

Lagging behind

New insights into the barriers to energy efficiency uptake

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The Social Market Foundation is Britain's leading cross-party think-tank, standing proudly in the centre-ground of politics since 1989.

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Making energy efficiency uptake a successful government mission means better understanding who needs support and how to provide it

Executive summary

- Britain has the leakiest homes in Europe. As energy prices rise and the 2050 net zero target draws closer, the case for improving energy efficiency is only getting stronger.
- The energy crisis has strengthened political will to raise chronically low installation rates, but it is unclear if recent policy announcements are enough to resolve entrenched structural and attitudinal barriers for households.
- Cost may be the biggest barrier to installing energy efficiency measures, but poor awareness and tenure type are also significant. Our work with Public First on energy bill support has given us deeper insight into barriers faced by homeowners. Our analysis of Public First's polling finds, surprisingly, that 54% of homeowners do not believe they need any/more insulation. Homeowners say that "other" barriers exist, but further research is required to identify them.
- Majority of homeowners (74%) would be willing to co-contribute some of their own money for insulation (alongside a government energy efficiency scheme). That said, homeowners likely underestimate how difficult some upgrades may be.
- But not all groups experience the same barriers in the same way. Who lives in a property and the type of property they live in can have notable effect on which barriers are most significant to them. As it stands, dwelling and tenure characteristics account for greater variation in energy efficiency ratings than household characteristics.
- A better understanding of the barriers and motivations for individual groups is needed to design an informed policy to encourage wider take up of efficiency measures.

Glossary

Explanation of commonly used acronyms

- **DLUHC** – Department for Levelling Up Housing and Communities
- **ECO** – Energy Company Obligation. A government energy efficiency scheme, designed to support households in fuel poverty to make their homes more efficient
- **EPC** – Energy Performance Certificate. A certificate that give a rating on how efficient a property is. The ratings range from A (very efficient) to G (inefficient). It will often provide a guide on how expensive heating and lighting the home will be, and what measures can be taken to improve the energy efficiency.
- **HRP** – Household Reference Person. Created to replace a “head of household” in the 2001 census, the HRP refers to an individual in a household that acts as a reference point for providing descriptive statistics about the household.
- **SAP** – Standard Assessment Procedure. The method that is used by government to compare the environmental performance of a home. It assesses how much energy a home will need to deliver a defined level of comfort. The standardisation means like for like comparisons can be made with other homes. The SAP underpins the EPC.

The energy crisis has strengthened political will to raise chronically low installation rates

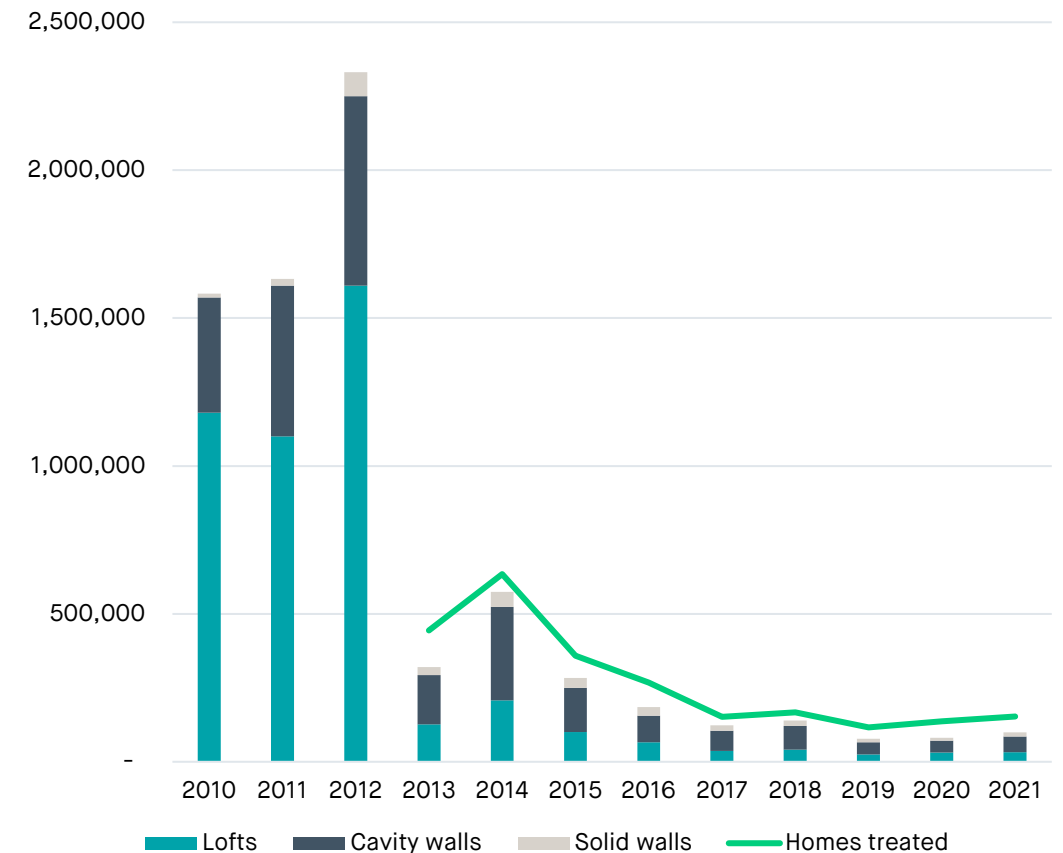
Context on energy efficiency installations and policy

Following cuts to support for energy efficiency measures in 2013, insulation rates plummeted, with little sign of recovery. Many subsequent policy interventions (the Green Deal, the Renewable Heat Incentive and Green Homes Grant) failed to deliver, creating short-term signals and undermining the development of the market. **There is one policy that bucks this trend: ECO.** The scheme has helped more than 2.3 million homes over the past 9 years and is set to upgrade an extra 450,000 to 2026. **While ECO's help is welcome, this rate of insulation is still too low compared to the scale of the challenge.**

The current energy crisis makes a strong economic case for energy efficiency measures. Given the scale of current government subsidy in this market, the political will to reduce energy demand has grown in recent months. **In the November 2022 Autumn Budget, a new energy efficiency taskforce was announced alongside additional £6bn funding.** As well as this, ECO+ will provide more insulation support to a broader group of households. **These are welcome policy developments, but will they be enough?**

Protracted high energy bills will likely sustain the economic case for greater investment in energy efficiency in the medium term. Even as bills eventually do come down, the case for improved efficiency remains and is only made stronger by the need to prepare homes for low-carbon heating. It is therefore **important to continue to explore the barriers that hinder some groups from making these efficiency upgrades.** This report is the first part of a larger research project that aims to do just that. **The project ultimately aims to provide policymakers with a toolkit for encouraging insulation uptake.**

