Great British Insulation Scheme Willingness to Co-fund: A Discrete Choice Experiment

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Executive Summary

Background

The Great British Insulation Scheme (known hereafter as 'the Scheme'), formerly referred to as ECO+, is a supplier obligation which is being developed by the UK Government's Department for Energy Security and Net Zero (DESNZ). The aim of the scheme is to deliver energy efficiency upgrades in homes in Great Britain. A recent consultation highlights the benefits this would bring to homeowners – reducing energy bills and ensuring homes are warm and safe – and nationally – increasing resilience to price shocks and working towards the UK Government's Net Zero targets (BEIS, 2022).

The Scheme will target the worst performing homes and include a 'general eligibility group', covering homes in the lower council tax bands, with an EPC of D and below. It will also cover a 'low-income group' targeting those on means tested benefits, in the least efficient social housing, or referred via a participating local authority or energy supplier and considered on a low-income or vulnerable. Under the scheme, suppliers may offer to install a single retrofit insulation measure with the cost partially or fully subsidised. For the general eligibility group, part of the cost of installing a higher cost measure may need to be covered by the homeowner.

DESNZ commissioned the Behavioural Practice at Kantar Public UK to carry out research to understand the extent to which owner-occupiers are willing to co-fund the installation of retrofit measures in their home.

Methods

This report summarises the results of an online discrete choice experiment (DCE) and survey carried out in November 2022. Respondents were sampled from Kantar's online access panel, LifePoints.

The DCE tested how two attributes affect the decision to install a home energy efficiency upgrade or not:

- Type of retrofit measure (*cavity wall, loft, external/solid wall, room-in-roof, and underfloor insulation*)
- Maximum Scheme subsidy available (*no subsidy, £750, £1,500, £3,000*)

Respondents made a series of hypothetical choices between pairs of energy efficiency upgrades, which differed in one or both of these attributes. They could also choose neither.

We analysed responses to the DCE using a mixed logit model with correlated random parameters. The model describes the odds of an individual choosing to have a measure installed given the type of measure and level of subsidy available. We then used this model to simulate uptake rates by measure and subsidy level.

Findings

The analysis found that all levels of subsidy were associated with an increase in the likelihood of sample members choosing to install an energy efficiency upgrade at home. The larger the subsidy, the greater the effect on the likelihood of uptake was. Correspondingly, simulated uptake rates increased as consumer contributions decreased.

The impact of subsidies on uptake varied between retrofit measures. In particular, subsidies had a greater impact on take-up of more expensive measures. This finding reflects the finding from the follow-up survey that cost was the most frequent barrier for the more expensive measure types (solid/external wall, room-in-roof, and underfloor insulation) but not for cavity wall and loft insulation.

Taken together, the results of this study suggest (a) that the Scheme would increase uptake of home energy efficiency upgrades at any level of subsidy, but that larger subsidies would yield greater increases, and (b) that the effect of subsidy is likely to depend on the specific upgrade being offered.

Introduction

Since 2021, global shortages and increased prices in oil, gas and electricity markets have caused millions of UK households to fall into fuel poverty.[1] National Energy Action estimates that as of the start of April 2022 there were 6.7 million UK households in fuel poverty amid the cost-of-living crisis, an increase of more than 50% in just over six months (BEIS, 2021; National Energy Action, 2022a).

The UK government is developing plans for a new a supplier obligation and subsidy scheme to deliver energy efficiency measures – named the Great British Insulation Scheme . A recent consultation for the Scheme, formerly referred to as ECO+, lists multiple benefits from installing energy efficiency measures including the opportunity to: reduce energy bills over the longer term; increase the security and resilience of the energy system to future price shocks; ensure homes are warm and safe; and achieve the UK government's Net Zero targets (BEIS, 2022).

The scheme will deliver energy efficiency upgrades[2] in Great Britain at pace until March 2026 (BEIS, 2022). The Scheme will work alongside existing schemes (such as ECO4 focused solely on low-income households, least able to pay and in fuel poverty) to install measures to as many households as possible. The scheme will target the worst performing homes and include a 'general eligibility group', with an EPC of D and below, as well as a 'low-income group' targeting those on means tested benefits, in the least efficient social housing, or referred via a participating local authority or energy supplier and considered to be on a low-income or vulnerable. Under the Scheme, suppliers may offer to install a single retrofit insulation measure with the cost partially or fully subsidised. Low income homes may also be offered secondary heating controls where they are also having an insulation measure installed. For the general eligibility group, part of the cost of the installing a higher cost measure may need to be covered by the homeowner. The scheme will be targeted at homeowners in homes with poor energy efficiency (EPC) ratings and those in lower council tax bands.

To maximise the number of households that could benefit from the Scheme, the Department for Energy Security and Net Zero (DESNZ) commissioned this study to understand the extent to which owner-occupiers are willing to co-fund the installation of retrofit measures in their home.

Research questions

The study's primary research questions were:

[1] In 2000, UK-wide legislation first defined a person living in fuel poverty as 'a member of a household living on a lower income in a home which cannot be kept warm at reasonable cost'. The inability to heat a home is defined by three common factors across UK nations: a household's income, their fuel costs and their energy consumption.
[2] The full list of eligible measures are: Cavity wall insulation; Solid wall insulation (both external and internal); Loft insulation; Pitched roof insulation; Flat roof insulation; Under floor insulation; Solid floor insulation; Park home insulation; Room-in-roof insulation (BEIS, 2022, p. 37).

1. How do different levels of subsidy affect the likelihood of owner occupiers choosing to install any given retrofit measure?
2. How much are owner-occupiers willing to contribute to the cost of installing a given retrofit measure?

We also explored the following secondary research questions:

3. How does uptake of retrofit measures vary with select demographics of interest?
4. How might people allocate a cost-cap subsidy across multiple retrofit measures?
5. How open are people to different financing options for retrofit measures?
6. How confident are people in their knowledge of energy efficiency measures?

