EQUINOX:
Equitable Novel Flexibility Exchange

Primary Market Research

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Project goals and overview

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Background and project goals

INSIGHT NEEDS

EQUINOX (Equitable Novel Flexibility Exchange) is a four-year project led by National Grid Electricity Distribution (NGED) with **a goal to garner learnings that can be scaled to help decarbonise residential heating** in the most cost-efficient way for customers.

The planned trial seeks to enrol approximately 1,000 participants. **Customer insight is needed to inform the trial design and customer recruitment strategies.**

GOALS

1. What is the **average customer attitude (e.g., level of acceptance, awareness, preference,** etc.) related to home heating, heat pumps and thermal storage, and in-home automation of assets?
2. How can we **shape customer preference** to improve adoption of heat pumps?

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Method and sample

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Quantitative method

ROBUST AND RELEVANT SAMPLE

- Online panel survey of 2,023 household participants
- Nationally representative responding sample (age, gender, region, socio-economic group (SEG))
- Other subgroups including off gas, owners vs. renters, financially vulnerable, age of property and others
- Current vs. future customers
- Face-to-face boost of 400 for hard-to-reach groups (including ethnic minorities, English as a second language, low-SEG, digitally excluded)
- Data weighted to give population-based findings *

MEANINGFUL AND USEFUL QUESTIONNAIRE

- Average **survey length** 21.31 mins
- Easy to complete, using **plain English**
- Simple explanations of low carbon heating technologies, **including visuals**
- Dynamic, **device-responsive design**
- Questionnaire **cognitively tested** and improved prior to launch
- **Soft launch** ensured that the questionnaire was functioning and understood as intended
- **Primarily closed questions** to drive response with some open-ended

* Age, gender and region weighting based on 2021 Census estimates. SEG weighting based on 2011 Census.

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Questionnaire design

The survey included questions to test and probe the following topics

- Screening and initial demographics
- Knowledge of environmental issues, including energy conservation
- Attitudes towards environmental issues, including energy conservation
- Environmentally conscious behaviours
- Current home heating systems and technologies
- Existing awareness and understanding of heat pumps and thermal storage
- Attitudes towards heat pumps, other low carbon technologies and flexible tariffs
- Appetite for heat pumps, other low carbon technologies and flexible tariffs
- Barriers to and drivers of change when it comes to home heating solutions
- Information sources when considering changes to heating systems
- Full demographic information for sub analysis (such as rural vs urban, fuel poverty/financial vulnerability, home ownership status, age of property)

Questionnaire stimuli

The text and graphics below were shown to participants during the early stages of the survey to provide them with an overview of the LCTs in question. The cost data shown were based on best estimates at the time the survey launched.

Heat Pumps

Heat pumps take heat from the air or ground, boost it to a higher temperature using a compressor, then transfer the heat to homes. They work a bit like refrigerators in reverse and work even if the temperature is well below zero

The heat can be transferred to water, stored in hot water cylinders, and sent to radiators or underfloor heating. Alternatively, heat pumps feed heat into properties through fans using a warm air circulation system to move the heat around

These systems cannot produce hot water, so a gas or immersion water heater is still needed. However, in the summer, an air-to-air heat pump can operate in reverse and be used like an air-conditioning unit to provide cool air

For heat pumps to work efficiently, properties need to be well insulated, so the heat is kept inside

Heat Pumps

The cost of buying and installing a heat pump is on average £9,000 compared with an average of £3,000 for a gas boiler. Government grants are currently available that would cover around half of the installation costs of a heat pump

Running a heat pump would **currently** cost the average household around £250 more per year compared with a gas boiler **given the recent increases in the cost of electricity**. However, flexible electricity tariffs, which we will discuss in more detail later, may help to reduce these running costs

Further, a gas boiler needs to be replaced on average twice as frequently as a heat pump (once every ten years compared with once in twenty years for a heat pump), so money can be saved in the long term with a heat pump

Thermal Storage Systems

Renewable energy sources, such as wind and solar, can be quite variable in when, and how much energy they produce. This creates peaks and troughs in the UK's energy capacity

Thermal energy storage is a way of taking excess energy – such as surplus energy from renewable sources – and storing it as heat to be used later for heating. Water tanks are a simple and common example of thermal energy storage, but solid materials such as bricks can also be used

Thermal storage systems can be **connected to several and indeed multiple** different heating systems, such as solar panels, wood or pellet stoves, conventional boilers, Aga-type ranges, or electrical heating elements

Thermal Storage Systems

Installation costs vary because of the sheer range of thermal storage systems available, and the technologies they are being combined with

Thermal storage systems are not specifically designed to save money - it's better to think of them as products that will solve problems or **allow other technologies to combine or work more efficiently together**

For example, if a thermal store was used to **combine heat from a heat pump and wood stove**, it won't change the amount of energy being produced but it will allow the stove to put energy into a common store and reduce the energy required to be supplied by the heat pump

Questionnaire stimuli

Net Zero by 2050

The UK government has set a target for reducing UK carbon emissions to 'net zero' by 2050. By achieving 'net zero' emissions, the UK will no longer contribute to climate change

This will involve significantly reducing emissions from different activities, such as how we drive, how we eat and how we use energy, including the electricity we consume

Any remaining carbon emissions would be 'offset' by technologies and actions that reduce greenhouse gases in the atmosphere. Examples of carbon 'offsetting' activities include creating or restoring habitats which absorb emissions, such as tree planting or rewilding.

Smart Thermostats

Smart thermostats are connected to the household Wi-Fi

They are like programmable thermostats, where timings can be set for the heating to be on using a schedule. However, because they are Wi-Fi connected, heating settings can be set remotely using other devices such as a laptop or smart phone

They can also be connected to other in-house automated systems such as smart speakers

Smart thermostats can also record internal and external temperatures

Flexible Electricity Tariffs

Electricity consumption is expected to increase in the near future, with more people charging their electric vehicles and using electricity to heat their homes and to power cooking appliances

Renewable energy sources can be quite variable in when and how much energy they produce. This creates peaks and troughs in the UKs energy capacity. Energy providers are currently not able to pass on the benefits of oversupplies from these peaks to their customers

There are currently four main types of household electricity tariffs:

- **Variable tariffs**: the price paid for a unit of electricity varies according to the market value
- **Fixed tariffs**: a fixed price is paid for each unit of electricity used for a fixed period
- **Pre-Payment Tariffs**: units of electricity are bought in advance using a pre-payment meter
- **Economy 7 or 10**: the cost of electric units is cheaper at night than during the day

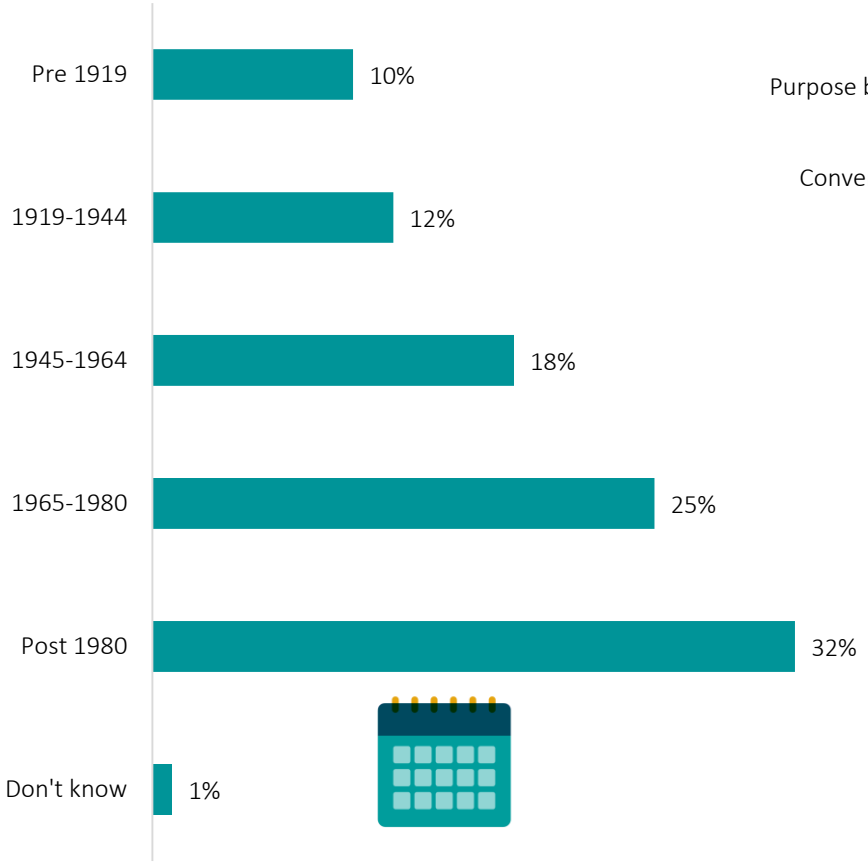
A flexible electricity tariff would be like Economy 7 or 10, where it is cheaper to use electricity at certain times in the day. However, these times would be flexible, and your supplier would inform you when these times would be using a smart meter or app

These tariffs may also include options to automate your heating to best take advantage of cheap energy units or provide discounts for allowing your energy provider to temporarily pause your heating system during peak times to better manage the network capacity, with a minimal disruption to your household temperature (allowing it to go up or down by a maximum of two degrees only)

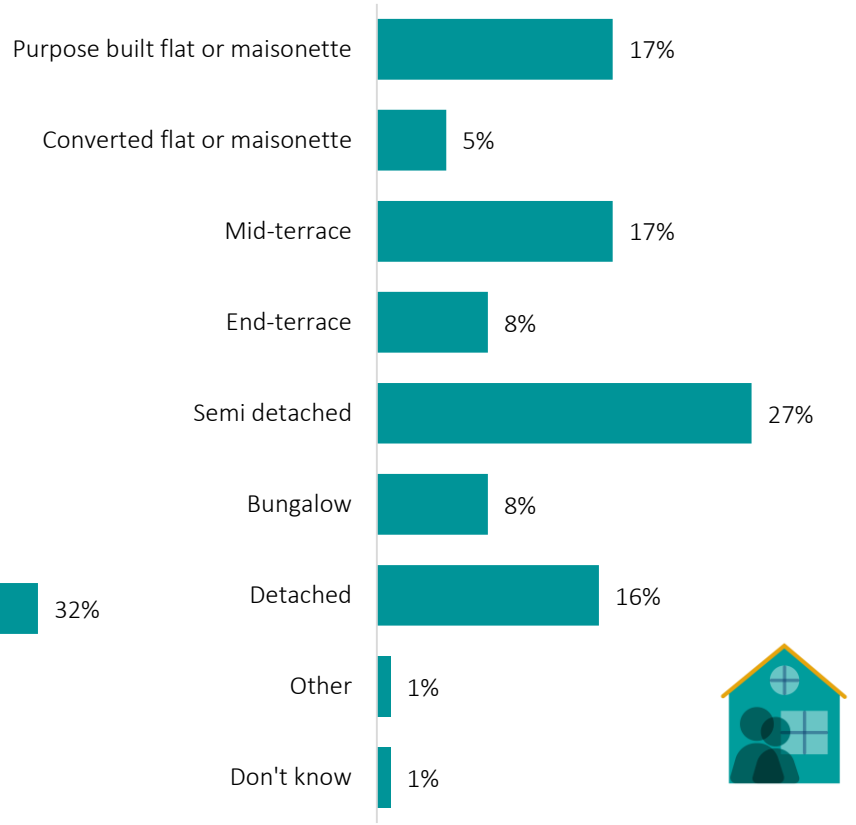
Housing and household composition

Nearly a third currently live in post-1980s housing and over a quarter live in semi-detached houses

Roughly when was your property built?



Which of the following types of property best describes your accommodation?



Insights

- **30%** have a least one child under 17 years living in the house
- **45%** have someone over 60 living in the house

Q33: Roughly when was your property built? Q34. Which of the following types of property best describes your accommodation? Base: 2,423

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Housing and home heating

Around 30% live in relatively modern semi-detached, detached or bungalows

HOUSE TYPE BY YEAR BUILT	Semi detached	Purpose built flat or maisonette	Mid-terrace	Detached	Bungalow	End-terrace	Converted flat or maisonette
Pre 1919	2%	0%	4%	1%	0%	1%	1%
1919-1944	5%	1%	3%	1%	1%	1%	1%
1945-1964	6%	3%	4%	2%	2%	1%	1%
1965-1980	7%	5%	4%	3%	4%	2%	1%
Post 1980	6%	8%	3%	8%	2%	2%	1%
Don't know	0%	0%	1%	0%	0%	0%	0%

Insights

- Over three-quarters heat their home using gas central heating
- Only 3% are currently using a heat pump for home heating

TYPE OF HEATING	*Our sample*	*National data (BEIS)*
Gas central heating	76%	*78%*
Electric room-by-room heating: electric radiators or panel/fan/convection heaters	5%	*6%*
Electric central heating (conventional electric boiler serving a network of connected radiators)	5%	*3%*
Oil or LPG (Liquified Petroleum Gas) central heating	4%	*5%*
Electric room-by-room heating: storage heaters	4%	*5%*
Electric central heating (using an air source heat pump)	2%	*1%*
Electric central heating (using a ground source heat pump)	1%	
Solid fuel central heating (e.g. coal/wood stove)	1%	*1%*
Solar heating	0%	*3%*
Wind-powered home heating	0%	
Other	1%	

Q35: Which fuel is used for your main home heating system? That is, for heating the rooms in your home Base: 2,423

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Environmental attitudes, knowledge and behaviour