Figure 1: Home energy efficiency installations 2010-2021, UK



Source: CCC, 2022

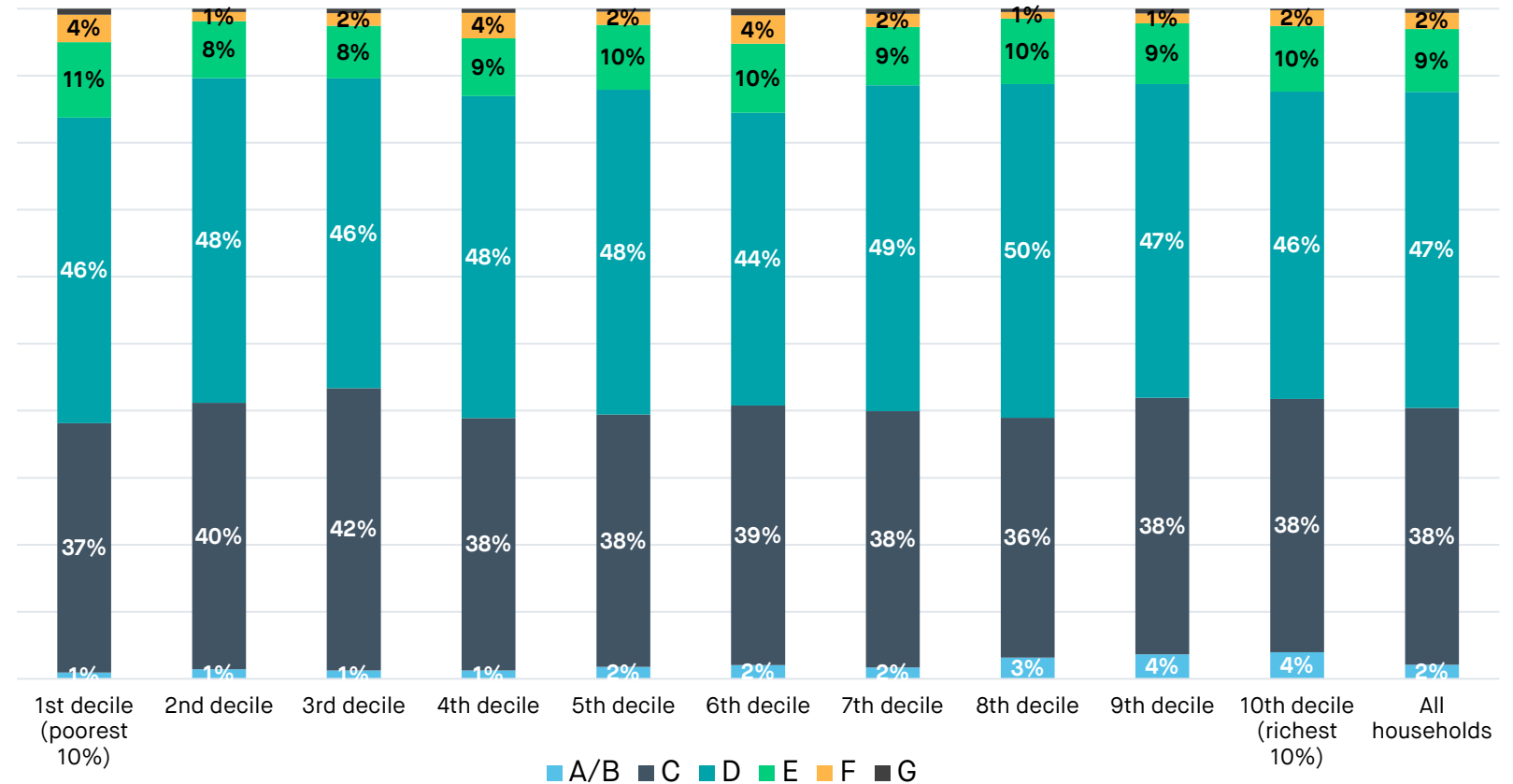
Much of the housing stock would benefit from improved energy efficiency

Context on energy efficiency installations and policy

The potential for improvement across the housing stock is significant and (ostensibly) distributed evenly across income deciles – there are nearly as many homes rated below EPC C in the poorest decile as in the richest. As a result, **there is particular policy interest in incentivising those who are ‘able to pay’ to invest private household capital in improvements.**

There is a lot of **obscurity around what classifies a household as “able to pay”** with no working definition across government or research groups. Additionally, with the suggestion that much of the low hanging fruit has already been picked, it is possible that much of this market may face significant financial and/or non-financial barriers.

Figure 2: EPC rating by income decile, England



Source: SMF analysis of English Housing Survey, 2019 (latest available dataset for analysis at time of writing).





Cost may be the biggest barrier to installing energy efficiency measures, but poor awareness and tenure are also significant.

General barriers to uptake identified in the literature

Previous research has found several high-level barriers affecting uptake of energy efficiency measures. Broadly we can categorise these as economic, material, informational and attitudinal.

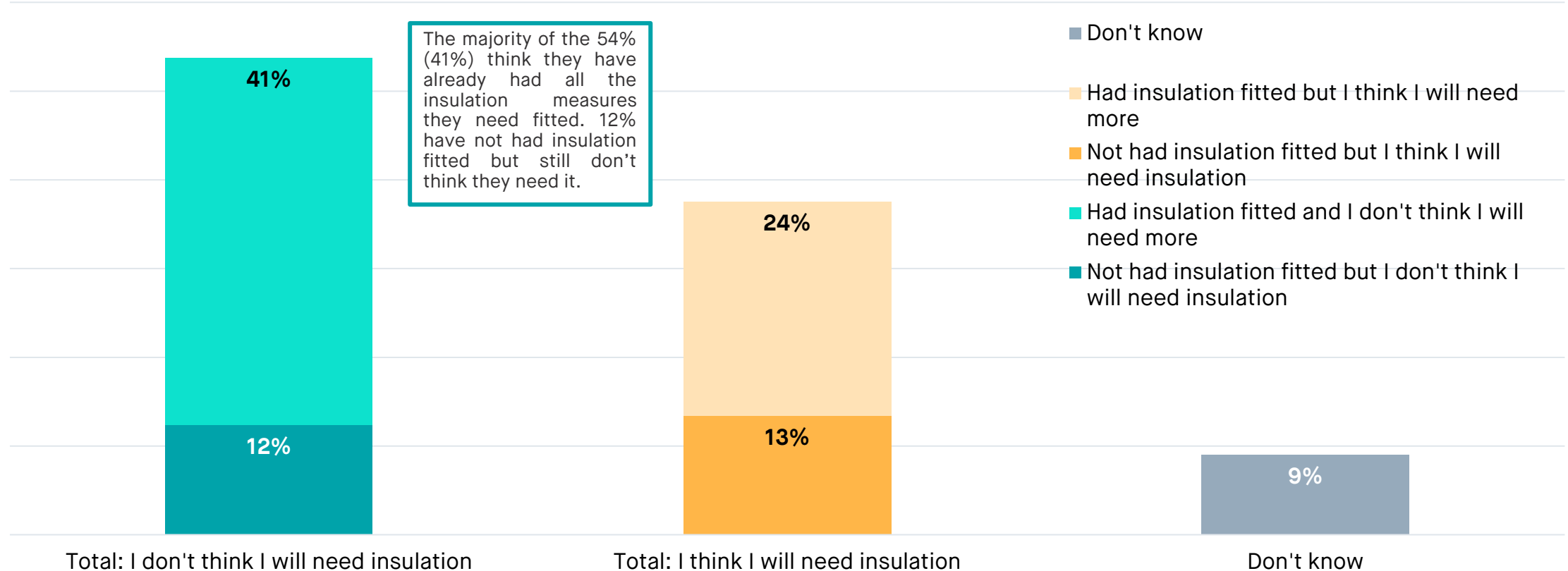
It is important to note that these factors often intersect with each other. For example, the most frequently cited barrier in the literature is cost, but a belief that energy efficiency measures would be too expensive to install could also be influenced by poor awareness and/or misunderstanding of what energy efficiency measures are needed and their cost. Similarly, homeowners' reluctance for disruption and hassle will likely be influenced by the complexity of the measures, which is greater in older homes.