To address research questions 1-3, we ran an online discrete choice experiment (DCE). DCEs are a technique for finding out how influential different attributes of a decision are on the choice made. They are a robust method for predicting behaviours and preferences and are commonly used to determine willingness-to-pay (Breidert et al., 2006). We used a battery of post-DCE survey questions to answer research questions 4-6.

Methods

Sample / eligibility

We recruited 1,000 owner-occupiers in Great Britain from Kantar's online access panel, LifePoints. Panellists are incentivised to complete online surveys using 'Lifepoints', which they can exchange into vouchers/e-gift certificates or money via PayPal.

We applied demographic quotas matching eligibility for the Scheme at the time of fieldwork:

- Owner occupiers,
- Living in Great Britain (England, Scotland, or Wales),
- EPC rating of D or below, and
- Council tax band A to D inclusive in England, or Council tax band A to C inclusive in Wales, or Council tax band A to E inclusive in Scotland.

The experiment included an attention check question which directed respondents to choose a particular answer. Any who failed to do so were excluded from the study and are not included in the final total of 1,000 respondents.[3]

While there is no scientific consensus on the sample size required for a sufficiently powered discrete choice experiment, our sample (n = 1,000) exceeds the minimum suggested by a commonly used heuristic for a main effects discrete choice model (Johnson & Orme, 2003; Orme, 1998)

A full breakdown of the demographic characteristics of respondents can be found in Appendix A1.

Fieldwork

Fieldwork was carried out in November 2022.

Discrete choice experiment

The DCE tested how two attributes – the maximum size of the Scheme subsidy and the type of retrofit measure offered – affected the decision to install or not. Following initial scoping discussions with DESNZ, we agreed on four levels of subsidy and five types of retrofit measure (Table 1).

Table 1. DCE attributes and levels

Attribute	Level
Retrofit measure type	Cavity wall [a]
	Solid wall
	Underfloor
	Room-in-roof
	Loft
Maximum subsidy available	£0 (no subsidy) [a]
	£750
	£1,500
	£3,000

[3] 117 respondents failed the attention check.

a: Reference category

The DCE consisted of 20 hypothetical choices, of which each respondent saw ten. Each choice offered two retrofit measures for respondents to choose between, with a third option: ‘neither measure’. The two options in any one pair differed according to the size of the subsidy, the retrofit measure type, or both. An example is shown in Figure 1. For a full list of DCE choices offered, see Appendix B (Table 2 and 3). For a technical description of how the DCE design was generated, see Appendix C.

The retrofit measures on offer were shown as ‘cards’ stating the maximum level of subsidy available for installing the measure and giving key information about the type of retrofit measure on offer, including installation cost, likely savings, and how disruptive installation usually is. All information regarding costs, savings and disruption were provided by DESNZ and were presented to respondents as being for ‘a typical home’. Table 2 displays the information we gave for each retrofit measure.

Table 2. Characteristics of retrofit measures shown on the DCE cards

	Disruption level	Typical cost of installation	Potential energy bill savings per year
Cavity wall	Minimal	£1500	£140
Solid wall	Medium to significant	£20,000	£300
Loft	Minimal	£1200	£60 - £100
Room in roof	Medium to significant	£5,900	£100
Underfloor	Significant	£2,700	£70

The cost and bill savings are estimates produced based on the average across a 'typical home', which for this study was defined as a semi-detached or end-terraced home. Cost estimates were produced by analysts in DESNZ, using latest estimates and including inflation, and £395 PAS costs. Energy savings were based on the percentage heat demand reduction from SAP, applied to a ‘typical’ heating bill of £1,200/yr.

The disruption rating and time taken is taken from Gov.uk information and advice service (https://www.gov.uk/improve-energy-efficiency). The time taken refers to the number of days for installation (not the start-to-finish user journey). The disruption description is taken from a variety of sources, including the Gov.uk information and advice service. It focuses on major

sources of disruption and may not be comprehensive. Disruption from any pre-installation surveys, or post-installation quality checks is not included.

The rating scale is based on the following definitions:

- **Minimal:** Measure is not expected to be considered disruptive. It does not require constructural changes and no dependency on occupant to change their living habits or living arrangement (e.g. not use a room during installation) at any point.
- **Medium:** Some disruption is expected with the measure. Installation may have minor constructural requirements but not expected to generate dust. Does not require occupant to move out or adjust their living arrangement (e.g. not use a room during installation), but may require reasonable adjustments to the occupant's living habit for a period (e.g. electricity may need to be turned off during the installation).
- **Significant:** Disruption is expected with the installation of measure, may generate dust. May require occupant to move out or adjust their living arrangement (e.g. not use a room) during at least one point during the installation.

In the experiment, the order in which the pairs were shown to respondents, and which option appeared on the left, were randomised to minimise the influence of order effects (Schwarz, 2014).

