there have been a number of developments, and a number of surveys have been undertaken which collected some relevant data. These surveys include:

- The [Family Resources Survey \(FRS\)](#) commenced in 1992 and was designed to provide a comprehensive picture of income levels, with some details on assets and savings.
- An inheritance trailer on the General Household Survey (GHS) was carried out in 1989/90 and 1990/91, which asked respondents about any inheritances they had received in the previous ten years focusing principally on property. Similar questions were also commissioned as part of the 1994 GHS.

- In 1995 the Joseph Rowntree Foundation published the report from its 'Inquiry Group on Income and Wealth' and this was updated by a further report in March 1998 (Income and Wealth the Latest Evidence). These reports concentrated on using the ['Households Below Average Income'](#) series (using data from the [Family and Expenditure Survey \(FES\)](#) and also the [British Household Panel Survey \(BHPS\)](#)).
- Until 2004 HMRC published estimates of wealth using data collected on the estates of the deceased to produce a series of National Statistics tables with estimates of the composition and distribution of wealth. Their data sources have very little information on the less wealthy half of the population.
- The [English Longitudinal Survey of Ageing \(ELSA\)](#), which commenced in March 2002, included some questions on wealth and assets including pensions. Information is collected from a representative sample of the English population aged 50 and over only.

The current survey

Development of the current survey commenced in June 2000 when ONS brought together interested parties throughout government to consider the needs of a survey and to consider, again, the feasibility of such a survey. This feasibility study concluded that a survey, gathering information about household and individual wealth, was feasible. Following this a group of departments agreed to form a consortium to fund the survey which would be carried out by ONS. The first wave of the survey commenced in July 2006 and ran for two years until June 2008. The second wave started in July 2008 and also ran for two years, finishing in June 2010.

The WAS is unique in its coverage, both in terms of the comprehensive coverage of assets, debts and savings, attitudes towards debt and savings – particularly for retirement – and the characteristics of households, but also in its coverage of all persons living in private households in Great Britain.

The survey is large and complex and much of the data collected is of a sensitive nature. It is sometimes difficult for respondents to reply. Nevertheless the results from WAS have already proved to be very valuable both within and outside government, informing policy decisions and contributing to the wider debates on topics including, pensions, well-being and social exclusion.

This report

Wealth in Great Britain: Main Results from the Wealth and Assets Survey 2008/10, which includes results from the second wave of the WAS will be published over a number of months, as data become available. This is the first part of the publication which focuses on the cross sectional change between wave 1 and wave 2 household property wealth and

household physical wealth. Further cross-sectional data on other aspects of wealth (household financial wealth and individual and household pension wealth) will be published as they become available in 2012. The final part of the publication will concentrate on unpacking the changes between the cross sectional estimates by undertaking longitudinal analysis. Longitudinal analysis will focus on individual change but will take into account household changes in wealth. Additional analysis will establish the relationship between the various dimensions of wealth and the relationship of wealth with characteristics of individuals within households.

Technical details

Chapter 4 gives some technical details about the survey and the processing of the survey data. Some key points are given below:

The Survey

- The WAS samples the population of private households in Great Britain.
- The first wave of the WAS commenced in July 2006 and lasted for two years, ending in June 2008. The main results from this wave of the survey were published in *Wealth in Great Britain, 2006/08*².
- The second wave of the survey commenced in July 2008 and ran until the end of June 2010.
- The second wave returned to responding households from wave 1 who gave their permission to be re-interviewed. In addition, households who were eligible at wave 1 but could not be contacted were approached again at wave 2³.
- Data were collected in the field by Computer Assisted Personal interviewing (CAPI).
- The WAS questionnaire was divided into two parts, a household questionnaire completed by one person in each household and an individual questionnaire addressed to all adults aged 16 years and over (excluding those aged 16 to 18 currently in full-time education or those aged 19 and in government training scheme).

Challenges:

- As the wave 2 data is the first to allow longitudinal analysis, much effort has gone into considering the quality of the data.
- Additional longitudinal editing was introduced at wave 2, using information gathered at wave 1 to validate the wave 2 data, but also looking at the wave 1 data in the light of data given at wave 2.

² *Wealth in Great Britain: Main Results from the Wealth and Assets Survey 2006–08*.
Published 10 December 2009.

³ See Technical details on page 42

- In any sample survey, there will always be missing values for individual questions. However, when constructing estimates of wealth it is necessary that valid responses have been given to all the component estimates. Therefore, any missing values are imputed. The imputation methodology was improved with wave 2 to take into account the information gathered at both waves.
- Where possible the aggregate data has been subject to comparative checks against external sources.
- No estimates are included which are based on fewer than 30 responding households. However, due to the complexity of the data (imputed values, complex weighting etc) no formal significance testing has been undertaken at this stage, though this will be covered in later chapters.
- The WAS is a particularly long survey, taking on average some 90 minutes to be completed for each household. In 2006/08 (wave 1), it was decided that some questions would be addressed to a sub-sample of respondents: 17,316 households (56.6 per cent of the full sample of 30,595 households). This became known as the 'half sample'. Some components of physical wealth were included in the topics addressed to the 'half sample'. Therefore, the wave 1 estimates of physical wealth in this report are based on the half sample of households. In wave 2, such questions were addressed to all households. See chapter 3, Physical Wealth for further details.

Revision of Wave 1 Data

Wave 1 data, 2006/08, published in this report differ slightly from those previously published, mainly due to re-imputation. See chapter 4, Technical details.

All the above issues were reviewed as part of the process to improve this and subsequent waves of the survey.

Some of the results presented in this report are closely related to other statistical information published as National Statistics. There are many reasons why statistics published elsewhere could be expected to differ from those in this report. These include: sampling variability, different estimation methods, different geographical coverage, different population coverage and different measurement units.

Availability of detailed and unpublished data

The tables and charts in this report provide summary results. Each of these is linked to a spreadsheet giving the source data, and often more detailed results. The spreadsheets can be accessed by clicking on the table or chart. It is also possible to request data from the wave 1 dataset in tabular form from ONS. Contact wealth.and.assets.survey@ons.gov.uk

The wave 2 dataset will be made publicly available via the UK Data Archive after the final part of this report is published in mid-2012. At that time a revised version of the wave 1 dataset will also be archived, which will include revised edited and imputed data.

Demographic Characteristics of the Sample

Part 1 of the report covers property and physical wealth at a household level only. For each of these, the distribution of wealth has been considered by key household socio-demographic characteristics: region of residence and household type. In the report on wave 1 data, the distribution of wealth was also considered across some characteristics of the Household Reference Person (HRP)⁴, but when looking at wave 2 of the survey, it became clear that the HRP can change more frequently than perhaps originally thought⁵. Therefore characteristics such as age, employment status, qualifications and socio-economic activity will be considered during analysis of longitudinal data, which can take these changes into account.

The following section, however, presents some demographic data to 'describe' the WAS wave 2 sample.

In wave 2, 20,170 households agreed to take part in the survey, encompassing 46,347 individuals. Only adults aged 16 or older were interviewed giving a final achieved sample of 37,600.

Region of Residence

Table 1 shows the distribution of the WAS sample of individuals and households by region of residence, that is the region of a households' main residence. The achieved sample varied in terms of the proportion of respondents in the different regions, for example 13.9 per cent of the achieved sample lived in the South East compared with only 4.7 per cent in the North East. The differences between regions will in part be a reflection of regional variations in response.

Household Type

Table 2 shows the distribution of households by household type. The largest group were those households with married/cohabiting adults with dependent children (19.6 per cent) and the smallest was those households with a lone parent and non-dependent children (2.9 per cent).

⁴ See Glossary for details

⁵ The HRP (household reference person) had changed between waves in nearly one eighth of households who responded in both wave1 and wave 2 of the survey. This can occur for a number of reasons, for example if the main income earner changes, households split or, new adults join a household.

Table 1
The WAS sample: by region of residence, 2008/10

Great Britain

Individuals 16+			Households		
Region of residence ¹	Frequency	Percentages	Region of residence ¹	Frequency	Percentages
North East	1,785	4.7	North East	960	4.8
North West	4,321	11.5	North West	2,336	11.6
Yorkshire & the Humber	3,481	9.3	Yorkshire & the Humber	1,902	9.4
East Midlands	3,223	8.6	East Midlands	1,684	8.3
West Midlands	3,387	9.0	West Midlands	1,800	8.9
East of England	3,786	10.1	East of England	2,022	10.0
London	3,555	9.5	London	1,890	9.4
South East	5,220	13.9	South East	2,761	13.7
South West	3,126	8.3	South West	1,703	8.4
England	31,884	84.8	England	17,058	84.6
Wales	2,085	5.5	Wales	1,117	5.5
Scotland	3,631	9.7	Scotland	1,995	9.9
Great Britain	37,600	100.0	Great Britain	20,170	100.0

1 The region in which respondents main residence lies.

Table 2
The WAS sample: by household type, 2008/10

Great Britain

Households		
Household Type	Frequency	Percentages
Single HHold, over SPA	3,281	16.3
Single HHold, under SPA	2,574	12.8
Married/Cohabiting both over SPA, no children	2,938	14.6
Married/Cohabiting both under SPA, no children	2,538	12.6
Married/Cohabiting 1 over, 1 under SPA, no children	958	4.7
Married/Cohabiting, dependent children	3,958	19.6
Married/Cohabiting, non-dependent children only	1,124	5.6
Lone parent, dependent children	1,313	6.5
Lone parent, non-dependent children	576	2.9
2 or more families/Other HHold type	910	4.5
All households	20,170	100.0

Chapter 2

Property Wealth

Summary

- The property values presented here are based on people's perception of how much their property is worth. In general, people will overestimate the value of their houses and respondents to the survey did not appear to perceive as large a fall in the value of their property as the actual changes that took place in the property market over this period.¹
- Total net property wealth for all private household in Great Britain dropped by over £131 billion (3.7 per cent) between 2006/08 and 2008/10 to £3,375 billion.
- Based on households' perceived valuations, there was a 3.1 per cent fall in the mean *gross* value of all property owned by households between 2006/08 and 2008/10. There was a 3.3 per cent fall in mean *gross* value of main residence and a 7.4 per cent fall in the mean for other property (based on a much smaller number of households and, therefore, having little effect on the mean estimates for all property).
- The largest decline in mean *net* property wealth for home owners was seen in households that were 'Couples with dependent children', decreasing by 12.4 per cent, compared to the average fall of 4.6 per cent seen for all property owning households.
- The mean *net* property wealth for property owning households in the regions of the North East, Wales and the North West showed the largest decrease, declining by 9 per cent. There was no substantial change in *net* property wealth perceived by property owning households in the South West and Scotland.

Introduction

This chapter looks at estimates of household property wealth from the Wealth and Assets Survey (WAS). New data from the second wave of the survey is presented alongside revised estimates from the first wave²

Property Wealth is comprised of the value of the main residence for a household and the value of any additional property or properties owned by the household. The gross value of household property and the value of mortgages (liabilities) are presented at the beginning of the chapter, and then combined to report on net property wealth (gross assets minus liabilities). This is followed by an analysis of net property wealth according to region of residence and household type.

The data presented in this chapter are cross-sectional estimates for wave 1 (July 2006 - June 2008) and wave 2 (July 2008 - June 2010). The wave 1 estimates therefore include some responding households who chose not to take part at the second wave, and the wave 2 results include some households who were not in the wave 1 sample.

¹ See Box 7 on page 24, which compares WAS data with independent sources of house prices data

² *Wealth in Great Britain: Main Results from the Wealth and Assets Survey 2006-08.*

Published 10 December 2009. The wave 1 data has since been updated, and revised data should be used where available.

Box 1: The UK Housing Market over time**Figure A**
House prices since 1953¹

UK

Mean £



1 Quarterly house prices are available from 1953 from Nationwide - other sources considered do not have such long series. The methodology used by Nationwide has undergone continuous development since 1952 and this has to be considered when interpreting time series in house prices. Developments included several updating of weights and the introduction of a mix-adjustment process. For more details, see <http://www.nationwide.co.uk/hpi/methodology.htm>.

Source: Nationwide

As **Figure A** shows, since the 1950s the housing market has been characterised by two sustained periods of rapid increase (in the 1980s, and between the mid 1990s and the late 2000s) and two shorter periods of decrease (beginning in 1990 and in 2008). The data used for figure A are nominal house prices that have not been adjusted for inflation (source: Nationwide). Nonetheless, during the two boom periods in the housing market, the growth rate outstripped rates of inflation.

