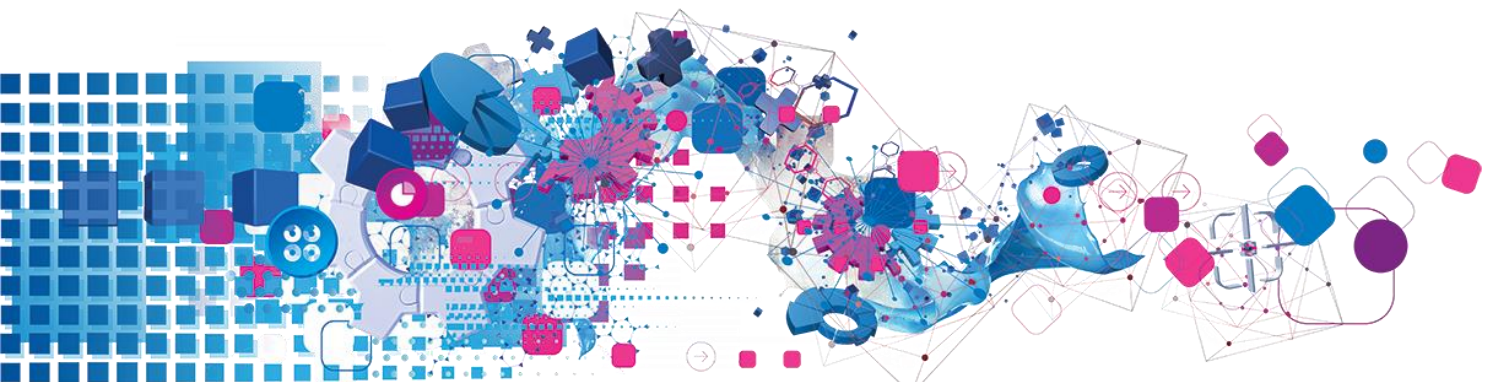




Household Income Welsh Water

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1. Background and overview

Welsh Water wants to quantify average disposable income for their customers and compare this with other water companies across England and Wales. They need data that supports analysis over time to understand how income has changed in different areas. They also require income estimates at a refined geographic level so they can understand how income varies across their customer base.

There are a number of different household income estimates available from official statistics and proprietary data produced by data vendors. Each of these uses different approaches and sources of data to estimate household income. It is important to note that disposable household income estimates drawn from different sources provide quite different estimates of income levels. This is due to a number of factors, including definitions (what is actually being measured), whether the data is equivalised (an adjustment to take account of the number of people that live in a household) and the approach used to estimate income (whether they are model or survey based). However, despite such differences, at UK level, the trends in changes in household income over time tend to follow similar patterns.

ONS produces two data sets of relevance to this study. The first is Gross Household Disposable Income (GDHI) which provides a time-series of household income by local authority area up to and including 2015. ONS also produces a number of household income estimates at middle layer super output area (MSOA) for 2011/12 and 2013/14. The latter dataset also has information on the proportion of households in poverty.

Experian has drawn on both of these official data sources and supplemented the information with Experian's proprietary estimates of disposable income by Financial Strategy Segment to provide analysis of household income across water company areas and produce income estimates for small areas (Lower Super Output Areas) within the Welsh Water boundary.

The next section of this report provides an analysis of disposable household income at water company level based derived from these sources. Section 3 set out the approach used to generate the different income variables presented in this report and the data provided to Welsh Water.

2. Disposable household income estimates by area

2.1 Water company area disposable household income estimates

Figure 1 shows weekly average disposable household income for each of the water companies in England and Wales for the period 2011 to 2015 based on the aggregation of ONS Gross Disposable Household Income (GDHI) data. Figures for all years are consistent with the data published by ONS at local authority level. Across all years, Welsh Water has the second lowest disposable household income estimates across all water companies. In 2015 average household income in England and Wales is estimated at £889 per week, 20 per cent higher than the average for Welsh Water, estimated at £737 per week. Between 2011 and 2015, weekly household disposable income in the Welsh Water area increased by just 8 per cent, compared with an increase of almost 11% in England and Wales.