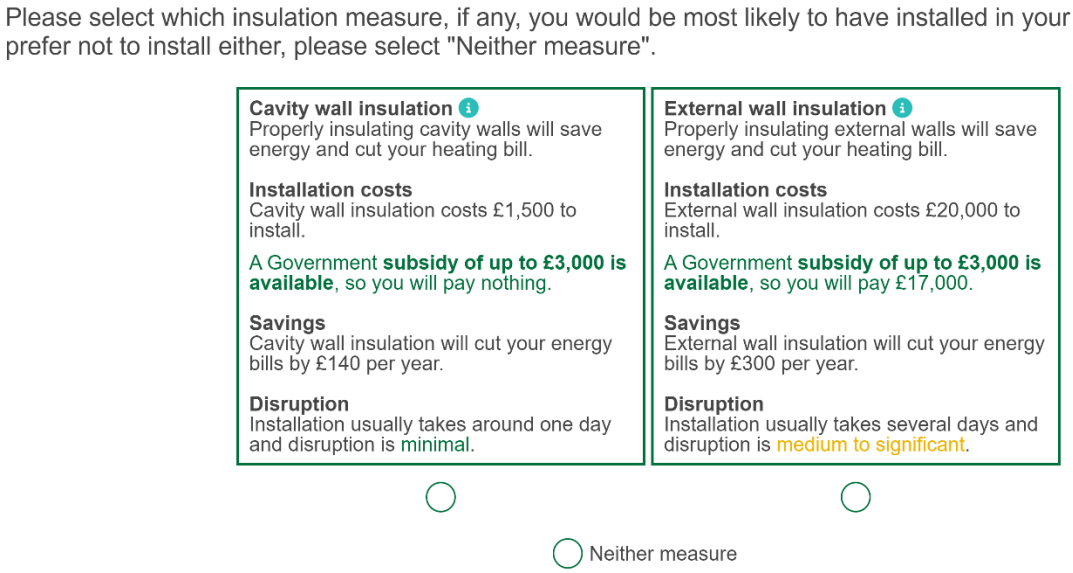

Figure 1. Example screen showing a choice in the DCE as seen by respondents

Follow-up survey

After completing the DCE, respondents answered a battery of follow-up survey questions. The first round of questions targeted respondents who had chosen not to install any retrofit measures over the course of the experiment. The questions aimed to understand their reasons

for rejecting measures. The remainder of the battery aimed to answer our secondary research questions and provide contextual demographic information. For a full list of questions asked, see Appendix A2.

Analysis

To analyse the results of the DCE we applied a mixed (or random parameters) main effects logit model with correlated random parameters. The model treats each level of each attribute as a separate parameter and compares the effect each level has on choice to that of a pre-selected reference level. The influence of a maximum subsidy available of £750, £1,500, and £3,000 were each compared to the reference rate of £0 (no subsidy). The reference level for retrofit measure type was cavity wall insulation. The model produces two outputs of interest for each parameter:

- a *p*-value, which can be used to determine whether a given parameter is having a statistically significant effect on choice, and
- odds ratios, which give the direction and strength of the effect. An odds ratio is the ratio of the odds of choosing to install a measure with a given level in an attribute (e.g., £750 subsidy) to the odds of choosing to install the same measure with the reference level in that attribute (i.e., no subsidy). An odds ratio above one means the corresponding level is preferred to the reference level, and a number below one means the opposite.

Mixed models differ from fixed effects models in that they allow for heterogeneity in preference between individuals. For a more detailed description of statistical methods please see Appendix C.

Where statistically significant results are reported, these have a *p*-value of under 0.05, where the *p*-value is the probability of getting a result as least as extreme as that observed, assuming the null hypothesis is true.

The model could be used to simulate uptake of each measure for a given level of subsidy, albeit there are caveats to the figures generated, which are discussed in the section ‘Strengths and Limitations’. For details on how uptake rates were calculated, see Appendix C.

One of the aims of this study was to simulate population-level uptake of home energy efficiency upgrades, so we included those (a) who already have one or more of the retrofit measures of interest; and (b) whose home might not be suitable for certain measures. This meant the sample reflected the eligible population for the Scheme.

As a sensitivity analysis to test the robustness of our findings, we replicated the primary analysis model with a subsample that excludes anyone who told us they could not have one or more type of retrofit measure installed. These respondents either had a home that was not suitable for the measure(s) in question, or they had already fully insulated their home with it/them. The primary analysis captured the impact this had on decision making where the sensitivity analysis does not. This means that the sensitivity analysis is likely to overestimate uptake of measures in a population resembling this study’s respondents.

Results

Sample characteristics

Respondents were aged between 18 and 65 (mean age = 44), and 75% were female. Ninety per cent live in England, 7% in Scotland, and 3% in Wales. The most common EPC ratings were D (68%) and E (27%). Most of the sample lived in homes at council tax bands C, D, or E (64% total), with 36% in A-B. For further details on sample demographics including a breakdown of council tax banding by country, see Appendix A1. We did not produce demographic weights as survey weights are not usually applied in standard discrete choice analyses.

Headline findings from the discrete choice experiment

Most respondents (94%) chose to install at least one retrofit measure over the course of the experiment. A significant proportion (35%) chose to install a retrofit measure (rather than 'neither measure' on every question. This means 6% selected 'neither measure' on every question.

Research question 1: How do different levels of subsidy affect the likelihood of owner occupiers choosing to install any given retrofit measure?

The results of our primary mixed logit analysis are summarised in Figure 2. The odds ratios given can be interpreted as preference weights, where a number greater than one indicates that an attribute level is preferred to the reference level, and a number less than one, the opposite. The greater the odds ratio, the more preferred the attribute level is compared to the reference level. For a full model table, see Appendix D1 (Table 5).

