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Scottish House Condition Survey: 2019 Key Findings

A National Statistics publication for Scotland

PEOPLE, COMMUNITIES AND PLACES

Acknowledgements

The Scottish Government acknowledges and thanks the 2,997 households across Scotland who gave their time to take part in the Scottish House Condition Survey interview and physical dwelling inspection in 2019.

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Scottish House Condition Survey Team

Ailie Clarkson, Rucha Amin and Claire Wood

Directorate for Housing and Social Justice
Communities Analysis Division
Scottish Government

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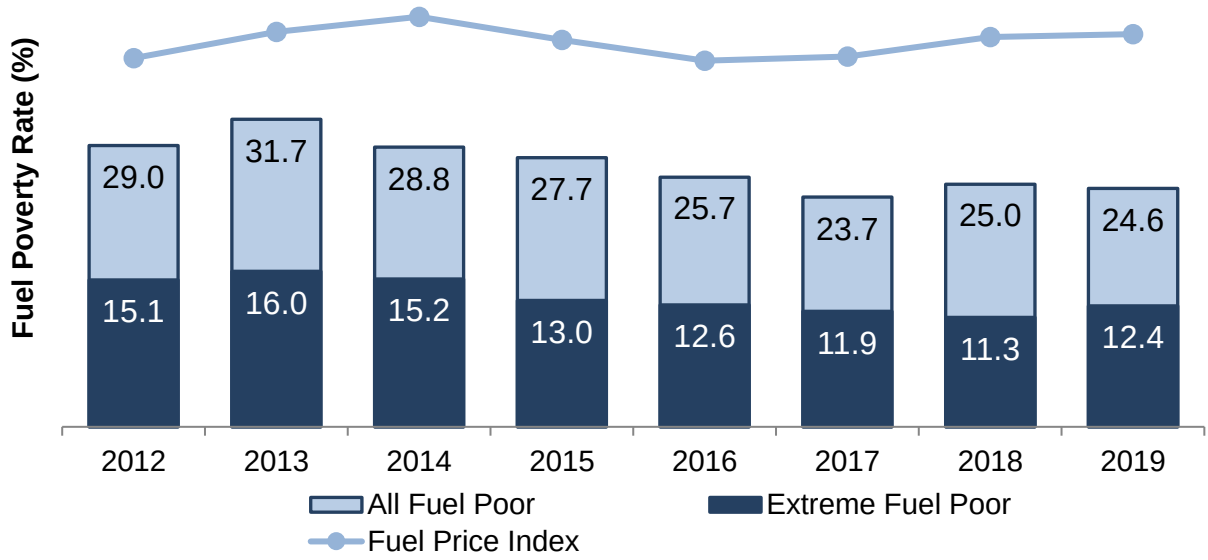
Key Findings Summary

Fuel Poverty

- In 2019 an estimated 24.6% (around 613,000 households) of all households were in **fuel poverty**. This is similar to the 2018 fuel poverty rate of 25.0% (around 619,000 households) but lower than that recorded in the survey between 2012 and 2015.
- 12.4% (or 311,000 households, a subset of the 613,000 in fuel poverty) were living in **extreme fuel poverty** in 2019 which is similar to the 11.3% (279,000 households) in the previous year but a decrease from 16% (384,000 households) in 2013.
- The **actual median fuel poverty gap** for fuel poor households in 2019 was £750. This is higher than the median fuel poverty gap between 2015 and 2018. The **median fuel poverty gap (adjusted for 2015 prices)** for fuel poor households in 2019 (£700) is higher than in 2018 (£610) but similar to the median gap in 2012 to 2017.

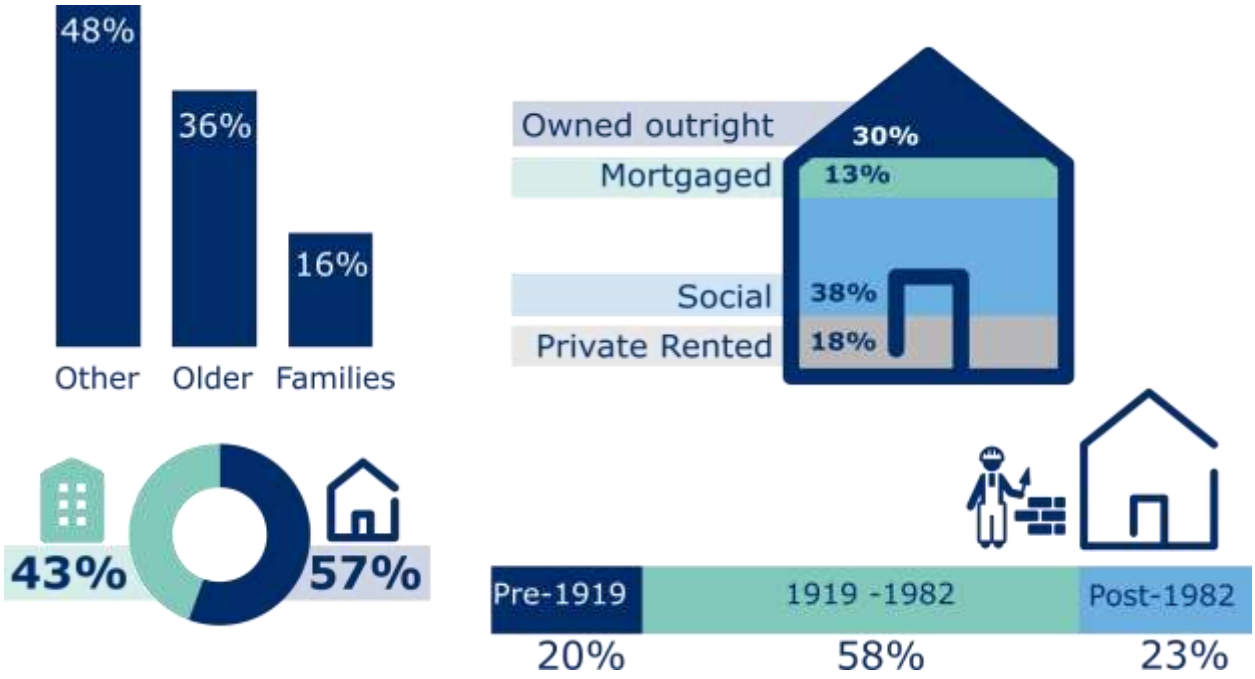
Proportion of Households in Fuel Poverty and Extreme Fuel Poverty, 2012-2019



Note: Energy requirement underpinning fuel poverty estimate modelled on the following basis: 2012 – 2013: BREDEM 2012 v.1.0; from 2014 onwards: BREDEM 2012 v.1.1, and New Prices to the adjustment of fuel price sources from 2013. From 2016 an improvement is included by assigning pre-payment metered fuel prices to the relevant households. From 2019 further improvements are included by using more detailed information on combi boilers to improve the accuracy of calculations surrounding hot water losses and assigning an off-peak tariff to relevant household's lights and appliances fuel prices.
Note: The 2012-2017 estimates are not comparable to those in the 2012-2017 Key Findings reports. See Section 4.1.1 for more details.

- Between 2018 and 2019, rates of fuel poverty increased in **remote rural areas** (from 33% to 43%), increasing the gap when comparing overall **urban** (24%) to overall **rural** areas (29%). Similarly, levels of extreme fuel poverty increased in remote rural areas (from 23% to 33%), meaning that extreme fuel poverty rates in rural areas (19%) were higher than in urban areas (11%).
- Overall rates of fuel poverty differed between the **social** (37%) and **private sector** (20%) although rates of extreme fuel poverty were similar (14% and 12%, respectively) in 2019.
- As in 2018, **older households** (27%) and **other households** (27%) in 2019 have a higher fuel poverty rate than **families** (17%).
- Levels of fuel poverty among households using **electricity** as their primary heating fuel have remained the highest, at 43%, compared to households using gas (22%), oil (28%) and other fuel types (31%) as their primary heating fuel in 2019.

Composition of Fuel Poor Households, 2019



- A higher proportion of households with a **pre-payment meter** (PPM; electricity, gas or both) were in fuel poverty compared to those without a PPM, 36% compared to 22% respectively.

- Fuel poverty and extreme fuel poverty have a strong **association with income** with rates increasing as weekly household income decreases. Extreme fuel poverty rates in the second lowest income band (£200-£299.99 a week) have increased in 2019 (25%) compared to 2018 (16%).

- Although low income is associated with fuel poverty, it is not equivalent. 73% of fuel poor households were also **income poor** in 2019 whilst the other quarter would not be considered income poor (27%). This is a similar pattern to 2018 (70% fuel and income poor and 30% fuel poor not income poor).

Heating Satisfaction

- **Fuel poor** households and **extreme fuel poor** households are more likely to have difficulties staying warm in winter and to report affordability problems; 23% of fuel poor and 28% of extreme fuel poor say that their heating keeps them warm enough in winter “only sometimes” or “never”, compared to 15% of all other households. 9% of fuel poor and 10% of extreme fuel poor households report that they **cannot afford to heat their home**, higher than the 3% of non-fuel poor households.

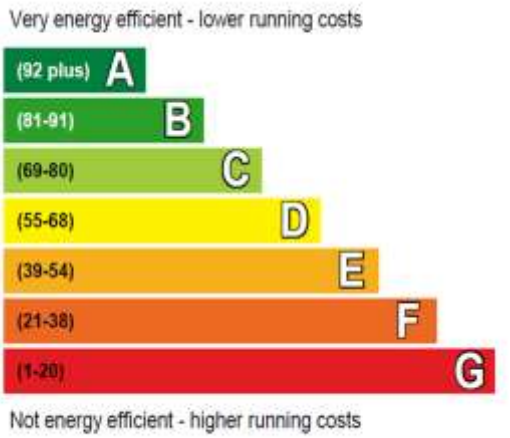
- 13% of all households find that their **heating keeps them warm enough** in winter only sometimes and 3% find it never keeps them warm. This is similar to 2018 rates.

- The extent to which home energy use is monitored by householders is similar to last year with 57% stating they **monitor their energy use** “very” or “fairly closely” compared to 58% in 2018. 35% of all households report owning an **energy monitoring device** – a 7 percentage point increase on the previous year.

- A similar proportion of **fuel poor** (60%) and **extreme fuel poor** (59%) households monitored their energy use “very” or “fairly closely” compared to non-fuel poor households (56%) in 2019. However they are less likely to have monitoring devices at home; 32% of fuel poor and 28% of extreme fuel poor households compared to 36% of all other households.

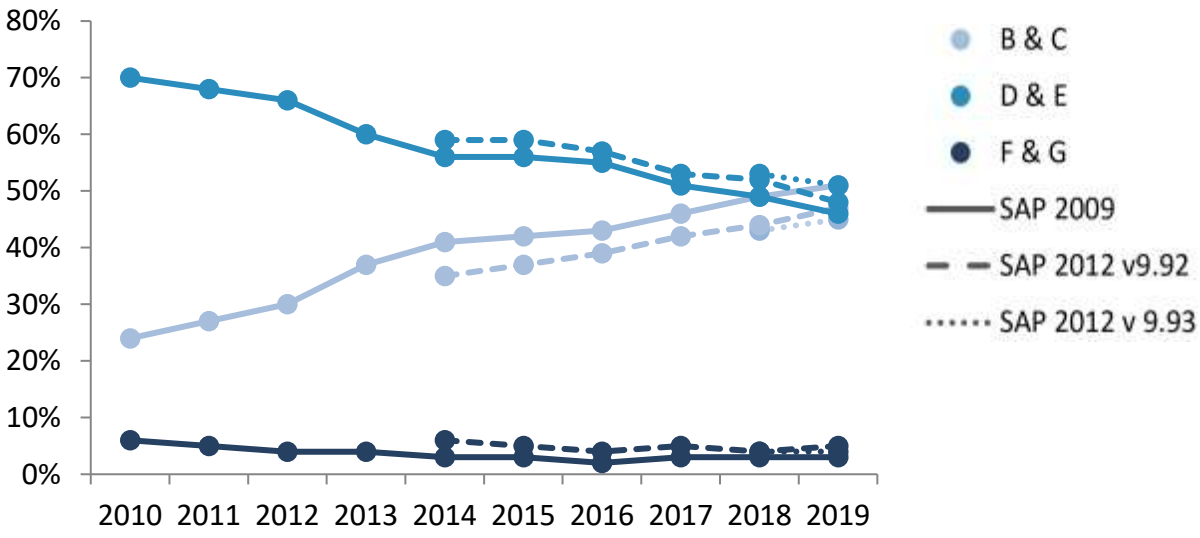
Energy Efficiency and Carbon Emissions

- In 2019, 45% of Scottish homes were rated as **EPC band C** or better and half had an **Energy Efficiency Rating** of 67 or higher (SAP 2012 (RdSAP v9.93)) which is similar to 2018.
- SAP 2012 (RdSAP v9.92) allows consideration of trends over a longer period. 47% of Scottish homes were rated as EPC band C or better in 2019, a 3 percentage point increase on 2018 and an 11 percentage point increase from 2014 (the first year in which data based on SAP 2012 is available).



- Using **SAP 2009** continues to show long-term improvement in the energy efficiency profile of housing. The share of the most energy efficient dwellings (rated C or better) increased from 24% in 2010 to 51% in 2019. In the same period, the proportion of properties in the lowest EPC bands (E, F or G) more than halved, reducing from 27% to 12%.

Proportion of Scottish Homes by Grouped EPC Band, SAP 2009, SAP 2012 (RdSAP v9.92) and SAP 2012 (RdSAP v9.93), 2010-2019



- The share of homes with **lofts** insulated to 100 mm or more remained at 94% in 2019. This represents an increase of 12 percentage points on 2010 levels although this has been stable since 2015. 30% of lofts were insulated to a high standard of insulation (300 mm or more), a similar level to 2015-2018 following significant increases from 5% in 2010.
- Wall insulation measures continue to be delivered under energy efficiency programmes such as the Energy Company Obligation (ECO). Levels of **wall insulation** have remained similar in recent years, with 59% of walls having insulation in 2019. However, there is a longer term trend of improvement with 18% of solid wall dwellings and 73% of cavity wall dwellings being insulated in 2019, representing an increase from 11% and 66% respectively in 2012.
- In 2019, 64% of gas and oil **boilers** met the minimum efficiencies specified by current Building Standards, similar to 2018 but a substantial increase from 30% in 2012.
- One third of dwellings had an **Environmental Impact Rating** in band C or better in 2019 (SAP 2012 (RdSAP v9.93)), this is similar to 2018. The mean rating was 61 and the median was 64, both of which lie in band D.
- Average **modelled carbon emissions** for all properties was 73 kg/m2 in 2019 which has been stable since 2017 following a decrease from 80 kg/m2 in 2014.

Housing Conditions

- Disrepair to critical elements, central to weather-tightness, structural stability and preventing deterioration of the property, stood at 52% in 2019. Less than half of these (19% of all dwellings) required urgent disrepair to critical elements and just 1% had extensive disrepair (covering at least a fifth of the element area) to critical elements.
- Overall, this is an improvement of 5 percentage points on 2018, when 57% of dwellings had disrepair to critical elements, with 20% having critical elements in urgent need of repair and, again, just 1% having extensive disrepair to critical elements. The 2019 rate has returned to a level similar to 2017 (50%).
- 18% of dwellings had disrepair only to non-critical elements, with 3% of dwellings requiring some urgent repair and 1% with extensive disrepair to non-critical elements, similar to 2018.
- Levels of damp and condensation were similar to those seen in 2018: 91% of properties were free from any damp or condensation.

- 2% (or 40,000) of all dwellings fell below the Tolerable Standard in 2019, similar to 2018. Longer term this represents an improvement of 2 percentage points since 2012.
- The Scottish Housing Quality Standard (SHQS) failure rate in the social sector was 41%, not allowing for abeyances and exemptions, which is similar to 2018. This has fallen from 60% in 2010. Failures of the Energy Efficient criterion were the biggest drivers of failures overall. In 2019, 31% of social sector properties did not meet the Energy Efficient criterion.
- SHCS surveyors may not always be able to identify the presence of cavity wall insulation. The Energy Efficient criterion failure rate in the social sector would be 14% if it is assumed that all social dwellings have insulated cavity walls where this is technically feasible. This, in turn, would lower the overall SHQS failure rate in the social sector to 28%.
- The failure rate in the private sector overall is similar to that seen in 2018 (44%, compared to 43%) and is also driven by failures of the Energy Efficient criterion. Nevertheless, whilst private owners and landlords are currently under no obligation to bring their properties up to this standard, long term improvement is being made in the private sector overall.
- The majority of dwellings falling below the SHQS failed on a single criterion; this accounted for more than 8 out of 10 failures in the social sector and overall.
- For 69% of social homes failing the SHQS this was due to falling short on a single one of the 55 elements which make up the standard. Most frequently these were cavity wall insulation, pipe and tank insulation, full and efficient central heating, effective loft insulation, at least six kitchen sockets, and safe common front and rear doors.
- In 2019 around 51,000 households lived in overcrowded accommodation (2%) under the bedroom standard, similar 2018.
- Around 918,000 (37%) households had one bedroom in excess of the minimum requirement under the bedroom standard. A further 812,000 (33%) households had two or more bedrooms in excess.
- Social sector tenants are more likely to live in accommodation which is at the level meeting the minimum requirements of the bedroom standard (53% compared to 20% in the private sector). Social sector tenants are also slightly more likely (3%) to live in accommodation which is overcrowded according to the bedroom standard than those households living in the private sector (2%)

1 Introduction

1. The statistics reported in this publication are based on a national survey of the housing stock, the only one of its kind in Scotland, which is part of the Scottish Household Survey (SHS). Until 2012 it was carried out as a stand-alone survey under the name Scottish House Condition Survey (SHCS). Following the review of the large-scale Scottish population surveys, the SHCS was incorporated within the SHS and became one of its modules. We continue to report the results from this module of the SHS under the name Scottish House Condition Survey.

2. The SHCS consists of an interview with householders and a physical inspection of the dwelling they occupy, which provides a picture of Scotland's occupied housing stock. It covers all types of households and dwellings across the country - whether owned or rented, flats or houses. The physical data about the dwelling is recorded by surveyors trained to collect detailed information on housing characteristics. This is combined with information about the household collected through the face to face interview, covering a range of topics such as household characteristics, tenure, neighbourhood satisfaction, dwelling satisfaction, health status and income. The result is a unique and powerful data set for examining the condition and characteristics of Scotland's housing stock alongside the views and experience of the people living in those dwellings.

3. This is the sixteenth 'Key Findings' report since the SHCS changed to a continuous format in 2003 and the eighth since it was integrated within the SHS. Details on the methodology and design of the survey are provided in the Scottish Household Survey Methodology and Fieldwork Outcomes reports. The incorporation of the SHCS within the SHS in 2012 introduced some discontinuities in the methodology of the survey and may contribute to some observed change over time.

4. In 2019 there were 2,997 surveyed properties. Statistics published in this report are based on fieldwork undertaken during 2019. A small proportion (4%) of the household interviews took place in the first quarter of 2020.

5. In 2009, the SHCS was designated as a National Statistics product by the UK Statistics Authority (UKSA) and in October 2020, following a compliance check by the Office for Statistics Regulation (OSR), it was confirmed that these statistics should continue to be designated as National Statistics. This demonstrates that the SHCS statistics are accurate, trustworthy and compliant with the high standards required of National Statistics.

6. Past methodological changes are described in each years' Key Findings report and associated Methodology Notes and, where relevant, in individual sections of this report. We always seek to improve and keep our methods and processes up to date and there may therefore be small changes to elements of data processing which do not impact significantly on the results. Details are provided in the respective technical sections.

7. The main change in 2019 is to the information presented relating to disrepair (section 6.1). In order to aid understanding of the statistics, data is now presented in terms of disrepair to critical elements (and sub-groups of urgent disrepair to critical elements and extensive disrepair to critical elements) and disrepair only to non-critical elements.

8. Differences between years or across characteristics are only highlighted in the commentary of this report if they are statistically significant. Values will be described as 'similar' if they are not significantly different. On occasion we also explicitly note that a difference is not statistically significant, particularly if it might appear large to the reader. This can occur if the statistic is based on a small sample size. Please see Chapter 7 for further details on confidence intervals, design effects and statistical significance.

9. The remainder of this report covers the following topics:

- Key Attributes of the Scottish Housing Stock: this chapter describes key dwelling characteristics such as dwelling type, age of construction, main heating fuel and the characteristics of the households that occupy them.
- Energy Efficiency: this chapter presents an analysis of the energy efficiency of the housing stock including presence and level of insulation.
- Fuel Poverty: this chapter presents an analysis of the characteristics of households in fuel poverty and extreme fuel poverty. It also examines the key drivers of fuel poverty and how they have changed over time.
- Perceptions and Experiences: this chapter examines householders' reports of their experience and satisfaction with heating and the extent to which they monitor their use of energy.
- Housing Conditions: this part of the report provides information on the number of dwellings in compliance with the tolerable standard and the Scottish Housing Quality Standard (SHQS). It also covers the presence of dampness, condensation and disrepair as well as some indicators of overcrowding and under-occupation.
- Technical Notes: the final chapter provides information about the content of the survey and the definition of some of the key concepts used. Discussion on the statistical reliability of the estimates is also included.

2 Key Attributes of the Scottish Housing Stock

10. The Scottish House Condition Survey provides a snapshot of the Scottish housing stock in each survey year. This chapter sets out information on the basic attributes of occupied Scottish dwellings as captured in 2019. Subsequent chapters build on this and provide more details on energy efficiency, fuel poverty, housing quality and disrepair.

11. The following topics are included:

- the construction age and built form of Scottish domestic buildings;
- the dwellings' location in relation to the gas network and the type of fuel used to heat them;
- the relationship between the dwellings' attributes and household tenure; and
- the composition of the households who occupy them.

2.1 Dwelling Age and Type

12. The age of construction and the built form of a dwelling has consequences for energy performance, running costs and living conditions. For example, older dwellings built with solid stone walls are typically less effective at preventing heat transmittance between the inside and the outside of a building than properties that have been built using modern construction materials and that, since 1982, have been subject to increasingly rigorous minimum standards of energy efficiency and airtightness.

13. More information on the main dwelling types used in the SHCS is provided in section 7.8.1.

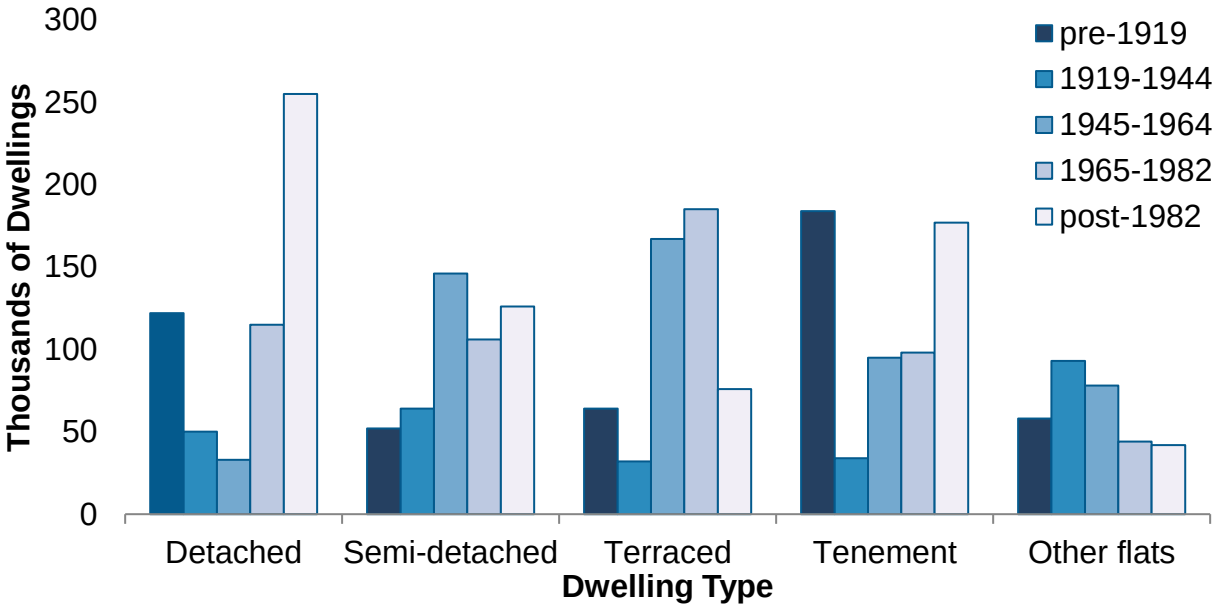
14. At the same time, types of dwellings can differ in terms of the size of the external surface area; dwellings with a smaller area of exposed wall, for example those that are shielded by adjacent properties, typically have lower levels of heat loss than in buildings with fewer sheltered sides.

15. The Scottish housing stock is diverse and varies across the country and between rural and urban areas. However, some common types can be recognised in Figure 1:

    - Old (pre-1919) detached houses (5%; around 122,000) and tenement flats (7%; 184,000)
    - More modern post-1982 detached houses (10%; 255,000) and tenements (7%; 177,000)
    - Post-war terraced houses (14%; 353,000 built between 1945 and 1982)
    - Semi-detached houses, common across all age bands and accounting for around 20% of the stock alone.

16. These six broad categories account for 63% of the overall housing stock however there is also variability within these groups. For example, among pre-1919 tenement flats, of the type common in Edinburgh and Glasgow, there is a wide range of sizes, layouts and areas of exposure (for example in top floor flats the roof is exposed) which affects their energy efficiency and the living conditions experienced by the household.

Figure 1: Number of Occupied Scottish Dwellings by Age Band and Type, 2019



17. The proportion of the stock in each dwelling age band and type is provided in Table 1. Numbers of dwellings of each age group and type are shown in Table 2.

Table 1: Proportion of Occupied Dwellings by Age Band and Type, 2019 (Percentage of Whole Stock)

Age of dwelling	Type of Dwelling					
	Detached	Semi-detached	Terraced	Tenement	Other flats	Total
pre-1919	5%	2%	3%	7%	2%	**19%**
1919-1944	2%	3%	1%	1%	4%	**11%**
1945-1964	1%	6%	7%	4%	3%	**21%**
1965-1982	5%	4%	7%	4%	2%	**22%**
post-1982	10%	5%	3%	7%	2%	**27%**
Total	**23%**	**20%**	**21%**	**24%**	**13%**	**100%**
Sample size						*2,997*

Table 2: Number of Occupied Dwellings by Age Band and Type, 2019 (Thousands)

Age of dwelling	Type of Dwelling					
	Detached	Semi-detached	Terraced	Tenement	Other flats	Total
pre-1919	122	52	64	184	58	**479**
1919-1944	50	64	32	34	93	**273**
1945-1964	33	146	167	95	78	**518**
1965-1982	115	106	185	98	44	**548**
post-1982	255	126	76	177	42	**677**
Total	**576**	**494**	**525**	**587**	**315**	**2,496**
Sample size						*2,997*

18. The category 'other flats' includes houses that have been converted to flats (34,000), towers / slabs (57,000) and so-called "4-in-a-block" flats (223,000).

- "4-in-a-block" flats were commonly built as social housing between 1919 and 1965 (70% of "4-in-a-block" flats fall in that age category).
- 78% of towers / slabs were built in the 1945 to 1982 period, again often as social housing.
- Converted flats are almost exclusively pre-1919 structures (99.7%), where a house has been divided into multiple residences.

2.1.1 Dwelling Size (Floor Area)

19. The size of the internal floor area has implications for the heating requirements of a dwelling. Larger dwellings require greater heat inputs and therefore cost more to heat. This has a direct impact on fuel poverty (see Chapter 4).

20. Pre-1919 dwellings tend to be larger than the other two age categories across dwelling types with the exception of tenements which on average are comparable in size to more recently built ones (Figure 2). Semi-detached houses built after 1919 are on average around three-quarters of the size of those built pre-1919. Terraced houses built after 1919 are around two thirds the size those built pre-1919.

21. The overall average for post-1982 dwellings is somewhat higher compared to those built between 1919 and 1982. This is largely driven by differences in detached houses, which are both larger in size and more common in the post-1982 stock (see Table 2).

22. Rural dwellings are, on average, 31% larger than urban dwellings based on internal floor area, as shown in Table 3. The difference is smallest for dwellings built between 1919 and 1982 at 16%. Among pre-1919 and post-1982 dwellings, rural properties are around 34% larger.

Figure 2: Mean Floor Area (m^2) by Dwelling Type and Age, 2019

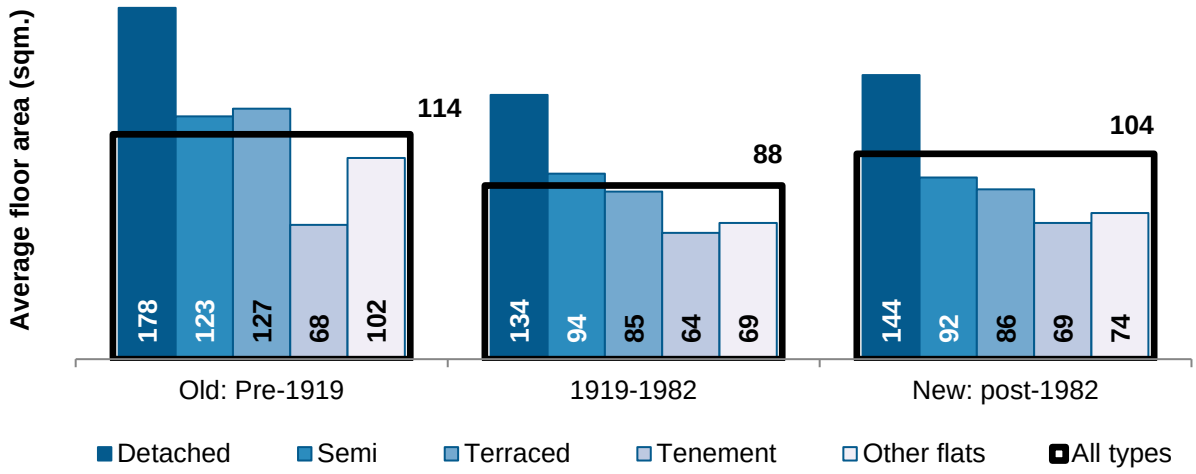


Table 3: Average Internal Floor Area (m^2) by Urban/Rural Location, 2019

Dwelling Age	Location			Rural % larger
	Urban	Rural	All	
Pre-1919	105	141	114	34%
Sample size	*345*	*201*	*546*	
1919-1982	86	100	88	16%
Sample size	*1347*	*305*	*1652*	
Post-1982	97	131	104	34%
Sample size	*588*	*211*	*799*	
All Age Bands	93	121	97	31%
Sample size	*2280*	*717*	*2997*	

Urban/rural categories are based on the 2013/14 Scottish Government Urban/Rural classification to be consistent with survey weighting as described in Section 7.8.3.

2.2 Gas Grid Coverage and Rural/Urban Location

23. Approximately 17% of dwellings in Scotland are estimated to be outside the coverage of the gas grid[1]. As shown in Table 4, the majority (93%) of urban dwellings are within the coverage of the gas grid, whereas almost two-thirds (65%) of those in rural areas are not.

Table 4: Gas Grid Coverage Overall and by Urban/Rural Location, 2019

Gas Grid Coverage				Location					
				Urban			Rural		
	000s	row %	col %	000s	row %	col %	000s	row %	col %
On Gas Grid	2,079	100%	83%	1,928	93%	93%	150	7%	35%
Off Gas Grid	417	100%	17%	143	34%	7%	274	66%	65%
Total	2,496		100%	2,071	83%	100%	425	17%	100%
Sample size			*2,997*			*2,280*			*717*

Urban/rural categories are based on the 2013/14 Scottish Government Urban/Rural classification to be consistent with survey weighting as described in Section 7.8.3.

24. Connection to the gas grid allows households to use gas for heating and hot water. As gas is currently the cheapest of the major commercial fuels, gas grid access can be a significant determinant in the required cost of heating a home to a satisfactory temperature.

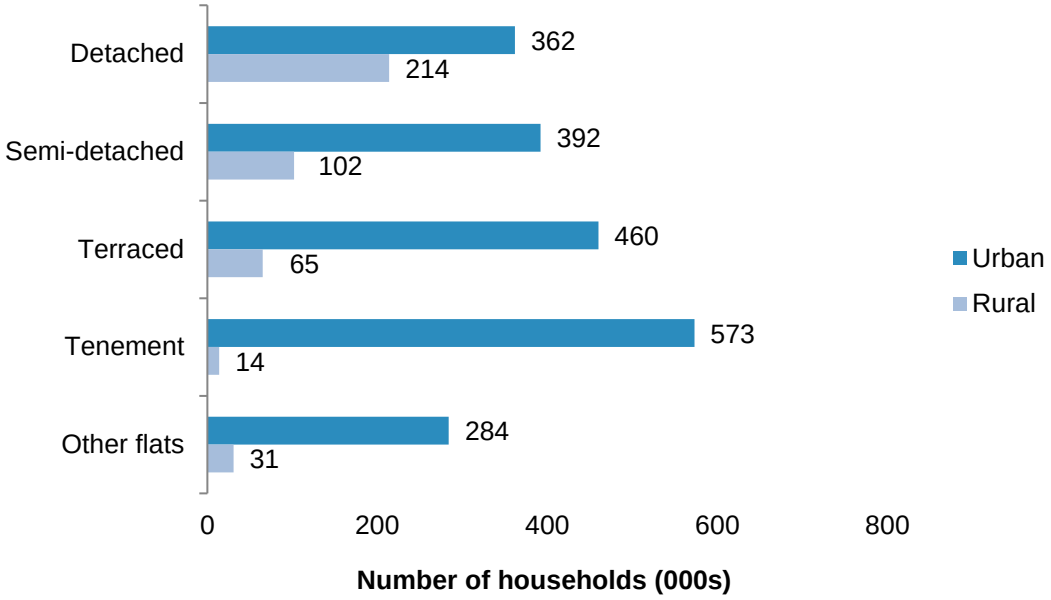
25. Figure 3 shows the number of dwellings in rural and urban areas by property type.

26. Half (50%; 214,000 households) of all rural dwellings are detached, and 24% (102,000) are semi-detached. Only 11% of rural dwellings are flats; 45,000 in total.

27. The most common dwelling type in urban areas is the tenement flat (573,000), accounting for around 28% of urban housing. Around 59% of urban stock are detached, semi-detached and terraced houses, in total accounting for 1.2 million of the 2.1 million urban dwellings.

[1] Gas grid coverage is determined on the basis of the distance of the dwelling from a low / medium / intermediate pressure gas distribution pipe. Based on the usual maximum distance for standard domestic connection (63 m), dwellings are classified as being “on” or “off” the grid. This does not reflect whether the dwelling is actually connected to the grid. Further details on the method for estimating distance to the gas grid are available in section 7.8.4 of this report and in SHCS Methodology Notes.

Figure 3: Dwelling Types in Rural and Urban Areas (000s), 2019



Urban/rural categories are based on the 2013/14 Scottish Government Urban/Rural classification to be consistent with survey weighting as described in Section 7.8.3.

2.3 Heating Fuel

28. This section examines the distribution of dwellings in terms of the primary heating fuel used and a range of other characteristics, such as age and type of dwelling. The relationship between the type of fuel used, the energy efficiency rating and fuel poverty will be explored further in later chapters.

29. Overwhelmingly the most common heating fuel is mains gas: 81% of Scottish households (around 2.0 million) use mains gas for heating, 11% use electricity and 5% use oil (Table 5), these are similar to 2018.

Table 5: Primary Heating Fuel, Households (000s) and %, for All Stock and by Sector, 2019

	All Stock		Owner Occupied		Private Rented		Social	
Primary Heating Fuel	**000s**	**%**	**000s**	**%**	**000s**	**%**	**000s**	**%**
Mains gas	2,016	81%	1,277	82%	230	74%	509	80%
Electricity	262	11%	121	8%	53	17%	88	14%
Oil	129	5%	111	7%	15	5%	2	0%
Communal Heating	34	1%	*	*	*	*	28	4%
LPG bulk or bottled	18	1%	*	*	*	*	-	-
Solid mineral fuel	20	1%	10	1%	4	1%	6	1%
Biomass	16	1%	11	1%	4	1%	-	-
Sample size		*2,997*		*1,965*		*317*		*715*

"*" denotes cases where attributes appear too rarely to provide an adequate basis for reporting. "–"denotes no sampled cases. See section 7.1.6 for table conventions.

30. Mains gas and electricity are the primary fuel types present in 94% of social housing with a further 4% (28,000 households) using some form of communal heating. Conversely, oil is rarely used to heat social housing, but is the primary heating fuel in 7% of owner occupied dwellings and 5% of private rented dwellings.

31. Mains gas use is less prevalent in private rented households at 74% compared to 82% in owner occupied dwellings and 80% in social housing.

32. Owner occupier households were less likely to use electricity as their primary fuel type at 8% compared to 17% of private rented dwellings and 14% of social sector dwellings.

33. 85% of dwellings built between 1919 and 1982 use gas as their primary heating fuel (Table 6). In comparison, 79% of dwellings built after 1982 and 72% of dwellings built pre-1919 use gas. Older dwellings more commonly (18%) use other fuel types aside from gas or electricity than newer dwellings.