Policymakers are largely aware of these barriers and their cross-cutting nature. Our research with officials reveals that work is underway across departments to produce systems mapping of barriers and to avoid duplication of efforts. However, beneath the surface of these high-level themes, there is limited robust, current evidence on how behaviour may differ within consumer groups.

Economic 	Logistical 	Informational 	Attitudinal-behavioural 
<p>Cost Consumers think that energy efficiency measures they need may be too expensive for them.</p> <p>Consumers have doubts as to whether spending on energy efficiency measures provides a good return on investment</p>	<p>Building limitations Consumers can believe that their home is too difficult to insulate or not suitable for certain insulation.</p> <p>Capacity Not all consumers have the power to make decisions on which energy efficiency measures to install in their homes, due both to their tenure and building regulations.</p>	<p>Awareness There is a lack of awareness on what insulation measures are already in place as well as of the different types of energy efficiency measures which are available.</p> <p>Trust Scarring from past government schemes and previous mis-selling of insulation has made consumers wary.</p>	<p>Inertia Consumers are not motivated to insulate (or further insulate) their homes, they may feel they have done enough or are satisfied with their current level of thermal comfort.</p> <p>Convenience/hassle Consumers are put off by the perceived disruption from installing energy efficiency measures,</p>

Surprisingly, 54% of homeowners do not believe they need (any/more) insulation

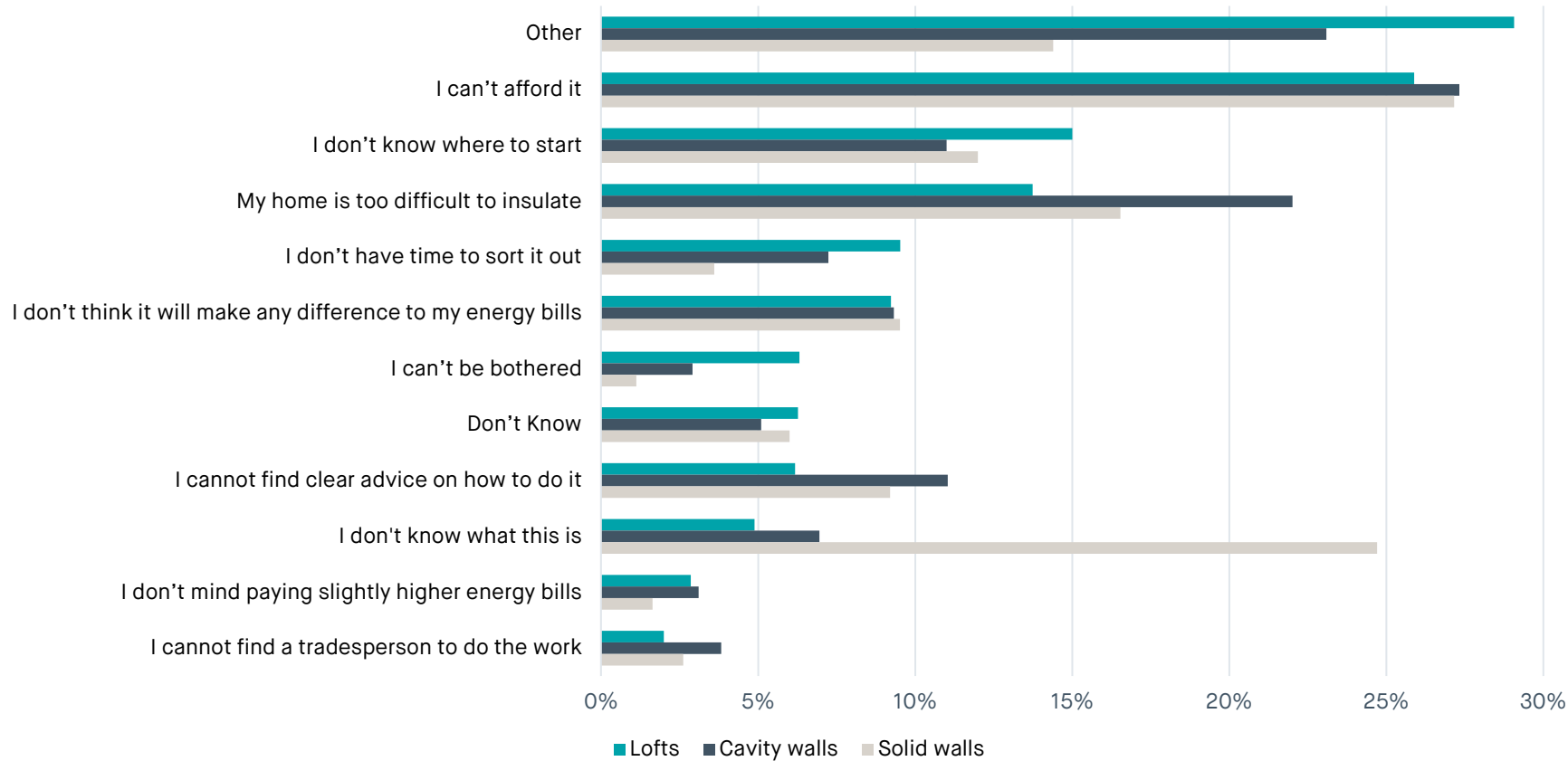
Figure 3: Public attitudes on energy efficiency uptake



Source: SMF analysis of Public First polling. Fieldwork dates: 21st October – 25th October 2022. Base: Homeowners.

While cost remains a significant barrier to uptake, further research is required to identify “other” barriers