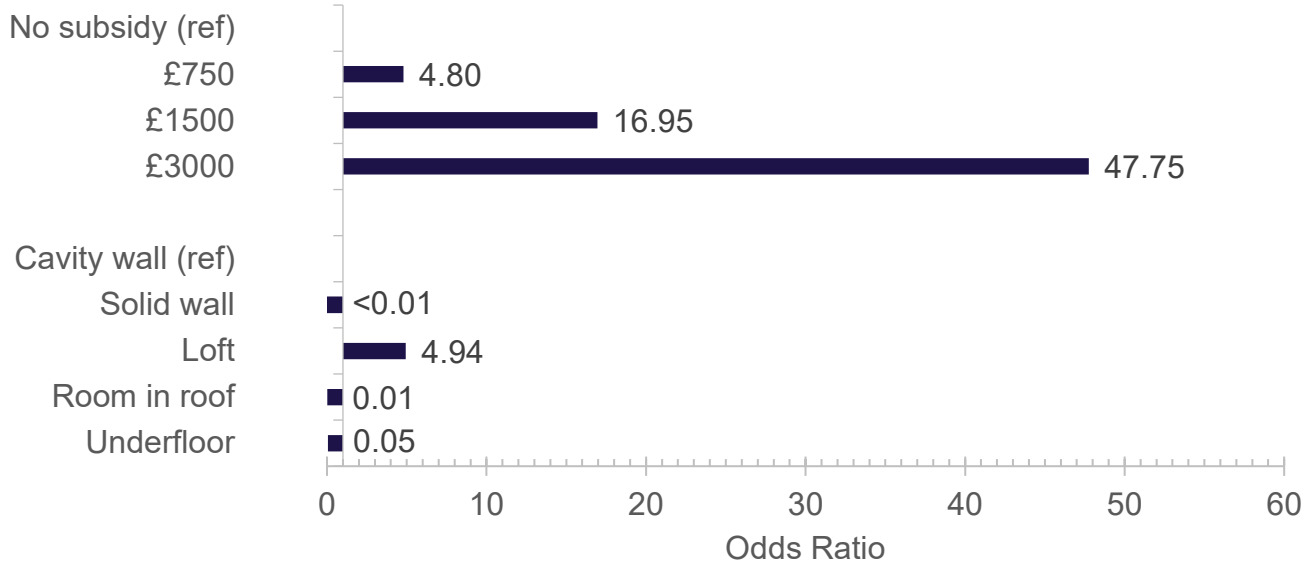

Figure 2: Odds ratios produced from the primary DCE analysis model coefficients. Odds ratios > 1 indicate a preference for that level over the reference level.

Note: Cavity wall insulation is used as the baseline attribute level for retrofit measure attribute, and no subsidy (£0) is used as the baseline attribute level for the maximum subsidy attribute. Observations = 30,000. Respondents = 1,000.

For all levels of subsidy, there was a statistically significant increase in the odds of owner occupiers choosing to install a given measure when compared to the same measure with no subsidy (the reference level). The odds of uptake increased by more the larger the maximum subsidy was. These results can be used to simulate population-level uptake (see below).

The model also includes an odds ratio for each retrofit measure type. There was a statistically significant increase in the odds of uptake of loft insulation compared to that of cavity wall insulation (the reference level). The odds of uptake for all other measure types were statistically significantly lower than for cavity wall insulation. These results imply that uptake of loft insultation will be higher than cavity wall insulation and all other measures will have uptake lower than cavity wall insulation.

Research question 2: How much are owner-occupiers willing to contribute to the cost of installing a given retrofit measure?

From the mixed logit model shown in Figure 2, we calculated the sample's estimated percentage uptake for each retrofit measure at each level of subsidy. For a description of the methodology used, see Appendix C.

Figure 3 shows the increases in uptake associated with each level of subsidy compared to no subsidy. For each retrofit measure, the increase in uptake increased as the size of the subsidy increased. The largest increases in uptake were seen for room-in-roof insulation (18pp-37pp), and the smallest for loft insulation (2-8pp).

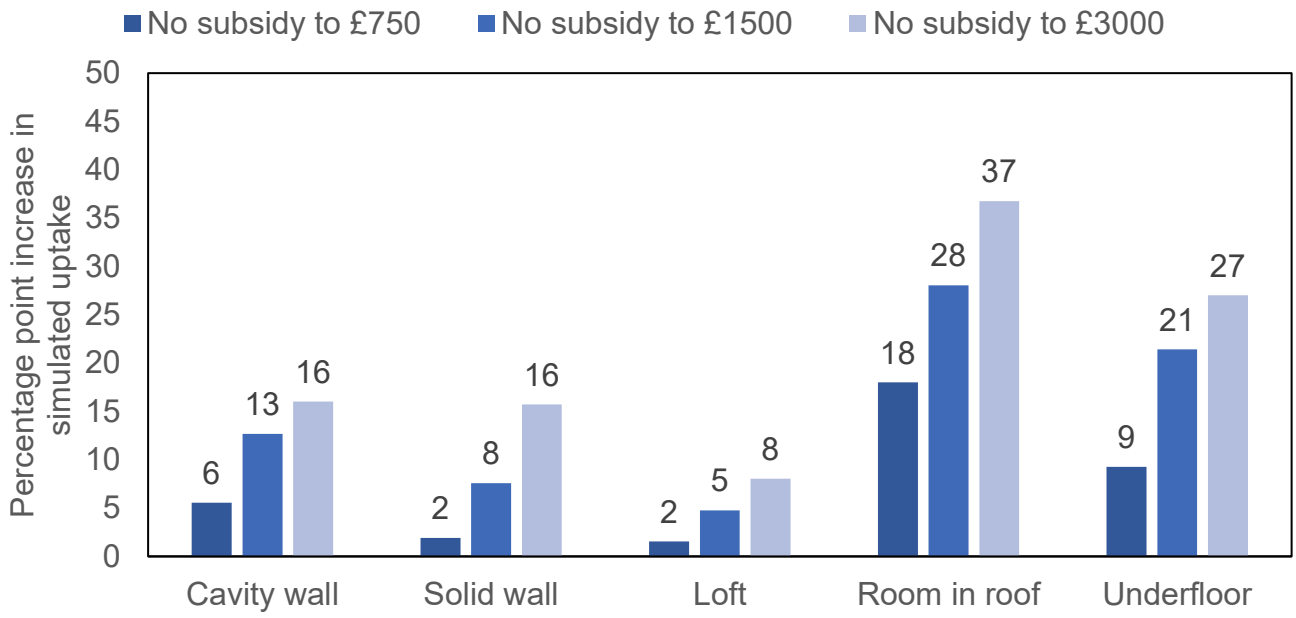

Figure 3. Percentage point increase in simulated uptake of each retrofit measure, by subsidy level.

Note: Simulated uptake produced using n=10,000 simulations on the full sample model.