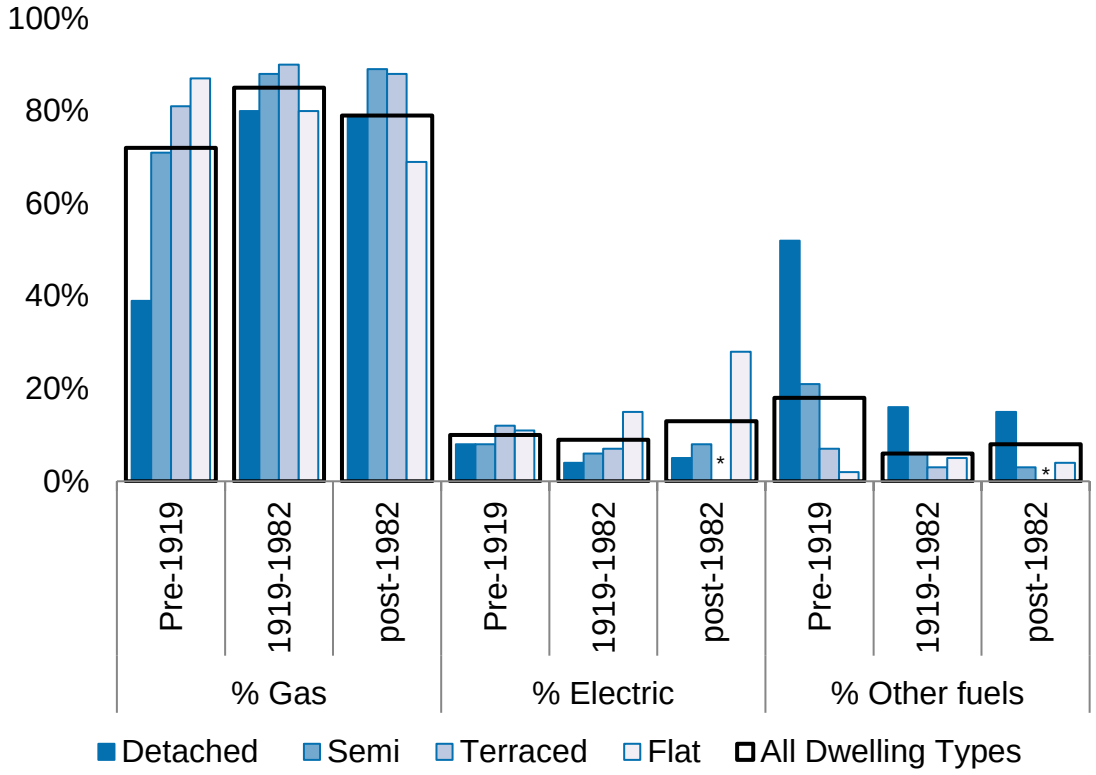
Table 6: Primary Heating Fuel by Age and Type of Dwelling, 2019

Dwelling Type	Dwelling Age	Primary Heating Fuel			*Sample*
		Gas	**Electric**	**Other**	*size*
All Dwelling types	**All age bands**	81%	11%	9%	*2,997*
	pre-1919	72%	10%	18%	*546*
	1919-1982	85%	9%	6%	*1652*
	post-1982	79%	13%	8%	*799*
Detached	**All age bands**	71%	6%	23%	*852*
	pre-1919	39%	8%	52%	*186*
	1919-1982	80%	4%	16%	*316*
	post-1982	79%	5%	15%	*350*
Semi	**All age bands**	87%	6%	7%	*685*
	pre-1919	71%	8%	21%	*74*
	1919-1982	88%	6%	6%	*446*
	post-1982	89%	8%	3%	*165*
Terraced	**All age bands**	89%	8%	3%	*589*
	pre-1919	81%	12%	7%	*74*
	1919-1982	90%	7%	3%	*438*
	post-1982	88%	*	*	*77*
Flat	**All age bands**	79%	17%	4%	*871*
	pre-1919	87%	11%	2%	*212*
	1919-1982	80%	15%	5%	*452*
	post-1982	69%	28%	4%	*207*

34. Primary heating fuel also varies by type of dwelling (Table 6). Households living in detached houses are least likely to use mains gas for heating; 71% of them do, compared to 81% of households for Scotland as a whole and 89% of those households living in terraced houses. This is due to the greater prevalence of alternative heating fuels amongst pre-1919 detached houses. 39% of pre-1919 detached houses use gas as their primary heating fuel, 8% use electricity, and more than half (52%) are reliant on an alternative fuel source for space heating and hot water. As shown in Figure 3 this is largely due to the higher proportion of detached dwellings in rural areas and Table 4 demonstrates that dwellings in rural areas are less likely to be within the coverage of the gas grid.

35. “Other” fuels (than gas or electricity) are most commonly used in detached houses. Flats have the highest levels of electricity (17%) as main heating fuel.

Figure 4: Primary Heating Fuel by Age and Type of Dwelling, 2019 (per cent of dwellings in age/type category using fuel type)



36. Primary heating fuel varies by geographic location. 89% of dwellings in urban locations use mains gas as their primary heating fuel compared to 40% of those in rural locations. By contrast, there are higher rates of electricity and oil as primary heating fuel in rural locations, 20% and 28%, respectively, compared to urban locations where electricity is used in 9% and oil in less than 1% of dwellings (Table 7).

Table 7: Primary Heating Fuel, Households (000s) and %, for All Stock and by Urban/Rural Location, 2019

	All Stock		Urban		Rural	
Primary Heating Fuel	**000s**	**%**	**000s**	**%**	**000s**	**%**
Mains gas	2,016	81%	1,845	89%	171	40%
Electricity	262	11%	177	9%	85	20%
Oil	129	5%	10	0%	119	28%
Communal Heating	34	1%	32	2%	2	1%
LPG bulk or bottled	18	1%	*	*	*	*
Solid mineral fuel	20	1%	3	0%	17	4%
Biomass	16	1%	*	*	*	*
Sample size		*2,997*		*2,280*		*717*

Urban/rural categories are based on the 2013/14 Scottish Government Urban/Rural classification to be consistent with survey weighting as described in Section 7.8.3.

2.4 Household Type

37. In this report we describe households in terms of three main types which are derived from the more detailed classification used in the Scottish Household Survey:

    - **Families.** These are households which contain at least one child aged under 16. The resident adult(s) may be of any age.
    - **Older households.** One- or two-member households which include at least one resident aged 65 or older.
    - **Other households.** These are all other household types which are made up of adults only and have no resident children.

38. More details about the definitions are provided in section 7.8.2. This grouping was introduced in the 2015 Key Findings report and is different from the one used in previous reports, where the pensionable age for women was 60 and 65 for men. From 2015 onwards, 65 is adopted as the common age threshold for both men and women for older households reflecting the gradual increase in the state pension age for women.

39. There is a broad association between household types and the type of dwellings they occupy, as shown in Figure 5 and Table 8. While families and older households are more likely to live in houses (both 71%), other households are more evenly split between houses and flats (55% and 45% respectively).

40. Families have the highest proportional occupancy of post-1982 houses: 28% of households with children live in post-1982 houses, compared with 13% of older households and 17% of other types of households. The highest occupancy of pre-1919 flats is observed among other types of households, 16%, compared to 3% for families and 6% for older households.

Figure 5: Proportion of Households in Each Dwelling Type and Age Band, 2019

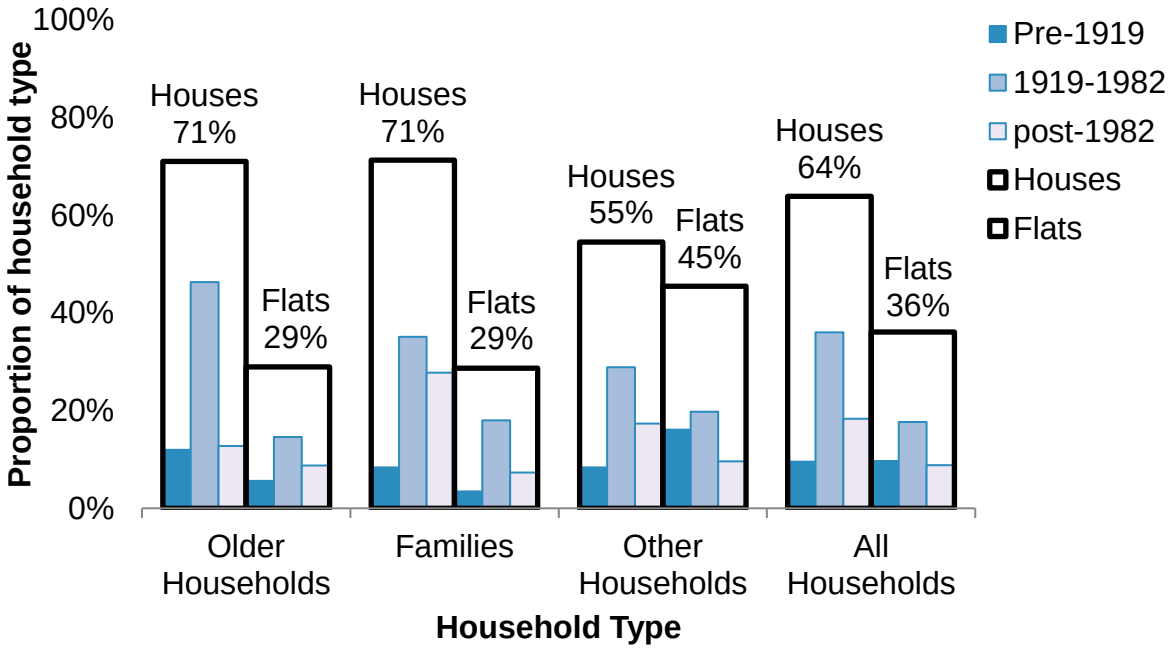


Table 8: Proportion of Households in Each Dwelling Type and Age Band, 2019

Dwelling Type and Age Band		Older Households	Families	Other Households	All Household Types
Houses	Pre-1919	12%	8%	8%	10%
	1919-1982	46%	35%	29%	36%
	Post-1982	13%	28%	17%	18%
	Subtotal	71%	71%	55%	64%
Flats	Pre-1919	6%	3%	16%	10%
	1919-1982	15%	18%	20%	18%
	Post-1982	9%	7%	10%	9%
	Subtotal	29%	29%	45%	36%
Total		100%	100%	100%	100%
Sample size		*1,039*	*706*	*1,252*	*2,997*

2.5 Tenure

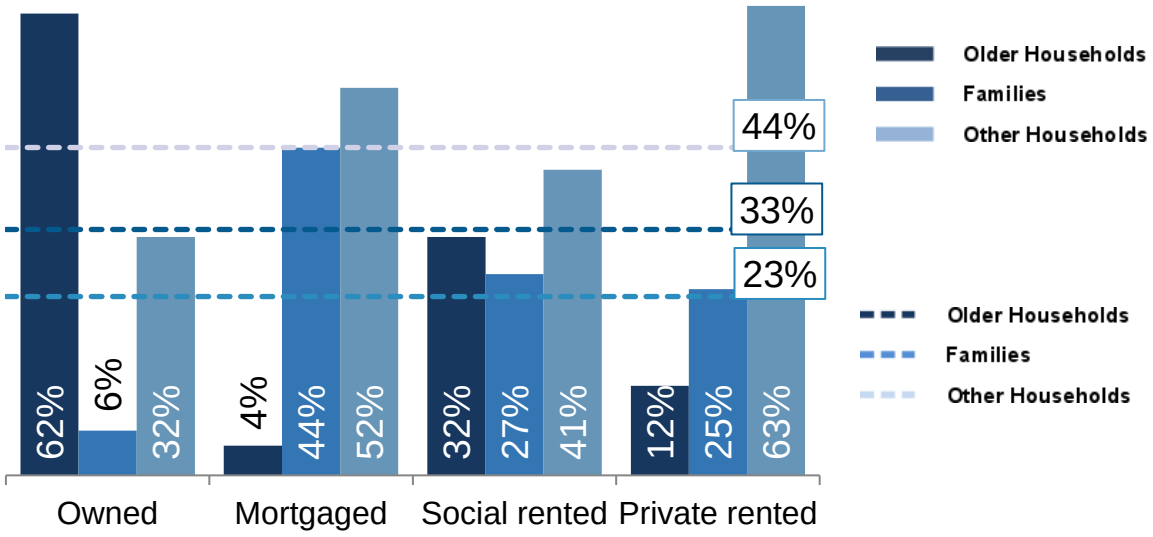
41. Statistics on tenure in the SHCS are based on the achieved sample of dwellings in the physical survey and are not calibrated against figures produced as part of the Scottish Government Housing Statistics for Scotland publication or the Scottish Household Survey publication (which is based on a larger sample and different weighting methodology). For estimates of the total number of dwellings by tenure, readers are referred to the Housing Statistics for Scotland publication which uses information from social landlords' returns which comprehensively cover the social housing sector and therefore provides more accurate estimates of the total stock.

42. In this section we explore data from the SHCS sample which provides more detailed information on the composition of each tenure type.

2.5.1 Household Type and Tenure

43. There are some clear differences in household type across tenure, as shown in Figure 6.

Figure 6: Proportion of Households in Each Tenure Group by Household Type, 2019



Note: Dashed lines represent the proportion of household type in Scotland as a whole.

44. Owner occupiers with mortgages are predominantly families (44%) and other households (52%). The majority of those who own their properties outright are older households (62%) and other types of households (32%).

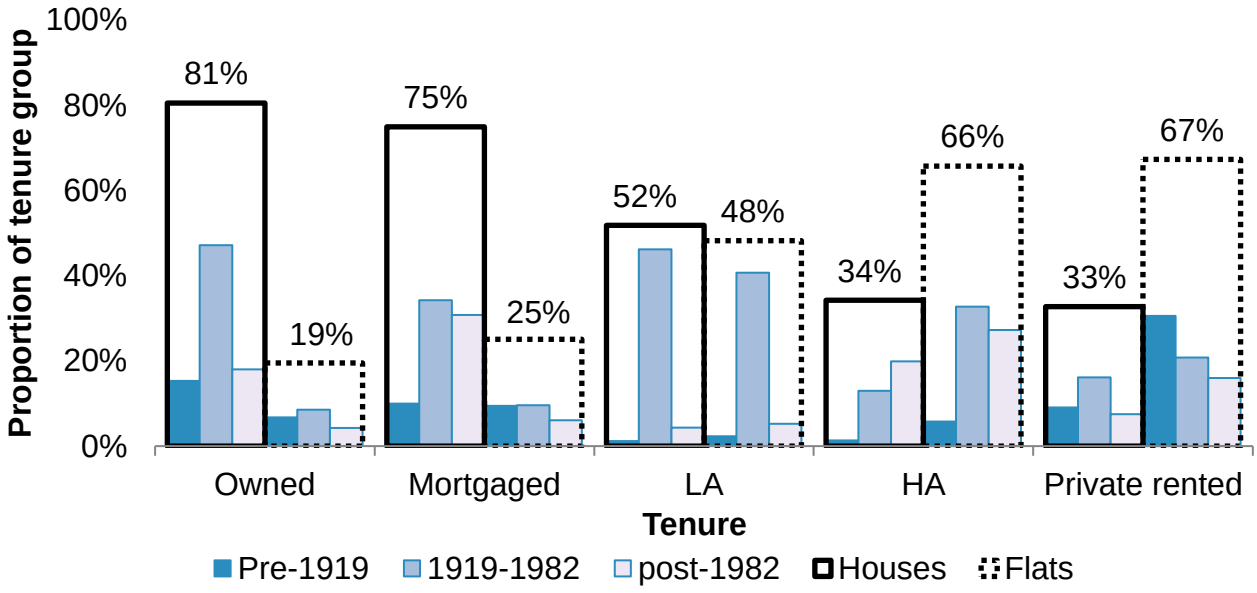
45. The majority of those who live in the private rented sector (PRS) belong to other households (63%) and only 12% are older households. Around a quarter of renters in both the private (25%) and the social sector (27%) are households with children, which reflects their share in the national population.

2.5.2 Dwelling Type and Tenure

46. Figure 7 shows that rented properties in the Housing Association (HA) and private rented sectors are more likely to be flats. Flats account for 66% of Housing Association (HA) stock and 67% of dwellings rented from private sector landlords.

47. Owner-occupied dwellings are more likely to be houses: 81% of dwellings owned outright and 75% of those with a mortgage, compared to 52% of dwellings owned by Local Authorities, 34% of Housing Association stock and 33% of private rented properties.

Figure 7: Proportion of Dwellings in Each Tenure Group by Age Band and Type of Dwelling, 2019



48. Almost all properties (87%) owned by Local Authorities were built between 1919 and 1982, while less than half (46%) of the Housing Associations stock was built in this period. Private rented sector dwellings are older, with 40% built before 1919, compared with 37% built between 1919 and 1982 (Table 9).

Table 9: Proportion of Dwellings in Each Tenure Group, by Age Band and Type of Dwelling, 2019

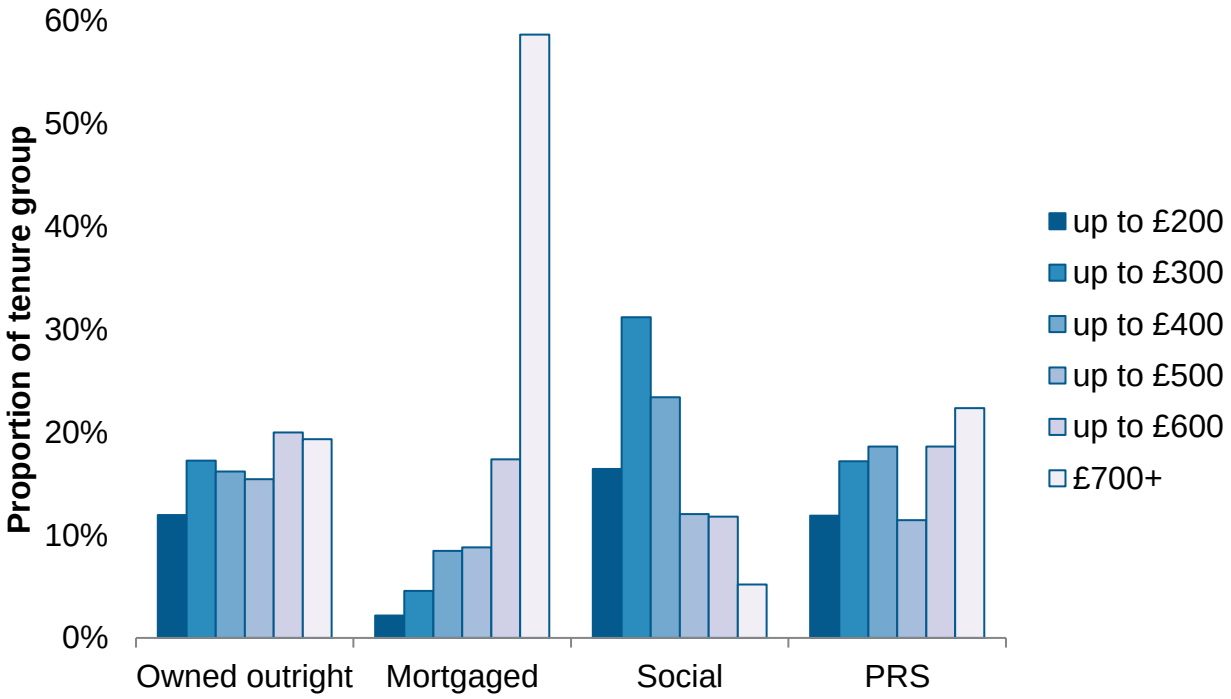
Dwelling Age and Type		Owned	Mortgaged	LA	HA	Private rented
Houses	Pre-1919	15%	10%	1%	1%	9%
	1919-1982	47%	34%	46%	13%	16%
	Post-1982	18%	31%	4%	20%	7%
	Subtotal	81%	75%	52%	34%	33%
Flats	Pre-1919	7%	9%	2%	6%	31%
	1919-1982	9%	10%	41%	33%	21%
	Post-1982	4%	6%	5%	27%	16%
	Subtotal	19%	25%	48%	66%	67%
Total		100%	100%	100%	100%	100%
Sample size		*1159*	*806*	*425*	*290*	*317*

2.6 Household Income Band

49. As we might expect, income and tenure are closely correlated. For social sector residents the distribution is skewed towards lower income groups, as shown in Figure 8, while households with mortgages have the largest share of higher income groups.

50. The distribution of households by income in the PRS is broadly similar to that for outright owner occupiers. It is generally wider than the social housing sector, including significant shares of both higher and lower income band households.

Figure 8: Proportion of Households in Each Tenure Group by Weekly Household Income Band, 2019



3 Energy Efficiency

51. The energy efficiency of a dwelling depends on its physical characteristics. Factors such as the age of construction, the dwelling type, the heating and hot water systems in use and the extent to which the building fabric is insulated, all affect energy efficiency.

52. Based on information about the characteristics of the dwelling collected in the SHCS physical survey, and using standard assumptions about the make-up and the behaviour of the occupying household, the energy consumption associated with the dwelling is modelled. This allows us to make comparisons of energy use, emissions and energy efficiency ratings between dwellings that are independent of occupant behaviour. Further details on the methodology underpinning these measures of energy efficiency are provided in the Methodology Notes.

53. In this chapter we report on analysis of:

- levels of insulation in Scottish dwellings (section 3.1);
- boiler efficiencies (section 3.2);
- Energy Efficiency Ratings (EER), also known as SAP ratings (section 3.3);
- National Home Energy ratings (NHERs) (section 3.4);
- modelled CO2 emissions from dwellings (section 3.5); and
- Environmental Impact Ratings (section 3.6).

3.1 Insulation Measures

54. Installing or upgrading insulation is one of the most effective ways to improve the energy efficiency of a building. The Energy Saving Trust estimates that an un-insulated dwelling loses a third of all its heat through the walls and a further quarter through the roof. As a result, insulation can significantly reduce energy consumption and therefore lower heating bills, making it cheaper to enjoy satisfactory levels of thermal comfort, see Chapter 4 on Fuel Poverty.

55. Additional insulation is most commonly added to a property through the insulation of loft spaces and by adding insulating material to external walls.

Key Points

- The majority of loft spaces are insulated. In 2019, **loft insulation** with a thickness of 100 mm or more had been installed in 94% of dwellings. This has been stable since 2015 but represents an increase of 12 percentage points on 2010 levels.
- In 2019, 30% of lofts were insulated to a high standard of insulation (300 mm or more). This proportion has remained about this level since 2015, following year on year increases from the 2010 figure of 5%.
- The proportion of **insulated cavity walls** recorded by the SHCS was 73% in 2019, similar to the previous year. In the longer term, the share of insulated cavity walls has been increasing, with a 7 percentage point improvement since 2012.
- The proportion of **solid wall** dwellings with insulation was 18% in 2019, which was similar to 2018, and an increase of 7 percentage points on the 2012 figure.
- Levels of insulation (both loft and wall) are higher in the social sector than in the private sector. 55% of homes in the private sector have wall insulation compared to 70% in the social sector. In the private sector, 63% of lofts are insulated to 200 mm or more compared to 71% in the social sector.

3.1.1 Loft Insulation

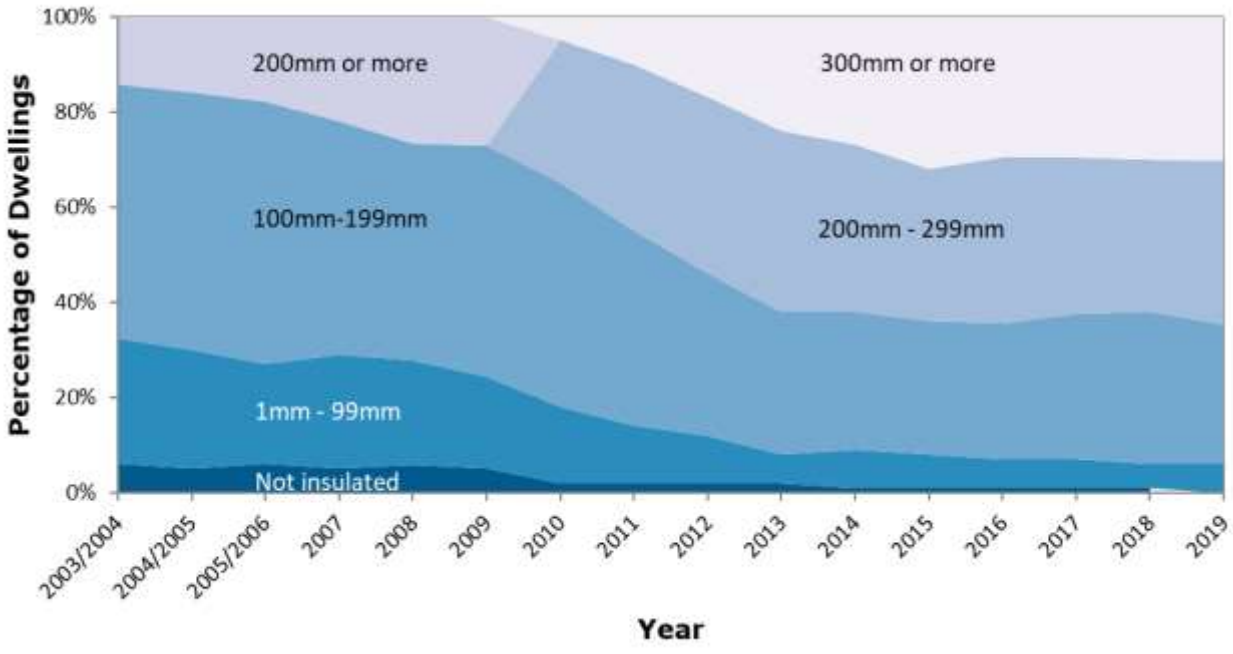
56. Since 2010, there has been an overall improvement in the uptake of loft insulation. The proportion of all housing with 100 mm or more of loft insulation has increased by 12 percentage points on 2010 levels with 94% of applicable dwellings insulated in 2019 (see Table 10**)**Table 10, similar to the level in 2018. Most of this improvement occurred before 2013.

57. Figure 9 shows the level of loft insulation in all dwellings back to 2003/4. The share of dwellings with no loft insulation has fallen from 6% in 2003/4 to 1% in 2019. Most of this decline occurred before 2010. Since then improvement has slowed down, suggesting that there may be barriers preventing the installation of insulation in the relatively few remaining uninsulated lofts.

58. Over the same period the thickness of loft insulation has increased significantly. In 2019, 65% of dwellings with lofts had insulation with a depth of 200 mm or more (Figure 9). Much of this increase has occurred between 2009 and 2013, when the percentage increased from 27% to 62%. This can largely be attributed to the installation of top-up insulation. There has been a decrease in the share of dwellings with loft insulation with a depth of 100-199 mm between 2018 and 2019. However there is no significant associated increase in the share of dwellings with 200+ mm.

59. The percentage of lofts with a high standard of insulation (300 mm or more) has remained similar since 2015, at 30%, following significant increases from 5% in 2010 (the first year the SHCS captured this information). In 2019, 29% of private sector dwellings had a high standard of loft insulation, lower than 37% of dwellings in the social sector. The difference between the sectors and the levels of each were similar in 2018.

Figure 9: Depth of Loft Insulation (where applicable) 2003/04 – 2019



Note: A dwelling is classified as 'not applicable' for loft insulation if it has a flat roof or another dwelling above it (i.e. it is a mid- or ground-floor flat).

60. Between April 2008 and December 2012, the UK government Carbon Emissions Reduction Target (CERT) scheme delivered 410,937 loft insulation measures in Scotland[2] (Table 10).

61. Between January 2013 and December 2019 a further 73,482 loft insulation measures were delivered in Scotland by its successor scheme, the Energy Company Obligation (ECO)[3].

62. In total, around 484,000 loft insulation measures have been installed under these government programs since 2008.

Table 10: Depth of Loft Insulation (000s), 2010, 2012 and 2015 to 2019

Loft Insulation	2019	2018	2017	2016	2015	2012	2010
none	14	11	9	9	19	31	42
1mm-99mm	105	95	101	109	125	185	279
100mm-199mm	547	594	563	525	518	617	822
Subtotal: <200mm	666	701	673	643	663	834	1,143
200mm or more	1,217	1,135	1,152	1,197	1,161	975	621
Not applicable	612	641	638	612	610	577	592
All Dwellings	2,496	2,477	2,464	2,452	2,434	2,386	2,357
Sample Size	*2,997*	*2,964*	*3,002*	*2,850*	*2,754*	*2,787*	*3,114*
Cumulative recorded loft insulations under government schemes							
CERT (000s)						411	157
ECO (000s)	74	69	59	53	39		

Note: There were fewer insulation measures installed under ECO in 2019 compared to earlier years as ECO3, which went live in December 2018, focuses exclusively on Affordable Warmth resulting in a greater number of heating measures (including boiler measures). In total, there were around 5% more ECO measures installed in 2019 compared to 2018 across Great Britain however 12% of these were loft insulation measures compared to 19% in 2018.[4]

63. As shown in Table 11 thickness of loft insulation is greater in social sector dwellings than private sector dwellings. In 2019, 93% of private housing lofts were insulated to 100 mm or more and 63% to at least 200 mm. In the social sector, 96% of dwellings had lofts insulated to 100 mm or more, and 71% had at least 200 mm of loft insulation.

64. One of the reasons for the difference between private and social sector is that the Scottish Housing Quality Standard (SHQS), which was introduced in 2004, requires at least 100 mm of loft insulation (see section 6.2.2 for more information).

[2]CERT-Summary-Report-Q19-by-English-Regions-Scotland-Wales, HEED dB, Nov 2014. Access available through Energy Saving Trust.

[3] Scottish Government analysis of data provided by Ofgem of measures installed under ECO. Provisional figures.

[4] Household Energy Efficiency detailed release: Great Britain Data to December 2019, BEIS

65. The difference in the proportion of lofts with at least 100 mm insulation between the private and the social sector has been reducing gradually, from 17 percentage points in 2003/04 (81% in the social and 64% in the private sector) to 3 percentage points in 2019 (96% in the social sector and 93% in the private sector).

Table 11: Depth of Loft Insulation (000s and %) by Tenure, 2018 and 2019

		Private Sector		Social Sector		All Tenures	
Year	Loft Insulation	000s	%	000s	%	000s	%
2019	none	10	1%	4	1%	14	1%
	1mm - 99mm	91	6%	14	3%	105	6%
	100mm+	1,378	93%	386	96%	1,764	94%
	100mm - 199mm	446	30%	101	25%	547	29%
	200mm - 299mm	509	34%	135	33%	643	34%
	300mm or more	423	29%	151	37%	574	30%
	Total	1,480	100%	403	100%	1,883	100%
2018	none	10	1%	1	0%	11	1%
	1mm - 99mm	82	6%	13	3%	95	5%
	100mm+	1,350	94%	380	96%	1,730	94%
	100mm - 199mm	494	34%	101	26%	594	32%
	200mm - 299mm	444	31%	149	38%	594	32%
	300mm or more	412	29%	130	33%	542	30%
	Total	1,442	100%	394	100%	1,836	100%
Samples	2019		*1,924*		*479*		*2,403*
	2018		*1,874*		*472*		*2,346*

Note: Dwellings without loft spaces are excluded.

3.1.2 Wall Insulation

66. The presence of **cavity wall insulation (CWI)** is becoming increasingly difficult for SHCS surveyors to identify as over time the injection holes age, fade or are covered up by later work. Contractors are also getting better at concealing their work. This may mean that the SHCS under-estimates the number of homes which have had CWI installed (see also section 6.2.2.4). Despite efforts to maintain the high quality of the SHCS physical survey fieldwork, some misclassifications may remain.

67. In Scotland around three quarters of dwellings have external cavity walls and the remaining one quarter have solid or other construction types of external wall. These “other” types include steel or timber-frame dwellings and dwellings made from pre-fabricated concrete. As the improvement of solid and other wall types generally requires more expensive interventions than CWI, this diverse group is addressed together in this chapter.

68. Table 12 and Table 13 show the number and proportion of insulated dwellings by type of external wall. Higher insulation levels in new buildings have been required by building standards since 1983 when the Building Standards (Scotland) Amendment Regulations 1982 came into force. These dwellings are therefore treated as insulated when built.

Table 12: Cavity Wall Insulation, 2012 and 2015 - 2019

	2019		2018		2017		2016		2015		2012	
	000s	%	000s	%	000s	%	000s	%	000s	%	000s	%
Not insulated	510	27%	500	27%	457	25%	512	28%	525	29%	606	34%
Insulated	1,359	73%	1,331	73%	1,363	75%	1,323	72%	1,286	71%	1,157	66%
Total	1,870	100%	1,831	100%	1,821	100%	1,834	100%	1,811	100%	1,763	100%
Sample		*2,278*		*2,240*		*2,284*		*2,154*		*2,099*		*2,414*
Cumulative reduction in SHCS uninsulated since 2007												
000s	306		316		359		304		291		210	
Cumulative recorded CWI installations under government schemes since 2007, thousands												
CERT											218	
ECO	104		100		91		82		72			

Note: 1. Dwellings built post-1983 are presumed insulated when built.
2. There were fewer insulation measures installed under ECO in 2019 compared to earlier years as ECO3, which went live in December 2018, focuses exclusively on Affordable Warmth resulting in a greater number of heating measures (including boiler measures). In total, there were around 5% more ECO measures installed in 2019 compared to 2018 across Great Britain however 19% of these were cavity wall insulation measures compared to 38% in 2018.[5]

69. In 2019, 73% of cavity wall dwellings in Scotland were insulated (Table 12), similar to 2018. Administrative data shows that 3,824 cavity wall dwellings were insulated with CWI during 2019 (through ECO).

70. The longer term trend, showing a decrease in the share of uninsulated cavity walls of 7 percentage points since 2012, is broadly consistent with administrative data on the number of cavity wall insulation measures installed under the CERT and ECO schemes.

[5] Household Energy Efficiency detailed release: Great Britain Data to December 2019, BEIS

71. Between April 2008 and December 2012, the CERT scheme delivered around 218,000 cavity and 9,000 solid and other wall insulation measures in Scotland[6]. Between January 2013 and December 2019 a further 104,137 cavity and 65,122 solid wall insulation measures were delivered in Scotland by the successor ECO scheme[7]. This equates to around 396,000 wall insulation measures, including around 322,000 cavity wall insulation measures, installed under these programs by the end of 2019. This is reflected in the estimated cumulative reduction of 306,000 uninsulated cavity wall dwellings reported by the SHCS since 2007.

72. Table 13 shows the levels of insulation in dwellings with **solid or other** construction type walls recorded by the survey in 2019. The results show that 18% of dwellings in this category had insulated walls in 2019; the difference with the level recorded in the previous year (19%) is not statistically significant but is an increase of 7 percentage points from 2012. Only 719 dwellings with solid walls were surveyed in 2019 as part of the SHCS. This relatively small sample does not allow enough precision to capture the increase in solid wall insulation measures which administrative data shows is taking place. Since the beginning of January 2013 at least 65,122 solid wall insulation measures were delivered in Scotland under ECO.

Table 13: Wall Insulation of Solid and Other Wall Types, 2012 and 2015 to 2019

	2019		2018		2017		2016		2015		2012	
	000s	%	000s	%	000s	%	000s	%	000s	%	000s	%
Not insulated	516	82%	524	81%	529	82%	524	85%	552	89%	557	89%
Insulated	110	18%	122	19%	115	18%	94	15%	71	11%	66	11%
Total	626	100%	646	100%	643	100%	617	100%	623	100%	623	100%
Sample		*719*		*724*		*718*		*696*		*655*		*711*
Cumulative recorded installations under government schemes since 2007, thousands												
CERT											9	
ECO	65		60		51		41		30			

Note: 1. Dwellings built post-1983 are presumed insulated when built. ECO figures will include a small number of cavity walls with solid wall insulation types.
2. There were fewer insulation measures installed under ECO in 2019 compared to earlier years as ECO3, which went live in December 2018, focuses exclusively on Affordable Warmth resulting in a greater number of heating measures (including boiler measures). In total, there were around 5% more ECO measures installed in 2019 compared to 2018 across Great Britain however 6% of these were cavity wall insulation measures compared to 9% in 2018.[8]

[6] CERT summary report (Q19) by English regions, Scotland and Wales, HEED database, Nov 2014. Access available through Energy Saving Trust.

[7] Scottish Government analysis of data provided by Ofgem of measures installed under ECO. Provisional figures.

[8] Household Energy Efficiency detailed release: Great Britain Data to December 2019, BEIS

73. The information in Table 14 is broken down by type of cavity wall into hard to treat cavities (HTTC) and standard cavity walls using the ECO definition as far as possible with the available data (further details are available in section 7.8.6). HTTCs have certain attributes which make CWI more expensive, complex or inadvisable. Standard cavity walls have no such barriers.

74. In the social sector, three quarters (74%) of cavity wall dwellings and 42% of dwellings with solid and other wall types were estimated to have insulation in 2019. Nearly three-quarters (70%) of social housing overall had insulated walls.

75. In the private sector, nearly three quarters (72%) of cavity wall dwellings and 14% of solid and other wall dwellings, had insulation in 2019. Over half (55%) of all private sector dwellings had insulated walls.

76. 36% of cavity wall dwellings in Scotland have had retrofit cavity wall insulation, which is generally the lowest cost improvement available; the remainder of insulated cavity walls were insulated as built or insulated in another way such as with internal and external wall insulation.

77. Levels of insulation are higher in the social sector at 70% (all wall types) compared with 55% in the private sector. Within wall type, this tenure divide is also apparent for the more expensive insulation measures: internal / external insulation of cavity walls (14% of cavity wall dwellings in the social sector; 3% of private dwellings) and retrofit solid wall insulation measures (42% of solid wall dwellings in the social sector; 11% in the private sector).

Table 14: Insulation by Wall Type and Tenure, 2019 and Insulation of all Wall Types by Tenure, 2018 and 2019

Wall and Insulation Type	Private Sector			Social Sector			Total		
	000s	%type	%all	000s	%type	%all	000s	%type	%all
Cavity									
Un-insulated	369	28%	20%	142	26%	22%	510	27%	20%
- HTTC	106	8%	6%	57	10%	9%	163	9%	7%
- Standard	262	20%	14%	85	15%	13%	347	19%	14%
Insulated	951	72%	51%	408	74%	64%	1,359	73%	54%
- CWI	476	36%	26%	199	36%	31%	675	36%	27%
- Int/External	42	3%	2%	76	14%	12%	118	6%	5%
- As built	434	33%	23%	133	24%	21%	567	30%	23%
Total	1,320	100%	71%	550	100%	87%	1,870	100%	75%
Sample Size			1,646			632			2,278
Solid/Other									
Un-insulated	468	86%	25%	49	58%	8%	516	82%	21%
- Pre-1919	409	75%	22%	29	35%	5%	438	70%	18%
- Post-1919	59	11%	3%	19	23%	3%	78	12%	3%
Insulated	75	14%	4%	35	42%	6%	110	18%	4%
- Retrofit	62	11%	3%	35	42%	6%	97	15%	4%
- As built	13	2%	1%	0	1%	0%	13	2%	1%
Total	542	100%	29%	84	100%	13%	626	100%	25%
Sample Size			636			83			719
All Wall Types									
Uninsulated	836		45%	190		30%	1,026		41%
Insulated	1,026		55%	443		70%	1,469		59%
Total	1,862		100%	634		100%	2,496		100%
Sample Size			2,282			715			2,997
All Wall Types: 2018									
Uninsulated	828		45%	196		30%	1,024		41%
Insulated	994		55%	460		70%	1,453		59%
Total	1,822		100%	656		100%	2,477		100%
Sample Size			2,231			733			2,964

Note: Dwellings built post-1983 are presumed insulated when built.

3.2 Boilers

Key Points

- In 2019, 64% of **gas and oil boilers** met the minimum efficiencies specified by the current Building Standards, similar to 2018. This has increased substantially from 30% in 2012.

78. The heating system is a key factor in the thermal efficiency of a dwelling. Around 87% of households use a gas or oil-fuelled boiler. Trends in boiler efficiency are closely related to developments in energy efficiency and building standards regulations:

    - From 1998, minimum boiler efficiency standards were set by European Council Directive 92/42/EEC
    - In 2007, Scottish Building Standards increased the efficiency requirements for all new and replacement boilers, details are available in the Domestic Building Services Compliance Guide for Scotland.

79. Building regulations in Scotland effectively require the installation of a condensing boiler[9] for gas and oil-fuelled heating in new builds or when boilers are replaced in any dwelling.

80. The SHCS has recorded the age of the household's heating system since 2010 and contains sufficient data to derive the Seasonal Efficiency (SEDBUK) ratings of surveyed boilers in the 2012-2019 data collections. For these years we can track the improved efficiency of gas and oil boilers associated with the rising standards of the regulatory framework.

81. The methodology by which boiler efficiency ratings are calculated changed in 2016 and the time series was updated at that point to reflect this and to account for the minimum efficiency required of new oil combination condensing boilers. All subsequent data is published on the basis of the new methodology and further details can be found in section 7.6.

[9] This design has higher running efficiencies; a portion of the heat that would be lost through vented water vapour is recovered through condensation in a heat exchanger.

82. The minimum requirements applied in the assessment of whether a boiler is compliant with standards are: a minimum efficiency of 88% for condensing standard gas, oil and LPG boilers; for condensing combination boilers, 86% for oil, and 88% for gas and LPG; for ranges, back boiler and combined primary storage units (CPSUs), 75% when gas, and 80% when oil[10].

