

Compendium

# Household satellite accounts: 2005 to 2014

The Household Satellite Account (HHSA) measures unpaid home production in the UK. This account builds on the work first carried out by ONS (Holloway et al, 2002) who constructed the first UK HHSA in 2002. ONS have since updated various elements of full account; however, this is the first time the HHSA has been constructed in its entirety since 2002. The HHSA measures the value of adult and child care, household housing services, nutrition, clothing and laundry, transport and volunteering. There is also scope to include other home production activities within future iterations of the HHSA as ongoing development work takes place following this release.

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# Chapter 1: Executive summary for household satellite account

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# 1 . Authors and acknowledgements

## Authors

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## Acknowledgements

Thea J Thomas, Gerard Carolan

# 2 . Main points

This household satellite account measures and values home production in the UK, including adult and child care, household housing services, nutrition, private transport, clothing and laundry and volunteering.

Measures of the value of home production, although not captured within National Accounts, are important to gain a deeper understanding of the substitution of activities between the household and the market.

The proportion of total home production to GDP has grown by 3.9 percentage points, from 52.2% to 56.1% between 2005 and 2014. The total gross value added (GVA) of home production was £1,018.9bn in 2014.

'Extended GDP' (EGDP) – home produced services plus GDP – was £2,024.6bn in 2005 and £2,836.2bn in 2014, in current prices. This represents an annual average growth rate of 3.8% (where GDP excluding home produced services grew at an average annual rate of 3.5% per year).

The main drivers in the growth in the value of home produced services were childcare, due to growth in both childcare prices and child population, and household transport services, due to growth in the price of transport per mile.

GVA of informal childcare was £320.6bn in 2014 making it the largest component of home production, accounting for 31% of the total. The value of informal childcare grew by an average of 6.0% per year between 2005 and 2014 despite increasing substitutions from home to paid childcare for children under 5.

The value of private household transport was £235.8bn in 2014, accounting for 23% of total home production. This is approximately 6.5 times larger than total household expenditure on publicly provided transport.

There has been a general decline in the time spent cleaning, doing DIY, and gardening per person between 2005 and 2014. However, this is outweighed by growth in the market equivalent costs of home maintenance, resulting in the GVA of household housing services – providing and maintaining a home – growing by an average of 1.4% per year.

The value of home nutrition services declined by 7.0% between 2013 and 2014, from £155.2bn to £144.3bn. This was due to a decline in both the number of calories eaten in per person, and the cost of consuming calories out of the home.

The number of adults receiving informal adult care remained largely static between 2005 and 2014. However, there has been an increase in the number of hours per cared-for person, leading to 4.2% average annual growth in the GVA of informal adult care.

Hours of formal frequent volunteering declined by 6% between 2013 and 2014. As a result, GVA of home produced voluntary activity was £23.3bn in 2014 – a fall of 5.0% on the previous year.

GVA of clothing and laundry services was £88.4bn in 2014, growing by an average of 4.3% per year.

ONS will continue to develop the household satellite account. Current plans include measuring internet-based activities (e.g. booking holidays online). As noted in the Bean Independent Review of Economic Statistics (IRES), this is an increasingly important activity within households.

All values and prices in this report are in current prices so do not adjust for inflation.

### **3 . What is a household satellite account?**

In 2002, the Office for National Statistics (ONS) published the first Household Satellite Account (HHSA) for the UK. This measured and valued most of the goods and services that are produced by households (home production), but are not included in the National Accounts (ONS, 2002; Holloway, Short and Tamplin, 2002). We have updated various elements of the full account since 2002; however, this is the first time the HHSA has been constructed in its entirety since that time. As before, the HHSA measures the value of informal adult and child care, household housing services, nutrition, clothing and laundry, transport and volunteering.

Following the publication of the report by the Commission for the Measurement of Economic Performance and Social Progress (2009), there has been fresh interest in estimating the value of household production. More recently, over the past year, Sir Charles Bean has delivered the Independent Review of Economic Statistics (IRES; Bean, 2016) which highlighted the UK Household Satellite Account as a valuable economic tool for measuring the modern economy. The implications of IRES for the Household Satellite Account are addressed later in this report but broadly IRES recommends the investigation of services which may have been carried out by the market but are now being produced by households themselves, possibly via the internet or through the sharing economy.

The original HHSA utilised an output approach for most sections<sup>1</sup> to develop value estimates of home production. This approach measures the volume of home production valued at a market equivalent rate. The methodology of this account is largely unchanged, with the exception of household housing services. This activity is now based on an input approach: measuring the hours of input, principally labour and valuing at the equivalent market wage rate.

The HHSA extends the production boundary of the core System of National Accounts (SNA, 2008) to include volunteer production of goods, housing services produced by owner occupiers, own account production and additional 'other services produced for own use' as seen in table 1.1 (Eurostat, 2003).

**Table 1.1: Scope of the household satellite account in comparison with the System of National Accounts**

Core SNA		Satellite account of household production	
		SNA production	Non-SNA production
Market production	Volunteer production (goods)	Household production for own use	
		Housing services produced by owner occupiers	Volunteer production (services)
		Own account production (goods), in particular, own-account construction of dwellings	Other services produced for own use

Source: Eurostat, 2003

Activities which are classed as ‘Other services produced for own use’ and ‘volunteer production (services)’ (see table 1) are those activities which differentiate the contents of the core SNA from those in the HHSA. Their inclusion within the extended production boundary of the HHSA is decided by their suitability to meet the ‘third party criterion’<sup>2</sup>. Within this HHSA, activity is divided into 7 principal functions:

- childcare
- adult care
- household housing service
- nutrition
- clothing and laundry
- transport
- volunteering

**Notes for what is a household satellite account?**

1. The output of volunteering was, and still is, estimated using an input approach. More details on the methodology can be found on [The National Archive](#)
2. The third party criterion was originally defined by Margaret Reid (1934) and posits that if an activity were both productive and could [under usual circumstances] be contracted out to a third party then it would be included in an extended boundary of production

## 4 . The value of home production, 2005 to 2014

The total gross value added (GVA) of home production was £1,018.9bn in 2014. This is equivalent to approximately 56.1% of UK GDP, up from 52.5% in 2005. Total GVA grew by 46.8% between 2005 and 2014 at an average of 4.4% per year where the main driving factors in the value of home produced services were childcare (due to growth in both childcare prices and child population) and household transport services (due to growth in the price of transport per mile). This is compared to UK GDP which grew at an average of 3.5% per year over the same period (in current prices).

Considering the two together, 'Extended GDP' – the sum of GVA of home production and GDP – grew from £2,024.6 billion in 2005, to £2,836.2 billion in 2014. This represents an average annual growth of 3.8% between 2005 and 2014. This implies that if home produced services were included in GDP then GDP's average annual growth rate over the last 10 years would have been 0.3 percentage points higher. Due to the lack of a deflator for home production these measures of home production and GDP are expressed in current prices, and do not take into account the effects of inflation.

In accordance with the System for National Accounts (SNA, 2008), home production has historically been excluded from the core National Accounts (and therefore GDP) as it could potentially obscure what is happening in the markets, and reduce the usefulness of National Accounts data for analysis. While household production is relevant to thinking about well-being, it doesn't give rise to wages and salaries, and it doesn't provide a tax base for the government to raise revenue. The use of a satellite account to estimate home production facilitates analysis of home produced services while avoiding any of the aforementioned complications.

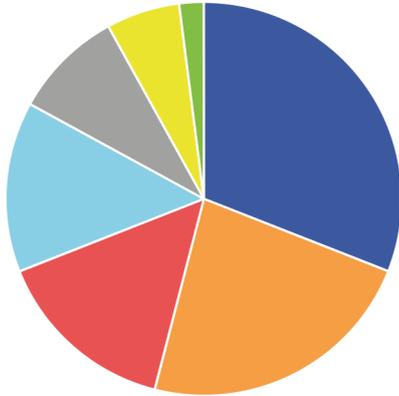
In 2014, informal childcare represents the largest share of total GVA, followed by transport services, accounting for 31.5% and 23.1% respectively. Household housing services (14.7%) and nutrition (14.2%) were the next largest activities. Finally, clothing and laundry, adult care and volunteering account for the remaining share (see figure 1.1).

Figure 1.1: Share of total non-market household GVA by activity, 2014

UK

Figure 1.1: Share of total non-market household GVA by activity, 2014

UK



Source: Office for National Statistics

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## Chapter 2: Home produced 'childcare' services

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# 1 . Value of informal childcare

## What is formal and informal childcare?

The definitions of formal and informal childcare vary between different surveys and projects. Definitions of formal childcare can vary from including only childcare that is registered and paid for (for example registered childminder places for those aged under 8), to including care which is formalised by payment but unregistered (for example unregistered childminders and nannies). Reflecting this, the definition of informal childcare can also vary, but it is often defined as unpaid care. This usually refers to care given by family members such as grandparents and siblings, as well as friends; but does not usually include care given by parents. Alternatively, informal childcare can be defined as care which is unregistered even if paid for, including babysitters and unregistered childminders. This is still referred to as informal care because the arrangements are not formalised with contracts or employment rights.

The Household Satellite Account (HNSA) definition of informal childcare is all care which does not involve a monetary transaction and therefore includes the childcare of parents and other family members. It is the total amount of childcare required (total number of children in the population multiplied by 24 hours a day) less any formal childcare, defined as all paid childcare, whether it is registered or unregistered. Childcare therefore covers both 'other services produced for own use' and 'volunteer services' as shown in table 1 in the executive summary.

Within this definition of informal childcare we have not tried to distinguish between physical acts of supervision or help and the building of parent-child relationships, which obviously cannot be delegated. By using a residual approach to estimate informal childcare we are accounting for all the time a child needs supervision. This supervision can be 'active' or 'passive'. Passive care includes the time when an adult may not be directly interacting with the child, but is still responsible for them. The important point is that if no unpaid carer were available, a third person would have to be paid to take their place. Therefore passive care is part of the productive role of households and is included in our estimates. One simple way of distinguishing between passive and active childcare is to look at waking and sleeping time. If we assume a child under 5 sleeps for 12 hours, we can say that 50% of their childcare is passive, and so on. As children get older, it is more likely that they will be left unsupervised for varying amounts of time. An allowance has been made for this resulting in a reduction in the amount of informal care for older children.

## 2 . Formal and informal childcare hours

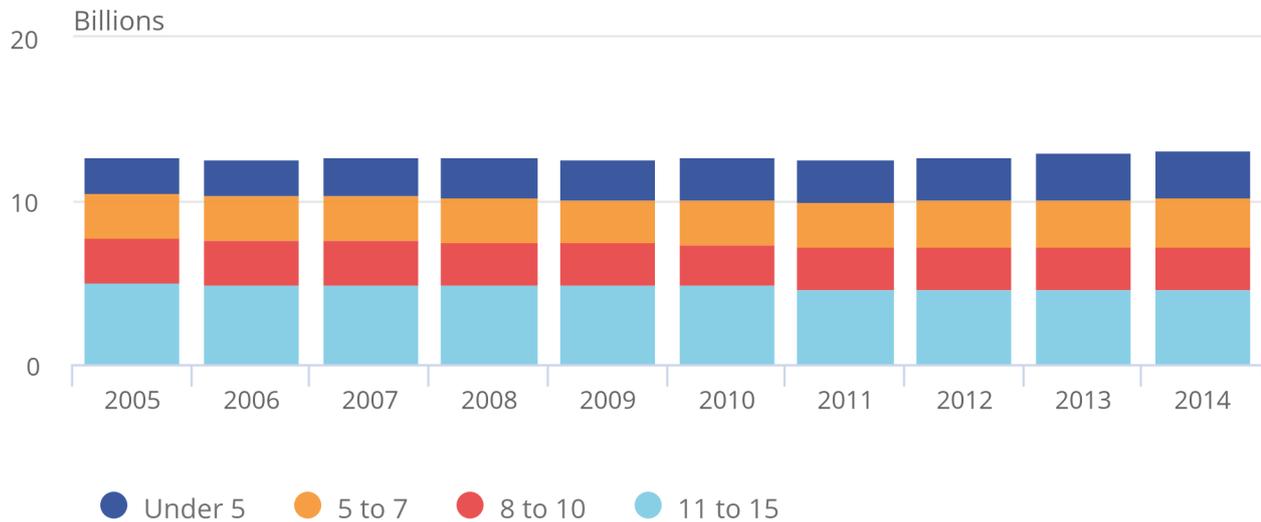
Formal childcare is defined as care which involves a monetary transaction. Total hours of formal childcare can be affected by 2 factors - the duration of time that children spend in childcare, and the total number of children who attend formal childcare.

**Figure 2.1: Formal childcare hours by age, 2005 to 2014**

UK

Figure 2.1: Formal childcare hours by age, 2005 to 2014

UK



Source: Office for National Statistics

Figure 2.1 shows that, overall, there has been a 2.9% increase in the total number of hours of formal childcare between 2005 and 2014. This was largely driven by 27.4% growth in formal childcare hours for children aged under 5, which more than offset a 10.1% reduction in formal childcare hours for children aged 11 to 15.

There are 3 main factors which affect the total number formal childcare hours in the UK – duration of time spent in childcare settings, population of children in the UK, and uptake of formal childcare settings. In this analysis, the duration of time spent in any childcare setting is assumed to remain constant over the period considered.

Examining uptake, which is positively correlated with formal childcare hours, table 2.1 highlights a 1.0% decline in formal childcare hours per child between 2005 and 2014. However, over the same time period, there has been an 8.9% increase in the hours per child aged under 5, coupled with a 1.6% decline in hours per child aged between 11 and 15. Furthermore, the population of children aged under 5 grew by 17.0%, while the population of children aged between 11 and 15 declined 8.7%. Therefore, growth of 27.4% in total formal childcare hours for those aged under 5 is likely to be driven by both increases in hours per child, as well as increasing population. Similarly, a decline in hours per child for those aged 11 to 15, the declining population of this age group, help to explain the 10.1% decline in total formal childcare hours for those aged 11 to 15.