Figure 4: Public attitudes on barriers to energy efficiency uptake



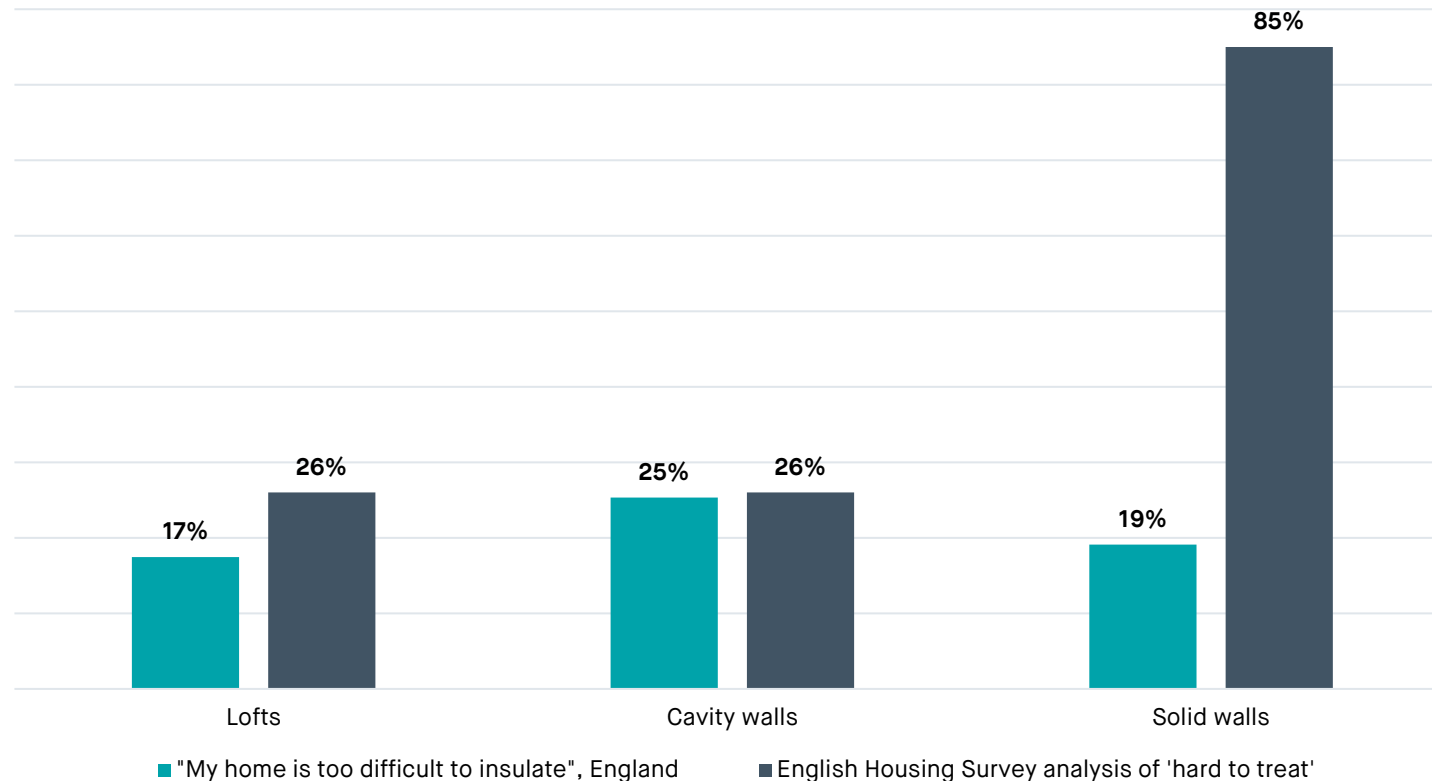
Where consumers indicated that they did not have a specific insulation measure, they were asked why they had decided not to install it.

We also note that some homes cannot have cavity wall insulation installed, which may account for some of the “other” responses.

Source: SMF analysis of Public First polling. Fieldwork dates: 21st October – 25th October 2022.

Homeowners likely underestimate how difficult some upgrades may be

Figure 5: Comparing public opinion with official estimates for 'hard to treat' homes



The government has recognised that some homes are more challenging to upgrade than others. But how far does this align with what homeowners think about their own properties?

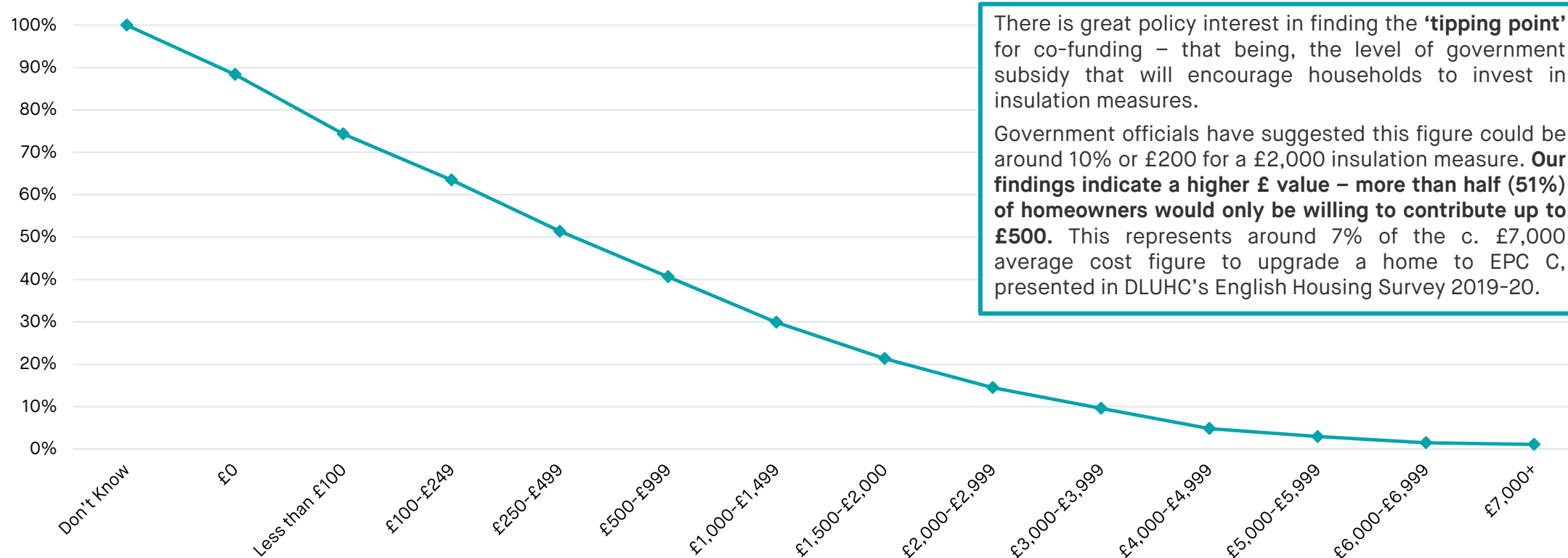
DLUHC's analysis of the English Housing Survey 2020-21 identifies the extent to which certain measures (lofts, cavity walls and solid walls) are 'hard to treat'. For DLUHC, 'hard to treat' refers to the types of homes that are the most difficult to add efficiency measures too. What qualifies as 'hard to treat' varies depending on the measure, but usually it will depend on the construction of the property. Our analysis of Public First polling data highlights that the homeowners public underestimate how difficult some upgrades may be, particularly solid wall insulation.

Just 19% of homeowners who have not insulated their solid walls believe it would be too difficult to do so, while government estimates put this figure nearly 4.5 times as high (85%).

Source: SMF analysis of Public First polling. Fieldwork dates: 21st October – 25th October 2022; English Housing Survey 2020-21.

The majority of homeowners (74%) would be willing to co-contribute some money for insulation

Figure 6: Public willingness to co-contribute to home energy-efficiency costs



Source: SMF analysis of Public First polling. Fieldwork dates: 21st October – 25th October 2022. Base: Homeowners.

Survey question: "If the Government were to offer you a discount to help you upgrade your home's insulation, how much would you be willing to pay out of your pocket to contribute to this insulation upgrade? As a rough guide, the average investment required to bring draughty homes up to the Government's target EPC rating of C is around £7,000."

Note: In the survey, "£0" was defined as "I would not be willing to pay anything out of pocket".





But not all groups experience the same barriers in the same way

Barriers to uptake by different groups

Research tends to focus on the barriers to energy efficiency uptake in the aggregate. We know that different groups likely experience these barriers in different ways. Although there is limited in-depth qualitative research here, our review of the existing literature identifies three key groups.