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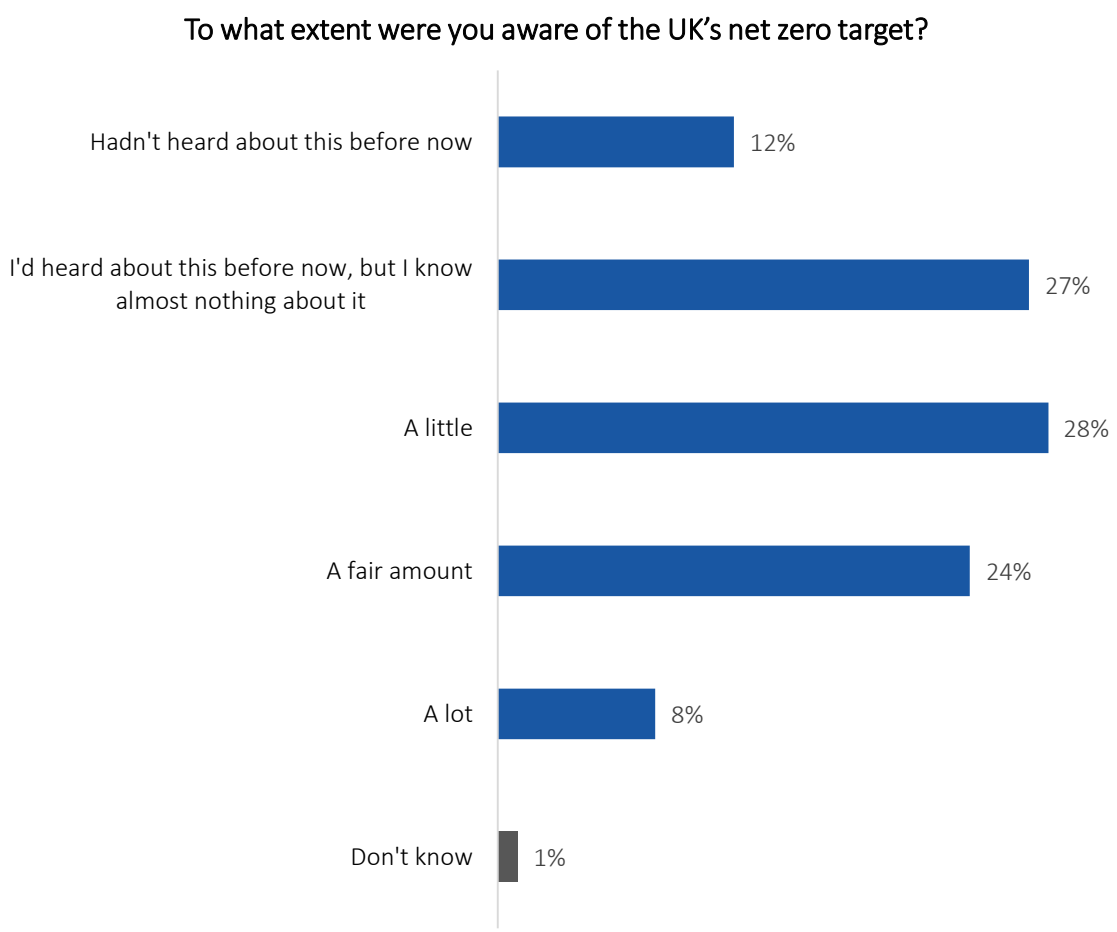
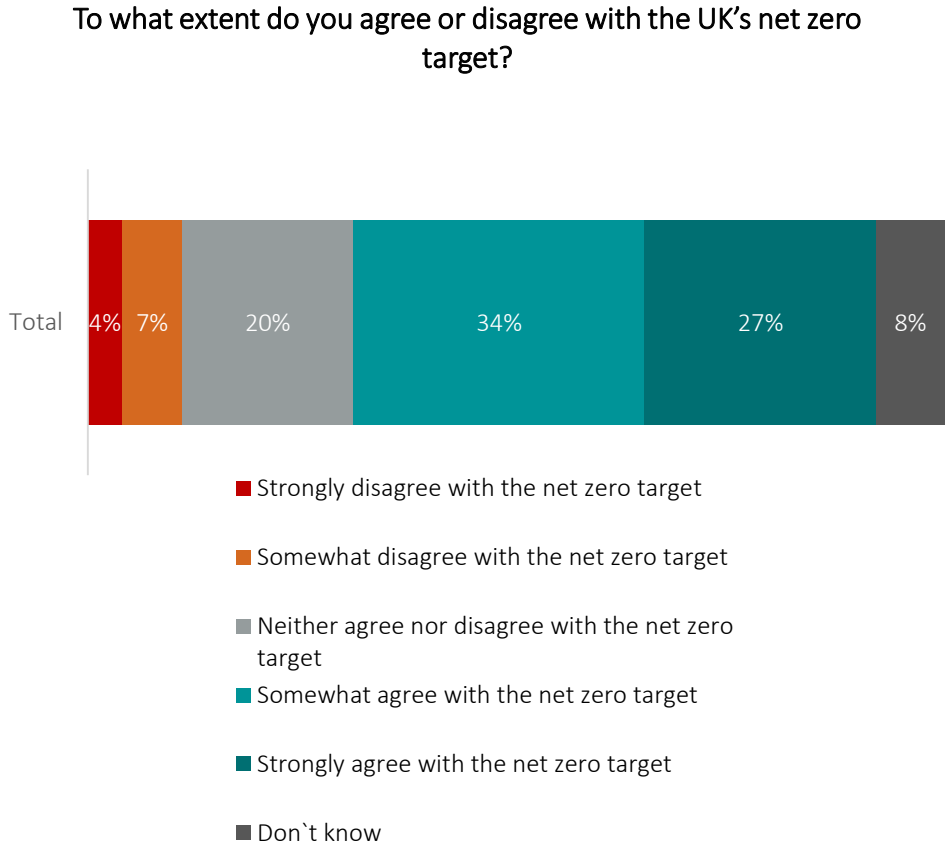
Environmental attitudes

A third reported they had good levels of knowledge about net zero. However, two-thirds agree to some extent with the UK's net zero target





Q30: To what extent were you aware of the UK`s net zero target? Base 2,423. Q31. To what extent do you agree or disagree with the UK`s net zero target? Base: 2,423.

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Environmental attitudes

We probed participants on their level of agreement with the UK's net zero target and thematically analyzed the responses: "good idea" and "need to act now" were common themes for people who agree with the target, "don't know" and "cost concerns" frequently appeared for neutral participants, and "won't have an impact" and "unrealistic" for those who disagree

Agree with Net Zero

Base: 1,621

Neutral towards Net Zero target

Base: 479

Disagree with Net Zero

Base: 226

Q32. "You said that you [Q31] the UK`s net zero target. Please explain why you feel this way? Base 225 (Negative), 1605 (Positive)

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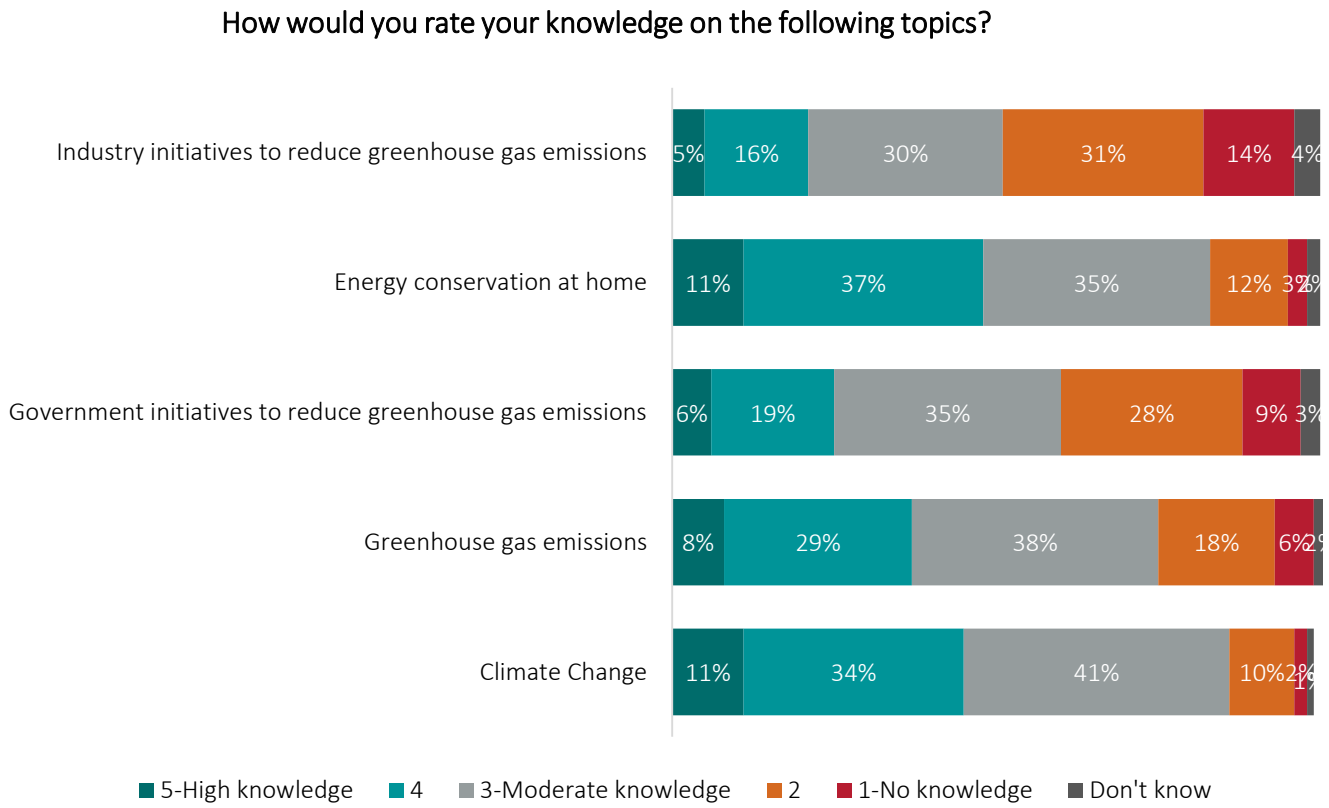
Environmental knowledge

Of all topics probed, participants reported knowing most about saving energy at home (49% reported good knowledge). Second came knowledge of climate change (45%)
Lowest knowledge was reported around the areas of Government and industry initiatives to reduce greenhouse gases



Insights

- Those in identified social grades DE significantly more likely to report no knowledge of all areas
- Those identified as being in social grades AB significantly more likely to report high knowledge across the areas
- Those in identified social grades DE significantly more likely to report no knowledge of all areas
- Those living in social housing and those who identify as digitally excluded are also significantly more likely to report no knowledge of all areas

Q24: How would you rate your knowledge on the following topics? Base: 2,423.

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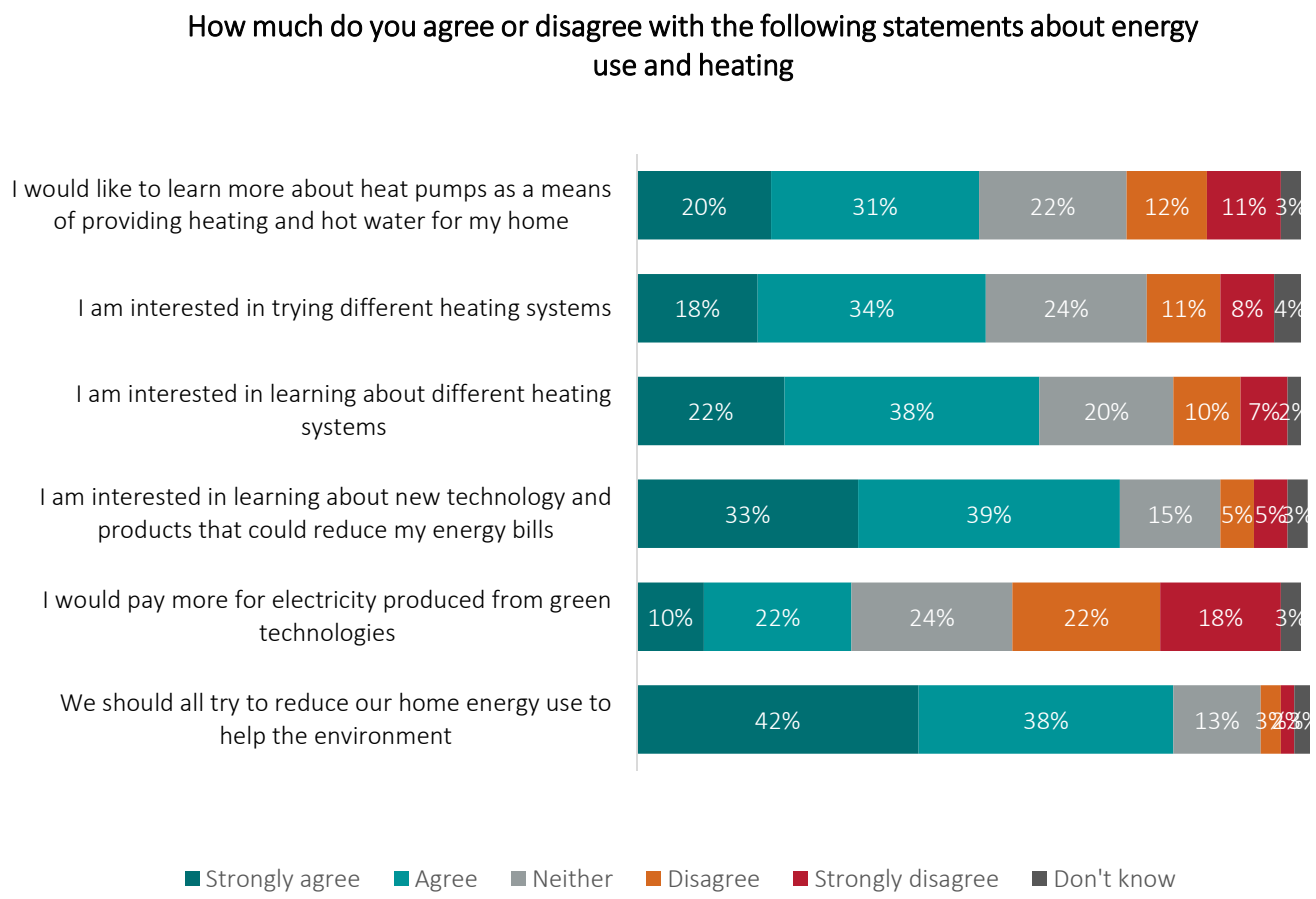
Attitudes about energy use & heating

80% believe home energy consumption should be reduced to help the environment
60% overall said they'd be interested in learning about alternative heating systems and over half expressed an interest in learning about heat pumps specifically



Insights

- Those living in social housing are significantly less likely to agree that:
  - They would pay more for electricity produced from green technologies
  - They would be interested in learning about different heating systems
- Agreement on reducing home energy use to help the environment was consistent across all groups

Q26: How much do you agree or disagree with the following statements about energy use and heating? Base: 2,423.

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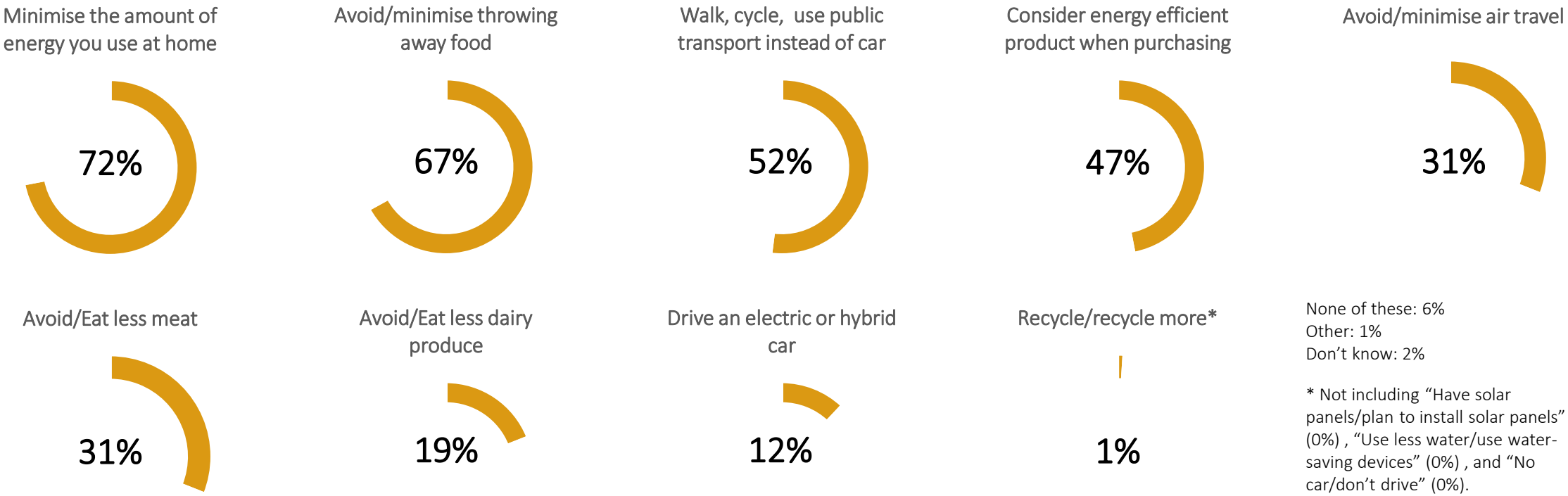
Actions to limit climate change

The most frequently reported behaviour to mitigate climate change, with almost three quarters reporting this, was reducing energy consumption at home. Further, almost half consider the energy efficiency of appliances and electrical equipment when buying.

