



Department for
Business, Energy
& Industrial Strategy

EVALUATION OF THE WARM HOME DISCOUNT SCHEME

Synthesis Evaluation Report



March 2018

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Executive Summary

This evaluation was commissioned by the Department of Climate Change (DECC) in 2015. ICF led a consortium with UCL Consultants to complete the research in late 2015. As DECC became part of the Department of Business, Energy and Industrial Strategy (BEIS) in 2016, this evaluation has been published by BEIS.

This report presents a synthesis of the findings from an evaluation of the Warm Home Discount scheme. Two further reports present the detailed findings and methodologies used in this evaluation. These cover: (i) the qualitative research into the customer journey of the Warm Home Discount; and (ii) the quantitative research into the impact of the Warm Home Discount on energy expenditure and on the indoor environment¹.

The Warm Home Discount scheme (WHD) was designed to alleviate fuel poverty² by improving the thermal comfort of homes, and by mitigating the burden of rising fuel costs on low income households. The WHD was intended to complement other government schemes including the Affordable Warmth target with in the Energy Company Obligation (ECO), the Winter Fuel Payment (WFP), and the Cold Weather Payment. It achieves this by providing a £120-£140 one-off discount on the electricity bills of eligible individuals drawn from one of two categories, a 'Core Group' of low income pensioners, and a 'Broader Group' of other vulnerable or low-income individuals. At the time of this evaluation Core Group eligibility criteria were set by the Government and consistent across all energy suppliers. By contrast, Broader Group eligibility criteria could be defined by energy suppliers themselves so long as suppliers targeted those who were in or at risk of fuel poverty (subject to approval by Ofgem)³. Core Group recipients were largely automatically 'matched' using existing Department for Work and Pensions (DWP) data and

¹ These papers are titled 'Evaluation of the Warm Home Discount Scheme – Analytical Paper 1: Qualitative Research into the Delivery and Customer Journey of the Warm Home Discount' and 'Evaluation of the Warm Home Discount Scheme – Analytical Paper 2: Quantitative Research into the impact of the WHD on energy expenditure and the indoor environment' respectively. Both are available at: <https://www.gov.uk/government/publications/warm-home-discount-evaluation-2010-to-2015>

² The definition of fuel poverty changed between the development of the WHD scheme, and the delivery of the scheme. Specifically, the scheme was developed under the old 10% fuel poverty definition. This changed (in England) following the March 2012 Hills Review, but it is not clear that the WHD scheme was harmonised to reflect this new definition of fuel poverty.

³ Since this evaluation was conducted, the WHD has introduced some standard eligibility criteria to improve consistency across suppliers. In addition suppliers can continue to submit additional criteria for approval to Ofgem.

sent to the energy suppliers,⁴ while Broader Group recipients were required to apply to the energy companies directly. In 2014/2015 there were 1,427,108 Core Group recipients and 758,132 Broader Group recipients of the WHD.

Evaluation Methodology and Limitations

The evaluation considered 3 themes: the implementation process, the customer journey, and the impact of the WHD.

- The implementation process and the customer journey of the scheme were evaluated using qualitative measures. Specifically, the evaluation used in-depth semi-structured interviews with energy suppliers, scheme administrators, and recipients.
- The impact of the WHD was evaluated using quantitative measures. Specifically, Random Forest (statistical) analysis was used to examine the fit between the eligibility criteria for the scheme and the known predictors of an increased risk of living in a cold home, while Regression Discontinuity Design (statistical) modelling was used to evaluate the expected impact of the scheme on energy consumption. Statistical modelling was also used to evaluate the impact of the scheme on health outcomes.

Findings and Impact

There are 4 key findings to the WHD evaluation:

- **The rebate typically alleviated households' electricity usage for several months, releasing cash to be spent elsewhere (such as on gas use for heating or other general expenditure).** Interviewees reported that receiving the rebate had a positive impact on their mental wellbeing, providing 'peace of mind' in relation to keeping up with bills.
- **The way in which WHD recipients were identified is likely to have influenced the impacts of the scheme.** Because the rebate did not always go to recipients in fuel poverty and the intended impact of the scheme (to reduce fuel poverty) was constrained where the recipient already lived in a warm home.
 - **Core Group eligibility was not found to be a strong indicator of households living in a cold home** (as defined by Public Health England as being colder than 18°C). Instead, modelling shows that the WHD appeared to target low-income pensioners rather than those in fuel poverty. Energy suppliers used the receipt of DWP means-testing as a practical 'proxy' for identifying Broader Group eligibility,

⁴ A subgroup of Core Group members were 'unmatched', leading to some manual verification of their eligibility.

again raising questions about whether those in fuel poverty were sufficiently targeted rather than those with broader vulnerabilities.