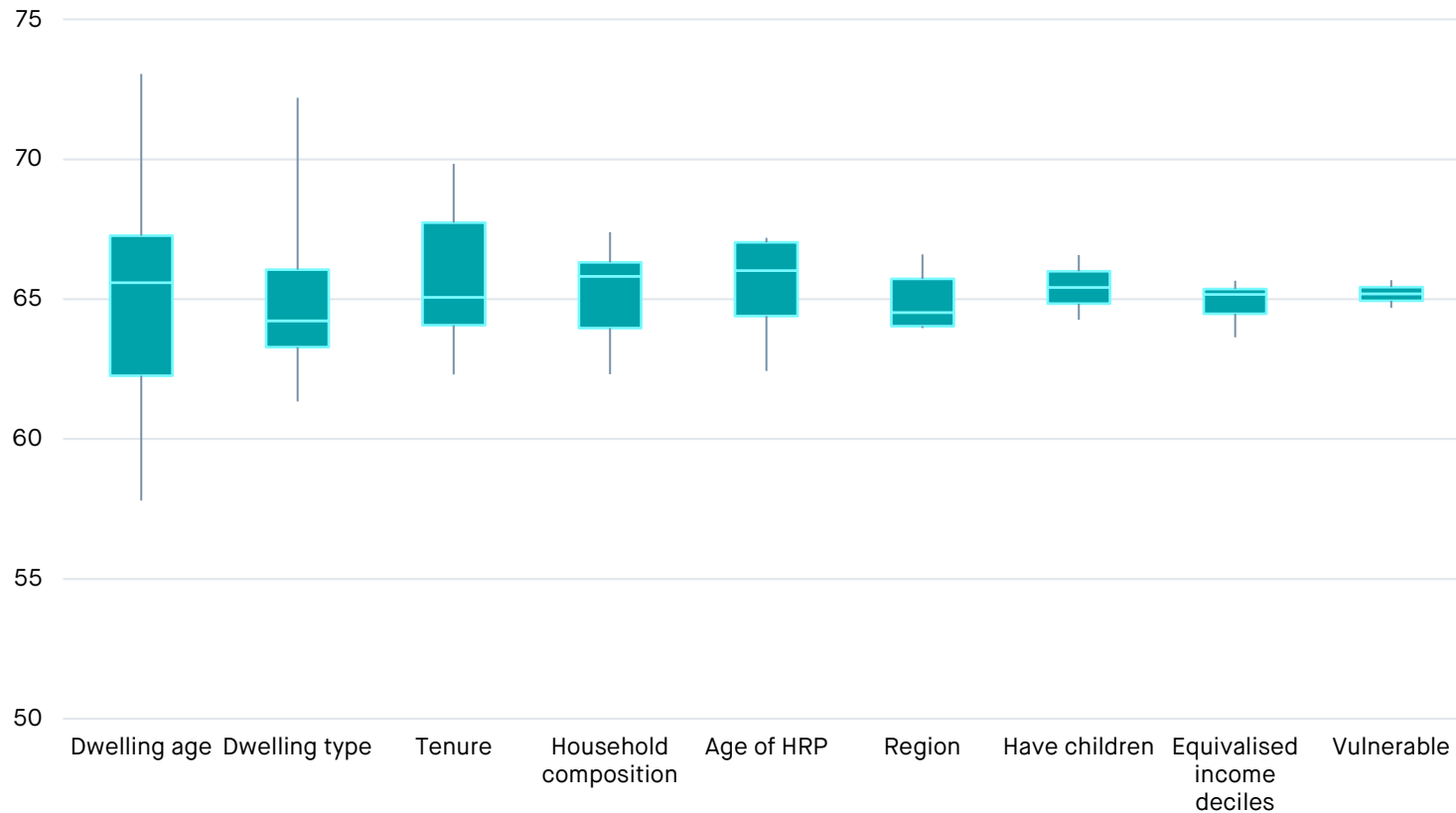
Tenure status: owner-occupiers feature most heavily in energy-efficiency research. This is understandable, as they have both the powers to make changes and will see the benefits (via energy savings/lower bills and increased thermal comfort). As a result, there is limited evidence on the barriers faced by landlords. As the private rented sector is now at its highest ever level, at 19% of the population, and these homes are some of the least well-insulated, failure to understand the barriers and motivations for landlords is a significant oversight.

Households of varying **income** and **dwelling age/type** also experience different barriers. Older, terraced homes are harder to treat than younger detached homes, and this usually comes with a heftier price tag. Whether or not a household can afford to make those changes depends on their earnings (and savings). Whether they *want* to make those changes is a separate issue.

Barrier	Groups affected
 Cost	<p>The cost of upgrades can vary greatly depending on the complexity of the property, which is influenced by the dwelling age and type. Households living in older homes with solid walls face significant costs.</p> <p>High costs can be offset by energy savings over time, making the investment more attractive. This incentive differs between tenure: owner-occupiers are more likely to see this benefit than landlords who typically do not pay for energy bills.</p> <p>The income category of different households can understandably affect what households may be able to afford to (and are willing to) pay.</p>
 Capacity	<p>A households' tenure impacts what changes they are able to make to the property. Renters have limited power to make changes to their homes compared to owner-occupiers.</p> <p>Certain dwelling types such as listed buildings or historic homes are often “hard to Treat” and face restrictions on how these properties can be altered.</p>
 Information	<p>Residents' tenure affects what they know about the overall efficiency of their property, as well as methods to improve it. Renters are least likely to know their EPC rating and what measures were already installed. While it may be reasonable that information levels vary by income/social grade, evidence on this phenomenon is limited.</p>
 Attitudinal	<p>Uptake of efficiency measures can be greater among environmentally-conscious groups.</p> <p>Where landlords do not live in their owned properties, they are less inclined to invest in energy efficiency measures. Further research is required on the specific motivations here e.g., weak cost-benefit or lack of priority.</p>

Dwelling and tenure characteristics account for greater variance in energy efficiency ratings than household characteristics

Figure 7: Variance in energy efficiency level (average SAP ratings) by dwelling, tenure and household characteristics



The energy efficiency of a home varies most significantly depending on when it was built (15.3 SAP points) and its property type (10.9 SAP points), compared to the demographics of its residents.

Different tenure groups (7.5 SAP points) also experience substantial variance in energy efficiency.

Perhaps surprisingly, there is relatively little difference in the energy efficiency levels of homes occupied by households of different income levels (2 SAP points) or benefits claimants (1 SAP point).

EER / EPC rating	SAP rating
A	92-100
B	81-91
C	69-80
D	55-68
E	39-54
F	21-38
G	1-20

Source: SMF analysis of English Housing Survey, 2019 (latest available dataset for analysis at time of writing. SAP is rated from 1 (EER G) to 100 (EER A).

Households that live in homes built since 1990 and purpose-built high-rise flats benefit from the highest energy efficiency ratings

Profile of who is most/least likely to live in energy efficient homes

The greatest variance in energy efficiency occurs between homes of different ages. Unsurprisingly, on average, households that live in newer homes (post-1990) benefit from the highest SAP rating (73.1 or EPC C) while those that live in the UK's oldest homes (pre-1919) see a SAP rating of 57.8.

On average, homes that are social rented from housing associations are the most energy efficient tenure type (SAP rating of 69.8). While renters and landlords face unique barriers, we find that on average, owner-occupiers who own their home outright see the lowest SAP rating (62.3) compared to other tenure types (eg., private rented has an average SAP rating of 64.1).

There is a notable difference in household composition. Lone parents with dependent children live in more energy efficient homes than elderly couples.