The UK Housing Market Boom during the 2000s

This increase in house price, which began around the mid 1990s, continued throughout much of the 2000s (see Figure A). There were several reasons for this prolonged period of price rises in the housing market. Up until 2008, the UK experienced strong economic growth and consumer confidence. Mortgages were also readily available as banks offered competitive interest rates and high loan-to-value (95% to 100%) mortgages to their customers. As a result, people from a wide range of income levels were able to obtain a mortgage to purchase their homes. The high demand for housing, coupled with a relatively low housing supply, pushed up house prices, which peaked in Q3 2007 at £184,000. (See Technical Notes on page 25, explaining how these typical house prices are derived).

The UK Housing Market from 2008

Following the peak in 2007, the UK housing market experienced a decline throughout 2008 and including Q1 2009. As with the boom, there were several reasons for the housing market decline. One of the most significant factors was the credit crisis, during which banks were unable to lend due to a sudden shortage of funds (see Endnote 1 on page 25). The reluctance of banks to lend meant that mortgages were not as readily available. Additionally, the boom prior to 2007 has resulted in an inflated house-prices-to-earnings ratio. Both of these factors meant that it became more difficult for first-time buyers to purchase a home. The uncertainty within the housing market might have also led to buy-to-let investors leaving the housing market (see Endnote 2 on page 25), which further dampened demand, and therefore house prices. From Q2 2009, house prices started rising again until Q2 2010, since when the market has been a little more volatile.

The second wave of the survey commenced shortly after the start of the 2008/09 recession, so some comparisons have been made with various other sources of data to consider whether the estimates from the WAS show a similar trend in property values to these other sources. These data can also give some background into the housing market prior to the recession (see Box 1).

The tables and charts included provide summary results. Each of these is linked to a spreadsheet giving the source data, and often more detailed results. On occasions, the text refers to estimates which are available in these background tables as opposed to the summary tables and charts.

Box 2: Collection and presentation of data

Property wealth estimates are derived from respondents' own valuations of their property. With respect to a household's main residence, if the property is either owned outright, owned with a mortgage or part owned/part rented, respondents are first asked to estimate the value of this property. This is asked of the respondent answering the household questionnaire. If this respondent is unable to estimate a precise value, then they are offered a choice of banded values. With respect to other property, each adult in a household is asked about any property they own and the value of their share of that property. Once again if precise estimates cannot be given, then respondents are asked to estimate the band in which the value of their property would lie.

The precise values of these banded responses are later imputed, based on the distribution of the precise values obtained from other respondents. It is therefore statistically valid to consider mean and median values using both precise and imputed data. In addition some of the property wealth estimates have been presented using banded values. The bands used in these tables are based on the stamp duty thresholds which tend to influence house prices.

Property ownership

Home ownership

Table 1 presents estimates of ownership of main residence in 2006/08 and 2008/10. This shows that just over two-thirds of households interviewed in each wave owned their own residence (or were buying it with a mortgage). Around one-third of households were renting their main property. These figures are very similar to those of other sources of data for property ownership rates³.

Between wave1 and wave 2, there has been little change in the proportion of households either owning, or renting their home. However, the proportion of households who owned their home outright increased slightly with a similar fall in the proportion who were buying their home with a mortgage.

³ The corresponding property ownership rate from the Family Resources Survey for 2008/09 was 69 per cent and for 2009/10 was 68 per cent.

Table 1
Ownership of main residence, 2006/08, 2008/10

Great Britain	Percentages	
	2006/08	2008/10
Not owned (rent or rent free)	31.8	31.5
Owned	68.2	68.5
of which owned outright	30.1	30.9
of which owned with mortgage	37.7	37.2
of which part owned part rent	0.4	0.4
All Households	100.0	100.0

Source: *Wealth and Assets Survey, Office for National Statistics*

Table 1, like other tables in this chapter, compares two cross sectional estimates. The actual changes occurring are more complex, with the composition of households changing over time due to, for example, separation and divorce, young adults moving into or out of education etc. This will be considered in detail when the longitudinal data are analysed and published at a later date.

Ownership of other property

Some households own a property or properties other than their main residence. As seen in Table 2, there was a small increase in the proportion of households who owned some form of other property from 9.6 per cent in 2006/08 to 10.1 per cent in 2008/10.

Table 2
Ownership of other property, 2006/08, 2008/10

Great Britain	Percentages	
	2006/08	2008/10
Other houses/flats in UK ¹	6.1	N/A
Second Homes	N/A	3.1
Buy-to-lets	N/A	3.6
Other buildings	0.7	0.9
Land in the UK	0.8	0.8
Land or property overseas	3.0	2.9
All Property²	9.6	10.1

- 1 In wave 1 respondents were only offered the category 'Other houses/flats in the UK', second homes and buy-to-lets were not specifically mentioned or separately identified.
- 2 Households may own more than one type of other property therefore the columns will not add up. Also includes a number of households who owned other property but did not specify the type.

Source: *Wealth and Assets Survey, Office for National Statistics*

In wave 2 of the survey, second homes and buy-to-let properties were separately identified (as opposed to wave 1, where only one category 'Other houses/flats or a holiday home in the UK' was offered and would have included both second homes and buy-to-lets). In 2008/10, 3.1 per cent of households reported having a second home (including time shares and holiday homes) and 3.6 per cent of households reported owning buy-to-let property.

Box 3: Property Valuation comparisons

There are a number of sources of data for the valuation of properties. While it is important to compare the WAS data with these other sources, it has to be remembered that they are derived in very different ways. In particular the WAS estimates gross value of main residence are based on self-valuation. (See Technical notes on page 25.)

Table B

Value of main residence: by dwelling type, 2006/08, 2008/10

Great Britain

£

	2006/08	2008/10
Detached		
Land Registry	267,000	249,000
Halifax	324,000	282,000
Nationwide	244,000	224,000
WAS	327,000	317,000
Semi Detached		
Land Registry	167,000	152,000
Halifax	198,000	166,000
Nationwide	174,000	156,000
WAS	202,000	195,000
Terraced		
Land Registry	138,000	124,000
Halifax	184,000	148,000
Nationwide	148,000	131,000
WAS	178,000	178,000
Flat		
Land Registry	167,000	150,000
Halifax	189,000	154,000
Nationwide	135,000	121,000
WAS	173,000	162,000

Table B shows the average house price values produced from WAS and three other data sources, for the time periods equivalent to wave 1 and wave 2 of WAS. These figures are broken down by type of property.

The values derived from these external sources vary considerably, with the Halifax data being consistently higher than both the Land Registry and Nationwide. While, in 2006/08 WAS results are very similar to or lower than the Halifax estimates, WAS is consistently higher than all three sources in 2008/10. This indicates that households tend to overestimate the value of their property, and moreover, may not adjust their valuation in line with the market, particularly in times of falling house prices.

While the perceived value of property may lead to an over-estimate of property wealth compared with market price indicators, it is nonetheless a useful indicator. It is the perceived value that may be influencing the behaviour of households with respect to their property assets as well as their other assets such as financial, pensions and, to a lesser extent, their physical wealth. The relationship between the different assets and the attitudes and behaviour of individuals within households

will be further considered in chapters to be published at a later date.

Box 4: Quarterly Estimates

Figure C shows quarterly estimates for the mean and median values of all property owned for each quarter in the second wave of WAS. This shows, that in the first year of this wave, households were reducing their own valuations of their property, but when the market started to pick up slightly in 2010, households were probably being more optimistic.

Figure C
Quarterly estimates of household gross property wealth

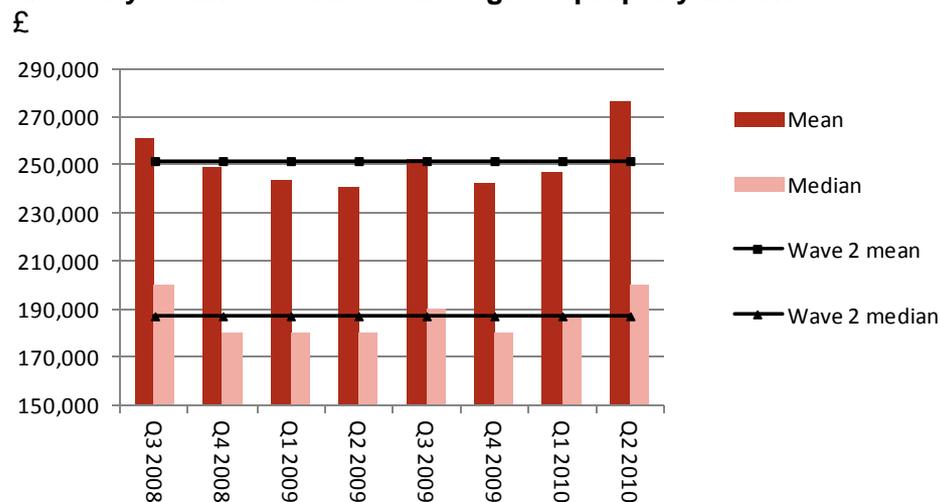
**Household gross property wealth**

Table 3 shows summary statistics for gross property wealth. It presents figures for the mean, median, upper quartile and lower quartile.

Table 3
Household gross property wealth¹: summary statistics, 2006/08, 2008/10

Great Britain

£

	Mean		1st Quartile		Median		3rd Quartile	
	2006/08	2008/10	2006/08	2008/10	2006/08	2008/10	2006/08	2008/10
Main Residence ²	231,000	224,000	135,000	130,000	190,000	180,000	275,000	260,000
Other Property ³	246,000	228,000	50,000	60,000	124,000	130,000	250,000	250,000
All Property	260,000	252,000	135,000	130,000	196,000	190,000	297,000	286,000

1 Results are for 'property owners' and so exclude zeros (households that do not own any property).

2 Owners of main residence only.

3 Owners of any other property only.

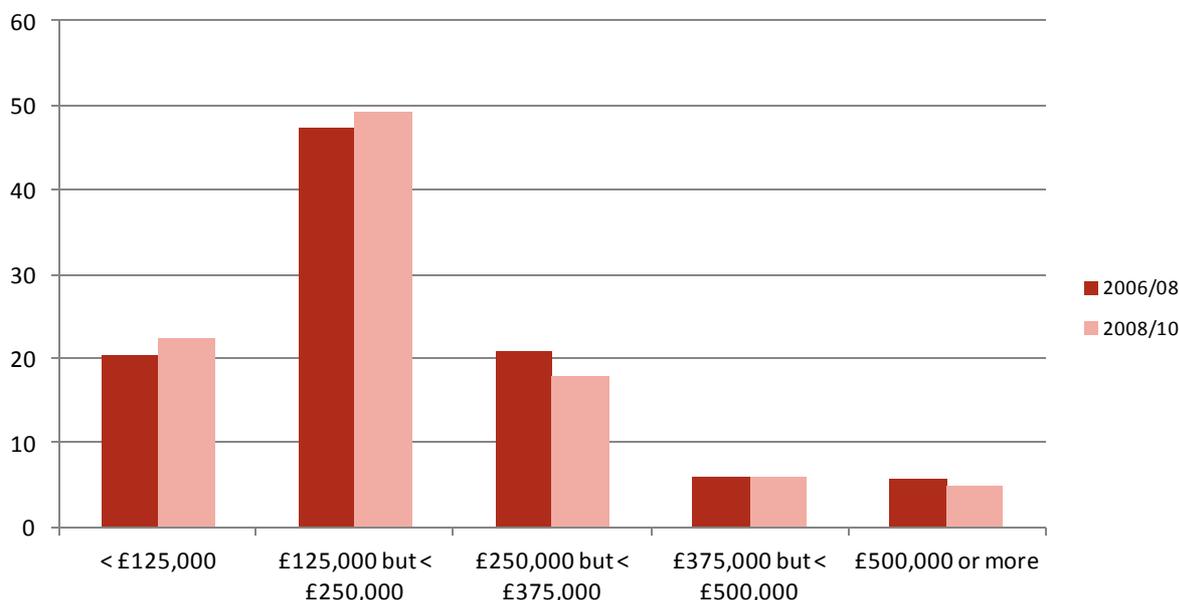
Source: *Wealth and Assets Survey, Office for National Statistics*

Household gross property wealth fell between 2006/08 and 2008/10. In 2006/08, half of all households who owned their *main residence* valued their home at £190,000 or more, with a corresponding value of £180,000 in 2008/10. The mean values for this group decreased from £231,000 in 2006/08 to £224,000 in 2008/10.