**Table 2.1: Estimated UK formal childcare hours per child, 2005 to 2014**

UK	Under 5	5 to 7	8 to 10	11 to 15	Total
2005	636	1266	1228	1310	1088
2010	664	1333	1225	1297	1083
2014	693	1283	1213	1289	1076
% change 2005 to 2014	8.9%	1.3%	-1.2%	-1.6%	-1.0%

Source: Office for National Statistics

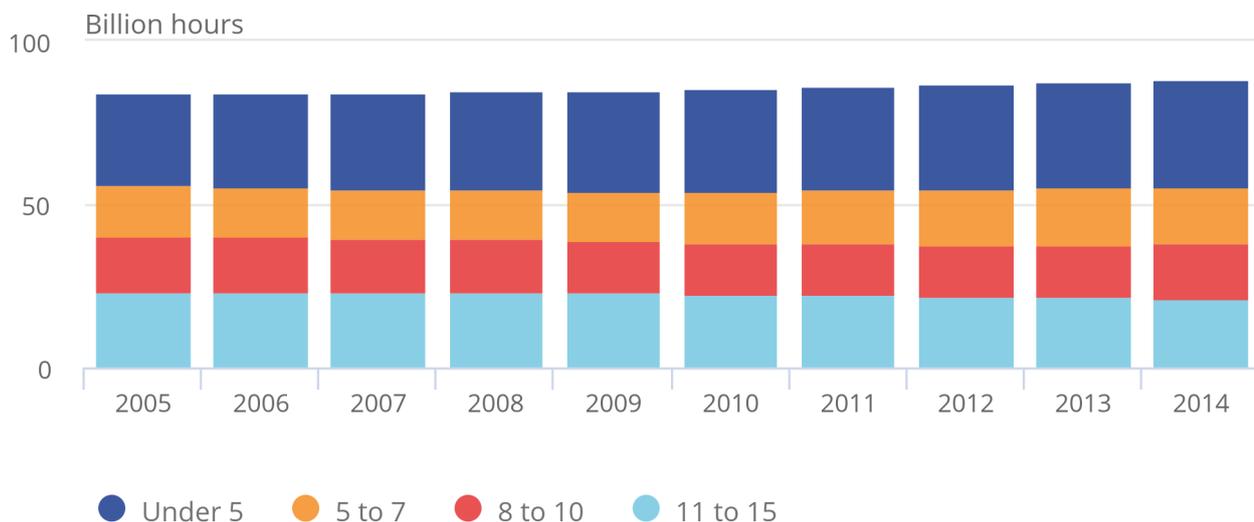
The 8.9% increase in formal childcare hours per child aged under 5 continues the trend reported in [our previous analysis](#), albeit at a slower rate. Further, these results are consistent with government policies aimed at improving accessibility and affordability of childcare. Finally, [we recently published](#) results highlighting that the participation rate for women aged 16 to state pension age with dependent children increased from 70.6% to 74.1% between 2005 and 2014. This is consistent with an increase in the amount of formal childcare hours per child over the same period.

**Figure 2.2: Informal childcare hours by age, 2005 to 2014**

UK

Figure 2.2: Informal childcare hours by age, 2005 to 2014

UK



Source: Office for National Statistics

Figure 2.2 shows total informal childcare hours increased by 4.9% between 2005 and 2014, largely driven by a 4.0% increase in the population of children aged under 16. Hours of informal childcare per child remained broadly flat, growing 0.9% over the 10 year period. Informal hours of childcare for under 5s decreased by 0.7% per child which reflected growth in formal hours of childcare. All other age groups recorded growth between negative 0.2% and positive 0.1%.

Figure 2.3 presents the ratio of informal to formal childcare hours to explore substitutions between the 2 forms of care. The ratio of informal to formal childcare hours grew slightly (1.9%) between 2005 and 2014; however, there was significant variation between different age groups.

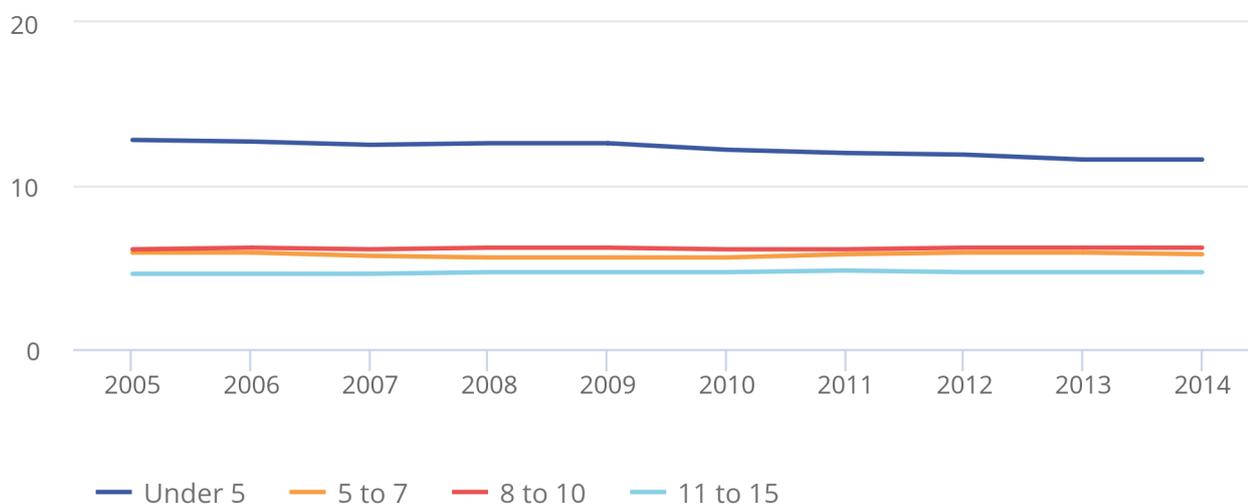
The rate of growth in the ratio of informal to formal childcare hours between 2005 and 2014 for those aged 5 to 7, 8 to 10 and 11 to 15 was -1.5%, 1.4% and 1.7% respectively. This is unsurprising given that these age groups are most likely to attend school, and have little option other than attending formal childcare settings. However, informal to formal childcare hours declined by 8.8% over the same period highlighting the increasing extent to which informal childcare is being substituted for formal childcare settings.

**Figure 2.3: Ratio of informal to formal childcare hours, 2005 to 2014**

UK

Figure 2.3: Ratio of informal to formal childcare hours, 2005 to 2014

UK



Source: Office for National Statistics

### 3 . Value added of informal childcare

As explained in the methodological section of this article, we have made a change to the way in which hours of informal childcare are valued. The hourly cost of a child minder, using information from the Childcare Costs Survey undertaken by Family and Childcare Trust is used to value informal hours. This replaces the wages of live-in nannies from the Nanny/Tax Survey.

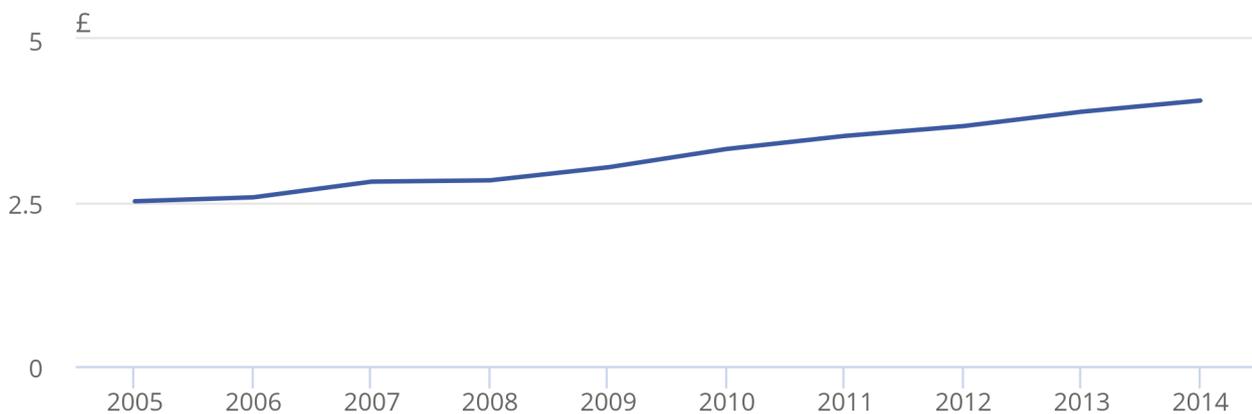
The average hourly cost of a child minder for a child aged 2 and over in England has increased by 61.1% from £2.52 per hour in 2005 to £4.06 in 2014 (see Figure 2.4).

**Figure 2.4: Average hourly cost of a child minder for a child aged 2 and over, 2005 to 2014**

England

Figure 2.4: Average hourly cost of a child minder for a child aged 2 and over, 2005 to 2014

England



Source: Family and Childcare Trust

Gross value added (GVA) of informal childcare grew by 74.5% between 2005 and 2014, at an average growth of 6.4% per year. Most of the increase in the value of informal childcare occurred between 2008 and 2014 - annual growth was 7.5% per year. Growth between 2005 and 2008 was slightly less at 4.2% per year. Given that total informal hours only grew by 4.9% over the 10 year period, a large majority of the growth in the value of informal childcare is accounted for by the 61.1% increase in the cost of a child minder.

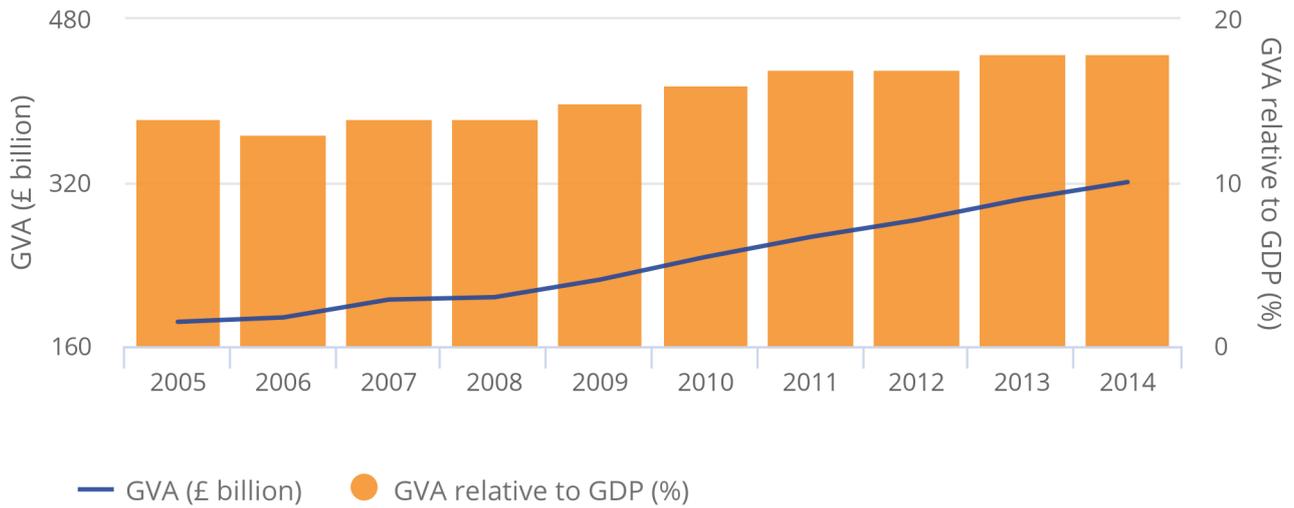
Comparing the value of informal childcare with GDP, Figure 2.5 shows that the proportion of informal childcare to GDP increased by 3.8 percentage points from 13.8% to 17.6% between 2005 and 2014. Further, informal childcare is the largest of all home production activities throughout the 10 year period covered.

Figure 2.5: GVA of informal childcare and GVA relative to GDP, 2005 to 2014

UK

Figure 2.5: GVA of informal childcare and GVA relative to GDP, 2005 to 2014

UK



Source: Office for National Statistics

## 4. Sources for estimating formal childcare hours

England

Scotland

Northern Ireland

Wales

Childminders	Department for Education	Pre-School and Childcare Statistics: 2005-2010. The Care Inspectorate Child Statistics: 2011-2014	Department of Health, Social Services and Public Safety: 2002-2012.	CSSIW
Day Nursery	Department for Education	Pre-School and Childcare Statistics: 2005-2010. The Care Inspectorate Child Statistics: 2011-2014	Department of Health, Social Services and Public Safety: 2002-2012.	CSSIW
Nursery School	Department for Education	Scottish Government	Department for Education Northern Ireland	StatsWales
Play Groups	Department for Education	Preschool and Childcare Statistics	The Care Inspectorate Child Statistics	CSSIW
Nursery Classes	Department for Education	No data	Department for Education Northern Ireland	No data
Maintained Schools	Department for Education	Pupil Census, Supplementary Data, Scottish Schools	Department for Education Northern Ireland	StatsWales
Special needs	Department for Education	Pupil Census, Supplementary Data, Scottish Schools	Department for Education Northern Ireland	StatsWales
Boarding School	Independent schools council	Scottish independent schools council	Department for Education Northern Ireland	StatsWales
Independent School	Department for Education	Pupil Census, Supplementary Data, Scottish Schools	Department for Education Northern Ireland	StatsWales
Children's homes	Department for Education	Children Looked After Statistics	The Department of Health, Social Services and Public Safety	Health Stats. and Analysis Unit: 2001-2011, StatsWales 2012-2014
Foster Places	Department for Education	Children Looked After Statistics	The Department of Health, Social Services and Public Safety	Health Stats. and Analysis Unit: 2001-2011, StatsWales 2012-2014
Hospitals	Hospital episode statistics - NHS	Information Services Division - NHS Scotland	The Department of Health, Social Services and Public Safety	NHS Wales
Holiday clubs	Department for Education	No data	No data	No data

Out of  
school Clubs

Department  
for  
Education

Pre-School and Childcare  
Statistics: 2005-2010. The  
Care Inspectorate Child  
Statistics: 2011-2014

No data

No data

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## Chapter 3: Home produced 'adultcare' services

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# 1 . What is informal adult care?