Figure 1: Weekly average household disposable income (unequalised) by water company area, 2011 to 2015

Water Company	2011	2012	2013	2014	2015
Cambridge Water	1128	1168	1196	1246	1270
Thames Water	1059	1115	1147	1190	1228
Sutton & East Surrey Water	1043	1090	1108	1132	1156
Affinity Water	954	993	1016	1047	1087
South East Water	948	983	1001	1025	1050
Cholderton & District Water	894	907	917	939	979
Essex & Suffolk Water	817	851	856	881	913
Southern Water	811	836	845	859	888
Bournemouth & West Hants Water	801	822	831	853	887
Bristol Water	793	806	821	847	881
Wessex Water	809	820	827	846	872
Portsmouth Water	772	801	826	838	858
Anglian Water	770	794	798	816	837
Dee Valley Water	755	775	780	795	821
South West Water	735	749	757	772	794
Severn Trent Water	713	734	742	761	777
South Staffordshire Water	695	718	725	752	773
United Utilities	692	712	716	730	750
Yorkshire Water	684	703	706	717	737
Dwr Cymru Welsh Water	684	702	702	716	737
Northumbrian Water	652	678	678	689	713
<i>England and Wales Average</i>	802	830	842	864	889

Source: ONS and Experian analysis

The data presented in figure 1 is unequalised, which means it does not take account of the number of people living in households nor the composition of households. In simple terms, the more people living in a household, the less income there is per person. Equalisation adjusts the household income estimates to take account of occupancy levels for different types of household to enable comparison of income on a like for like basis. Figure 2 presents equalised weekly average household income data for water company

areas. On an equivalised basis Welsh Water's average weekly disposable household income remains at the bottom end of the rankings amongst water companies, again ranking 20th out of the 21 water companies in England and Wales. In 2015, average weekly household disposable income at £690 is 22 per cent lower than the average for England and Wales. Equivalised weekly household disposable income increased by just 8 per cent between 2011 and 2015 for the Welsh Water area compared with an average of 11 per cent across England and Wales over the same period.

Figure 2: Weekly average household disposable income (equivalised) by water company area, 2011 to 2015

Water Company	2011	2012	2013	2014	2015
Cambridge Water	1117	1156	1185	1234	1258
Thames Water	1016	1070	1101	1143	1179
Sutton & East Surrey Water	964	1008	1023	1046	1068
Affinity Water	890	926	948	976	1014
South East Water	873	904	921	943	967
Cholderton & District Water	809	820	830	850	886
Bournemouth & West Hants Water	783	804	813	835	868
Essex & Suffolk Water	764	796	800	823	854
Southern Water	776	800	809	823	850
Wessex Water	774	785	792	809	834
Bristol Water	749	763	777	802	834
Portsmouth Water	735	762	786	798	816
Anglian Water	726	749	752	769	789
Dee Valley Water	708	727	732	746	770
South West Water	704	718	725	740	761
Severn Trent Water	670	690	697	715	731
United Utilities	662	681	685	698	717
South Staffordshire Water	641	662	669	694	713
Yorkshire Water	647	664	667	678	697
Dwr Cymru Welsh Water	641	658	657	671	690
Northumbrian Water	629	654	654	665	688
<i>England and Wales Average</i>	760	787	798	818	842

Source: ONS and Experian analysis

Figure 3 presents equivalised household income after housing costs which is useful for assessing the impact of the costs of housing for a given area and for providing an indicator of disposable income before the cost of living. The data suggests that in 2015 average housing costs in England and Wales are £110 per week.

Housing costs include:

- rent (gross of housing benefit)
- water rates, community water charges and council water charges
- mortgage interest payments (net of any tax relief)
- structural insurance premiums (for owner occupiers)
- ground rent and service charges

After housing costs, Welsh Water remains ranked 20th out of the 21 water company areas, with average weekly household income of £618 in 2015, which is 18 per cent lower than the England and Wales average. This demonstrates that housing costs are lower in the Welsh Water area than the England and Wales

average. In 2015, average equivalised housing costs for the Welsh Water area are estimated at £72 per week. Between 2011 and 2015, household income after housing costs grew by around 9 percent compared with an England and Wales average of 10 percent over the same period.

Figure 3: Weekly average household disposable income (equivalised) after housing costs by water company area, 2011 to 2015

Water Company	2011	2012	2013	2014	2015
Cambridge Water	973	1007	1044	1087	1108
Thames Water	845	890	899	934	963
Sutton & East Surrey Water	867	906	902	922	941
Affinity Water	775	807	813	836	869
South East Water	782	810	824	844	864
Cholderton & District Water	716	726	736	753	785
Bournemouth & West Hants Water	685	703	706	725	753
Southern Water	673	694	706	717	742
Bristol Water	652	663	687	709	737
Essex & Suffolk Water	665	692	688	707	733
Wessex Water	686	696	695	711	733
Portsmouth Water	649	674	691	701	717
Anglian Water	651	671	671	686	704
Dee Valley Water	636	653	662	674	696
South West Water	624	636	638	651	670
Severn Trent Water	595	612	617	632	646
South Staffordshire Water	563	581	597	619	636
United Utilities	586	603	604	615	632
Yorkshire Water	578	594	593	603	620
Dwr Cymru Welsh Water	568	583	588	600	618
Northumbrian Water	562	584	579	588	608
<i>England and Wales Average</i>	665	688	693	711	732