Figure 4 shows the percentage of property owners of main residence in each of five property value bands⁴. The percentage of property owners in the two lower bands increased by 4.0 percentage points between 2006/08 and 2008/10 with a total of 67.5 per cent of households valuing their main residence under £250,000 in 2006/08 compared to 71.4 per cent in 2008/10. Conversely, the percentage of property owners who valued their home at '£250,000 or more' decreased by 4.0 percentage points, from 32.5 per cent in 2006/08 to 28.6 per cent in 2008/10. Most of this decrease was in the percentage of properties valued between '£250,000 but less than £375,000', which fell by 3.0 percentage points between 2006/08 and 2008/10. One reason for these movements could be associated with stamp duty thresholds. Properties, which may have previously been considered above the threshold price, may be offered at a price below the threshold value in order to attract buyers.

Figure 4
Owners¹ of main residence: by property value bands, 2006/08, 2008/10

Great Britain
Per cent



1 Results for 'property owners' exclude zeros (households that do not own any property)

Source: *Wealth and Assets Survey, Office for National Statistics*

⁴ The bands used in this table have breaks at stamp duty thresholds (Stamp Duty Land Tax), a tax paid by house buyers which varies depending on the price of the property. These thresholds change at £125,000, £250,000, £500,000 and £1 million, although this upper band is not used as the sample size would be small.

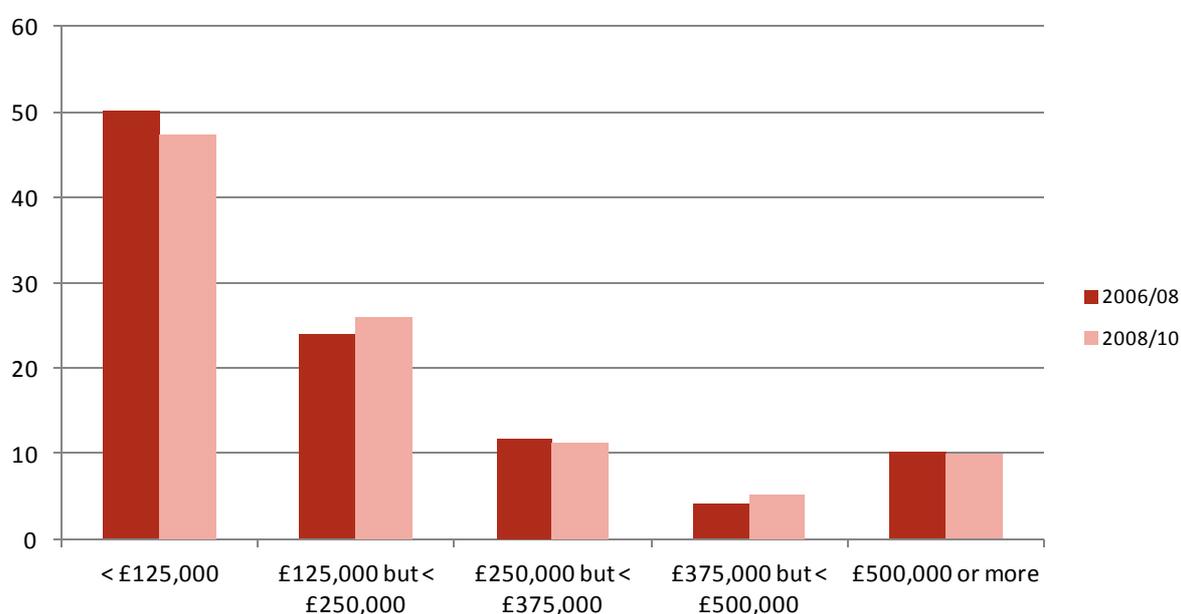
Table 3 shows that the mean value of property other than main residence decreased more steeply from £246,000 in 2006/08 to £228,000 in 2008/10. However, there was an increase in the median values, with half of all households who owned other property valuing this at £124,000 or more in 2006/08 compared to £130,000 or more in 2008/10. The different direction of these changes can be explained by the different effects that changes to the distribution of property values have on these average estimates. Looking in more detail at the value of other property for households in the top band of '£500,000 or more', while there has been virtually no change to the proportion of households in this group, the mean value within this band has fallen from £1.23m in 2006/08 to £1.01m in 2008/10, this may cause the mean to fall but with no effect on the median. Looking at the change in the median, there was a 2.6 percentage point drop in the number of households with other property valued at 'less than £125,000' with a slightly smaller increase in the next band '£125,000 but less than £250,000'; this could in part explain the increase in the median.

Box 5: Other Property

It should be noted that 'other property' includes property types with a wide range of values compared to values of main residence e.g. timeshare, land plots, garages etc. The propensity to buy and sell this lower valued property may be higher than that for the higher valued property types, irrespective of the market at the time. Therefore values might be more subject to change between waves.

Figure 5
Owners¹ of other property; by property value bands, 2006/08, 2008/10

Great Britain
Per cent



¹ Results for 'property owners' exclude zeros (households that do not own any property)

Source: *Wealth and Assets Survey, Office for National Statistics*

If the values of all property owned, including both main residence and any other property owned are considered, half of all households owning property had a gross property wealth of £196,000 or more in 2006/08 and £190,000 more in 2008/10. The mean values of gross property wealth for households owning property was £260,000 in 2006/08 and £252,000 in 2008/10.

Mortgage debt

The survey asked households about mortgages (including all-in-one accounts). The results show that:

- The percentage of households who had a mortgage on their main residence was 38.2 per cent in 2006/08 and 37.3 per cent in 2008/10
- The proportion of households who had a mortgage on another property or properties was 3.9 per cent in 2006/08 and 4.2 per cent in 2008/10.

Table 6 shows that for those households which had a mortgage on their main residence, the mean value of their mortgages increased by 5.1 per cent between 2006/08 and 2008/10 (£88,000 to £92,000) with the median value increasing in the same period (£70,000 to £75,000). The median value of mortgages on other property also increased between 2006/08 and 2008/10, from £80,000 to £84,000. The mean values fell slightly from £131,000 in 2006/08 to £129,000 in 2008/10.

Box 6: Mortgage Arrears

It should be noted that the mortgage values reported in Table 6 may not include mortgage arrears. As arrears were not explicitly mentioned in the questionnaire, this could have introduced a downward bias in relation to true mortgage values. On the other hand, the questionnaire did not explicitly ask respondents to exclude any part of the mortgage debt for which members of other households were responsible; this may have introduced a slight upward bias in the estimates.

Table 6

Mortgages^{1,2}: summary statistics, 2006/08, 2008/10

Great Britain

£

	Mean		Median	
	2006/08	2008/10	2006/08	2008/10
Households with mortgage on main property	88,000	92,000	70,000	75,000
Households with mortgage on other property	131,000	129,000	80,000	84,000

1 Households may have one or more mortgages.

2 Results exclude households without this type of asset/liability (zeros).

Source: *Wealth and Assets Survey, Office for National Statistics*

Like other tables in this chapter, Table 6 compares two cross sectional estimates. The actual changes occurring are more complex, with some households paying off mortgages, selling

their properties or starting new mortgages. This will be considered in detail when the longitudinal data are analysed and published at a later date.

The survey also asked about equity release schemes. Equity release is a way of getting cash from the value of a home without having to move out. It is usually restricted to people aged 55 and above. There are two main types of equity release scheme – lifetime mortgages and home reversions. A lifetime mortgage is a loan secured on the home (which is not repayable until the person dies or moves into long-term care); home reversion involves selling all or part of the home to a reversion company in return for cash or a monthly income. Overall, less than 2 per cent of households were involved in equity release schemes in both 2006/08 and 2008/10.

Household net property wealth

This section presents summary estimates for total household net property wealth in Great Britain. This is calculated as the sum of the values recorded for each household for the main residence plus any other property, **minus** the value of mortgage liabilities and equity release for each household.

Table 7 shows the mean and median values for total net property wealth for property owners. In 2006/08, the mean net property wealth for property owners was £204,000, compared to £195,000 in 2008/10, a fall of 4.6 per cent. The medians show that half of property-owning households had net property wealth of £150,000 or less in wave 1 and £148,000 or less in wave 2. The small change in the median values could reflect the fact that there was a greater fall in net property wealth in households with higher value property.

Table 7
Household net property wealth¹, 2006/08, 2008/10

Great Britain	£	
	2006/08	2008/10
Mean per household	204,000	195,000
Median per household	150,000	148,000

1 Results are for 'property owners' and so exclude zeros (households that do not own any property).

Source: *Wealth and Assets Survey, Office for National Statistics*

Table 8 shows the aggregate values for property wealth for all households in Great Britain (i.e. the weighted sum of each property wealth for every household). Based on respondents' estimates of their property value, total net property wealth for the whole of Great Britain fell from £3,506 billion in 2006/08 to £3,375 billion in 2008/10, a fall of 3.7 per cent. This fall was the result of total gross property wealth falling by 2.3 per cent, while total mortgage debt increased by 3.5 per cent.

Table 8
Aggregate estimates of total property wealth, 2006/08, 2008/10

Great Britain	£ billion	
	2006/08	2008/10
Household gross property wealth aggregate	4,460	4,359
Mortgage debt aggregate	947	980
Household net property wealth aggregate	3,506	3,375

Source: *Wealth and Assets Survey, Office for National Statistics*

Household property wealth by key household characteristics

Property wealth by region

Table 9 shows property ownership rates by region of residence. The region with the lowest ownership rate in each of the waves was London, where 58.3 per cent of households owned their main residence and/or other property of some kind in 2006/08 and 61.3 per cent in 2008/10. The region with the highest ownership rate in each of the waves was the South East – where just over three-quarters of households owned their main residence and/or other property of some kind.

Table 9
Household ownership rates: by region of residence, 2006/08, 2008/10

Great Britain

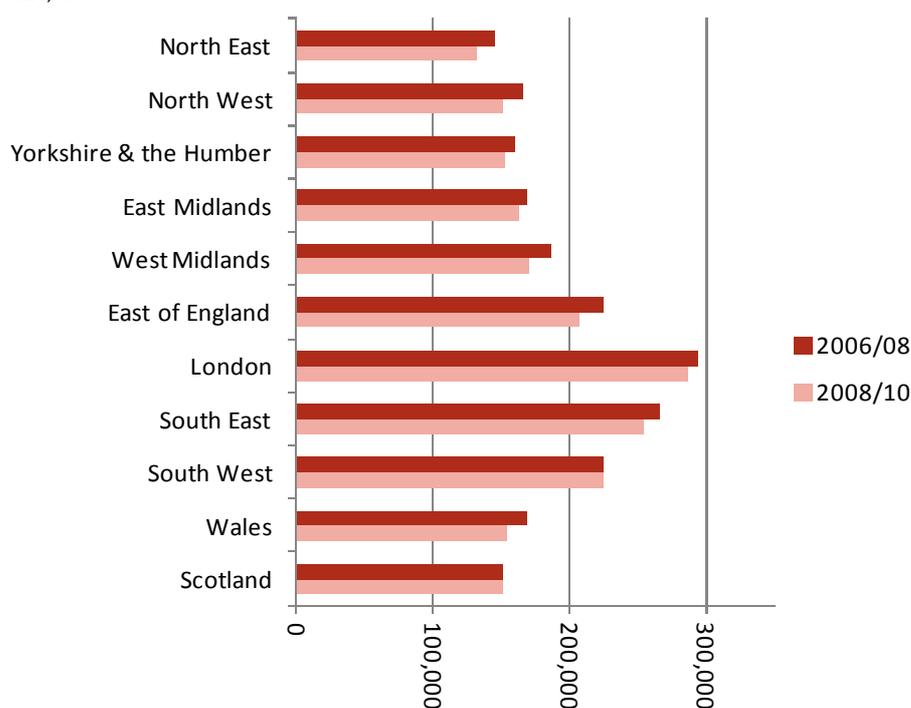
Region	2006/08			2008/10		
	All households (000's)	Property owners ¹ (000's)	Ownership rate (%)	All households (000's)	Property owners ¹ (000's)	Ownership rate (%)
North East	1,084	717	66.1	1,097	710	64.7
North West	2,877	2,009	69.8	2,850	1,993	69.9
Yorkshire & the Humber	2,184	1,529	70.0	2,199	1,542	70.1
East Midlands	1,842	1,340	72.7	1,859	1,336	71.9
West Midlands	2,184	1,528	70.0	2,218	1,590	71.7
East of England	2,334	1,728	74.0	2,367	1,753	74.1
London	2,966	1,728	58.3	2,966	1,819	61.3
South East	3,367	2,527	75.1	3,373	2,535	75.2
South West	2,170	1,601	73.8	2,185	1,586	72.6
All England Regions	21,007	14,707	70.0	21,113	14,864	70.4
Wales	1,289	949	73.6	1,298	936	72.1
Scotland	2,288	1,514	66.2	2,314	1,529	66.1
Great Britain	24,584	17,171	69.8	24,725	17,329	70.1

¹ Excludes households with zero property wealth (households that do not own any property)

Source: *Wealth and Assets Survey, Office for National Statistics*

Figure 10 shows mean net household property wealth for property owners, according to the location of the households' main residence. It shows Scotland, Wales and the eight regions of England (with London shown separately; the figures for the South East exclude London).