Table 15: Gas and Oil Boiler Improvements, 2012-2019

	2019	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**
Households using gas or oil boilers for heating								
%	87%	88%	85%	86%	85%	84%	84%	82%
000s	2,159	2,171	2,104	2,097	2,075	2,041	2,022	1,960
… of which								
% "New" boilers (post-1998)	94%	92%	91%	91%	89%	85%	83%	81%
% condensing boilers	76%	73%	67%	61%	56%	48%	43%	38%
% standards compliant boilers	64%	62%	57%	52%	47%	41%	33%	30%
Sample size (gas/oil boilers)	*2,518*	*2,489*	*2,475*	*2,356*	*2,259*	*2,195*	*2,219*	*2,488*

83. In 2019 the survey found that 94% of the domestic gas and oil boilers in Scotland have been installed since 1998, when the European Boiler Efficiency Directive minimum standards came into effect. The proportion of new boilers, those installed since 1998, has increased by 24 percentage points since 2010.

84. In 2019, over three-quarters (76%) of gas and oil boilers were condensing boilers. This represents a rapid increase of 4 percentage points since 2018 and 54 percentage points since 2010.

85. In 2019, 64% of gas and oil boilers met the minimum efficiencies specified by the current Building Standards, similar to 2018 (62%). This has increased substantially from 30% in 2012.

[10] For existing dwellings, there are occasions where it may not be practical to install a condensing boiler. The Condensing Boiler Installation Assessment Procedure Guide offers further guidance in this area. Where a non-condensing boiler is installed this may result in a boiler with poorer efficiency than that of a newly installed condensing boiler of the same fuel type.

3.3 Energy Performance Certificates

Key Points

- In 2019, 45% of Scottish homes were rated as EPC band C or better under **SAP 2012 (RdSAP v9.93)**, this is similar to 2018.
- Under **SAP 2012 (RdSAP v9.92)**, 47% of Scottish homes were rated as EPC band C or better in 2019. This represents a 3 percentage point increase compared to 2018 and an 11 percentage point increase from 2014 (the first year in which data based on SAP 2012 is available).
- Under **SAP 2009**, which allows comparisons over a longer period, over half of dwellings (51%) were rated C or better, up 27 percentage points since 2010. In the same period, the proportion of properties in the lowest EPC bands (E, F or G) has more than halved, reducing from 27% in 2010 to 12% in 2019.
- Under SAP 2009, the median EE rating was 69, the first time this has been in band C. This is an increase from 62 in 2010 which is equivalent to band D.

86. Energy Performance Certificates (EPC) were introduced in January 2009 under the requirements of the EU Energy Performance Building Directive (EPBD). They provide energy efficiency and environmental impact ratings for buildings based on standardized usage. EPCs are required when a property is either sold or rented to a new tenant.

87. EPCs are generated through the use of a standard calculation methodology, known as Standard Assessment Procedure (SAP). SAP is the UK Government approved way of assessing the energy performance of a dwelling, taking into account the energy needed for space and water heating, ventilation and lighting and, where relevant, energy generated by renewables.

88. The Energy Efficiency Rating (EER) is expressed on a scale of 1-100 where a dwelling with a rating of 1 will have very poor energy efficiency and higher fuel bills, while 100 represents very high energy efficiency and lower fuel bills. Ratings can exceed 100 where the dwelling generates more energy than it uses.

89. Ratings are adjusted for floor area so that they are essentially independent of dwelling size for a given built form.

90. For Energy Performance Certificates EERs are presented over 7 bands, labelled A to G. Band A represents low energy cost and high energy efficiency, while band G denotes high energy cost (and low energy efficiency).

91. Energy Efficiency Ratings reported in this publication are calculated under two versions of SAP, the SAP 2009 methodology and the SAP 2012 methodology. Using SAP 2009 enables us to examine the trend in the energy efficiency of the housing stock since 2010. SAP 2012 was first used in reporting data from the SHCS in the 2014 Key Findings report and therefore only five years of data are available.

92. SAP is periodically reviewed by the UK government to ensure it remains fit for purpose and to address its continued application across an increasing range of carbon and energy reduction policy areas. SAP is used for assessment of new buildings whilst a 'reduced data' version of the methodology, RdSAP, is applied to assessment of existing buildings.

93. SHCS energy modelling for SAP 2012 in this report is based on two versions of RdSAP. The first, RdSAP v9.92 which was released on 7 December 2014, introduced some technical updates and broadening of scope (for example, enabling assessment of 'park homes' as a dwelling type) as well as updating UK carbon factors and fuel costs based upon recent research undertaken by the Department for Business, Energy and Industrial Strategy (BEIS).

94. The latest version of RdSAP (v9.93) was released on 19 November 2017 and contains revisions to the underlying assumptions used within the SAP calculations. The most notable update to the methodology in v9.93 was a change to the default U-values of cavity, solid and stone walls, built prior to 1976. Compared to v9.92, U-values for solid, insulated stone and uninsulated cavity walls have improved, whereas they have declined for insulated cavity walls.These U-values are used to calculate the rate of heat loss through the walls, which contributes to the overall thermal performance of the building fabric of the dwelling. Data on the basis of RdSAP v9.93 is presented for 2018 and 2019 only.

3.3.1 Energy Efficiency Rating, SAP 2009

95. Table 16 shows the trend in mean EERs based on SAP 2009, which rose from 59.9 in 2010 to 66.4 in 2019. These ratings fall into band D. There was around a 1 point increase in the mean EER each year between 2010 and 2014. Improvement since then has been slower, and the increase between 2018 and 2019 was less than 1% which is not statistically significant.

Table 16: Average EER for 2010 – 2019, SAP 2009

		2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
EER	**Mean**	66.4	66.1	65.6	65.1	64.6	64.1	63.2	61.8	60.9	59.9
	Median	69	68	68	67	67	67.0	66.0	64.0	63.0	62.0
	Sample	*2,997*	*2,964*	*3,002*	*2,850*	*2,754*	*2,682*	*2,725*	*2,787*	*3,219*	*3,115*

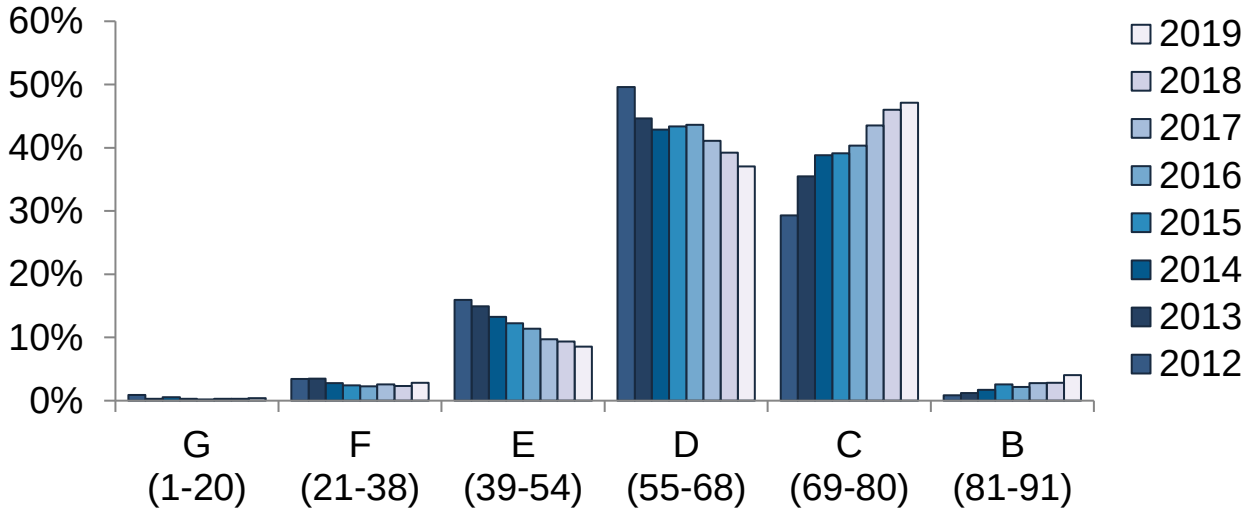
96. The median EE Rating has also improved since 2010. In 2019, half of all Scottish dwellings were rated 69 or better, the first time that the median EE rating has fallen in EPC band C, and an increase from 62 in 2010 (Figure 10).

Figure 10: Median EER relative to EPC bands, SAP 2009, 2010-2019

97. The Scottish housing stock is gradually becoming more energy efficient as shown by the increases in number of dwellings in bands B and C and corresponding decreases in the lower bands (Figure 11 and Table 17)**.**

98. Over half (51%) of the housing stock in 2019 had an EPC rating of C or better, up 27 percentage points since 2010 (Table 17). Over the same period, the proportion of properties in the lowest EPC bands, E, F and G, has dropped 15 percentage points: 27% of properties were rated E, F or G in 2010 compared with 12% in 2019.

Figure 11: Distribution of the Scottish Housing Stock by EPC Band, SAP 2009, 2012-2019



Note: Values for this figure are provided in Table 17.

Table 17: Distribution of the Scottish Housing Stock by EPC Band, SAP 2009, 2010 and 2015 to 2019

EPC band	2019		2018		2017		2016		2015		2010	
	000s	%	000s	%	000s	%	000s	%	000s	%	000s	%
A (92-100)	-	-	-	-	-	-	-	-	-	-	-	-
B (81-91)	101	4%	70	3%	69	3%	54	2%	62	3%	18	1%
C (69-80)	1176	47%	1140	46%	1072	44%	989	40%	953	39%	547	23%
D (55-68)	925	37%	971	39%	1,012	41%	1,070	44%	1,055	43%	1,157	49%
E (39-54)	213	9%	232	9%	240	10%	279	11%	298	12%	495	21%
F (21-38)	70	3%	57	2%	63	3%	56	2%	59	2%	127	5%
G (1-20)	10	0%	8	0%	8	0%	5	0%	7	0%	13	1%
Total	2,496	100%	2,477	100%	2,464	100%	2,452	100%	2,434	100%	2,357	100%
Sample		*2,997*		*2,964*		*3,002*		*2,850*		*2,754*		*3,115*

Note: No A-rated properties were sampled between 2010 and 2019.

3.3.2 Energy Efficiency Rating, SAP 2012

99. This section examines the energy efficiency profile of the Scottish housing stock in 2018 under the most recent SAP 2012 methodology. Time series analysis includes 2018 and 2019 data for both SAP 2012 RdSAP v9.93 and SAP 2012 RdSAP v9.92. Further breakdowns by characteristics of 2019 data are presented under the updated methodology alone: SAP 2012 (RdSAP v9.93).

100. Dwellings with main heating fuels other than mains gas (for example oil or coal) have systematically lower SAP ratings in SAP 2012 than in SAP 2009 and this is particularly true at the lower end of the SAP range. The main reason for this is that between SAP versions 2009 and 2012, fuel prices for these fuels increased more than for mains gas. As a result, average EERs tend to be slightly lower under SAP 2012 compared to SAP 2009.

101. Table 18 and Table 19 show the energy efficiency profile of the Scottish housing stock between 2014 and 2019 under SAP 2012. Figure 12 shows this alongside the longer term change as measured by SAP 2009.

Table 18: Average EER for 2014-2018, SAP 2012 (RdSAP v9.92) and 2018-2019, SAP 2012 (RdSAP v9.93)

		2019	2018	2017	2016	2015	2014
EER (RdSAP v9.92)	**Mean**	65.1	64.8	64.3	63.7	62.8	62.2
	Median	68	67	67	66	65	65
EER (RdSAP v9.93)	**Mean**	64.9	64.7				
	Median	67	67				
Sample		*2997*	*2,964*	*3,002*	*2,850*	*2,754*	*2,682*

102. In 2019, the mean energy efficiency rating of the Scottish housing stock under SAP 2012 (RdSAP v9.93) was 64.9 and the median was 67 points, indicating that half of the housing stock has an energy efficiency rating of 67 or better (Table 18). The difference in mean rating between 2018 and 2019 was not significant.

103. In 2019, the mean energy efficiency rating of the Scottish housing stock under SAP 2012 (RdSAP v9.92) was 65.1 and the median was 68 points. The difference in mean rating between 2018 and 2019 was not significant. However, there has been an overall improvement since 2014 when the mean was 62.2.

104. Over two-fifths (45%) of all properties in 2019 were rated C or better under SAP 2012 (RdSAP v9.93) (Table 19). Less than a fifth (14%) were in bands E, F or G. Both of these are similar to 2018.

105. Almost half (47%) of all properties in 2019 were rated C or better under SAP 2012 (RdSAP v9.92), this is an increase of 3 percentage points from 2018 and 11 percentage points from 2014. Less than a fifth (15%) were in bands E, F or G – a drop of 6 percentage points over the 5-year period from 2014 to 2018.

106. The update to the underlying methodology had little effect in 2019. Both the mean and median EERs were similar for SAP 2012 (RdSAP v9.92) and SAP 2012 (RdSAP v9.93). Similarly, the distribution of the Scottish housing stock across EPC bands were similar for SAP 2012 (RdSAP v9.92) and SAP 2012 (RdSAP v9.93).

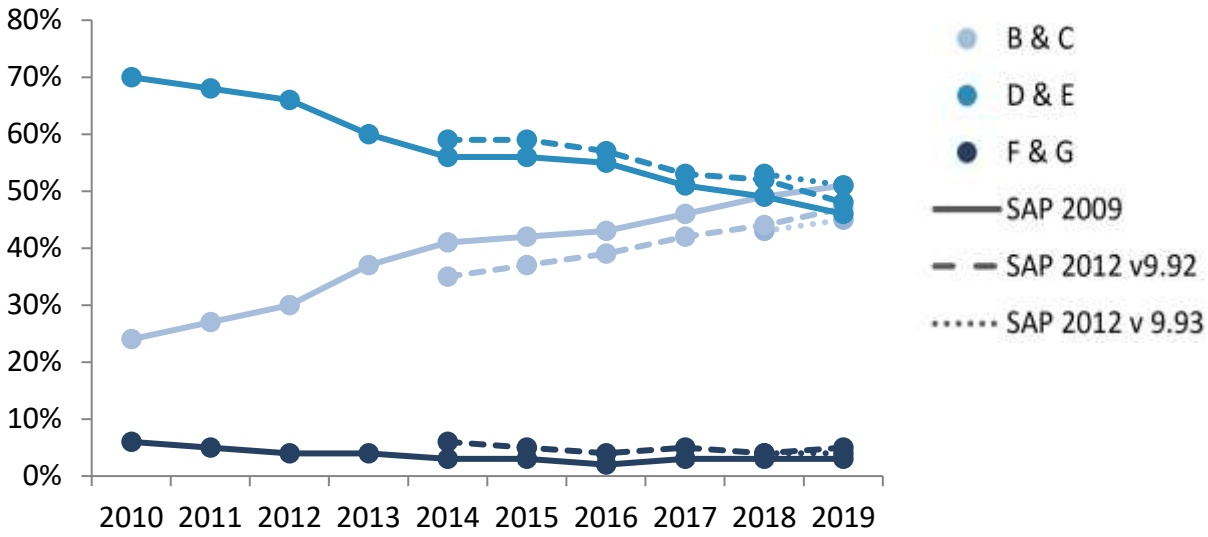
Table 19: Distribution of the Scottish Housing Stock by EPC Band, 2014-2019, SAP 2012 (RdSAP v9.92) and 2018-2019, SAP 2012 (RdSAP v9.93)

	EPC Band	2019		2018		2017		2016		2015		2014	
		000s	%	000s	%	000s	%	000s	%	000s	%	000s	%
SAP v 9.92	A (92-100)	-	-	-	-	-	-	-	-	-	-	-	-
	B (81-91)	98	4%	71	3%	65	3%	53	2%	53	2%	29	1%
	C (69-80)	1,075	43%	1,028	41%	978	40%	910	37%	837	34%	830	34%
	D (55-68)	959	38%	1,000	40%	1,028	42%	1,068	44%	1,061	44%	1,052	43%
	E (39-54)	249	10%	277	11%	280	11%	321	13%	368	15%	369	15%
	F (21-38)	94	4%	83	3%	95	4%	88	4%	94	4%	115	5%
	G (1-20)	21	1%	18	1%	18	1%	13	1%	20	1%	25	1%
SAP v 9.93	A (92-100)	-	-	-	-								
	B (81-91)	92	4%	68	3%								
	C (69-80)	1,026	41%	989	40%								
	D (55-68)	1,016	41%	1,039	42%								
	E (39-54)	250	10%	282	11%								
	F (21-38)	90	4%	83	3%								
	G (1-20)	22	1%	17	1%								
	Total	2,496	100%	2,477	100%	2,464	100%	2,452	100%	2,434	100%	2,420	100%
	Sample		*2,997*		*2,964*		*3,002*		*2,850*		*2,754*		*2,682*

Note: No A-rated properties were sampled for 2014-2019

107. Figure 12 shows EPC bandings for SAP 2009 and SAP 2012 (RdSAP v9.92 and RdSAP v9.93). The chart shows a strong trend of improvement in the energy efficiency profile of the housing stock since 2010. The proportion of dwellings rated C or better increased from 24% in 2010 to 51% in 2019 (as measured under SAP 2009), and 35% in 2014 to 47% in 2019 (as measured under SAP 2012 (RdSAP v9.92)).

Figure 12: Grouped EPC Bands under SAP 2009, SAP 2012 (RdSAP v9.92) and SAP 2012 (RdSAP v9.93), 2010-2019



108. Table 20 shows the energy efficiency profile by broad tenure groups in 2019 using SAP 2012 (RdSAP v9.93). Figure 13 provides more details on the distribution of the least energy efficient properties by household characteristics.

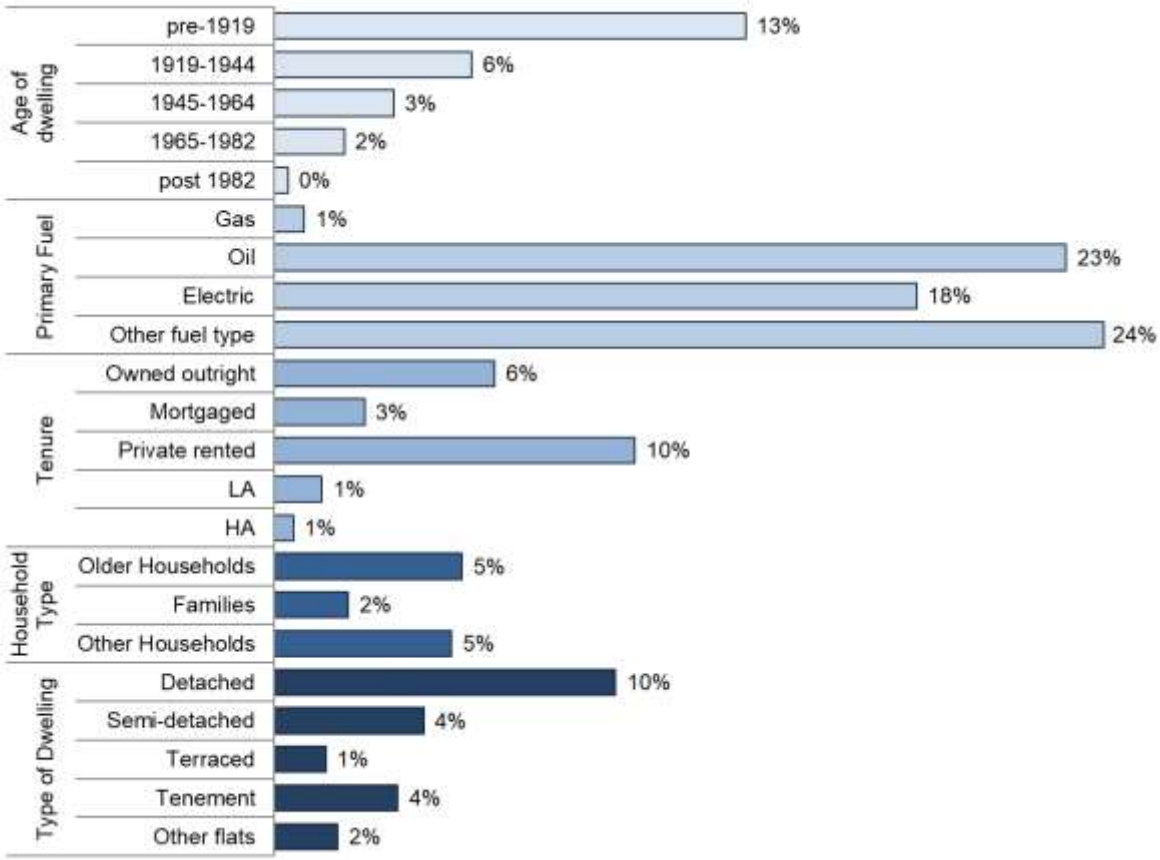
Table 20: EPC Band by Tenure in 2019, SAP 2012 (RdSAP v9.93)

	Owner occupied		Private rented		Social sector		All Tenures	
EPC Band	000s	%	000s	%	000s	%	000s	%
A (92-100)	-	-	-	-	-	-	-	-
B (81-91)	39	3%	9	3%	44	7%	92	4%
C (69-80)	601	39%	117	37%	308	49%	1,026	41%
D (55-68)	648	42%	123	39%	246	39%	1,016	41%
E (39-54)	189	12%	32	10%	29	5%	250	10%
F & G (1-38)	73	5%	32	10%	6	1%	111	4%
Total	1,550	100%	312	100%	634	100%	2,496	100%
Sample		1,965		317		715		2,997

109. Over half (56%) of social housing is in band C or better under SAP 2012, compared to two-fifths (40%) in the private rented sector and owner-occupied sector (41%). 6 per cent of dwellings in the social sector are within EPC bands E, F or G, while 17% of owner occupied dwellings and 20% of the private rented sector are within these EPC bands. Housing in the social sector tends to be more energy efficient than the owner occupied or private rented sector. This could be driven by the Scottish Housing Quality Standard and the Energy Efficiency Standard for Social Housing which introduced minimum energy efficiency levels for that sector.

110. Figure 13 shows that the share of dwellings in the lowest energy efficiency bands (F and G) is particularly high for pre-1919 dwellings (13%), non-gas heated properties (between 18% and 24%), detached properties (10%) and in the private rented stock (10%). Across Scotland as a whole, 4% of properties were in bands F or G in 2019**.**

Figure 13: Proportion of Homes in Band F or G by Dwelling Age, Primary Heating Fuel, Tenure and Household and Dwelling Type in 2019 (SAP 2012 (RdSAP v9.93))



Note: Base figures and more detailed breakdowns are provided in Table 21 and Table 22.

111. More detailed 2019 breakdowns are shown in Table 21 by household characteristics.

112. Mean SAP 2012 (RdSAP v9.93) ratings ranged from 62.0 in private rented dwellings to 71.0 in housing association dwellings, a statistically significant difference. Social housing as a whole is more energy efficient than the private sector, with a mean EER of 68.5 compared to 63.7 for private dwellings.

113. Older households (63.2) have lower average EER ratings than families (67.7) and other (adults without children) households (64.7).

114. Mean EER ratings ranged from 63.2 to 66.3 across income bands with the highest rating for £400 – £499.99 weekly household income. Average EER ratings ranged from 62.2 to 66.0 across council tax bands with the highest rating found in Band C.

Table 21: Mean EER and Broad EPC Band, by Household Characteristics in 2019, SAP 2012 (RdSAP v9.93)

	SAP 2012 Ratings	EPC Band			*Sample*
	Mean	ABC	DE	FG	
Tenure					
Owned outright	62.3	34%	60%	6%	*1,159*
Mortgaged	66.4	51%	47%	3%	*806*
LA	66.7	47%	52%	1%	*425*
HA	71.0	68%	32%	1%	*290*
Private rented	62.0	40%	49%	10%	*317*
Private Sector	63.7	41%	53%	6%	*2,282*
Social Sector	68.5	56%	43%	1%	*715*
Household Composition					
Older Households	63.2	36%	58%	5%	*1,039*
Families	67.7	55%	43%	2%	*706*
Other Households	64.7	46%	49%	5%	*1,252*
Weekly Household Income					
< £200	63.2	40%	54%	7%	*272*
£200-299.99	65.5	46%	50%	4%	*448*
£300-399.99	64.5	42%	54%	4%	*491*
£400-499.99	66.3	49%	47%	4%	*358*
£500-699.99	64.6	47%	48%	5%	*530*
£700+	65.2	45%	51%	4%	*851*
Council Tax Band					
Band A	64.9	43%	53%	4%	*590*
Band B	64.7	44%	51%	5%	*658*
Band C	66.0	51%	46%	3%	*468*
Band D	65.6	48%	47%	5%	*411*
Band E	65.0	41%	56%	3%	*449*
Band F	64.9	48%	47%	5%	*217*
Band G & H	62.2	39%	54%	7%	*201*
Scotland	64.9	45%	51%	4%	*2997*

115. Table 22 shows that there is a strong association between dwelling characteristics and energy efficiency rating. Across dwelling types, detached properties have the lowest energy efficiency profile on average (mean EER 61.2) while flats have the highest rating (68.4 for tenements and 67.2 for other flats). The energy efficiency ratings did not change for most dwelling types between 2018 and 2019 with the exception of dwellings built after 1982 where the proportion of dwellings with EPC band above C increased by 1 percentage point.

116. The **oldest, pre-1919**, properties are least energy efficient (mean EER of 55.5 and only 19% rated C or better) while those built after 1982 have the highest energy efficiency ratings (mean EER of 72.6, with 77% in band C or better); the mean EER for dwellings built after 1982 has increased 1 percentage point since 2018.

117. **Primary heating fuel** is a key determinant of the energy efficiency of the dwelling. Properties heated by mains gas have an average rating of 67.5 and 50% are in band C or better. Dwellings heated by other fuels (including electric and oil) have considerably lower ratings. The average energy efficiency rating for oil heated properties is 49.2 (making the average dwelling in this group E rated) and only 8% are in band C or better.

118. Proximity to the **gas grid** has a similar effect on the energy efficiency rating (average SAP rating 66.3 for dwellings near the gas grid, higher than the 58.1 for other dwellings).

119. As dwelling characteristics associated with lower energy efficiency are disproportionately represented in **rural areas**, the average energy efficiency profile of rural properties is lower than that for **urban**. Table 22 shows that mean SAP 2012 rating is 66.7 for dwellings in urban areas, higher than the 56.2 for dwellings in rural areas.

Table 22: SAP 2012 (RdSAP v9.93): Mean EER and Broad EPC Band, by Dwelling Characteristics, 2019

	SAP 2012 Ratings	EPC Band			
	Mean	ABC	DE	FG	***Sample***
Dwelling Type					
Detached	61.2	36%	54%	10%	*852*
Semi-detached	63.3	37%	59%	4%	*685*
Terraced	65.3	40%	59%	1%	*589*
Tenement	68.4	61%	36%	4%	*488*
Other flats	67.2	52%	47%	2%	*383*
Age of dwelling					
pre-1919	55.5	19%	67%	13%	*546*
1919-1944	62.2	29%	65%	6%	*310*
1945-1964	64.4	37%	60%	3%	*638*
1965-1982	65.6	42%	56%	2%	*704*
post-1982	72.6	77%	22%	0%	*799*
Primary Heating					
Gas	67.5	50%	49%	1%	*2,255*
Oil	49.2	8%	69%	23%	*268*
Electric	55.1	25%	57%	18%	*379*
Other fuel type	56.1	35%	41%	24%	*95*
Urban-rural indicator					
Urban	66.7	49%	49%	2%	*2,280*
Rural	56.2	25%	58%	17%	*717*
Gas Grid					
On grid	66.3	46%	52%	2%	*2,280*
Off grid	58.1	38%	45%	17%	*717*
Scotland	64.9	45%	51%	4%	2,997

3.4 National Home Energy Ratings (NHER)

120. The National Home Energy Ratings (NHER) system was the main methodology used in the SHCS to report on the energy efficiency of the housing stock prior to 2013. With the publication of the 2013 SHCS Key Findings Report the energy modelling methodology was updated and it is no longer possible to reproduce exactly the original NHER method, as the full documentation of this method is not publicly available. However because of user interest and because NHER scores are taken into account under the energy efficiency criterion of the SHQS, we provide an approximate NHER score. Further details can be found in the Methodology Notes to the 2013 SHCS report.

121. Table 23 presents banded NHER scores and mean values for selected categories of dwellings and household types for 2019. Significant differences were seen by age of dwelling, with older dwellings having lower average values (6.2 for pre-1919) than properties that were built more recently (8.8 for post-1982). Private sector dwellings had significantly lower NHER scores (7.4) than social sector (8.2) with mean scores by detailed tenure ranging from 7.2 (owned outright) to 8.7 (housing associations). There were also differences by dwelling type ranging from detached properties at 7.1 to tenements at 8.2. Dwellings using oil as their main fuel had the lowest score at 5.7 while those fuelled by gas had the highest at 8.0.

122. Table 23 also shows the percentage of homes in each dwelling and household category that were rated as good, moderate, or poor. Significant differences in the percentage of dwellings that were rated as “good” were seen by type of dwelling (67% of detached properties, compared to 84% of other flats) and age of dwelling (48% of pre-1919 dwellings compared to 94% of post-1982 dwellings). Primary heating fuel also had an impact on the proportion that were rated as good (85% of dwellings with gas as a primary fuel, compared to just 36% of dwellings with oil as a primary fuel). This profile is similar to SAP 2012 (RdSAP v9.93).

Table 23: NHER Scores and Banded Ratings by Selected Dwelling and Household Characteristics, 2019

	NHER (emulated)	NHER band			
	Mean	Good	Moderate	Poor	Sample
Scotland	7.6	77%	21%	2%	2,997
Dwelling Type					
Detached	7.1	67%	31%	2%	852
Semi-detached	7.3	74%	25%	2%	685
Terraced	7.6	81%	18%	1%	589
Tenement	8.2	83%	14%	3%	488
Other flats	8.0	84%	15%	1%	383
Age of dwelling					
pre-1919	6.2	48%	47%	6%	546
1919-1944	7.1	70%	28%	1%	310
1945-1964	7.5	79%	19%	1%	638
1965-1982	7.7	84%	15%	1%	704
post 1982	8.8	94%	*	*	799
Primary Heating Fuel					
Gas	8.0	85%	*	*	2,255
Oil	5.7	36%	60%	4%	268
Electric	5.8	44%	43%	13%	379
Other fuel type	7.0	59%	33%	8%	95
Tenure					
Owned outright	7.2	70%	28%	2%	1,159
Mortgaged	7.8	78%	21%	1%	806
LA	7.9	85%	14%	1%	425
HA	8.7	91%	*	*	290
Private rented	7.2	73%	22%	5%	317
Private Sector	7.4	74%	24%	2%	2,282
Social Sector	8.2	88%	11%	1%	715
Household Composition					
Older Households	7.4	74%	24%	1%	1,039
Families	8.0	83%	16%	1%	706
Other Households	7.6	76%	21%	3%	1,252

3.5 Carbon Emissions

Key Points

- Based on modelled energy use, the average Scottish home is estimated to produce 7.0 **tonnes of CO2** per year in 2019, which is approximately double the average carbon emissions per household as reported by BEIS (3.5 tonnes per year) in 2018, based on actual energy use. This suggests that households are not heating their homes to the standard heating regimes.
- Average **modelled carbon emissions** for all properties was 73 kg/m^2 in 2019 which has been stable since 2017 following a decrease from 80 kg/m^2 in 2014.

123. Carbon Emissions are the amount of greenhouse gas emissions, expressed as their carbon dioxide gas equivalent, vented to the atmosphere. Estimates of emissions from the residential sector which take into account actual energy consumption by households are reported annually by BEIS in the Local and Regional CO_2 Emissions Estimates. This methodology is consistent with the Greenhouse Gas Inventory (GHGI) which is the source for monitoring progress against the Scottish Government's climate change commitments.

124. In contrast, emissions reported from the SHCS are modelled on the assumption of a standard pattern of domestic energy consumption and do not reflect differences in consumption behaviour due to preferences or changes in weather conditions. As such, they are distinct from the carbon emissions figures published by BEIS and compiled in GHG inventories.

125. Table 24 shows modelled emissions from the SHCS and provides a comparison with the estimates published by BEIS for the period 2013-2018.

126. Average carbon emissions per household have decreased year on year since 2013, accompanied by a decrease in the SHCS based average modelled emissions, with the exception of 2014 and 2019. This is accompanied by an increase in number of dwellings from 2.4 million in 2013 to 2.5 million in 2019 as reported by National Records of Scotland.

127. There was a methodology change from 2014 so the modelled emissions figures between 2013 and 2014 are not fully comparable, details of this are provided in the 2014 Methodology Notes. The SHCS estimates are not designed to capture the increased demand for heating due to colder weather or reduced demand associated with warmer weather in any particular year.

Table 24: Carbon Emissions and Modelled Emissions in Scottish Housing, 2013-2019

		2019	2018	2017	2016	2015	2014	2013
Carbon Emissions: BEIS Domestic sector	Total ("Mt")		8.7	8.8	9.4	10.0	10.4	12.3
	per HH (t"")		3.5	3.6	3.8	4.1	4.3	5.1
	% change per HH		-1.6%	-6.8%	-6.7%	-4.7%	-15.8%	-4.0%
Modelled emissions: SHCS	Total ("Mt")	17.4	16.8	17.3	17.2	17.7	17.9	17.4
	per HH ("t")	7.0	6.8	7.0	7.0	7.3	7.4	7.3
	% change per HH	2.5%	-3.2%	-0.2%	-3.0%	-1.8%	1.1%	-3.6%

Notes: [1] Local and Regional CO2 Emissions Estimates, BEIS. Data reflects revisions made in the most recent publication.
[2] Number of households (HHs) sourced from National Records of Scotland, Estimates of Households and Dwellings, 2019.
[3] Modelled emissions figures for 2014-2019 are not fully comparable to the previous years.

128. Estimates in the Third Report on Proposals and Policies (RPP3) or in the Climate Change Plan are also not comparable to SHCS estimates. RPP3 figures for the residential sector relate to non-traded emissions only (i.e. exclude electricity which is covered by the EU Emissions Trading System) while SHCS estimates cover all fuel types.

129. This report is only concerned with the level and variations in modelled emissions from the Scottish housing stock. These estimates are produced through the use of BREDEM 2012-based models, in line with other statistics on energy efficiency and fuel poverty reported here. Information on the energy modelling is available in the Methodology Notes.

130. To derive emissions estimates, modelled energy demand is combined with carbon intensity factors as adopted for the 2012 edition of the SAP (see section 7.3). These are CO_2 equivalent figures which include the global warming impact of CH_4 and N_2O as well as CO_2.

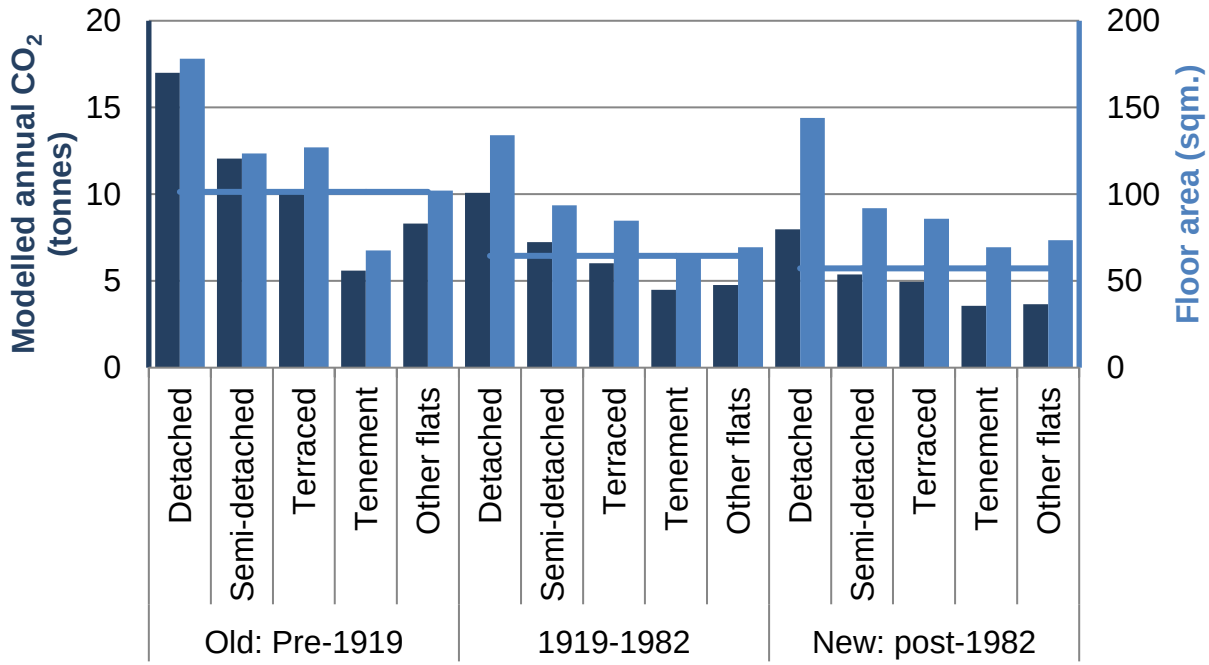
131. The change in the underlying BREDEM 2012 model, first implemented in the reporting of 2014 data, has meant that carbon emissions for 2014-2019 are not estimated on a consistent basis with those for 2010-2013. Further details on this change are given in the Methodology Notes to the 2014 Key Findings report.

3.5.1 Modelled Emissions by Dwelling Type and Age of Construction

132. The annual modelled emissions from a property reflect the energy use for the whole dwelling heated according to the standard heating regime[11]. Figure 14 shows that dwellings with larger floor area generally have higher carbon emissions.

133. Newer dwellings have lower modelled emissions than older ones on average as a result of their better thermal performance and higher energy efficiency (as shown in section 3.3). Post-1982 flats have the lowest modelled emissions on average; less than 4 tonnes per year (Table 25).

Figure 14: Average Floor Area and Average Modelled Annual Emissions by Age and Type of Dwelling, 2019



Note: Floor areas for these subgroups are provided in section 2.1.1. Modelled carbon emissions figures are provided in Table 25. The blue line indicates the average modelled emissions for the dwelling age group.

[11] The standard heating regime is: 21°C in the living room (zone 1) and 18°C in other rooms (zone 2) for 9 hours a day during the week and 16 hours a day during the weekend.

Table 25: Average Modelled Annual Carbon Emissions (tonnes per year) by Dwelling Age and Type, 2019

	Dwelling Age			
Dwelling Type	Pre-1919	1919-1982	Post-1982	All
Detached	17.0	10.1	8.0	10.6
Semi-detached	12.1	7.2	5.4	7.3
Terraced	10.1	6.0	4.9	6.4
Tenement	5.6	4.5	3.6	4.6
Other flats	8.3	4.8	3.7	5.3
All dwelling types	10.1	6.4	5.7	7.0

134. Across all age bands, detached houses have the highest modelled emissions due to a larger share of exposed surfaces. As shown in section 2.3, they are also the most likely to use high carbon-intensity fuels such as oil and coal in place of mains gas.