Source: ONS and Experian analysis

The data presented so far provides different measures of mean disposable household income across water company areas. Average household income conceals households that have lower levels of household income. Alongside the mean household income estimates, ONS also produces estimates of households living in poverty. A household is deemed to be in poverty if the household's income lies below 60% of the UK median income, where income is defined as net weekly equivalised income. Experian has aggregated the ONS MSOA level data to provide estimates of the proportion of households in each water company area that are in poverty according to the ONS definition in 2011 and 2013.

Figure 4 presents the results of this analysis and shows that in 2011 and 2013, before housing costs, 20.5 percent of households in the Welsh Water area are living in poverty according to the ONS definition, and ranks the area as the highest water company on this measure. The earlier analysis demonstrated that housing costs are relatively low in the Welsh Water area, and this is reflected in the second table where we find that after housing costs, Welsh Water is ranked 4th out of 21 water companies according to the proportion of households in poverty. However, on this measure 22% of households in 2013 are in poverty after housing costs, consistent with estimates for 2011. The estimates for Thames Water reflect the high housing costs in and around London.

Figure 4: Proportion of household in poverty by water company area, before and after housing costs

Before Housing Costs			After Housing Costs		
Water Company	2011	2013	Water Company	2011	2013
Dwr Cymru Welsh Water	20.5%	20.5%	Thames Water	25.8%	25.0%
South Staffordshire Water	19.4%	19.5%	South Staffordshire Water	21.5%	24.0%
Yorkshire Water	19.4%	19.2%	Northumbrian Water	22.1%	23.3%
Severn Trent Water	18.7%	18.6%	Dwr Cymru Welsh Water	22.0%	22.3%
Northumbrian Water	19.3%	18.5%	Southern Water	20.6%	22.1%
United Utilities	18.1%	17.8%	Severn Trent Water	22.2%	21.6%
Dee Valley Water	17.2%	17.4%	Yorkshire Water	21.6%	21.4%
South West Water	19.0%	16.8%	United Utilities	21.4%	21.2%
Anglian Water	16.6%	16.3%	Essex & Suffolk Water	20.9%	21.2%
Essex & Suffolk Water	16.6%	15.8%	Affinity Water	21.6%	21.0%
Bristol Water	17.2%	15.3%	South West Water	22.1%	19.9%
Southern Water	16.6%	15.3%	Portsmouth Water	19.5%	19.7%
Bournemouth & West Hants Water	17.3%	15.3%	Dee Valley Water	18.5%	19.6%
Portsmouth Water	16.1%	15.0%	Bristol Water	21.5%	19.4%
Wessex Water	17.7%	15.0%	Bournemouth & West Hants Water	20.5%	19.0%
Affinity Water	15.8%	14.2%	Anglian Water	19.3%	18.8%
Thames Water	15.6%	14.0%	Wessex Water	21.3%	17.9%
South East Water	14.0%	13.3%	Cambridge Water	17.7%	17.6%
Cambridge Water	14.2%	13.0%	South East Water	16.3%	17.2%
Cholderton & District Water	12.4%	11.4%	Sutton & East Surrey Water	17.3%	16.2%
Sutton & East Surrey Water	12.7%	10.5%	Cholderton & District Water	15.9%	13.8%

Source: ONS and Experian analysis

Source: ONS and Experian analysis

3. Data sources and approach

3.1 Data sources

Experian has drawn on a number of data sets to prepare the analysis of household disposable income at water company and LSOA level as follows:

- ONS Gross Disposable Household Income (GDHI) for local authority areas, 2011 to 2015 inclusive
- ONS small area household income estimates for MSOA areas, England and Wales 2011/12 and 2013/14
- ONS small area model-based households in poverty estimates, England and Wales, 2011/12 and 2013/14
- ONS population estimates, MSOA and local authority areas, 2011 to 2015 inclusive
- Experian FSS Economics income estimates by FSS type
- Experian FSS area profiles for LSOA, MSOA and local authority areas
- Experian household estimates for LSOA, MSOA and local authority areas, 2011 to 2015 inclusive (derived from ONS population estimates and Census 2011 data)

3.1 Approach

There are 5 steps to derive the household income data as follows:

Step 1: Unequalised household income

The approach takes ONS local authority estimates of gross disposable household income and disaggregates these to MSOA level using Experian FSS disposable household income estimates. The data at this stage are unequalised.