Figure 10
Household net property wealth¹: by region of residence, 2006/08 and 2008/10
 Great Britain
 Mean, £



¹ Excludes households with zero property wealth (households that do not own any property)

Source: *Wealth and Assets Survey, Office for National Statistics*

The overall changes observed between 2006/08 and 2008/10 varied across regions, with nine of the eleven regions showing a decrease in the mean value of household net property wealth. In both the South West and Scotland, there was little change between the two waves: the mean net property wealth in the South West was £224,000 in 2006/08 and £225,000 in 2008/10. The mean net property wealth in Scotland was £150,000 in both 2006/08 and 2008/10.

In each of the waves, the wealthiest parts of England in terms of net household property wealth were London and the South East. The mean net property wealth in London decreased from £294,000 in 2006/08 to £287,000 in 2008/10 and in the South East from £266,000 in 2006/08 to £254,000 in 2008/10.

The largest decreases in the mean net property wealth occurred in the North East, Wales and the North West, which showed decreases of 8.8, 8.7 and 8.6 per cent respectively.

The region with the lowest mean net property wealth was the North East, with a mean of £145,000 in 2006/08 and £132,000 in 2008/10.

Property wealth by household type

Table 11 shows property ownership rates by household type. The household type with the lowest ownership rate in each of the waves was 'lone parent, dependent children' where only about a third of households own their main residence and/or other property of some type. The household type with the highest ownership rate in each of the waves was 'Couple 1 over / 1 under SPA⁵, no children' where nearly 88.2 per cent of such households own property.

Table 11
Household ownership rates: by household type, 2006/08, 2008/10
Great Britain

Household type	2006/08			2008/10		
	All households	Property owners ¹	Ownership rate (%)	All households	Property owners ¹	Ownership rate (%)
Single household, over SPA ²	3,454	2,176	63.0	3,651	2,315	63.4
Single household, under SPA ²	3,580	2,057	57.5	3,462	1,908	55.1
Couple both over SPA ² , no children	2,484	2,098	84.5	2,490	2,136	85.8
Couple both under SPA ² , no children	3,669	2,962	80.7	3,168	2,571	81.2
Couple 1 over/ 1 under SPA ² , no children	838	739	88.2	850	756	88.9
Couple, dependent children	5,312	4,176	78.6	5,493	4,302	78.3
Couple, non-dependent children	1,343	1,163	86.6	1,724	1,476	85.6
Lone parent, dependent children	1,708	584	34.2	1,669	534	32.0
Lone parent, non-dependent children	1,060	580	54.7	920	516	56.1
2 + households/other household type	1,136	635	55.9	1,299	814	62.7

1 Excludes households with zero property wealth (households that do not own any property)

2 SPA is State Pension Age (65 for men and 60 for women).

Source: *Wealth and Assets Survey, Office for National Statistics*

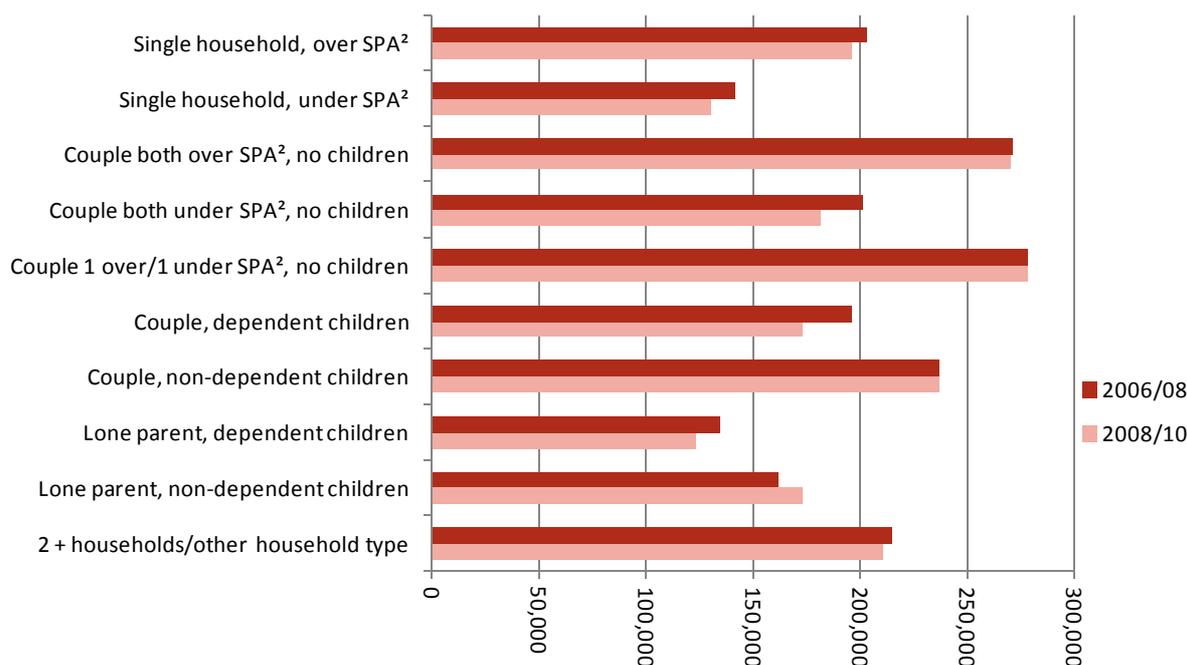
Figure 12 shows net household property wealth according to household composition, for property owners only. It shows the ten different categories of household type.

Older couples with no children had the highest average net property wealth in each of the waves: 'Couple 1 over/ 1 under SPA, no children', had mean net property wealth of £278,000 in 2006/08 and 2008/10. 'Couple both over SPA, no children' had means of £271,000 in 2006/08 and £270,000 in 2008/10. Half of all property owning households in the category 'Couple 1 over/ 1 under SPA, no children' had a net property wealth of £205,000 or more in 2006/08 and £200,000 in 2008/10; and half of all property owning households in the category 'Couple both over SPA, no children' had a net property wealth of £200,000 or more in both 2006/08 and 2008/10. These figures reflect the fact that households who own property and are composed of older people may have higher net property values as a result of having repaid the majority of their mortgage.

⁵ State Pension Age – the age at which an individual can draw their state pension. The same definition of SPA has been used for the whole of both waves of WAS i.e. SPA for men is 65 and SPA for women 60. SPA started to change for women in April 2010, with SPA increasing monthly so that by November 2018 women's SPA will be the same as that for men, 65. SPA will be increased for both men and women to 66 by October 2020, with further increases announced by the government but not yet approved by parliament.

The types of household with the lowest mean net property wealth in both waves were the 'Lone parent, dependent children', with means of £134,000 in 2006/08 and £123,000 in 2008/10 and 'Single household, under SPA' with means of £141,000 in 2006/08 and £130,000 in 2008/10.

Figure 12
Household net property wealth¹: by household type, 2006/08 and 2008/10
 Great Britain
 Mean, £



1 Excludes households with zero property wealth (households that do not own any property)

2 SPA is State Pension Age (65 for men and 60 for women).

Source: *Wealth and Assets Survey, Office for National Statistics*

The only household type that saw a notable increase in net property wealth was 'Lone parent, non-dependent children' where the mean increased from £162,000 in 2006/08 to £173,000 in 2008/10, with the median values also increasing from £130,000 in 2006/08 to £140,000 in 2008/10.

The largest decline in net property wealth was seen in the 'Couple, dependent children' household type. The mean value of net property wealth for property owners in this group was £196,000 in 2006/08 reducing by some 12.4 per cent to £173,000 in 2008/10.

Box 7: Comparing regions

Table D compares the mean values of gross property wealth from the WAS with regional estimates from the Halifax. (see Endnote 3 on page 25)

Table D
Property values by region

	Halifax		WAS	
	2006/08	2008/10	2006/08	2008/10
North East	149,000	129,000	145,000	132,000
North West	151,000	127,000	165,000	151,000
Yorkshire & the Humber	144,000	123,000	159,000	152,000
East Midlands	162,000	138,000	170,000	161,000
West Midlands	177,000	154,000	186,000	170,000
East of England	188,000	162,000	225,000	206,000
London	298,000	255,000	295,000	289,000
South East	251,000	220,000	266,000	253,000
South West	206,000	181,000	224,000	225,000
Wales	162,000	135,000	170,000	155,000
Scotland	138,000	127,000	151,000	150,000

While, in all but one region, the direction of change is the same from both sources, the fall in value perceived by WAS respondents is much smaller than the degree of change in the Halifax data. This indicates that in general property owners did not perceive their properties falling in value to the same degree prevailing in the housing market.

It is interesting to note however, that the region with the largest decline was Wales in both cases, and the smallest change Scotland in both cases.

The two estimates diverged most in the South West, where WAS data showed no real change, but Halifax property values fell to a similar degree as in regions such as the South East and West Midlands. Similarly, in Scotland WAS, again, showed no real change while the Halifax data decreased. In London, the change in the Halifax data was much more pronounced than that from WAS.

It should be noted that we would not expect the changes to follow each other completely as the bases on which they are calculated differ. In particular, the WAS estimates are gross property wealth as this covers both main and any secondary properties owned by households, but the regional split is made using the region of main residence. It is quite likely, therefore, that any secondary properties owned could be located in different regions (this is very likely contributing to the differences in London). In addition, the Halifax data covers all property purchases; by both individual and businesses (for example it will include more buy-to-let properties where ownership has been set up as a business asset rather than a personal asset).

Endnotes

1. The credit crisis in 2007 originated from a number of 'subprime' mortgages being sold to customers with low income and poor credit in the US during the early part of the 2000s. To finance further lendings, mortgage companies bundled debts into consolidation packages and sold to other financial companies. In most of these subprime mortgages, the interest rate is fixed for the first two years, but increases thereafter. Along with rising fuel and food costs, many people with subprime mortgages were unable to afford their mortgage repayments and, therefore, had to default on their mortgages. This signalled the end of the housing market boom in the US as house prices began to fall. Many mortgage companies also went bankrupt because of the number of mortgage defaults. Banks were also forced into writing off bad debts that they had bought from these mortgage companies. As a result, banks became reluctant to lend, and therefore it became more difficult to borrow money.

2. Council of Mortgage Lenders: Published data & reports on the buy-to-let market.

<http://www.cml.org.uk/cml/media/press/1857> and <http://www.cml.org.uk/cml/media/press/2540>

3. When comparing WAS data with other sources, gross property wealth has been used (ie. including both main residences and other property) as this better reflects the coverage of the other sources. However, it should be noted that the regional split for the WAS is based on the region of residence for a household's main dwelling. Other properties may be in a different region

Technical Notes

This section provides brief details on the methodology used by the Land Registry, Nationwide and Halifax in producing house prices indicators based on property sales data.

1. The Land Registry has a record of all residential transactions in England and Wales since 1995. This dataset constitutes 16 million sales, of which 6 million are properties that have been resold during this period. The identification of these properties allow for a technique called repeated-sales regression to produce a housing price index which tracks changes in house prices over time. The 'average prices' reported by the Land Registry are standardised by taking a geometric mean price in April 2000 and adjusting it using the index, both backwards to 1995 and forwards to the present day. The average prices are also seasonally adjusted using classical seasonal decomposition methods.