135. By dividing modelled emissions by total internal floor area we derive CO_2 emissions per square meter (kg/m^2). Controlling for floor area in this way shows that pre-1919 detached (106 kg/m^2) and pre-1919 semi-detached (105 kg/m^2) houses have the highest modelled emissions per sq. as shown in Table 26**.** Post-1982 dwellings have the lowest emissions, particularly detached dwellings (57 kg/m^2), tenements (56 kg/m^2) and other flats (54 kg/m^2).

Table 26: Average Modelled Emissions per Square Meter of Floor Area (kg/m^2) by Age and Type of Dwelling, 2019

	Dwelling Age			
Dwelling Type	Pre-1919	1919-1982	post-1982	All Ages
Detached	106	78	57	75
Semi-detached	105	78	60	76
Terraced	83	73	61	72
Tenement	87	72	56	72
Other flats	87	70	54	71
All dwelling types	93	74	58	73

3.5.2 Modelled Emissions by Tenure

136. Although data for 2014-2019 is not directly comparable to prior years, the data suggests that there is a longer term trend of declining emissions. Average modelled carbon emissions reduced from 92 kg/m^2 in 2010 to 80 kg/m^2 in 2013. Based on the updated carbon emissions methodology, there was then a further decrease from 80 kg/m^2 in 2014 to 74 kg/m^2 in 2017 and then remaining stable at 73 kg/m^2 in 2018 and 2019.

137. Table 27 and Figure 15 show how emissions differ across tenure for the period 2010-2019. The highest emissions were observed for private rented dwellings (85 kg/m^2) and lowest for housing association dwellings (66 kg/m^2), with emissions from the other tenures falling in between those values. The values were similar to the previous year across all tenures, however the longer time series shows a decreasing trend over the 2010-2019 period for all tenures.

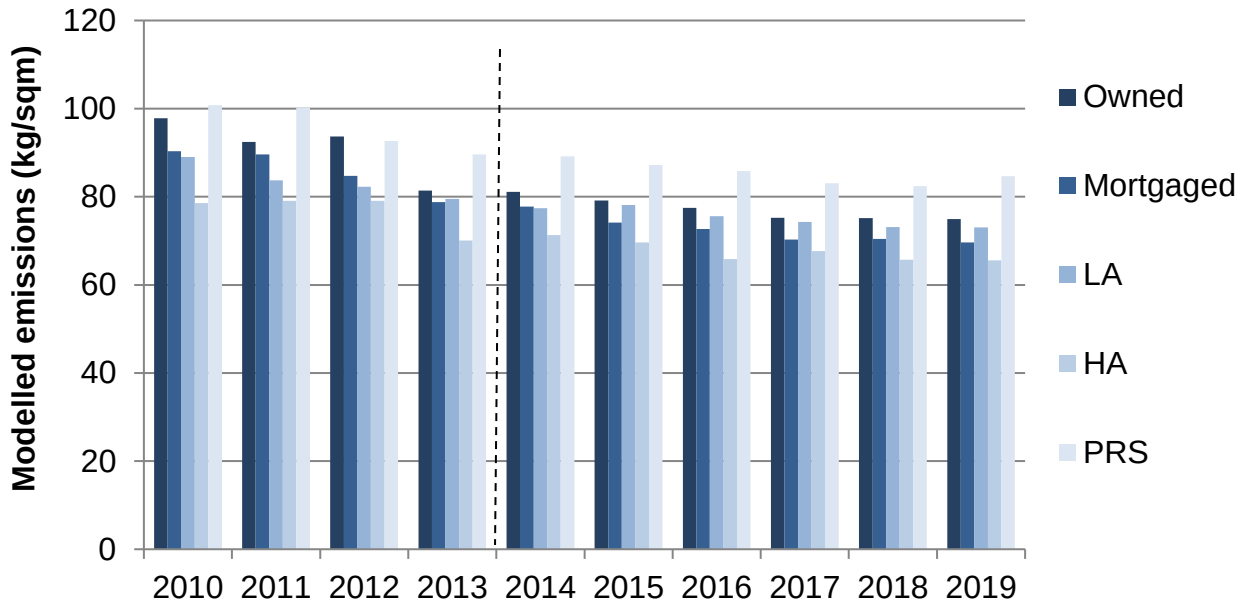
138. Changes to the tenure definitions and the revised carbon emissions methodology mean that figures for 2014-2019 by tenure are not fully comparable to earlier years. Differences that were statistically significant were seen in the mortgaged sector (reducing from 78 kg/m^2 in 2014 to 70 kg/m^2 in 2019) and households that are owned outright (reducing from 81 kg/m^2 to 75 kg/m^2 between 2014 and 2019).

Table 27: Average Modelled Emissions per Square Meter by Tenure, 2010-2013, 2014-2019

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Owned outright	75	75	75	78	79	81	81	94	92	98
Mortgaged	70	70	70	73	74	78	79	85	90	90
LA/Other public	73	73	74	76	78	77	79	82	84	89
HA/co-op	66	66	68	66	70	71	70	79	79	79
PRS	85	82	83	86	87	89	90	93	100	101
All Tenures	73	73	74	76	78	80	80	88	90	92

Note: Data prior to 2014 does not include households living rent free. Figures for 2014-2019 are therefore not fully comparable to the previous years.

Figure 15: Modelled Emissions per square meter (kg/m^2) by Tenure, 2010-2019



Note: Data prior to 2014 does not include households living rent free. Figures for 2014-2019 are therefore not fully comparable to previous years.

3.6 Environmental Impact Rating

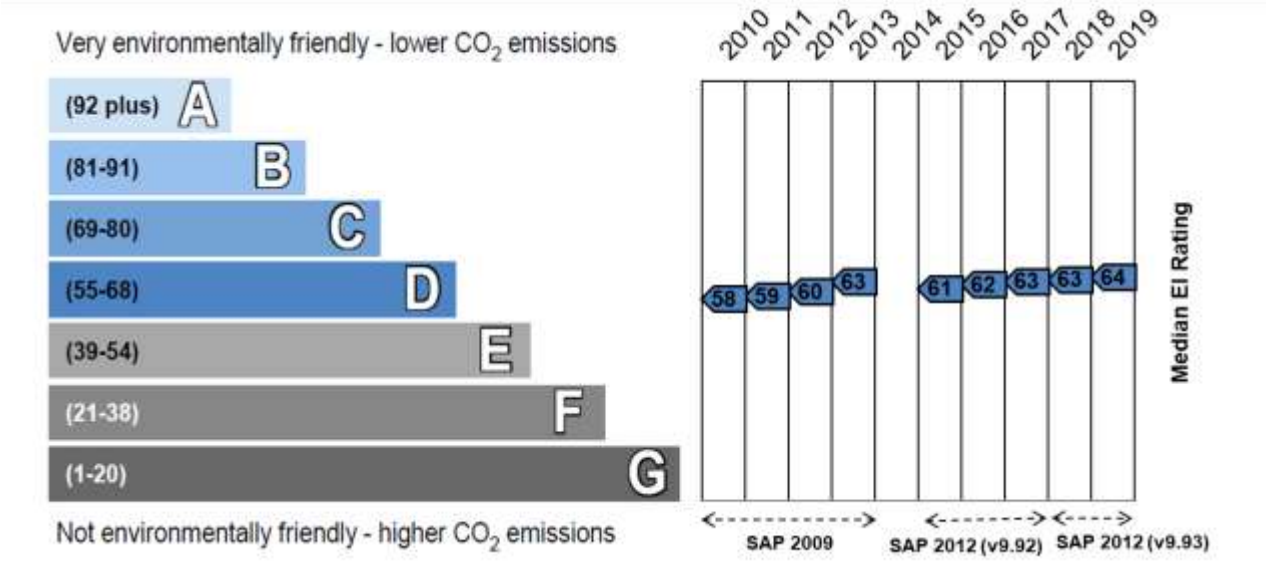
139. The Environmental Impact Rating (EIR) represents the environmental impact of a dwelling in terms of carbon emissions associated with fuels used for heating, hot water, lighting and ventilation. Ratings are adjusted for floor area so they are independent of dwelling size for a given built form. Emissions for this measure are calculated using SAP methodology.

140. Paragraphs 91 to 94 in Section 3.3 describe the versions of SAP and RdSAP available in this publication. 2019 EIRs have been described in this report based on SAP 2012 under both RdSAP v9.92 and v9.93. EI ratings for 2015-2019, produced on the basis of SAP 2012, are not fully comparable to those for the period 2010-2013, which were produced on the basis of SAP 2009.

141. Figure 16 illustrates the increasing trend in the median EIR between 2010 and 2019. This indicates that the environmental impact of Scottish housing is gradually falling over time but has always remained within band D.

142. The update to RdSAP v9.93 in SAP 2012 had no effect on the median EIR in 2019 which was the same for both SAP 2012 versions (Table 28).

Figure 16: Median EIR relative to Band, 2010-2013 (SAP 2009), 2015-2017 (SAP 2012 (RdSAP v9.92)), 2018 and 2019 (SAP 2012 (RdSAP v9.93))



143. As shown in Table 28, one third of dwellings had EI ratings in band C or better under SAP 2012 (RdSAP v9.93) in 2019, this is similar to 2018. The mean rating was 61 and the median was 64, both of which fall in band D.

144. Under SAP 2012 (RdSAP v9.92) 36% of dwellings had EI ratings in band C or better, which is similar to 2018. The mean rating was 61 and the median was 64, both of which fall in band D.

145. In 2019, 9% of dwellings were rated F or G in terms of their environmental impact under both SAP 2012 versions.

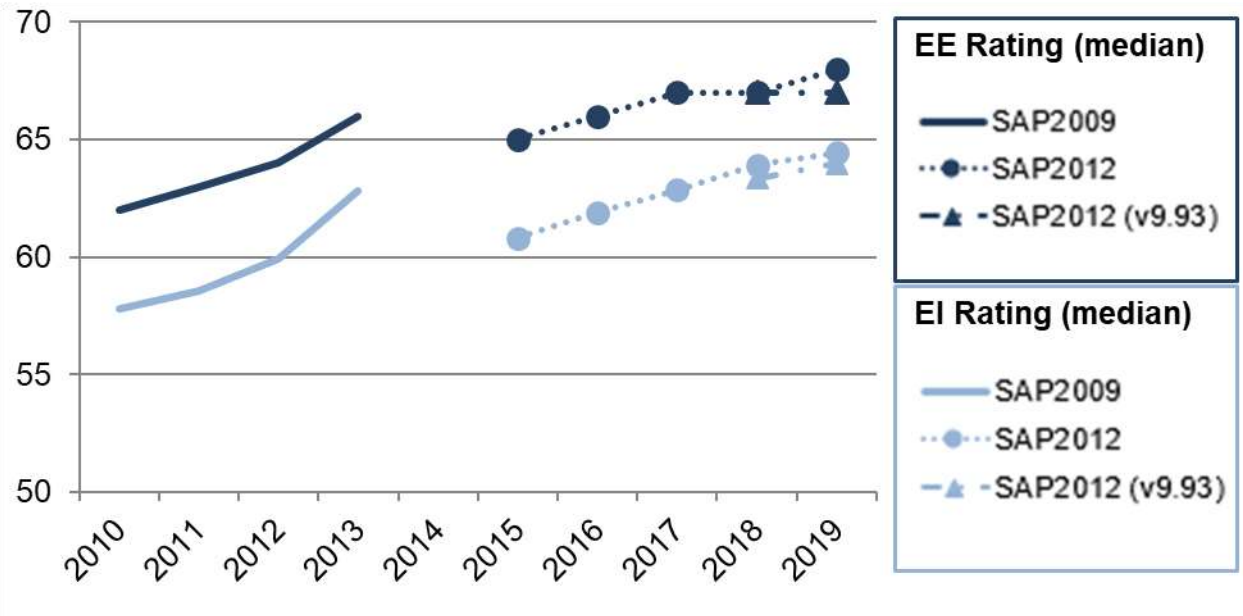
Table 28: EIR Bands in the Scottish Housing Stock, 2012 SAP 2009, 2015-2019 SAP 2012 (RdSAP v9.92) and 2018-2019 SAP 2012 (RdSAP v9.93)

	EIR Band	2019		2018		2017		2016		2015		2012	
		000s	%	000s	%			000s	%			000s	%
SAP v9.92	A - B (81+)	150	6%	136	6%	120	5%	96	4%	102	4%	71	3%
	C (69-80)	742	30%	709	29%	671	27%	613	25%	554	23%	524	22%
	D (55-68)	936	38%	952	38%	929	38%	947	39%	926	38%	888	37%
	E (39-54)	448	18%	476	19%	512	21%	558	23%	576	24%	587	25%
	F (21-38)	173	7%	170	7%	191	8%	200	8%	221	9%	248	10%
	G (1-20)	46	2%	34	1%	41	2%	39	2%	55	2%	64	3%
	Total	2,496	100%	2,477	100%	2,464	100%	2,452	100%	2,434	100%	2,383	100%
	Mean		61		61		60		59		58		57
	Median		64		64		63		62		61		60
SAP v9.93	A - B (81+)	140	6%	125	5%								
	C (69-80)	689	28%	682	28%								
	D (55-68)	998	40%	993	40%								
	E (39-54)	448	18%	473	19%								
	F (21-38)	174	7%	171	7%								
	G (1-20)	47	2%	34	1%								
	Total	2,496	100%	2,477	100%								
	Mean		61		61								
	Median		64		63								
	Sample		*2,997*		*2,964*		*3,002*		*2,850*		*2,754*		*2,783*

Note: Data prior to 2014 does not include households living rent free. Figures for 2014-2018 are therefore not fully comparable to previous years.

146. Figure 17 illustrates that the energy efficiency and the environmental impact rating for the median Scottish dwelling have changed in parallel since 2010.

Figure 17: Trend in Median EE and EI Ratings, 2010-2013 and 2015-2019



147. Table 29 shows how EI ratings vary across different type of dwellings. As expected dwellings built since 1982 have better environmental impact ratings than other dwellings, with 65% rated C or better and only 2% in the bottom two bands (F and G). Flats have a lower environmental impact (higher EI rating) than houses, as do gas heated properties compared to those oil or electricity.

148. Oil heating systems and houses are more common in rural areas, leading to lower overall environmental impact ratings for rural dwellings.

Table 29: SAP 2012 (RdSAP v9.93): Mean EIR and Broad EIR Band, by Dwelling Characteristics, 2019

	Environmental Impact Rating	EI Band (SAP 2012 v9.93)			
	Mean	ABC	DE	FG	**Sample**
Dwelling Type					
Detached	55.7	23%	61%	16%	852
Semi-detached	58.5	25%	65%	10%	685
Terraced	60.8	25%	69%	6%	589
Tenement	66.6	53%	42%	5%	488
Other flats	64.0	42%	53%	5%	383
Age of dwelling					
pre-1919	50.3	16%	61%	23%	546
1919-1944	57.7	20%	70%	10%	310
1945-1964	60.1	24%	70%	7%	638
1965-1982	61.3	25%	69%	6%	704
post 1982	70.1	65%	33%	2%	799
Primary Heating Fuel					
Gas	64.3	37%	60%	2%	2,255
Oil	40.7	*	54%	*	268
Electric	45.4	11%	52%	37%	379
Other fuel type	57.7	*	18%	*	95
Urban-rural indicator					
Urban	63.0	36%	59%	5%	2,280
Rural	50.8	20%	52%	28%	717
Gas Grid					
On grid	62.5	33%	62%	5%	2,280
Off grid	53.1	33%	38%	29%	717
Scotland	60.9	33%	58%	9%	2,997

4 Fuel Poverty

Key Points

- In 2019 an estimated 24.6% (around 613,000 households) of all households were in **fuel poverty.** This is similar to the 2018 fuel poverty rate of 25.0% (around 619,000 households) but lower than that recorded in the survey between 2012 and 2015.
- 12.4% (or 311,000 households, a subset of the 613,000 in fuel poverty) were living in **extreme fuel poverty** in 2019 which is similar to the 11.3% (279,000 households) in the previous year but a decrease from 16% (384,000 households in 2013.
- The **actual median fuel poverty gap** for fuel poor households in 2019 was £750. This is higher than the median fuel poverty gap between 2015 and 2018.
- The **median fuel poverty gap (adjusted for 2015 prices)** for fuel poor households in 2019 (£700) is higher than in 2018 (£610) but similar to the median gap in 2012 to 2017.
- Between 2018 and 2019, rates of fuel poverty increased in **remote rural areas** (from 33% to 43%), increasing the gap when comparing overall **urban** (24%) to overall **rural** areas (29%). Similarly, levels of extreme fuel poverty increased in **remote rural areas** (from 23% to 33%), so extreme fuel poverty rates in **rural** areas (19%) were higher than in **urban** areas (11%).
- Overall rates of fuel poverty differed between the **social** (37%) and **private sector** (20%) although rates of extreme fuel poverty were similar (14% and 12%, respectively) in 2019.
- Levels of fuel poverty among households using **electricity** as their primary heating fuel have remained the highest, at 43%, compared to households using **gas** (22%), **oil** (28%) and **other fuel types** (31%) as their primary heating fuel in 2019.
- A higher proportion of households with a **pre-payment meter** (PPM; electricity, gas or both) were in fuel poverty compared to those without a PPM, 36% compared to 22% respectively.
- For both fuel poor and extreme fuel poor households, the lowest rates of fuel poverty are associated with higher **energy efficiency standards**. 20% of households living in **post-1982** dwellings or in dwellings **rated C or better** were fuel poor with 9% and 7%, respectively, in extreme fuel poverty in 2019.
- Fuel poverty and extreme fuel poverty have a strong association with **income** with rates increasing as weekly household income decreases. Extreme fuel poverty rates in the second lowest **income band (£200-£299.99 a week)** have increased in 2019 (25%) compared to 2018 (16%).
- Although low income is associated with fuel poverty, it is not equivalent. 73% of fuel poor households were also **income poor** in 2019 whilst the other quarter would not be considered income poor (27%). This is a similar pattern to 2018 (70% fuel and income poor and 30% fuel poor not income poor).

4.1 Definition and Measurement of Fuel Poverty

4.1.1 Definition of Fuel Poverty

149. Under the 2001 Housing (Scotland) Act (section 88), the Scottish Government was committed to eradicating fuel poverty as far as practicably possible by November 2016. In June 2016, the Minister for Local Government and Housing informed Parliament that, based on the advice received from experts, it was unlikely that the statutory fuel poverty target would be met. This was confirmed by 2016 and 2017 fuel poverty rates, under the old definition of fuel poverty, of 26.5% and 24.9% respectively.

150. The Fuel Poverty (Targets, Definition and Strategy) (Scotland) Bill was introduced to the Scottish Parliament on 26 June 2018 and the Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 received Royal Assent on 18th July 2019. This includes a new definition of fuel poverty based on advice from an independent panel of experts and further scrutiny and amendment by the Scottish Parliament.

151. As set out in section 3 of the Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act, a household is in **fuel poverty** if:

- in order to maintain a satisfactory heating regime, total fuel costs necessary for the home are more than 10% of the household's adjusted (i.e. after housing costs) net income; and
- if, after deducting those fuel costs, benefits received for a care need or disability[12] and childcare costs, the household's remaining adjusted net income is insufficient to maintain an acceptable standard of living.

The remaining adjusted net income must be at least 90% of the UK Minimum Income Standard (MIS) to be considered an acceptable standard of living, with an additional amount added for households in remote rural, remote small town and island areas.

152. **Extreme fuel poverty** follows the same definition except that a household would have to spend more than 20% of its adjusted net income (after housing costs) on total fuel costs to maintain a satisfactory heating regime.

[12] Benefits received for a care need or disability include: disability assistance, personal independence payment, attendance allowance, severe disablement allowance and disability living allowance received by members of the household.

153. Where a household is in fuel poverty, the **fuel poverty gap** is the annual amount that would be required to move the household out of fuel poverty. This is either:

- the amount required so that the fuel costs necessary for the home are no longer more than 10% of the household's adjusted net income (after housing costs), or
- the amount required which, after deducting fuel costs, benefits received for a care need or disability and childcare costs, means the household's remaining adjusted net income is sufficient to maintain an acceptable standard of living.

The figure taken to determine the gap for each household is the lower of the two options.

154. The Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019 also set targets to eradicate fuel poverty. The 2040 targets are that:

- no more than 5% of households in Scotland are in fuel poverty
- no more than 1% of households in Scotland are in extreme fuel poverty
- the median fuel poverty gap of households in Scotland in fuel poverty is no more than £250 adjusted to take account of changes in the value of money.

155. The figures presented in this report are a best estimate of fuel poverty rates, extreme fuel poverty rates and the median fuel poverty gap under the new definition of fuel poverty as set out in the Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act. They reflect amendments made to the legislation during the Bill process up to and including Stage 2.

156. For statistics in this publication, the application of an uplift to the MIS for remote rural, remote small town and island households is based on previous studies[13] and we deduct all relevant care and disability benefits except Severe Disablement Allowance at part 2 of the definition.

[13] The uplifts that were applied to the MIS for households in RRRSTI areas were estimates, based on the approach taken by the 2017 Scottish Fuel Poverty Definition Review Panel which used average data from the MIS for remote rural Scotland published by Highlands and Island Enterprise in 2013. For working age single or couple households the uplift is 15%, for pensioner single or couple households it is 19% and for family households it is 27.5%.

157. In addition, a **satisfactory heating regime** is defined as follows:

- For “vulnerable” households (those where at least one member is aged 75 or over, or at least one member has a long-term sickness or disability), 23°C in the living room (zone 1) and 20°C in other rooms (zone 2), for 16 hours every day.
- For other households, 21°C in the living room (zone 1) and 18°C in other rooms (zone 2) for 9 hours a day during the week and 16 hours a day during the weekend.

158. The above areas of the definition will be updated in future publications to reflect the Stage 3 amendments, the Fuel Poverty (Enhanced Heating) (Scotland) Regulations 2020 and Fuel Poverty (Additional Amount in respect of Remote Rural Area, Remote Small Town and Island Area) (Scotland) Regulations 2020 which came into force on the 26th February 2020. These regulations set out the types of households for which enhanced heating regimes are appropriate and specify who is to determine the uplifts to the MIS for households living in remote rural, remote small towns, and island (RRRSTI) areas.

159. The first set of fuel poverty estimates fully compatible with all of the elements of the new definition in the Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act, including the regulations above, requires additional information to be collected from 2020 onwards[14] and the production of a new MIS for RRRSTI areas.

160. Due to the change in the definition of fuel poverty, the estimates in this Key Findings report are not comparable to those in Key Findings reports prior to 2018. However the 2012-2019 statistics within this report are comparable to each other and also to the 2012-2018 estimates presented in the 2018 Key Findings and the 2016-2017 estimates presented in the publication entitled “Latest estimates of Fuel Poverty and Extreme Fuel Poverty – following Stage 2 of the Fuel Poverty (Targets, Definition and Strategy) (Scotland) Bill”.

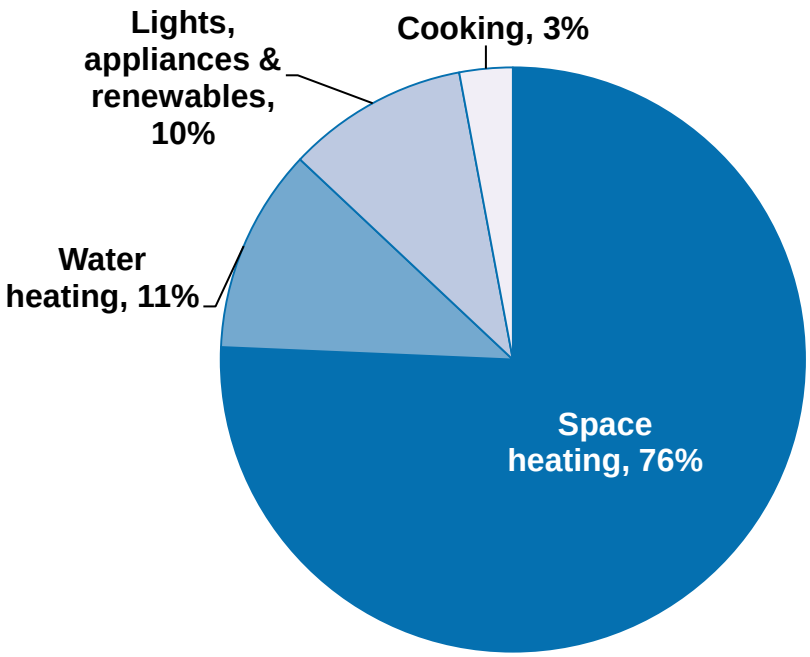
[14] 2020 SHCS fieldwork has been suspended since March 17th due to the effects of COVID-19 and the restrictions around travel. This affects both the social interview and the physical survey. Therefore it may be 2021 or later until all additional information is collected to fully account for all the elements of the new definition in the SHCS fuel poverty estimates.

4.1.2 Measurement of Fuel Poverty

161. Although space heating is the largest component of the energy consumption which underpins the fuel poverty estimate, there are other types of energy use that are also taken into account, such as water heating, lighting and appliance use, and cooking. All types of energy expenditure are estimated on the basis of a standard set of behavioural assumptions and do not reflect the actual energy use of the household, which may vary considerably depending on personal preference and priorities relative to other types of household expenditure.

162. Figure 18 shows that in 2019, on average, around 76% of the modelled household energy consumption was from space heating, 11% from water heating, 10% from lighting and appliance usage, and 3% was accounted for by cooking. These proportions are similar to 2018.

Figure 18: Mean Household Energy Consumption by End Use, 2019



Sample Size: 2,997
Note: Figures do not add to 100% due to rounding

163. The **energy costs** of maintaining a satisfactory heating regime and other uses of energy are modelled using data from the physical inspection of dwellings and the household interview conducted as part of the SHCS, as well as information on consumer fuel prices. The methodology for modelling the cost of energy use was updated for the 2014 Key Findings report and details were provided in the accompanying 2014 Methodology Notes.

164. The current report continues to use this improved method for setting the cost of the domestic energy requirement. A further small improvement introduced in the 2016 survey about **pre-payment meters** for energy supply is also continued, which has allowed us to improve the accuracy of fuel price information for pre-payment users, who are more common among lower income groups which are at higher risk of fuel poverty. In 2019, 17% of households in Scotland had a pre-payment meter (mains gas, electricity, or both), a similar rate as in 2018 (19%).

165. In 2019, two further small improvements were introduced. Firstly, more detailed information on combi boilers have been included to improve the accuracy of calculations surrounding hot water losses. This is expected to increase the mean BREDEM energy consumption by around 0.14% (33 kWh) per year[15].

166. Secondly, a household's lights and appliances are now assigned as using an off-peak electricity tariff if an off-peak electricity meter is present, even if there is no form of electric heating in the dwelling. Previously, where a household did not have a form of electric heating, the lights and appliances were assumed to use standard electricity. This change does not affect the energy consumption of a dwelling, only the fuel prices applied to the energy associated with lighting and appliance use. Figure 18 above shows that in 2019, on average, around 10% of the modelled household energy demand was from lighting and appliance usage.

167. The cost of the energy requirement includes an allowance for the bill rebate provided under the Warm Home Discount (WHD) scheme[16].

[15] Based on unweighted data. See section 4.4.3 for more detailed analysis of weighted energy consumption.

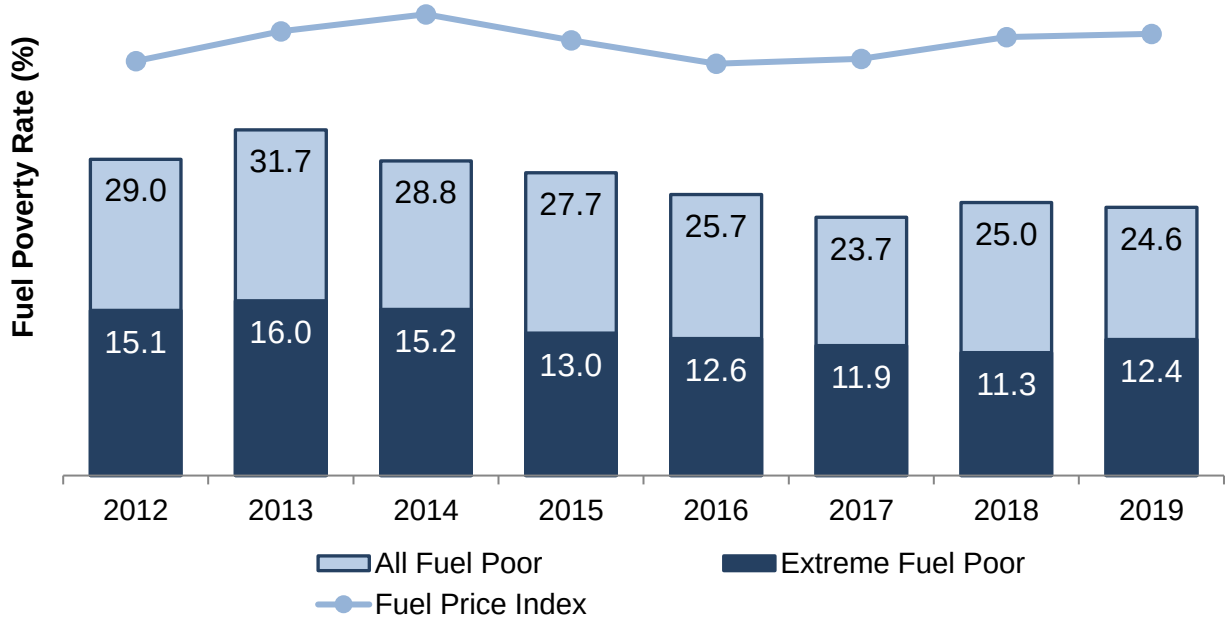
[16] Eligible households receive a £140 discount on their electricity bills. Households qualify if they receive the guarantee credit element of pension credit (core group) or they are on a low income and meet their energy supplier's criteria (broader group).

4.2 Fuel Poverty and Extreme Fuel Poverty

168. In 2019 an estimated 24.6% (around 613,000 households) of all households were in **fuel poverty** (Figure 19 and Table 30). This is similar to the 2018 fuel poverty rate of 25.0% (around 619,000 households) but lower than that recorded in the survey between 2012 and 2015. Since 2016 the rate of fuel poverty has remained between 23% and 26%.

169. Around 12.4% (311,000 households) were living in **extreme fuel poverty** in 2019 which is similar to the 11.3% (279,000 households) in the previous year but a decrease from 16% (384,000 households) in 2013. Since 2015, the rate of extreme fuel poverty has remained between 11% and 13%.

Figure 19: Estimates of Fuel Poverty and Extreme Fuel Poverty since 2012



Note: Energy requirement underpinning fuel poverty estimate modelled on the following basis: 2012 – 2013: BREDEM 2012 v.1.0; from 2014 onwards: BREDEM 2012 v.1.1, and New Prices to the adjustment of fuel price sources from 2013. From 2016 an improvement is included by assigning pre-payment metered fuel prices to the relevant households. From 2019 further improvements are included by using more detailed information on combi boilers to improve the accuracy of calculations surrounding hot water losses and assigning an off-peak tariff to relevant household's lights and appliances fuel prices.
Note: The 2012-2017 estimates are not comparable to those in the 2012-2017 Key Findings reports. See Section 4.1.1 for more details.

Table 30: Estimates of Fuel Poverty and Extreme Fuel Poverty since 2012

	Fuel Poverty		Extreme Fuel Poverty		*Sample*
	000s	**%**	**000s**	**%**	***Size***
2012	691	29.0%	361	15.1%	*2,728*
2013	761	31.7%	384	16.0%	*2,673*
2014	697	28.8%	368	15.2%	*2,643*
2015	675	27.7%	317	13.0%	*2,708*
2016	631	25.7%	308	12.6%	*2,794*
2017	583	23.7%	293	11.9%	*2,948*
2018	619	25.0%	279	11.3%	*2,905*
2019	613	24.6%	311	12.4%	*2,950*

Note: There are some discontinuities in the underlying methods as follows: figures for 2012 allow for Warm Home Discount (WHD) adjustment only; 2013 include WHD and price source adjustment; figures from 2014 onwards include WHD and price source adjustment and an updated BREDEM model; from 2016 an improvement is included by assigning pre-payment metered fuel prices to the relevant households; from 2019 further improvements are included by using more detailed information on combi boilers to improve the accuracy of calculations surrounding hot water losses and assigning an off-peak tariff to relevant household's lights and appliances fuel prices.

4.3 Fuel Poverty Gap

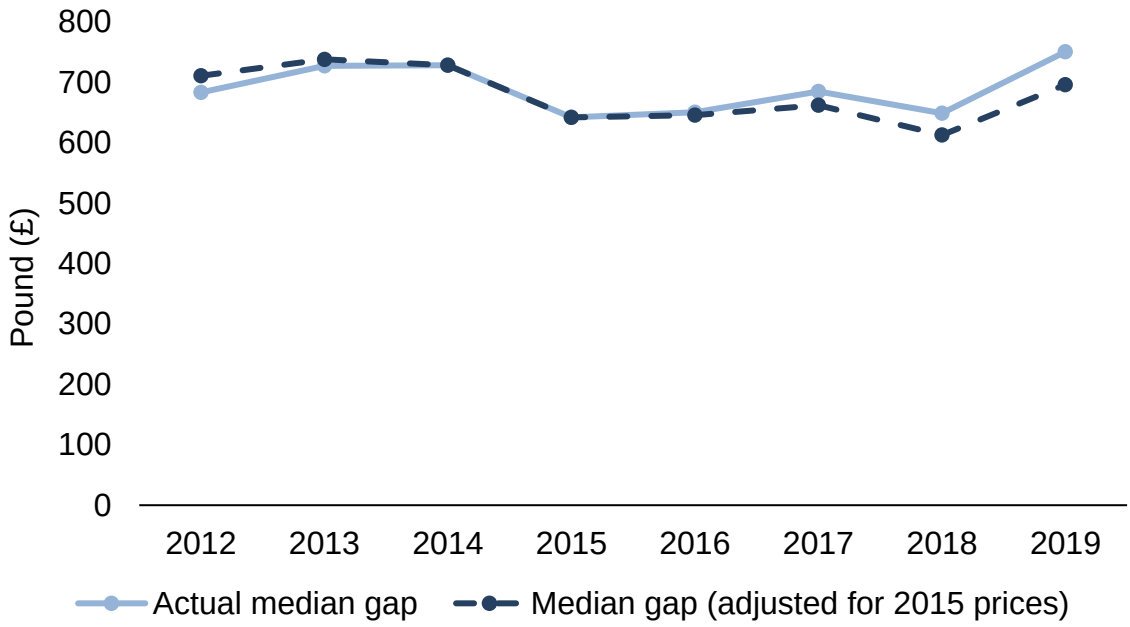
170. Where a household is in fuel poverty, the **fuel poverty gap** is the annual amount that would be required to move the household out of fuel poverty. Time trends in the fuel poverty gap have been presented as the median gap before adjustment and the median gap adjusted to 2015 prices. The median gap before adjustment presents the actual amount that fuel poor households require to move out of fuel poverty. The adjusted median gap figures have been presented in order to assess progress against the 2040 fuel poverty gap target. The adjustment has been made in alignment with the increases or decreases in the annual average consumer prices index (CPI) over the period from 2015 to the year which the figure relates to.

171. In 2019, the median fuel poverty gap for fuel poor households was £750 (Figure 20 and Table 31). This is higher than the median fuel poverty gap from 2015 to 2018.

172. In 2019, the median fuel poverty gap (adjusted for 2015 prices) for fuel poor households was £700. This is higher than the median fuel poverty gap (adjusted for 2015 prices) in 2018 (£610) but similar to the median gap in 2012 to 2017.

173. The increase in the median fuel poverty gap (adjusted for 2015 prices) between 2018 and 2019 reflects the overall increase in domestic fuel prices in 2019 and hence the increase in modelled running costs as discussed further in sections 4.4.1 and 4.4.3.

Figure 20: Median Fuel Poverty Gap of Fuel Poor Households, 2012-2019



Note: Data for this chart are provided in Table 31.

Table 31: Median Fuel Poverty Gap of Fuel Poor Households, 2012-2019

	Actual Median Fuel Poverty Gap (£)	Median Fuel Poverty Gap (adjusted for 2015 prices) (£)	*Sample Size*
2012	£680	£710	*793*
2013	£730	£740	*831*
2014	£730	£730	*791*
2015	£640	£640	*742*
2016	£650	£650	*729*
2017	£690	£660	*728*
2018	£650	£610	*732*
2019	£750	£700	*742*

4.4 Drivers and Trends

174. Fuel poverty is affected by levels of household income, the price of fuel required for space and water heating, the energy efficiency of housing and the use of fuel in households. Fuel poverty is distinct from poverty in that, while low income is an important driver, it is not a prerequisite. As shown in Table 37**,** fuel poor households are found in all income bands. Around 6% of all fuel poor households had weekly income above £400 before housing costs, which places nearly all of these households in the top half of the income distribution.

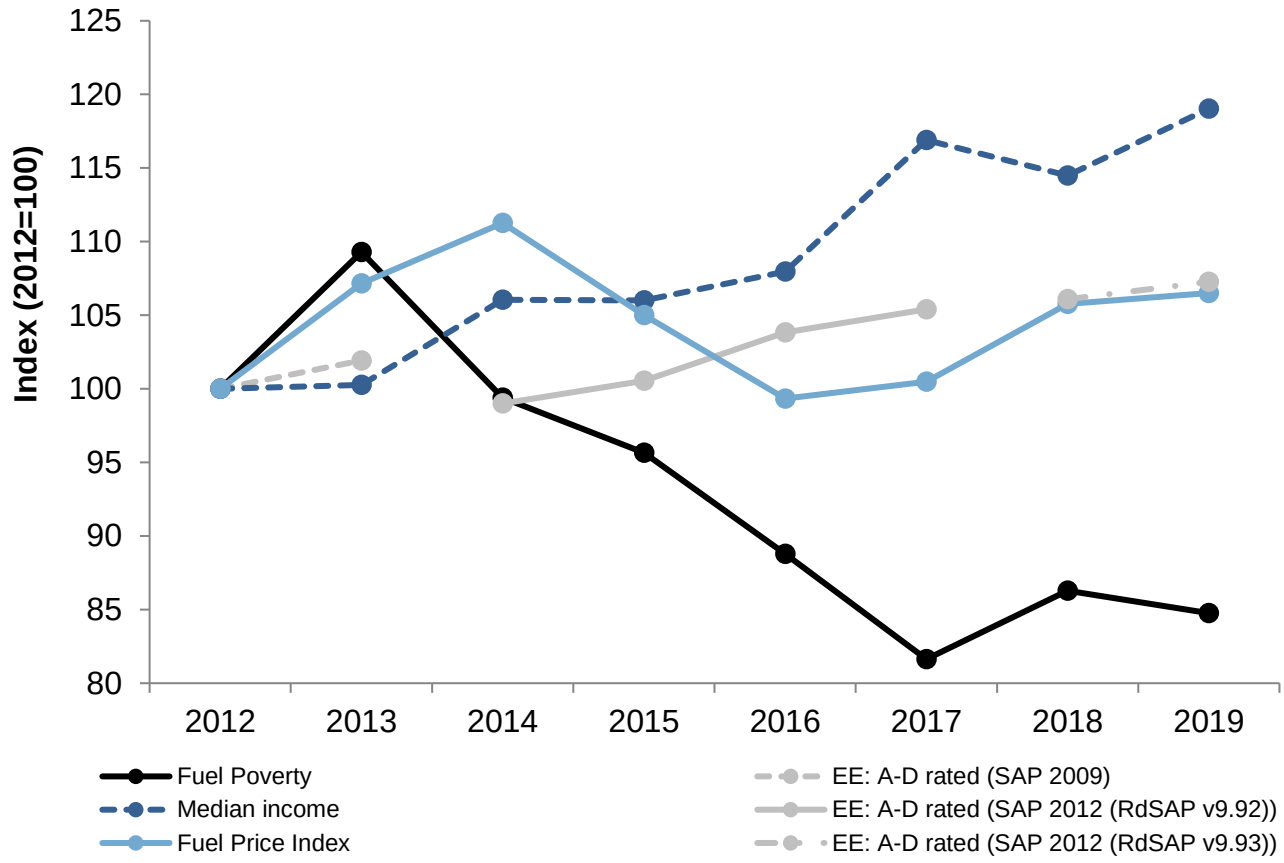
175. Figure 21 and Table 32 show indexes constructed to compare trends in three key drivers of fuel poverty since 2012[17]. Measures of energy efficiency and household incomes are derived from SHCS data. The fuel price index is constructed from Department for Business, Energy and Industrial Strategy (BEIS) quarterly prices as described in section 4.4.1. Prices and incomes are presented in nominal (cash) terms.