In the Household Satellite Account (HHSa), informal adult care estimates value the care received either from members of one's own household, or from members of other households. Arguably, most of this care could be delegated to another person. Therefore, this informal care is deemed to be part of the productive role of households, and measured as part of home production.

Informal adult care is estimated using information on the number of adults (individuals aged 16 and over) receiving informal care in the UK. An adjustment is made for the type and regularity of the care given for it to be relevant to the HHSa. The 3 different types of adult care are: personal care, practical care and personal and practical care.

Personal care includes help with activities such as dressing, bathing, washing and feeding.

Practical care includes help with activities such as mobility (for example, getting out of bed) and paperwork or financial matters.

Personal and practical care is providing aspects of both of these.

The amount of care received varies from a visit once a week to continuous care. Once the frequency of care is assigned, a value of the number of hours of care received is applied to each case allowing the calculation of UK total hours of care. Finally, a suitable hourly wage rate is applied based on the closest market equivalent occupation. A full account of the methodology is located in the annex.

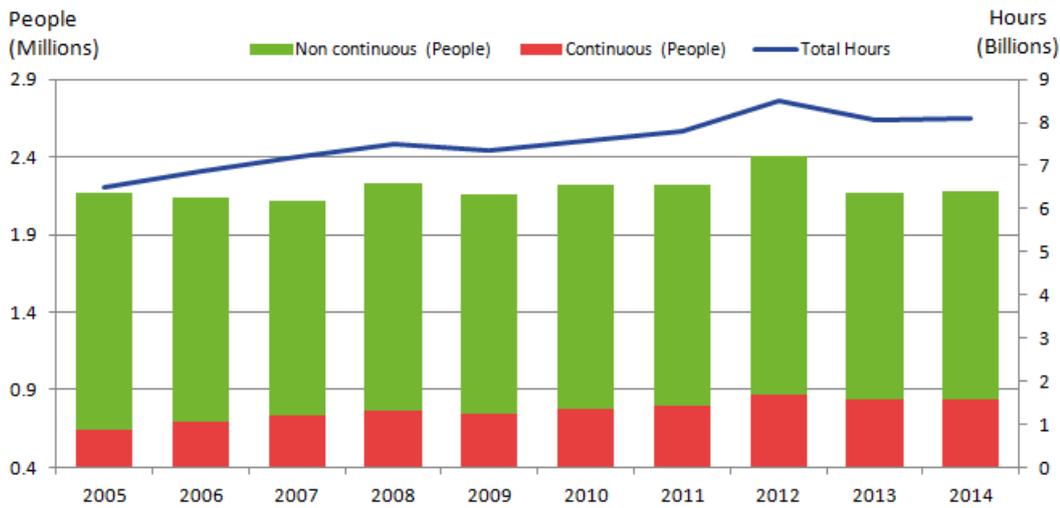
It should be noted that these measures of informal adult care do not aim to measure the help provided by members of voluntary organisations or care for individuals aged under 16 as this will be recorded in the volunteering and childcare sections of the HHSa.

## 2 . Volume of informal adult care

The volume of adult care is sourced from the Family Resources Survey which is a financial year dataset. To ensure comparability with the rest of the HHSa, financial year information is assumed to be equivalent to calendar year information. For instance, the number of hours of informal adult care reported in 2007 is equal to information for financial year ending 2008. Further, the latest year for which information is available is financial year ending 2013. Hours of informal adult care in 2014 are imputed assuming constant hours of care per person in the UK between 2013 and 2014.

**Figure 3.1: Total number of people receiving informal adult care by type, and total number of hours, 2005 to 2014**

UK



Source: Family Resources Survey (FRS)

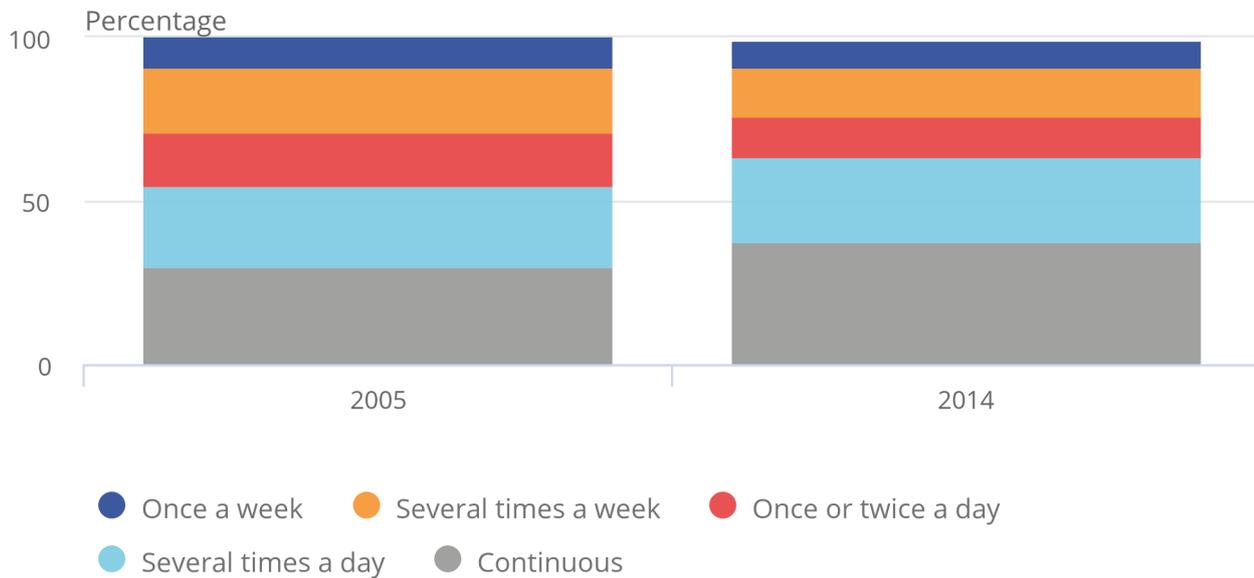
Figure 3.1 shows the number of adults receiving informal care remained largely static between 2005 and 2014, growing by 0.6%. In comparison, the total number of hours of care grew by 24.9% over the same period. The main contributor to this was the increasing proportion of those receiving continuous care (defined as receiving 168 hours per week). As figure 3.1 shows, since 2005 the number of people receiving continuous care has increased by 194,000. In comparison the amount of people receiving non-continuous care has fallen by 180,000 since 2005. As a result, continuous care hours increased by 1.7 billion compared with non-continuous care hours which fell by 0.1 billion between 2005 and 2014.

**Figure 3.2: Frequency of informal adult care, 2005 and 2014**

UK

Figure 3.2: Frequency of informal adult care, 2005 and 2014

UK



Source: Family Resources Survey (FRS)

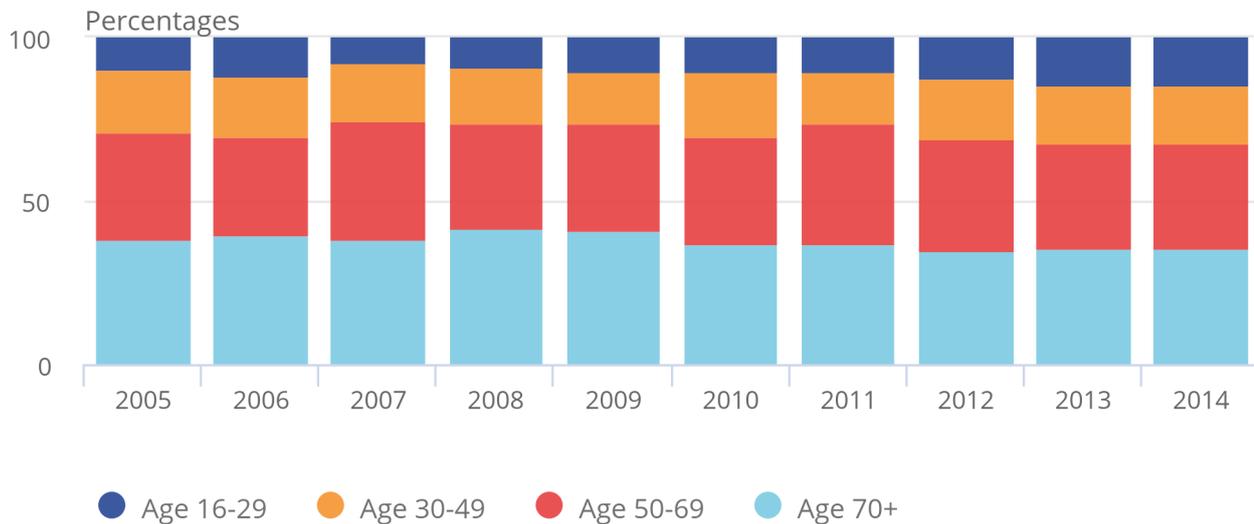
Figure 3.2 further highlights the changing pattern of frequency of informal care. In 2014, the proportion of continuous care received increased by 8.7 percentage points compared with that of 2005. Similarly in 2014, the proportion attributed to care received several times a day also increased whilst the proportion for once or twice a day and several times a week fell. This shift towards more frequent care explains the increasing total hours of adult care whilst the number of adults receiving care has stayed broadly flat.

**Figure 3.3: Share of informal adult care by age, 2005 to 2014**

UK

Figure 3.3: Share of informal adult care by age, 2005 to 2014

UK



Source: Family Resources Survey (FRS)

Notes:

1. Figures may not sum due to rounding

Figure 3.3 decomposes informal adult care by total hours received by age group. In 2014, those aged 70 and over, and those aged 50 to 69 received the most care, with 35.3% and 32.3% of the total informal adult care hours respectively. The remaining hours were received by those aged 30 to 49 (18.2%) and 16 to 29 (14.1%). Interestingly, those aged 70 and over have seen their share of total care decrease between 2005 and 2014. This is despite the fact that the population of this age group grew by 35.7% over the period, compared with 27.6% for the population as a whole.

### 3 . Gross value added of informal adult care

The output of informal adult care in the UK is estimated by multiplying the total hours of care by the wage rates of carers/nursing assistants. Gross value added (GVA), as described in the methodology section, is estimated by making an adjustment for the input of household housing services.

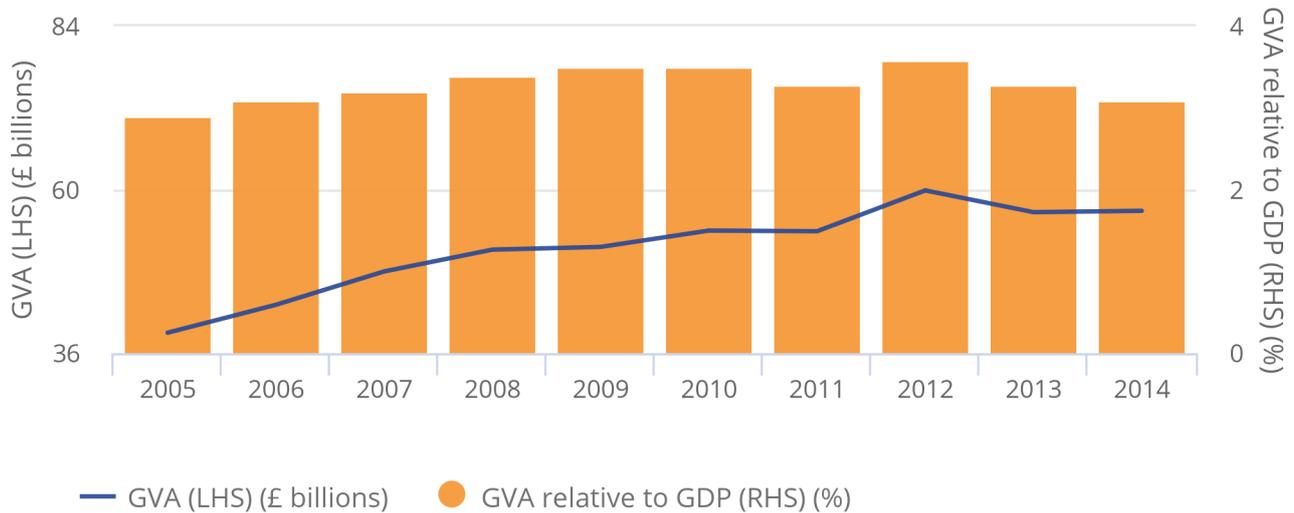
The GVA of informal adult care in the UK increased by 45.8% between 2005 and 2014, from £39.0 billion to £56.9 billion (Figure 3.4). This was characterised by 9.5% average annual growth between 2005 and 2008, driven by both a 15.7% increase in the total number of hours cared for, and an 11.9% increase in the wages of carers. Since 2008, growth has been relatively stable, with the exception of 2012 when value added grew by 11.2%. This was driven by an increase of 9.0% in the number of hours people reported being cared for.