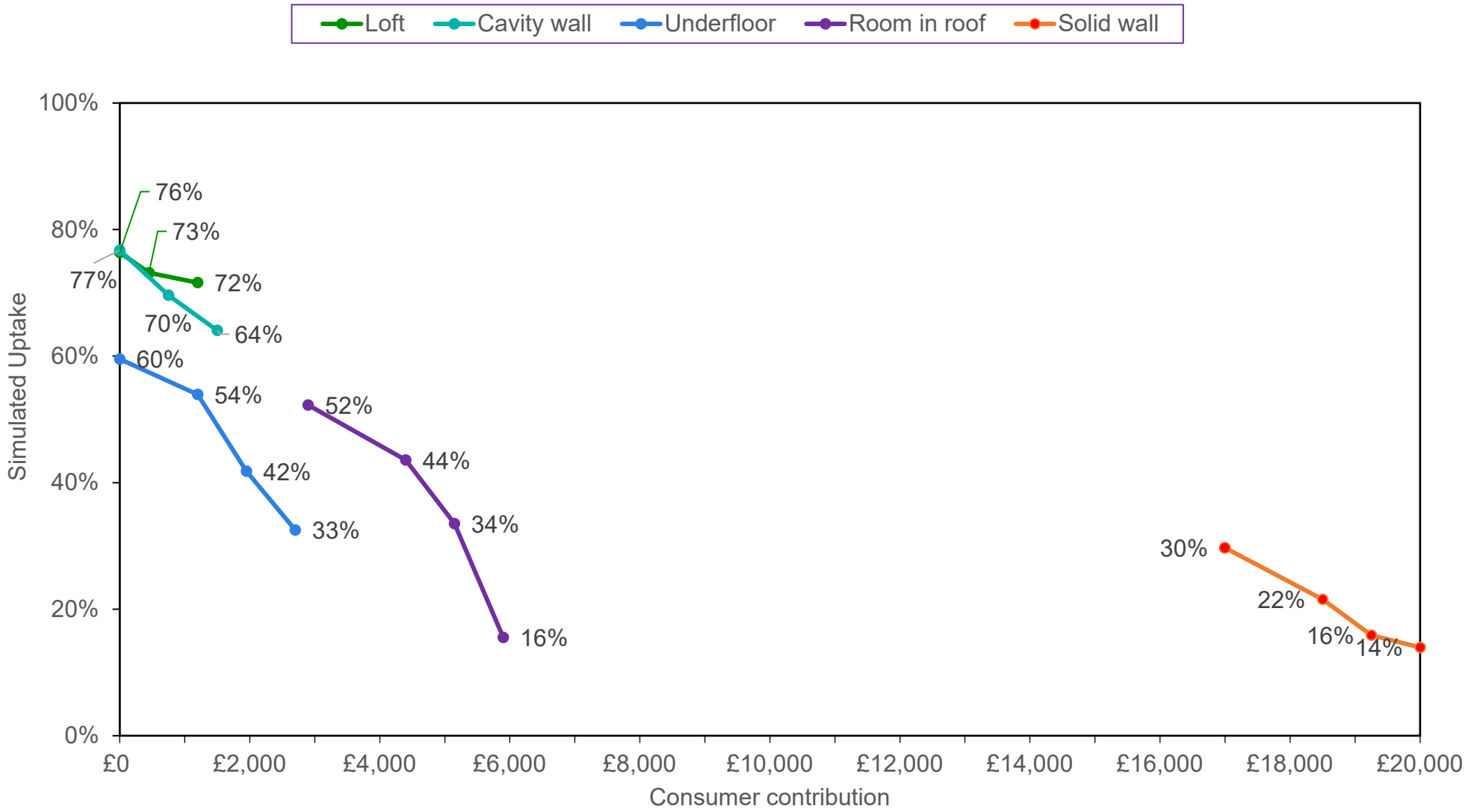

Figure 4. Simulated uptake of retrofit measures by consumer contribution to the cost of installation.

Note: Simulated uptake produced using n=10,000 simulations on the full sample model.

Figure 4 shows calculated uptake of each retrofit measure by consumer contribution (i.e., installation cost minus the subsidy offered). For all retrofit measure types, uptake declines as consumer contributions increase. For example, the typical cost for underfloor insulation given was £2,700. With the Scheme subsidy at £3,000 – meaning no consumer contribution is required – our simulation estimated uptake at 60%. This declines to 54%, 42%, and then 33% as the subsidy falls and consumer contributions rise to £1,200, £1,950, and £2,700, respectively.

Estimated uptake with a 10% contribution

The Scheme consultation includes an expectation that households will contribute 10% of the installation cost for energy efficiency upgrades subsidised by the scheme (BEIS, 2022). We cannot provide an estimate for uptake at 10% consumer contribution because no combination of subsidy and measure actually tested it. However, we may infer a range in which 10% uptake might lie where we have simulated uptake estimates for consumer contributions below and above 10%. This is the case for three retrofit measure types: loft insulation, cavity wall insulation, and underfloor insulation.

Following the logic laid out above, simulated uptake when consumers are offered an energy installation and asked to contribute 10% of the installation cost was as follows:

- Cavity wall insulation: 70-77%
- Loft insulation: 73-76%
- Underfloor insulation: 54-60%

Research question 3: How does uptake of retrofit measures vary with select demographics of interest?

Appendix D3 contains the results of analysis applying the same primary model specification to subsamples along two proxy measures of wealth: council tax band and household income. There were no consistent patterns across respondents with lower household incomes or those in homes with lower council tax bands.

Further analysis

Reasons for not installing measures

Some respondents never selected certain retrofit measures to install (external/solid wall insulation: 74%; room-in-roof insulation: 50%; underfloor insulation: 33%; cavity wall insulation: 17%; loft insulation: 11%). We asked these respondents why they never selected the respective retrofit measures.