Thinking now about your everyday life, do you do any of these things to help limit the effects of climate change? Base: 2,423



None of these: 6%
Other: 1%
Don't know: 2%

* Not including "Have solar panels/plan to install solar panels" (0%) , "Use less water/use water-saving devices" (0%) , and "No car/don't drive" (0%).

Insights

- Older age groups and those in adult only households mostly likely to minimise the amount of energy they use at home

*The limited number of respondents who selected "recycle/recycle more" was interesting to project team. However, there are no additional details to explain responses. The hypothesis is it may be because respondents do not see this as an action to reduce climate change although it has an environmental impact

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Heat pumps & thermal storage systems

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Summary

Heat pumps & thermal storage systems: acceptance, drivers and barriers

Acceptance

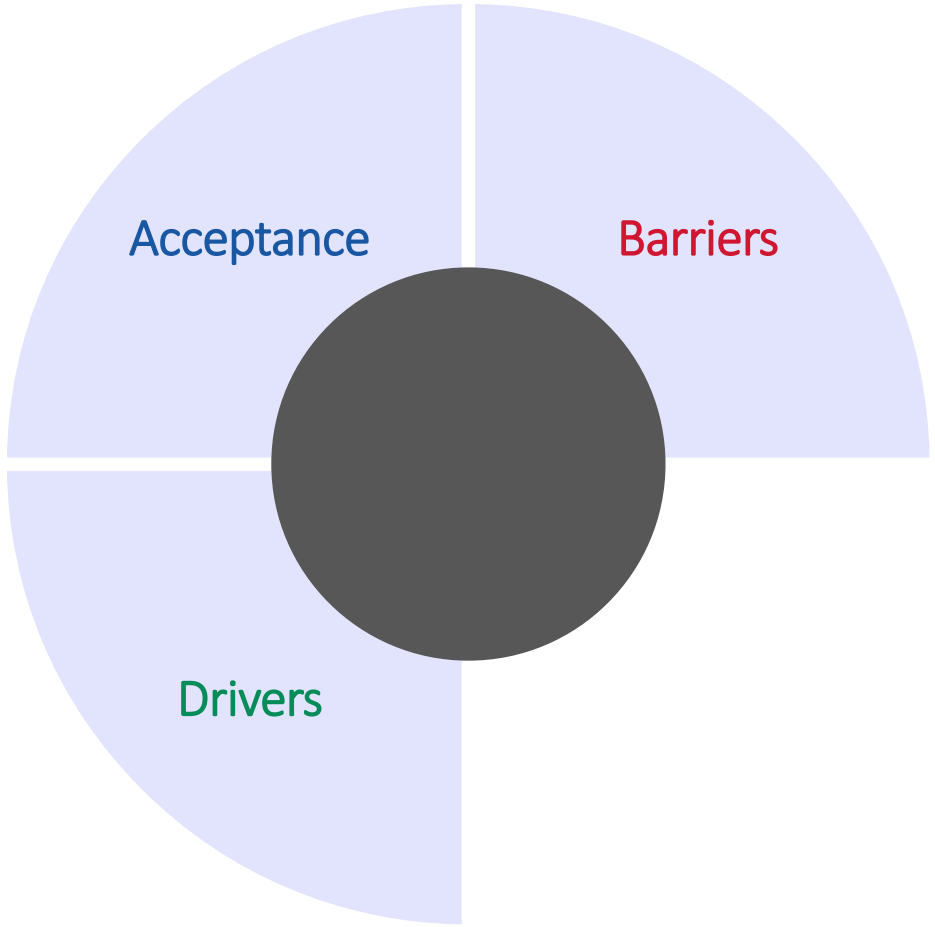
- There is significant overlap between people who are likely to install the different types of LCT. These people are likely to already have a relatively high awareness of heat pumps and thermals storage systems and strong environmental values

Drivers

- The environmental benefits of heat pumps and thermals storage solutions was the most strongly acknowledge benefit followed by the idea that they are an exciting new technology
- Government grants were consistently the mostly likely influencing factor to encourage uptake

Barriers

- Cost and complexity were key barriers for both heat pumps and thermal storage systems. A high proportion of people also felt that heat pumps were ugly



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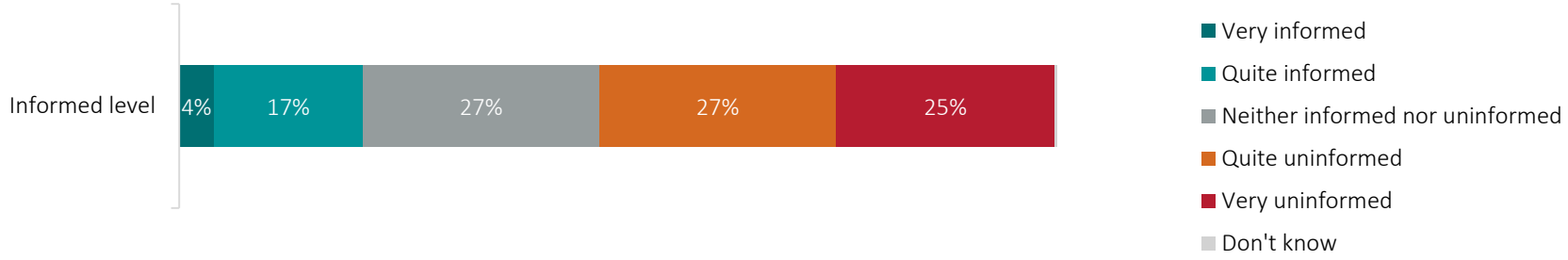
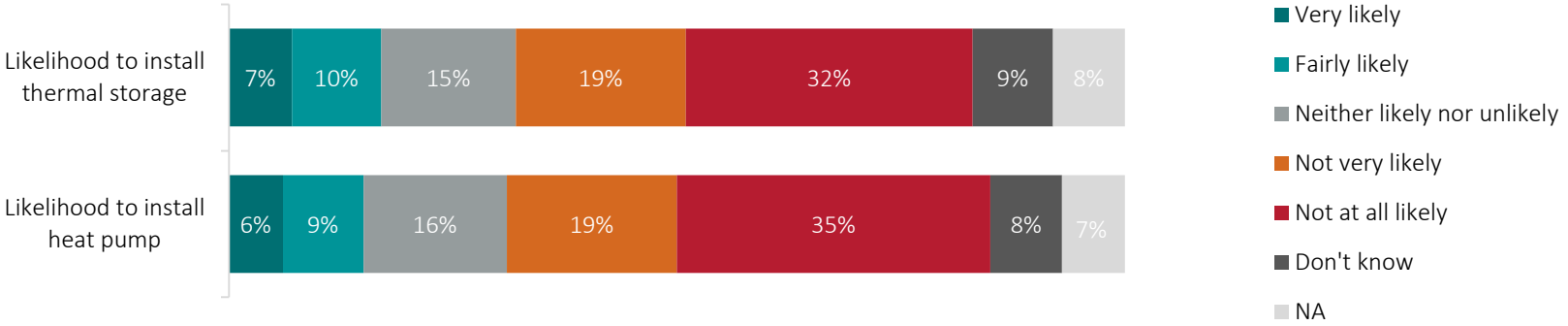
Knowledge of heat pump & likelihood to install

One in five claim to be informed about heat pumps and thermal storage systems.
15% state they are likely to install a heat pump in the next 5 years, and 17% to install a thermal storage system

How informed do you already feel about heat pumps and thermal storage systems for household heating?



How likely are you to install a heat pump/thermal storage heating system in your household within the next 5 years?



Insights

- People who already feel informed about heat pumps and thermal storage systems are more likely to be male, SEG AB, live in London, own their property, have children living at home, and already heat their home using low carbon heating systems.

Q38: How informed do you already feel about heat pumps and thermal storage systems for household heating? Q44: How likely are you to install a heat pump in your household within the next 5 years? and Q45 “How likely are you to install a thermal storage heating system in your household within the next 5 years?” Base: 2,423.

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Segmentation

The participants were segmented into three groups based on their attitudes towards adopting a heat pump using the question *"How likely are you to install a heat pump in your household within the next 5 years?"*

LIKELY ADOPTERS: Either agreed or strongly agreed that they would be likely to install a heat pump in the next five years

AMBIVALENT: Neither agreed nor disagreed that they would be likely to install a heat pump in the next five years

AVOIDERS: Disagreed or strongly disagreed that they would be likely to install a heat pump in the next five years

Heat pumps & thermal storage - LIKELY ADOPTERS:

Consumers who are **LIKELY to install** are more likely to be…

AGE

Under 44

REGION

London

GENDER

Male

DIGITAL STATUS

Connected

SOCIAL GRADE

AB

PROPERTY

Built post 1989

Children in household

Plan to move in 10 yrs

Owner-occupier

INCOME

£50k+

ENVIRONMENTAL ATTITUDES

Informed about heat pump

Informed about smart thermostat

Energy conservers

Worry about climate change

People who are likely adopters of heat pumps and thermal storage systems are very similar. Compared with the overall sample, they are more likely to be:

- younger, high-income families with children
- environmentally conscious.

Although likely adopters score very highly on environmental concern and awareness, only very few are motivated to reduce household energy solely for environmental reasons. Most are motivated by both financial and environmental concerns

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Heat pumps & thermal storage - AMBIVALENT GROUP:

Consumers who are neutral are more likely to be…

AGE

18-29

REGION

Mixed regions

GENDER

Even split

DIGITAL STATUS

Connected

SOCIAL GRADE

C2

PROPERTY

Terrace / Semi-Detached

Mixed household

Rural areas

INCOME

Even split

ENVIRONMENTAL ATTITUDES

Not informed about heat pump
Neutral or worry about climate change
Neutral or likely to install thermal storage
Neutral or likely to opt for flexible tariff

Consumers who were neutral about adopting heat pumps were more likely to be:

- younger (under 29)
- C2
- from a rural area.

There was no noticeable skew toward gender, regions or income
While they were less likely to be informed about heat pumps, some showed a neutral or positive attitude toward environmental attitudes

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Heat pumps & thermal storage - AVOIDERS:

Consumers who are NOT LIKELY to install are more likely to be…

AGE

Over 45

GENDER

Even split

SOCIAL GRADE

C1 or DE

INCOME

Under £30k

REGION

East of England, Midland, South East

DIGITAL STATUS

Disengaged

PROPERTY

Built pre 1919

Adult only household

No plan to move

Owner-occupier

ENVIRONMENTAL ATTITUDES

Not informed about heat pump

Not informed about smart thermostat

Not energy conservers

Not worry about climate change

The Avoiders group were more likely to be:

- slightly older (over 45)
- earn less than £30k/year

They tended to live in older houses as owner-occupiers and in adult-only households, with no plans to move

They were much less informed about heat pumps and smart thermostats. These consumers were also likely not to worry about climate change or conserving their energy.

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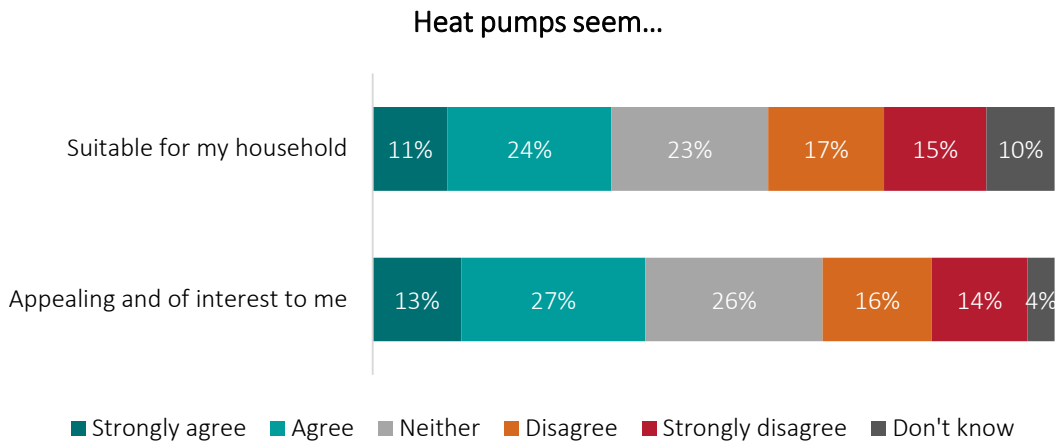
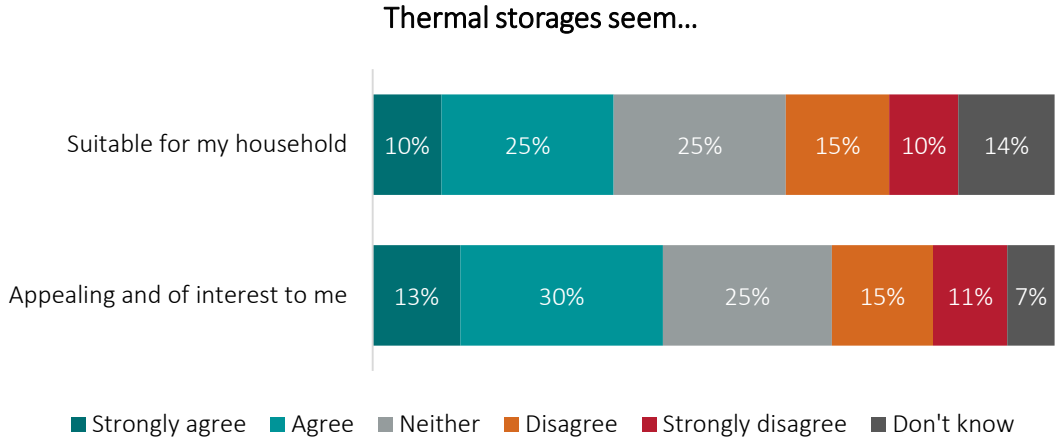
Attitudes about heat pumps & thermal storage systems

Over a third of people think that heat pumps and thermal storage systems are suitable for their household (35% each) and appealing (37% and 43% respectively)



Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
35%	79%	44%	17%
40%	83%	48%	20%



Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
35%	78%	46%	18%
43%	81%	55%	24%

Q39: Now you have read about heat pumps, how much do you agree or disagree with the following statements? Heat pumps seem… Base: 2,423. Q39b: Now you have read about thermal storage systems, how much do you agree or disagree with the following statements? Thermal storage systems seem… Base: 2,423.