Figure 3.4: GVA of informal adult care and GVA relative to GDP, 2005 to 2014

UK

Figure 3.4: GVA of informal adult care and GVA relative to GDP, 2005 to 2014

UK



Source: Office for National Statistics

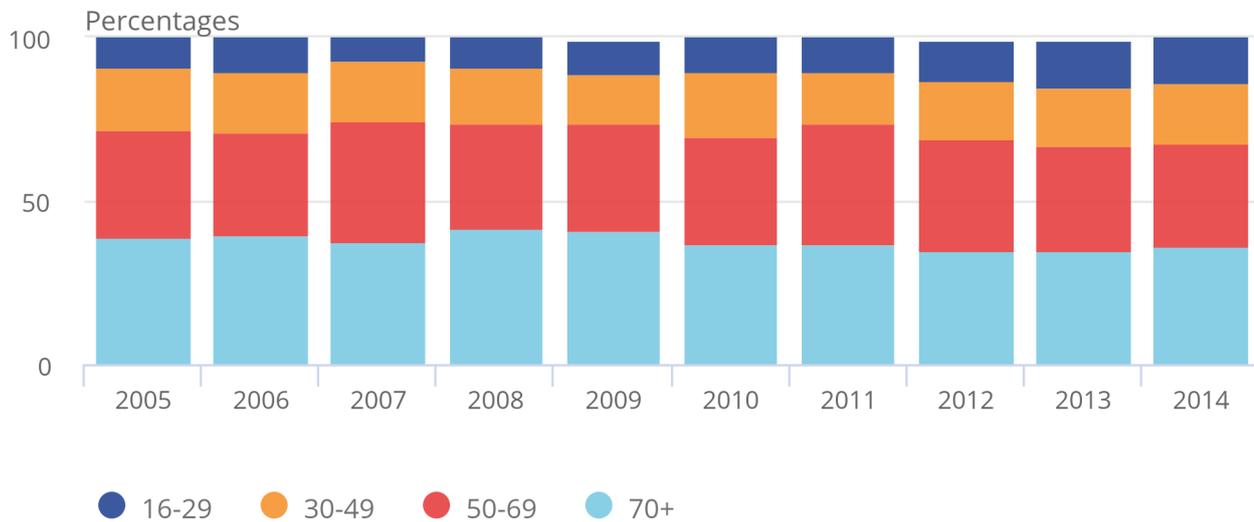
Figure 3.5 presents the output of informal care by age group. It shows that in 2014 those aged over 70 accounted for the largest proportion (35.5%) of the total output of informal adult care. However, the share of total informal adult care accounted for by those aged over 70 has declined by 5.9 percentage points from a peak of 41.4% in 2008. The proportion of total output accounted for by those aged 16 to 29, on the other hand, has almost doubled, growing from 7.4% to 14.0% of the total between 2007 and 2014.

**Figure 3.5: Share of informal adult care output by age group, 2005 to 2014**

UK

Figure 3.5: Share of informal adult care output by age group, 2005 to 2014

UK



Source: Office for National Statistics

Notes:

1. Figures may not sum due to rounding

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## Chapter 4: Home produced 'housing' services

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3. [Gross value added of household housing services](#)

# 1 . What are household housing services?

As shown in table 1.1, 'housing services produced by owner occupiers' are already estimated within the core System of National Accounts (SNA, 2008) as 'imputed rentals for housing services'. Imputed rentals represent the value of owner occupier housing if it were rented on the rental market. The household housing services within the Household Satellite Accounts (HSA) are different. The value of household housing services in the HSA are defined as the value of: buying or renting a house or flat, getting it furnished and equipped, cleaning it, maintaining it, and repairing it. This definition extends the definition of housing services already estimated in the core SNA.

Under the extended HSA definition of household housing services, both the value of the shelter and home produced services of household upkeep such as DIY, gardening and cleaning activities are included.

As described in the methodology section of this article, this analysis uses an input/production approach (comparable to GDP (I)), to estimate total output of household housing services. This requires the estimation of the following components:

- equivalent labour costs that would normally have been paid to maintain the housing using market services (Compensation of Employees; CoE)
- goods and services (resources) used up by housing such as utilities like electricity or water (Intermediate Consumption; IC)
- a market equivalent profit which a third party contracted in to provide some of the household upkeep activities could reasonably expect to generate in any given year (Gross Operating Surplus; GoS)

(Taxes and subsidies are not adjusted for and in this analysis are assumed to have no contribution to the total output or gross value added (GVA) of household housing services).

In addition to these elements, estimates of the value of accommodation services are also added in by using actual rentals paid for housing (for tenants) or imputed rentals paid for housing (for owner occupiers). These 2 estimates are taken from the National Accounts. Therefore total output is described with the following formula:

Total Output = CoE + IC + GoS + Imputed Rentals

In comparison, GVA can be best described with this formula:

GVA = CoE + GoS

In contrast to the measure of total output, the value of GVA excludes the output of imputed rentals for housing as this is already accounted for within the core SNA. It also excludes the value of actual rentals paid for housing by recording actual rentals paid for housing as intermediate consumption, therefore excluding it from GVA estimates.

## 2 . Volume of time spent carrying out productive activities of household upkeep

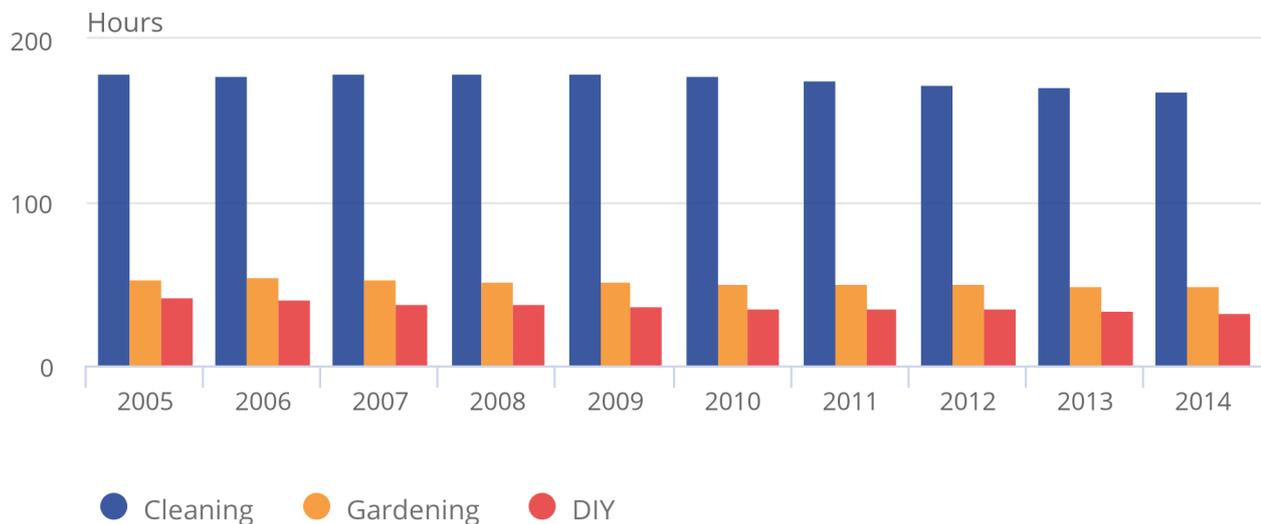
The compensation of employees component of household housing services is estimated by multiplying the volume of time spent carrying out activities for household upkeep by an appropriate market wage rate. Average annual hours undertaking activities of household upkeep per person in the UK has been falling between 2005 and 2014. Changes in the volume of time spent in these activities are likely to drive changes in both the total output and the GVA of household housing services.

**Figure 4.1: Average annual hours carrying out household upkeep tasks per person, 2005 to 2014**

UK

Figure 4.1: Average annual hours carrying out household upkeep tasks per person, 2005 to 2014

UK



Source: UK time Use Survey 2000 and British Household Panel Survey (BHPS)

As shown in figure 4.1, the amount of hours spent per person per year carrying out activities of household upkeep has steadily declined across all 3 types of activity: cleaning, DIY and gardening. Mean annual hours spent per person carrying out cleaning, DIY and gardening fell by 11.2 hours, 8.6 hours and 5.0 hours respectively between 2005 and 2014. This represents a fall of 6.2% for cleaning, 9.3% for gardening and 20.5% for DIY in the mean time spent carrying out those activities (per person, per year) between 2005 and 2014.

These trends could be explained by a range of factors. Innovation in tools and methods used to carry out these activities is likely to have a negative impact on the amount of hours taken to complete tasks. Further, the number of first time buyers, who will have more of a vested interest in upkeep of the house, [has been in steady decline over the last 15 years](#). The UK has an ageing population who may find it more difficult to undertake these tasks relating to household upkeep. Finally, it is possible that higher occupation rates per household may be having a negative effect. Supporting some of these possibilities it is also reported that the economic climate has been growing increasingly difficult for those market services which sell tools and materials for DIY (Mintel, 2013).

### 3 . Gross value added of household housing services

In the pursuit of comparability, the value of household housing services is estimated using similar economic methods to the core System of National Accounts (SNA, 2008), specifically those used in the production of GDP (I). Figure 4.2 presents estimates of GVA and the relative size of household housing GVA is compared with Gross Domestic Product - the total amount of GVA across the economy in any given year <sup>1</sup>.

**Figure 4.2: GVA of household housing services and GVA relative to GDP, 2005 to 2014**

UK

Figure 4.2: GVA of household housing services and GVA relative to GDP, 2005 to 2014



Source: Office for National Statistics

Figure 4.2 shows that between 2005 and 2010, the GVA of household housing services grew by an annual average rate of growth of 2.6% while there was a period of lower (slightly negative) growth between 2010 and 2014 at negative 0.1%. Over the whole series between 2005 and 2014, there was an annual average growth rate of 1.4%.

The proportion of the GVA of household housing services relative to GDP decreased throughout the 12-year period, from 9.9% of GDP in 2005 to 8.2% by 2014. Shortly after the economic downturn in mid-2008, the relative size of household housing services briefly grew again, peaking in 2009 where the size of its GVA was equivalent to a 10.2% share of GDP.

**Figure 4.3: Contributions to GVA growth of household housing services, 2005 to 2014**

UK

Figure 4.3: Contributions to GVA growth of household housing services, 2005 to 2014

UK



Source: Office for National Statistics

The previous chart, figure 4.2, showed growth in the GVA of household housing services followed 2 trends throughout the time series. Initially between 2005 and 2009, growth in GVA is mostly positive with an annual average growth of 3.5%<sup>2</sup>. Figure 4.3 shows most of the growth is driven by the value of compensation of employees which has grown by an annual average of 3.8% between 2005 and 2009. The slowdown in GVA between 2010 and 2014 to negative 0.1% is mainly driven by slower growth in compensation of employees. As shown in the earlier section, this change in the value of compensation of employees was related to a fall in the amount of time spent carrying out activities rather than a fall in relative wage rates.

**Notes for gross value added of household housing services**

1. Gross Domestic Product is the sum of GVA across the economy plus or minus taxes and expenses
2. In 2009 there is negative growth in the level of Gross Operative Surplus which is related to the economic downturn as this value is imputed using a ratio derived from equivalent market services. As the volume of non-market activity increased for a short duration after the economic downturn it may be more appropriate to impute a positive growth in gross operating surplus for 2009. Further work is necessary to develop currently experimental techniques to impute gross operating surplus

## Chapter 5: Home produced 'nutrition' services

The Household Satellite Account (HSA) presents estimates of unpaid home production in the UK. It captures a range of non-market services produced by households which are not included in the core UK National Accounts.

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1. [What are nutrition services of households?](#)
2. [Quantity of calories produced](#)
3. [Cost of calories eaten out](#)
4. [Gross value added](#)

# 1 . What are nutrition services of households?

Nutrition services of households include all activities related to the provision of food and drink, such as cooking, shopping, setting the table, and washing up. As most nutrition-related services carried out by a household's members could be delegated to another person, it is deemed to be a part of the productive role of households.

The output of nutrition services of the household are the meals, snacks and drinks prepared for members of the household, the final product of the activities listed above. Output is estimated by multiplying the total number of calories consumed in the home, by the cost per calorie eaten out. A detailed explanation of the methodology can be found in the annex.

## 2 . Quantity of calories produced

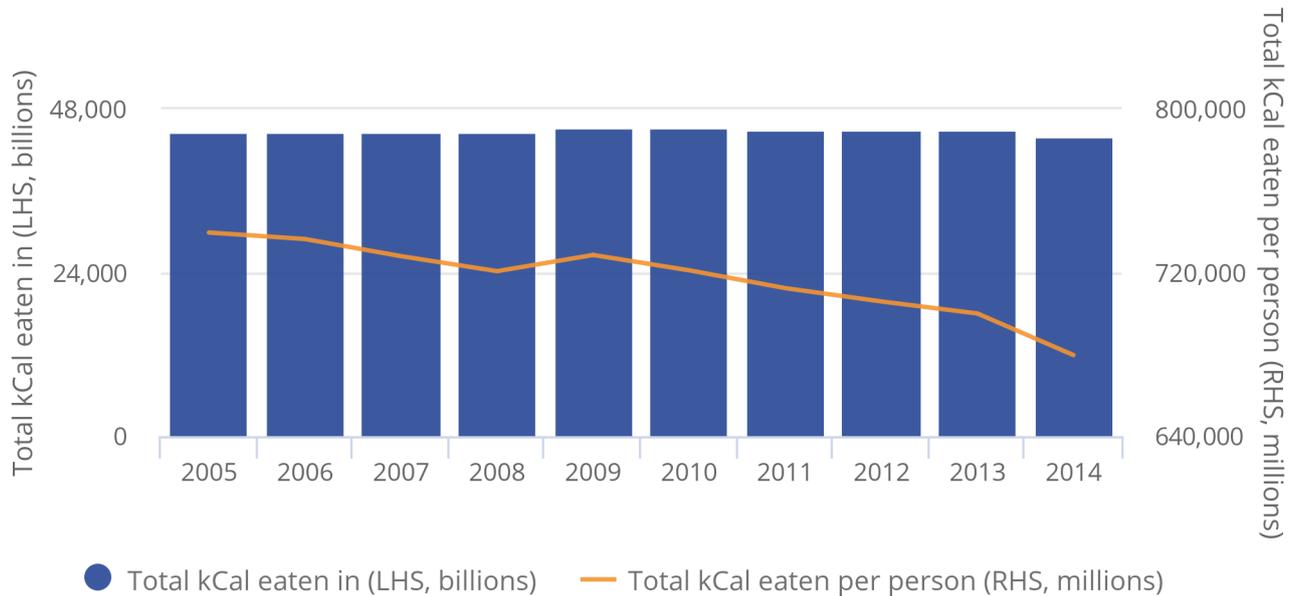
This methodology accounts for the variation in meal sizes by using calories eaten at home to estimate volume of nutrition services that households produce. This implicitly makes a number of assumptions. First, it assumes that consumption is equal to production, and therefore does not value any food produced but not eaten. Second, a decrease in the number of calories consumed per person will lead to a decrease in the output of nutrition services. This might not be the case if households are preparing healthier meals, with less calorific content. Finally, it is not possible to isolate specific foods that require no preparation. However, the data does identify calories consumed as part of alcoholic beverages. These are removed as it is assumed that the preparation of alcohol requires no productive activity.