The most frequently selected reason for never choosing solid/external wall insulation, room-in-roof insulation, and underfloor insulation was *‘I cannot afford the installation costs’* (70%, 56%, and 47%, respectively). For loft insulation, the most common reason was *‘My home is already fully insulated with loft insulation’* (40%) and for cavity wall insulation it was *‘My home cannot have cavity wall insulation’* (31%).

Of those who never chose underfloor insulation, 41% said they did not because *'Installation is too inconvenient'*, compared with between 8-15% for the other retrofit measure types.

Their full responses are detailed in Appendix A2.

Sensitivity analysis: excluding respondents who said they could not have at least one measure installed

The sensitivity analysis excluded 287 respondents who answered either *'My home is already fully insulated with X'* or *'My home cannot have X'* for at least one retrofit measure type. The sensitivity model is summarised in Appendix D2, Table 7. Calculated uptake rates are shown in Appendix D2, Table 8.

As in the primary analysis model, all parameter coefficients were statistically significant. All levels of subsidy were associated with a statistically significant increase in the odds of uptake when compared with options including no subsidy, and the odds of uptake increased by more the larger the maximum subsidy was.

Findings from the post-DCE questionnaire

This section reports the results of the questionnaire. These survey questions address the secondary research questions given by DESNZ. Note that, since the experiment was carried out using a non-probability sample drawn from an online access panel, the results are not robust population estimates (see Strengths and Limitations for discussion). For a full summary of responses to all questionnaire measures, please see Appendix A2.

Research question 4: How might people allocate a cost-cap subsidy across multiple retrofit measures?

An alternative subsidy scheme might offer a capped subsidy for the installation costs of home energy efficiency upgrades. This subsidy might be split across multiple retrofit measures. We asked respondents which of the five measures offered in the DCE they would have installed in their home if they had access to a £1,500 subsidy to cover the installation costs.

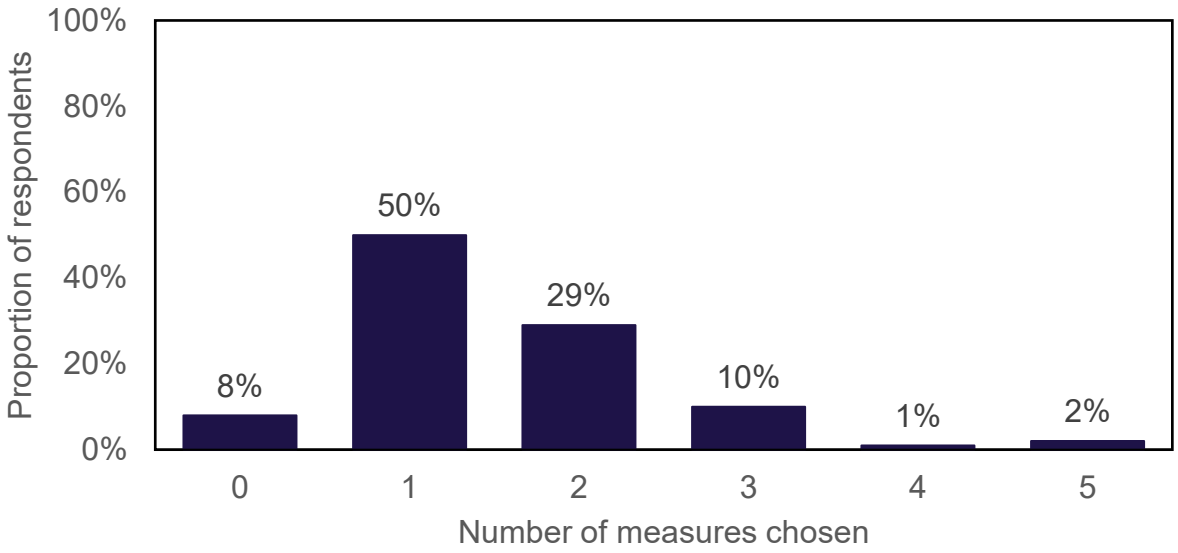

Figure 5. Number of retrofit measures chosen with a £1,500 cost-cap subsidy that could be split across measures.

Base: Respondents who did not report being unable to install at least one retrofit measure (n = 713). 55 (8%) respondents chose none of the measures.

Most respondents said they would install either one or two measures (Figure 5).