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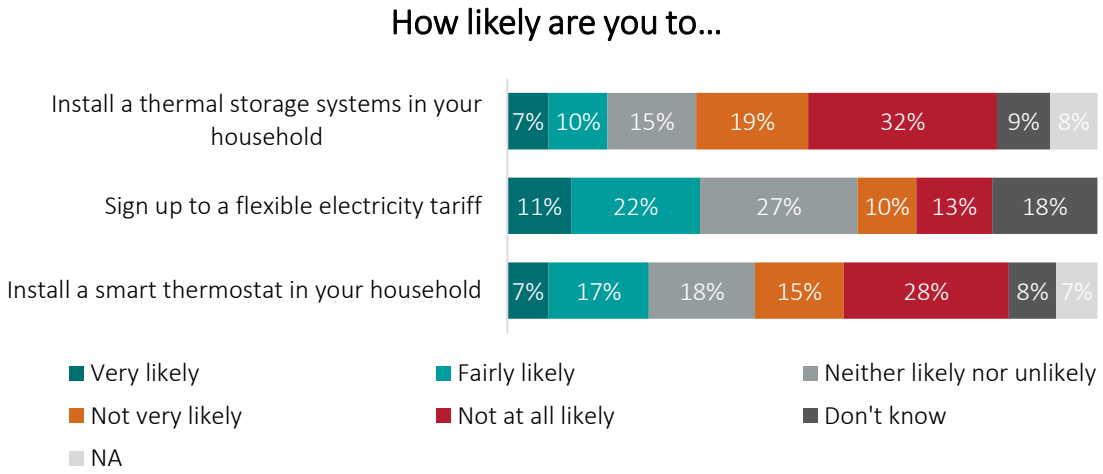
Likelihood to install new technologies & sign up for flexible electricity tariff

Those who state they are likely to install a heat pump (likely adopters) also more likely to sign up to a flexible tariff, install a smart thermostat and willing to have extra technology installed to their heat pump



Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
17%	75%	18%	3%
33%	75%	29%	21%
24%	79%	33%	14%

	Top 2 Agreement			
	TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
Willing to have extra technology installed to your heat pump to enable a third party to control your heating for limited time periods (% yes)	28%	59%	35%	15%
More likely to say they have no concern	7%	12%	8%	4%

Q45: How likely are you to install a thermal storage systems in your household within the next 5 years? Base 2,423. Q46: How likely are you to install a smart thermostat in your household within the next 5 years? Base 2,423. Q50: How likely would you be to sign up to a flexible electricity tariff? Base: 2,423

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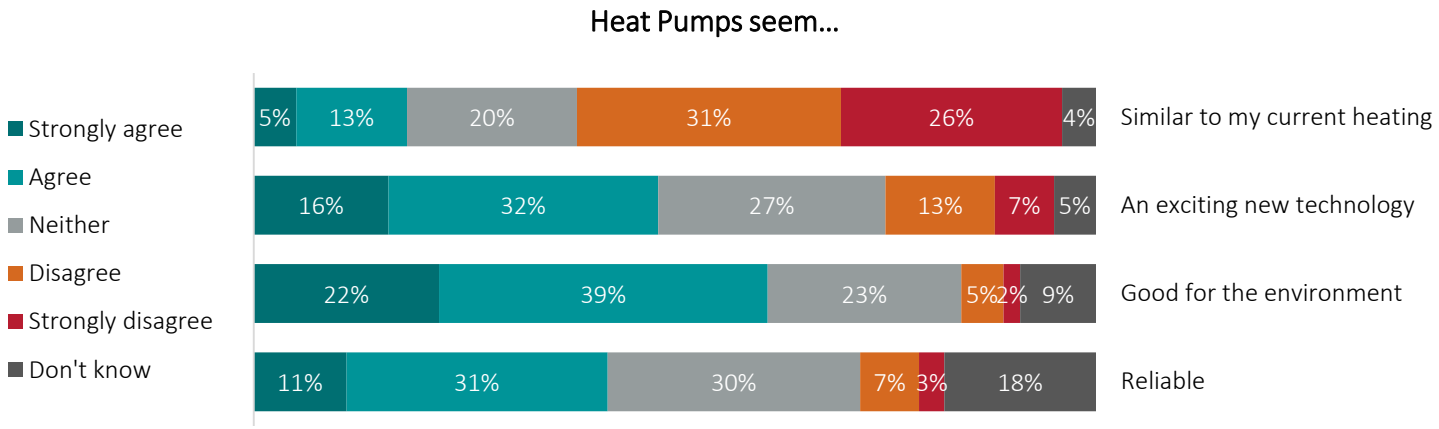
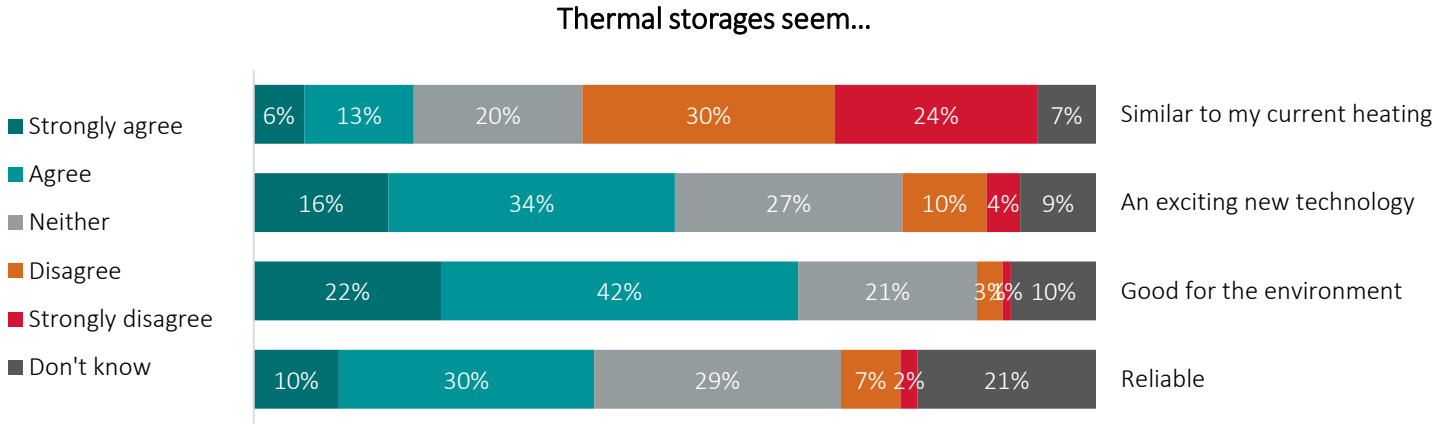
Attitudes about heat pumps & thermal storage systems (Positive)

Similar patterns seen for both heat pumps and thermal storage systems

Likely adopters significantly more likely to believe that both technologies are exciting, good for the environment and reliable





Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
18%	48%	19%	8%
48%	86%	58%	32%
61%	84%	65%	53%
42%	77%	50%	27%

Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
19%	55%	24%	8%
50%	80%	63%	35%
64%	81%	68%	57%
40%	76%	44%	26%

Q39r1-r14: Now you have read about heat pumps, how much do you agree or disagree with the following statements? Base 2,423. Q39br1-br14: Now you have read about Thermal storage systems, how much do you agree or disagree with the following statements? Base 2,423.

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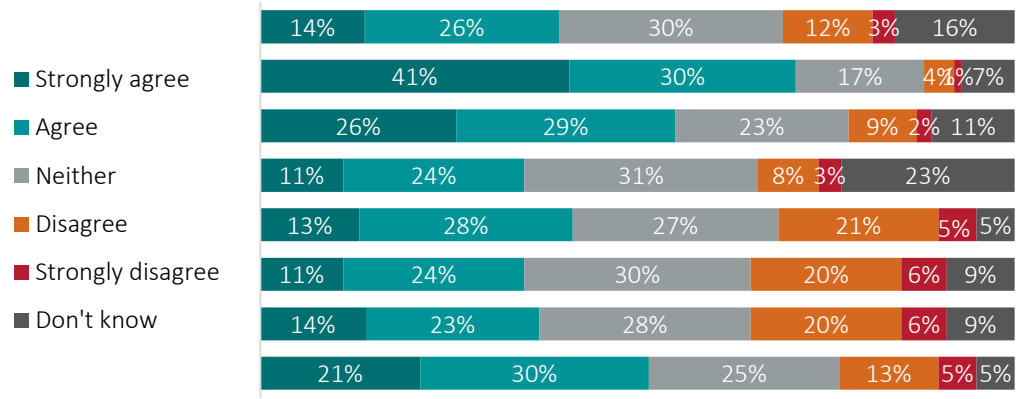
Attitudes about heat pumps & thermal storage systems (Negative)

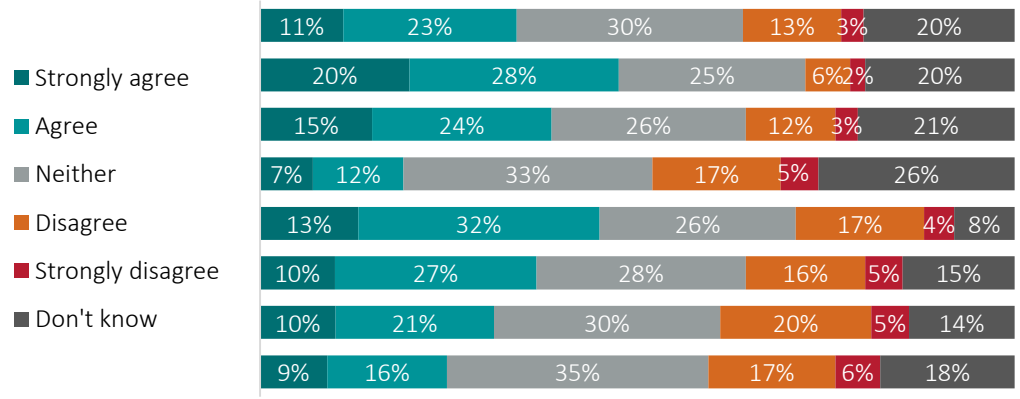
Those unlikely to install heats pumps are significantly more likely to feel they are too expensive to buy, impractical and ugly. And those unlikely to install thermal storage systems are significantly more likely to feel they are inferior in terms of performance and impractical

Heat Pumps seem...



Top 2 Agreement			
TOTAL	LIK ADOPTERS	AMBIVALENT	AVOIDERS
40%	52%	37%	41%
71%	82%	60%	59%
55%	50%	46%	62%
35%	44%	32%	35%
41%	48%	37%	44%
35%	43%	32%	37%
37%	42%	25%	44%
52%	61%	48%	40%

Thermal storages seem...



Top 2 Agreement			
TOTAL	LIK ADOPTERS	AMBIVALENT	AVOIDERS
34%	54%	29%	34%
47%	53%	40%	52%
38%	49%	32%	40%
19%	42%	18%	14%
44%	51%	36%	49%
37%	44%	32%	39%
32%	43%	23%	36%
25%	42%	20%	25%

Q39r1-r14: Now you have read about heat pumps, how much do you agree or disagree with the following statements? Base 2,423. Q39br1-br14: Now you have read about Thermal storage systems, how much do you agree or disagree with the following statements? Base 2,423.