Step 2: Equalised household income before housing costs

The next step involves applying assumptions to equalise the income estimates. The assumptions have been derived from the ONS small area household income estimates for MSOA areas, where for each MSOA area the ratio between equalised and unequalised net household income has been calculated and applied to the MSOA estimates from step 1.

Step 3: Equalised household income after housing costs

The ONS small area household income estimates have also been used to develop assumptions of equalised income after housing costs. Here the relationship between household income before and after housing costs has been calculated from the ONS data at MSOA level and applied to the equalised income data from step 2.

Step 4: Aggregation to water company boundaries

Step 5: LSOA equalised household income before and after housing costs

The final step uses Experian FSS household income estimates at LSOA level to disaggregate the MSOA estimates derived in steps 2 and 3.

A more detailed breakdown of the tasks completed under each step is provided below.

Step 1: Unequalised household income

Experian has used the ONS Gross Household Disposable Income (GDHI) for local authority areas as the primary dataset for the disposable household income estimates for this study. The data set provides consistent and comparable data across the UK on a time-series basis. Since the estimates are derived at local authority level and are consistent with regional, country and UK estimates of income, these estimates are more robust than income estimates derived at small area level.

To disaggregate the local authority income estimates to MSOA building blocks (which can subsequently be used to aggregate to water company areas), Experian has constructed a set of income estimates at MSOA level using Experian's Financial Strategy Segments (FSS) Economics dataset. FSS classifies over 50 million UK consumers into 55 types. The segmentation is tightly linked to each person's age and affluence. FSS Economics provides estimates and forecasts of household accounts for each of the 55 FSS types at UK level. FSS Economics provides estimates of income and expenditure split by a number of detailed categories for each FSS type. The income and expenditure estimates are derived from the ONS Living Costs and Food Survey and controlled to official estimates of income and expenditure at UK level.

FSS types are available for all households in the UK. The MSOA household FSS profile has been derived for each MSOA in England and Wales. The first cut MSOA disposable household income estimate takes the FSS profile for households in each MSOA area and applies the UK FSS Economics value for average disposable income by FSS type for each year from 2011 to 2015. The weighted household income estimates by FSS type are then aggregated to total MSOA gross disposable income.

The Experian MSOA gross household disposable income estimates have then been aggregated to local authority level and controlled to the ONS GDHI local authority estimates. This ensures that the MSOA level estimates are consistent with the published ONS GDHI estimates by year.

The next task is divide the MSOA total income through by the number of households in each MSOA by year to derive average disposable household income.

Step 2: Equalised household income before housing costs

ONS small area income data provides estimates for England and Wales MSOA areas for unequalised and equalised net household income for 2011/12 and 2013/14. The relationship between unequalised and equalised income for each MSOA area was calculated for each year and an average figure derived which was then applied to the annual MSOA unequalised household income estimates produced in step 1. An average was taken since the equalisation adjustment should be relatively stable over time as it is assumed that household composition changes slowly. At the end of this step the MSOA disposable household income data is equalised to account for household size and composition.

Step 3: Equalised household income after housing costs

ONS small area income data provides estimates of equalised net household income before and after housing costs. Experian used the relationship between the two income measures to generate a

ratio of housing costs to equivalised household income at MSOA level over time. The housing cost ratios were applied to the results from step 3 at MSOA level to derive equivalised disposable income at MSOA level.

Step 4: Aggregation to water company areas

Boundary files for water company areas have been used to derive an MSOA to water company look-up file. The MSOA gross disposable income estimates have been aggregated to water company level using the MSOA to water company look-up. MSOA level household estimates have similarly been aggregated to water company level. The average household income for each income measure for each company has been derived by dividing the gross income estimates for each water company by the household estimate for each water company area.

Step 5: LSOA equivalised household disposable income before and after housing costs

To further disaggregate the MSOA level data to LSOA level for the Welsh Water area, Experian has derived FSS LSOA gross disposable income estimates. This is similar to the process used at MSOA level, whereby the MSOA profile for households in each LSOA area within the Welsh Water area have been derived. The first cut LSOA disposable household income estimate takes the FSS profile for households in each LSOA area and applies the UK FSS Economics value for average disposable income by FSS type for each year from 2011 to 2015. The weighted household income estimates by FSS type are then aggregated to total LSOA gross disposable income. The final stage of the calculation is to control the LSOA income estimates to the MSOA income estimates, before dividing by the LSOA household estimates to derive average income by LSOA for equivalised disposable income both before and after housing costs.