Characteristic	Most likely group	Average SAP rating	Least likely group	Average SAP rating
National average	-	64.9	-	64.9
Dwelling characteristics				
Dwelling age	Post-1990	73.1	Pre-1919	57.8
Dwelling type	Purpose built flat, high rise	72.2	Converted flat	61.3
Region	North East	66.6	Yorkshire and the Humber, West Midlands and South West	64.0
Tenure type				
Tenure	Housing association/RSL	69.8	Own outright	62.3
Household characteristics				
Household composition	Lone parent with dependent children	67.4	Couple, no dependent children aged 60	62.3
Age of HRP	30-44	67	65 or over	62.4
Have children	Yes	66.6	No	64.3
Income decile (1 being poorest, 10 being richest)	2 nd decile	65.7	1 st decile	63.6
Benefit claimants	Yes	65.7	No	64.7

Source: SMF analysis of English Housing Survey, 2019 (latest available dataset for analysis at time of writing). SAP is rated from 1 (EER G) to 100 (EER A).

Since 2014, older homes and converted flats have seen the greatest increase in energy efficiency

Profile of who is most/least likely to have increased their efficiency (SAP rating) in a 5-year period (2014-2019)

Comparing SAP ratings from 2019 with 2014 data, we are better able to understand which households are more likely to have increased their efficiency. This time period is widely known for limited installations of energy efficiency measures (as shown on slide three).

Older homes (pre-1919) and converted flats saw the greatest gains in efficiency (around 10%) from 2014 to 2019. Although this equates to 6 SAP points (roughly half an average EPC band).

Interestingly, owner-occupiers with a mortgage increased their energy efficiency (8.1%) more than outright owners (6.5%). Mortgage holders also have overall higher efficiency (66.0 SAP rating) than outright owners (62.3 SAP rating).

Middle income households saw the smallest increase in efficiency (4.5%) compared to the richest (8.1%) and the poorest (5.1%).

Characteristic	Most likely group	% increase 2014-2019	Least likely group	% increase 2014-2019
National average	-	6.4%	-	6.4%
Dwelling characteristics				
Dwelling age	Pre 1919	10.8%	Post 1990	3.2%
Dwelling type	Converted flat	10.3%	Purpose built flat, high rise	-0.1%
Region	South East and South West	7.5%	Yorkshire and the Humber	4.0%
Tenure type				
Tenure	Own with a mortgage	8.1%	Social rented (HA & LA)	4.1%
Household characteristics				
Age of HRP	45-64	7.3%	65 or over	5.4%
Income decile (1 being poorest, 10 being richest)	10 th decile	8.1%	4 th decile	4.5%
Household composition	One person under 60	7.6%	Lone parent with dependent children	4.7%
Have children	Yes	7.0%	No	6.2%
Benefit claimants	No	7.2%	Yes	4.6%

Source: SMF analysis of English Housing Survey, 2019 (latest available dataset for analysis at time of writing. SAP is rated from 1 (EER G) to 100 (EER A).

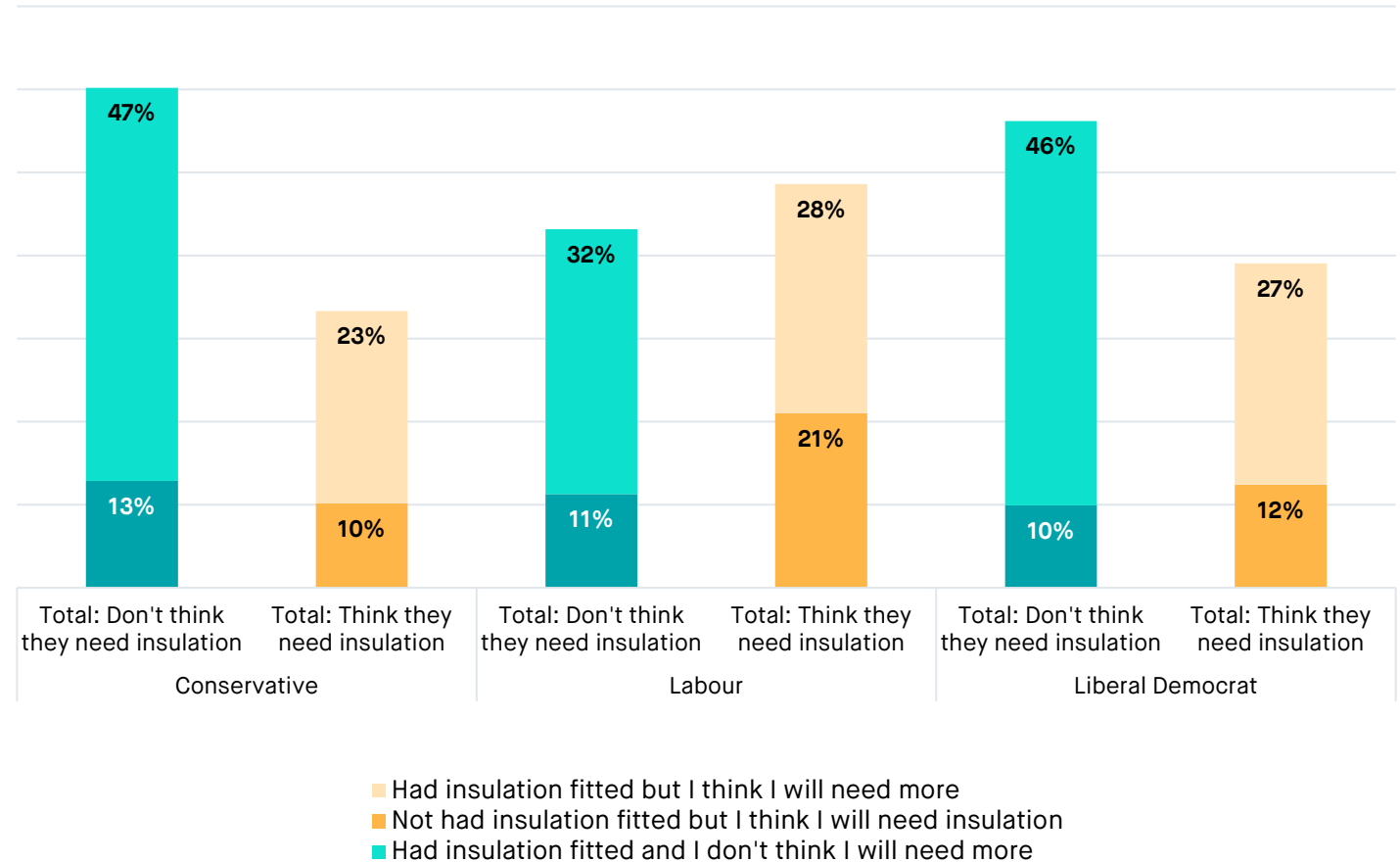
2019 Labour voters are most likely to say they need insulation (and have not had any)

Electoral politics inevitably plays a role in policy decisions. For policymakers, understanding how attitudes towards energy efficiency vary by electoral group can help to design more effective policy interventions and improve messaging toward these groups.

2019 Conservative voters were more likely to think that they did not need insulation (60%) compared to 2019 Liberal Democrat (56%) and Labour (43%) voters – this belief is largely the result of having insulation fitted already. Over one in five (21%) 2019 Labour voters believe they need insulation but have not had any fitted.

Additionally, homeowners with a mortgage were more likely to say they thought they needed insulation (40%) than outright owners (35%). Nearly half (47%) of those who own outright say they have already had insulation fitted compared to around a third (34%) of those with a mortgage. This contrasts our analysis of the EHS which finds that mortgage holders' homes are more efficient and have seen greater increases in efficiency from 2014-2019. This discrepancy may be a result of the time difference between 2019 data and the polling which took place in 2022.