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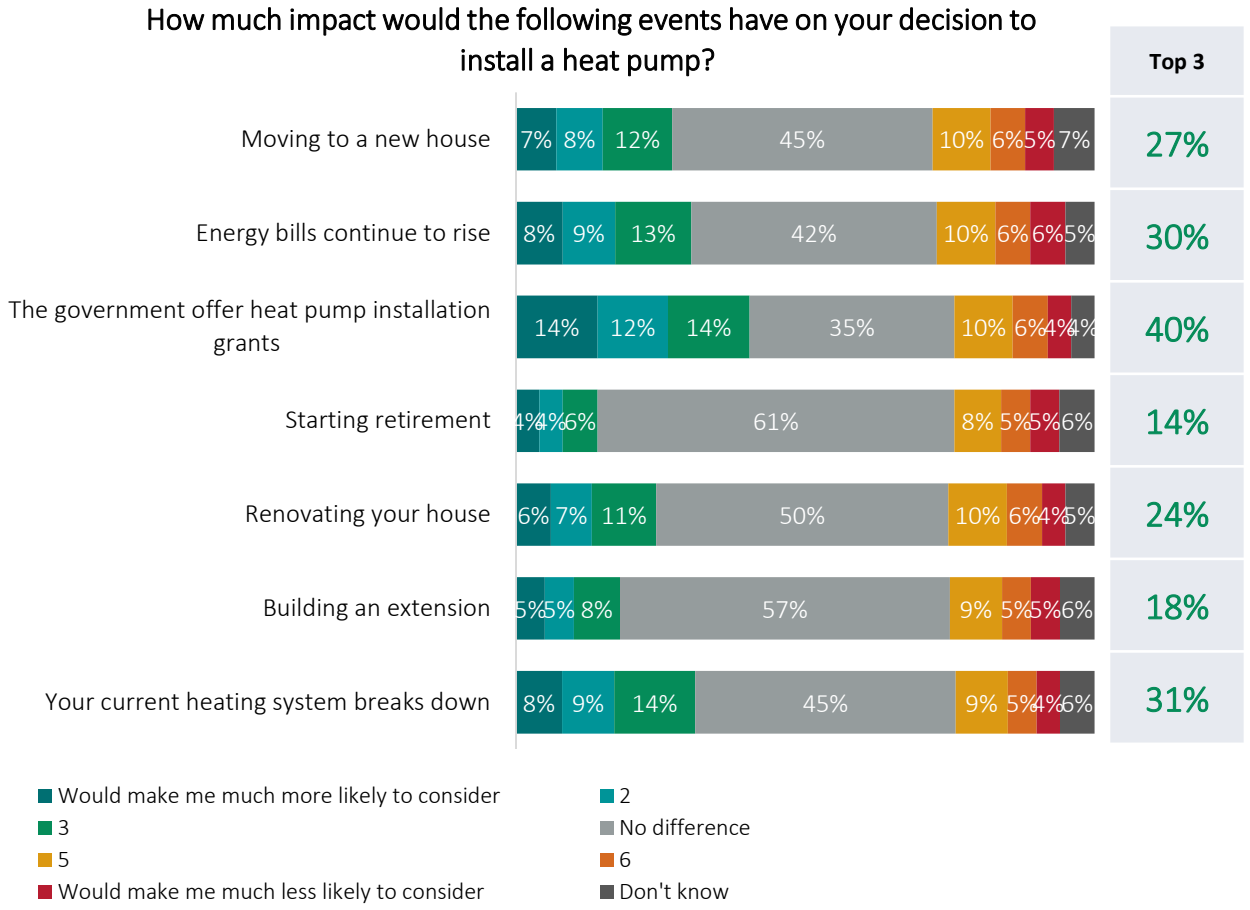
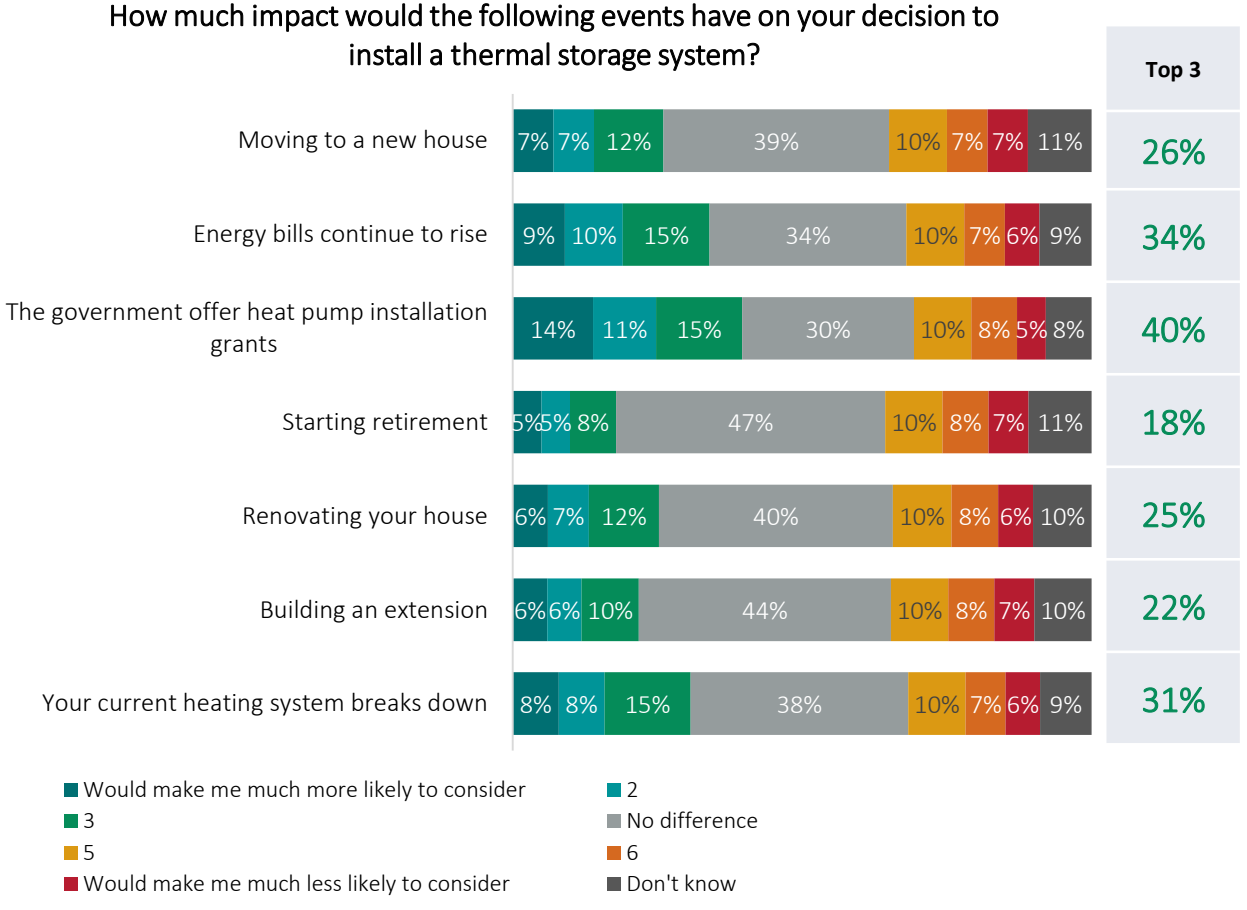
Decision drivers

Biggest triggers for installing heat pumps and thermal storage systems: government grants followed by the need to replace a broken down heating system. Least likely trigger is starting retirement followed by building an extension





Q47r1-r7: How much impact would the following events have on your decision to install a heat pump? Base 2,423. Q48r1-r7: How much impact would the following events have on your decision to install a thermal storage system? Base 2,423

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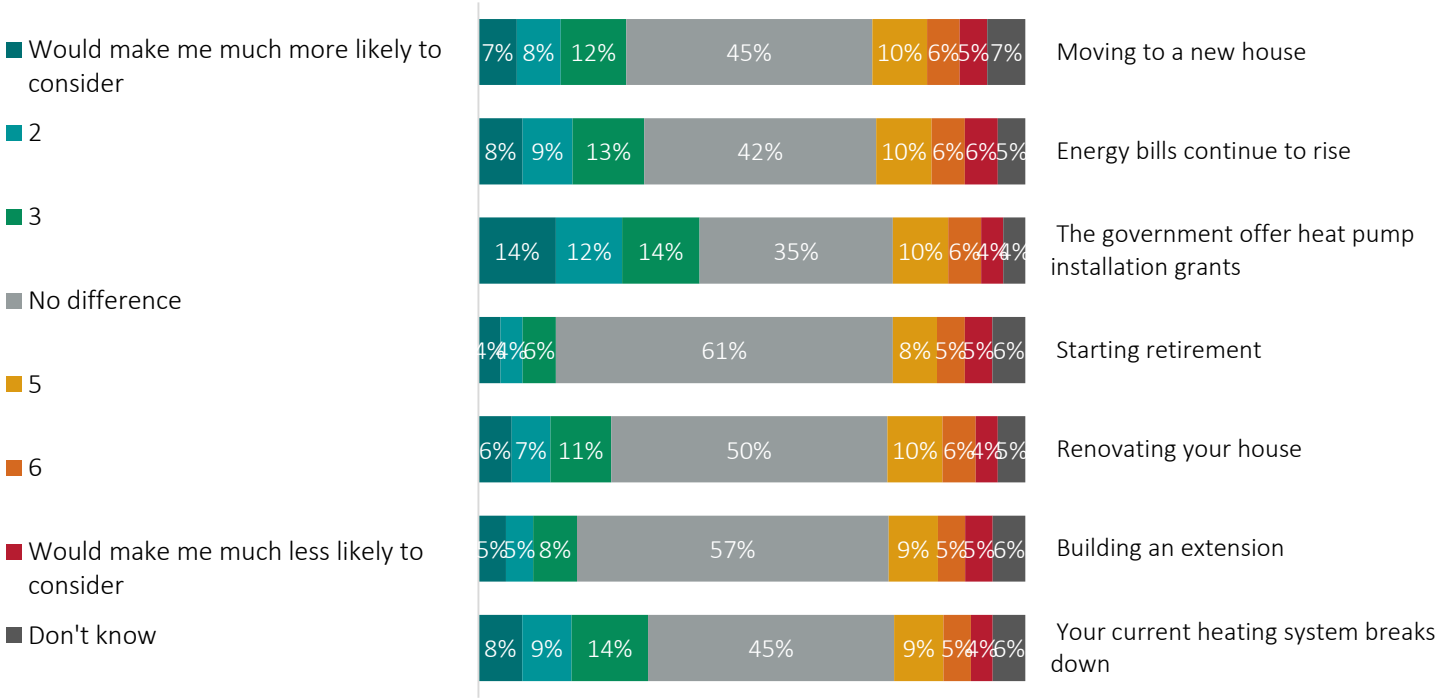
Decision drivers

Rising energy costs are a significant driver to install heat pumps amongst likely adopters (almost twice as many agree that this would be a trigger to installation compared to those unlikely to install – avoiders) The cost data shown were based on best estimates at the time the survey launched, which have since changed.

How much impact would the following events have on your decision to install a heat pump?



Top 3 Likelihood to consider			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
27%	38%	28%	20%
30%	42%	39%	22%
40%	47%	42%	36%
14%	29%	18%	9%
24%	38%	30%	18%
18%	32%	22%	11%
31%	43%	40%	21%

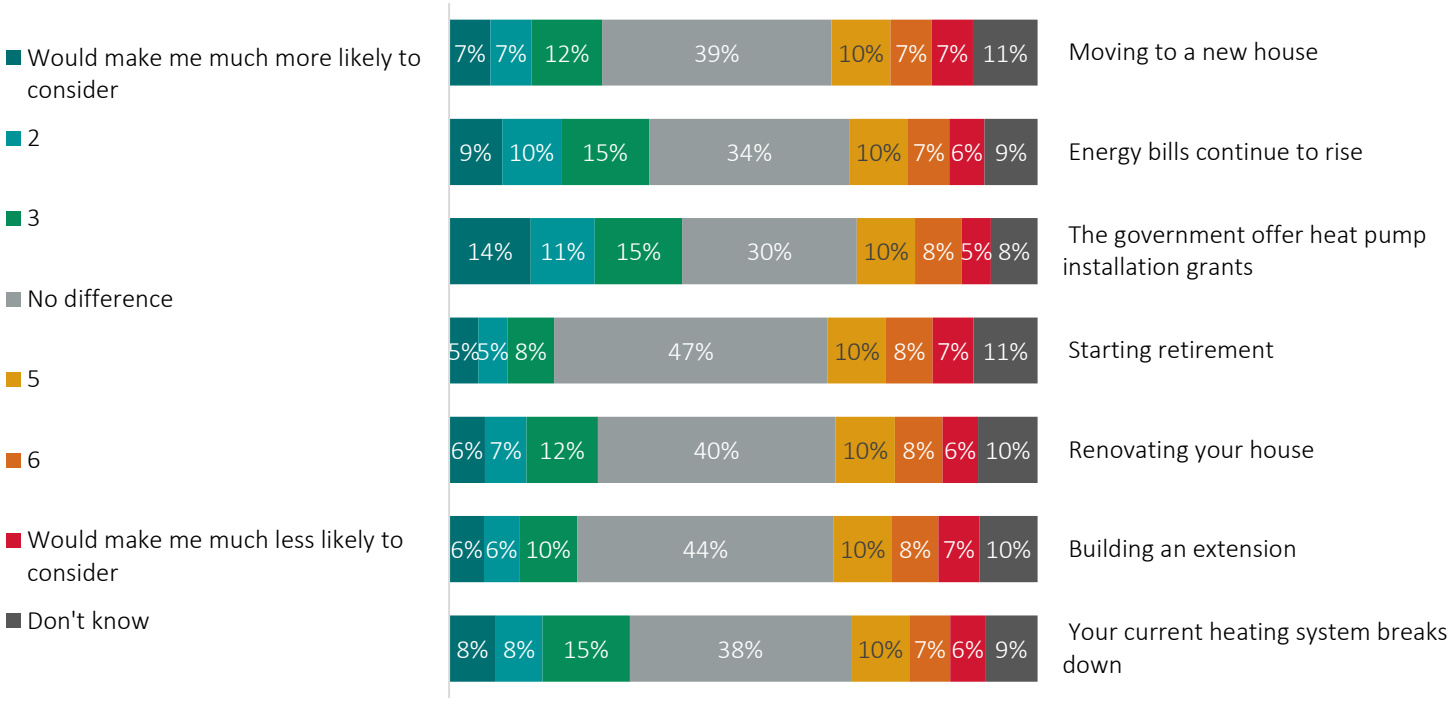
Q47r1-r7: How much impact would the following events have on your decision to install a heat pump? Base 2,423

Accent

Decision drivers

And the same can be seen when considering triggers to installing a thermal storage system

How much impact would the following events have on your decision to install a thermal storage systems?



Top 3 Likelihood to consider			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
26%	35%	31%	19%
34%	41%	42%	25%
40%	44%	42%	36%
18%	32%	24%	10%
25%	35%	33%	18%
22%	30%	24%	16%
31%	43%	39%	23%

Q48r1-r7: How much impact would the following events have on your decision to install a thermal storage systems? Base 2,423

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Smart thermostats

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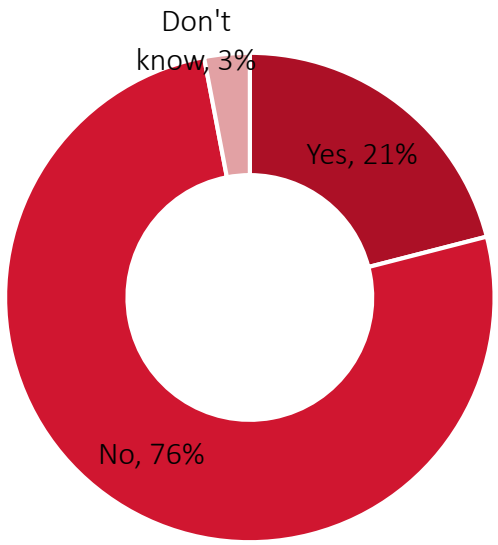
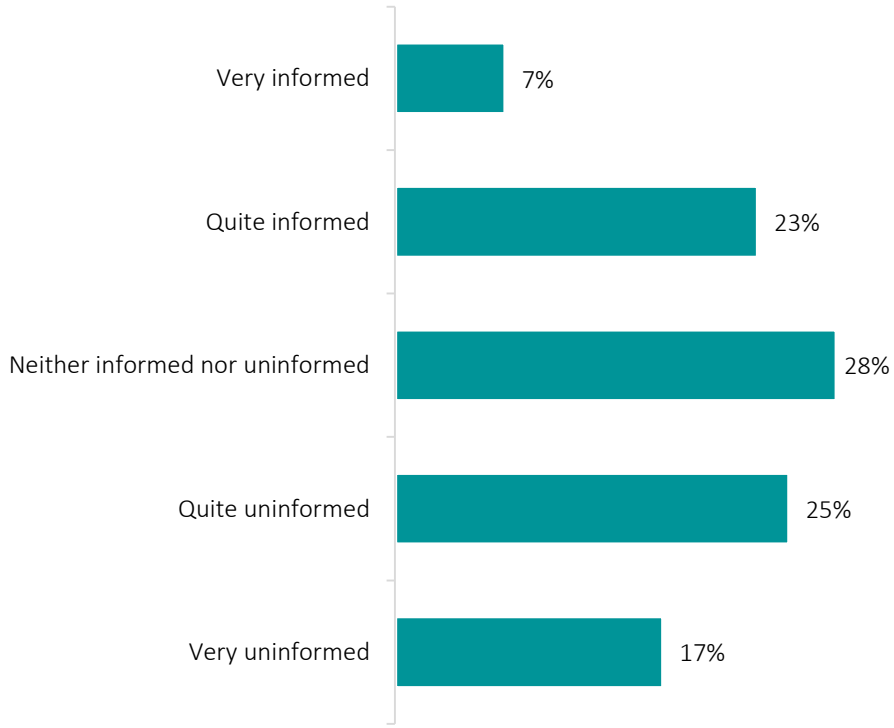
Knowledge of smart thermostats and ownership

One in five (21%) already have a smart thermostat in their home and 30% feel informed about how smart thermostats work

Does your household have a smart thermostat through which you can control your household heating?