The Land Registry collects information on all transactions regardless of method of purchase, and therefore is not only restricted to mortgage purchases. However, the dataset only includes transactions at full market value, and excludes sales from repossession and auctions as they do not reflect full market price. Also, the data from the Land Registry are only available for England and Wales. For more details, see <http://www.landregistry.gov.uk/>.

2. Nationwide is the second largest mortgage lender (by stock) in the UK, and using data for mortgages that are at approvals stage, it calculates a housing price index to give current indications of the housing market. The house price data consist of mix-adjusted prices, which gives an indication of how the price of a typical property changes over time. The prices are also seasonally adjusted. See <http://www.nationwide.co.uk/hpi/default.asp> for further information.

3. Halifax uses similar methods as those used by Nationwide in standardising house prices, and as such, both of these mortgage lenders produce similar housing price indices over time. Differences between the two indices are primarily due to the differences in their samples. Like Nationwide and DCLG, Halifax takes into account various attributes associated with each property transacted. These attributes refer to both quantitative (e.g., age, number of rooms) or qualitative (eg, location, type) characteristics of the property, and are translated into factors in a multivariate regression model to produce a standardised price. As a result, this technique allows the price of a 'typical' house to be tracked over time on a like-for-like basis. Both seasonally adjusted, and non-seasonally-adjusted house prices data for UK regions and different dwelling types are available on the Halifax website. For more details see http://www.lloydsbankinggroup.com/media1/research/halifax_hpi.asp.

Chapter 3

Physical Wealth

Summary

- Total household physical wealth rose by £51 billion to £1,012 billion for all households in Great Britain, almost four-fifths of which was the value of the contents of a households' main residence.
- The mean value of total household physical wealth increased by 4.7 per cent between wave 1 (2006/08) and wave 2 (2008/10).
- The mean value of household contents increased between waves from £30,300 in 2006/08 to £32,300 in 2008/10
- The mean value of household physical wealth increased in all regions of Great Britain apart from the North East.

Introduction

This chapter looks at estimates of household physical wealth from the Wealth and Assets Survey (WAS). New data from the second wave of the survey is presented alongside revised estimates from the first wave¹ (see Box 1).

In the WAS, physical wealth is derived from respondents' own estimates of the value of the contents of their main residence, the contents of any property which the household owns other than main residence and also collectables, valuables, vehicles and personalised number plates. All estimates of physical wealth are given on a gross basis.

The tables and charts included provide summary results. Each of these is linked to a spreadsheet giving the source data, and often more detailed results. On occasions, the text refers to estimates which are available in these background tables as opposed to the summary tables and charts.

Box 1: The wave 1 half sample

In the first wave of the survey, the value of household goods, collectables and vehicles was only asked of half of all households sampled. However, in the second (and subsequent waves of the survey) all households are asked to value these. In order to make aggregate estimates for wave 1 and wave 2 comparable, it has been necessary to use a 'rating up factor' in addition to our standard weighting procedures. This does not affect the reliability of the estimates for wave 1 because 'half sample' is sufficiently large to produce robust results for the analysis presented.

¹ *Wealth in Great Britain: Main Results from the Wealth and Assets Survey 2006–08*. Published 10 December 2009. The wave 1 data has since been updated, and revised data should be used where available.

Household goods and collectables

Table 1 gives the proportion of households with goods and collectables. The survey assumes that all households had some contents in their main residence therefore 100 per cent of all households were asked to value the goods in their main residence. A far smaller proportion of all households had goods in other properties or owned collectables or valuables.

Table 1
Proportion of households¹ with goods and collectables, 2006/08, 2008/10

Great Britain	Percentages	
	2006/08 ²	2008/10
Household goods in main residence	100.0	100.0
Household goods in property other than main residence	4.3	4.8
Collectables and valuables	12.5	10.9

1 All rows are shown as a percentage of all households.

2 Wave 1 figures based on half sample

Source: *Wealth and Assets Survey, Office for National Statistics*

Box 2: Collection and presentation of data

Goods and contents in main residence

The largest component of physical wealth is the value of households' goods and contents in their main residence. The way respondents are asked to value these differs from other valuation methods used in the survey. Respondents find this hard to estimate precisely, so are asked to give 'the approximate replacement value of household contents, which 'is the approximate cost of replacing the items now, and may be similar to the insured value'. Respondents are asked to select one of ten bands for the value of household goods starting with 'less than £5,000' and ending at '£200,000 or more'. In order to estimate a precise value for household goods and contents for each household, which can then be used to produce estimates of total physical wealth and total household wealth, the mid point of each band is taken to be the actual value (e.g. all households in the band £5,000 but less than £10,000 would be assigned a precise value of £7,500) with the open ended upper band '£200,000 or more' band being valued at £300,000. Since this is the case, instead of presenting the median and quartile bands as was done in *Wealth in Great Britain 2006/08*¹, the banded values have been used. Mean values have still been presented but are based on the mid-point estimates.

Other household goods and collectables, vehicles and personalised number plates

For all other physical assets respondents are first asked to estimate the value of the asset. If the respondent is unable to estimate a precise value, they are offered a choice of banded values. The actual values of these banded responses are later imputed, based on the distribution of the actual values obtained from other respondents. It is, therefore, statistically valid to consider mean and median values using both actual and imputed data. For comparison purposes, the other goods and collectables estimates have been presented using banded values.

Contents of main residence

Household goods consist of items found in the home such as furniture, clothing and electronic equipment. The questionnaire makes it clear that the value of household goods reported by respondents should not include collectables, valuables, bicycles or other vehicles.

Table 2 shows the distribution of households across the value bands offered (see Box 2). In 2008/10 there were slightly smaller proportions in the bands up to £30,000 than in 2006/08. This pattern is reversed in all bands above £30,000 except the top one that contains under half of one per cent of all households. Using the mid point of each band to calculate the mean, there has been an increase in the mean from £30,300 in 2006/08 to £32,300 in 2008/10.

Table 2
Household goods in main residence¹:
Distribution of households by banded values, 2006/08, 2008/10

Great Britain	Percentages										
	< £5,000	£5,000 but < £10,000	£10,000 but < £20,000	£20,000 but < £30,000	£30,000 but < £40,000	£40,000 but < £50,000	£50,000 but < £75,000	£75,000 but < £100,000	£100,000 but < £200,000	£200,000 or more	All H'hlds
2006/08 ²	10.9	13.2	18.6	17.8	13.8	11.3	9.9	2.5	1.4	0.4	100.0
- Cumulative	10.9	24.1	42.7	60.6	74.4	85.7	95.6	98.1	99.6	100.0	
2008/10	9.0	12.3	17.5	17.6	14.6	11.9	11.9	3.4	1.6	0.3	100.0
- Cumulative	9.0	21.3	38.8	56.4	70.9	82.8	94.7	98.1	99.7	100.0	

1 Results exclude households without this type of asset/liability (zeros).

2 Wave 1 figures based on half sample.

Source: *Wealth and Assets Survey, Office for National Statistics*

Contents in property other than main residence

Household goods may also be owned in property other than the main residence (for example in second homes or buy-to-lets); 4.3 per cent of all households declared a value for goods in such properties in 2006/08 and 4.8 per cent did so in 2008/10. This increase may be explained by the small increase in the proportion of households with property other than their main residence in 2008/10 (see Property: Table 2 on page 13) together with the fact that in 2006/08, 44.5 per cent of those with a second property declared they owned goods in those properties, while in 2008/10 this figure increased to 47.9 per cent.

The value of household goods in properties other than the households' main residence is given in Table 3, again as a distribution across the value bands. Due to the much smaller numbers of households involved, some bands have been merged. In 2008/10 there were a greater proportion of observations in the lowest band of 'less than £5,000' and conversely a smaller number in the top band of '£50,000 or more'. The median value falls in the same band in both waves - '£5,000 but less than £10,000'. There is a small decrease in the mean value from £21,200 in 2006/08 to £20,400 in 2008/10.

Table 3
Household goods in properties other than main residence¹:
Distribution of households by banded values, 2006/08, 2008/10

Great Britain		Percentages					
	< £5,000	£5,000 but < £10,000	£10,000 but < £20,000	£20,000 but < £30,000	£30,000 but < £50,000	£50,000 or more	All H'hlds
2006/08 ²	25.6	26.6	20.4	6.5	10.4	10.4	100.0
- Cumulative	25.6	52.3	72.6	79.2	89.6	100.0	
2008/10	26.8	24.6	21.4	6.9	11.6	8.8	100.0
- Cumulative	26.8	51.3	72.7	79.6	91.2	100.0	

1 Results exclude households without this type of asset/liability (zeros).

2 Wave 1 figures based on half sample.

Source: *Wealth and Assets Survey, Office for National Statistics*

Collectables and valuables

The survey asks households about collectables and valuables they own, such as antiques, artwork, stamps etc. Table 1 shows that in 2006/08, 12.5 per cent of all households owned collectables and valuables, which decreased in 2008/10 to 10.9 per cent.

Table 4
Household collectables and valuables¹:
Distribution of households by banded values, 2006/08, 2008/10

Great Britain		Percentages				
	< £5,000	£5,000 but < £10,000	£10,000 but < £25,000	£25,000 but < £50,000	£50,000 or more	All H'hlds
2006/08 ²	49.8	19.7	19.3	6.1	5.2	100.0
- Cumulative	49.8	69.5	88.7	94.9	100.0	
2008/10	51.3	18.8	18.5	6.0	5.3	100.0
- Cumulative	51.3	70.2	88.7	94.7	100.0	

1 Results exclude households without this type of asset/liability (zeros).

2 Wave 1 figures based on half sample.

Source: *Wealth and Assets Survey, Office for National Statistics*

Table 4 gives the distributions of households with collectables and valuables, across the value bands. The mean value of collectables for households who had declared a value increased from £12,600 in 2006/08 to £14,300 in 2008/10. However, this was not reflected in the median value, which was £5,000 in 2006/08 and £4,000 in 2008/10. The change in the median values reflects the fact that a higher proportion of households are giving a lower value for their collectables in 2008/10 compared to 2006/08. In both waves, the difference between the mean and median values is due to the skewed distribution of collectables and valuables across households. In each of the waves, 88.7 per cent of households which have collectables and valuables valued these at less than £25,000 with only 11.3 per cent of households giving a value of £25,000 or more. Although the proportion of households in these higher bands has remained stable between waves, the values given by households in

the upper band increased between waves (the mean value of collectables and valuables for households who valued these goods at £50,000 or more was £113,900 in 2006/08 and £148,300 in 2008/10) which explains the increase in the overall mean value between waves.

Vehicles and number plates

The survey asked households about ownership of cars, vans and motorbikes². Around three-quarters of all households owned one or more such vehicles in both waves of the survey. The breakdown is shown in Table 5. In addition households were asked about ownership of other vehicles – see Box 3. Respondents here were asked first for a precise estimate of value, and only offered bands if they could not give a precise estimate.

Table 5 also shows that there was very little difference in the proportion of households owning vehicles in each wave, with just under three-quarters of all households owning one or more vehicles.

Table 5

Proportion of households owning vehicles and personalised number plates¹, 2006/08, 2008/10

Great Britain	Percentages	
	2006/08 ²	2008/10
Cars	72.6	73.4
Vans	3.7	4.1
Motorbikes	4.0	4.1
No car, van or motorbike	26.5	25.6
Other vehicles ³	4.8	5.3
Personalised plates	5.5	5.7
All Vehicles ⁴	73.8	74.8

1 Results exclude households without this type of asset/liability (zeros)

2 Based on half sample with Physical wealth data for wave 1

3 Includes caravans, boats and other types of vehicles

4 Includes personalised plates

Source: *Wealth and Assets Survey, Office for National Statistics*

Box 3: Other Vehicles

Households are first asked about vehicles they own, after which they are asked about other vehicles they may own 'for example a caravan or boat?' Although bicycles are not specifically mentioned in the question, a subsequent question asks about the type of vehicles these are, where bicycles is one of the options given. Therefore some households may not have responded to the initial question if they did not regard a bicycle as another vehicle.

Table 6 shows there has been a small change in the value these households place on their vehicles between the two waves, with the average values of vehicles falling for all types of vehicles.