**Figure 5.1: Volume of calories eaten in, total and per person, 2005 to 2014**

UK

Figure 5.1: Volume of calories eaten in, total and per person, 2005 to 2014

UK



Source: Office for National Statistics

Figure 5.1 shows that growth in the total number of calories eaten in has been largely flat, with average annual growth of negative 0.2% between 2005 and 2014. The 1.8% increase between 2008 and 2009 was largely offset by a 2.2% decline between 2013 and 2014. This result is surprising given that the UK population has grown by 6.9% between 2005 and 2014. However, as the right hand axis of figure 5.2 highlights, the impact of the population increasing is negated by a reduction in the number of calories eaten in per person, which declined 8.1% between 2005 and 2014.

### 3 . Cost of calories eaten out

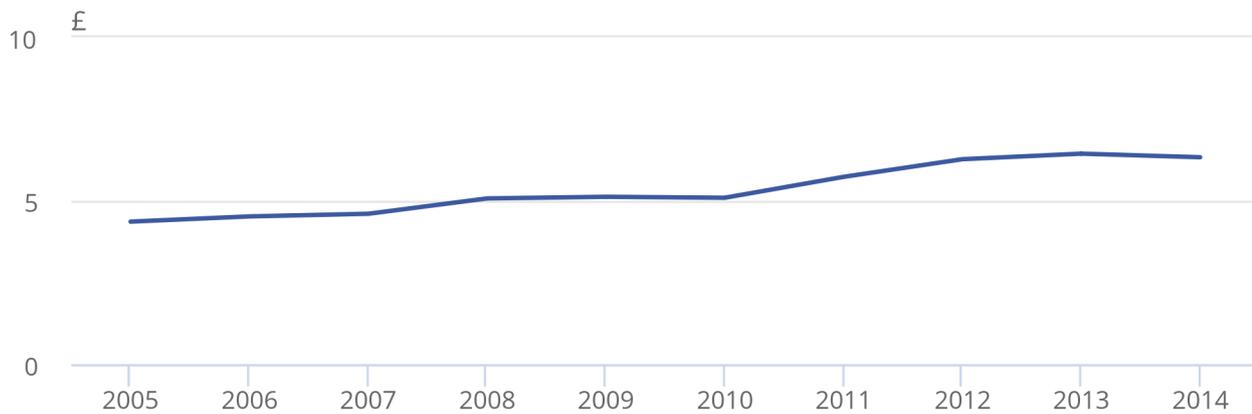
The price of the market equivalent of production, namely the price of food and drink eaten out from establishments such as restaurants, cafes, and pubs is used to attribute a monetary value to the production at home. This is achieved by dividing the number of calories eaten out by the expenditure on food eaten out to obtain expenditure per calorie.

**Figure 5.2: Expenditure per 1000 kCals eaten out, £'s, 2005 to 2014**

UK

Figure 5.2: Expenditure per 1000 kCals eaten out, £'s, 2005 to 2014

UK



**Source: Office for National Statistics**

Figure 5.2 shows expenditure per 1,000 kilocalories (kCals) (excluding alcohol) increased by 45.1% from £4.36 to £6.33 between 2005 and 2014. Most of the increase occurs between 2005 and 2012, where the expenditure per calorie grew by an average of 5.3% per year. Most notably, expenditure per 1,000 kCals increased by 12.7% between 2010 and 2011. This was driven by an 8.6% decline in reported calories consumed out coupled with an increase in expenditure of 3.0%.

More recently, between 2012 and 2014, average growth in the cost of calories consumed out of the house only grew by an average of 0.4%. The recent slowdown in the cost of calories corresponds [with our Consumer Price Inflation index for restaurants and cafes](#). While the rate of inflation for restaurant and café services was 4.8% in 2011, it declined in 2012 (to 3.3%), 2013 (2.8%) and 2014 (2.5%).

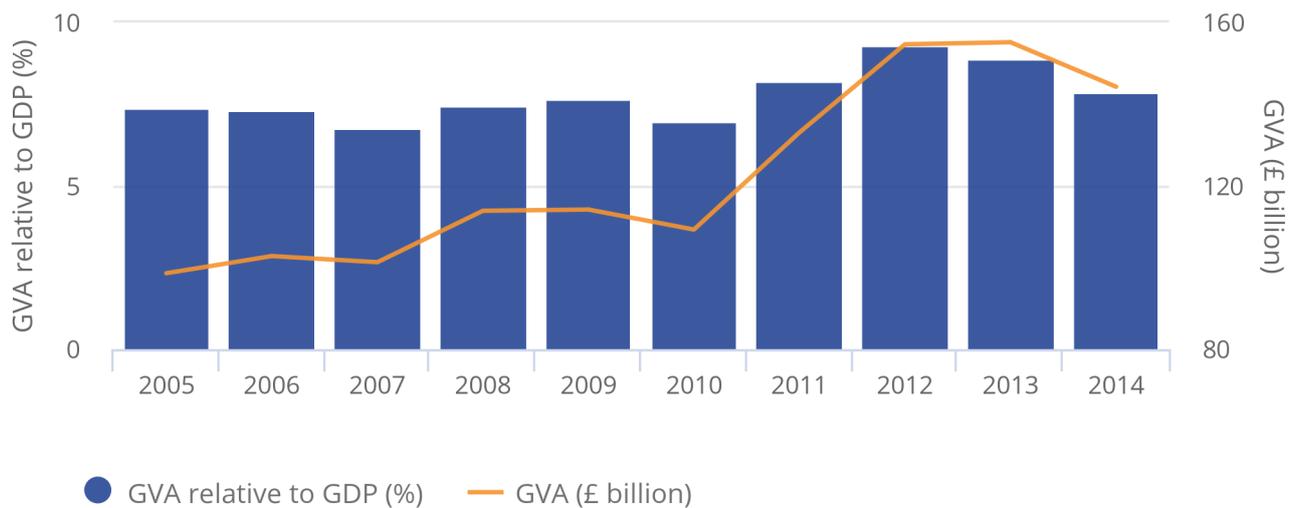
## 4 . Gross value added

Figure 5.3: GVA of nutrition services and GVA relative to GDP, 2005 to 2014

UK

Figure 5.3: GVA of nutrition services and GVA relative to GDP, 2005 to 2014

UK



Source: Office for National Statistics

Figure 5.3 shows GVA of nutrition services of households increased by 46.4% between 2005 and 2014. This was largely driven by average annual growth of 6.7% between 2005 and 2012. However, growth in the value of nutrition services declined by 6.8% between 2012 and 2014, driven by a decline in the number of calories consumed at home, and a flattening of the cost per calorie eaten out over this period.

In 2014, the value of nutrition services was £144.3 billion, equivalent to 7.9% of GDP. This is a largely similar position to 2005. However, within the period considered nutrition services as a proportion of GDP has fluctuated between 6.8% in 2007 and 9.3% in 2012.

Compendium

## Chapter 6: Home produced 'clothing' and 'laundry' services

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## Table of contents

1. [What are clothing and laundry services?](#)
2. [Volume and cost of household laundry services](#)
3. [Gross Value Added of household laundry services](#)
4. [GVA of clothing services](#)

# 1 . What are clothing and laundry services?

In table 1.1, household clothing and laundry services would be categorised as other services produced for own use or volunteer production (services). They are services which are not included in the core System of National Accounts (SNA, 2008). Instead household clothing and laundry services include activities such as the unpaid washing, drying and folding of clothes or the repair and production of clothing items such as knitting a jumper or sewing a button on a shirt.

## 2 . Volume and cost of household laundry services

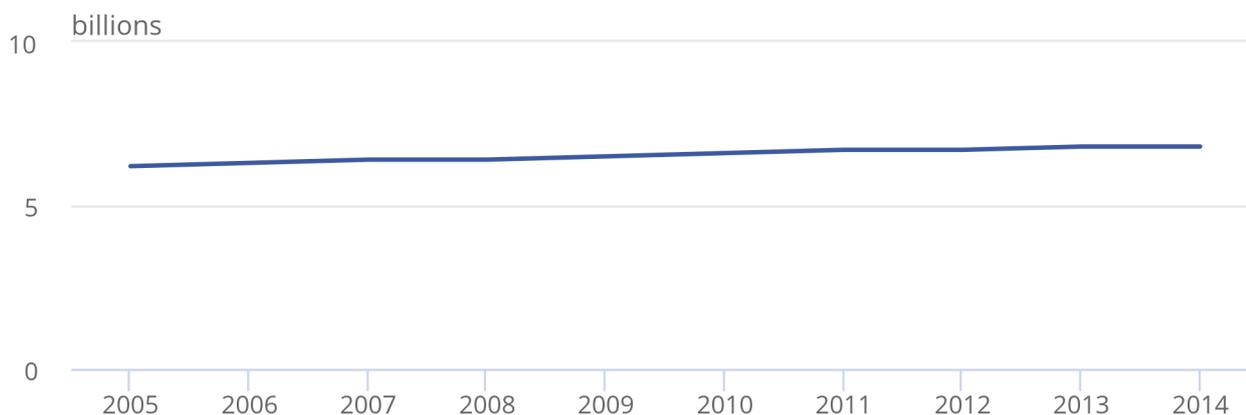
The volume of household laundry services is based on the number of 5 kilogram wash loads carried out in the UK. The number of wash loads is estimated by assuming that each household carries out 260 wash loads per year on average. This is based on estimates from the Lever Feberge UK Laundry Market Report (2000). In 2010, the Department for Environment, Food and Rural Affairs (Defra), the Department of Energy and Climate Change (DECC) and the Energy Saving Trust jointly commissioned a survey on energy consumption which suggested that households carried out an average of 284 wash cycles a year. This estimate was later revised to 244 wash loads per household per year in a follow up study (Energy Saving Trust, 2013). Due to a lack of consistent time series data, and because later point estimates do not differ considerably, we have continued to use the Lever Feberge measure to compile estimates of the volume of laundry carried out in the UK. Further, it assumed that 10% of that laundry is ironed and it is all folded and stored away. This is based on analysis conducted in the 2002 Household Satellite Account (HSA).

**Figure 6.1: Number of wash loads per year, 2005 to 2014**

UK

Figure 6.1: Number of wash loads per year, 2005 to 2014

UK



Source: Office for National Statistics

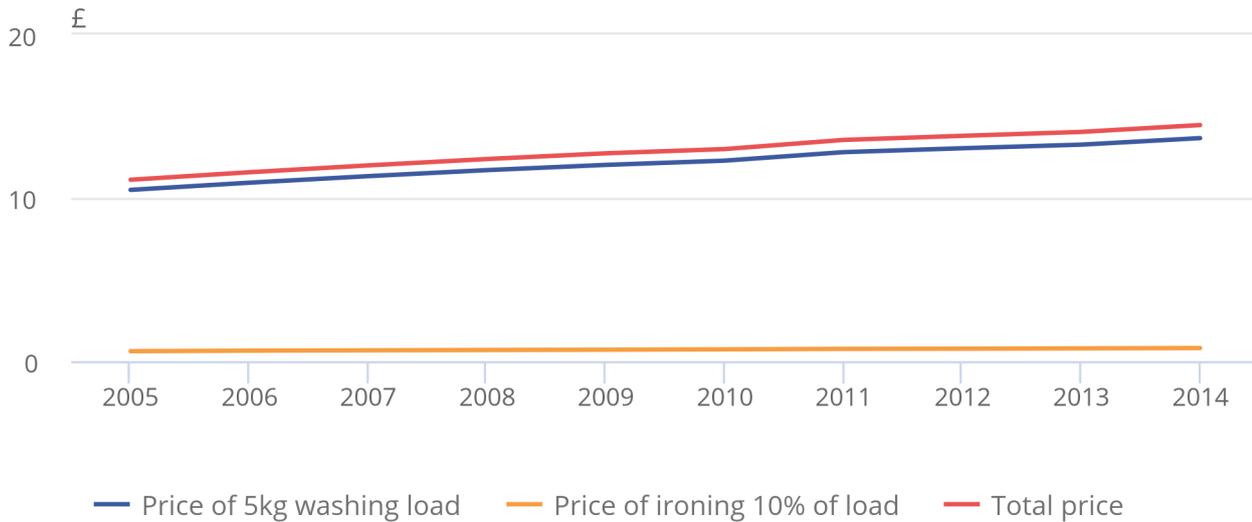
Figure 6.1 shows the number of wash loads has increased by 9.6% from 6.2 billion to 6.8 billion wash loads per year between 2005 and 2014<sup>1</sup>.

**Figure 6.2: Price of a laundry load, ironing and the sum of both components, 2005 to 2014**

UK

Figure 6.2: Price of a laundry load, ironing and the sum of both components, 2005 to 2014

UK



Source: Office for National Statistics

Figure 6.2 shows the price of laundry (washing, drying, folding and ironing). This price is based on market equivalent services and comprises several components including:

- the associate labour costs (Compensation of Employees)
- the utilities and resources used up in the process of laundering (Intermediate Consumption)
- a profit margin (Gross Operating Surplus)
- additional costs such as taxes/subsidies

The price of washing and ironing is unchanged from [methodology presented in our previous release](#). When intermediate consumption costs are considered, if the majority of the price is not made up of the costs of utilities such as electricity, water or detergent then the gross value added (GVA) would be close to zero. However this is not the case, demonstrating that the price actually includes a significant proportion of cost relating to compensation of employees and Gross Operating Surplus. This suggests that much of the cost of carrying out a load of washing may still result in the time spent to load and tend to the machines, load drying rails if air drying items, fold clothes and iron the 10% of clothes even though washing processes have largely been automated since the 1950s.