- **The type of properties occupied by recipient households also had an influence on the expected impact of the rebate on occupant health.** Where customers elected to use the rebate to increase the temperature of their home this was associated with both modelled⁵ and self-reported benefits to cardio-respiratory health. Recipients of the WHD could benefit from a small improvement in temperature (and therefore health) but the increase was constrained by WHD eligible households tending to live in energy efficient dwellings.
- **Interviews and modelling suggested that the Warm Home Discount Scheme led to a small increase in energy spend by recipients.** Recipients typically reported treating the rebate as an increase in their gross income, spending it according to their own needs. These needs included heating. However, the modelling suggests that there is limited evidence that the name and presentation of the scheme caused a larger share of the additional income to be allocated to heating than would have been expected of an unlabelled cash payment like Winter Fuel Payment. The modelling also suggests that recipients spent between ~£11-13.50 of the £140 rebate on their fuel.⁶
- **The delivery method for the WHD also influenced how recipients used the rebate.** Interview data suggests that some recipients were unaware that they had received a rebate unless they used a pre-payment meter and received vouchers in the post. How recipients used the rebate depended on whether they received it before, during, or after the winter heating season.

It is important to note that the qualitative research collected evidence directly from WHD recipients, whereas the quantitative research conducted modelling using existing survey or statistical data sources. Both approaches have limitations in the context of this evaluation.

- The qualitative research into recipients' experience of the rebate is limited by opt-in sampling, potential recall issues, and a low sample size. Interview data on the customer journey of the WHD is drawn from only 20 Core Group recipients and 35 Broader Group recipients. It is important to note that due to difficulties accessing recipient information, it was only possible to speak to Broader Group recipients from

⁵ The modelling suggests that households could see an average increase in temperature of around 0.25°C during wintertime conditions, leading to a **per capita improvement of 50 Quality Adjusted Life Years (QALYS) per 10,000 persons** for Core Group recipients, and a **per capita improvement of 30 QALYS per 10,000 persons** for Broader Group recipients.

⁶ Specifically, modelling suggests that recipients spent between £10.92 and £13.46 of the £140 WHD rebate on their fuel. The variation accounts for differing assumptions made in the modelling. **The lower figure is based on more robust modelling assumptions.**

one energy supplier. As a result, there is limited generalisability of these findings to the experience of recipients who received the rebate through other suppliers.

- The quantitative research is based exclusively on theoretical modelling. Thus, this research tells us what effects the rebate should have had on recipients, but it is not drawn from empirical data. Instead the models use UK Living Costs and Food Survey (LCFS) data to replicate the eligibility criteria of the rebate, the conditions of the housing typologies of recipients, and expenditure to extrapolate how WHD recipients will have spent their rebate and the effect that this is likely to have had on their health.

The limitations of this research are not flagged in this Synthesis Report as it follows. To the extent that they are covered, please refer to the individual Analytical Papers.

Background and Methodology

Introduction

In March 2015, ICF, in association with UCL Consultants (UCL), was commissioned by the Department of Energy and Climate Change (DECC) to undertake a combined process and impact evaluation of the Warm Home Discount (WHD) scheme. The aim of the evaluation was to determine the extent to which the WHD scheme was responsible for removing households from fuel poverty, to establish the impact on customers, and to review the process by which the scheme was delivered.

This report (*Synthesis Evaluation Report*) brings together the results of the research to provide overarching answers to the evaluation questions that the study was designed to answer. It draws on and should be read in conjunction with two analytical reports:

- *Analytical Paper 1*: Presents the results of qualitative research into the design and delivery of the WHD customer journey; and
- *Analytical Paper 2*: Presents the results of quantitative research into the labelling and health impacts of the WHD scheme.

The Warm Home Discount scheme

The WHD was an energy supplier-funded scheme that operated in England, Wales and Scotland. It came into operation on 1 April 2011 and was originally a four year programme ending on 31 March 2015, but was extended through to 31 March 2016.

The WHD was developed at a time when energy bills were relatively high and were expected to increase still further, thus putting greater numbers of households into fuel poverty. The WHD scheme had two objectives⁷:

- "To remove a significant number of households from fuel poverty and improve the thermal comfort and health of assisted households by providing direct support with energy bills; and
- To help to mitigate the burden of rising energy prices on low-income households, who will be worse affected than higher income households".

The WHD scheme was thus expected to contribute towards the UK Government's target for reducing fuel poverty. It was intended to complement other Government initiatives,

⁷ DECC (2011) The Warm Home Discount Scheme: Final Stage Impact Assessment

including the Affordable Warmth target within the Energy Companies Obligation – ECO⁸ – and the Winter Fuel Payment and Cold Weather Payment. The WHD would directly mitigate the impacts of rising energy prices by providing a rebate on energy bills, whereas ECO would improve the thermal efficiency of homes, and the Winter Fuel Payment would improve general household income.

DECC identified five broad principles that guided the design of the WHD scheme⁹:

- "Delivers a fair and clear benefit for consumers: consumers should have certainty on the absolute level of support that they will receive, allowing them to plan and budget for their energy costs;
- Provides focused support for vulnerable households: support should be targeted at households vulnerable to fuel poverty;
- Delivers good value for money: support should be a cost-effective tool for tackling fuel poverty, without undue administrative costs;
- Is consistent with competitive energy markets: has a minimal impact on the incentives of consumers and suppliers to engage with the domestic energy market; and
- Ensures a smooth transition from the current arrangements¹⁰ for consumers and suppliers".