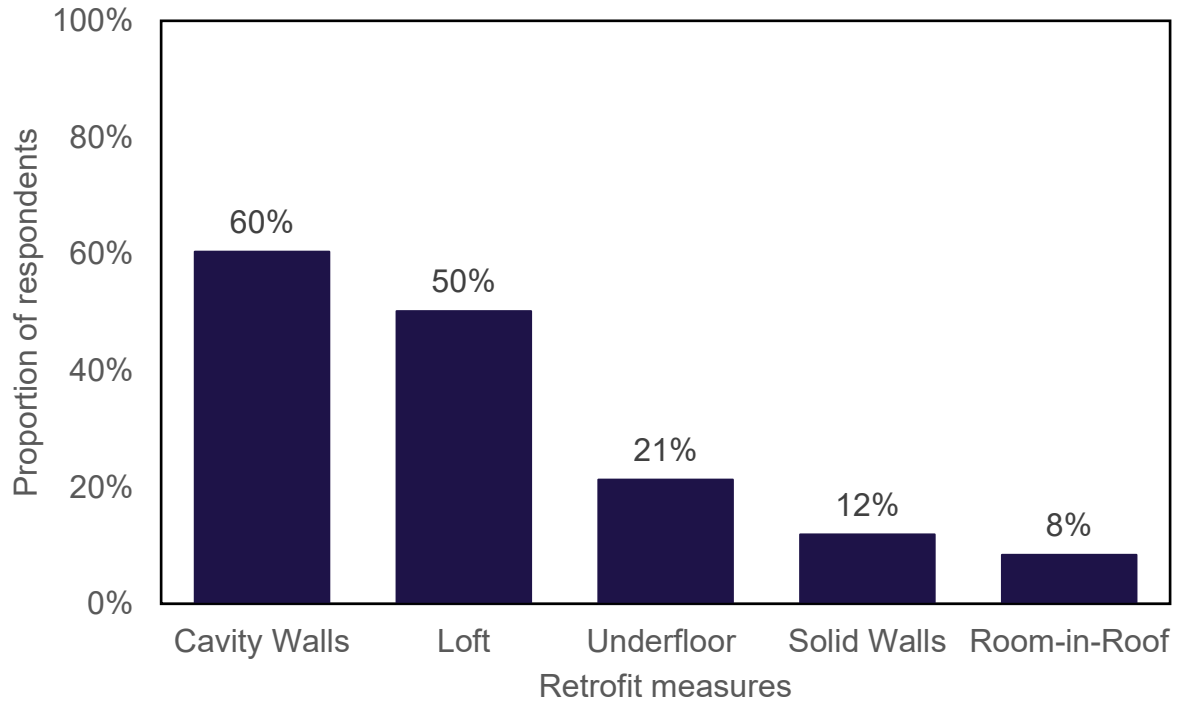

Figure 6. Proportion choosing each retrofit measure with a £1,500 cost-cap subsidy that could be split across measures.

Base: Respondents who did not report being unable to install at least one retrofit measure (n = 713). 55 (8%) respondents chose none of the measures.

The most popular measures were cavity wall insulation and loft insulation (Figure 6). The installation cost (for a typical home) for each of these measures individually was fully covered by the £1,500 cost-cap subsidy.

Research question 5: How open are people to different financing options for retrofit measures?

Fifteen per cent of respondents said they would definitely/probably be open in principle to taking a loan to finance energy efficiency upgrades at home, while 61% said they would definitely/ probably not be open to a loan. Respondents were less open to receiving such a loan from their energy supplier: of those who were generally open to using financing to fund upgrades, 64% said they were similarly open to taking out such a loan from their energy supplier (note that the sample size for this latter figure is low – n = 151).

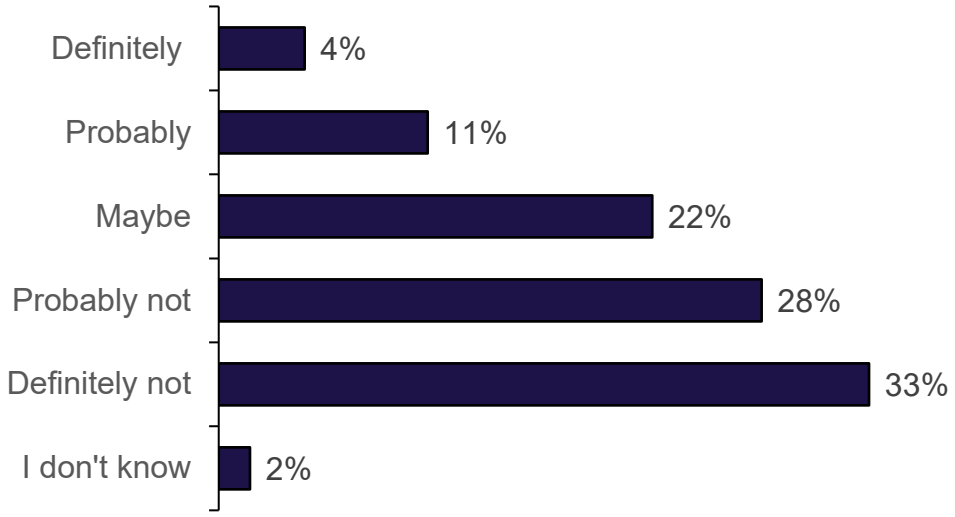

Figure 7. Responses: *In principle, would you consider taking out a loan to finance energy efficiency upgrades to your home?*

Base: Full sample (n = 1,000)

Research question 6: How confident are people in their knowledge of energy efficiency measures?

Most respondents reported feeling very/fairly confident in their understanding of energy efficiency in general (63%) and with regards to insulation measures that can be installed in the home (58%).

Strengths and limitations

This study provides indicative view of responses to the retrofit measures being offered and their associated subsidies. Online experiments allow researchers to simulate choice environments quickly in response to policy demands, but there are reasons to be cautious in interpreting the results. The simulated uptake figures presented here are best understood as

showing the relative effect of subsidies on uptake, rather than predicting absolute uptake rates in the eligible public. Below, we address five specific considerations when interpreting the study's results.

Firstly, **the choices taken in this study were hypothetical**. Academic studies of monetary decision-making suggest that hypothetical decision-making is a valid proxy for decisions involving real money (Johnson & Bickel, 2002). It is nonetheless possible that respondents would make different choices when using their own money and making changes to their home for real. This is an inherent limitation in empirical work on this topic short of a full field trial.

Secondly, **the experimental choice architecture may not reflect the real circumstances in which people would respond to an installation offer from their energy supplier**. For example, the real decision upon initial approach is likely to be an expression of interest, with time to reconsider and back out of installation if the prospect of disruption or the up-front cost becomes unpalatable. To minimise the risk of cueing respondents, the experiment's choice environment was designed to be as simple as possible, with no eye-catching images or icons. Energy suppliers may choose to strongly emphasise one attribute over others and in doing so affect uptake in a manner not captured by this study. Future work could address this limitation if energy suppliers are directly engaged to inform the study, although the results would only be generalisable to suppliers taking a similar approach when contacting homeowners.

This limitation also applied to the post-task questions about eligibility for specific retrofit measures. Some respondents will not know whether, for example, their home has cavity walls. They may therefore choose cavity wall insulation because it looks attractive on paper even though they could not have it installed in reality. In this case, they would not have been asked about eligibility in the post-task questionnaire. Under the Scheme, energy suppliers may be able to offer guidance and target installation offers to homes most suitable for them.