- Households who own one or more cars, vans or motorbikes, on average valued these vehicles at £7,800 in 2006/08 and £7,500 in 2008/10 with half of these households valuing these vehicles at £5,000 or more in both waves.

² The survey focuses specifically on ownership of vehicles. Respondents are asked not to include leased vehicles and company vehicles, as these do not belong to the household. Thus, the figures in this chapter do not indicate how many households have the use of vehicles.

- Households who own other vehicles (see Box 3), on average valued these vehicles at £7,700 in 2006/08 and £7,200 in 2008/10, with half of these households valuing these vehicles at £3,000 or more in 2006/08 and £2,300 or more in 2008/10.

Table 6
Vehicles and personalised number plates²:
Summary statistics, 2006/08, 2008/10

Great Britain

	Mean		Median	
	2006/08 ¹	2008/10	2006/08 ¹	2008/10
Cars, vans, motorbikes	7,800	7,500	5,000	5,000
Other vehicles	7,700	7,200	3,000	2,300
Personalised number plates	1,400	1,300	500	500
All vehicles	8,400	8,100	5,000	5,000

£

1 Based on half sample with Physical wealth data for wave 1

2 Results are for 'property owners' and so exclude zeros (households that do not own any property).

Source: *Wealth and Assets Survey, Office for National Statistics*

Tables 5 and 6 also show results for ownership of personalised number plates. Less than 6 per cent of households in each wave owned personalised number plates. The mean value of personalised number plates decreased slightly between waves; £1,400 in 2006/08 and £1,300 in 2008/10. However, half of all households who owned personalised number plates valued them at £500 or less. The difference between the mean and median values reflects the fact that the majority of households put a lower value on their personalised number plates, compared to a smaller number who gave much higher values (around four-fifths of households owning personalised number plates valuing them at less than £1,500).

Total household physical wealth

Total physical wealth is calculated as the sum of the values recorded for each household for contents of the main residence, contents of other property, collectables and valuables, vehicles and personalised number plates. Total physical wealth figures are presented gross³.

Table 7
Total household physical wealth, 2006/08, 2008,10

Great Britain

	2006/08 ¹	2008/10
Mean per household	39,100	40,900

£

1 Wave 1 figures based on half sample

Source: *Wealth and Assets Survey, Office for National Statistics*

³ Households may borrow money to buy vehicles. This is not subtracted from total physical wealth (gross) to produce a net figure. However, borrowing to finance vehicle purchases will be covered when considering financial wealth.

Table 7 shows the mean for total physical wealth (it is not appropriate to use median values for this asset - see Box 2 on page 29). The mean value of household physical wealth increased from £39,100 in 2006/08 to £40,900 in 2008/10.

Table 8 gives the aggregate values for household physical wealth for all households in Great Britain (i.e. the weighted sum of total physical wealth for every household). The aggregate value of total physical wealth in 2008/10 was estimated to have increased by 5.3 per cent to £1,012 billion.

Table 8
Aggregate estimates of total household gross physical wealth, 2006/08, 2008/10

Great Britain	£ billion	
	2006/08 ¹	2008/10
Household gross physical wealth aggregate	961	1,012

1 Based on half sample and multiplied by factor of 1.7683

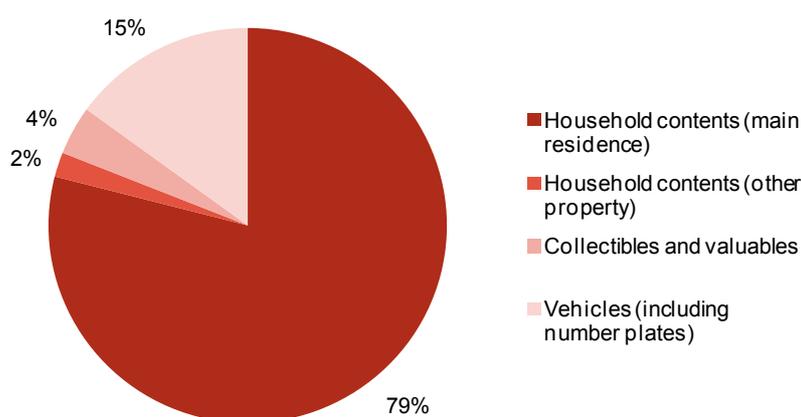
Source: *Wealth and Assets Survey, Office for National Statistics*

Figure 9 shows the breakdown of total household physical wealth into its four main components⁴. In 2008/10, wave 2, the value of the contents in the main residence made up over three quarters of the total, while vehicles accounted for 15 per cent.

Figure 9
Breakdown of household physical wealth, 2008/10

Great Britain

Percentages



Source: *Wealth and Assets Survey, Office for National Statistics*

⁴ It should be noted that this chart is not strictly comparable to the equivalent chart in *Wealth in Great Britain 2006/08*, as the value of contents in property overseas is no longer included.

Household physical wealth by key household characteristics

This section considers the changes in total household physical wealth by region of residence and household type. Unlike the first edition of *Wealth in Great Britain 2006/08*¹, only characteristics of the household are considered as opposed to characteristics of the household head – the household reference person (HRP)⁵. This is because there are a significant number of households who, for a number of reasons, change HRP between waves⁶. These characteristics will be explored further when longitudinal data are analysed at a later date. Tabulated data can be obtained by clicking on the charts.

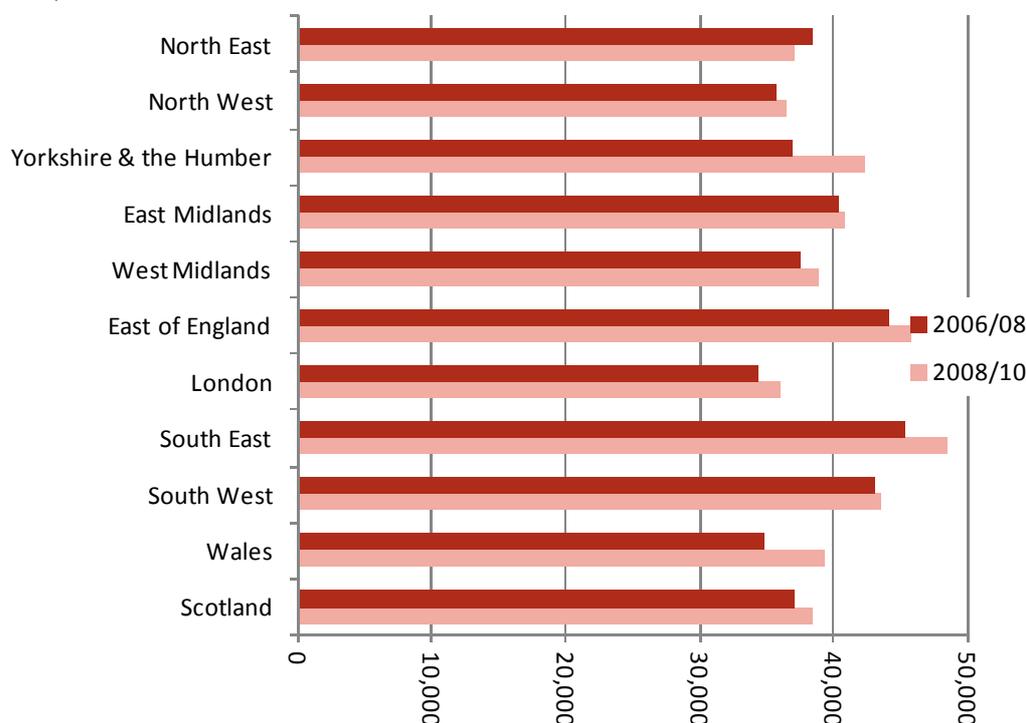
Physical Wealth by region

Figure 10 shows mean household physical wealth according to the location of the main residence of the household. It shows Scotland, Wales and the eight English regions (with London shown separately; the figures for the South East exclude London).

Figure 10

Distribution of household gross physical wealth¹: by region of residence, 2006/08 and 2008/10

Great Britain
Mean, £



¹ Based on half sample with Physical wealth data for wave 1
Source: *Wealth and Assets Survey, Office for National Statistics*

⁵ See Glossary

⁶ The HRP (household reference person) had changed between waves in nearly one eighth of households who responded in both wave 1 and wave 2 of the survey.

The highest average household physical wealth in both waves was observed in households in the South East with a mean value of £45,200 in 2006/08 and £48,400 in 2008/10. Households living in London had the lowest mean household physical wealth in both waves (£34,300 in 2006/08 and £35,900 in 2008/10). This may be a reflection of the fact that London has the lowest proportion of households owning their properties (see Property: Table 9 on page 20) with more rented accommodation and, therefore, fewer physical assets.

Physical wealth increased in all regions apart from the North East where the mean value of physical wealth was £38,400 in 2006/08 and £37,100 in 2008/10. The regions with the largest increases were Yorkshire and the Humber where the mean value of physical wealth increased by 14.8 per cent from £36,900 in 2006/08 to £42,300 in 2008/10, and Wales, where the mean value increased by 13.0 per cent, from £34,800 in 2006/08 to £39,300 in 2008/10.

Physical wealth by household type

Figure 11 shows household physical wealth according to the type of household. This is split into 10 categories of household types.

The household types with the highest physical wealth were 'Couple 1 over/1 under SPA⁷, no children' with a mean value £57,500 in 2008/10 and £54,600 in 2006/08, this was the second highest household type in wave 1. 'Couple, non-dependent children' had the highest household physical wealth in wave 1 with a mean value of £57,500 in 2006/08 and the second highest in 2008/10 with a mean value of £56,200. The type of household with the lowest average physical wealth in both waves 1 and 2 was 'Lone parent, dependent children' with a mean value of £22,900 in 2006/08 and £24,500 in 2008/10.

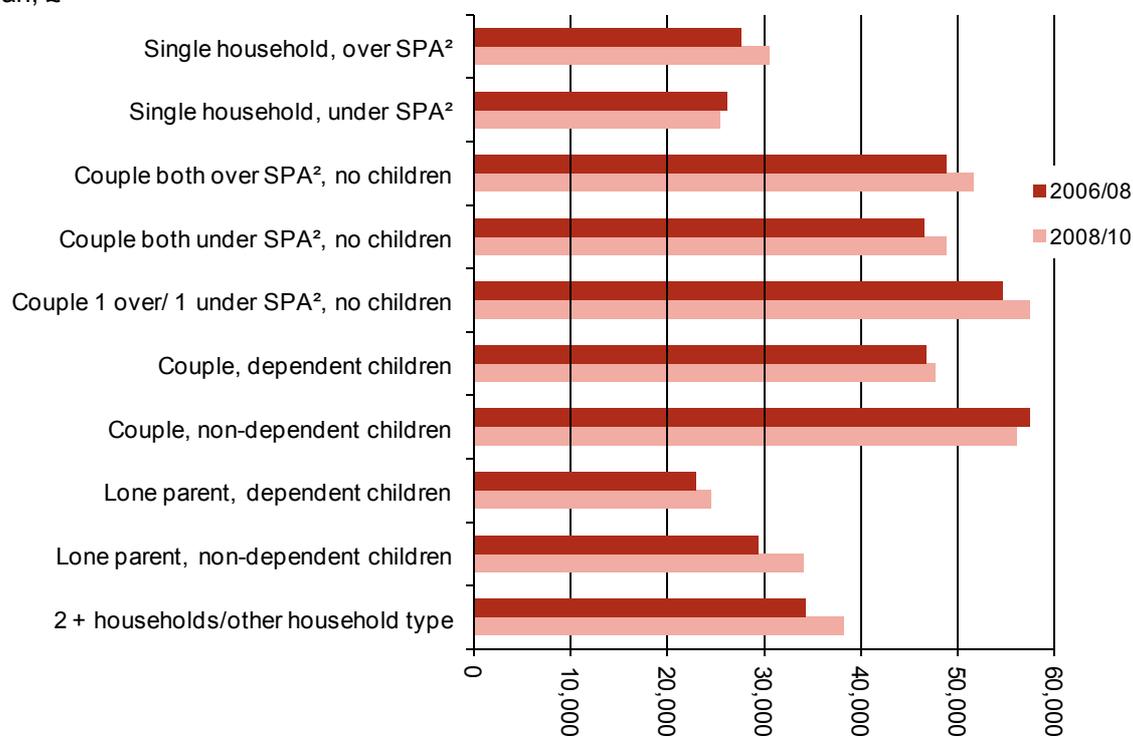
Physical wealth was estimated to have increased for most household types, the largest increase being seen in 'Lone parent, non-dependent children' households where the mean value increased from £29,400 in 2006/08 to £34,000 in 2008/10 – an increase of over 15.7 per cent. Physical wealth was only estimated to have decreased for two household types, 'Couple, non-dependent children' and 'Single household, under SPA', where the mean values decreased by 2.3 and 2.9 per cent respectively.