The WHD scheme provided a £120-£140 one-off annual rebate on the electricity bills of eligible individuals¹¹. To be eligible for the rebate, individuals had to fall within one of two groups:

- A 'Core Group', consisting of low income pensioners. To be eligible for the rebate, pensioners had to be in receipt of the Guarantee Credit part of Pension Credit¹², and

⁸ The Energy Companies Obligation, ECO, was launched in 2013 and replaced two previous schemes: the Carbon Emissions Reduction Target (CERT) and the Community Energy Saving Programme (CESP)

⁹ DECC (2011) The Warm Home Discount Scheme: Final Stage Impact Assessment

¹⁰ The WHD scheme replaced a 'voluntary agreement' between the UK Government and the largest six energy suppliers to provide support with energy bills to vulnerable households. The voluntary agreement ran from 2008 to 2011, and largely consisted of social tariffs (extra low tariffs offered to certain types of consumer) and, from 2010, a rebate on electricity bills that was offered to certain pensioners (the latter in effect formed a pilot for what became the WHD scheme).

¹¹ The WHD scheme also involved 'industry initiatives' (which consisted of a range of measures implemented by energy suppliers to support customers in fuel poverty or at risk of fuel poverty), and 'legacy spend' (which funded a continuation / wind-down of the activities previously delivered via the voluntary agreement). Neither the industry initiatives nor the legacy spend fell within the scope of this evaluation.

¹² The eligibility criteria changed over the scheme years: in year one, the rebate was available for recipients of the Guarantee Credit only, and from year two onwards this was extended to individuals in receipt of both the Guarantee Credit and Savings Credit (who were aged 80+ in year two, 75+ in year three, and 65+ in years four and five)

had to be named on an electricity account with one of the participating energy suppliers¹³. The Core Group eligibility criteria were defined by the Government, and were the same across all energy suppliers.

- A 'Broader Group', consisting of other vulnerable or low income individuals. In years one to four of the WHD scheme, Broader Group eligibility criteria were defined by participating energy suppliers but targeted at those in or at risk of Fuel Poverty (subject to approval by Ofgem). In year five of the scheme, the Government introduced a set of mandatory criteria that suppliers had to include in their schemes, though they were still able to apply additional criteria (again, subject to approval by Ofgem). For the most part, the Broader Group eligibility criteria were based on receipt of means-tested benefits (Income Support, Employment and Support Allowance, Job Seekers Allowance, Universal Credit). Individuals also had to have an active electricity account with an energy supplier to be eligible for the rebate.

An innovative design feature of the WHD scheme was the use of a data matching process to identify those eligible to receive support through the Core Group. A different approach was used for the Broader Group. Recipients were identified as follows:

- *The Core Group*: each year, DWP data on recipients of the eligible components of the Pension Credit were 'matched' with energy suppliers' customer records to identify who should receive the WHD rebate. Each August, the matched records were sent to participating energy suppliers who then paid out rebates. The data match process was not able to identify all eligible individuals¹⁴ and so each year DWP sent a letter to all 'unmatched' individuals (recipients of eligible components of Pension Credit that were not located in energy company records) asking them to call a contact centre to determine whether or not they were eligible for the rebate. Energy suppliers were provided with files containing the identities of all unmatched Core Group individuals on a rolling basis through to the end of the scheme year (31 March), so that they could pay out the rebates.
- *The Broader Group*: each energy supplier was responsible for the design and delivery of its own annual Broader Group scheme. In practice, their approaches were similar. Each supplier had a 'window' during which the schemes were open to applications from the company's customers. The rebate was paid to successful applicants at some point before the end of the WHD scheme year (31 March). Each

¹³ In years one and two of the WHD scheme this consisted of the 'big six' suppliers (British Gas, EDF Energy, E.ON, Npower, SSE and Scottish Power), but expanded to include First Utility and Utility Warehouse in year three, and Co-operative Energy in year four