## Notes for volume and cost of household laundry services

1. The estimate for number of wash loads has been revised from the previous. This is due to revised data on the number of households. This revises up the number of wash loads by 0.1 billion for years 2010, 2011, and 2012.

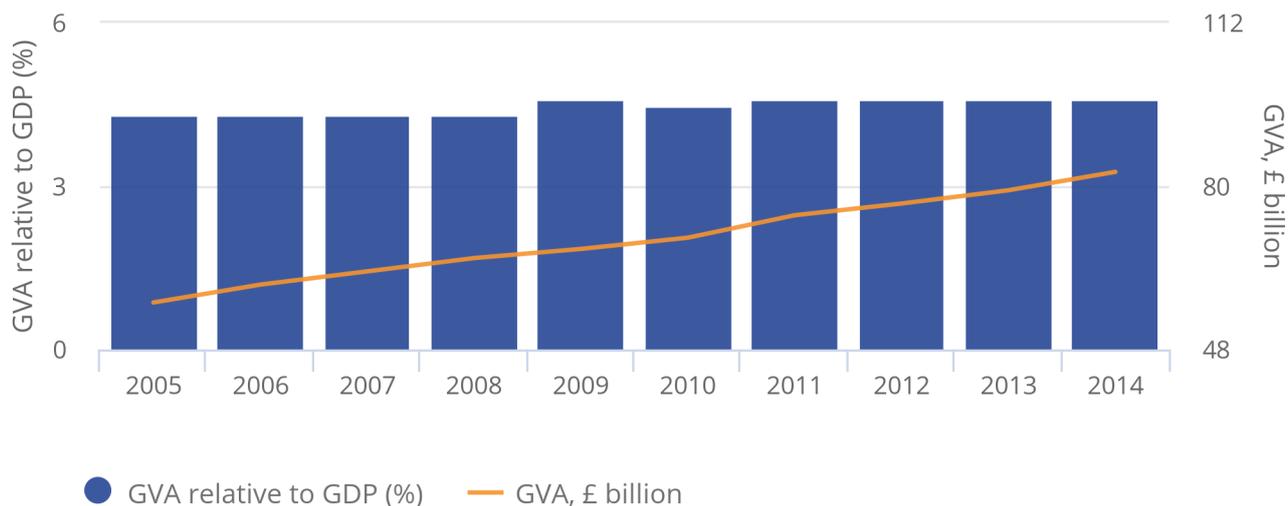
### 3 . Gross Value Added of household laundry services

Figure 6.3: GVA of laundry services and GVA relative to GDP, 2005 to 2014

UK

Figure 6.3: GVA of laundry services and GVA relative to GDP, 2005 to 2014

UK



Source: Office for National Statistics

The GVA of household laundry services has been increasing at a steady rate with an annual average growth rate of 4.2% per annum between 2005 and 2014. The growth was driven by both 2.8% annual growth in the price of laundry, coupled with increasing wash loads as a result of a growing population. The GVA relative to the size of GDP has stayed relatively constant, rising slightly from 4.3% in 2005 to 4.6% in 2014.

## 4 . GVA of clothing services

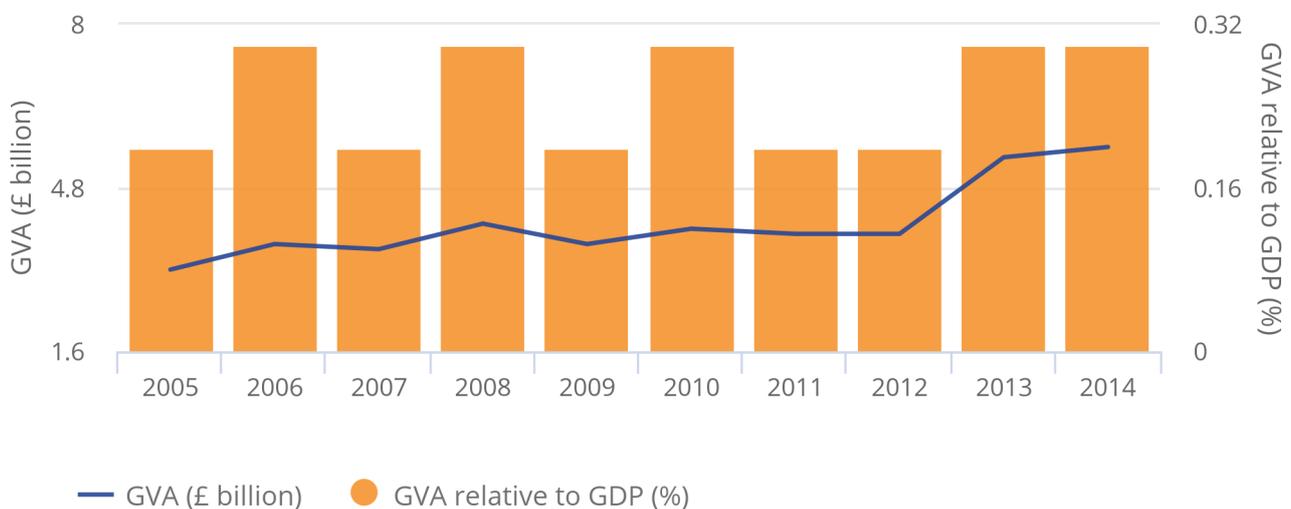
To estimate the output of clothing services, intermediate consumption is derived directly from household final consumption expenditure related to clothing materials and related haberdashery expenditure. A mark-up is applied based on the difference between 100 grams of wool and 100 grams of a jumper to derive the output. Finally, intermediate consumption is deducted to derive GVA.

**Figure 6.4: GVA of clothing services and GVA relative to GDP, 2005 to 2014**

UK

Figure 6.4: GVA of clothing services and GVA relative to GDP, 2005 to 2014

UK



Source: Office for National Statistics

Figure 6.4 shows that the GVA of household clothing services grew by an annual average rate of growth of 6.5% between 2005 and 2014. In 2014, the GVA of household clothing services was £5.6 billion measuring 0.3% relative to GDP (up from 0.2% in 2005).

Compendium

## Chapter 7: Home produced 'transport' services

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1. [What are transport services?](#)
2. [Total miles travelled](#)
3. [Price of transport services in the market](#)
4. [Gross value added](#)

# 1 . What are transport services?

Transport services of households are the provision of private transport by households using modes such as cars, motorcycles, bicycles and walking. Transport for all purposes is included, except cases where the use of the transport is purely for pleasure (that is, going for a walk, driving for pleasure).

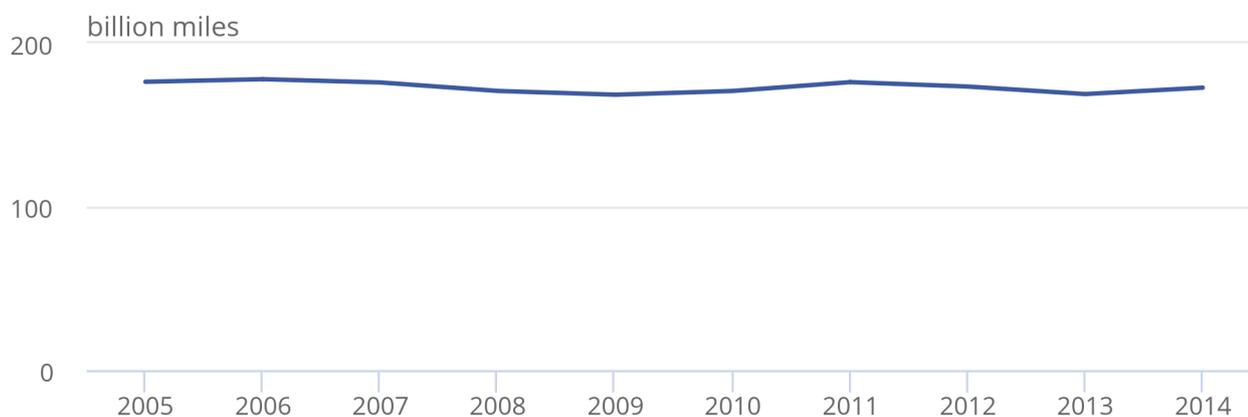
## 2 . Total miles travelled

**Figure 7.1: Total miles travelled by private transport billion miles, 2005 to 2014**

UK

Figure 7.1: Total miles travelled by private transport billion miles, 2005 to 2014

UK



**Source: Office for National Statistics**

**Notes:**

1. From 2005-2012, miles are calculated from data obtained from the National Travel Survey (NTS) and the Travel Survey for Northern Ireland (TSNI). From 2013 onwards, some figures have been extrapolated - see the annex for methodological information

The output of transport services of households is estimated by multiplying the total number of miles undertaken in all the trips that households produce, by the market equivalent cost. Figure 7.1 shows total miles travelled in the UK increased between 2005 and 2006 - where it peaked at 178.0 billion miles - before falling in consecutive years to 168.5 billion miles in 2009. Total miles increased again until 2011 but further decreases followed in 2012 and 2013. In 2014, total miles travelled increased to 172.8 billion miles but remain below the 2006 level.

As described in more detail in our [previous release](#), a number of factors could have influenced the decrease in miles travelled between 2006 and 2009, including the behaviour of fuel prices and the onset of the mid-2008 economic downturn.

Both petrol and diesel prices increased temporarily in 2005 and 2006 before increasing 35.5% and 41.6% respectively within the 18 months from 2007 to mid-2008. Following the onset of the economic downturn, median equivalised household disposable income decreased (falling from £25,700 in financial year ending 2008 to £25,200 in financial year ending 2009) and the UK unemployment rate increased (from 5.3% in 2007 to 7.6% in 2009). As well as less potential commuting trips as a result of the increased unemployment rate, some individuals might have reduced their miles travelled as a result of having less income, coupled with increased travel costs.

Total miles travelled recovered between 2009 and 2010, before increasing 3.2% between 2010 and 2011. This was a result of both an increase in miles travelled per person and the population, which outweighed the increase in the average<sup>1</sup> number of people travelling together. However, between 2011 and 2013, total miles fell again, as a result both of miles travelled per person decreasing and an increase in average party size. In 2014, total miles recovered - increasing to 172.8 billion miles. This was mainly due to a reduction in average party sizes, which offset falls in miles per person travelled. During this time fuel prices declined (petrol fell 13.0% and diesel fell 12.8% between the end of 2013 and the end of 2014), alongside a rise in median equivalised household income, from £24,100 in financial year ending 2013 to £24,800 in financial year ending 2014. As a result, individuals might have found travelling alone increasingly more affordable.

#### **Notes for total miles travelled**

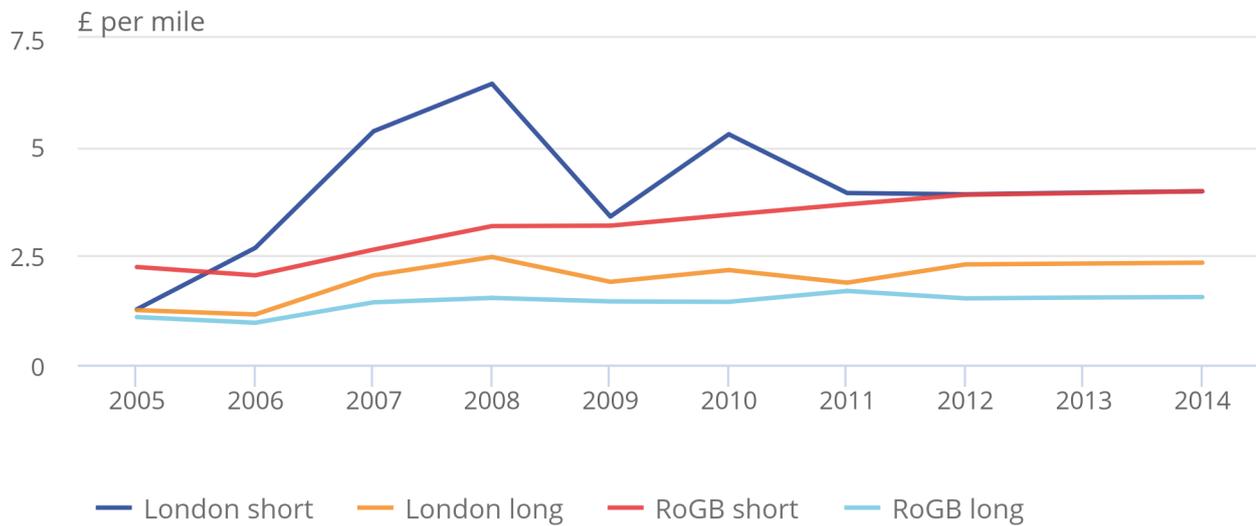
1. An increase in average party size, all else constant, will result in a decrease in the total miles travelled

### **3 . Price of transport services in the market**

As outlined in the methodology section, the price per mile is calculated using information on the cost of Private Hire Vehicle (PHV) from the National Travel Survey (NTS). However, the NTS stopped collecting this information in 2012. Therefore, for 2013 and 2014, PHV prices are up-rated using an ONS Consumer Price Index for mini-cabs. Prices are split into long and short trips for both London and for the rest of Great Britain. Due to a lack of PHV data for Northern Ireland, prices for the rest of Great Britain are used as a proxy (see figure 7.2).

**Figure 7.2: Private Hire Vehicles price per mile for short and long trips for London and for the rest of Great Britain, 2005 to 2014**

Figure 7.2: Private Hire Vehicles price per mile for short and long trips for London and for the rest of Great Britain, 2005 to 2014



**Source: National Travel Survey and Department of Transport**

**Notes:**

1. Figures in current prices
2. ROGB stands for Rest of Great Britain

Prices per mile of a PHV were higher in 2014 compared with 2005, but were less volatile in the rest of Great Britain than in London. Overall, the price per mile of a PHV for long journeys outside London, which account for the majority of total miles travelled, increased by an average of 4.0% per year between 2005 and 2014.