⁷ State Pension Age – the age at which an individual can draw their state pension. The same definition of SPA has been used for the whole of both waves of WAS i.e. SPA for men is 65 and SPA for women 60. SPA started to change for women in April 2010, with SPA increasing monthly so that by November 2018 women's SPA will be the same as that for men, 65. SPA will be increased for both men and women to 66 by October 2020, with further increases announced by the government but not yet approved by parliament.

Figure 11**Distribution of household gross physical wealth¹: by household type, 2006/08 and 2008/10**

Great Britain

Mean, £



1 Based on half sample with Physical wealth data for wave 1

2 SPA is State Pension Age (65 for men and 60 for women).

Source: *Wealth and Assets Survey, Office for National Statistics*

Chapter 4

Technical Details

Introduction

This chapter aims to assist readers in interpreting and utilising estimates from the Wealth and Assets Survey (WAS) by describing technical aspects relating to the second wave of the survey and the steps taken to successfully link data from waves 1 and 2. Much of the technical material regarding the survey has already been reported in Chapter 10 of the report 'Wealth in Great Britain'¹ published in December 2009 and the wave 1 User Guide². Readers should consult these earlier documents for more general technical detail.

In summary, the WAS is a longitudinal survey of private households and individuals in Great Britain (except for the Isles of Scilly and the area north of the Caledonian Canal), conducted face-to-face by ONS interviewers. The first wave of interviews was carried out between July 2006 and June 2008, followed by the second wave from July 2008 until June 2010. The results being reported in this and the accompanying chapters cover the latter period as well as changes occurring between waves 1 and 2.

The Wave 2 Sample

Details of the sample design, sampling frame, sample structure and field sampling procedures underlying both completed waves of the survey are provided in the wave 1 report. No new cohort was introduced to boost the survey in wave 2 and, as such, households approached in this wave included those that had responded positively in wave 1 plus those where the original household at wave 1 had split or moved to a new address. In addition, households where no contact had been made at wave 1 were approached for a wave 2 interview. However, households which had refused to cooperate at wave 1 were not approached at wave 2.

At wave 2, interviews were sought from those who had been interviewed previously and those who were previously ineligible (i.e. those aged 16 or under or 16-18 and in full time education or those aged 19 and in a government training scheme) and had become eligible by wave 2.. One new group comprised of individuals who were not part of the original sample but who had moved into a household with a wave 1 original sample member (OSM) and met the relevant criteria for eligibility. These entrants are referred to as secondary sample members (SSM).

The original sample approached in wave 1 was approximately 63,000 households. However, for the reasons outlined above, the number with whom contact was attempted in wave 2 was approximately 35,000.

¹ *Wealth in Great Britain: Main Results from the Wealth and Assets Survey 2006–08*.
Published 10 December 2009.

² *Wealth and Assets Survey User Guide Volume 1*:
http://www.esds.ac.uk/doc/6415/mrdoc/pdf/6415userguide_wave1.pdf

Data collection

Fieldwork was carried out in such a way that interviews at wave 2 took place two years after interviews at wave 1, and generally within the same calendar month³. Interviewers were given an allocation of addresses on a monthly basis and were instructed to make contact and gain an interview at all of these addresses using best practice in terms of varying calling times and days. Where it was not possible to attempt contact within the month, addresses were carried forward for reissue in the following month.

Where information was unlikely to have changed, or earlier responses were likely to provide a useful *aide memoire*, answers from wave 1 were rolled forward and made available, in the computer assisted interviewing programme to the interviewer during the interviewing process. For instance, the type of tenure of the household's accommodation from wave 1 would be available to the interviewer at wave 2. However, value information, such as the value of the property, was not rolled forward.

The wave 2 questionnaire covered the same topics as wave 1, however as a result of the longitudinal nature of the survey and specifically the experience gained during wave 1, it was slightly longer⁴. The flow of questions was also improved, the types and nomenclature of some assets and debts were changed, and certain new requirements of stakeholders⁵ were included.

These changes were tested both cognitively and via a pilot survey, which involved engaging a sample of wave 1 pilot respondents in the full interview.

The mean interview length for wave 2 was 85 minutes (compared to 79 minutes for wave 1), while the median was 78 minutes. As with wave 1, all interviewers were trained to administer the WAS questionnaire and were also briefed about changes made to the wave 2 questionnaire.

Table 1 shows response for waves 1 and 2. At wave 2 approximately 35,000 households were selected for interview however some of these addresses were found to be outside the scope of the survey and therefore were ineligible to be interviewed. The sample was further reduced as some households had unknown eligibility and some interviews could not be attempted. The final eligible sample for wave 2 of the survey was nearly 29,600 households and of these 20,170 either fully or partially responded, giving a household response rate of 68.2 per cent. This figure is not comparable with the household response rate of 54.8 per cent achieved in wave 1 since the wave 2 figure is calculated as a proportion of the sample

³ There is some latitude in this gap in that interviewers were given sufficient time to follow up their monthly quotas so that the actual wave 1 interview could have been 23 months, rather than 24 months, earlier.

⁴ Partly due to the fact that in wave 2 the physical wealth questions covered the whole sample, rather than approximately half of the sample, which was the case in wave 1, but also other changes made to the questionnaire.

⁵ Stakeholders involved in the development of the questionnaire comprise of the group of funding departments which is currently: ONS, Department for Work and Pensions, HM Revenue and Customs, Department for Business, Innovation and Skills, and the Scottish Government.

brought forward from wave 1. As a proportion of the original wave 1 sample, the response rate is 36.1 per cent, which illustrates both the scale of non-response at wave 1 and subsequent attrition between waves 1 and 2.

Table 1
Household response rates for wave 1 and wave 2

Great Britain

	Wave 1 (2006/08)		Wave 2 (2008/10)	
	Number	Percentage	Number	Percentage
Sample	62,800		34,740	
Total eligible sample	55,829	100.0	29,584	100.0
Cooperating households	30,595	54.8	20,170	68.2
Non-contact	4,135	7.4	2,717	9.2
Refusal to office	3,759	6.7	1,268	4.3
Refusal to interviewer	15,451	27.7	4,527	15.3
Other non-response	1,889	3.4	902	3.0

Source: *Wealth and Assets Survey, Office for National Statistics*

Thus, of the eligible households in wave 2, an interview was achieved with over two-thirds while no interview took place with just under one-third. The non-contact rate at wave 2 (9.2 per cent) was slightly above that observed as wave 1 (7.4 per cent). However, the refusal rate was considerably higher in wave 1 than in wave 2, in part because wave 1 refusers were not re-approached in wave 2.

The cross-sectional results presented in the Wealth in Great Britain report are based on all those households which responded in the particular wave in question, while the longitudinal analyses (to follow in later chapters) will use only those households which responded in both waves.

Wave 2 Challenges

The data collection for the WAS started in July 2006, with a two year field period for each wave. Compared to other longitudinal social surveys, WAS can, therefore, be considered as a relatively young survey. It should also be noted that WAS collects a vast amount of wealth data that is very unique in this combination. It, therefore, requires a good understanding of the complexity of the data and relations between wealth components not only on a cross-sectional level, but also on a longitudinal level.

By linking wave 2 data to wave 1, the first longitudinal dataset was created for this survey. However, unexpected teething problems occurred at various stages in the survey flow that needed to be addressed before data was finalised for analysis. The following outlines the main areas of challenges and how these have been dealt with.

- Data editing and validation

Previously, for wave 1 data, only cross-sectional edit and validation checks were carried out. For the second wave, the same checks were done in the first instance. Subsequently, by comparing data of linked records between waves inconsistencies in the data were observed that required further investigation. Therefore, additional longitudinal edit and validation checks were conducted to ensure longitudinal records were accurate. See further details below.

- Imputation

The imputation was carried out in two rounds. The first round of imputation purely focused on imputing item non-response (with the same methodology as used for wave 1) as well as unit non-response including non-responding adults within responding households. The latter was added to the imputation methodology to ensure that aggregated household wealth would not be underestimated. However, this methodology did not consider any data collected in wave 1 for linked records. This led to changes being observed in the cross-sectional and longitudinal comparison of wealth data between waves. Parts of these changes were explained by the fact that the imputation for wave 1 data did not account for unit non-response. Therefore, it was decided to have a second round of imputation where wave 2 data as well as the longitudinal component of wave 1 data was imputed with a new methodology. See further details on page 45.

- Weighting

The wave 2 data can be analysed both cross-sectionally and also longitudinally, so two separate weights had to be produced that can be applied depending on the analysis carried out. Besides having to adjust the weights according to the observed attrition bias, the weighting procedure had to account for various inconsistencies in the data that were highlighted during the editing and validation process. The weighting process therefore had to be repeated twice to ensure changes to the structure of the data were incorporated into the weighting procedure and weighted estimates also had to be adjusted accordingly. See further details on page 47.

The above may provide a better picture of the challenges that had to be addressed throughout the survey process of the second wave. Since this longitudinal dataset is the first in the history of WAS, the lessons learned from the processing of wave 2 data have already led to a considerable improvement for the data collection and processing of wave 3 data.

Data editing and validation

Editing and validation processes were overall similar to those used for wave 1: more details are provided in section 10.4 of the wave 1 report⁶. However, since this is a longitudinal survey, part of the achieved sample size in wave 2 is therefore linkable to wave 1 data. Therefore it was important to include longitudinal edit checks with the editing and validation processes that were carried out for the previous wave.

⁶ *Wealth in Great Britain: Main Results from the Wealth and Assets Survey 2006–08*.
Published 10 December 2009.

Before any longitudinal checks could be carried out on the data, the linked records were checked for accuracy. The handling of adding new household members to households that responded in the previous wave, Original Sample Members (OSM) who left a household to be interviewed at their new address, or whole households who moved between waves, added complications to the linking exercise that deserved particular attention when the linkage checks were carried out. Furthermore, recorded gender and date of birth that differed from the data collected in the previous wave were checked to ensure that sample members were linked accurately.

After errors in linked records were amended, data for property and physical wealth were subsequently compared between waves. To account for changes of circumstances within households that may impact on the observed wealth, indicator variables were produced to highlight circumstances such as a change of the Household Reference Person (HRP), additional household members, split households, and movers between waves.

Through this process changes between waves were observed that required further investigation. Thorough checking highlighted that the large majority of observed changes were genuine and could be explained through changes of circumstances for some or all individuals in the household, or where there was no evidence to indicate that collected data would be incorrect. However, these longitudinal checks also identified inconsistencies in the longitudinal data which were explained by errors occurring during the interview. These errors were amended where it was possible to establish the correct values.

More information on the specific longitudinal checks conducted will be published in an updated version of this technical chapter with the longitudinal data.

Imputation

As a panel survey, the WAS data contained records for participants new to the survey (cross-sectional data only) in addition to records for participants who had been in the survey in the previous wave (longitudinal data).

Methodology

Two primary methods of imputation were applied to repair missing data across all relevant WAS variables:

Deterministic Imputation: Wherever possible, missing values were replaced using rule-based editing. All rules were generated by expert review of legal and logical constraints integral to the internal consistency of the data both within and between WAS variables.

Statistical Imputation: Where deterministic imputation was not possible, missing values were replaced with statistical editing. All missing values were imputed using Nearest-Neighbour/Minimum-Change (NIM) methodology (Bakier, Lachance, Poirier; 1999) implemented in CANCEIS (Canceis,2009).

NIM is an efficient extension of traditional Fellegi-Holt (1976) imputation methodology that aims to replace missing data with plausible values drawn from other records in the data. A large pool of potential donors is constructed based on their statistical similarity to the recipient record (Nearest-Neighbour). Where appropriate, the pool is refined by determining a sub-set of donors whose data will lead to a plausible imputed record while implementing the least amount of change to the recipient record (Minimum-Change). For the final choice of a particular donated value, the probability of selection is proportional to the distribution of all potential values in the refined donor pool.