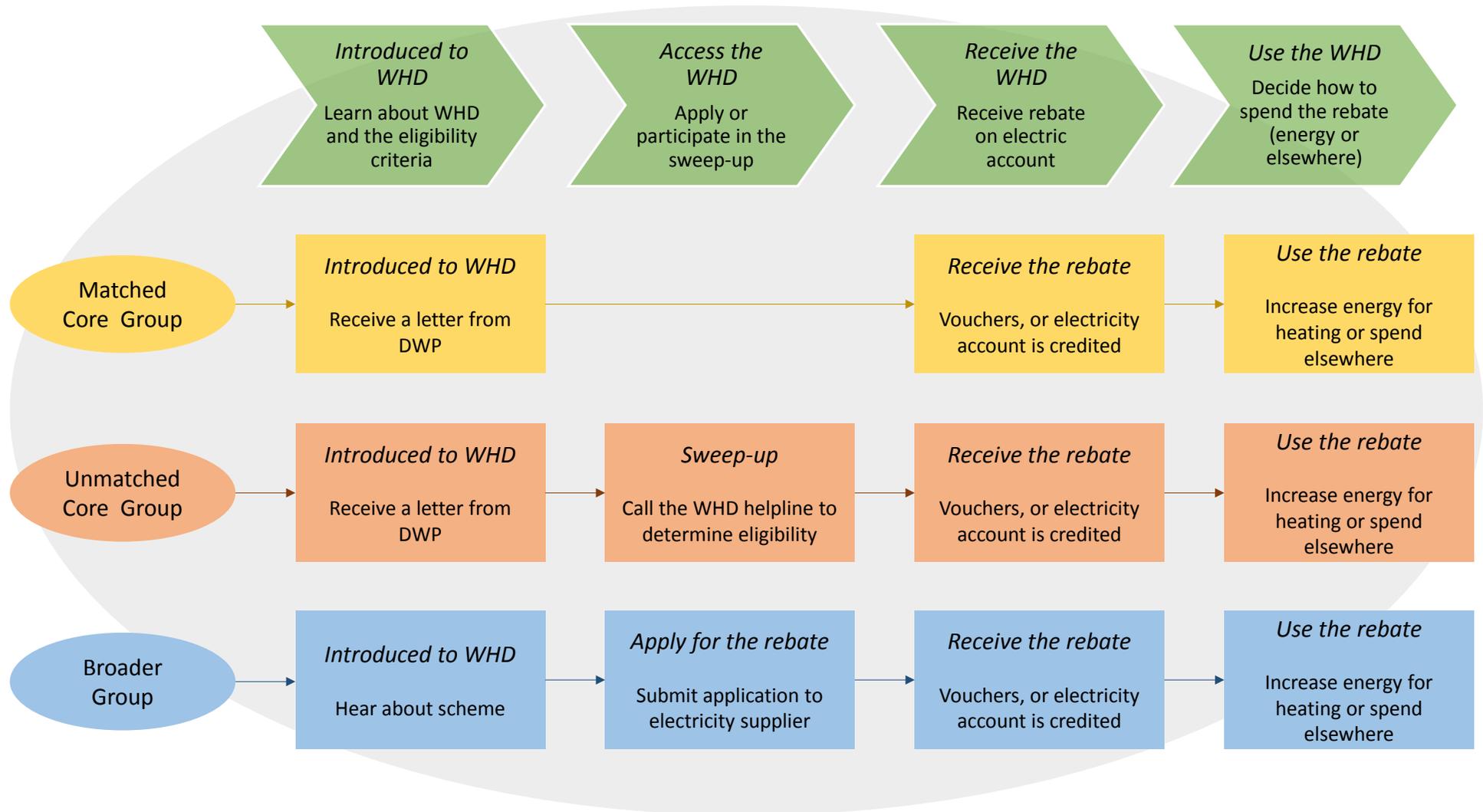
¹⁴ This was due to mismatches between DWP records and energy suppliers' customer data. These could occur where individuals' names did not match exactly, for example because a supplier's database contained an initial rather than a full first name, or where there was a slight discrepancy in spelling.

year suppliers were obliged to verify that a minimum of 5% of their applicants were indeed eligible for the rebate (e.g. by proving that they received an eligible benefit)¹⁵.

Figure 1 summarises the 'customer journey' for the WHD scheme. As this demonstrates, the early stages of customer journey for the matched Core Group customer journey was largely 'automatic' from the perspective of rebate recipients, whereas the unmatched Core Group and Broader Group recipients had to be much more active. Beyond the introduction and access stages of the customer journey, however, the process was the same regardless of whether customers were within the Core or Broader Groups.

¹⁵ Suppliers were free to verify as many applications as they wished, providing that at least 5% of applicants 'passed' the process. The selection of a sample of applications for verification had to be carried out at random

Figure 1: Overview of the WHD customer journey for the three 'categories' of customer



Study objectives

This study was a combined process and impact evaluation of the years one to four of the WHD scheme. It had the following objectives:

- To review the **process** by which the WHD scheme was delivered, and specifically to:
 - determine the effectiveness of the process of data matching to identify Core Group customers;
 - assess the customer journey and customer perceptions of the WHD scheme in terms of their awareness of the scheme, interaction with suppliers, and any impacts the scheme had on energy bills, household comfort or other household behaviour; and
 - determine the perceptions of energy suppliers on the administrative requirements, customer identification and WHD delivery mechanisms.
- To establish the **impact** of the WHD scheme, and specifically to:
 - determine the extent to which the WHD was responsible for moving households out of fuel poverty;
 - determine the extent to which the WHD alleviated the distributional impacts of higher energy bills on low income and vulnerable households; and
 - measure the impact that the WHD had on improving thermal comfort in recipients' homes.

Evaluation questions

To address these objectives, the study was expected to answer a total of seven evaluation questions, each of which had a number of sub-questions. Evaluation questions and sub-questions are listed in Table 1, which also summarises the methodology that was employed, and provides a page number within this report where the answer is located.