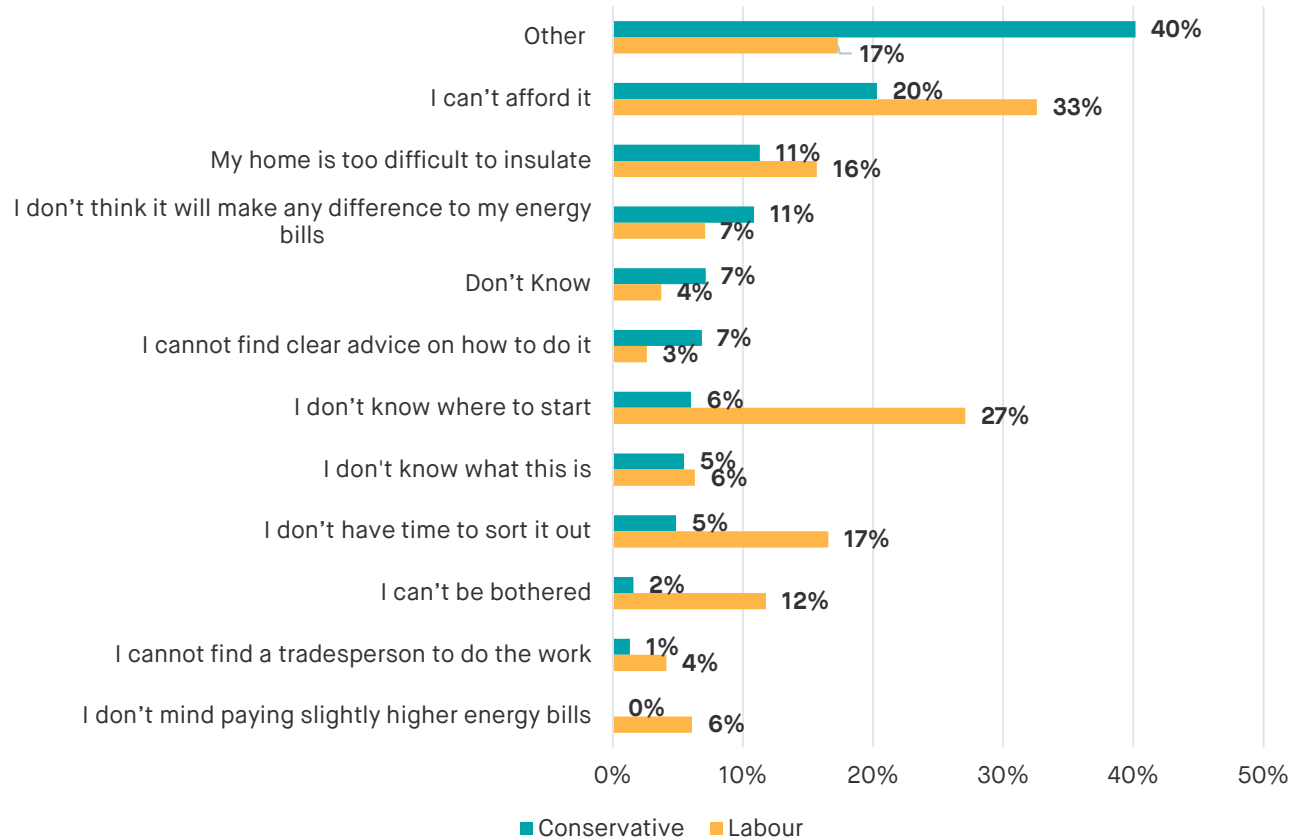
Figure 8: Public attitudes on energy efficiency uptake, by electoral groups



Source: SMF analysis of Public First polling. Fieldwork dates: 21st October – 25th October 2022. Base: Homeowners.

2019 Conservative voters are more likely to select “other” (not listed) barriers, warranting further exploration

Figure 9: Public attitudes on barriers to energy efficiency uptake, by electoral groups



Source: SMF analysis of Public First polling. Fieldwork dates: 21st October – 25th October 2022.

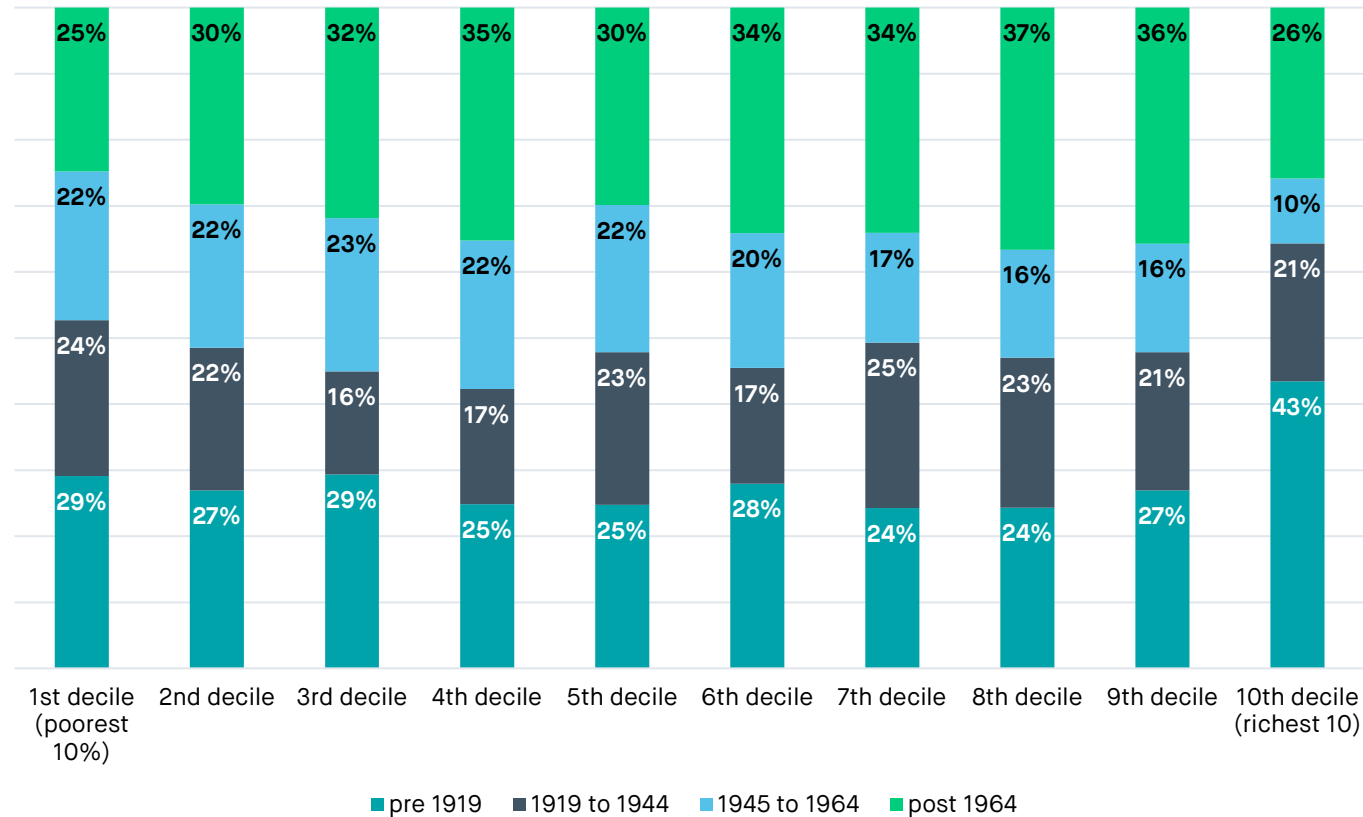
2019 Conservative voters are far more likely (40%) than 2019 Labour voters (17%) to indicate “other barriers” (not listed) to **loft insulation** – this warrants further exploration through in-depth qualitative research. Labour voters (33%) are more than 1.5x more likely to list affordability concerns compared to Conservative voters (20%). Cost (33%) and lack of early support (27%) were the most common reasons for low uptake of loft insulation among Labour voters.