176. Between 2012 and 2013 the rate of fuel poverty increased in line with the rise in the average fuel price index. In 2014 the rate of fuel poverty did not increase in line with the rise in the average fuel price index as there was an increase in median income which likely offset the fuel price increase. In 2015 and 2016, the decline in the price of fuel and improvements in energy efficiency was reflected in a reduction in the fuel poverty rate. In 2017 there was a further reduction in the fuel poverty rate, in line with a large increase in median income and some improvements to energy efficiency. The non-significant increase in the 2018 fuel poverty rate likely reflects increases in fuel prices whilst median income and energy efficiency remained similar to 2017.

177. The 2019 fuel poverty rate (24.6%) is similar to that in 2018 (25.0%). In 2019 there was an increase in the median income index and small increase in the energy efficiency index. This has been partly offset by a slight increase in the overall fuel price index.

[17] See the 2017 Key Findings publication for analysis of longer time trends between 2003/04-2017.

Figure 21: Trends in Fuel Price, Energy Efficiency and Median Income, 2012 to 2019



Note: All values indexed to 100 in 2012. Data for this chart are provided in Table 32.
Fuel Price Index constructed as described in section 4.4.1.
Fuel poverty energy requirement modelled on the following basis: 2010 – 2013: BREDEM 2012 v.1.0; 2014 onwards: BREDEM 2012 v.1.1. From 2018 onwards there was a small update in the version of RdSAP underlying the energy modelling as described in section 3.3. From 2019 a further improvement is included by using more detailed information on combi boilers to improve the accuracy of calculations surrounding hot water losses.
Fuel poverty costs as follows: 2012 include WHD adjustment only; from 2013 onwards include WHD and price source adjustments; from 2016 an improvement is included by assigning pre-payment metered fuel prices to the relevant households; from 2019 a further improvement is included by assigning an off-peak tariff to relevant household's lights and appliances fuel prices.

Table 32: Fuel Price, Energy Efficiency and Income Indices

Survey Year	Fuel Poverty		Fuel Price Index		EE: A-D rated		Median Income	
	%	lx	lx	Rebased	%	lx	£	lx
2012	29.0	100	122	100	80%	100	20,000	100
2013	31.7	109	130	107	81%	102	20,000	100
2014	28.8	99	135	111	79%	99	22,000	106
2015	27.7	96	128	105	80%	101	22,000	106
2016	25.7	89	121	99	83%	104	22,000	108
2017	23.7	82	122	100	84%	105	24,000	117
2018	25.0	86	129	106	85%	106	23,000	114
2019	24.6	85	129	107	86%	107	24,000	119

Sources: BEIS Quarterly Prices; SHCS.
Note: All values indexed to 2012 = 100 with the exception of the fuel price index where both 2010 = 100 (lx) and 2012 = 100 (rebased) have been supplied.
Fuel poverty rates shown on BREDEM 2012 basis (new energy model).
EE ratings shown on SAP 2009 basis up to 2013, SAP 2012 (RdSAP v9.92) basis between 2014 and 2017 and SAP 2012 (RdSAP v9.93) basis from 2018.

4.4.1 Fuel Costs

178. BEIS publish quarterly energy prices data on the price of key fuels which enables us to construct time series for the price of fuels for the average Scottish household over the longer term. For further information on the data sources which feed into these National Statistics and the quality assurance processes undertaken see the BEIS domestic energy prices guidance document.

179. Using information from the SHCS about the fuels used for space and water heating we can weight the published national quarterly fuel price indices, BEIS QEP Table 2.1.3, and produce an average index value for the price of the heating fuel requirement for Scotland. The results are shown in Figure 22 and Table 33.

180. Since the majority of Scottish households heat their properties with gas (81%), the national average index follows the gas index closely. In 2015 and 2016 the average index fell by 5.6% and 5.4%, respectively, primarily due to the falling price of liquid fuels (oil) and gas. In 2017 and 2018 the average index grew by 1.2% and 5.4%, respectively, mostly driven by electricity (up 8.7% in 2018) and liquid fuels (up 25.3% in 2018).

181. In 2019, the fuel price index grew again by 0.7%. The largest increases were in electricity (up 7.3%), solid fuels (3.6%) and other domestic fuels (3.8%). The average index for liquid fuels fell by 2.6% compared to 2018.

Figure 22: BEIS Fuel Price Indices and a Weighted Average for Scotland: 2012 to August 2020

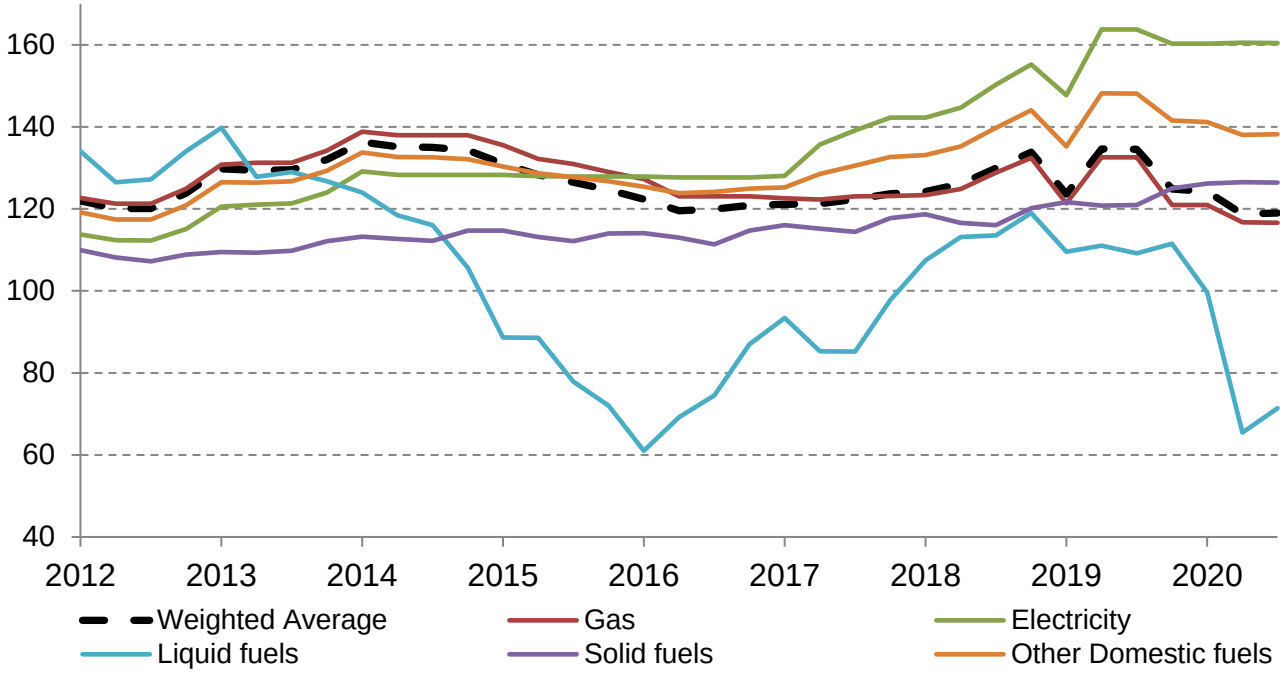


Table 33: BEIS Current Fuel Price Indices and a Weighted Average for Scotland: 2012 – August 2020

	Current fuel price indices					
Year	**Gas**	**Electricity**	**Liquid fuels**	**Solid fuels**	**Other fuels**	**Weighted Average**
2012	122.5	113.4	130.5	108.6	118.7	**121.5**
2013	131.9	121.7	130.8	110.2	127.2	**130.2**
2014	138.2	128.5	116.0	113.2	132.8	**135.2**
2015	131.9	128.0	81.8	113.5	128.4	**127.6**
2016	124.1	127.7	72.9	113.3	124.6	**120.7**
2017	122.8	136.3	90.4	115.9	129.3	**122.1**
2018	127.4	148.1	113.3	117.9	138.0	**128.5**
2019	126.9	158.9	110.3	122.1	143.3	**129.4**
to Aug 2020	118.1	160.4	78.8	126.4	139.1	**120.7**

Note: BEIS Quarterly Energy Prices, Table 2.1.3. Indices supplied with 2010 = 100.
Weighted average based on SHCS heating fuel use proportions, 2012 to 2019. 2020 proportions assumed unchanged from 2019.

182. BEIS has published fuel price data up to August 2020. As fuel use changes slowly, we assume that the fuel mix in Scotland in 2020 was the same as captured by the 2019 SHCS in order to extend the weighted average for Scotland into 2020. Into the third quarter of 2020 the weighted average of heating fuels falls, driven primarily due to the falling price of liquid fuels (down 28.5%) and gas (down 6.9%). This amounts to an approximate 6.8% decrease in the composite price on average 2019 levels to August 2020.

4.4.2 Household Income

183. The SHCS is not designed to capture income as comprehensively as other formal surveys of income and is collected on a self-reported basis. From 2018, total household income, including the income of other adults, has been collected in the survey. However, in order to provide a consistent time series of fuel poverty estimates for 2012 to 2019, we have only taken account of income from the highest income householder and their partner. We plan to introduce income from other household members, along with other developments under the new definition, in future years.

184. Income is reported in nominal terms and is not equivalised to take into account that households of different size and composition need different levels of income to sustain the same living standard. Figures in this section therefore may not align with official statistics on household income and inequality.

185. In 2019, 50% of households earned £24,300 or more after tax, higher than the £23,300 in 2018 (Table 34). This equates to an increase in median income of 4%. Since 2012, median income has increased by 19% (around £4,000) in nominal terms.

186. The mean income of surveyed households was higher in 2019 (around £29,900) than 2018 (£28,600). This equates to an increase in mean income of 4%. Percentage change in income between years varied across income deciles. Increases in income ranged between 1% in deciles 1 and 8 to 6% in deciles 3 and 10. There were no decreases in income for any decile group.

Table 34: Mean Annual Income in Each Decile Group, SHCS 2018 and 2019

Income Decile	Year 2018	2019	Percentage change
1	£7,000	£7,100	1%
2	£11,900	£12,400	4%
3	£14,700	£15,600	6%
4	£17,900	£18,700	5%
5	£21,300	£22,300	4%
6	£25,400	£26,600	5%
7	£31,000	£32,000	3%
8	£38,200	£38,700	1%
9	£47,300	£49,100	4%
10	£71,500	£76,000	6%
All	£28,600	£29,900	4%
Median	£23,300	£24,300	4%
Sample Size	*2,905*	*2,950*	

4.4.3 Housing Stock

187. As shown in Table 35, the mean modelled energy consumption required to meet the fuel poverty heating regime (see Section 4.1.1) in 2019 was 28,427 kWh, which is similar to 27,795 kWh in 2018.

188. Over the same time period, mean running costs have significantly increased by 6.7% from £1,710 in 2018 to £1,825 in 2019, which reflects the increase in modelled energy requirement and overall increase in domestic fuel prices in 2019.

Table 35: Modelled Annual Energy Consumption and Running Costs, 2012-2019

	Energy requirement		Running Costs		*Sample*
Year	Mean (kWh)	Annual change	Mean (£)	Annual change	***Size***
2012	29,621	-	1,727	-	*2,787*
2013	28,964	-2.2%	1,860	7.7%	*2,725*
2014	29,195	0.8%	1,898	2.1%	*2,682*
2015	29,068	-0.4%	1,745	-8.1%	*2,754*
2016	28,286	-2.7%	1,611	-7.7%	*2,850*
2017	28,257	-0.1%	1,665	3.4%	*3,002*
2018	27,795	-1.6%	1,710	2.7%	*2,964*
2019	28,427	2.3%	1,825	6.7%	*2,997*

Note: Fuel poverty energy requirement modelled on the following basis: 2012 – 2013: BREDEM 2012 v.1.0; 2014 -2018: BREDEM 2012 v.1.1. Fuel poverty costs as follows: 2012 include WHD adjustment only; from 2013 onwards include WHD and price source adjustments; from 2016 an improvement is included by assigning pre-payment metered fuel prices to the relevant households; from 2019 further improvements are included by using more detailed information on combi boilers to improve the accuracy of calculations surrounding hot water losses and assigning an off-peak tariff to relevant household's lights and appliances fuel prices.

4.4.4 Impact on Fuel Poverty

189. To understand how the changes in the price of domestic fuels and the incomes of the households included in the SHCS sample interact with the performance of the housing stock, we carried out a micro-simulation which sought to isolate the impact of each set of factors on the level of fuel poverty recorded in 2019. The results are illustrated in Figure 23**.**

190. The analysis which underpins these findings uses SHCS data from 2018 and 2019 to model hypothetical rates of fuel poverty under different scenarios, adding one change at a time. This included the following steps as shown in Table 36.

- First, 2019 fuel prices were applied to the 2018 survey sample to determine the effect of price change alone under 2018 levels of energy demand and household income.
- Next, the income of households in this sample was updated by the mean change observed for their decile group between 2018 and 2019. This demonstrated the additional effect of income changes on fuel poverty between 2018 and 2019.
- We then compare the fuel poverty rate modelled at the previous step with the estimate for 2019. The difference is estimated to be the effect of the energy performance of the housing stock and other sampled housing stock changes between 2018 and 2019.[18]

[18] The sequence of steps in this method affects the size of the estimated impact. Where factors operate in the same direction any potential joined effect will be attributed to those assessed first.

Figure 23: Contributions to Change in Fuel Poverty Rate between 2018 and 2019

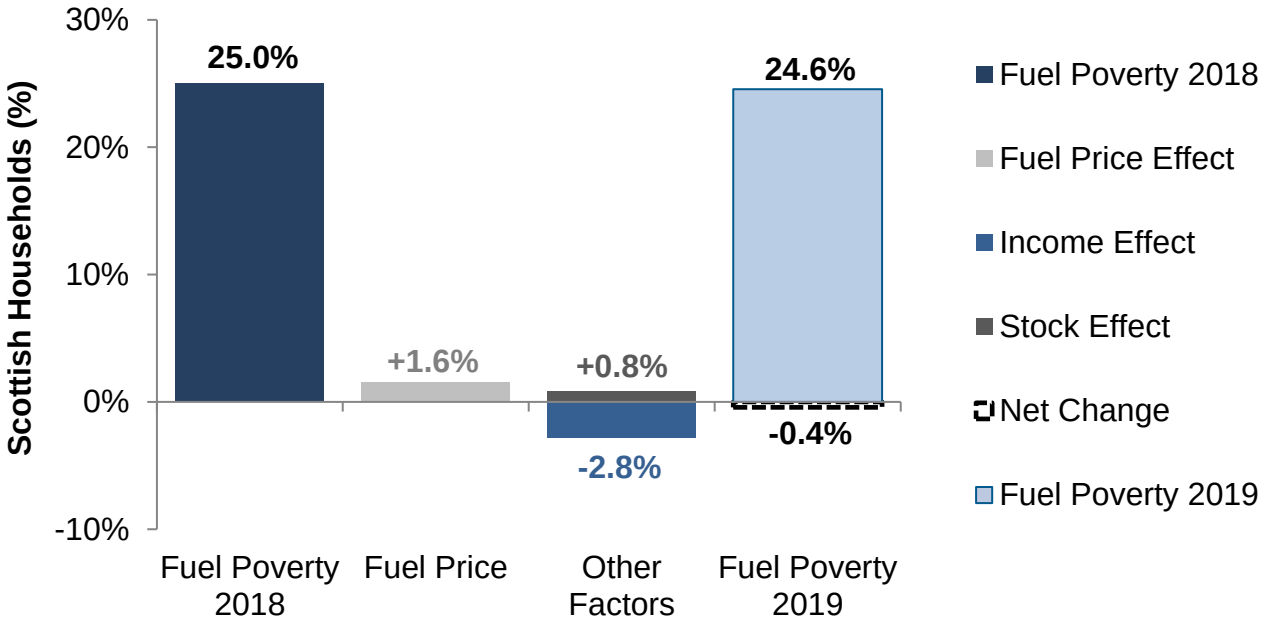


Table 36: Steps in Attributing Change in the Fuel Poverty Rate between 2018 and 2019

	Fuel Poverty Rate	Step Difference
Fuel Poverty 2018	25.0%	
- Step 1: Fuel change	26.6%	1.6 points
- Step 2: Income change	23.8%	-2.8 points
- Step 3: Attributed to changes in the housing stock	24.6%	0.8 points
Fuel Poverty 2019	24.6%	

191. The net change of 0.4 percentage points in the fuel poverty rate between 2018 and 2019 was not statistically significant. The results from the micro-simulation analysis indicate that changes in fuel prices and income would affect the fuel poverty rate differently. Applying fuel price changes increased the fuel poverty rate by 1.6 percentage points whilst applying income changes decreased the fuel poverty rate by 2.8 percentage points.

192. The residual change is attributed to differences in energy efficiency performance, changes in the housing stock as described in section 4.4.3 and other underlying changes to the sampled stock distribution, increasing the rate by 0.8 percentage points.

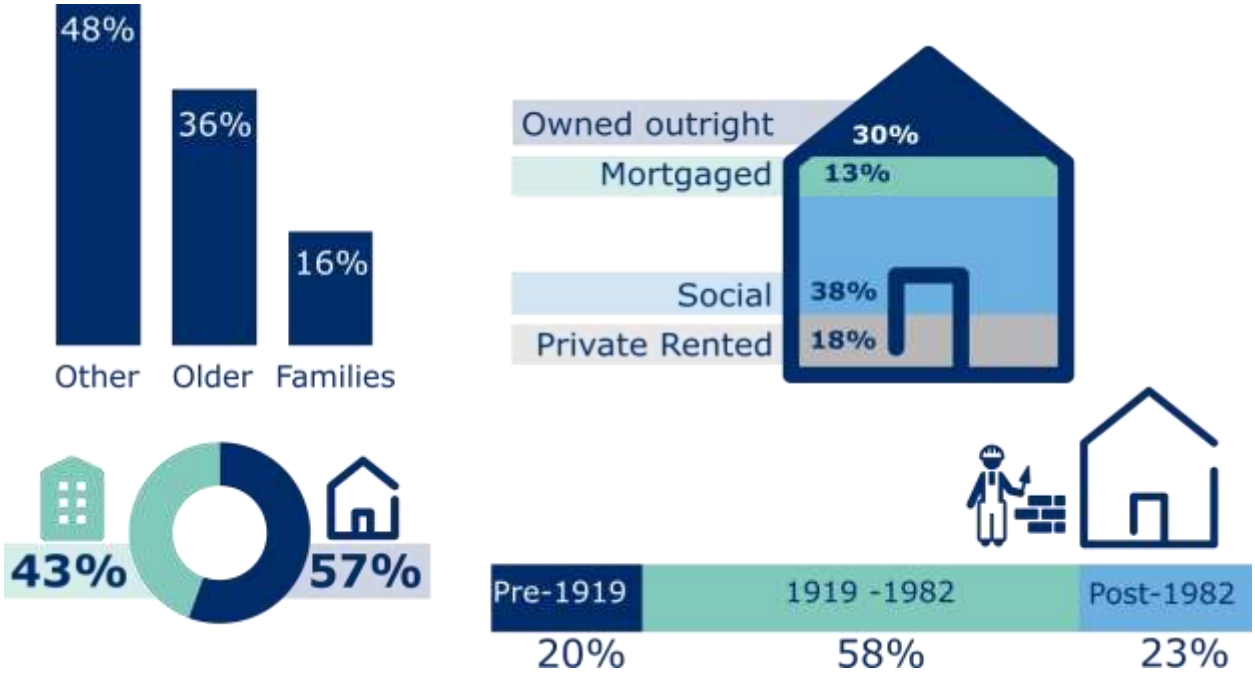
4.5 Characteristics of Fuel Poor Households

193. Figure 24 illustrates some of the key attributes of the fuel poor population in 2019. Approximately half (48%) of fuel poor households are other households (without children or older members). Around 16% of households living in fuel poverty are families with children, and 36% are older households.

194. 44% of fuel poor households are owner occupiers, 38% are social housing residents and the remaining 18% rent in the private sector. 57% of fuel poor households live in houses – of which 17% are detached properties, 18% semi-detached, and 23% terraced – with the remaining 43% occupying flats.

195. One fifth (20%) of the dwellings of fuel poor households were built before 1919, and 23% were built since 1982. The remaining 58% were constructed in the intervening years.

Figure 24: Composition of Fuel Poor Households by Selected Household and Dwelling Characteristics, 2019



4.5.1 Household Characteristics

196. Table 37 shows fuel poverty rates by a number of household characteristics for 2019 and in comparison to the previous year.

197. Overall rates of fuel poverty differed between the **social** (37%) and **private sector** (20%) in 2019. However, looking at tenure in a more disaggregated way shows that rates of fuel poverty in the housing association (39%), local authority (36%) and private rented sectors (36%) are similar. In comparison, 12% of those with a mortgage are assessed to be fuel poor. These are similar rates to those in 2018.

198. As in 2018, **older households (27%)** and **other households (27%)** in 2019 have a higher fuel poverty rate than families (17%).

199. Fuel poverty has a strong association with income and households in the lower **income bands** have the highest rates of fuel poverty: 96% for the bottom income band and 60% for the 2nd bottom band. Fuel poverty rates across income bands are similar to 2018 fuel poverty rates.

200. Fuel poverty rates generally decrease as **council tax bands** increase from A (35%) to F (14%) and G-H (16%). Fuel poverty rates across all council tax bands are similar to 2018.

Table 37: Fuel Poverty Rates by Household Characteristics, 2019 and 2018

	2019			2018		
	000s	%	*Sample*	000s	%	*Sample*
Tenure						
Owned outright	186	21%	*1,133*	193	23%	*1,065*
Mortgaged	82	12%	*803*	74	10%	*840*
LA/ public	131	36%	*418*	160	39%	*447*
HA/co-op	104	39%	*286*	97	39%	*266*
PRS	110	36%	*310*	97	36%	*287*
Private	378	20%	*2,246*	363	20%	*2,192*
Social	235	37%	*704*	256	39%	*713*
Household type						
Older households	218	27%	*1,029*	221	28%	*950*
Families	100	17%	*702*	94	17%	*664*
Other households	294	27%	*1,219*	304	27%	*1,291*
Weekly Household Income						
< £200	222	96%	*272*	242	95%	*281*
£200-300	234	60%	*448*	235	55%	*480*
£300-400	119	29%	*491*	98	24%	*464*
£400-500	25	8%	*358*	35	12%	*344*
£500-700	*	*	*530*	8	2%	*506*
£700+	*	*	*851*	1	0%	*830*
Council Tax Band						
Band A	175	35%	*579*	174	33%	*587*
Band B	163	29%	*649*	178	32%	*642*
Band C	90	23%	*465*	95	23%	*477*
Band D	61	19%	*405*	70	22%	*386*
Band E	70	20%	*440*	57	18%	*392*
Band F	27	14%	*213*	31	14%	*269*
Band G – H	27	16%	*196*	15	12%	*152*
All Scotland	613	24.6%	*2,950*	619	25.0%	*2,905*

Note: A * indicates suppressed data due to low sample sizes. There were 3 cases in 2019 with a missing council tax band which have been excluded from the table but included in the Scotland statistics.

4.5.2 Dwelling Characteristics

201. Table 38 shows how the level of fuel poverty varies across dwelling characteristics.

202. Fuel poverty rates are lowest for **detached** households (18%). The lowest rates of fuel poverty are associated with higher energy efficiency standards. 20% of households living in **post-1982** dwellings and 20% of households living in dwellings **rated C or better were fuel poor**. Both of these categories have similar rates to their respective 2018 levels.

203. Households using **gas** (22%) as their **primary heating fuel** have similar fuel poverty levels to that in 2018 (23%). Consequently, the rates of fuel poverty for households **within coverage of the gas network** and for **urban** households (24% for both) have remained similar to rates in 2018 (25% for both on grid and urban).

204. In 2019, the fuel poverty rate for **rural** (29%) households was higher than for **urban** (24%) households. Levels of fuel poverty for **remote rural** households are higher than for all other urban rural locations and have increased by 9 percentage points from 33% in 2018 to 43% in 2019. This increase reflects the high proportion of rural households which use electricity and other fuel types (such as solid mineral fuels; Table 7) as their primary fuel type and the associated increase in fuel prices for these fuel types between 2018 and 2019, as discussed further in section 4.4.1.

205. Fuel poverty rates for all other dwelling characteristics have remained similar between 2018 and 2019.

206. Levels of fuel poverty among households using **electricity** as their primary heating fuel have remained the highest, at 43%, compared to households using gas (22%), oil (28%) and other fuel (31%) as their primary heating fuel.

207. A higher proportion of households in the 15% most deprived areas (based on **SIMD**) were in fuel poverty compared to other areas of Scotland, 32% compared to 23% respectively.

208. A higher proportion of households with a **pre-payment meter** (PPM; electricity, gas or both) were in fuel poverty compared to those without a PPM, 36% compared to 22% respectively.

Table 38: Fuel Poverty by Dwelling Characteristics, 2019 and 2018

	2019			2018		
	000s	%	*Sample*	000s	%	*Sample*
Dwelling Type						
Detached	106	18%	*838*	94	17%	*793*
Semi	108	22%	*674*	112	22%	*647*
Terraced	139	26%	*583*	138	26%	*626*
Tenement	175	30%	*480*	175	31%	*496*
Other flats	86	27%	*375*	100	32%	*343*
Age of dwelling						
pre-1919	121	25%	*539*	121	26%	*512*
1919-1944	68	25%	*301*	78	28%	*318*
1945-1964	142	27%	*630*	153	29%	*643*
1965-1982	144	26%	*693*	142	27%	*646*
post-1982	138	20%	*787*	125	19%	*786*
Primary Heating Fuel						
Gas	442	22%	*2,219*	468	23%	*2,189*
Oil	36	28%	*267*	33	22%	*257*
Electric	113	43%	*370*	106	43%	*386*
Other	22	31%	*94*	13	24%	*72*
EPC Band (SAP 2012)						
B - C	221	20%	*1,201*	201	19%	*1,104*
D	271	27%	*1,230*	295	29%	*1,240*
E	76	31%	*361*	87	30%	*407*
F - G	45	40%	*158*	36	35%	*154*
Location (2013/14 urban rural classification)						
Large urban areas	228	26%	*799*	222	25%	*803*
Other urban areas	186	21%	*988*	205	24%	*981*
Accessible small towns	43	19%	*282*	54	24%	*275*
Remote small towns	31	34%	*174*	27	31%	*183*
Urban overall	488	24%	*2,243*	508	25%	*2,242*
Accessible rural	60	22%	*350*	62	23%	*332*
Remote rural	64	43%	*357*	49	33%	*331*
Rural overall	125	29%	*707*	111	27%	*663*
SIMD: Most deprived 15% (SIMD 2016)						
No	484	23%	*2,565*	483	23%	*2,521*
Yes	129	32%	*385*	136	33%	*384*
Gas Grid						
On	501	24%	*2,239*	515	25%	*2,190*
Off	112	27%	*711*	104	23%	*715*
Pre-payment Meter						
No	458	22%	*2,488*	439	22%	*2,405*
Yes	154	36%	*460*	178	38%	*496*
All Scotland	613	24.6%	*2,950*	619	25.0%	*2,905*

Note: There was one N/A response for primary heating fuel in 2018 which has been excluded from the table but included in the Scotland statistics. There were 2 cases in 2019 and 4 cases in 2018 with unobtainable pre-payment meter values which have been excluded from the table but included in the Scotland statistics.

4.6 Characteristics of Extreme Fuel Poor Households

209. Over half (54%) of extreme fuel poor households are adults without children. Around 9% of households living in extreme fuel poverty are families with children, and 37% are older households.

210. Almost half (49%) of extreme fuel poor households are owner occupiers, 30% are social housing residents and the remaining 22% rent in the private sector. 60% of extreme fuel poor households live in houses – of which 25% are detached properties, 15% semi-detached, and 19% terraced – while the remaining 40% occupy flats.

211. Just under a third (28%) of the dwellings of extreme fuel poor households were built before 1919, and 21% were built since 1982. The remaining 51% were constructed in the intervening years.

4.6.1 Household Characteristics

212. Table 39 shows extreme fuel poverty rates by a number of household characteristics for 2019 and in comparison to the previous year.

213. Overall rates of extreme fuel poverty were similar between the **social** (14%) and **private sector** (12%) in 2019. The highest rates of extreme fuel poverty by tenure are found in the private rented sector where 22% are extreme fuel poor. In comparison, 5% of those with a mortgage are assessed to be extreme fuel poor. Overall rates by tenure in 2019 were similar to that in 2018.

214. As in 2018, **older households (14%)** and **other households (15%)** have a higher extreme fuel poverty rate than families (5%) in 2019.

215. As with fuel poverty overall, extreme fuel poverty has a strong **association** with **income**. Households in the lowest income band (<£200 a week) have the highest rate of extreme fuel poverty (74%) whereas there are no cases of extreme fuel poverty in the highest income band (£700+ a week).

216. Extreme fuel poverty rates in the second lowest income band (£200-£299.99 a week) have increased in 2019 (25%) compared to 2018 (16%). Extreme fuel poverty rates across all other income bands are similar to 2018.

217. In 2019, extreme fuel poverty rates across **council tax bands** ranged from 9% in council tax band F to 16% in council tax band A.

Table 39: Extreme Fuel Poverty Rates by Household Characteristics, 2019 and 2018

	2019			2018		
	000s	%	*Sample*	000s	%	*Sample*
Tenure						
Owned outright	116	13%	*1,133*	110	13%	*1,065*
Mortgaged	36	5%	*803*	29	4%	*840*
LA/ public	54	15%	*418*	61	15%	*447*
HA/co-op	38	14%	*286*	27	11%	*266*
PRS	67	22%	*310*	52	19%	*287*
Private	219	12%	*2,246*	191	10%	*2,192*
Social	92	14%	*704*	88	13%	*713*
Household type						
Older households	116	14%	*1,029*	102	13%	*950*
Families	27	5%	*702*	32	6%	*664*
Other households	167	15%	*1,219*	145	13%	*1,291*
Weekly Household Income						
< £200	171	74%	*272*	172	68%	*281*
£200-300	98	25%	*448*	67	16%	*480*
£300-400	33	8%	*491*	28	7%	*464*
£400-500	5	2%	*358*	*	*	*344*
£500-700	3	1%	*530*	*	*	*506*
£700+	-	-	*851*	-	-	*830*
Council Tax Band						
Band A	82	16%	*579*	66	13%	*587*
Band B	71	13%	*649*	69	12%	*642*
Band C	44	11%	*465*	43	11%	*477*
Band D	32	10%	*405*	34	11%	*386*
Band E	42	12%	*440*	32	10%	*392*
Band F	16	9%	*213*	22	10%	*269*
Band G – H	22	13%	*196*	13	11%	*152*
All Scotland	311	12.4%	*2,950*	279	11.3%	*2,905*

Note: A * indicates suppressed data due to low sample sizes. A – indicates where there were no sampled cases. There were 3 cases in 2019 with a missing council tax band which have been excluded from the table but included in the Scotland statistics.

4.6.2 Dwelling Characteristics

218. Table 40 shows how the level of extreme fuel poverty varies across dwelling characteristics.

219. The lower rates of extreme fuel poverty are associated with higher energy efficiency standards. 9% of households living in **post-1982** dwellings and 7% of households living in dwellings **rated C or better were extreme fuel poor**. Both of these categories have similar rates to their respective 2018 levels.

220. Extreme fuel poverty rates ranged across **dwelling type**, where semi-detached households (9%) had the lowest extreme fuel poverty rates compared to tenement flats (16%) with the highest.

221. Households using **gas** as the **primary heating fuel** have the same extreme fuel poverty levels as in 2018 (both 9%). Consequently, the rates of extreme fuel poverty for households **within coverage of the gas network** and for **urban** households (11% for both) have remained similar to rates in 2018 (10% for both).

222. Levels of extreme fuel poverty among households using **electricity** as their **primary heating fuel** have remained among the highest, at 33%, and are higher than for households using any other fuel as their primary heating fuel. In addition, households using **oil** as their primary heating fuel have higher fuel poverty rates than households using gas (21% compared to 9%). Consequently, the rates of extreme fuel poverty for households **out with the coverage of the gas network** (19%) are higher than for households within coverage of the gas network (11%).

223. Levels of extreme fuel poverty increased as EPC rating decreased, with 26% of households with an **EPC rating of E** and 38% of households with an EPC rating of **F-G** being extreme fuel poor.

224. Levels of extreme fuel poverty were higher in **rural areas** (19%) compared to **urban areas** (11%) in 2019. Fuel poverty rates were highest for remote rural households (33%) and lowest for other urban (9%) and accessible urban households (8%).

225. Levels of extreme fuel poverty for **remote rural** households have increased by 11 percentage points, from 23% in 2018 to 33% in 2019. Extreme fuel poverty rates for all other dwelling characteristics have remained similar between 2018 and 2019.

226. A higher proportion of households with a **pre-payment meter** (electricity, gas or both) were in extreme fuel poverty compared to those without a PPM, 18% compared to 11% respectively.

Table 40: Extreme Fuel Poverty by Dwelling Characteristics, 2019 and 2018

	2019			2018		
	000s	%	*Sample*	000s	%	*Sample*
Dwelling Type						
Detached	79	14%	*838*	63	11%	*793*
Semi	46	9%	*674*	53	11%	*647*
Terraced	60	11%	*583*	53	10%	*626*
Tenement	91	16%	*480*	71	12%	*496*
Other flats	35	11%	*375*	39	12%	*343*
Age of dwelling						
pre-1919	88	18%	*539*	81	17%	*512*
1919-1944	33	12%	*301*	37	13%	*318*
1945-1964	62	12%	*630*	60	11%	*643*
1965-1982	64	12%	*693*	56	11%	*646*
post-1982	64	9%	*787*	44	7%	*786*
Primary Heating Fuel						
Gas	186	9%	*2,219*	186	9%	*2,189*
Oil	27	21%	*267*	23	16%	*257*
Electric	86	33%	*370*	65	27%	*386*
Other	11	16%	*94*	5	10%	*72*
EPC Band (SAP 2012)						
B - C	80	7%	*1,201*	59	6%	*1,104*
D	125	12%	*1,230*	121	12%	*1,240*
E	62	26%	*361*	65	23%	*407*
F - G	43	38%	*158*	34	34%	*154*
Location (2013/14 urban rural classification)						
Large urban areas	116	13%	*799*	90	10%	*803*
Other urban areas	80	9%	*988*	82	9%	*981*
Accessible small towns	17	8%	*282*	21	9%	*275*
Remote small towns	16	17%	*174*	12	14%	*183*
Urban overall	228	11%	*2,243*	206	10%	*2,242*
Accessible rural	32	12%	*350*	39	14%	*332*
Remote rural	51	33%	*357*	34	23%	*331*
Rural overall	82	19%	*707*	72	17%	*663*
SIMD: Most deprived 15% (SIMD 2016)						
No	257	12%	*2,565*	236	11%	*2,521*
Yes	54	13%	*385*	43	10%	*384*
Gas Grid						
On	231	11%	*2,239*	212	10%	*2,190*
Off	80	19%	*711*	67	15%	*715*
Pre-payment Meter						
No	234	11%	*2,488*	206	10%	*2,405*
Yes	75	18%	*460*	71	15%	*496*
All Scotland	311	12%	*2,950*	279	11%	*2,905*

Note: There was one N/A response for primary heating fuel in 2018 which has been excluded from the table but included in the Scotland statistics. There were 2 cases in 2019 and 4 cases in 2018 with unobtainable pre-payment meter values which have been excluded from the table but included in the Scotland statistics.

4.7 Fuel Poverty and Income Poverty

227. Although fuel poverty is correlated with low income, it is not equivalent to **income poverty**. This section updates previous analysis of how these two conditions relate in the household population under the current fuel poverty definition.

228. According to the official poverty definition, individuals are considered to be in relative (income) poverty if their equivalised net household income is below 60 per cent of the median income in the same year. Official poverty estimates are calculated using the Department for Work and Pensions' (DWP) Family Resources Survey (FRS). The latest estimates for Scotland were published on 26 March 2020 and relate to 2016/19[19].

229. It is possible to use the SHCS to determine how fuel poverty and income poverty relate, although there are some caveats to this approach. One of the main caveats is that the SHCS does not use the full range of household income data used to derive the official measure of poverty. For example, we have only taken account of income from the highest income householder and their spouse/partner[20]. As a result, the SHCS would underestimate the income of households with more than two earners, and therefore over-estimate levels of income poverty. To correct to some extent for this we make a corresponding adjustment to the equivalisation method used for producing official poverty statistics. It is therefore important to note that the results presented here do not reproduce exactly the official measure of fuel poverty and are only approximate.

230. In this report, the adjustment has been applied to household income after housing costs (AHC) to better align with the new definition of fuel poverty. One caveat around this is that the definition of housing costs differs slightly between the SHCS and the DWP's Households Below Average Income (HBAI) statistics. The main difference is that here we deduct full mortgage payments, whereas HBAI deducts only mortgage interest payments. For the HBAI structural insurance premiums for owner occupiers, ground rent and service charges are also deducted.

[19] Note that in this release the data were presented as a three year rolling average. However, single year data relating to 2018/19 were also provided.

[20] From 2018, total household income data is collected. However in order to produce comparable fuel poverty statistics for 2019 to those in previous reports only the income of the HIH/spouse was used in this publication.

231. A further caveat is that the latest published income poverty estimates relate to 2018/19. In order to derive a poverty threshold figure for 2019 we use the relationship between the SHCS and the FRS estimates of the median equivalised household income for the previous year, 2018. We adjust the 2019 SHCS median by the ratio between the two estimates observed in 2018 to obtain a 2019 poverty threshold. We estimate this as £282 per week AHC for a couple without children. The actual FRS 2018/19 poverty threshold of £268 is used for 2018 data.

232. As Table 41 shows, almost three-quarters of fuel poor households would be considered poor in terms of their income (73% or 448,000) while the other quarter have incomes above the relative poverty threshold (27% or 165,000 households) in 2019. This is a similar pattern to 2018.

233. Table 42 shows the fuel poverty rate by income poverty status. 86% of income poor households were fuel poor in 2019, a similar rate to 2018 (88%).