Table 1: The evaluation questions

| Theme | Evaluation question | Sub-questions | Summary of methodology (see next section for further information) | Page number |
|--------------------------|--|--|---|-------------|
| Process (administration) | EQ1: How efficient was the delivery of the WHD scheme? | 1a: How well do definitions of Core and Broader group target the fuel poor? | UCL developed a prediction model that used a Random Forest design to identify the factors that were associated an increased risk of living in a cold home, and compared these to the Core and Broader Group criteria. | 20 |
| | | 1b: How well do they target the neediest part of the fuel poor group? | | 20 |
| | | 1c: How might we develop a new proxy to better target fuel poor customers under LIHC? | ICF carried out in-depth qualitative interviews with energy suppliers and scheme administrators that included discussion of the appropriateness of the eligibility criteria for the Core and Broader Groups. | 21 |
| | | 1d: What is the cost of delivery and what are the benefits to energy suppliers? | ICF conducted in-depth semi-structured interviews with eight of the nine energy suppliers that delivered under year four of the WHD scheme. Interviews explored the costs and benefits to energy suppliers. | 21 |
| | EQ2: How effective was the Core Group matching service for energy suppliers? | 2a: What were the costs to suppliers of the data-matching? What suggestions do they have to improve data-matching? | ICF conducted in-depth semi-structured interviews with eight of the nine energy suppliers that delivered under year four of the WHD scheme. Interviews included suppliers' views on the effectiveness of the data-match | 23 |
| | | 2b: How effective was the sweep-up process in | | 23 |

| Theme | Evaluation question | Sub-questions | Summary of methodology (see next section for further information) | Page number |
|----------------------------|--|---|---|--|
| | | identifying eligible Core Group customers? What suggestions do suppliers have to improve the sweep-up process? | and sweep-up processes, including whether interviewees had suggestions for improvements. | |
| | EQ3: How effective were the approaches of suppliers to the identification and verification of Broader Group customers? | 3a: How have eligible customers been identified for the Broader Group? | ICF conducted in-depth semi-structured interviews with eight of the nine energy suppliers that delivered under year four of the WHD scheme. Interviews included discussion of suppliers' approaches to identifying customers, and covered suppliers' views on the verification process. | 24 |
| | | 3b: How successful have the various approaches for identifying Broader Group customers been? | | 24 |
| | | 3c: What are the reasons for failing verification? | | 25 |
| Process (customer journey) | EQ4: How was the customer journey experience for Core Group customers? | 4a: How have Core Group customers found the rebate delivery and sweep-up process? | ICF carried out in-depth semi-structured interviews with 17 Core Group customers, and three individuals who received a letter from DWP inviting them to participate in the sweep-up (but who were deemed ineligible for the rebate). Interviews explored individuals' experiences of the sweep-up exercise. | 28 |
| | | 4a (i): How and when did Core Group customers hear about the WHD scheme? | | 28 |
| | | 4a (ii): Is there any impact from repeated receipt of the rebate? | | 31 |
| | | 4a (iii): Does changing between Core/Broader Group have any impact? | | It was not possible ¹⁶ to identify and recruit to the research any individuals who had moved between the Broader and Core and Groups (e.g. because they retired and started claiming Pension Credit), and so this |

¹⁶ Since there were no contact databases for all recipients of either the Core or Broader Group rebates, sampling frames had to be assembled by contacting a cross-section of rebate recipients and asking them to opt-in to the research. It was not known whether those who opted-in had moved from the Broader to Core Groups (or vice versa), and so it was not possible to sample using this variable. Moreover, a relatively small number of individuals opted-in, meaning that the probability of finding somebody who had moved between the two groups was very low.

| Theme | Evaluation question | Sub-questions | Summary of methodology (see next section for further information) | Page number |
|-------|---|---|---|-------------|
| | | | evaluation question could not be answered. | |
| | | 4b: How easy / difficult was it for Core Group customers to access the rebate? How did the form of rebate delivery affect Core Group responses to the rebate? | ICF carried out in-depth semi-structured interviews with 17 Core Group customers. Interviews investigated individuals' experiences of the WHD customer journey, from learning about the scheme from the DWP letter, through to receiving and using the rebate. Core Group customer interviews explored whether rebate had affected customers' switching behaviour. Energy supplier interviews also included discussion of whether suppliers believed the WHD scheme affected customers' switching behaviour. | 31 |
| | | 4b (i): How and when did Core Group customers access the rebate? | | 30 |
| | | 4b (ii): Did Core Group customers experience any issues in accessing the rebate? | | 30 |
| | | 4b (iii): Did the rebate have an impact on whether Core Group customers are likely to switch suppliers? | | 32 |
| | EQ5: How was the customer journey experience for Broader Group customers? | 5c: How have Broader Group customers found the rebate application and delivery process? | ICF carried out in-depth semi-structured interviews with 30 Broader Group customers. Interviews explored customers' experiences of learning about and applying for their WHD rebate, and the process of receiving the rebate. | 33 |
| | | 5c (i): How and when did Broader Group customers hear about the WHD scheme? | | 33 |
| | | 5c (ii): Is there any impact from repeated receipt of the rebate? | | 36 |
| | | 5c (iii): Does changing between Core/Broader Group have any impact? | See sub-question 4a (iii) | |
| | | 5d: How easy / difficult was it for Broader Group customers to make use of the rebate for heating? | ICF carried out in-depth semi-structured interviews with 30 Broader Group customers. Interviews investigated individuals' experiences of the WHD customer journey, including discussion of the process of | 35 |
| | | 5d (i): How and when did Broader Group customers access the rebate? | | 34 |