This pattern is broadly similar for wall insulation. 2019 Conservative voters were more likely to say they did not know what solid wall insulation was than 2019 Labour voters. Liberal Democrat sample sizes were too small to include.

Homeowners with a mortgage were more likely to say that affordability was a barrier to insulation uptake (32% for lofts, 37% for cavity walls and 40% for solid walls) than those that owned their home outright (18% for lofts, 20% for cavity walls and 21% for solid walls). Homeowners who own their home outright were more likely to select “other” barriers than homeowners with a mortgage.

The richest households are most likely to live in older drafty homes that could be difficult to upgrade

Figure 10: Proportion of households living in homes rated below EPC C, by income decile and dwelling age



One proxy for ‘hard to treat’ homes is the dwelling age. Older homes are more likely to have been built with solid walls that are difficult to insulate. As well as this, older homes can be listed, restricting building works and improvements to safeguard heritage.

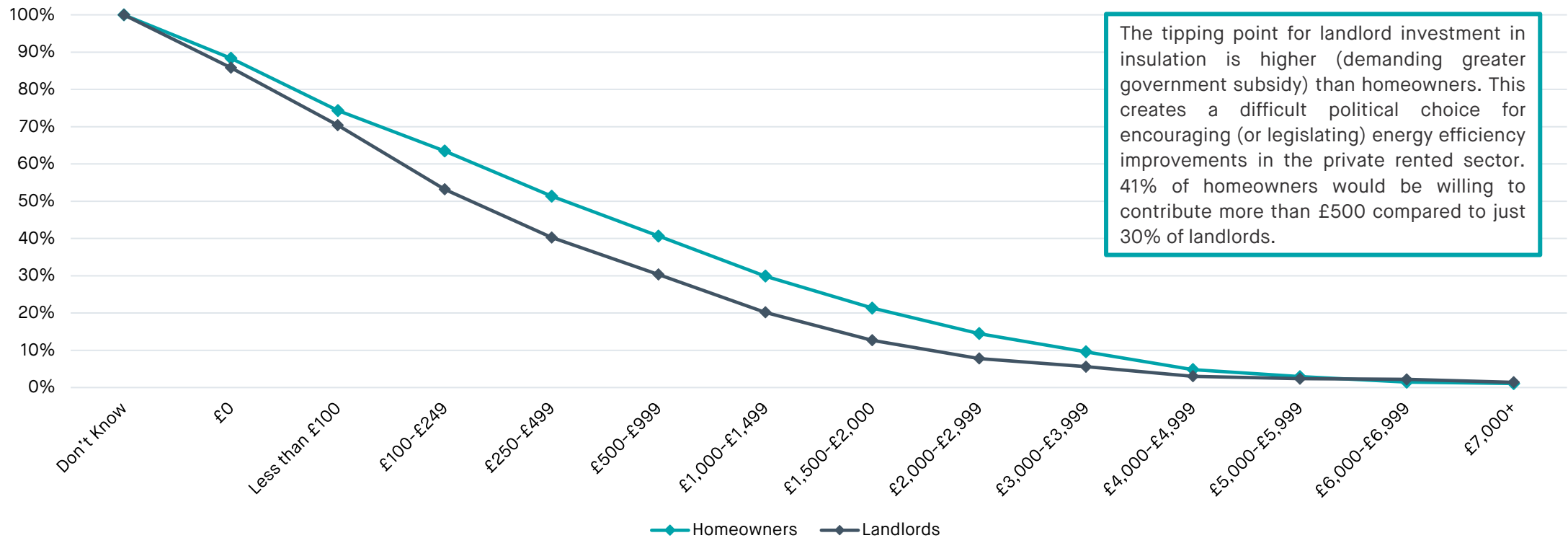
England’s richest households are most likely to live in these homes. Nearly half (43%) of the richest 10% of households living in inefficient homes are also living in properties built before 1919. This figure is less than a third (29%) for the poorest 10% of households and even lower (25%) for middle income households.

The Government has recognised that a proportion of homes may not be practical, cost-effective or affordable to retrofit. The CCC for example excludes 5.5 million homes from its costing analysis, including half of solid wall properties. As a result, based on our analysis of the EHS, it is likely that households with the most capital to invest in their homes may be unable to or exempt from doing so.

Source: SMF analysis of English Housing Survey, 2019 (latest available dataset for analysis at time of writing).

Landlords are less willing to co-contribute for insulation than homeowners

Figure 11: Public willingness to co-contribute to home energy-efficiency costs, by tenure



Source: SMF analysis of Public First polling. Fieldwork dates: 21st October – 25th October 2022.

Survey question: "If the Government were to offer you a discount to help you upgrade your home's insulation, how much would you be willing to pay out of your pocket to contribute to this insulation upgrade? As a rough guide, the average investment required to bring draughty homes up to the Government's target EPC rating of C is around £7,000."

Note: In the survey, "£0" was defined as "I would not be willing to pay anything out of pocket".

A better understanding of the barriers and motivations for individual groups is needed to design informed policy

Identified groups for further analysis

- There is a useful evidence base on the energy efficiency (or lack thereof) of British homes, and the general barriers that the public faces to improve their energy efficiency. However, there are notable gaps in understanding how these barriers are experienced across different groups.
- In order to encourage a higher uptake of energy efficiency measures, further in-depth qualitative research is needed to establish a more robust and nuanced understanding of the barriers between different groups, but also the motivations of those that have already installed energy efficiency measures. What convinced them to install where others were not swayed? Based on the key groups identified in our research the broad groups we will look at are based on tenure, dwelling type, and income.
- Different tenure groups require greater attention. We will explore landlords' and renters' attitudes towards insulation as well as mortgage holders and outright owners (given the calls for green mortgages by various research groups). Our conversations with government officials have also indicated that further analysis on the differences between freehold and leasehold groups is needed.
- As the size of the private rented sector is set to grow further, and the tipping point for investing in energy efficiency measures is greater for landlords, we are particularly keen to understand these attitudes.
- Any investigations into energy efficiency uptake need to more closely look at dwelling characteristics including property age and type.
- Although we have found there is little variance in energy efficiency between those on the highest and the lowest incomes, we expect the reasons behind this may differ – for example, higher income households may not be able to afford upgrades due to high costs of complex old homes whereas affordability for poorer households could relate more to low income and/or savings.
- While our analysis of Public First's polling shows little difference in uptake and voting intention, we will seek to explore this further through focus groups to understand how voting intention interacts with other characteristics.
- The SMF will conduct a series of focus groups and interviews of the identified groups throughout the spring of 2023.