The advantage of the NIM methodology is that it is designed primarily to preserve statistical distributions in the observed data in the presence of edit constraints. This process serves to improve estimation accuracy while reducing bias and inconsistencies in published statistical outputs.

Processing Strategy

The WAS variables were processed in four Sections: Property Wealth, Physical Wealth, Private Pension Wealth and Financial Wealth. There were two primary processing strategies associated with all variables in each Section:

Routing Architecture: All variables in the WAS data are preceded by a routing variable. Typically, the routing variable is linked to a survey question that determines whether a proceeding variable should contain a response from the expected range of responses or whether it should be marked as no-code required. In all cases, missing routing was imputed prior to imputing a proceeding variable.

Cross Sectional and Longitudinal Imputation: As a panel survey, the WAS data contained records for participants new to the survey (cross-sectional data only) in addition to records for participants who had been in the survey in the previous wave (longitudinal data). While the aim of imputing missing values into records with cross sectional data only can be met by processing the range of discrete expected values in a variable directly, for longitudinal data, and particularly for continuous data, the rate of growth and/or decay across waves becomes extremely important. Consequently, wherever possible for the longitudinal data, the NIM methodology outlined in the previous Section was applied to impute ratio-between-waves rather than discrete values. The imputed ratios were used to calculate appropriate discrete values.

To maximise the utility of the imputation process the data were divided into different imputation groups.

Table 2
Wave 1 and 2 cross-sectional and longitudinal imputation groups.

Wave 1	Wave 2	Imputation Group
Missing	Observed	Longitudinal (IO)
Observed	Missing	Longitudinal (OI)
Missing	Missing	Longitudinal (II)
Observed	Observed	Donor Pool Longitudinal (OO)
Ineligible	Observed	Cross sectional
Not in W1	Observed	Donor Pool Cross Sectional (O)
Not in W1	Missing	Cross Sectional (I)

Missing values in the cross-sectional data for Wave 2 were imputed using donors from Wave 2 only. This ensured that any unidentified factors that may have influenced changes in the data since Wave 1 were implicit in the potential donor pool.

In the longitudinal data, missing values had been imputed previously for Wave 1 in a way similar to the cross-sectional imputation now being applied to Wave 2⁷. As the primary aim of the longitudinal imputation was to preserve observed patterns of growth and/or decay over time, previously imputed values in Wave 1 were removed and replaced with values that reflect observed patterns of change over time more accurately. This strategy serves not only to support better estimates of change but also to improve the accuracy of the Wave 1 imputed data, particularly at lower levels of aggregation.

Throughout the data, extreme values and extreme changes over time were observed. While these data were not necessarily implausible there is an inherent risk of introducing significant bias into estimates should they be included as potential donors. To limit this possibility, statistical trimming was applied to the observed data to exclude outlying values from the potential donor pool.

⁷ Detailed in the Chapter 10: Technical Details of the wave 1 report

Imputation summary

In general, the imputation strategy applied to the WAS data met the primary aim of replacing missing values with plausible and consistent data. Consequently, this should facilitate improved estimation accuracy and reduce bias and inconsistencies in published statistical outputs.

Weighting

Overview

Two sets of weights were created for use with the wave 2 dataset: (i) a longitudinal and (ii) a pseudo cross-sectional weight. It is recommended that one or the other of these weights is used for analysis of the relevant subsample of wave 2 respondents. The weights incorporate adjustments for non-response and differential sampling probabilities of selection at Wave 1 (Daffin et al., 2009). The weights also adjust for loss to follow-up (LTFU) at Wave 2.

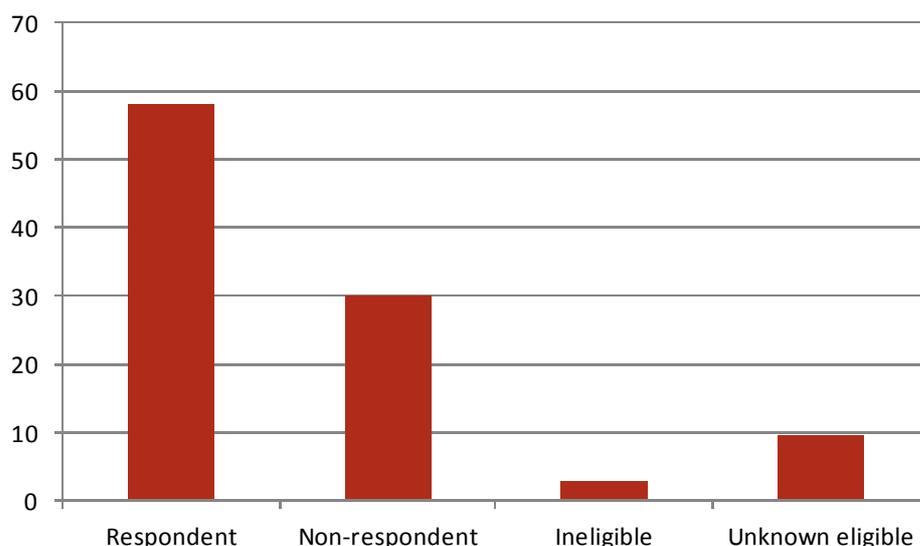
Calculation of the Weights

The wave 1 weights were constructed in three stages: first as the reciprocal of the selection probability; secondly adjusted for non-response; and finally calibrated to population totals using an age by sex and regional breakdown (Daffin et al., 2009). The wave 1 weight was brought forward to use as the basis of the wave 2 base weight. The wave 1 weight was created using 'integrative calibration' which ensures that each person in the household has the same weight, which is also the household weight. The base weight tracks the progress through the survey of all people enumerated in the household, i.e. includes children and young adults who are deliberately not interviewed for the survey. WAS weights are calculated for all people enumerated in the household.

LTFU occurs through two processes. One process is where eligible people from wave 1 cannot be traced for their wave 2 interview and, therefore, their eligibility status for the wave 2 interview is unknown. Of the 71,268, cases present at wave 1, a substantial minority of nearly one in ten (6,678) were of unknown eligibility at wave 2 (Figure 3).

Figure 3: Wave 2 outcome rates

Percent



Note: outcomes are shown for all people enumerated at wave 1.

The cases with unknown eligibility will, in reality, have included both eligible and ineligible cases. A weight was constructed to adjust for unknown eligibility using a (wave 1) weighted binomial regression of known/unknown eligibility status onto a suite of socio-demographic characteristics measured at wave 1. The reciprocal of the propensity for known eligibility was used to adjust the wave 1 weight by multiplying the wave 1 weight through by the eligibility adjustment weight. The resulting weight was then used in a binomial regression of response/non-response status onto a suite of characteristics to adjust for the second stage of LTFU (response attrition). The reciprocal of the response propensity was used to adjust further the previous weight.

In summary, the wave 2 longitudinal base weight (W_{2k}^{long}) can be written as (1) below for respondents:

$$W_{2k}^{long} = W_{1k}^{cal} W_{2k}^e W_{2k}^{nr}, \quad k \in S_2^r \quad (1)$$

The weight is the product of three quantities, i.e. the wave 1 weight (W_{1k}^{cal}) adjusted for those cases moving into unknown eligibility (W_{2k}^e) and non-response (W_{2k}^{nr}) at wave 2. This weight is defined over the set of (S_2^r) longitudinal respondents at wave 2.

A second group of people included in the construction of the base weight are those people who became ineligible at wave 2 (s_2^{ie}), described in (2). Typically, this group predominantly comprises those people who have left the cross-sectional population through death, migration or institutionalisation.

$$W_{2k}^{long} = W_{1k}^{cal} W_{2k}^e, \quad k \in S_2^{ie} \quad (2)$$

Taking the two sets s_2^r and s_2^{ie} together should recover the wave 1 population prior to LTFU, assuming complete correction for the LTFU processes.

A longitudinal calibration weight ($w_2^{long-cal}$) was constructed from a trimmed version the longitudinal base weight by calibrating the combined sub-sets of cases (s_2^r and s_2^{ie}) to the wave 1 population totals.

$$W_2^{long-cal} = W_2^{long} W_2^g \quad (3)$$

The g-weight (w_2^g) ensures that the sums of the calibration control variables (age x sex and region) match those of the wave 1 population.

A pseudo-cross-sectional weight was constructed from the base weight first through a process of weight sharing the base weight among new entrants to the survey who entered through joining the household of a wave 1 original sample member (OSM). These new entrant cases are referred to here as secondary sample members (SSMs). A second adjustment was required to account for cases that were originally, but unsuccessfully, approached at wave 1 but who when approached again at wave 2 did respond on this occasion (here called entrant households).

The first challenge for the cross-sectional weight is to assign a weight to people entering the sample. Rather than attempt to work out selection probabilities directly, it is common to use a weight share method to approximate these probabilities (eg Huang 1984, Ernst 1989, Kalton & Brick 1995).

A standard approach is to assign weight shares based on wave 1 household members to people in target wave 2 households. A variety of weight share algorithms exist (eg Rendtel & Harms 2009). Following Kalton & Brick (1995), the weight at time t for household W_i can be defined as the product of the initial weight and a constant:

$$W_i = \sum_j \sum_k \alpha_{ijk} W'_{ijk} \quad (4)$$

The i th household weight W_i at time t is the initial weight⁸ W'_{ijk} summed over the k individuals in households j at time 1 contributing to membership of household i at time t. The constant (α) is defined in terms of the number of people in household i at time t who were in household (j) in the population at time t1. As long as the sum of alpha within households equals unity, estimation will be unbiased (Kalton & Brick 1995).

$$\alpha_{ijk} = \begin{cases} 1/N_h & \text{if individual } k \text{ lives in household } i \\ 0 & \text{otherwise} \end{cases} \quad (5)$$

Finally, the weight w_i is assigned to all k household members of household i .

In this scheme a population entrant at wave 2 is ascribed a zero contribution to α and a zero initial weight (W'_{ijk}). However, a sample entrant who was in the population at wave 1 but only in the sample at wave 2 contributes to α but has a zero initial weight. Consequently, sample entrants in the population do not increase the sum of the weights; whereas population entrants do increase the sum of the population weights. This is the fair share method of Huang (1984) and also the weight share method of Ernst (1989). Unfortunately, with the WAS data it is not possible to determine if an entrant was in the Wave 1 population or not, so all entrants (other than births) are treated as former Wave 1 population members.

Having undertaken the weight share for the longitudinal sample and their entrant secondary sample members and established a design weight for the entrant households at Wave 2 (i.e.

⁸ This may be the Horvitz Thompson estimator or an adjustment of this, e.g. for non-response and/or through calibration.

those who were wave 1 non-respondents), we can create the pre-calibration cross-sectional weight.

$$pre-cal w_{2i}^{xs} = \begin{cases} (1-\theta) \sum_j \sum_k \alpha_{ijk} w_{2ijk}^{long} & \text{longitudinal} \\ \theta \sum_i w_{1i}^d & \text{entrant} \end{cases} \quad (6)$$

Explicit in Equation 6 is a weighting factor (θ) which combines the two sample sources prior to calibration. This factor is in proportion to the sum of the Wave 2 entrant sample members' Wave 1 design weights relative to the total Wave 1 weight sum over Wave 1 respondent households. Each component of the Wave 2 pre-calibration cross-sectional weight is a constant for all members in the household. This is a consequence of the design for the entrant component subsample and of the weight share averaging (which occurred for all households not just those with entrants) for the longitudinal subsample component.

Finally, the pseudo- cross-sectional Wave 2 weight is created through calibrating the pre-calibration weight in (6) to the relevant population totals at Wave 2. An integrative calibration weighting procedure was used.

$$W_{2ik}^{xs_cal} = pre-cal w_{2i}^{xs} W_{2i}^g \quad (7)$$

Table 4
Calibration Control Groups

Age x Sex Weighting Classes	
0-9 Male	0-9 Female
10-15 Male	10-15 Female
16-24 Male	16-24 Female
25-34 Male	25-34 Female
35-39 Male	35-39 Female
40-44 Male	40-44 Female
45-49 Male	45-49 Female
50-54 Male	50-54 Female
55-59 Male	55-59 Female
60-64 Male	60-64 Female
65-74 Male	65-74 Female
75+ Male	75+ Female
Government Office Region	
North East	
North West	
Yorkshire & Humberside	
East Midlands	
West Midlands	
East	
London	
South East	
South West	
Wales	
Scotland	

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