| Theme | Evaluation question | Sub-questions | Summary of methodology (see next section for further information) | Page number |
|--------|---|--|---|-------------|
| | | 5d (ii): Did Broader Group customers experience any issues in accessing the rebate? | accessing the rebate. Broader Group customer interviews explored whether rebate had affected customers' switching behaviour. Energy supplier interviews also included discussion of whether suppliers believed the WHD scheme affected customers' switching behaviour. | 35 |
| | | 5d (iii): Did the rebate have an impact on whether Broader Group customers are likely to switch suppliers? | | 36 |
| | | 6e) Have households applied for the Broader Group rebate but not received it? Why not? What were the consequences? | It was not possible to identify and recruit to the research any individuals who had unsuccessfully applied for a Broader Group rebate, and so this evaluation question could not be answered. | |
| Impact | EQ6: What has the impact of the rebate been on fuel poverty in both prevalence and severity | 6a: Could the same / higher impact be achieved via different & lower/same cost means such as direct cash payments? | UCL used a RDD approach to compare the labelling effect of the WHD with that of the direct cash payment provided under the Winter Fuel Payment. | 39 |
| | | 6b: Is the value of the benefits sufficient to justify the cost of the rebate process? | UCL modelled the benefits of the WHD scheme, in terms of the impact on the temperature of recipients' homes, and the (monetised) health impacts of the scheme. | 39 |
| | EQ7: What is the impact of providing price support directly on energy bills? | 7a: Has the rebate increased energy consumption? | UCL used a RDD approach to identify whether the WHD rebate had changed recipients' energy consumption. | 41 |
| | | 7b: How has the rebate been used by customers? | ICF carried out in-depth qualitative interviews with Core and Broader Group customers to identify how they had used the rebate, and the impact (if any) on energy consumption. | 41 |
| | | 7c: Has the rebate improved recipients' wellbeing? | UCL modelled the health impacts associated with receipt of the WHD rebate. ICF carried out in-depth qualitative interviews | 43 |

Evaluation questions

| Theme | Evaluation question | Sub-questions | Summary of methodology (see next section for further information) | Page number |
|-------|---------------------|---|--|-------------|
| | | | with Core and Broader Group customers which included discussion of any health and wellbeing benefits to receiving the WHD rebate. | |
| | | 7d: What was the net benefit / impact of the WHD for individual recipients and society? | UCL analysed the (monetised) health impacts of the WHD scheme, and compared this against the costs of the rebate to determine the net impacts. | 44 |

Study methodology

The study applied a mixed methods approach involving qualitative and quantitative research:

- Modelling of the health impacts of the WHD payment and the labelling effect (undertaken by UCL Consultants); and
- Qualitative interviews with WHD customers, scheme administrators, and energy suppliers (undertaken by ICF).

Qualitative interviews

The qualitative research activity consisted of in-depth semi-structured interviews with representatives from the organisations responsible for the design and delivery of the WHD scheme, and with customers who received the rebate. Between April 2015 and September 2015, ICF interviewed:

- The four scheme administrators responsible for designing, overseeing and delivering the WHD scheme (DECC, DWP, Ofgem and Capita, the contact centre operator);
- Eight of the nine energy suppliers that delivered rebates to customers during year four of the WHD scheme;
- Seventeen Core Group customers who received the rebate in 2014, and three individuals who received a letter from DWP inviting them to participate in the sweep-up (but who were deemed ineligible for the rebate);
- Thirty-five Broader Group customers who received the rebate in 2014 (three who accessed the rebate having received assistance from a Children's Centre and 32 who accessed it via a single energy supplier's Broader Group scheme¹⁷).

Modelling the labelling and health impacts of the rebate

The quantitative research activities comprised developing three models to examine: the potential health impact of the WHD payment, the presence of a WHD labelling effect on fuel expenditure, and using the WHD eligibility to identify the risk of living in cold homes. Specifically, UCL undertook the following research activities:

- A model of energy expenditure and wintertime indoor temperatures was used to estimate the potential impact the WHD payment had on changing indoor temperatures. The model used data from the English Housing Survey (EHS) to

¹⁷ Difficulties in assembling a sampling frame consisting of Broader Group customers meant that it was only possible to contact the customers of a single energy supplier

characterise the dwelling energy performance and fuel expenditure and temperature data from a sub-survey of the EHS to characterise the indoor thermal environment.

- A model of the change in energy expenditure and receipt of WHD was used examine the presence of a labelling effect (i.e. a change in expected spending patterns due to labelling a payment). The model used a Regression Discontinuity Design (RDD) to determine the labelling effect of the WHD in conjunction with survey data from the Living Cost and Food Survey (LCFS) on household weekly expenditure.
- A prediction model that used a Random Forest design to classify the risk of living in a cold home (i.e. <18 C) using indoor temperature and household and dwelling characteristics from the EHS sub-survey.

Report structure

The remainder of this synthesis report consists of four sections:

- Section 1 provides answers to evaluation questions relating to the **administrative processes** underpinning the WHD scheme, including the Core Group data matching service, and energy suppliers' approaches to identifying and verifying Broader Group customers;
- Section 2 addresses evaluation questions relating to the **Core and Broader Group customer journeys** (schematics of which were shown in Figure 1);
- Section 3 addresses evaluation questions concerning the **impacts** of the WHD scheme;
- Section 4 provides a concise summary of the conclusions of the ICF and UCL study team in terms of whether the WHD scheme met its objectives.