How informed do you already feel about smart thermostats?



Insights

- Only 59% of people with a smart thermostat felt 'quite' or 'very' informed about how they work
- The extent to which smart thermostat users felt informed about the technology had little to do with their bill-paying responsibilities
- 22% of people who do not have a smart thermostat at home felt 'quite' or 'very' informed about how they work. This group are more likely to consider installing a smart thermostat in the next 5 years (45% compared with 24% of people who feel uninformed or neither informed or uninformed)

Q41: Does your household have a smart thermostat (such as Nest or Hive) through which you can control your household heating, even when you're not at home, either online or using an app? Base: 2,423. Q42: How informed do you already feel about smart thermostats? Base: 2,423

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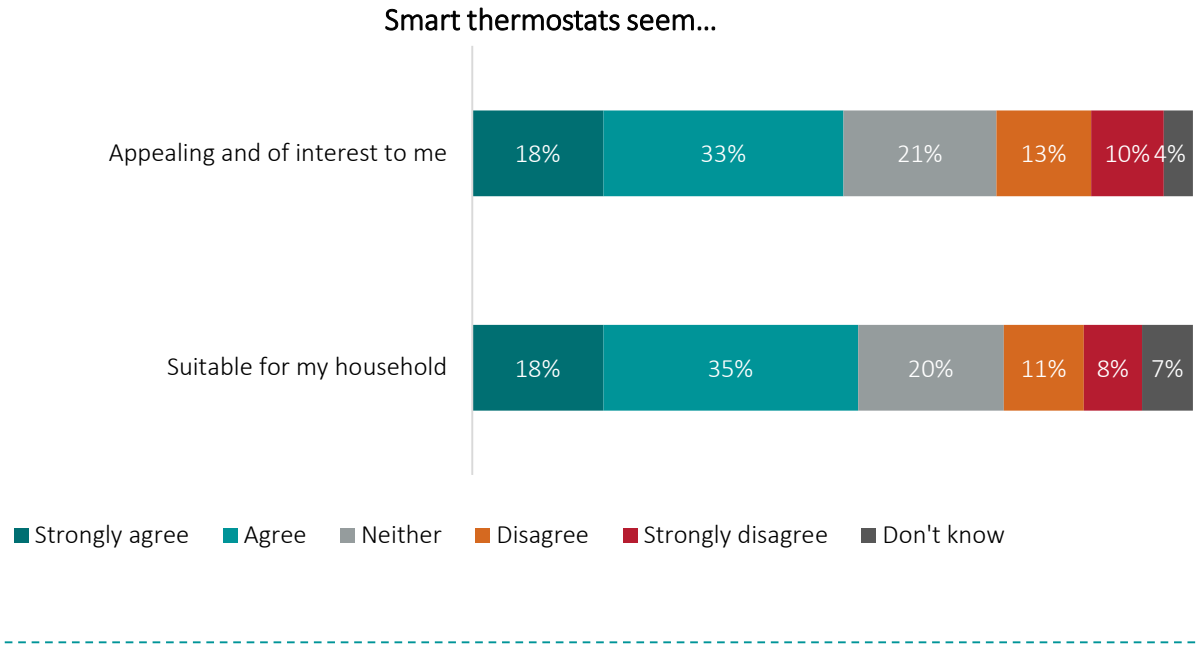
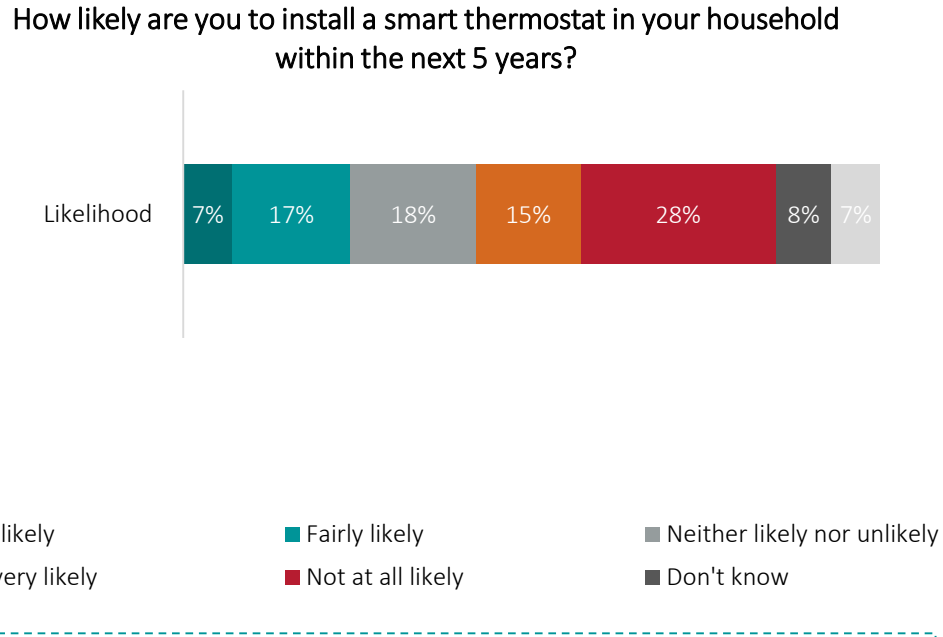
Attitudes about smart thermostats and likelihood to install

More people thought that smart thermostats would be suitable for their household than any other LCT (53% cf. 35%), but only 24% think it's likely they'll install one in the next 5 years. However, this still makes smart thermometers the technology most likely to be adopted





Insights

- There is a substantial, but not complete, overlap between people who agreed the technology is appealing and suitable and those how are likely to install it in the next 5 years. 51% of people who agreed smart thermostats are appealing, and 53% of people who agreed they are suitable for their home said they are likely to install one

Q46: How likely are you to install a smart thermostat in your household within the next 5 years? Base: 2,423. Q43: How much do you agree or disagree with the following statements? Smart thermostats seem… Base: 2,423.

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Flexible tariffs

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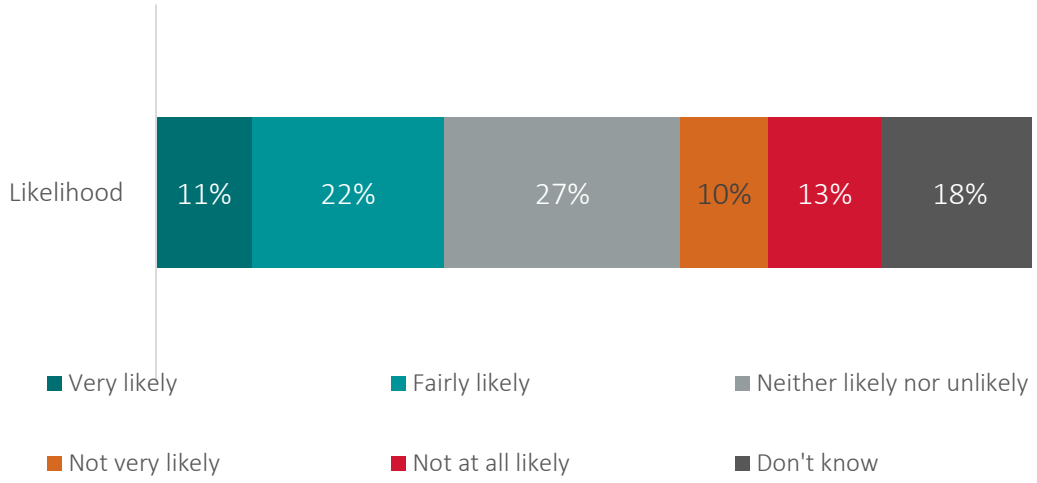
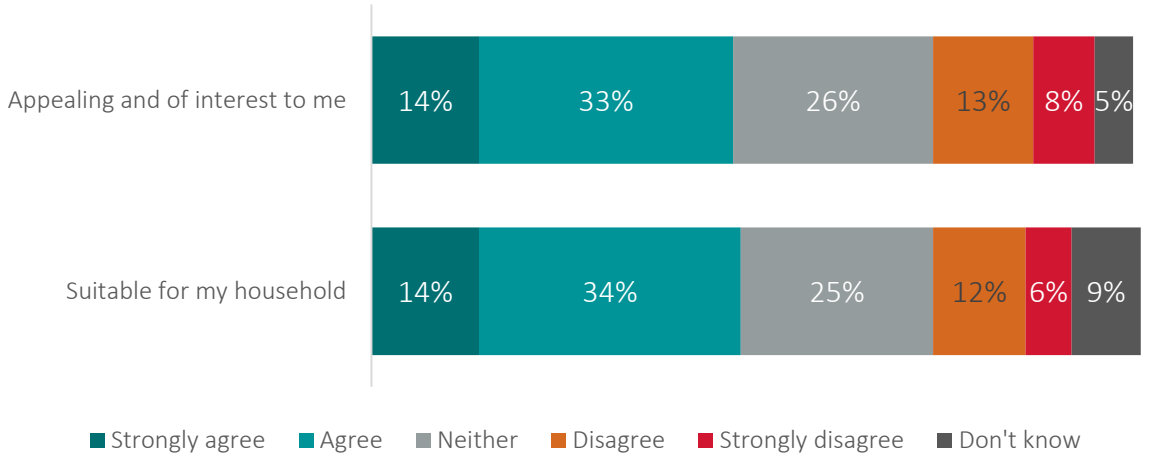
Attitudes about flexible tariffs & likelihood to sign up

More people think flexible tariffs are suitable for their home and find them appealing than think they would sign up for one in the next 5 years: 48% think they're suitable for their home, 47% think they're appealing and of interest, but only 33% are likely to sign up to one

How likely would you be to sign up to a flexible electricity tariff?



How much do you agree or disagree with the following statements? Flexible electricity tariffs seem…



Insights

- **53%** of people who think their home is **suitable** for a flexible tariff said they would be likely to sign up for one.
- **54%** of people who think flexible tariffs are **appealing and of interest** said they would be likely to sign up for one.
- Overall, **26%** of people said they would be willing to have **extra technology installed** to allow third-party control of the heating. This rose to 48% for people likely to sign up to a flexible tariff in the future.

Q50: How likely would you be to sign up to a flexible electricity tariff? Base: 2,423. Q43b: How much do you agree or disagree with the following statements? Flexible electricity tariffs seem…Base: 2,423.

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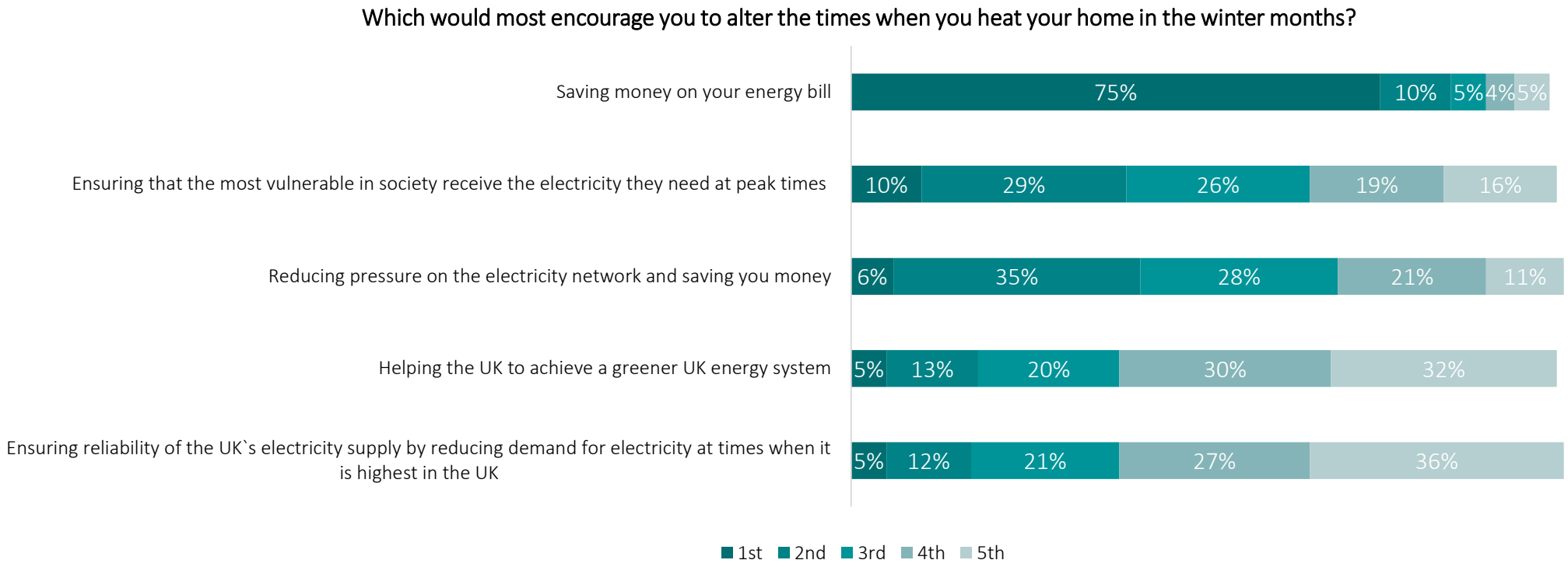
Decision drivers

Saving money on energy bills was by far the highest-ranked driver or ‘hook’



Insights

- Reducing pressure on the network and ensuring vulnerable people have energy were ranked similarly, typically in 2nd and 3rd place
- Supporting a greener energy system and ensuring reliability were also rated similarly and were most often ranked as the least or second least important incentive

Q54: Please rank (order) the following items from 1 to 5 in terms of which would most encourage you to alter the times when you heat your home in the winter months. Base: 2,423.