Table 41: Estimated Number and Proportion of Households by Fuel Poverty and Income Poverty Status, SHCS 2018 and 2019

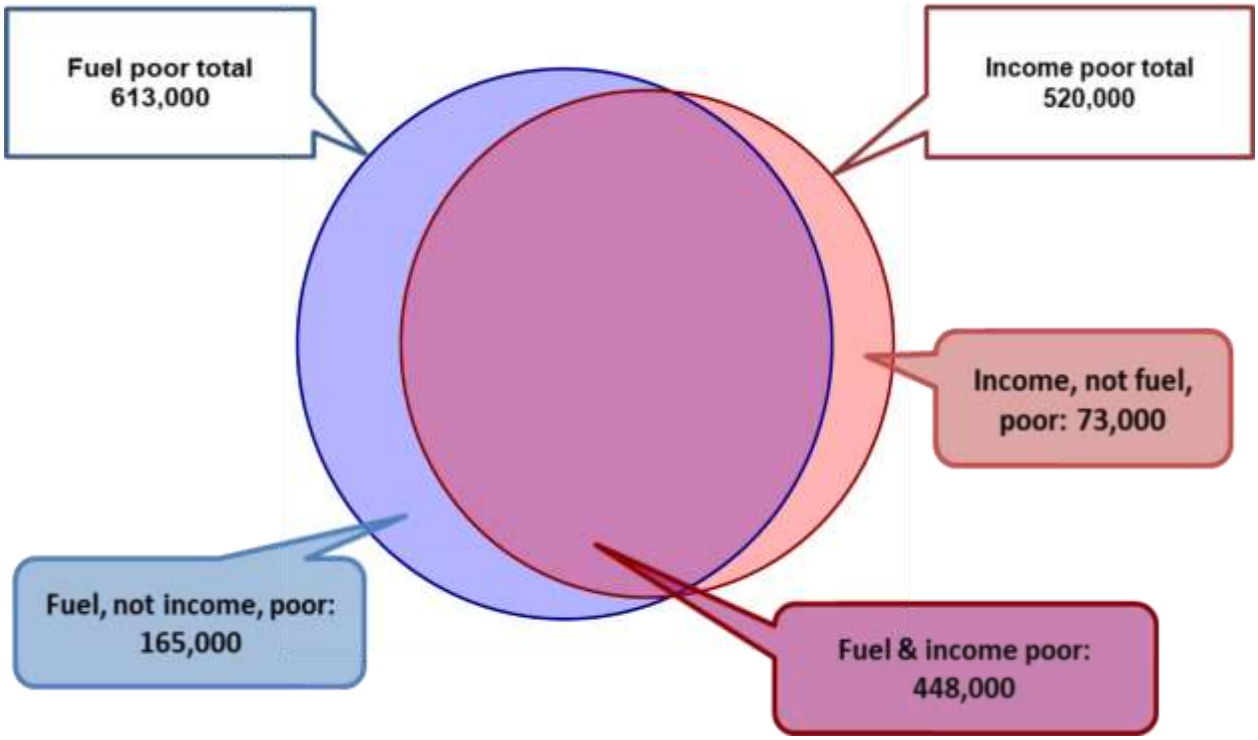
			Income Poor	Not Income Poor	All	*Sample Size*
2018	**Fuel Poor**	**000s**	432	187	619	
		Row %	70%	30%	100%	*732*
	Not Fuel Poor	**000s**	58	1,800	1,858	
		Row %	3%	97%	100%	*2,173*
	All	**000s**	490	1,988	2,477	*2,905*
2019	**Fuel Poor**	**000s**	448	165	613	
		Row %	73%	27%	100%	*742*
	Not Fuel Poor	**000s**	73	1,810	1,883	
		Row %	4%	96%	100%	*2,208*
	All	**000s**	520	1,975	2,496	*2,950*

Table 42: Fuel Poverty Rate (%) by Income Poverty Status, SHCS 2018 and 2019

		2018	2019
Income Poor	**%**	88%	86%
	Sample size	*551*	*596*
Not Income Poor	**%**	9%	8%
	Sample size	*2,354*	*2,354*
All	**%**	25.0%	24.6%
	Sample size	*2,905*	*2,950*

234. Figure 25 sets out this information graphically. This chart demonstrates, that while low income is associated with fuel poverty, it is not equivalent. Over a quarter of fuel poor households would not be considered income poor. Similarly, there are some income poor households who are unlikely to be struggling with their fuel bills with 8% of income poor households not being fuel poor.

Figure 25: Fuel Poor and Income Poor Households, SHCS 2019



Sample Size: 2,950

235. Table 43 provides further information about the characteristics of the households who fall into the different sub-groups.

236. Households that are both income poor and fuel poor tend to live in more energy efficient dwellings than other fuel poor households, potentially because of high energy efficiency standards in the social rented sector. They are more likely to use gas for heating, live on the gas grid and live in urban locations compared to other fuel poor households. These characteristics point to low income as a key reason for their experience of fuel poverty.

237. Conversely, households who are not income poor but experience fuel poverty have a higher likelihood of living in low energy efficiency properties, using electricity for heating, and living in rural areas compared to fuel poor and income poor households and Scotland overall.

Table 43: Household and Dwelling Characteristics by Income Poverty and Fuel Poverty, 2019

		Fuel, not Income Poor	Fuel & Income Poor	All Fuel Poor	Income, not Fuel Poor	All Scotland
EPC Band (SAP 2012)						
B-C	000s	36	185	221	51	1,122
	col %	22%	41%	36%	70%	45%
D	000s	79	192	271	22	1,017
	col %	48%	43%	44%	30%	41%
E-G	000s	51	70	121	-	357
	col %	31%	16%	20%	-	14%
Household Type						
Older	000s	67	151	218	19	819
	col %	41%	34%	36%	26%	33%
Families	000s	20	80	100	44	598
	col %	12%	18%	16%	61%	24%
Other	000s	77	217	294	9	1,079
	col %	47%	48%	48%	13%	43%
Urban-Rural (2013/14 urban rural classification)						
Urban	000s	117	371	488	69	2,069
	col %	71%	83%	80%	94%	83%
Rural	000s	49	76	125	4	426
	col %	29%	17%	20%	6%	17%
Primary Heating Fuel						
Gas	000s	95	347	442	71	2,035
	col %	57%	78%	72%	98%	82%
Oil	000s	13	23	36	*	130
	col %	8%	5%	6%	*	5%
Electric	000s	50	63	113	*	261
	col %	30%	14%	18%	*	10%
Other fuels	000s	7	15	22	*	70
	col %	4%	3%	4%	*	3%
Gas Grid						
On grid	000s	117	383	501	68	2,075
	col %	71%	86%	82%	93%	83%
Off grid	000s	48	64	112	5	421
	col %	29%	14%	18%	7%	17%
Sample size		*222*	*520*	*742*	*76*	*2,950*

Note: A * indicates where data has been suppressed due to low sample numbers.

5 Energy Perceptions

Key Points

- 13% of all households find that their heating **keeps them warm enough** in winter only sometimes and 3% find it never keeps them warm. This is similar to 2018 rates. 4% reported that their heating not keeping them warm enough in winter was "a serious problem".
- 4% of all households report that their homes were difficult to heat because they **cannot afford to heat them**, which is similar to the level in 2018.
- **Fuel poor** households and **extreme fuel poor** households are more likely to have difficulties staying warm in winter and to report affordability problems; 23% of fuel poor and 28% of extreme fuel poor say that their heating keeps them warm enough in winter "only sometimes" or "never", compared to 15% of all other households. 9% of all fuel poor and 10% of extreme fuel poor households report that they cannot afford to heat their home, higher than the 3% of non-fuel poor households.
- The extent to which home energy use is monitored by householders is similar to last year with 57% stating they **monitor their energy use** "very" or "fairly closely" compared to 58% in 2018. 35% of all households report owning an **energy monitoring device** – a 7 percentage point increase on the previous year.
- A similar proportion of **fuel poor** (60%) and **extreme fuel poor** (59%) households monitored their energy use "very" or "fairly closely" compared to non-fuel poor households (56%) in 2019. However they are less likely to have monitoring devices at home; 32% of fuel poor and 28% of extreme fuel poor households compared to 36% of all other households.

5.1 Heating Satisfaction

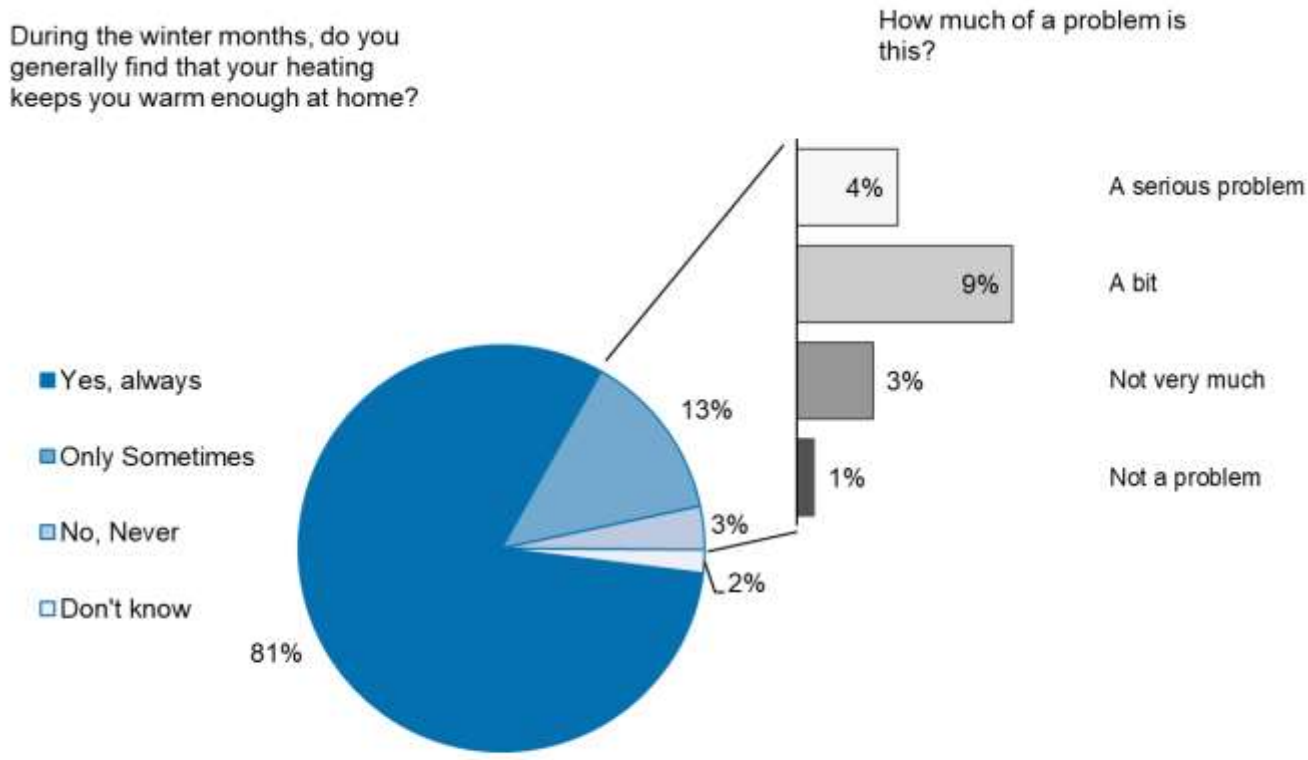
238. Respondents' views on their ability to keep warm enough in the winter and why this may be difficult is a useful context for understanding statistics on fuel poverty and energy efficiency in the home.

239. In 2019, 81% of householders reported that they were always able to stay warm at home during the winter (Figure 26), 13% said that their heating keeps them warm only sometimes, and 3% report that their heating systems never keep them warm in winter. These are similar levels to 2018.

240. Of those reporting that their heating system keeps them warm enough in winter "only sometimes" or "never", 25% report this to be "a serious problem", 53% "a bit of a problem", while 23% said it was "not very much" or "not a problem". The proportion of households who said this was "not very much" or "not a problem" has decreased compared to 2018 (30%).

241. Of all households, 4% reported their heating not keeping them warm enough in winter, and this to be "a serious problem", while 9% said it was "a bit of a problem", both which are at similar levels to 2018.

Figure 26: Staying Warm in Winter, 2019



Sample size: 2,997

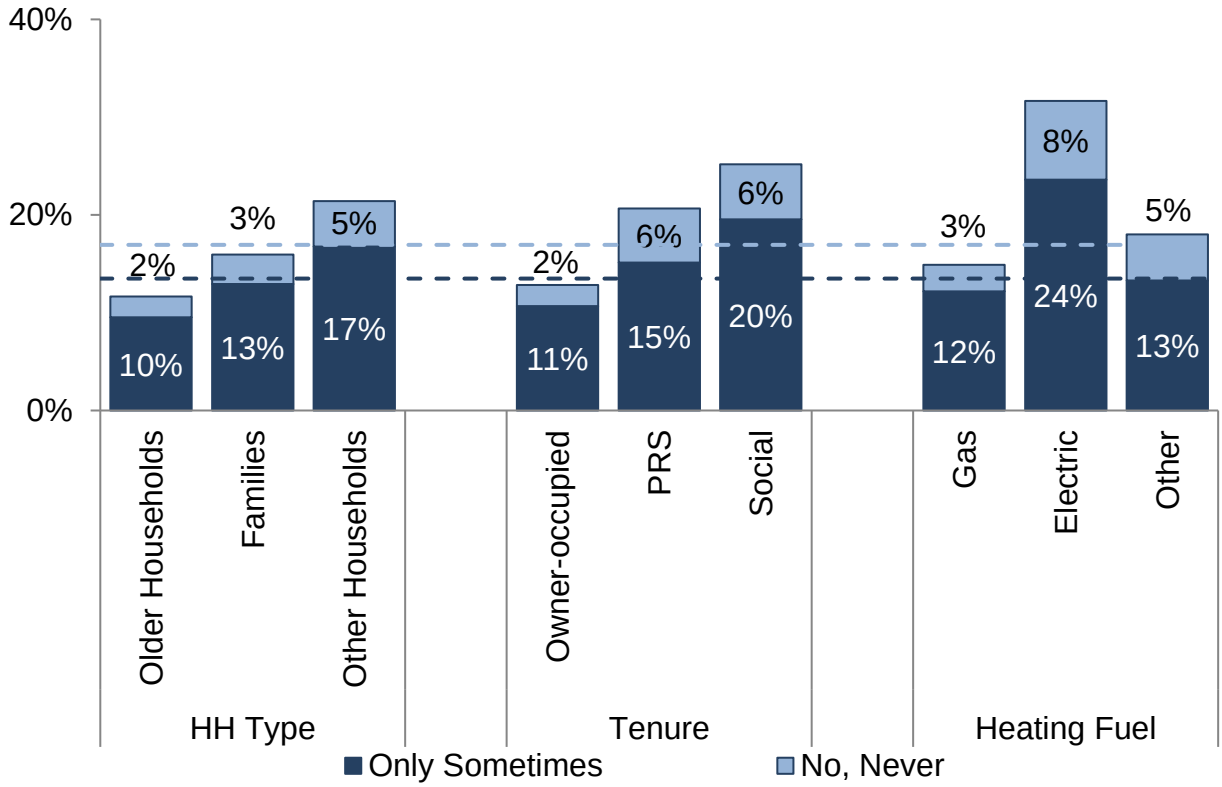
242. Figure 27 shows respondents' views on how well their heating systems keep them warm enough in winter vary depending on household (HH) type, tenure and the primary heating fuel they use in 2019.

243. Families and other households are more likely than older households to report that their heating system doesn't always keep them warm enough in the winter; 16% and 21%, for families and other households respectively, compared to 12% for older households.

244. Social and private renters have increased likelihood to report that their heating does not always keep them warm enough compared to owner occupiers; 25% and 21%, for social and private renters respectively, compared to 13% for owner occupiers. For social sector tenants this is despite the relatively better energy efficiency of the dwellings they occupy compared to other tenures (as shown in Table 20).

245. Householders with electric heating also have a high propensity to report that their heating systems does not keep them warm enough in the winter (32%).

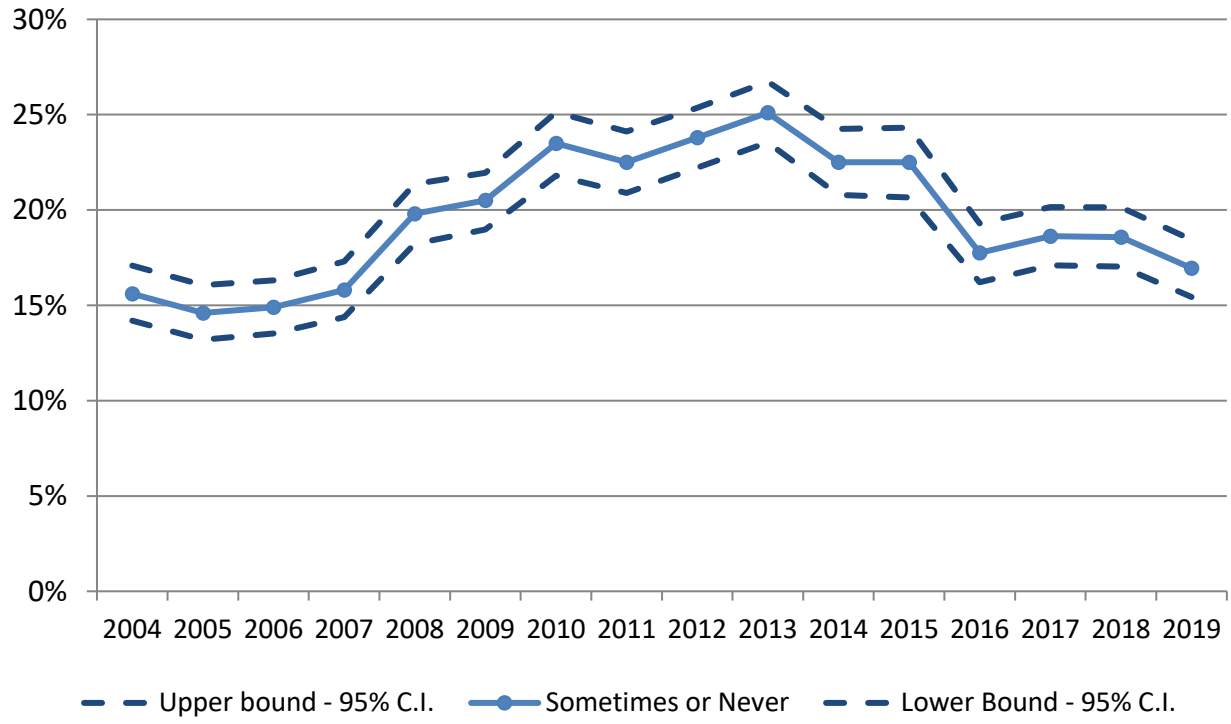
Figure 27: "Does Your Heating Keep You Warm Enough in the Winter?" by Household Type, Tenure and Primary Heating Fuel; SHCS 2019



Note: Dashed lines represent the responses from all households in Scotland shown in Figure 26.

246. Figure 28 shows how the proportion of householders reporting that their heating does not always keep them warm enough has changed over time, allowing for the margin of error (see section 7.1). Following a significant decrease in 2016, the proportion has remained at a similar level since then.

Figure 28: "Does Your Heating Keep You Warm Enough in the Winter?" Proportion 'Only Sometimes' or 'Never Warm', 2004-2019

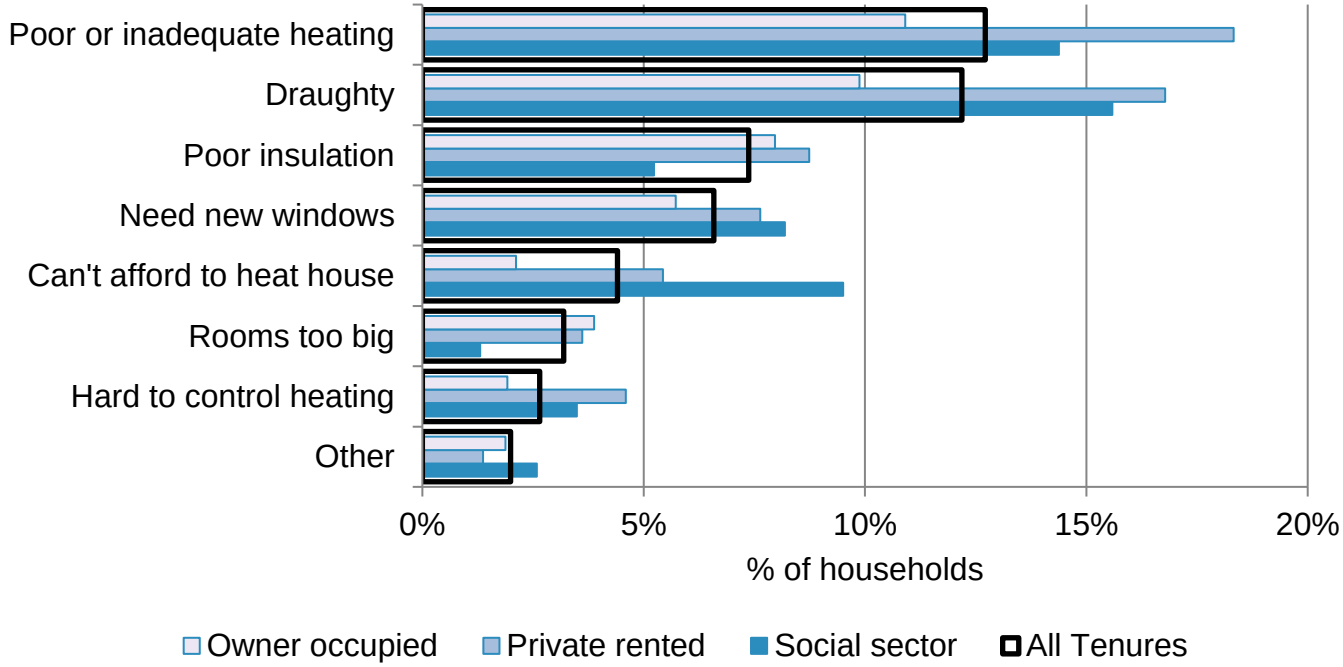


247. The reasons why people found their homes difficult to heat in 2019 are shown in Figure 29 and Table 44. The most common reasons relate to poor energy performance of the dwellings: poor or inadequate heating systems (13%) and draughts (12%) followed by poor insulation and windows (7% each).

248. About 4% of all surveyed householders considered it unaffordable to achieve the indoor temperatures they want. This is higher among private and social renters (5% and 10% respectively) compared to owner occupiers (2%).

249. On the whole, private rented and social sector tenants were more likely than owner occupiers to report difficulties in 2019. 67% of all interviewed households did not report any problems heating their homes, a similar percentage to 2018 (65%).

Figure 29: Reasons Heating Home is Difficult by Tenure, 2019



Note: responses have been grouped by theme, as described in section 7.8.5. More than one answer is allowed so the sum of responses can exceed 100%.

Table 44: Reasons Heating Home is Difficult by Tenure, 2019

	Owner occupied	Private rented	Social sector	All Tenures
None reported	70%	61%	62%	67%
Poor or inadequate heating	11%	18%	14%	13%
Draughty	10%	17%	16%	12%
Poor insulation	8%	9%	5%	7%
Need new windows	6%	8%	8%	7%
Can't afford to heat house	2%	5%	10%	4%
Rooms too big	4%	4%	1%	3%
Hard to control heating	2%	5%	3%	3%
Other	2%	1%	3%	2%
Sample size	*1,965*	*317*	*715*	*2,997*

Note: Respondents are permitted to select more than one response. For this reason the sum down a column can exceed 100%

250. Table 45 shows how fuel poor and non-fuel poor households compare in their views on winter heating and heating affordability in 2019.

251. Fuel poor and extreme fuel poor households are more likely to report that their heating keeps them warm enough in winter “only sometimes” or “never”, 23% and 28%, respectively, compared to 15% of non-fuel poor households. For 21% of fuel poor households and 25% of extreme fuel poor households this is “a serious” or “a bit of a problem”, higher than 11% for households who are not fuel poor.

252. Fuel poor and extreme fuel poor households are also more likely to report affordability problems. When asked about the reasons why they find it difficult to keep their home warm, 9% of fuel poor households and 10% of extreme fuel poor households say “cannot afford to heat my home”, compared to 3% of non-fuel poor households.

Table 45: Staying Warm and Fuel Poverty, 2019

	Not Fuel Poor	Fuel Poor	Extreme Fuel Poor
During the winter months, do you generally find that your heating keeps you warm enough at home, or not?			
Yes, always	83%	74%	70%
Only some of the time	13%	17%	20%
No, never	2%	7%	8%
Don't know	2%	2%	2%
How much of a problem is this, if at all, to you?			
A serious problem	3%	8%	9%
A bit of a problem	8%	13%	17%
Affordability			
Cannot afford to heat house	3%	9%	10%
Sample size	*2,208*	*742*	*384*

5.2 Monitoring Energy Use

253. Since 2008 the SHCS has asked respondents to what extent they monitor their energy use and whether or not they have energy monitoring devices.

254. The proportion of households who do not monitor their energy use fell from 31% in 2008 to 22% in 2012 and remained around that level (20-22%) until 2017, which saw an increase to 24% (Table 46) from 20% in 2016. The proportion of households who do not monitor their energy use fell again to 19% in 2018 and has remained at a similar level in 2019 (20%).

255. The proportion of those who report monitoring their energy use “fairly” or “very closely” increased from 44% in 2008 to 54% in 2012 and remained around that level until 2017. In 2018 this increased again to 58% where it has remained at a similar level in 2019 (57%).

Table 46: Extent to which Energy Use is Monitored, 2008, 2012-2019

	Year								
	2019	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2008**
Very closely	20%	19%	17%	18%	16%	16%	17%	16%	11%
Fairly closely	37%	39%	37%	38%	41%	37%	38%	38%	33%
Subtotal: Very or fairly closely	57%	58%	54%	56%	57%	54%	56%	54%	44%
Not very closely	23%	22%	21%	23%	22%	24%	24%	24%	24%
Not at all	20%	19%	24%	20%	22%	22%	20%	22%	31%
Don't know	1%	1%	1%	1%	0%	1%	0%	0%	1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sample size	*2,997*	*2,964*	*2,529*	*2,441*	*2,492*	*2,682*	*3,442*	*3,428*	*3,762*

256. In 2019, 35% of households had energy monitoring devices, as shown in Table 47. This is the fourth consecutive statistically significant year on year increase and represents a 26% increase in the proportion of households with an energy monitoring device compared to 2018 where 28% of households had energy monitoring devices.

Table 47: Households with Energy Use Monitoring Devices, 2008-2019

	% of households	*Sample Size*
2019	35%	*2,997*
2018	28%	*2,964*
2017	18%	*2,529*
2016	10%	*2,441*
2015	8%	*2,492*
2014	7%	*2,682*
2013	8%	*3,442*
2012	8%	*3,428*
2011	7%	*3,949*
2010	4%	*3,853*
2009	2%	*4,153*
2008	2%	*3,762*

257. Table 48 shows that a similar proportion of fuel poor (60%) and extreme fuel poor (59%) households monitored their energy use "very" or "fairly closely" compared to non-fuel poor households (56%) in 2019. However, they are less likely to have monitoring devices at home - 32% of fuel poor and 28% of extreme fuel poor households compared to 36% of all other households – despite the overall increase in energy monitoring devices recorded by the survey.

Table 48: Monitoring Energy Use and Fuel Poverty, 2019

	Not Fuel Poor	Fuel Poor	Extreme Fuel Poor
To what extent do you monitor your use of energy in your property?			
Very closely	20%	19%	18%
Fairly closely	36%	41%	42%
Not very closely	23%	22%	22%
Not at all	20%	17%	*
Don't know	1%	0%	*
Do you have an energy-use monitoring device in your home?			
Yes	36%	32%	28%
Sample Size	*2,208*	*742*	*384*

Note: A * indicates where data has been suppressed due to low sample sizes.

6 Housing Conditions

6.1 Disrepair

Key Points

- Disrepair to critical elements, central to weather-tightness, structural stability and preventing deterioration of the property, stood at 52% in 2019. Less than half of these (19% of all dwellings) required urgent disrepair to critical elements and just 1% had extensive disrepair (covering at least a fifth of the element area) to critical elements.
- Overall, this is an improvement of 5 percentage points on 2018, when 57% of dwellings had disrepair to critical elements, with 20% having critical elements in urgent need of repair and, again, just 1% having extensive disrepair to critical elements. The 2019 rate has returned to a level similar to 2017 (50%).
- 18% of dwellings had disrepair only to non-critical elements, with 3% of dwellings requiring some urgent repair and 1% with extensive disrepair to non-critical elements, similar to 2018.
- Levels of damp and condensation were similar to those seen in 2018: 91% of properties were free from any damp or condensation.

258. The SHCS measures disrepair for a wide range of different building elements ranging from aspects of roofs and walls to chimney stacks, internal rooms and common parts of shared buildings like access balconies and entry doors.

259. This is reported in two categories:

- **Critical elements.** This refers to disrepair to building elements central to weather-tightness, structural stability and preventing deterioration of the property, such as roof coverings or the structure of external walls. These elements are listed in section 7.8.7.1.
- **Non-critical elements.** This relates to any damage to a non-critical element (such as skirtings and internal wall finishes, staircases, boundary fences or attached garages) which requires some repair beyond routine maintenance.

260. Elements in both of the above categories can be assessed according to the severity of disrepair, as follows:

- **Urgent disrepair.** This relates only to external and common elements[21] (a mixture of critical and non-critical). Urgent disrepair to these elements is recorded where immediate repair is required to prevent further deterioration to the building fabric or health and safety risks to occupants. Not all disrepair to critical elements is necessarily considered urgent by the surveyor. Internal room floor structures and floor finishes as well as internal walls and the presence of dry / wet rot are the only critical elements for which urgency is not applicable.
- **Extensive disrepair.** Damage which covers at least a fifth (20%) or more of the building element area. This can apply to any element whether critical or otherwise.

Disrepair which is not to a critical element, is not urgent or extensive, is referred to as basic. This is the minimum category of disrepair in the survey.

261. More detailed description of the categories of disrepair is given in section 7.8.7.

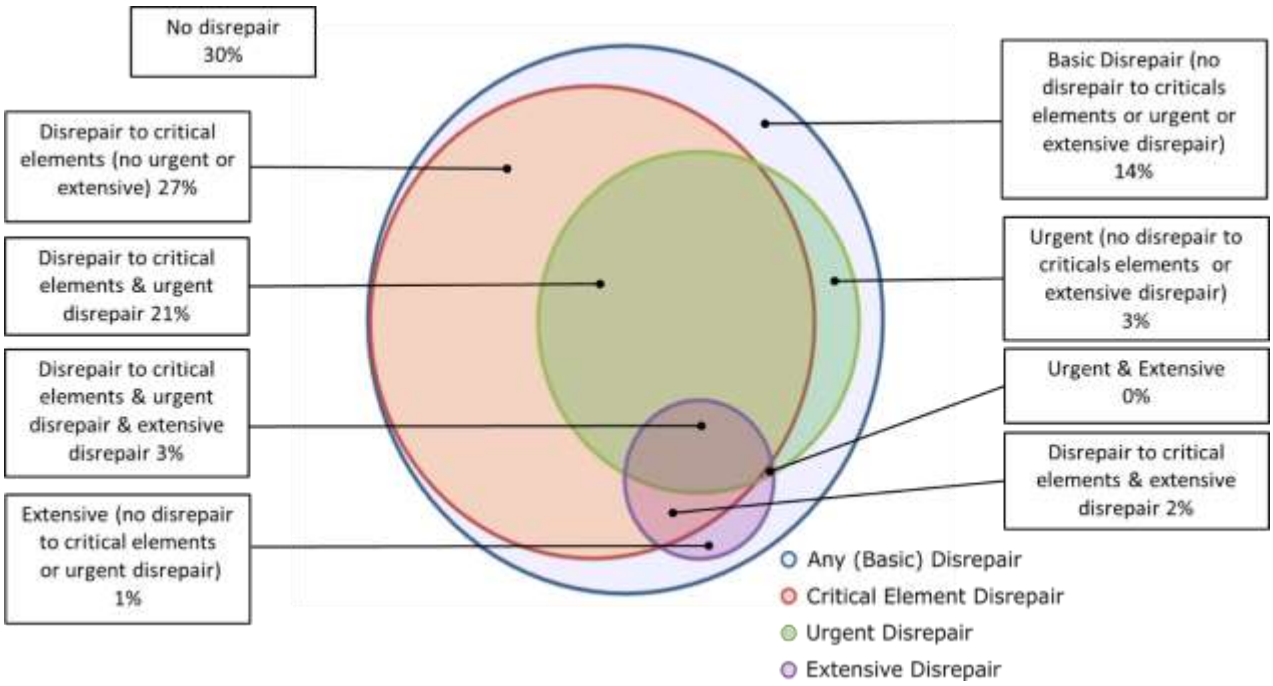
262. It is fairly common for dwellings to display elements of disrepair in more than one category. The SHCS surveyor manual provides guidance for our surveyors on assessing the type and severity of disrepair for each element, for example:

- A leaking tap in the bathroom (**disrepair to a non-critical element)**.
- A large section (covering over 20% of the area) of the render on an external wall has broken off but is not considered an urgent repair by the surveyor (**extensive disrepair to a critical element**).
- A small area of guttering is damaged, causing rain water to pour down an external wall surface. This is marked as urgent by the surveyor as it is likely to lead to further damage and compromise the weather-proofing of the building in the short term (**urgent disrepair to a critical element**).

[21] These relate to dwellings which are parts of a block with common access and cover elements such as the shared stairs and landings, lifts and common security systems.

263. This is illustrated in Figure 30, which shows that 52% of dwellings had some disrepair to critical elements, of which: 27% had no instances of urgent or extensive disrepair; 21% had some urgent disrepair (which could be to critical or non-critical elements) but no extensive disrepair; 3% had some urgent and some extensive disrepair (to any element); and 2% had had some extensive disrepair (to any element) but no urgent disrepair.

Figure 30: Disrepair Categories, Proportions of Scotland's Housing Stock, 2019



Notes: 1. No disrepair, includes a very small number of cases where it was not possible to obtain the disrepair status of every element of the property. See the technical notes section 7.8.7 for further information. 2. Where categories overlap in the above figure, this means that the properties have instances of each type of disrepair. However, this may be to different elements. For example 21% of properties have disrepair to critical elements and urgent disrepair. This can include properties where disrepair to an element (e.g. guttering) is both critical and urgent as well as properties which have critical disrepair to one element (e.g. external wall finish) and urgent disrepair to another (e.g. flashings).

6.1.1 Rates of Disrepair

264. Table 49 provides details of rates of disrepair over time for dwellings with disrepair to critical elements and for dwellings with only disrepair to non-critical elements. In 2019, disrepair to critical elements stood at 52% of all dwellings. Less than half, 19% of all dwellings, had instances of urgent disrepair to these critical elements and only 1% of dwellings had extensive disrepair to one or more critical elements. These dwellings may also have other instances of disrepair (including urgent and extensive) to non-critical elements.

265. Overall, this is an improvement of 5 percentage points on 2018, when 57% of dwellings had disrepair to critical elements, with 20% having critical elements in urgent need of repair and, again, just 1% having extensive disrepair to critical elements. The 2019 rate has returned to a level similar to 2017 (50%).

266. 18% of dwellings had disrepair only to non-critical elements, with 3% of dwellings requiring some urgent repair and 1% with extensive disrepair to non-critical elements, similar to 2018.

267. Urgent and extensive repair can apply to both critical and non-critical elements. Table 50 shows the rates of this type of disrepair regardless of element type. 27% of properties had some instances of urgent disrepair improving on 30% in 2018 and down from 39% in 2012. In 6% of the housing stock some extensive disrepair was present, similar to 2018 but improving from 9% in 2012.

Table 49: Disrepair to Critical Elements and Non-Critical Elements, 2012-2019

Year	Critical Elements			Only Disrepair to Non-Critical Elements			Sample size
	Disrepair	Urgent disrepair to critical elements	Extensive disrepair to critical elements	Disrepair	Urgent	Extensive	
2019	52%	19%	1%	18%	3%	1%	2,997
2018	57%	20%	1%	18%	3%	1%	2,964
2017	50%	N/A	N/A	18%	4%	1%	3,002
2016	48%	N/A	N/A	20%	4%	1%	2,850
2015	52%	N/A	N/A	21%	5%	1%	2,754
2014	53%	N/A	N/A	20%	4%	1%	2,682
2013	57%	N/A	N/A	20%	4%	1%	2,725
2012	61%	N/A	N/A	20%	4%	1%	2,787

Notes: 1. For a very small number of cases it was not possible to obtain the disrepair status of every element of the property. Where that element feeds into one of the disrepair categories the result is recorded as unobtainable.
2. Urgent disrepair concerns only external and common elements which are a mixture of critical and non-critical. Urgent disrepair to critical elements and extensive disrepair to critical elements have been calculated for the first time in 2019 and back updated for 2018 to allow a comparison. Back updating to previous years is complex and work will be taken forward to ensure that a longer trend can be presented in the next report.
3. Dwellings which have disrepair to critical elements may also have instances of disrepair to non-critical elements. Similarly, dwellings which have urgent or extensive disrepair to critical elements may also have urgent or extensive disrepair to non-critical elements which is not captured in this table. Table 50 provides rates of urgent and extensive disrepair regardless of element type.
See the technical notes for further information.

Table 50: Rates of Disrepair, 2012-2019

Year	Disrepair to Critical Elements	Any Urgent Disrepair	Any Extensive Disrepair	Sample size
2019	52%	27%	6%	2,997
2018	57%	30%	6%	2,964
2017	50%	28%	5%	3,002
2016	48%	28%	6%	2,850
2015	52%	33%	8%	2,754
2014	53%	32%	7%	2,682
2013	57%	36%	7%	2,725
2012	61%	39%	9%	2,787

Note: 1. For a very small number of cases it was not possible to obtain the disrepair status of every element of the property. Where that element feeds into one of the disrepair categories the result is recorded as unobtainable. See the technical notes for further information.

6.1.2 Disrepair to Critical Elements

268. This section examines in more detail disrepair to critical elements (affecting 52% of dwellings in 2019) and its prevalence across tenure, dwelling age band and location.

269. As shown above in Figure 30 and in Table 51**,** in some of those dwellings with disrepair to critical elements there was also some urgent disrepair (not necessarily to the same elements), accounting for 24% of the housing stock. This represents a reduction from 26% in 2018.

270. In 3% of the housing stock, in addition to the presence of disrepair to critical elements and urgent disrepair, some disrepair in the property was assessed as extensive, similar to the rate in 2018.

6.1.2.1 Dwelling age and location

271. The prevalence of disrepair to critical elements is associated with age of construction, with dwellings built after 1964 less likely to fall within this category. Dwellings built in the period pre-1919 have a rate of disrepair to critical elements of 71%. However, only 32% had any urgent disrepair to critical elements and only 2% had any extensive disrepair to critical elements. Rates of disrepair to critical elements fall to 48% (15% urgent disrepair to critical elements and 1% extensive disrepair to critical elements) for those built in the period 1965-1982 while those built after 1982 have a rate two-thirds that level again at 31% (9% urgent disrepair to critical elements and no instances in the sample of extensive disrepair to critical elements). This is also evident where instances of disrepair to critical elements co-exist with urgent disrepair to any element, a pattern which has remained unchanged since 2018.