## 4 . Gross value added

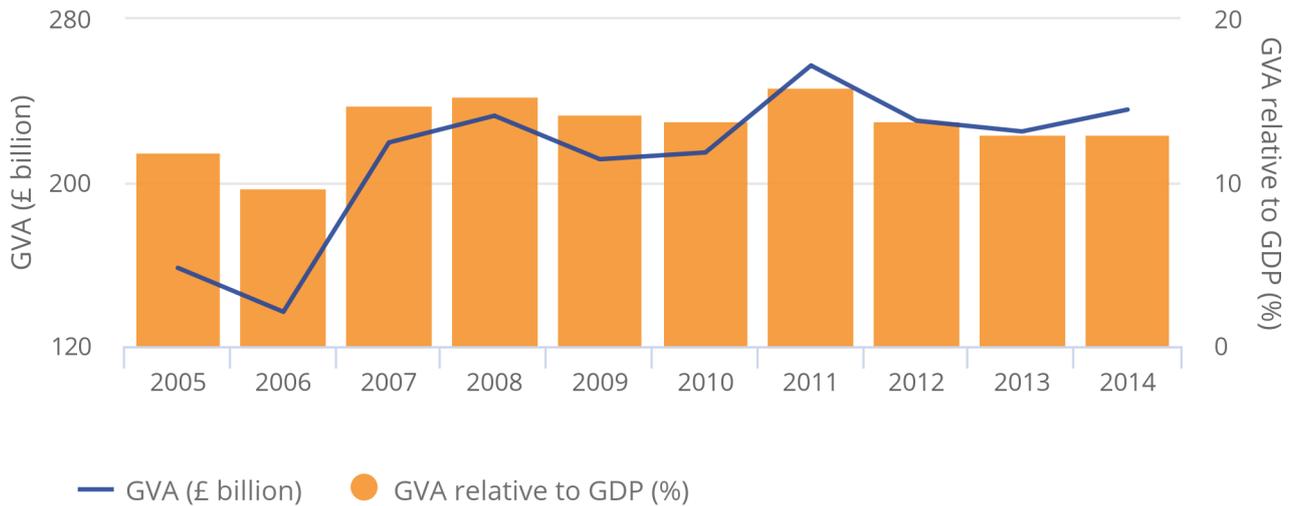
The transport services of households are valued by multiplying the total trip miles for long and short trips for London and for the rest of the UK by their respective price per mile of a Private Hire Vehicle (PHV).

**Figure 7.3: GVA of transport services and share of GDP, 2005 to 2014**

UK

Figure 7.3: GVA of transport services and share of GDP, 2005 to 2014

UK



Source: Office for National Statistics

Notes:

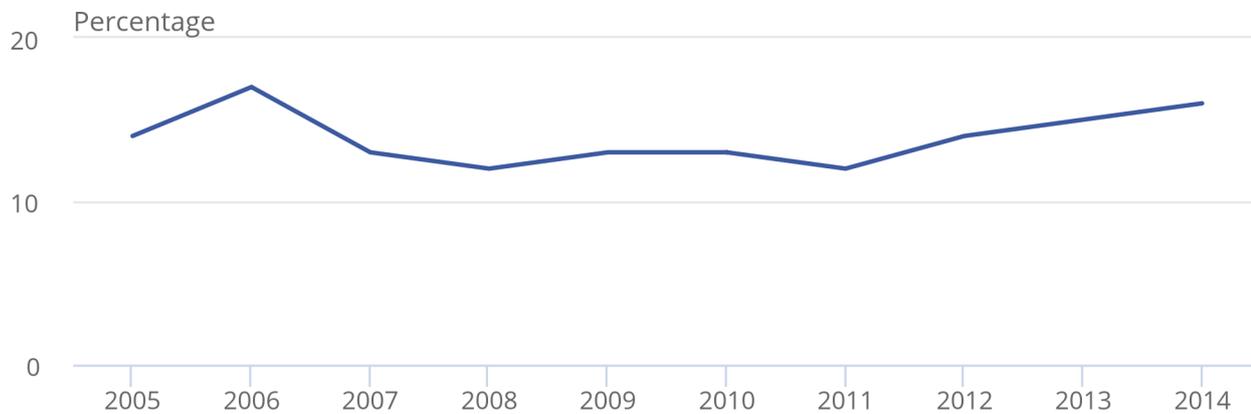
1. The value of transport services is expressed in current prices

Figure 7.3 shows that the GVA of private household transport increased 48.9% between 2005 (£158.3 billion) and 2014 (£235.8 billion), largely driven by a 60.5% increase in the value between 2006 and 2007. Despite being on a general upward trend until 2011, the series declined in 2012 and 2013. Between 2013 and 2014, GVA increased 4.7% (£10.6 billion). Changes in the value of private household transport are mainly driven by changes in the price per mile of a PHV rather than by changes in the total trip miles, as explained in our [previous publication](#).

The proportion of transport services to GDP increased by 1.1 percentage points from 11.9% to 13.0% of GDP between 2005 and 2014. However, the proportion of transport to GDP was as high as 15.9% in 2011. This reflects strong growth in transport services compared with GDP between 2005 and 2011. This trend has since abated, with GDP growing faster than transport services.

**Figure 7.4: Household expenditure on total market transport services as a proportion of transport services of households in the UK, 2005 to 2014**

Figure 7.4: Household expenditure on total market transport services as a proportion of transport services of households in the UK, 2005 to 2014



**Source: Office for National Statistics, Consumer Trends, Department of Transport and National Travel Survey**

Figure 7.4 compares market and private household transport activity by presenting household expenditure on market transport services<sup>1</sup> as a proportion of output of home-produced household transport services. Since 2011, household expenditure on transport increased steadily in contrast to a general decline in the output of household transport services.

In 2014, the value of total market expenditure on transport was valued at £46.0 billion, while the value of household-produced transport services was £296.7 billion. As a proportion, total market expenditure on transport services was equivalent to 15.5% of the value of private household transport. This was similar to the position in 2005 when the ratio of home-produced transport services to market transport services was 14.4%.

#### **Notes for gross value added**

1. Market produced transport comprises of transport for which there is a market value paid, for example for taxis, minicabs, bus trips, sea, rail etc

# Chapter 8: Home produced ‘volunteering’ services

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1. [What is voluntary activity?](#)
2. [Hours of formal volunteering](#)
3. [Gross value added of volunteering activities](#)

# 1 . What is voluntary activity?

The potential crossover between volunteering and care – of which informal child and adult care is valued elsewhere within the Household Satellite Account (HHSA) – requires clear definitions of what voluntary activity includes within these measures. Volunteering is defined by the International Labour Organisation (2001) as ‘unpaid non-compulsory work; that is, time individuals give without pay to activities performed either through an organisation or directly for others outside of the household’. This definition shows that voluntary activity can be classed as formal or informal depending on the nature of the activity. Volunteering activity measured within the HHSA only includes activity that occurs through a formal institution – a group or organisation. Informal volunteering, such as helping friends or family members, is included either in the childcare or adult care projects (separate modules within the HHSA). Excluding informal activity, some of which may not be picked up elsewhere within the HHSA, is likely to underestimate the full value of volunteering in the UK.

## 2 . Hours of formal volunteering

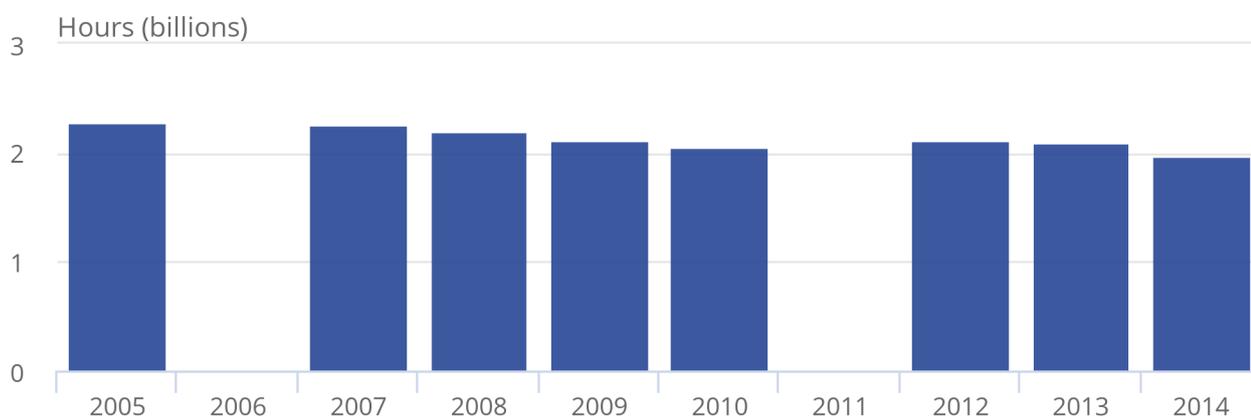
The number of hours spent volunteering is obtained from the Citizenship Survey for years: 2005, 2007/08, 2008 /09, 2009/10, and 2010/11. The Community Life Survey, the successor to the Citizenship Survey, provides estimates of hours spent volunteering for 2012/13, 2013/14, and 2014/15. To ensure comparability with the rest of the HHSA, financial year information is assumed to be equivalent to calendar year information. For instance, the number of hours of formal volunteering reported in 2007 is equal to 2007/08 financial year information. Those who volunteer at least once a month are characterised as frequent volunteers. This article only estimates the value of frequent volunteering. The exclusion of infrequent volunteering is due to issues with data quality. Data on infrequent hours tends to be less consistent and by just using the frequently volunteered hours, the estimates are likely to be more accurate.

**Figure 8.1: Total frequent hours of formal volunteering, billion hours, 2005 to 2014**

UK

Figure 8.1: Total frequent hours of formal volunteering, billion hours, 2005 to 2014

UK



Notes:

- 1. 2006 and 2011 data not available

There has been a general downwards trend in the total number of frequent hours volunteered, from 2.28 billion hours to 1.97 billion hours between 2005 and 2014 (see figure 8.1). This is despite population growth of 6.9% over the same period, meaning that the average number of frequent hours volunteered person has declined by 19.3% over the 10 year period. More recently, between 2013 and 2014 there was a 6.0% fall in the total number of hours volunteered.

### 3 . Gross value added of volunteering activities

The total number of hours by type of voluntary activity is multiplied by an appropriate wage rate to estimate output of frequent formal volunteering. Currently, we are unable to identify intermediate consumption of the voluntary activity, and therefore, the gross value added (GVA) is equal to output. The methodological section of this report and the [previous release](#) provide a more detailed explanation of the process for estimating output and GVA.

As mentioned previously, the Citizenship Survey and Community Life Survey didn't provide estimates of hours volunteered for 2006 or 2011. To ensure a consistent time series, output was imputed for 2006 and 2011. This was based on the assumption that output per person of the UK was constant between the years where information on hours volunteered is missing.

Figure 8.2: GVA of volunteering and GVA relative to GDP, 2005 to 2014

UK

Figure 8.2: GVA of volunteering and GVA relative to GDP, 2005 to 2014

UK

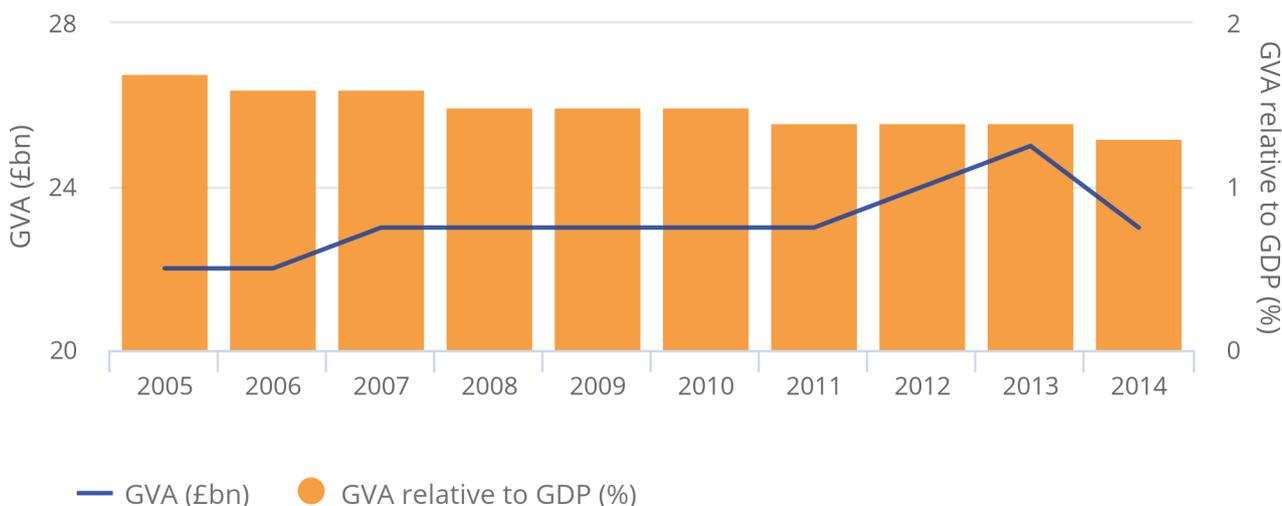


Figure 8.2 shows the value of informal frequent volunteering was £23.3 billion in 2014, £1.2 billion less than it was in 2005. Growth in value added of volunteering remained fairly steady between 2005 and 2014, averaging 0.6% per year, despite a fall of 5.0% between 2013 and 2014. GDP over the same period grew, on average, 3.6% per year over the 10 year period. This means that the value of volunteering activity is equivalent to a reducing share of GDP, declining from 1.7% in 2005, to 1.3% in 2014.

Compendium

## Chapter 9: The household satellite account and the future of measuring the modern economy

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1. [Consideration of activities for future inclusion](#)
2. [Development of existing measures using Time Use data](#)

# 1 . Consideration of activities for future inclusion

As previously mentioned, the rationale for including activities within the Household Satellite Account (HHSA) is largely governed by the 'Third Party Criterion'. This states that an activity carried out in the home, without transaction, is productive if it could be contracted to the market. While the HHSA presented here captures most activity that would pass the Third Party Criterion, the emergence of digital services is causing a shift in the home-production boundary. The Office for National Statistics (ONS) plans to develop methodologies to better capture the following activities in the HHSA.