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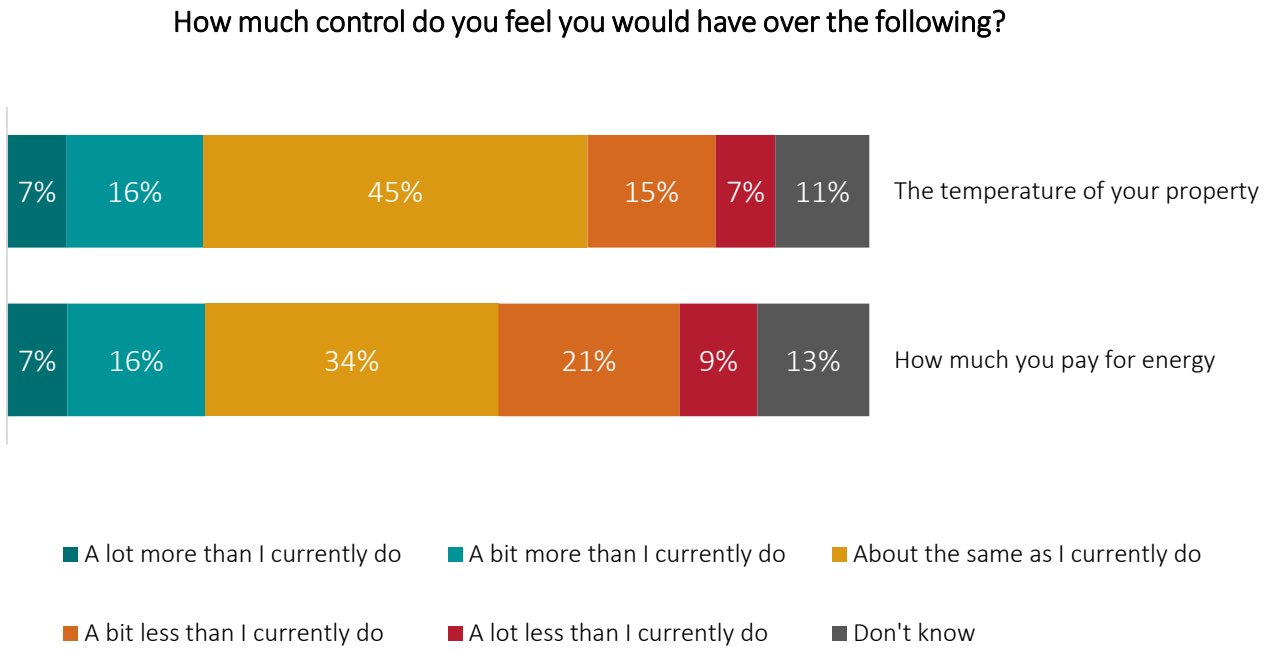
Control over temperature and cost

People were generally neutral over how the amount of control they have over their household temperature would change (45%). However, 30% felt they would have less control over how much they pay



Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
22%	21%	24%	28%
22%	21%	19%	33%

Insights

- Likely adopters tend to think they will have less control over their household temperature (37%), but expect to pay less than they currently do (46%)

Q51: Imagine you were using a flexible electricity tariff. How much control do you feel you would have over the following? Base 2,324.

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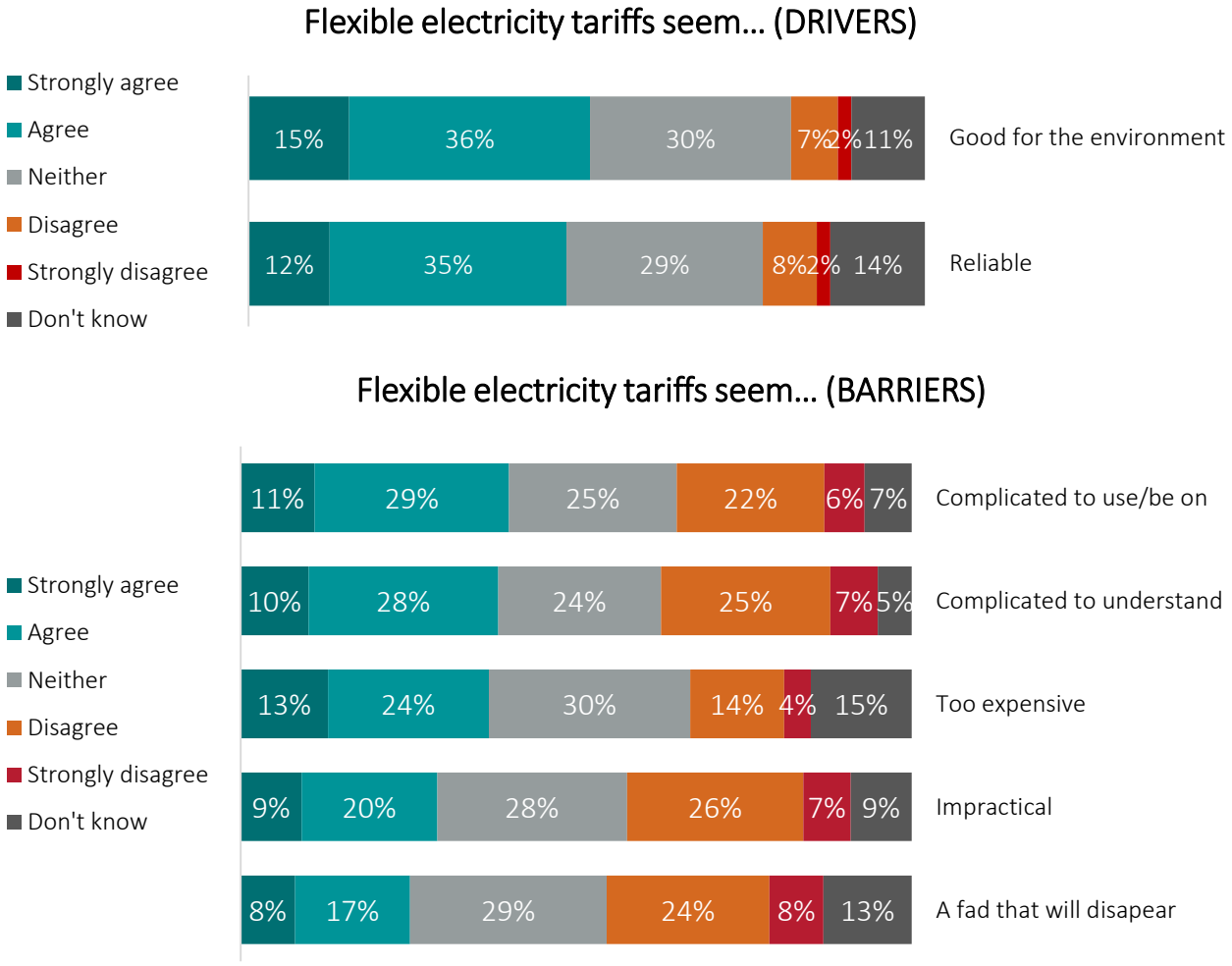
Attitudes about flexible tariffs

Unlike the other low-carbon heating technologies, the cost was not the primary barrier to flexible tariffs. 40% thought they would be complicated to use.



Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
51%	78%	41%	36%
47%	73%	38%	31%

Top 2 Agreement			
TOTAL	LIKELY ADOPTERS	AMBIVALENT	AVOIDERS
39%	37%	36%	50%
39%	37%	37%	46%
37%	35%	36%	51%
29%	28%	27%	42%
25%	28%	21%	15%

Q43b: How much do you agree or disagree with the following statements? Flexible electricity tariffs seem… Base: 2,423.

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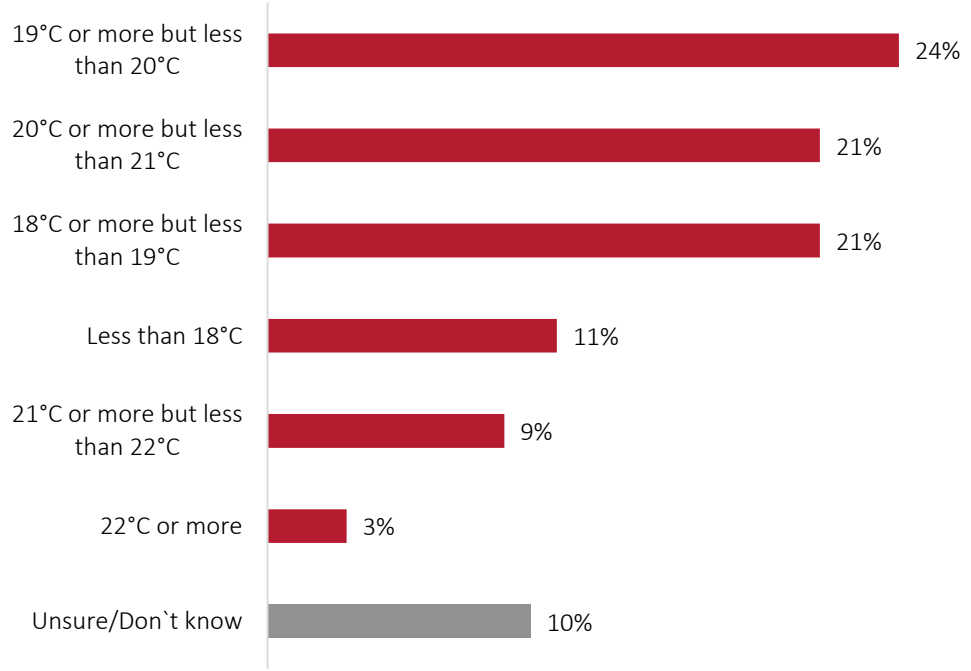
Flexible tariffs – Temperature preferences

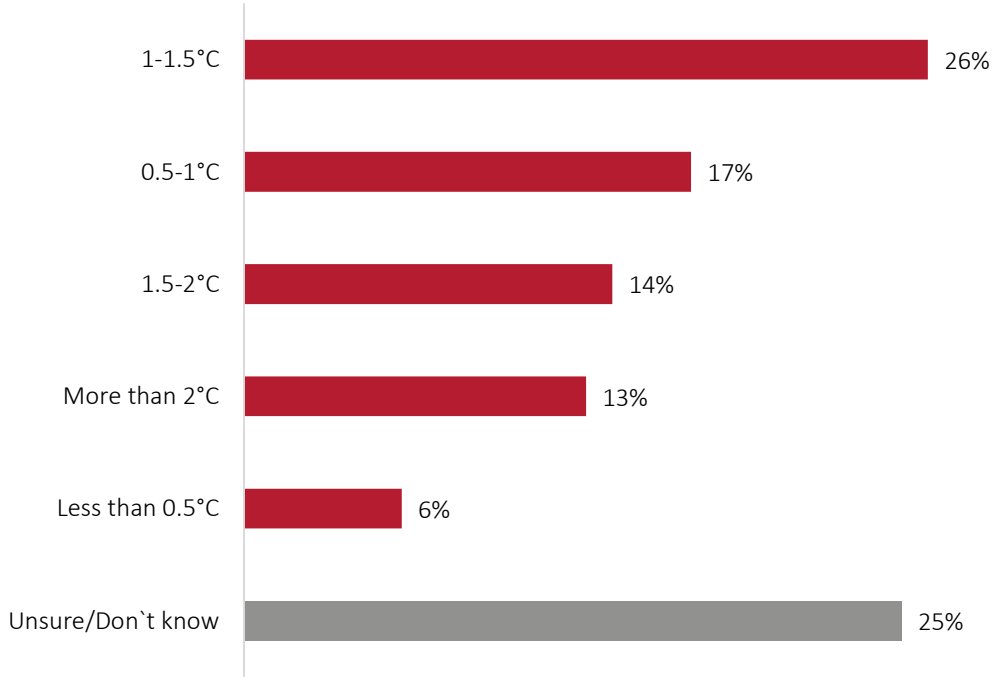
- 10% of people don't know the temperature they prefer in their house. The most common response was 19-20°C.

- 25% of people don't know the amount of temperature variation they'd be comfortable with.
- The most common response was 1-1.5°C.

What room temperature do you usually feel most comfortable in when at home with the heating on?



How many degrees do you think (or know) you could tolerate above or below your most comfortable room temperature at times when you have the heating on?



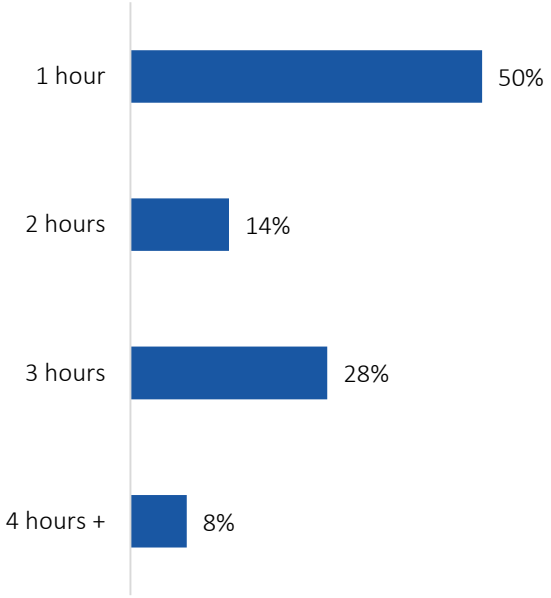
Q52: What room temperature do you usually feel most comfortable in when at home with the heating on? Base: 2,423. Q53: How many degrees do you think (or know) you could tolerate above or below your most comfortable room temperature at times when you have the heating on? Base: 2,423.

Third-party control and advance notice

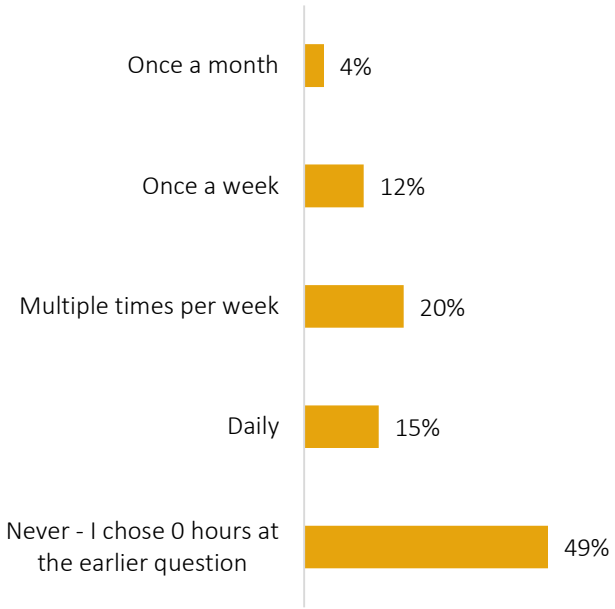
Half willing to have heating system controlled for 1 hour (meaning half would be willing for heating system to be controlled for more than 1 hour)

- Flexible tariff adopters were most likely to say 3 hours (41%)
- 24% of flexible tariff adopters said 'daily' and 30% said 'multiple times a week'
- 36% of flexible tariff adopters said 'the day before' but 31% still said 'more than 1 day before'
- 38% of flexible tariff adopters said 'the day before' but 33% still said 'more than 1 day before'

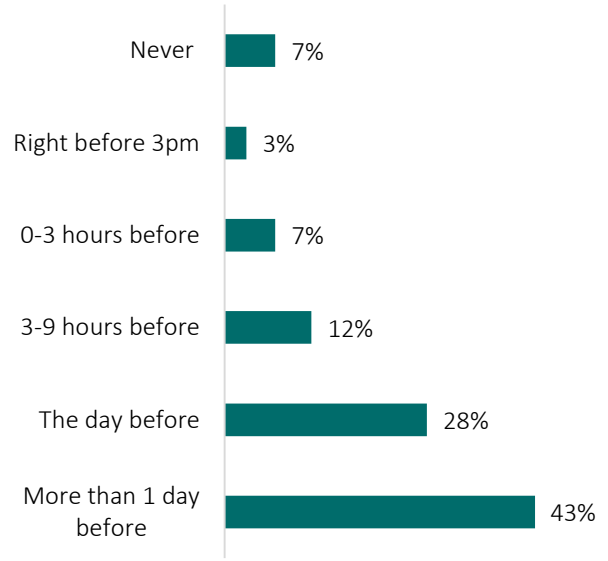
For how many hours at a time would you be willing to have your heating system controlled by a third party?