Administration process evaluation questions

EQ1: How efficient was the delivery of the WHD scheme?

EQ1a/b: How well do definitions of Core and Broader group target the fuel poor? And, how well do they target the neediest part of the fuel poor group?

The WHD scheme was aimed at reducing the cost of fuel expenditure amongst vulnerable households, who may be at risk of living in fuel poverty. The WHD was initially designed under the 10% fuel poverty definition, whereby a household that spent more than 10% of their income on energy was in fuel poverty. However, this changed (in England) following the Hills Review¹⁸ recommendation of defining fuel poverty as those households living in a high energy cost home with low incomes (known as low-income high-costs – LIHC – fuel poverty). As such, the analysis of identifying the neediest population concentrated on those households living in cold homes.

UCL conducted analysis to determine how well WHD eligibility criteria identified households at risk of living in cold homes. A Random Forest classification approach was developed to determine important variables in identifying households that were at risk of living within cold homes (defined as having a wintertime average indoor temperature <18 °C). This temperature was selected because it aligned with a recent review by Public Health England that heating homes to at least 18°C in winter poses minimal risk to the health of a sedentary person, wearing suitable clothing.

The analysis found that the Core Group eligibility criteria were not strong indicators of households living in cold homes (i.e. <18 °C). This reflected the predominant type of home that those households occupy, i.e. mid-20th century flats in the social rental market. Instead, a stronger predictor of coldness was a measure of the dwelling energy performance, length of residency, household type, dwelling age, presence of a boiler, age of the household reference person, number of people in the home, household income, number of bedrooms, and whether the household reference person is employed. While the WHD scheme targeted households who are older, it may not necessarily have reflected households at risk of living in cold homes. For more information, see Analytical Report 2 (page 37).

Qualitative research findings on the Core and Broader Group definitions

ICF conducted interviews with energy suppliers, who were asked for their views on how well the Core and Broader Group definitions targeted the fuel poor. Some questioned the

¹⁸ Hills, J. (2012) Getting the measure of fuel poverty: Final Report of the Fuel Poverty Review

EQ1: How efficient was the delivery of the WHD scheme?

fit of the Core Group to fuel poverty, noting that the Core Group eligibility criteria select low income pensioners rather than pensioners in fuel poverty, and takes no account of whether or not rebate recipients live in homes that are relatively well-insulated and warm.

Recognising that constraint, suppliers saw merit in targeting WHD support at pensioners on the basis that they:

- are a relatively 'stable' target group (i.e. individuals tend not to move in and out of eligibility).
- are less likely than other groups to come forward and request assistance if they were struggling to keep up with energy bills. An 'automatic' enrolment scheme such as WHD is an effective way to overcome this barrier.

Energy suppliers reported that their Broader Group eligibility criteria directed WHD rebates towards individuals who might struggle to pay their energy bills. Low incomes and other vulnerabilities (such as a long-term illness and/or disability) were, it was reported, associated with an increased likelihood that customers would struggle to keep up with their energy bills. Receipt of means-tested benefits was seen by suppliers as a practical 'proxy' for identifying such customers. However, some energy suppliers questioned whether the Broader Group was sufficiently targeted at those in fuel poverty, as opposed to people on low incomes or with other vulnerabilities. Again, it was noted that the WHD scheme takes no account of fuel use or need (i.e. whether or not rebate recipients actually live in cold homes), though it was recognised that there are practical reasons for this given the absence of data that would enable the cost-effective identification of such individuals.

The qualitative interviews with WHD customers illustrated the positive impact that the WHD scheme had on people's ability to heat their homes, but also that the rebate recipients were not always in need with help with their home energy bills. For more information, see Analytical Report 1 (pages 17 and 34).

EQ1c: How might we develop a new proxy to better target fuel poor customers under LIHC?

The analysis conducted by UCL on identifying households who were at risk of living in cold homes found that using a measure of energy performance (which would also reflect dwelling age) and some form of length of residence within the LIHC definition of fuel poverty could provide a more appropriate proxy to better target households vulnerable to living in cold homes. For more information, see Analytical Report 2 (page 53).

EQ1d: What is the cost of delivery and what are the benefits to energy suppliers?

ICF conducted qualitative research with suppliers. The interviews included discussion of the costs of participating in the WHD scheme. Suppliers incurred costs through the

management and delivery of their Core and Broader Group schemes, costs which were then recouped as part of the 'levy' on customers' electricity bills. These costs included the salaries of the WHD scheme 'team' within each energy supplier, marketing costs, IT and system costs. Delivery of the rebate to the Core Group, it was reported, was relatively low-cost, because the Core Group 'system' was essentially automated. The Broader Group was more labour intensive, involving scheme design, marketing and delivery. By far the largest cost, however, reportedly related to the verification of applicants, which was a manual process.

Energy suppliers identified some benefits to participating in the WHD scheme. These benefits included: being able to offer WHD to customers who struggle to keep up with energy bills, often as part of a 'package' of support measures; the positive impact on their image and profile; and a positive impact on customer satisfaction levels.