Thirdly, **fieldwork for this study was conducted in November 2022, against the backdrop of rising energy prices** and as the UK formally entered a recession. The attractiveness or otherwise of heating insulation in the study is likely to reflect current household finances, well-publicised concern around energy costs, and the start of winter.

Fourthly, **the experiment was carried out using a non-probability sample drawn from an online access panel** so the results are not robust population estimates (Brown et al., 2017). This also applies to comparisons between demographic sub-groups, since coverage and sampling biases between groups may not be consistent. Furthermore, time and budget constraints restricted the application of demographic quotas to those ensuring eligibility for the Scheme. A more robust exploration of how uptake of energy efficiency upgrades differs across demographic sub-groups may prove fruitful.

And fifthly, **our primary analysis includes respondents whose homes may (a) already have certain retrofit measures installed, or (b) be unsuitable for certain measures**. It is likely that some of these respondents will have chosen not to select measure types which they already have or can't install. However, some participants may have treated the experiment as entirely hypothetical, or not known what measures are already installed in their home.

Therefore, the influence of existing measures or property characteristics on uptake is unlikely to be fully captured in this study.

We should also acknowledge the strengths of the study's design. DCEs are a robust method for predicting behaviour (Breidert et al., 2006), with strong external validity (McPhedran et al., 2022). The 'card' design shown to respondents integrated the subsidy level within a description of the retrofit measure on offer to avoid cueing respondents. The look and feel of the task was designed by the Behavioural Practice and DESNZ to mimic that of a plausible source of information for homeowners looking for information – the UK government's website. Finally, the short period of time in which the study was conceived, designed, and completed allowed results to inform rapidly developing policy in a context of historically high heating prices (National Energy Action, 2022b) and against the backdrop of the UK Government's Net Zero targets (BEIS, 2021).

Discussion

We found that owner occupiers' hypothetical willingness to install retrofit measures increased when they were offered a government subsidy to help cover the cost. As the level of subsidy increased, so did their likelihood of taking up retrofit measures. This implies that government subsidies are likely to increase take-up of retrofit measures and that bigger subsidies—covering a larger proportion of installation costs—will have a greater impact.

Respondents seemed to favour options where no personal contribution to costs was required. Within the DCE, respondents preferred the two measures whose typical installation costs were fully covered by two of the subsidy levels tested (i.e. loft insulation and cavity wall insulation). Similarly, when we asked respondents which retrofit measures they would install if offered a subsidy with a cost cap of £1,500, the most selected measures were those whose installation costs were fully covered by the cost-cap subsidy. This suggests that some recipients of the Scheme will be more likely to install cheaper measures which do not require them to contribute. It also suggests that if government asks people to co-fund measures then this will reduce take-up, compared to if government fully subsidises measures.

Increasing the subsidy levels had a greater impact on uptake of more expensive measures (such as room-in-roof and underfloor insulation) than cheaper ones (such as loft insulation and cavity wall insulation). One thing to note is that both cavity wall and loft insulation cost less that £1500, so there is no additional benefit to the consumer of a subsidy higher than that. However, the smaller subsidies of £750 and £1500 also had a greater impact on more expensive measures than cheaper ones. This could also be because the baseline take-up (where there was no subsidy on offer) was higher for cheaper measures compared to more expensive ones, creating a 'ceiling effect'. Therefore, it's possible that higher subsidies would have a disproportionately positive impact on uptake of more expensive measures on the ground.

Overall, this experiment found relatively high hypothetical take-up of retrofit measures at all subsidy levels. This could reflect the fact that prompts can stimulate decision-making - that is,

people are more likely to install retrofit measures if someone proactively suggests it to them. A homeowner may not spontaneously choose to insulate their home because they did not know they could, did not know how to, or simply did not think of it. Indeed, we found that 28% of our respondents indicated that they would not know how to go about getting insulation in their home. It may be that people are more likely to install retrofit measures if someone proactively suggests it to them. In this case, suppliers approaching homeowners under the Scheme would increase uptake in two ways: (i) by removing cost barriers (which depends on the size of the subsidy) and (ii) by prompting homeowners with the choice (which does not).

The experiment focussed on the influence of the level of subsidy, but take-up may also be affected by the 'hassle factor' of installing retrofit measures. When respondents who never selected a particular measure were asked to give their main reasons why they hadn't, the main reasons given for never selecting the more expensive measures – external/solid, room-in-roof, and underfloor insulation – concerned affordability and value for money. However, disruption associated with installation was also a factor reported by some respondents. This was particularly true of underfloor insulation, which was the only measure presented as causing 'significant disruption' during installation. The most common reason for not installing it was that the installation would be too inconvenient, with 41% choosing this answer, compared to 8-15% for the other retrofit measure types. This suggests that the level of anticipated disruption may also affect take-up of retrofit measures.

The post-experiment survey found that there is little appetite for using loans to finance retrofit measures. This suggests loans may not be a viable solution to support homeowners who do not have sufficient funds to contribute to upgrades. Given the post-DCE survey found that 85% of respondents are struggling with the cost of living and 30% have less than £1,000 in savings, further work may be needed to find ways to support those who are unable to co-fund..

Conclusions

Taken together, the results of this study suggest (a) that the Scheme would increase uptake of home energy efficiency upgrades at any level of subsidy, but that larger subsidies would yield greater increases, and (b) that the effect of subsidy is likely to depend on the specific upgrade being offered.

We suggest two avenues for further research. Firstly, the study was unable to support robust conclusions about uptake across different demographic sub-groups, so this may be a priority for any appraisal of the Scheme. Secondly, there is scope for DESNZ to engage directly with suppliers to test and refine their approach to best inform homeowners and address surmountable barriers.

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