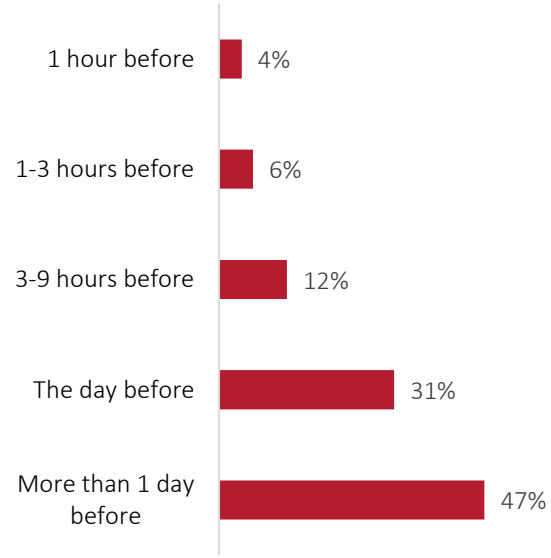
How frequently throughout the winter months would you be willing to have your heating controlled by a third party?



How far in advance would you want to be informed about an event where your heating will be controlled by a third party?



How far in advance would you want to be informed about a period between 3-5pm where electricity becomes much cheaper to use?



Q55: For how many hours at a time would you be willing to have your heating system controlled by a third party in this way, within temperature limits, say a maximum of 2 degrees? Base: 2,149.
Q57: How frequently throughout the winter months would you be willing to have your heating controlled by a third party for the number of hours you chose for the earlier question? Base: 2,423.
Q59: How far in advance would you want to be informed about an event where your heating will be controlled by a third party between 3-5pm, which you can accept or deny? Base: 2,423.
Q60: How far in advance would you want to be informed about a period between 3-5pm where electricity becomes much cheaper to use? Base: 2,423.

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Awareness and acceptance of LCTs Summary

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Demographic groups most aware of LCTs

	Heat pumps / thermal storage systems	Smart thermostats
People with an above average household income	✓	✓
Males	✓	✓
Socio-economic segment AB	✓	✓
Londoners	✓	✓
Owner occupiers	✓	✓
People in a households with children	✓	
Current bill payers	✓	
People from BAME groups		✓
Aged 18-44		✓
Agree with net zero targets		✓
Living in a detached house		✓
Informed about heat pumps and thermal storage systems		✓
Already take actions to reduce household energy use		✓
Planning to move in the next 1-10 years		✓

Demographic groups most likely to adopt LCTs

	Heat pumps	Thermal storage system	Smart thermostats	Flexible tariffs
People with an above average household income	✓	✓	✓	✓
Socio-economic segment AB	✓	✓	✓	✓
People from BAME groups	✓	✓	✓	✓
Aged 18-44	✓	✓	✓	✓
Not digitally excluded	✓	✓	✓	✓
Planning to move in the next 10 years	✓	✓	✓	✓
Informed about heat pumps and thermal storage systems	✓	✓	✓	✓
Already take actions to reduce household energy use	✓	✓	✓	✓
Agree with net zero targets	✓	✓	✓	✓
Households with low carbon heating (HPs, solar etc)	✓	✓	✓	✓
Worried about climate change	✓	✓	✓	
Londoners	✓	✓		✓
Owner occupiers and private tenants	✓	✓		
Males	✓			✓
Households with electric heating	✓	✓		
Living in newer housing (post 1980)	✓	✓		
Current customers/bill payers		✓		
Planning to move in the next 1-10 years			✓	
Connected to the gas network			✓	
People in a households with children				✓
Smart thermostat users				✓

Thank you

Accent conforms to the requirements of ISO20252:2012

Accent

Registered in London No. 2231083
Accent Marketing & Research Limited
Registered Address: 30 City Road, London, EC1Y 2AB

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Appendix: Demographics

Summary of participants

(base)
2,423
responses

6%
work or have a close family member working in the energy sector (148)

83% online panel
17% Face-to-face interviews

9%
digitally excluded (212)

23%
live in a household with someone whose first language isn't English (551)

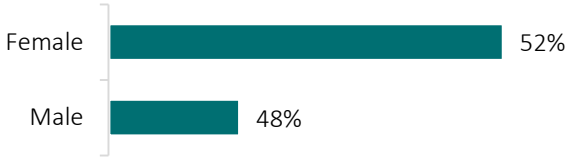
67%
financially vulnerable (1,617)*
this includes all participants that experience any degree of difficulty in bill paying utility bills, and is likely reflective of recent energy price increases

13%
off-gas (317)

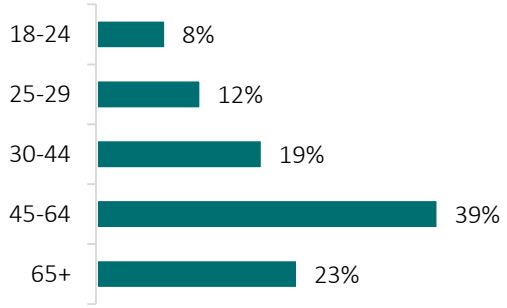
2%
future bill payers (50)

Demographics

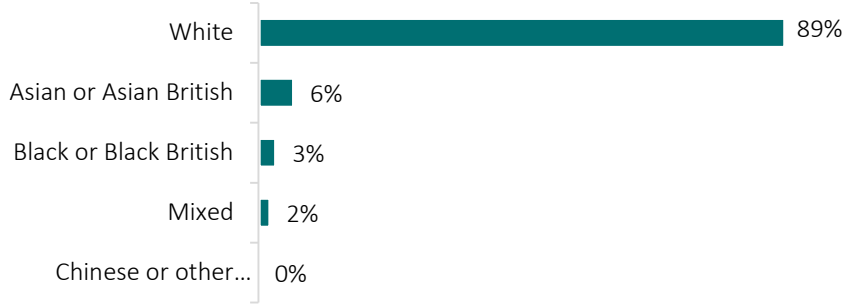
Gender



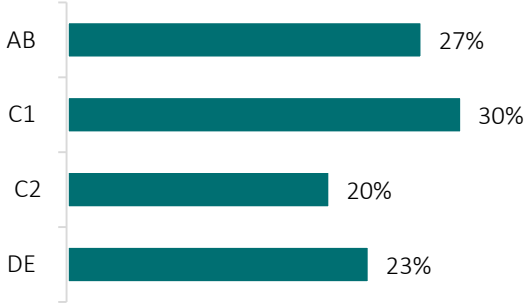
Age



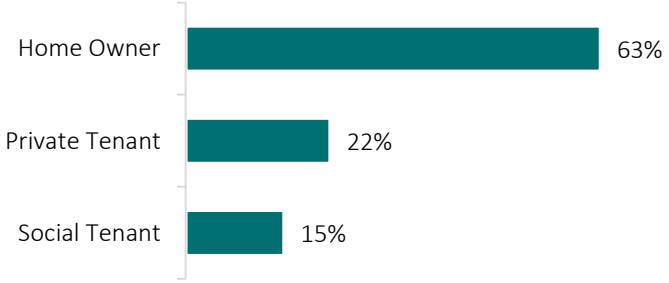
Ethnicity



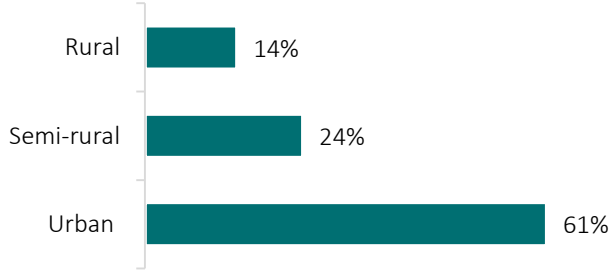
SEG



Occupancy Type



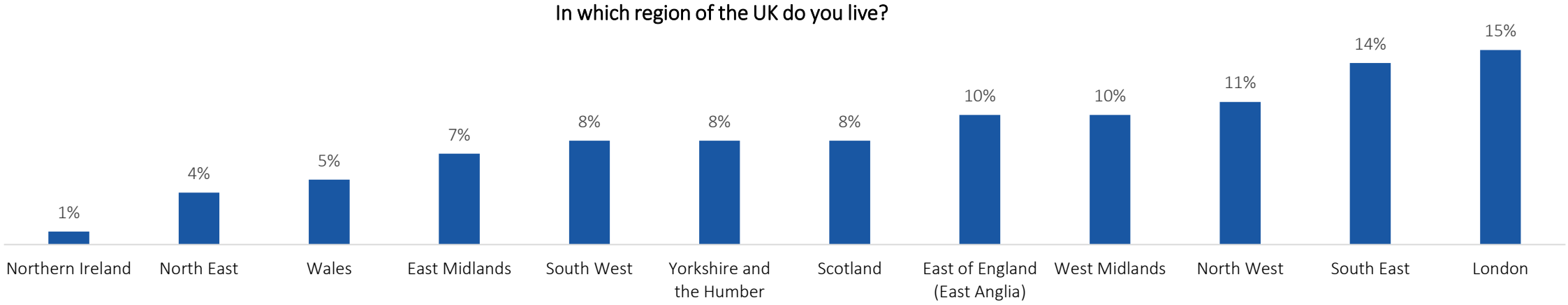
Urban/Rural

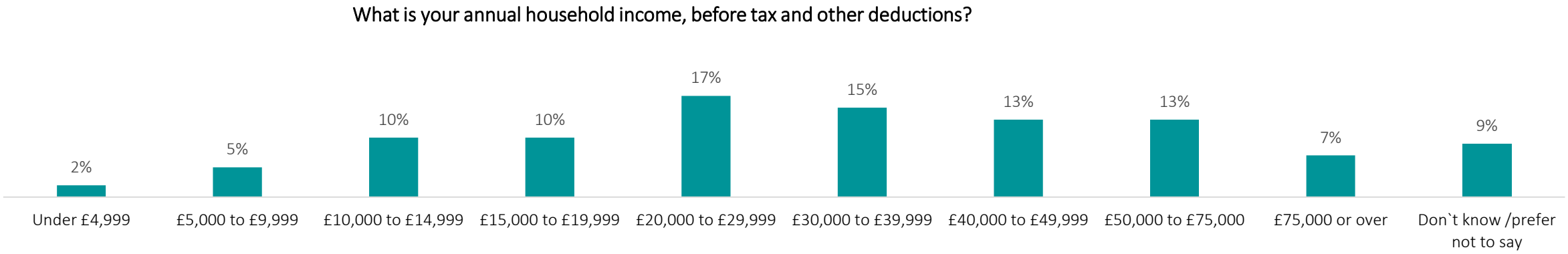


Q12. Are you…? Q13. Which of the following age groups do you fall into? Q14. To which of these ethnic groups do you consider you belong? Q11. SEG Q21. Which of the following best describes your household? Q22. Would you describe the area that you live in as…? Base: 2,423.

Demographics

We met our quota targets for all UK regions (as well as for gender, age and SEG). Our participants were well dispersed over the income bands. As a reference, the 2020 UK median household income was £30,500





Q7. In which region of the UK do you live? Base: 2,423. Q61. What is your annual household income, before tax and other deductions? Base: 2,423

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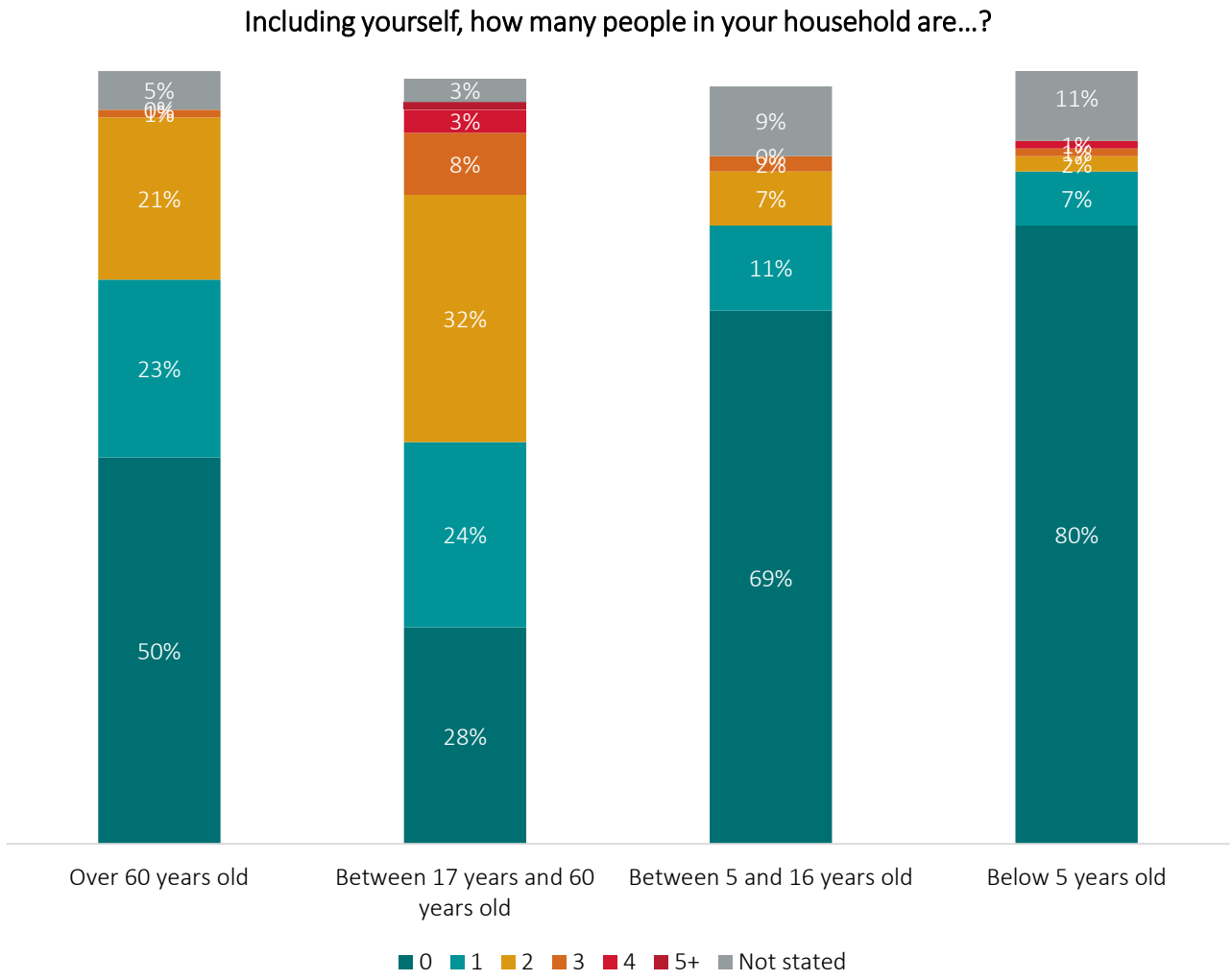
Housing and household composition



- **30%** have a least one child under 17 years living in the house
- **45%** have someone over 60 living in the house

Q62r1-r4. Including yourself, how many people in your household are…?

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