272. In 2019, rates of disrepair were similar between urban and rural areas for all categories shown. This reflects improvements for urban areas in rates of disrepair to critical elements (6 percentage point reduction) and rates of both disrepair to critical elements and urgent disrepair to any elements (3 percentage point reduction) between 2018 and 2019 while rates for rural areas have remained similar.

273. The above figures consider the presence of critical, urgent and extensive disrepair within a dwelling. However, these need not apply to the same elements. Table 51 also provides some further breakdowns for those dwellings which have urgent disrepair or extensive disrepair to one or more critical elements. Urgent disrepair to critical elements follows a similar pattern by age and location as described above. However, rates of extensive disrepair to critical elements are very small and therefore similar across all age and location categories.

Table 51: Disrepair to Critical Elements, Urgent and Extensive Disrepair by Dwelling Age and Location, 2018 and 2019

	Age of dwelling					Location		
	pre-1919	1919-1944	1945-1964	1965-1982	post 1982	Urban	Rural	Scotland
Dwellings with any disrepair to critical elements								
2019	71%	64%	59%	48%	31%	52%	53%	52%
2018	73%	73%	67%	52%	35%	57%	54%	57%
Dwellings with any disrepair to critical elements and any urgent disrepair								
2019	36%	30%	30%	19%	11%	24%	21%	24%
2018	40%	35%	34%	21%	12%	27%	23%	26%
Dwellings with any disrepair to critical elements, any urgent and any extensive disrepair								
2019	4%	4%	3%	4%	1%	3%	3%	3%
2018	7%	2%	5%	3%	1%	4%	4%	4%
Dwellings with urgent disrepair to one or more critical elements								
2019	32%	24%	22%	15%	9%	19%	18%	19%
2018	31%	26%	26%	15%	8%	20%	20%	20%
Dwellings with extensive disrepair to one or more critical elements								
2019	2%	1%	2%	1%	-	1%	1%	1%
2018	3%	*	1%	1%	1%	1%	3%	1%
Sample sizes								
2019	546	310	638	704	799	2,280	717	2,997
2018	521	327	654	654	808	2,292	672	2,964

Notes: 1. For a very small number of cases it was not possible to obtain the disrepair status of every element of the property. Where that element feeds into one of the disrepair categories the result is recorded as unobtainable.
2. Urgent disrepair concerns only external and common elements which are a mixture of critical and non-critical. Urgent disrepair to critical elements and extensive disrepair to critical elements have been calculated for the first time in 2019 and back updated for 2018 to allow a comparison.
See the technical notes for further information.

6.1.2.2 Tenure

274. Levels of disrepair to critical elements are lower for the private sector (50%) than the social housing sector (58%) considered as a whole. This is driven by a reduction, since 2018, in the private sector, from 57% to 50%.

275. Private sector dwellings have also seen a decrease in dwellings with some disrepair to critical elements as well as some urgent disrepair to any elements (27% to 24%) and in 2019 have the same rate as the social sector. A small proportion (3% in the private and 3% in the social sector) also have instances of extensive disrepair in addition to critical and urgent.

276. Housing association dwellings tend to have amongst the lowest levels of disrepair in the categories covered by Table 52 in 2019. However, in 2019, owner occupied dwellings (47%) have a similar level of disrepair to critical elements as housing association dwellings (48%). This follows a decrease from 54% in 2018 for the owner occupied sector. Local authority and private rented sector properties have the highest levels of disrepair in these categories, for example having disrepair to critical elements in 66% and 65% of dwellings respectively.

277. The private rented sector has seen a decrease in dwellings with instances of disrepair to critical elements, urgent disrepair to any elements and extensive disrepair to any elements from 9% in 2018 to 4% in 2019.

Table 52: Disrepair to Critical Elements, Urgent and Extensive Disrepair by Tenure Group, 2018 and 2019

	Tenure						
	Owner occupied	LA/Other Public	HA/Co-op	Private rented	Private Sector	Social Sector	Scotland
Dwellings with any disrepair to Critical elements							
2019	47%	66%	48%	65%	50%	58%	52%
2018	54%	63%	46%	72%	57%	57%	57%
Dwellings with any disrepair to Critical elements and any Urgent disrepair							
2019	21%	31%	14%	36%	24%	24%	24%
2018	24%	31%	17%	39%	27%	26%	26%
Dwellings with any disrepair to critical elements, any Urgent any Extensive disrepair							
2019	3%	4%	1%	4%	3%	3%	3%
2018	3%	3%	2%	9%	4%	3%	4%
Dwellings with urgent disrepair to one or more critical elements							
2019	16%	25%	12%	30%	19%	20%	19%
2018	18%	25%	11%	29%	20%	20%	20%
Dwellings with extensive disrepair to one or more critical elements							
2019	1%	2%	2%	1%	1%	2%	1%
2018	1%	1%	*	2%	1%	1%	1%
Sample sizes							
2019	1,965	425	290	317	2,282	715	2,997
2018	1,937	459	274	294	2,231	733	2,964

Notes: 1. For a very small number of cases it was not possible to obtain the disrepair status of every element of the property. Where that element feeds into one of the disrepair categories the result is recorded as unobtainable.
2. Urgent disrepair concerns only external and common elements which are a mixture of critical and non-critical. Urgent disrepair to critical elements and extensive disrepair to critical elements have been calculated for the first time in 2019 and back updated for 2018 to allow a comparison.
See the technical notes for further information.

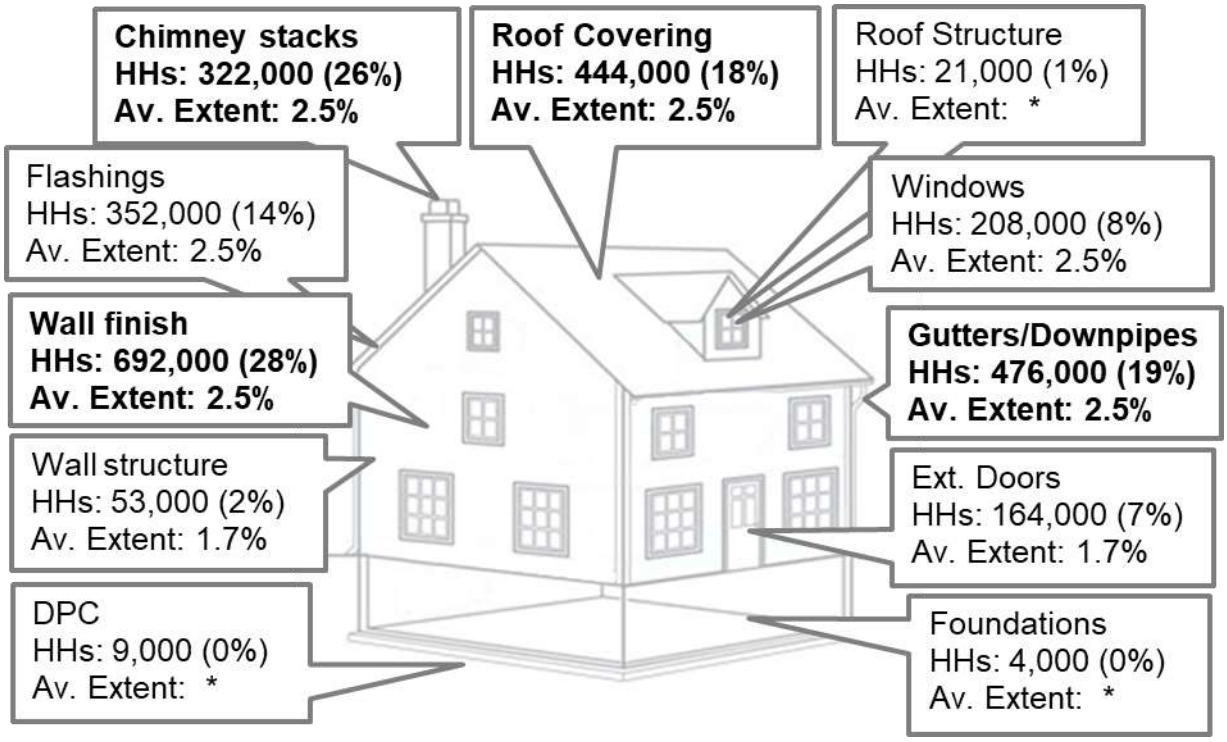
6.1.2.3 Type of Disrepair to Critical Elements

278. As shown in Figure 31 although some disrepair to critical elements is fairly common it tends to be at a relatively low level in each property, affecting on average (median) 2.5% of the relevant area. A full list of elements in this category is provided in section 7.8.7.1 along with details of how the extent of disrepair is recorded in the survey for each and how an average extent is calculated.

279. Wall finish, gutters / downpipes and roof coverings are often affected. Around 28% of dwellings had some disrepair to wall finish, 19% had some disrepair to gutters / downpipes and 18% had some disrepair to roof coverings; however, in all three cases the average (median) disrepair covered around 2.5% of the area. Where stone pointing, render or harling on walls is damaged, moisture can seep into the structure of the walls and cause further damage. Similarly slipped roof tiles or slates can allow water to access the roof structure or the tops of internal walls.

280. Around a quarter (26%) of dwellings with chimneys showed some signs of disrepair. Unchecked this can lead to water ingress and eventually falling masonry.

Figure 31: The Number of Households (HHs) Affected and Average (Median) Extent of Disrepair to External Critical Elements



** Av. Extent has been suppressed for some categories due to small sample sizes*

6.1.3 Damp and Condensation

281. The definitions of damp and condensation are provided in section 7.8.8.

282. Any condensation, rising or penetrating damp recorded in the SHCS can cover anything from a small damp patch or area of condensation on a single wall in one room (caused for example by ineffective ventilation whilst cooking) to prevalence throughout a dwelling, so does not indicate a serious housing quality issue in all cases.

283. The incidence of these defects in isolation and together is given in Table 53. Around 91% of all dwellings in 2019 were free from any form of condensation or damp. This rate has been stable in recent years but represents an overall improvement from 86% in 2012.

284. In 2019, 2.0% of the housing stock (around 49,000 dwellings) suffered from some degree of penetrating damp, which is similar to 2018 levels. The presence of penetrating damp has fluctuated between 2.0% and 3.7% across the past 8 years of the survey.

285. There were a very small number of properties with rising damp in the survey sample, suggesting that their share in the housing stock is less than 1%.

286. Condensation was observed in 7.7% of the surveyed stock (equivalent to around 192,000 dwellings) which is similar to recent years, although represents a reduction from 11.3% in 2012.

287. In 0.7% of dwellings (18,000) both condensation and some form of damp were recorded. This level has not changed significantly in the previous eight years.

Table 53: Presence of Damp and/or Condensation in 2012-2019

	2019		2018		2017		2012	
Defect	000s	%	000s	%	000s	%	000s	%
No Damp or Condensation	2,268	90.9%	2,209	89.2%	2,236	90.8%	2,056	86.2%
Condensation	192	7.7%	220	8.9%	185	7.5%	270	11.3%
Penetrating damp	49	2.0%	69	2.8%	58	2.3%	86	3.6%
Rising damp	10	0.4%	10	0.4%	6	0.2%	7	0.3%
Rising and / or penetrating damp	54	2.2%	73	3.0%	60	2.4%	90	3.8%
Condensation and any damp	18	0.7%	26	1.0%	19	0.8%	29	1.2%
Total	2,496		2,477		2,464		2,386	
Sample		*2,997*		*2,964*		*3,002*		*2,787*

6.2 Housing Quality Standards

Key Points

- 2% (or 40,000) of all dwellings fell below the Tolerable Standard in 2019, similar to 2018. Longer term this represents an improvement of 2 percentage points since 2012.
- The Scottish Housing Quality Standard (SHQS) failure rate in the social sector was 41%, not allowing for abeyances and exemptions, which is similar to 2018. This has fallen from 60% in 2010. Failures of the Energy Efficient criterion were the biggest driver of failures overall. In 2019, 31% of social sector properties did not meet the Energy Efficient criterion.
- SHCS surveyors may not always be able to identify the presence of cavity wall insulation. The Energy Efficient criterion failure rate in the social sector would be 14% if it is assumed that all social dwellings have insulated cavity walls where this is technically feasible. This in turn would lower the overall SHQS failure rate in the social sector to 28%.
- The failure rate in the private sector overall is similar to that seen in 2018 (44%, compared to 43%) and is also driven by failures of the Energy Efficient criterion. Nevertheless, whilst private owners and landlords are currently under no obligation to bring their properties up to this standard, long term improvement is being made in the private sector overall.
- The majority of dwellings falling below the SHQS failed on a single criterion; this accounted for more than 8 out of 10 failures in the social sector and overall.
- For 69% of social homes failing the SHQS this was due to falling short on just one of the 55 elements which make up the standard. Most frequently these were cavity wall insulation, pipe and tank insulation, full and efficient central heating, effective loft insulation, at least six kitchen sockets, and safe common front and rear doors.

288. Two quality standards are set by the Scottish Government and monitored through the Scottish House Condition Survey. These are:

- The **Tolerable Standard**. A "condemnatory" standard which means that it is not reasonable to expect people to continue to live in a house that falls below it. For more information on the Tolerable Standard see section 7.8.10.
- The **Scottish Housing Quality Standard (SHQS).** This was introduced in February 2004 and means social landlords must make sure their tenants' homes are in a good state of repair, energy efficient, healthy, safe and secure. A target was agreed that all social landlords must ensure that all their dwellings pass the SHQS by April 2015. Private owners and private landlords are currently under no obligation to bring their properties up to this standard. However SHCS collects the same data for all dwellings to allow comparison across the housing stock. Since 2012 this target has been incorporated in the Scottish Social Housing Charter and the performance of landlords has been monitored by the independent Scottish Housing Regulator (SHR). For more information on the SHQS see section 7.8.11.

6.2.1 Tolerable Standard

289. 2% of all dwellings (around 40,000) fell below the tolerable standard in 2019, similar to 2018. However there is a longer term trend of improvement and 2019 levels represent a drop of 2 percentage points since 2012.

290. The share of dwellings below tolerable standard in the private sectors was 2% and in the social sector was 1%, both similar to 2018. The proportion of owner occupied dwellings failing the tolerable standard has reduced from 4% in 2012 to 1% in 2019.

291. The rate for the PRS in 2019 was 3% and has remained broadly at the same level for the last eight years. While in the past, we have found that PRS dwellings were more likely to fall below tolerable standard than owner occupied dwellings or those in the social sector, this gap is no longer observed in the SHCS sample for 2016 onwards, and there remains no significant difference in levels of compliance.

292. The proportion of pre-1919 dwellings below tolerable standard was 4% in 2019, also similar to 2018 but 4 percentage points lower than in 2012. Very few recently built dwellings (post 1965) were below tolerable standard compared to pre-1919 dwellings, at less than 1% in 2019.

293. The tolerable standard consists of 12 criteria (listed in section 7.8.10), failure on one of which leads to a failure overall. Dwellings which failed the tolerable standard in 2019 most commonly did so because they were:

- not free from rising/penetrating damp (13,000 or 33% of BTS dwellings);
- not satisfactorily insulated (8,000 or 21% of BTS dwellings);
- had unsatisfactory provision for lighting, ventilation or heating (8,000 or 21% of BTS dwellings).

Table 54: Dwellings Below Tolerable Standard (BTS) by Tenure and Age Band, 2019 and 2012

		Below Tolerable Standard				% BTS (2012)
		%	000s	% of BTS Stock	*Sample*	
Whole Stock		2%	40	100%	*2,997*	4%
Tenure	Owner-occupied	1%	23	57%	*1,965*	4%
	Private-rented	3%	9	22%	*317*	4%
	Subtotal: Private	*2%*	*31*	*78%*	*2,282*	*4%*
	Social	1%	9	22%	*715*	3%
Age of Dwelling	Pre-1919	4%	21	53%	*546*	9%
	1919-1944	3%	7	17%	*310*	4%
	1945-1964	1%	7	17%	*638*	2%
	Post-1965	0%	5	12%	*1,503*	2%

6.2.2 Scottish Housing Quality Standard (SHQS)

294. The SHQS is made up of 55 different elements grouped into 5 higher-level criteria: Tolerable Standard (A), Serious Disrepair (B), Energy Efficiency (C), Modern Facilities and Services (D) and Healthy, Safe and Secure (E). In the SHCS 54 of the 55 individual elements are assessed by surveyors trained to collect detailed information on housing characteristics. Only one element is not assessed using SHCS data: no information is collected on external noise insulation[22]. The data collected is subsequently aggregated by Scottish Government analysts into higher level measures for each of the 5 criteria and the standard overall.

[22] Compliance with this element will be considered in social landlords' annual reporting to the Scottish Housing Regulator on properties meeting the SHQS.

295. A minor error was found in the SHQS energy efficient data for 2018 which has been addressed in this publication. This reduces the 2018 energy efficient failure rate by 0.4 percentage points and the overall failure rate by 0.4 percentage points. The energy efficiency criterion failure rate for 2018 is therefore similar to 2017 rather than a statistically significant increase as reported previously. For more information see section 7.7.

296. Table 55 shows the overall results for the Scottish housing stock, covering the period 2010 to 2019. In 2019, 43% of all dwellings failed to meet the SHQS, which is similar to recent years. However, it is down from 47% in 2014 and 61% in 2010. As in previous years, the highest failure rate was with respect to the Energy Efficient criterion (32%), followed by Healthy, Safe and Secure (12%) and Modern Facilities (7%). There were a small number of dwellings which did not meet the BTS criterion (2%) or the Serious Disrepair criterion (0.1%). There are no statistically significant changes between 2018 and 2019 on any of the criteria.

Table 55: Proportion of Dwellings Failing SHQS and Individual Criteria 2010-2019

	2019	2018	2017	2016	2015	2014	2010
SHQS*	42.9%	41.1%	40.3%	44.7%	45.4%	47.5%	61.0%
BTS	1.6%	2.0%	1.0%	1.6%	1.7%	2.0%	3.6%
Serious Disrepair	0.1%	0.1%	0.1%	*	0.1%	0.1%	0.8%
Energy Efficient*	31.8%	29.9%	29.7%	32.8%	33.7%	34.8%	49.2%
Modern Facilities	6.5%	6.0%	7.4%	8.6%	8.8%	11.1%	15.6%
Healthy, Safe and Secure	12.2%	12.6%	10.4%	12.4%	13.4%	13.8%	16.6%

Notes: 1. Figures for 2014-2019 are not fully comparable to previous years.
2. A minor error was found in the SHQS energy efficient data for 2018 which has been addressed in this publication.
For details see Technical Notes and Definitions.

6.2.2.1 Compliance with SHQS by Tenure, Dwelling Age and Location

297. Table 56 shows the number and proportion of properties failing the SHQS by selected characteristics.

298. The lowest failure rates are in the newest dwellings (post-1982, 17% fail) and in Housing Associations stock (32% fail). As previously shown (section 2.5.2), Housing Association dwellings are often newer than Local Authority stock and are built to a higher energy efficiency standard. The newest purpose-build social housing in Scotland is also likely to be designed to comply with SHQS.

299. The overall SHQS failure rate for social sector housing in 2019 stood at 41%, similar to 2018 (35%) and to the private sector at 44%. If it is assumed that all social dwellings have insulated cavity walls where this is technically feasible, the overall SHQS failure rate in the social sector would be 28% (see section 6.2.2.4). SHCS based measures do not make an allowance for abeyances and exemptions.

300. The overall similarity in the SHQS failure rate in the past year is reflected across the dwelling types, tenures and locations detailed in Table 56.

Table 56: Number and Proportion of Dwellings Failing SHQS, 2018 and 2019

	2019			2018		
	000s	% fail	*Sample*	000s	% fail	*Sample*
All Scotland	1,070	43%	*2,997*	1,017	41%	*2,964*
Tenure						
Owned outright	384	44%	*1,159*	367	43%	*1,091*
Mortgaged	265	40%	*806*	266	38%	*846*
LA	172	47%	*425*	167	41%	*459*
HA/co-op	86	32%	*290*	64	26%	*274*
PRS	163	52%	*317*	153	56%	*294*
Private	812	44%	*2,282*	786	43%	*2,231*
Social	258	41%	*715*	231	35%	*733*
Dwelling Age						
pre-1919	256	53%	*546*	251	53%	*521*
1919-1944	151	55%	*310*	143	51%	*327*
1945-1964	277	53%	*638*	260	49%	*654*
1965-1982	269	49%	*704*	253	48%	*654*
post-1982	117	17%	*799*	110	17%	*808*
Location						
Urban	860	42%	*2,280*	813	39%	*2,292*
Rural	209	49%	*717*	204	49%	*672*

Note: A minor error was found in the SHQS energy efficient data for 2018 which has been addressed in this publication. For details see Technical Notes and Definitions.

6.2.2.2 Individual SHQS Criteria

301. Table 57 shows the failure rates for each criterion of the SHQS for private and social sector housing since 2010. Whilst there has been a consistent trend of decreases between 2010 and 2017, since then SHQS failure rates have remained similar. The survey sample is not large enough to measure accurately year-on-year changes for each criterion and between 2018 and 2019 we see no significant changes in failure rates on any criterion by sector.

302. The SHCS estimates that 41% of social sector housing failed to meet the SHQS in 2019. This was predominantly due to the Energy Efficient criterion, where 31% of properties failed on this measure. 9% failed the Healthy, Safe and Secure criterion and 7% failed the Modern Facilities criterion. A small number (1%) failed the Below Tolerable Standard criterion.

Table 57: SHQS Criteria Failure Rates by Tenure, 2010-2019

		2019	2018	2017	2016	2015	2014	2010
All tenures	**SHQS Overall**	43%	41%	40%	45%	45%	47%	61%
	Below Tolerable Standard	2%	2%	1%	2%	2%	2%	4%
	Serious Disrepair	0%	0%	0%	*	0%	0%	1%
	Not Energy Efficient	32%	30%	30%	33%	34%	35%	49%
	Lacking Modern Facilities/Services	7%	6%	7%	9%	9%	11%	16%
	Not Healthy, Safe or Secure	12%	13%	10%	12%	13%	14%	17%
Private	**SHQS Overall**	44%	43%	41%	47%	47%	48%	61%
	Below Tolerable Standard	2%	2%	1%	2%	2%	2%	4%
	Serious Disrepair	0%	*	0%	*	0%	0%	1%
	Not Energy Efficient	32%	31%	31%	35%	36%	37%	51%
	Lacking Modern Facilities/Services	6%	7%	7%	9%	9%	11%	13%
	Not Healthy, Safe or Secure	13%	14%	11%	14%	14%	14%	17%
Social	**SHQS Overall**	41%	35%	37%	38%	39%	45%	60%
	Below Tolerable Standard	1%	2%	0%	1%	1%	1%	2%
	Serious Disrepair	-	*	-	-	-	*	*
	Not Energy Efficient	31%	26%	26%	26%	27%	30%	44%
	Lacking Modern Facilities/Services	7%	5%	7%	8%	8%	12%	22%
	Not Healthy, Safe or Secure	9%	9%	7%	9%	10%	14%	16%

Notes: 1. Figures for 2014-2019 are not fully comparable to previous years.
2. A minor error was found in the SHQS energy efficient data for 2018 which has been addressed in this publication.
For details see Technical Notes and Definitions.

6.2.2.3 Number of Criteria and Elements Failing

303. In the large majority of cases failure to meet the SHQS is due to a dwelling not passing one criterion or even a single element. As the standard incorporates 55 different elements, it is generally sufficient for a dwelling to fail on a single one of these in order to be considered not satisfying the higher level criterion requirement and the SHQS overall[23].

304. Table 58 and Table 59 present the distribution of dwellings for Scotland as a whole and social housing separately by number of criteria failed. The majority of failures in 2019 were due to a single criterion: 35% of dwellings in the whole stock and 34% of social sector dwellings failed the SHQS because of a single criterion.

[23] There is an exception to this principle with respect to 14 secondary building elements where failure on at least two is required for a building to be considered not meeting the standard overall. The full guidance is available at http://www.gov.scot/Topics/Built-Environment/Housing/16342/shqs

305. This constitutes respectively 81% (for all housing) and 83% (for social sector) of all dwellings falling below the SHQS. In 2010 the corresponding figure for the percentage of dwellings failing the SHQS which do so on just one criterion was 68% for both the social sector and the whole housing stock. Therefore over time, alongside the reduction in the overall failure rate, there has also been a reduction in the reasons why a dwelling does not meet the standard although this has been more stable in recent years.

Table 58 : Number and Proportion of Dwellings by Numbers of SHQS Criteria Failures, All Housing, 2010, 2016-2019

Number of Criteria Failures	2019		2018		2017		2016		2010	
	000s	Col %	000s	Col %	000s	Col %	000s	Col %	000s	Col %
None	1,426	57%	1,460	59%	1,470	60%	1,355	55%	920	39%
1	865	35%	806	33%	821	33%	867	35%	980	42%
2	178	7%	185	7%	143	6%	202	8%	352	15%
3+	26	1%	26	1%	29	1%	28	1%	106	4%
Total Dwellings	2,496	100%	2,477	100%	2,464	100%	2,452	100%	2,357	100%
Criteria Fails as % of All assessed	10%		10%		10%		11%		17%	
Sample size		*2,997*		*2,964*		*3,002*		*2,850*		*3,115*

Note: A minor error was found in the SHQS energy efficient data for 2018 which has been addressed in this publication. For details see Technical Notes and Definitions.

Table 59 : Number and Proportion of Dwellings by Numbers of SHQS Criteria Failures, Social Dwellings, 2010, 2016-2019

Number of Criteria Failures	2019		2018		2017		2016		2010	
	000s	Col %	000s	Col %	000s	Col %	000s	Col %	000s	Col %
None	376	59%	425	65%	392	63%	385	62%	259	40%
1	214	34%	193	29%	217	35%	202	33%	262	41%
2	40	6%	34	5%	*	*	35	6%	98	15%
3+	4	1%	4	1%	*	*	-	-	31	5%
Total Dwellings	634	100%	656	100%	626	100%	622	100%	650	100%
Criteria Fails as % of All Assessed	10%		8%		8%		9%		17%	
Sample size		*715*		*733*		*728*		*716*		*823*

Note: A minor error was found in the SHQS energy efficient data for 2018 which has been addressed in this publication. For details see Technical Notes and Definitions.

Table 60: Number and Proportion of Social Sector Dwellings by Number of SHQS Element Failures, and Most Common Single-Element Failures, 2019

Number of Element Failures	000s	% of All Dwellings	% of Failing Dwellings
None	376	59%	
1 element	177	28%	69%
… of which			
Cavity wall insulation (C31)	*81*		
Pipe and tank insulation (C33)	*29*		
Full and efficient central heating (D34)	*14*		
Effective loft insulation (C32)	*12*		
At least six kitchen sockets (D39)	*10*		
Safe Common Front and Rear Doors (E55)	*9*		
2 elements	55	9%	21%
3 or more elements	27	4%	10%
Subtotal: dwellings failing the SHQS	258		100%
All social sector dwellings	634	100%	
Sample size		*715*	

306. Table 60 shows the distribution of social sector dwellings by the number of elements failed. 69% of dwellings failing the SHQS did so because of a single element. The elements most likely to cause failure (as there are no other reasons to fail the SHQS in these dwellings) are cavity wall insulation, pipe and tank insulation, full and efficient central heating, effective loft insulation, at least six kitchen sockets, and safe common front and rear doors.

6.2.2.4 SHQS Compliance and Cavity Wall Insulation

307. The SHQS target is incorporated into the Scottish Social Housing Charter and the independent Scottish Housing Regulator (SHR) is responsible for monitoring social landlords' progress towards the target. The latest SHQS progress update published by the SHR reported that 94% of social homes met the SHQS in 2019/20.

308. There are some differences between the SHR and the SHCS survey in the way data for assessing the SHQS is collected and reported which make the headline compliance rates not immediately comparable. Abeyances and exemptions are not taken into account by the SHCS as it is not feasible to collect this kind of information in the survey.

309. One potential source of difference relates to the ability of the survey to detect the presence of cavity wall insulation (CWI) in all cases. According to feedback from social landlords, cavity wall insulation is installed as standard where there is a suitable cavity, and in most other cases external or internal insulation is considered (although this is not required for SHQS). This is because CWI is recognised throughout the sector as a relatively low cost measure with a high impact on energy efficiency.

310. However, the survey still records uninsulated cavity wall properties, and to allow for the possibility that SHCS surveyors may not always be able to identify the presence of CWI we provide an alternative estimate of SHQS compliance (Table 61). This estimate assumes that all social dwellings have insulated cavity walls where this is technically appropriate. Where it is not appropriate we assume an exemption. Therefore this alternative measure of compliance assumes that no dwelling fails the SHQS for lack of CWI. Although this is an unlikely scenario, it illustrates the maximum impact that undercounting CWI in the survey could potentially be making on the measurement of SHQS compliance in the social sector.

Table 61: Number and Proportion of Dwellings in the Social Sector Failing the Energy Efficient Criterion and SHQS Overall, With and Without the Cavity Wall Insulation (CWI) Element, 2018 and 2019

		Dwellings Failing the Energy Efficient Criterion		Dwellings Failing the SHQS Overall	
		000s	%	000s	%
2019	inc. CWI element	193	31%	258	41%
	exc. CWI element	90	14%	176	28%
	Difference	-103	-16 pts	-81	-13 pts
2018	inc. CWI element	170	26%	231	35%
	exc. CWI element	68	10%	147	22%
	Difference	-102	-16 pts	-84	-13 pts

311. In 2019, around one sixth of social dwellings (19% or 118,000 dwellings) are recorded as failing the CWI element of the SHQS. Excluding this element from the compliance requirement leads to a 16 percentage point reduction in the energy efficiency element failure rate and a 13 percentage point reduction in overall SHQS failure. This amounts to around 81,000 fewer social sector dwellings failing the SHQS and an overall SHQS failure rate of 28%.

6.3 Overcrowding and Under-Occupancy

Key Points

- In 2019 around 51,000 households lived in overcrowded accommodation (2%) under the bedroom standard, which is similar to 2018.
- Around 918,000 (37%) households had one bedroom in excess of the minimum requirement under the bedroom standard. A further 812,000 (33%) households had two or more bedrooms in excess.
- Social sector tenants are more likely to live in accommodation which is at the level meeting the minimum requirements of the bedroom standard (53% compared to 20% in the private sector). Social sector tenants are also slightly more likely (3%) to live in accommodation which is overcrowded according to the bedroom standard than those households living in the private sector (2%).

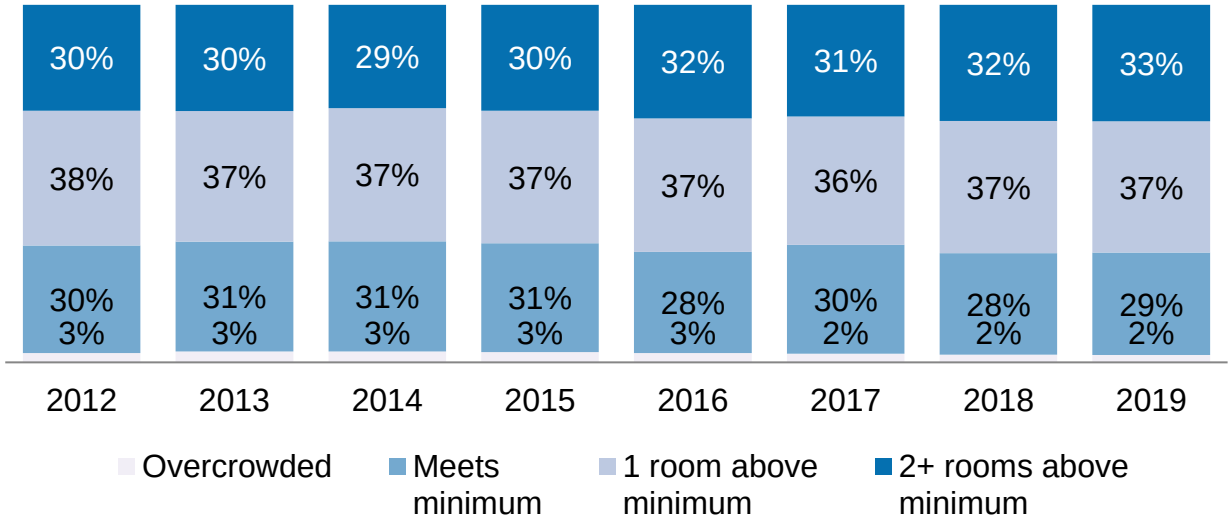
312. This section examines some key measures of whether households are living in overcrowded or under-occupied conditions. This is determined on the basis of the bedroom standard as defined in the Housing (Overcrowding) Bill 2003 taking into account the number of bedrooms available in the dwelling and the type of household that occupies it.

313. Minimum requirements for bedrooms under the bedroom standard should not be confused with criteria for the removal of the spare room subsidy. More information on the bedroom standard and the differences between the two is included in section 7.8.9.

314. Figure 32 and Table 62 show how headline occupancy measures have changed over time. There was no significant change in these headline measures between 2018 and 2019. In both years, the national rate of households with at least one bedroom above the minimum standard was 69%. The rate of overcrowding has remained within 2-3% since 2012 and is currently at 2% in 2019. However, there has been a small increase in the rate of dwellings with 3 or more bedrooms above the minimum from 8% in 2012 to 11% in 2019.

315. Subsequent sections examine in more detail differences across household and dwelling characteristics for 2019 and the preceding year.

Figure 32: Proportion of Dwellings which are Overcrowded, Meet the Minimum Standard, Exceed it by 1 Bedroom or Exceed by 2 or More Bedrooms, 2012-2019



Note: The SHS collects data on gender and not sex. Therefore the number of bedrooms required are allocated based on self-reported gender. In addition, from 2018 onwards the question on gender was non-binary and included two additional responses: 'Identified in another way' and 'Refused'. Please see Annex 2 of the Scottish Household Survey Annual Report 2018 for further details.

Table 62: Dwellings which are Below The Standard, Meet The Minimum Requirement, or Exceed it by 1, 2 or + Bedrooms, 2012, 2018, 2019

	2019		2018		2012	
Bedroom Standard	**000s**	**%**	**000s**	**%**	**000s**	**%**
Below Standard	51	2%	53	2%	62	3%
Compliance: minimum requirements	714	29%	703	28%	718	30%
Above Standard	1,730	69%	1,721	69%	1,607	67%
1 bedroom above minimum	918	37%	918	37%	900	38%
2+ bedrooms above minimum	812	33%	804	32%	706	30%
2 bedrooms above minimum	549	22%	573	23%	514	22%
3 or more bedrooms above minimum	263	11%	230	9%	192	8%
Total	2,496	100%	2,477	100%	2,386	100%
Sample Size		2,997		2,964		2,787

6.3.1 Overcrowding

316. A dwelling is considered overcrowded if there are insufficient bedrooms to meet the occupants' requirements under the bedroom standard definition (see section 7.8.9).

Table 63: Overcrowding by Tenure and Housing Type, Dwelling Age Band, Income Band and Location, and Weekly Household Income, 2018 and 2019

	Overcrowded under Bedroom Standard					
	2019			2018		
	000s	%	*Sample*	000s	%	*Sample*
Tenure						
Owned	7	1%	*1,159*	2	0%	*1091*
Mortgaged	10	2%	*806*	7	1%	*846*
LA	8	2%	*425*	14	3%	*459*
HA	13	5%	*290*	14	6%	*274*
PRS	13	4%	*317*	15	6%	*294*
Private	31	2%	*2,282*	25	1%	*2,231*
Social	21	3%	*715*	28	4%	*733*
Age of dwelling						
pre-1919	*	*	*546*	10	2%	*521*
1919-1944	*	*	*310*	8	3%	*327*
1945-1964	16	3%	*638*	13	3%	*654*
1965-1982	13	2%	*704*	9	2%	*654*
post-1982	11	2%	*799*	13	2%	*808*
Dwelling Type						
Detached	*	*	*852*	4	1%	*807*
Semi-detached	10	2%	*685*	4	1%	*659*
Terraced	8	2%	*589*	13	2%	*633*
Tenement	24	4%	*488*	22	4%	*514*
Other flats	*	*	*383*	10	3%	*351*
Weekly Household Income						
< £200	5	2%	*272*	3	1%	*281*
£200-300	7	2%	*448*	13	3%	*480*
£300-400	9	2%	*491*	8	2%	*464*
£400-500	7	2%	*358*	7	2%	*344*
£500-700	15	3%	*530*	8	2%	*506*
£700+	8	1%	*851*	12	2%	*830*
Location						
urban	48	2%	*2,280*	50	2%	*2,292*
rural	4	1%	*717*	3	1%	*672*
Scotland	51	2%	*2,997*	53	2%	*2,964*

317. Around 2%, or 51,000 households, lived in overcrowded accommodation in 2019 (Table 63). Social sector dwellings (3%) were more likely to be overcrowded than private sector dwellings (2%). Households who own their properties outright or live in rural areas had below average national overcrowding rates.

6.3.2 Under-Occupancy

318. In 2019 around 918,000 (37%) had one additional bedroom above the minimum under the bedroom standard **(**Table 64). 812,000 (33%) households had two or more bedrooms in excess of the minimum standard.

319. Social and private rented sector tenants are more likely to live in accommodation which is at the level meeting the minimum requirements of the bedroom standard (Table 65; 53% of the social sector and 43% in the PRS, compared to 10% for those who own outright and 23% for those with a mortgage). In contrast, households in the social housing and private rented sectors are less likely to have two or more bedrooms in excess of the minimum requirements: 10% (social) and 13% (PRS) have two or more additional rooms, compared to 55% of those who own out right and 34% of those with a mortgage. The proportion of households with one bedroom in excess of minimum requirements is similar across the tenures (38% and 34% for private and social sectors respectively).

320. Higher income households (£700+ per week) are more likely to live in dwellings with two or more additional bedrooms (43%) than the national average.

321. Under-occupied dwellings are least common amongst dwellings built between 1919-1944 and 1945-1964, where 28% and 27% have two or more bedrooms in excess of the standard respectively, compared to post-1982 where the rate is 37%. Similarly, detached houses have the highest rates of under-occupancy compared to other building types: 69% with two or more additional bedrooms. Tenements (6%) and other flats (11%) have the lowest rates with two or more additional bedrooms but are more likely to meet the minimum standard (52% and 41% respectively).

322. Under-occupation is more common in rural areas. 46% of rural dwellings have two or more bedrooms in excess of the minimum requirements under the bedroom standard, compared to 30% for urban properties. Conversely urban dwellings are more likely to meet the minimum standard (31%) than rural dwellings (19%).