## Internet services

With the emergence in digital services resulting in reduced transactions costs, information-intensive activities, traditionally carried out through an intermediary, are increasingly taking place within the home. An example, highlighted in the [Bean Review of Economic Statistics](#), is the way households are now booking their holidays. In the past, a trip would often be booked via a travel agent. More recently, households are able book a trip independently using specialist websites and apps to research and reserve accommodation. This shift from market to non-market activity is likely to impact many of the consumer-facing industries such as travel, banking, estate agents, and insurance. Further, this activity could clearly be contracted back to the market, and should therefore be captured within the HHSA.

We are currently exploring methodologies and data sources to measure these types of activities. A potential source of information is Time Use data. Time Use surveys ask households to detail how they spent their time over a given period. Estimates of how much time individuals spend undertaking internet-based activities, valued at a suitable market-rate, could enable value estimations.

## The 'sharing economy'

Closely related to issues related to internet services are those posed by the emergence of the 'sharing economy'. Measuring market-related activities of the sharing economy is [not a new challenge for ONS](#). However, there are activities that are taking place outside of the market which, theoretically, should be captured within the HHSA. For instance, rather than throwing away and replacing goods, households are increasingly using specialist sites to share, and even "up-cycle" used goods.

# 2 . Development of existing measures using Time Use data

The analysis in this HHSA is largely based on calculating the value of home-produced services using an output methodology. This estimates output of home-produced services by estimating volumes of output and multiplying them at a market price. One limitation of this approach is that the results provide little information about the labour supplied in home-production activities. This was recognised by Holloway (2002) who discussed the value in using Time Use data to address these limitations. Time Use data would theoretically enable the development of estimates of the time spent by specific socio-demographic groups carrying out different home-produced services contained in the HHSA. This type of information would enable a much richer understanding of, for example, the split between sexes in home-production.

Time Use data is infrequently collected with the last published estimates for the UK collected in 2000. However, in spring 2016 a fresh wave of Time Use data will become available for the UK via the Centre of Time Use Research (CTUR) at the University of Oxford. We plan to use this Time Use data within the HHSA. Specifically we will be exploring:

- re-estimating values that were previously benchmarked to 2000 Time Use data
- home-production by socio-demographic groups

- home-production by sex and age
- the extent to which household members are undertaking activities simultaneously (for example, caring for a child while cooking a meal)
- the impact of home-production on leisure time

This is information that is likely to be important to analysts, policy makers and also the general public who all, one way or another, are responsible for the value of unpaid work.

Compendium

## Chapter 10: Methodological annex

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1. [Annex 1 – Methodology for all the activities](#)
2. [Annex 2 – Methodology for constructing the full account](#)
3. [References](#)

# 1 . Annex 1 – Methodology for all the activities

## Home-produced childcare

The methodology for estimating hours and output for informal childcare is largely unchanged from the previous release. However, 2 minor amendments have been made. The first revises estimates of informal childcare hours for 2005 to 2010 using population estimates that are consistent with 2011 Census. This means that all estimates produced within this release are now entirely consistent with 2011 Census population information. As a result, the number of informal childcare hours for 2005 to 2010 will be different in this article as compared with previously published results. You should be wary of comparing informal childcare hours for 2005 to 2014 published here with pre-2005 figures published previously.

The second change to the methodology is in relation to the method in which informal hours of childcare are valued. In previous releases the wages of live-in nannies, taken from the Professional Nanny/Nannytax Annual Survey, have been used to value informal childcare. We have updated this methodology and now use the hourly cost of placing a child in a child minder service using information from the Childcare Costs Survey undertaken by Family and Childcare Trust. This decision was taken, primarily over concerns regarding the quality of wage estimates of live-in nannies from the Nannytax Annual Survey. Further, child minder services are arguably a more realistic market alternative to informal childcare than live-in nannies. As a result of this methodological change, estimates of the value of informal childcare published previously are now revised for 2005 to 2010. Previously published estimates relating to years before 2005 are not comparable with the estimates published in this release.

## Home-produced adult care

The methodology for valuing informal adult care is entirely consistent with previous published estimates. The methodology is [presented in detail](#) in a previous article.

## Home-produced housing services

As explained in the analytical breakdown of household housing services, using the input/production approach to estimating the value of output requires the following components to be estimated:

- Compensation of Employees
- hours of labour
- wage rates
- Intermediate Consumption
- Gross Operating Surplus

The following section will describe the process used to estimate each component.

## Compensation of Employees

## Hours of labour

Data for the number of hours spent carrying out productive non-market activities within UK households is taken from the Time Use Survey (TUS) (2000). This is then modelled on both the British Household Panel Survey which was conducted for even-numbered years between 1998 and 2008 and on the Understanding Society Survey carried out on even-numbered years over the years 2009 to 2013. Hours for 2014 (compared with 2013) were modelled using annual average growth rates across the series applied to 2013 data. The data was calibrated using the Time Use Survey (TUS) (2000) where the British Household Panel Survey (BHPS) was more likely to overestimate the amount of time spent carrying out productive non-market activities. The BHPS relies on stylised questions which refer to events in the past month as opposed to the TUS where respondents record their daily activities throughout the day or as they are taking place.

## Wage rates

Wage data has been sourced from the Annual Survey of Hours and Earnings (ASHE) for professional specialist and generalist occupations. Due to the specialist nature of some specialist trade professions, the 25th percentile wage has been used for all professions with a Standard Occupational Classification (SOC) prefixed with a '5xxx' (apart from for gardeners/grounds persons whose median pay is significantly lower). A similar approach was taken by Suh and Folbre (2015) who apply a 25% downward adjustment on various wages to compensate for an assumed difference in quality.

For both gardening/grounds person and cleaning professions the median wage is taken. This assumes that work carried out in home-produced services would warrant the median hourly rate of pay as professional cleaners and gardeners/landscapers. The median is taken in preference to the mean to avoid unwanted skew from the highest or lowest wages reported in the survey.

This approach is called the market 'replacement cost' model for applying wage rates to non-market household 'housing' service activities of upkeep.

## Intermediate Consumption

See overall Intermediate Consumption methodology section.

## Gross Operating Surplus

The market price for a service would normally include an element of profit (Gross Operating Surplus). However, when using an input/production method to estimate the GVA for non-market services (where the services are essentially unpaid) a gross operating surplus has to be imputed. This avoids distortions both:

- in the level of GVA when services transition from the paid to the unpaid economy
- between functions within the Household Satellite Account where some use market prices to calculate output (using an output estimation technique akin to GDP(O)) while others estimate compensation of employees and intermediate consumption and have to add in an adjustment for gross operating surplus separately (using input/production technique akin to GDP(i))

## Home-produced nutrition services

There are 2 possibilities for measuring home production; to measure inputs or outputs. Measuring inputs focuses on the time spent on productive activities and relies principally on time use data. This usually takes the form of a diary, which the survey respondent is asked to complete, giving information about their principal activities throughout a 24-hour period. The alternative is to attempt to measure outputs, this is the approach we take.

The output method values what the household produces, for example the number of children cared for or the number of washing loads undertaken. This is important because it is often easier to value outputs than inputs, particularly when there is a market equivalent to the service being produced. Output measurement is also more consistent with the way the rest of the National Accounts are constructed and reflects household productivity.

The output of household nutrition services is the meals, snacks and drinks prepared by the members of households for consumption, for which no monetary transaction takes place. For example, if a household were to prepare free food for a birthday party this would be included, whereas if they sell the prepared food it would not. Further, if an item of food requires no preparation at all, such as a chocolate bar, it should not theoretically be counted. A differentiation between adult and child portions should also theoretically be made.

There is currently a lack of detailed information on meals produced within the household. In the absence of this data, we estimate the value of nutrition services within a household using data from the Family Food Survey, published by the Department for Environment Food and Rural Affairs (DEFRA). This approach uses calories consumed at home as a proxy for volume prepared. As discussed earlier, this assumes that consumption is equal to production, and doesn't make any adjustment for food produced but not eaten. Further, this methodology does not adjust for the type or quality of the meals and snacks being produced, purely quantity indicated by calories, although we do remove alcoholic beverages.

The DEFRA Family Food Survey also provides information on the consumption and expenditure of calories eaten 'out' (not sourced from household supplies). Expenditure per calorie is derived from this information, and used to value calories eaten in to estimate output of nutrition services. GVA is estimated by making an adjustment for intermediate consumption and the input of household transport services. This process is described in the methodology section of the full UK account.

## Home-produced clothing and laundry services

The methodology for valuing clothing and laundry services is entirely consistent with previous published estimates. The methodology [is presented in detail in a previous article](#).

## Home-produced transport services

The methodology used to create these latest estimates is consistent with the [methodology](#) used in our previous publication - released in 2014 (see Annex 1) - with a few exceptions.

From 2013 onwards the National Travel Survey (NTS) moved from surveying residents of Great Britain to residents of England only. Therefore, from 2013 onwards the average miles travelled per person per year (MPPPY) for residents of Scotland and Wales were extrapolated using the average growth rate from 2002 to 2011.

In addition, the NTS variable used to calculate the cost of private hire vehicles was dropped in 2013. As a result, private hire vehicle costs were up-rated from 2013 onwards using a Consumer Price Index (CPI) for minicab costs.

The results in the 2010 publication were estimated using minicab costs for London and outside of London, which was equivalent to the rest of Great Britain. However, given the change to the NTS from 2013 onwards, 'outside of London' from 2013 onwards refers to the rest of England. From 2013 onwards these private hire vehicle costs for the rest of England are applied to Scotland, Wales and Northern Ireland. This is also the case for the calculations on the average number of people in a party.

Private hire vehicles (PHV) prices for London short trips were based on a small sample size and so in this publication a 3-year average was taken. This had the effect of smoothing the estimates.

In the previous methodology, short journeys in Northern Ireland were defined as journeys of 2 miles or under and long journeys were defined as journeys over 2 miles. Trips in other regions, however, treated short trips as those under 2 miles and long trips as trips of 2 miles and over. This has now been applied for all regions for consistency.

## Home-produced volunteering services

The methodology for valuing volunteering activities is entirely consistent with previous published estimates. The [methodology is presented in detail in a previous article](#).

## 2 . Annex 2 – Methodology for constructing the full account

### Housing as an input into other functions within the Household Satellite Account

Housing also produces inputs to other functions within the Household Satellite Account, for example, the kitchen is used for nutrition and other rooms in a household may be used to accommodate child or adult care activities and clothing and laundry services (Eurostat, 2003). In this Household Satellite Account, housing output and intermediate consumption is accounted for in its entirety within under the household 'housing' services function and then a proportion of the output is then recorded on a separate row of the final tables as an input to other functions (see datasets 1 to 10) including:

- nutrition (proportion of kitchens to total rooms where 64% of kitchen output is relevant)
- laundry (proportion of kitchens to total rooms where 16% of kitchen output is relevant)
- childcare (one room per household allocated to childcare)
- adult care (one room per household allocated to adult care)

This allows all GVA from household 'housing' services to be recorded under the household 'housing' tab and net off from the GVA of other functions to avoid double counting.

### Private household transport as an input to nutrition

Private household transport is considered an input to the output of nutrition services. This accounts for the fact that an element of the market price of meals eaten out will include transportation costs of purchasing food. This is accounted for in the Household Satellite Account by applying a proportion of output of private household transport as input to nutrition services. This is based on the proportion of total miles accounted for by shopping trips.

### Intermediate consumption

Household Final Consumption estimates (HHFCE) from the core System of National Accounts (SNA) are used to calculate the value of intermediate consumption within households.

These items of final consumption are both in current prices and non-seasonally adjusted and represent the resources which are used up in the process of home production. Each different function (other than adultcare and volunteering where intermediate consumption is not measured) of home production within the HHSA has an element of intermediate consumption and these are listed below.

### Home-produced childcare

In the home provision of childcare, some other personal effects and clothing items are included such as articles for babies including an element of the value of baby carriages, pushchairs, carrycots, recliners, car beds and seats, back-carriers, front carriers, reins and harnesses, etc. An element of the value of children's clothing is also included.

## **Home-produced housing services**

In the home provision of housing, the value of the rent paid (actual rentals) due to an occupant living in a property is presumed to be the value of the housing which is used up to provide that warm and dry shelter while non-durable household goods could include cleaning products used to clean the property.

## **Home-produced nutrition services**

In the home provision of nutrition services, a proportion of a range of food items are counted as intermediate consumption. In addition to this, a proportion of small kitchen appliances and food production utensils are also counted.

## **Home-produced clothing and laundry services**

In the home provision of clothing and laundry services, a proportion of non-durable household goods are counted as intermediate consumption, for example, washing powders, softeners, detergents and stain removers.

## **Home-produced transport services**

In the home provision of transport services, a proportion of expenditure on fuel, tyres and other transport-related household expenditure is allocated as intermediate consumption.

# **3. References**

Bean, C. (2016). Independent Review of Economic Statistics. London.

Eurostat (2003), Household Production and Consumption. Proposal for a Methodology of Household Satellite Accounts. Luxembourg: Office for Official Publications of the European Communities.

Holloway, S. (2002). Using Time Use data to calculate an hourly effective return to labour: results from the UK Household Satellite Account (experimental) 2000. Paper for the IATUR Conference, Portugal.

Holloway, S., Short, S., and Tamplin, S. (2002). Household Satellite Account (Experimental) Methodology: Chapter 10 Household Capital. Office for National Statistics.

Reid, M. (1934). Economics of Household Production. New York: John Wiley.

Stiglitz, J., Sen, A., and Fitoussi, J. (2009). 'Report by the Commission on the Measurement of Economic Performance and Social Progress'. Paris.

Suh, J. and Folbre, N. (2015). Valuing Unpaid Child Care in the U.S.: A Prototype Satellite Account Using the American Time Use Survey. Review of Income and Wealth. doi:10.1111/roiw.12193

United Nations, (2008). System of National Accounts. New York: United Nations.