Table 64: Above Minimum Standard, by Tenure, Dwelling Age, Type and Location, and Weekly Household Income, 2018 and 2019

	2019					2018				
	2+ additional		1 additional		*Sample*	2+ additional		1 additional		*Sample*
	000s	%	000s	%		000s	%	000s	%	
Tenure										
Owned	482	55%	302	34%	*1159*	446	53%	306	36%	*1091*
Mortgaged	228	34%	273	41%	*806*	267	38%	289	41%	*846*
LA	44	12%	125	34%	*425*	39	10%	141	35%	*459*
HA/co-op	19	7%	91	34%	*290*	19	8%	79	32%	*274*
PRS	39	13%	127	41%	*317*	32	12%	103	38%	*294*
Private	749	40%	702	38%	*2,282*	745	41%	698	38%	*2,231*
Social	63	10%	216	34%	*715*	59	9%	220	33%	*733*
Age of dwelling										
pre-1919	162	34%	164	34%	*546*	142	30%	166	35%	*521*
1919-1944	76	28%	124	45%	*310*	79	28%	124	44%	*327*
1945-1964	142	27%	211	41%	*638*	143	27%	217	41%	*654*
1965-1982	180	33%	184	34%	*704*	183	35%	185	35%	*654*
post-1982	252	37%	235	35%	*799*	257	39%	226	34%	*808*
Dwelling Type										
Detached	395	69%	140	24%	*852*	391	71%	122	22%	*807*
Semi	183	37%	201	41%	*685*	175	35%	223	44%	*659*
Terraced	164	31%	211	40%	*589*	160	30%	210	39%	*633*
Tenement	36	6%	225	38%	*488*	36	6%	222	39%	*514*
Other flats	35	11%	141	45%	*383*	42	13%	140	45%	*351*
Weekly Household Income										
< £200	60	27%	81	35%	*272*	58	23%	103	41%	*281*
£200-300	87	23%	145	38%	*448*	100	24%	152	36%	*480*
£300-400	106	26%	155	38%	*491*	106	27%	134	34%	*464*
£400-500	89	30%	113	38%	*358*	80	27%	124	42%	*344*
£500-700	159	35%	161	36%	*530*	142	34%	150	37%	*506*
£700+	294	43%	254	37%	*851*	308	47%	231	35%	*830*
Urban-rural indicator										
urban	616	30%	774	37%	*2,280*	606	29%	771	37%	*2,292*
rural	196	46%	143	34%	*717*	197	48%	147	35%	*672*
Scotland	812	33%	918	37%	*2,997*	804	32%	918	37%	*2,964*

Table 65: Households Meeting the Minimum Bedroom Standard, by Tenure, Dwelling Age, Type and Location, and Weekly Household Income 2018 and 2019

	2019			2018		
	000s	%	*Sample*	000s	%	*Sample*
Tenure						
Owned	91	10%	*1,159*	92	11%	*1,091*
Mortgaged	156	23%	*806*	138	20%	*846*
LA	190	52%	*425*	213	52%	*459*
HA	144	54%	*290*	136	55%	*274*
PRS	133	43%	*317*	123	45%	*294*
Private	380	20%	*2,282*	353	19%	*2,231*
Social	334	53%	*715*	350	53%	*733*
Age of dwelling						
pre-1919	144	30%	*546*	153	32%	*521*
1919-1944	71	26%	*310*	70	25%	*327*
1945-1964	149	29%	*638*	157	30%	*654*
1965-1982	172	31%	*704*	152	29%	*654*
post-1982	178	26%	*799*	171	26%	*808*
Dwelling Type						
Detached	40	7%	*852*	35	6%	*807*
Semi-detached	101	20%	*685*	102	20%	*659*
Terraced	142	27%	*589*	149	28%	*633*
Tenement	302	52%	*488*	296	51%	*514*
Other flats	130	41%	*383*	121	39%	*351*
Weekly Household Income						
< £200	81	36%	*272*	86	34%	*281*
£200-300	144	38%	*448*	153	37%	*480*
£300-400	133	33%	*491*	143	36%	*464*
£400-500	92	31%	*358*	85	29%	*344*
£500-700	116	26%	*530*	111	27%	*506*
£700+	129	19%	*851*	109	16%	*830*
Location						
urban	632	31%	*2,280*	636	31%	*2,292*
rural	82	19%	*717*	67	16%	*672*
Scotland	714	29%	*2,997*	703	28%	*2,964*

7 Technical Notes and Definitions

7.1 Survey Estimation

323. From 2012 onwards, the SHCS is a module of the Scottish Household Survey (SHS). In general, around one third of respondents to the SHS are invited to participate in a follow-up inspection by SHCS building surveyors. For 2019, this was increased to almost half of respondents to ensure that the required number of households for the physical survey sample was achieved.

7.1.1 Sample Sizes and Gross Dwelling Numbers

324. In Table 66 we provide the sample sizes in the social interview and physical dwelling inspection follow-up for all years of the annual SHCS to 2019.

Table 66: Achieved Samples for SHCS Streams of the Scottish Household Survey and Base Number of Occupied Dwellings by Survey Year, 2003/4-2019

Survey Year	Social Interview	Physical Survey	Households (000s)
2003/4	3,870	3,090	2,269
2004/5	3,783	3,093	2,301
2005/6	3,679	3,147	2,315
2007	3,867	3,033	2,314
2008	3,763	3,015	2,331
2009	4,153	3,346	2,344
2010	3,853	3,115	2,357
2011	3,949	3,219	2,368
2012	3,813	2,787	2,386
2013	3,780	2,725	2,402
2014	3,787	2,682	2,420
2015	4,083	2,754	2,434
2016	4,220	2,850	2,452
2017	5,049	3,002	2,464
2018	4,843	2,964	2,477
2019	4,843	2,997	2,496

325. Table 66 also shows the total number of households in Scotland for each survey year which provides the basis for grossing up the estimates of households and dwellings in this report. These figures are produced annually by the National Records of Scotland as part of their inter-censal household estimates publication.

326. The SHCS is a sample survey. All survey figures are estimates of the true prevalence within the population and will contain some error associated with sampling variability. The likely size of such variability can be identified, by taking account of the size and design of the sample, as described in sections 7.1.2 to 7.1.5.

327. In addition to sampling variability, there are other sources of uncertainty, such as those arising from incomplete responses or failure to secure participation in the survey from each sampled household. Where non-response is not random, i.e. some types of household are less likely to participate than others, bias is introduced into the survey data. Such errors have not been quantified in this report.

328. In general, the smaller the sample size, the greater the likelihood the estimate could be misleading, so more care must be taken when using smaller subsets of the survey sample for analysis. In this report estimates representing 2 or fewer cases, or where the base sample is below 30 have been suppressed.

329. Different types of estimates are subject to different levels of uncertainty associated with sampling and design. For example, estimates of change (i.e. figures relating to comparisons across survey years) are generally subject to greater sampling error than point-in-time estimates (i.e. figures relating to one survey year only) and such errors would be understated by figures in Table 67. There is more uncertainty associated with complex measures, such as the fuel poverty rate and this is not quantified in this report or reflected by stated confidence intervals in Table 67.

7.1.2 Confidence Intervals

330. By convention, a 95% confidence interval is used to quantify the variability of a sample estimate, under which there is a 1 in 20 chance that the true value will fall outside the given confidence interval.

331. Table 67 shows the 95% confidence limits for estimates of proportions based on sub-samples of various sizes before design effects are taken into account.

Table 67: Approximate 95% Confidence Limits for Estimates Based on SHCS Sub-Samples of Various Sizes (Excluding Design Effects)

Sub-sample size (corresponding to 100%)	Estimate (lookup to nearest multiple of 5%)											
	1% or 99%	2% or 98%	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
	percentage points (+ / -)											
100	2.0	2.7	4.3	5.9	7.0	7.8	8.5	9.0	9.3	9.6	9.8	9.8
150	1.6	2.2	3.5	4.8	5.7	6.4	6.9	7.3	7.6	7.8	8.0	8.0
200	1.4	1.9	3.0	4.2	4.9	5.5	6.0	6.4	6.6	6.8	6.9	6.9
250	1.2	1.7	2.7	3.7	4.4	5.0	5.4	5.7	5.9	6.1	6.2	6.2
300	1.1	1.6	2.5	3.4	4.0	4.5	4.9	5.2	5.4	5.5	5.6	5.7
350	1.0	1.5	2.3	3.1	3.7	4.2	4.5	4.8	5.0	5.1	5.2	5.2
400	1.0	1.4	2.1	2.9	3.5	3.9	4.2	4.5	4.7	4.8	4.9	4.9
450	0.9	1.3	2.0	2.8	3.3	3.7	4.0	4.2	4.4	4.5	4.6	4.6
500	0.9	1.2	1.9	2.6	3.1	3.5	3.8	4.0	4.2	4.3	4.4	4.4
600	0.8	1.1	1.7	2.4	2.9	3.2	3.5	3.7	3.8	3.9	4.0	4.0
700	0.7	1.0	1.6	2.2	2.6	3.0	3.2	3.4	3.5	3.6	3.7	3.7
800	0.7	1.0	1.5	2.1	2.5	2.8	3.0	3.2	3.3	3.4	3.4	3.5
900	0.7	0.9	1.4	2.0	2.3	2.6	2.8	3.0	3.1	3.2	3.3	3.3
1,000	0.6	0.9	1.4	1.9	2.2	2.5	2.7	2.8	3.0	3.0	3.1	3.1
1,100	0.6	0.8	1.3	1.8	2.1	2.4	2.6	2.7	2.8	2.9	2.9	3.0
1,200	0.6	0.8	1.2	1.7	2.0	2.3	2.5	2.6	2.7	2.8	2.8	2.8
1,300	0.5	0.8	1.2	1.6	1.9	2.2	2.4	2.5	2.6	2.7	2.7	2.7
1,400	0.5	0.7	1.1	1.6	1.9	2.1	2.3	2.4	2.5	2.6	2.6	2.6
1,500	0.5	0.7	1.1	1.5	1.8	2.0	2.2	2.3	2.4	2.5	2.5	2.5
1,600	0.5	0.7	1.1	1.5	1.7	2.0	2.1	2.2	2.3	2.4	2.4	2.5
1,700	0.5	0.7	1.0	1.4	1.7	1.9	2.1	2.2	2.3	2.3	2.4	2.4
1,800	0.5	0.6	1.0	1.4	1.6	1.8	2.0	2.1	2.2	2.3	2.3	2.3
1,900	0.4	0.6	1.0	1.3	1.6	1.8	1.9	2.1	2.1	2.2	2.2	2.2
2,000	0.4	0.6	1.0	1.3	1.6	1.8	1.9	2.0	2.1	2.1	2.2	2.2
2,200	0.4	0.6	0.9	1.3	1.5	1.7	1.8	1.9	2.0	2.0	2.1	2.1
2,400	0.4	0.6	0.9	1.2	1.4	1.6	1.7	1.8	1.9	2.0	2.0	2.0
2,600	0.4	0.5	0.8	1.2	1.4	1.5	1.7	1.8	1.8	1.9	1.9	1.9
2,800	0.4	0.5	0.8	1.1	1.3	1.5	1.6	1.7	1.8	1.8	1.8	1.9
3,000	0.4	0.5	0.8	1.1	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.8
3,200	0.3	0.5	0.8	1.0	1.2	1.4	1.5	1.6	1.7	1.7	1.7	1.7
3,400	0.3	0.5	0.7	1.0	1.2	1.3	1.5	1.5	1.6	1.6	1.7	1.7
3,600	0.3	0.5	0.7	1.0	1.2	1.3	1.4	1.5	1.6	1.6	1.6	1.6
3,800	0.3	0.4	0.7	1.0	1.1	1.3	1.4	1.5	1.5	1.6	1.6	1.6
4,000	0.3	0.4	0.7	0.9	1.1	1.2	1.3	1.4	1.5	1.5	1.5	1.5

7.1.3 Design Effects

332. The design effect is the ratio between the variance (average deviation of a set of data points from their mean value) of a variable under the sampling method used (actual) and the variance computed under the assumption of simple random sampling (standard). In short, a design effect of 2 would mean doubling the size of the sample used (actual) in order to obtain the same level of precision as with a simple random sample; a design effect of 0.5 implies the reverse. Design effect adjustments are necessary where standard errors are affected by the design and complexity of the survey.

333. Generally speaking, disproportionate stratification and sampling with non-equal probabilities tends to increase standard errors, giving a design effect greater than 1. However, this can be controlled by deliberately over-sampling in stratum where the item of interest is either very rare or variable. The impact of non-response weighting on standard errors tends to be, although with exceptions, comparatively limited. The sampling design of the SHCS meets the criteria above in that disproportionate stratification is applied across the 32 Local Authority areas with over-sampling of remote rural areas - for example in Shetland and Orkney. As a result, one would expect the design effect to be above 1 although only modestly so.

334. Table 68 shows the design effects for all the SHCS surveys since 2003/4. When using a mixture of the physical and social survey data, the physical survey design effect must be used. The design effects for the 2019 SHCS are 1.12 for the physical and 1.08 for the social surveys.

335. When producing estimates at Local Authority level, no design effect adjustment of standard errors is necessary because simple (actually equal interval) random sampling was carried out within each Local Authority.

Table 68: Design Effects for the Annual SHCS, 2003/4 to 2019

	Design Effect	
Survey Year	Physical Weight	Social Weight
2003/04	1.14	1.13
2004/05	1.18	1.17
2005/06	1.14	1.14
2007	1.13	1.11
2008	1.11	1.11
2009	1.09	1.08
2010	1.11	1.1
2011	1.12	1.11
2012	1.09	1.08
2013	1.09	1.08
2014	1.09	1.08
2015	1.10	1.08
2016	1.10	1.08
2017	1.10	1.08
2018	1.11	1.08
2019	1.12	1.08

7.1.4 Example: Accounting for Sampling Variation

336. Both confidence intervals and the design effect must be accounted for when quoting confidence levels on a statistic. For example we may wish to find the confidence interval for the proportion of pre-1919 detached houses in Table 1.

337. The stated proportion is 5%. The sub-sample size for the group (the sample size of 100% of the group) is also provided in the table, which in this case is the full survey sample: n=2,997. Reading from Table 67 in the row labelled 3,000 (the closest value to our n value) in the column for 5% we find the confidence interval for this estimate is 0.8 percentage points.

338. To account for the design effect, we must multiply this value by the physical design effect value from Table 68 since this statistic relates to the physical properties of the dwelling. So the true confidence interval is 0.8 x 1.12 = 0.896 ≈ 0.9 percentage points. We can therefore be 95% confident that the true proportion of pre-1919 detached houses is between 4.1% and 5.9%.

7.1.5 Statistical Significance

339. Because the survey's estimates may be affected by sampling errors, apparent differences may not reflect real differences in the population. A difference is significant if it is so large that a difference of that size is unlikely to have occurred purely by chance.

340. Comparisons in this publication are tested at the 5 per cent level as described in section 7.1.2. Testing significance involves comparing the difference between two statistics (for example, the per cent of households rated as EPC band C or better in 2019 compared to 2018 or for the social sector compared to the private sector) with the 95 per cent confidence limits for each of the two estimates taken into account.

341. Our approach to testing statistical significance follows that described in the Scottish Household Survey 2019 supporting document.

7.1.6 Table Conventions

342. The following conventions are used in tables:

0 indicates value is rounded to 0.

\- indicates no sample cases in this category

* indicates base sample too small to report (below 30 cases) or estimate representing 2 or fewer sampled households

343. Because of rounding, figures in tables and charts may not always add exactly.

7.2 Missing Tenure Information

344. Because of a routing error tenure information is not available for a small number of cases in the 2012 and 2013 surveys (46 in 2012, 42 in 2013). This was rectified for the 2014 fieldwork and the full sample has been used when reporting on tenure for subsequent years. This introduces some discontinuities in comparing statistics for the social (or the private) sector between 2014 and 2015, on the one hand, and previous years, on the other. For further details please refer to the respective earlier Key Findings reports. Tables in this report are clear whether data for 2011 and earlier are presented including or excluding rent free cases.

7.3 Energy Models

345. Two different models (Table 69) are used to produce the energy efficiency outputs in this report. They are based on the same core methodology but have some different assumptions and calculations affecting the output values.

346. Energy related statistics presented in this report are based on RdSAP 9.92 and additionally 9.93 for SAP derived variables from 2018 onwards, as version 9.93 was released in November 2017.

Table 69: Summary of Domestic Energy Models used on SHCS Data

Model	SAP	BREDEM 2012
Version	SAP 2009[24] SAP 2012[25] and RdSAP 9.92 for 2014 onwards. Additionally, RdSAP 9.93 from 2018 onwards.	Version 1.0 for data up to 2013 Version 1.1 for data from 2014 onwards
Outputs	Energy Efficiency Rating Environmental Impact Rating	• Fuel poverty energy use • Carbon emissions • Fuel poverty running costs
Fuel Prices	SAP standard	Based on a range of sources[26]
Occupancy	Number of occupants derived based on total floor area of the dwelling	Actual number of occupants in the dwelling
Heating regime	21°C in the main living area and 18°C elsewhere; 9 hours per weekday and 16 hours at the weekend	As SAP, except for vulnerable households for fuel poverty related statistics, where: 23°C in the main living area and 20°C elsewhere; 16 hours per day
Climate	East Pennines	Based on geographical location
Energy end-use included	• space heating • water heating • fixed lighting • gains from renewable energy technologies.	As SAP but also energy used for: • cooking • running appliances

347. Carbon emissions are calculated on the basis of the standard heating regime, applying carbon intensity values to each fuel type used. Emissions factors for the BREDEM 2012 model come from SAP 2012 and are provided in Table 70.

[24] BRE, "The Government's Standard Assessment Procedure for Energy Rating of Dwellings"

[25] BRE, "The Government's Standard Assessment Procedure for Energy Rating of Dwellings, 2012 Edition", Table 12

[26] For more details see SHCS Methodology Notes 2014

Table 70: Carbon Intensity of Common Heating Fuels, SAP 2012

Fuel	kg CO2 per kWh
Mains gas	0.216
LPG	0.241
Oil	0.298
Coal	0.394
Anthracite	0.394
Smokeless fuel	0.433
Wood	
- logs	0.019
- pellets	0.039
- chips	0.016
Electricity	0.519

348. From 2018 onwards, SAP based energy variables under both RdSAP v9.92 and v9.93 are reported. Compared to v9.92, U-values for solid, insulated stone and uninsulated cavity walls have improved, whereas they have declined for insulated cavity walls. As a result, the mean SAP rating under v9.93 is 0.16 SAP points less than under v9.92 in 2019 and 0.17 points less in 2018.

349. In 2019, two further small improvements were introduced. Firstly, more detailed information on combi boilers have been included to improve the accuracy of calculations surrounding hot water losses. The mean BREDEM energy consumption is expected to increase by around 33 kWh per year.

350. Secondly, a household's lights and appliances are now assigned as using an off-peak tariff if an off-peak electricity meter is present, even if there is no form of electric heating in the dwelling. Previously, where a household did not have a form of electric heating, the lights and appliances were assumed to use standard electricity. This change does not affect the energy consumption of a dwelling, only the fuel prices applied to the energy associated with lighting and appliance use. Figure 18 shows that in 2019, on average, around 10% of the modelled household energy demand was from lighting and appliance usage.

7.4 Fuel prices for pre-payment meters

351. From 2016, the SHCS has collected information about the presence of pre-payment meters for energy supply which allows us to assign the appropriate fuel price. In 2019 prepayment electricity and gas prices as well as non-prepayment electricity prices have increased slightly compared to 2018.

7.5 Fuel Poverty Income

352. For the 2017 SHCS, an updated set of questions collecting council tax information were incorporated and accounted for in fuel poverty analysis. Previously respondents were only asked to provide what they paid in council tax whether or not they received any deductions or reductions. The survey now distinguishes between reported council tax after any deductions or reductions, and full council tax. This reduces the risk of double counting Council Tax Reduction in household income in the former case.

353. As described in section 4.7, income for fuel poverty analysis is total household income (a sum of the highest income householder and their spouse/partner's income), net of council tax and housing costs. For income poverty analysis, this income is equivalised, and compared against an adjusted FRS poverty threshold for a couple with no children, to account for the fact the latest published FRS data relate to 2018/19. 2018 income poverty results use the published FRS poverty threshold, rather than the adjusted threshold.

7.6 Boilers

354. Testing compliance of boilers with current Scottish Building Standards for domestic properties is carried out by comparing the boiler efficiency to minimum requirements. Data on the efficiency of households' heating systems was first produced by BRE for the 2012 SHCS. However, there was a change to the methodology for the 2014 and 2015 SHCS which made an adjustment to the modelling to allow for the assumption that a poorly controlled system is, in effect, less efficient.

355. In the 2016 SHCS report, the full boiler efficiency dataset was revised to ensure it was on a consistent basis across years and represents the efficiency of the heating system before any adjustments for lack of controls. Efficiencies are taken directly from the Product Characteristics Database whenever possible and from the SAP default efficiencies for that system otherwise. This is therefore more representative of the actual boiler efficiency.

356. Furthermore, the thresholds used to test compliance for oil condensing boilers were also updated in 2016 to reflect current minimum standards. The full time series presented from 2017 onwards continues to reflect these changes.

7.7 Scottish Housing Quality Standard

357. A minor error was identified in the method used to compile the data for the Energy Efficiency criterion in 2018. This also affected the overall SHQS failure rate for the year. Both have been revised in this 2019 publication. The correction reduces the 2018 energy efficient failure rate by 0.4 percentage points and the overall failure rate by 0.4 percentage points. The energy efficiency criterion failure rate for 2018 is therefore similar to 2017 rather than a statistically significant increase as reported previously. For the social sector, the correction reduces the 2018 energy efficient failure rate and the overall failure rate by 0.3 percentage points. For the private sector, the reduction for each is 0.5 percentage points.

358. Figures on SHQS failure rates for 2014 onwards are not entirely comparable to previous years published in this report. Because of missing tenure information, a small number of dwellings (see section 7.2 for more detail) are excluded from tenure breakdowns in figures relating to years prior to 2014. In addition, small changes to data processing relating to failure thresholds for the energy efficiency criterion[27], as well as other minor data processing corrections were introduced in 2014. Although the effect of these corrections on the overall failure rates in the social sector was neutral, some discontinuities with previous years cannot be ruled out, especially when considering more detailed breakdowns.

7.8 Definitions of Categories in the Key Findings Report

7.8.1 Dwelling Types

359. The SHCS uses the following definitions of dwelling types:

- **Detached house**: a house that is free standing with no party walls;
- **Semi-detached house**: a house that is only attached to one other dwelling, commercial premise etc. The two properties taken together should be detached from any other properties
- **Terraced house**: a house forming part of a row of three or more dwellings, commercial premises etc.

[27] This relates to the SAP and NHER thresholds for element 35 and the thickness of hot water tank insulation for element 33.

- **Tenement flat**: a dwelling within a common block of two or more floors (commonly up to five storeys but may be higher in certain circumstances) where some or all of the flats have a shared or common vertical access. The selected dwelling need not share the access, but may be situated within the block with shared/common access (own door flat)
- **4-in-a-block**: each flat in a block has its own independent access. Flats on the upper level have an internal or external stair
- **Tower/slab**: flats in a high rise (ten or more storeys) or flats where the common circulation is predominantly horizontal (maisonette, balcony or gallery access)
- **Flat from a conversion**: flats resulting from the conversion of a house only. A flat converted from a non-residential building (e.g. a warehouse) is classified according to the above flat types.

7.8.2 Household Types

360. This report uses the following classification of household types:

- **Families**: Households which contain at least one child aged under 16. Resident adults may be of any age.
- **Older households**: Small households made up of one or two residents, at least one of which is aged 65 or older.
- **Other households**. These are all other households with adult residents (of any age) and no children.

This classification is derived from the more detailed grouping used in the Scottish Household Survey as set out in Table 71.

Table 71: Household Types Classification Used in the SHCS and the SHS Reports

SHCS	SHS
Families	A **single parent** household – contains one adult of any age and one or more children. A **small family** household – contains two adults of any age and one or two children. A **large family** household – contains two adults of any age and three or more children, or three or more adults of any age and one or more children.
Older households	A **single older** household - contains one adult of pensionable age and no children. An **older smaller** household – contains one adult aged 16-64 and one of pensionable age and no children, or two adults of pensionable age and no children.
Other households	A **single adult** household – contains one adult aged 16-64 and no children. A **small adult** household – contains two adults aged 16-64 and no children. A **large adult** household – contains three or more adults and no children

361. The pensionable age threshold used for the SHCS Key Findings reports from 2015 onwards is 65 years for both men and women. Previous publications used 65 for men and 60 for women. Therefore the categories 'Older households' and 'Other households' used from 2015 are not fully comparable with previous years.

7.8.3 Urban Rural Classifications

362. The urban/rural classification in this report is the Scottish Government 2 fold and 6 fold Urban Rural Classification. Dwellings in settlements with over 3,000 people are considered urban by this definition. The Scottish Government published the 2016 Urban Rural Classification in 2017. However, to remain consistent with the classification underpinning survey weight derivations, the 2013/14 Urban Rural Classification (2011 datazone edition) is used for reporting 2016 to 2019 data. Prior to 2016, 2001 datazones are used.

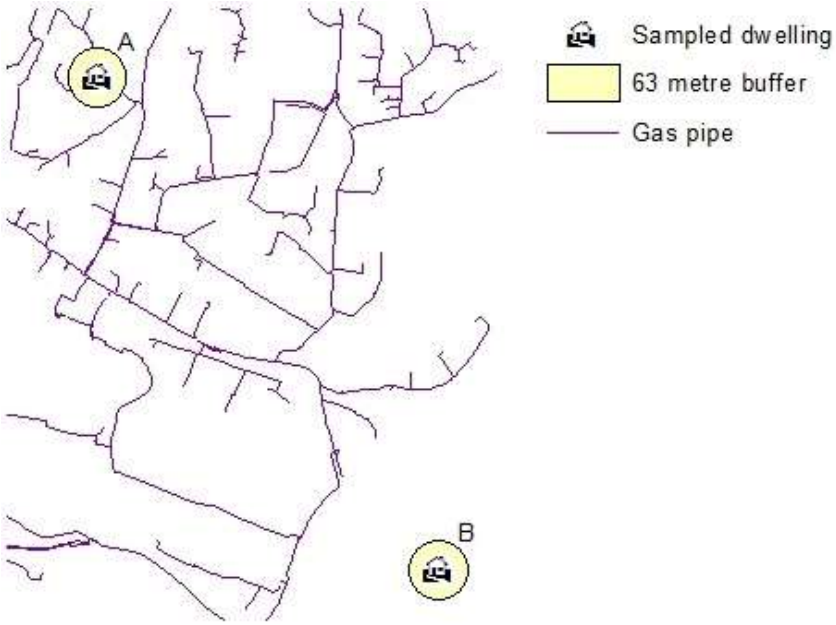
7.8.4 Gas Grid Coverage Derivation

363. Determining whether a dwelling is within the coverage of the gas grid is based on its proximity to gas distribution pipes. The current methodology for deriving gas grid coverage was first used for the 2013 Key Findings Report. A dwelling is considered to be “on the gas grid” if it is within 63m of a low/ medium/ intermediate pressure pipe, the usual maximum distance for a standard domestic connection.

364. Figure 33 shows how this is derived using GIS mapping. From the dwelling location information of surveyed properties, a 63m buffer is drawn. Where this buffer intersects a gas distribution pipe, the dwelling is said to be on the gas network. In the example, dwelling A is on the network, while dwelling B is not.

365. The gas grid information used for this mapping is provided by SGN. It includes both the national gas network and the Scottish Independent Undertakings (SIUs), where gas is provided in areas remote from the national gas grid. It does not however include information on pipes owned and operated by Independent Gas Transporters (IGTs). Therefore, dwellings classified as off-grid by the survey may be within 63m of an IGT operated gas distribution pipe and potentially have a connection to the gas grid and the methodology may therefore slightly undercount dwellings within the range of the gas grid.

Figure 33: Gas Grid Derivation with GIS



7.8.5 Reasons Why Home Heating is Difficult

Table 72: Potential Responses to Question ht14

Group	Response Number	Response
Poor or inadequate heating	ht14_01	No Central Heating
	ht14_02	Not enough heaters/radiators
	ht14_03	Position of heaters/radiators
	ht14_04	Poor/need new heating system
	ht14_05	Radiators not large enough
	ht14_06	Heating not working
	ht14_07	Dislike storage heaters
	ht14_08	Inadequate heating
	ht14_10	Heating in part of house
	ht14_17	Can't afford to replace system
Hard to control heating	ht14_09	Difficult to control
	ht14_11	Hard to control heat
Need new windows	ht14_12	Need new windows
Poor insulation	ht14_13	Poor insulation
Draughty	ht14_14	Draughty
Rooms too big	ht14_15	Rooms too big
Can't afford to heat house	ht14_16	Can't afford to heat house
Other	ht14_18	Other
No answer	ht14_19	No answer

366. The full text of this question is: "Which of these things, if any, make it difficult to heat your home". Response categories have been grouped for reporting, as described in Table 72 above. Respondents were able to choose any combination of reasons why heating their home was difficult.

7.8.6 Hard to Treat Cavity Walls

367. In this report we use the ECO definition of HTTCs to provide a breakdown of the remaining insulation potential of cavity wall dwellings in the Scottish housing stock (see Table 14).

368. A cavity wall is considered hard to treat if:

- **The building has three or more storeys.** Dwelling spaces in lofts are not counted as storeys.
- **The building is severely exposed to wind-driven rain.** The SHCS is not able to collect this information, which will lead to an underestimation of hard to treat cavity walls.
- **Walls at risk of water penetration** i.e. walls requiring urgent repair to the wall finish and walls with penetrating damp.

- **Non-traditional building types** e.g. timber frame, metal-frame, prefabricated concrete.
- **Partially filled, narrow or uneven cavities** as well as cavities with failed CWI**.** The SHCS is not able to capture this information. As a result hard to treat cavity walls may be underestimated.
- Note that the presence of a conservatory alone does not cause a dwelling to be considered hard to treat under ECO.

7.8.7 Disrepair

369. This report uses different categories of disrepair to describe the state of disrepair of a dwelling.

370. A range of elements - both internal and external - are assessed for the extent of disrepair, the urgency of disrepair (relating to external and common elements only), and in some cases the residual life of the element.

371. In a small number of instances, surveyors may not be able to assess the state of repair of certain elements of a property. This results in a disrepair status of 'unobtainable' for the full property since we are unable to say for certain whether disrepair exists. In 2019, this affected 0.2% of properties surveyed. Each of the tables and figures relating to disrepair in Chapter 6 describe where these properties have been counted for clarity in reporting.

7.8.7.1 Critical Elements

372. The critical elements are those whose condition is central to a dwelling being wind and weather proof, structurally stable and safeguarded against further rapid deterioration. They are as follows:

- Roof covering;
- Roof structure;
- Chimney stacks;
- Flashings;
- Roof gutters and downpipes;
- External walls - finish;
- External walls - structure;
- Access decks and balustrades (common areas - flats only);
- Foundations;
- Damp-proof course;
- External doors and windows (dwelling only);
- Doors, screens, windows and roof lights (common areas - flats only);

- Internal walls/partitions[28];
- Floor structure;
- Floor finish;
- Dry rot/wet rot.

373. Disrepair to critical elements is recorded where there is any disrepair, no matter how small, to the critical elements of the dwelling.

7.8.7.2 Urgent Disrepair

374. Urgent disrepair is recorded where the SHCS surveyor deems that a dwelling has any disrepair which, if not rectified, would cause the fabric of the building to deteriorate further and/or place the health and safety of the occupier at risk.

375. Urgency of disrepair is only assessed for external and common elements.

376. In 2019, we consider for the first time, instances of urgent disrepair to relevant critical elements. Not all disrepair to critical elements is necessarily considered urgent by the surveyor. Internal room floor structures and floor finishes as well as internal walls and the presence of dry / wet rot are the only critical elements for which urgency is not applicable.

7.8.7.3 Extensive Disrepair

377. Extent of disrepair is usually measured on a 5- or 10- point scale as follows:

    - 5- point scale: 0 (no disrepair), 1 (small repairs up to 5%), 2 (minor repairs 5% to less than 25%), 3 (medium repairs 25% to less than 60%), 4 (renew 60% to 100%).

    - 10- point scale: 0 (no disrepair), 55 (less than 5%), 1 (5-15%), 2 (15-25%), 3 (25-35%), 4 (35-45%), 5 (45%-55%), 6 (55%-65%), 7 (65%-75%), 8 (75%-85%), 9 (85%-95%), 10 (renewal of 95% or more).

378. Extensive disrepair is calculated in order to identify those dwellings where any disrepair present is of a relatively greater severity. It is recorded where:

    - Any building element has an overall disrepair score exceeding 20% by area
    - Any building element assessed has a score of 'medium' or 'renew' on the 5-point repair scale (equivalent to an area of around 25% or more of the element) or
    - Dry/wet rot is recorded in two or more rooms.

[28] This element has been incorrectly described in all previous SHCS reports as ‘party walls’

379. Average extent of disrepair is calculated from the 5- and 10- point scales by taking the mid-point of the relevant band for the element. So, for example, a chimney stack assessed as band 4 on the 10-point scale would contribute 40% toward the average value. Similarly, a bathroom wash hand basin assessed as medium on the 5-point scale would contribute 42.5% to the average value. The presence of dry / wet rot contributes 50% to the average value. Thus measures of average extent should be considered approximate.

7.8.8 Damp and Condensation

- **Penetrating damp** is usually the result of a defect in the building fabric, such as damage to the walls or roof, water ingress due to damaged seals on doors or windows or damp as a result of leaking plumbing.
- **Rising damp** is the result of defective or missing damp proof coursing, leading to water leaching into the building fabric.
- **Condensation** is the build-up of moisture inside a dwelling, which may be the result of insufficient or ineffective ventilation.

7.8.9 Bedroom Standard

380. The Bedroom Standard is defined in the Housing (Overcrowding) Bill 2003 based on the number of bedrooms in a dwelling and the people in a household who can share a bedroom.

381. Each of the following groups or individuals requires a separate bedroom:

- Any couple;
- a person aged 21 years or more;
- two people of the same sex[29] aged between 10 and 20;
- two children (whether of the same sex or not) under 10 years;
- two people of the same sex where one person is aged between 10 years and 20 years and the other is aged less than 10 years;
- any further person who cannot be paired appropriately.

[29] The SHS collects data on gender and not sex therefore the number of bedrooms required are allocated based on self-reported gender. In addition, from 2018 onwards the question on gender was non-binary and included two additional responses: 'Identified in another way' and 'Refused'. Further details are provided in Annex 2 of the Scottish Household Survey Annual Report 2018.

382. This definition is distinct from the rules introduced by the UK Government in April 2013 for the size of accommodation that Housing Benefit will cover for working age tenants renting in the social sector, known as the 'spare room subsidy'[30]. Applying the rules of the spare room subsidy requires information not collected in the SHCS. Statistics in this report relate to the Bedroom Standard only.

7.8.10 Tolerable Standard

383. The Tolerable Standard is a minimum standard for habitability introduced in the 1969 Housing (Scotland) Act, and updated by the 1987, 2001 and 2006 Acts.

384. Additional criteria for electrical installations and thermal insulation were added by the 2006 Act. These requirements came into force in April 2009 and were first reported by the SHCS in 2010. The change in definition caused the fail rate for the standard to increase from 0.7% in 2009 to 3.9% in 2010 in the full time series tables.

385. A dwelling meets the tolerable standard if it:

- is structurally stable;
- is substantially free from rising or penetrating damp;
- has satisfactory provision for lighting, ventilation and heating;
- has an adequate piped supply of wholesome water available within the house;
- has a sink provided with a satisfactory supply of both hot and cold water within the house;
- has a water closet or waterless closet available for the exclusive use of the occupants of the house and suitably located within the house;
- has a fixed bath or shower and a wash-hand basin, each provided with a satisfactory supply of both hot and cold water and suitably located within the house;
- has an effective system for the drainage and disposal of foul and surface water;
- has satisfactory facilities for the cooking of food within the house;
- has satisfactory access to all external doors and outbuildings;
- has electrical installations that are adequate and safe to use. The "electrical installation" is the electrical wiring and associated components and fittings, but excludes equipment and appliances;
- has satisfactory thermal insulation.

[30] Department for Work and Pensions, Housing Benefit Spare Room Subsidy Changes Factsheet, Retrieved: 19/11/15

386. The tolerable standard has since been amended by the Housing (Scotland) Act 1987 (Tolerable Standard) (Extension of Criterion) Order 2019 to include a two new elements covering i) smoke and heat alarms and ii) carbon monoxide alarms. For the first time, assessors will consider the presence, type and condition of smoke, heat and carbon monoxide alarms in a house when deciding if the house meets the tolerable standard. These new standards are expected to come into force from 1 February 2022, subject to Parliamentary approval, and are therefore not considered in this current report but will be incorporated into future surveys.

387. Fewer dwellings fail the tolerable standard on the basis of the presence of rising or penetrating damp than experience this issue overall. This reflects the fact that low levels penetrating damp would not give grounds for action under the tolerable standard. A dwelling will normally be below tolerable standard if a surveyor finds persistent visible penetrating damp that covers an area greater than approximately:

- 10% of the overall wall space in one habitable room;
- or 10% of the ceiling in one habitable room;
- or 20% of the overall wall space or ceiling in one or more other spaces in the dwelling.

7.8.11 Scottish Housing Quality Standard (SHQS)

388. The SHQS was announced by the Minister for Communities in February 2004. A target was agreed that all social landlords must ensure that all their dwellings pass the SHQS by 2015. Private owners and private landlords are currently under no obligation to bring their properties up to a standard which meets the SHQS. However SHCS collects the same data for all dwellings to allow comparison across the housing stock.

389. The SHQS is an aggregation of the results from 55 different elements grouped into 5 higher-level criteria, which in turn provide a single pass/fail classification for all dwellings. The 5 higher-level criteria specify that the dwelling must be:

- above the statutory tolerable standard;
- free from serious disrepair;
- energy efficient;
- with modern facilities and services;
- healthy, safe and secure.

390. A full list of assessed elements is available on the Scottish Government website. Only one element of the SHQS is not assessed using SHCS data: no information is collected on external noise insulation.

391. The data is assessed against the SHQS as it stood in the year the data relates to. So, for 2019, dwellings are assessed against elements 31 to 35 (covering cavity wall insulation, loft insulation, water tank and pipe insulation, central heating and energy efficiency ratings based on NHER or SAP) in the energy efficiency criterion. However, from 1 January 2021 these will be superseded by the Energy Efficiency Standard for Social Housing (EESSH). Similarly, from 1 February 2022, element 11 and element 44 will be replaced by elements 11A and 11B to cover changes to the tolerable standard relating to smoke, heat and carbon monoxide alarms.

A National Statistics publication for Scotland

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics. The designation of the Scottish House Condition Survey as National Statistics was initially confirmed on 30 March 2010 following an assessment by the UK Statistics Authority and re-confirmed on the 16 October 2020 following a compliance check by the Office for Statistics Regulation.

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- meet identified user needs;
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- are produced according to sound methods, and
- are managed impartially and objectively in the public interest.

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National Statistics status means that our statistics meet the highest standards of trustworthiness, quality and public value, and it is our responsibility to maintain compliance with these standards.

Changes to these statistics

Since the latest review by the Office for Statistics Regulation in October 2020 we have continued to comply with the Code of Practice for Statistics, and are working to implement improvements over the coming year which will enhance the quality and value of the statistics.

How to access background or source data

The data collected for this statistical publication:

☒ are available in more detail through statistics.gov.scot.

☐ are available via an alternative route

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Correspondence and enquiries

For enquiries about this publication please contact:
Scottish House Condition Survey Team,
Scottish Government,
Telephone: 0300 244 4000
e-mail: ScottishHouseConditionSurvey@gov.scot
Webpage: https://www.gov.scot/collections/scottish-house-condition-survey/

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