EQ2: How effective was the Core Group matching service for energy suppliers?

EQ2a: What were the costs to suppliers of the data matching? What suggestions do they have to improve data matching?

ICF conducted interviews with energy suppliers, who reported that the costs of the data matching process for Core Group customers was minimal, and considerably lower on a unit cost basis than the cost of delivering rebates to the Broader Group. Customer records received via the sweep-up process that complemented the data match were slightly more labour intensive to process, especially since files were typically received over a period of several months.

Energy suppliers were satisfied with the data matching process, and noted that communication between themselves over the lifetime of the WHD scheme had ensured that any operational problems were identified and resolved. Suppliers had no suggestions for any further improvements to the operation of the data matching process. For more information, see Analytical Report 1 (page 19).

EQ2b: How effective was the sweep-up process in identifying eligible Core Group customers? What suggestions do suppliers have to improve the sweep-up process?

ICF's qualitative research with scheme administrators, energy suppliers and Core Group customers suggested that the sweep-up was an effective way in which to identify individuals who were eligible for the rebate. Scheme administrators concluded that the telephone helpline had largely worked well; energy suppliers concurred, though noted that the data files they received (i.e. indicating who they should pay the rebate to) included more errors than was the case for the matched data file (e.g. individuals that they still could not identify within their customer databases, even with an MPAN number). Core Group customers, where they could recall the process, were also satisfied with the service that they received as part of the sweep-up.

Energy suppliers were largely satisfied with the sweep-up process. However, the 'drawn-out' nature of the sweep-up (which typically ran from September to March in each scheme year) meant that they received numerous data files containing customer records, some of which contained details for just a handful of individuals. Each file required time to process, and so suppliers suggested that it would be preferable to receive smaller numbers of data files (files could be provided with less frequency, or the sweep-up 'window' could be shortened). For more information, see Analytical Report 1 (page 22).

EQ3: How effective were the approaches of suppliers to the identification and verification of Broader Group customers?

EQ3a: How were eligible customers identified for the Broader Group?

Responsibility for identifying eligible Broader Group customers was the responsibility of participating energy suppliers. ICF's interviews with energy suppliers showed that they typically adopted 'wide' or inclusive eligibility criteria for their Broader Group schemes to maximise their chances of achieving their annual rebate targets. Suppliers used a variety of promotional and marketing activities to notify their customers that their schemes were open to applications. These activities included: a dedicated WHD webpage on their website; communicating with customers via email or postal mail-outs; briefing their contact centre staff to raise the WHD scheme with customers; and notifying third parties (such as Citizens Advice Bureaus and fuel poverty charities) that their WHD schemes had opened.

All energy suppliers noted that their promotional activity was targeted and, to some extent, low-key. Suppliers reported that they would focus on previous WHD customers in their mail-out activities, or would target individuals who they believed might prove to be eligible for a WHD rebate. This targeted / low-key approach became more common towards the end of the WHD scheme, when suppliers were more confident that they could achieve their Broader Group targets. Suppliers reported that they did not want to generate demand that they could not meet, either because their schemes would become oversubscribed, or because they would receive applications from ineligible customers (who they would have to turn down, thus disappointing them). Suppliers also noted that they tended to stagger their promotional activity across the scheme year to avoid spikes in applications. For more information, see Analytical Report 1 (page 37).

EQ3b: How successful were the various approaches for identifying Broader Group customers?

If assessed in terms of rebate targets being achieved, suppliers' approaches for identifying Broader Group customers were successful. Indeed, as noted above, suppliers reported that they employed various demand management procedures to ensure that they were not oversubscribed.

When interviewed by ICF, some Broader Group interviewees believed that energy suppliers should promote the WHD more widely. These individuals had typically learned of

EQ3: How effective were the approaches of suppliers to the identification and verification of Broader Group customers?

the scheme 'by chance', when speaking to friends or by following weblinks when browsing online, and felt that more should be done to promote the rebate amongst people in similar circumstances. As noted above, however, energy suppliers reported that they tended to deliberately keep their Broader Group schemes low profile, to avoid being oversubscribed. For more information, see Analytical Report 1 (page 37).

EQ3c: What were the reasons for failing verification?

Energy suppliers employed a two-stage verification model. DWP did an initial check against benefits records to assess whether applicants were eligible for the rebate. This was followed by a manual verification check whereby applicants were asked to send in proof of eligibility. Energy suppliers are each required to verify that at least 5% of their Broader Group applicants are eligible to receive their rebate. In order to ensure that this was achieved, suppliers reported that they would select more than 5% of applications for verification (this ranged from 8%-11%).

When interviewed by ICF, energy suppliers reported that where applicants failed the manual verification process, it was mostly because they did not respond to the request to provide proof of receipt of benefit(s) within the allotted time period. In other cases, applicants submitted insufficient information, or submitted information that proved they were ineligible (e.g. because their household income was above the permitted threshold). Inasmuch as suppliers knew the reasons why applicants did not provide the necessary proof of eligibility (since many applicants simply did not respond), energy suppliers gave the following explanations:

- *Customers' confusion over their exact benefits status:* many energy suppliers believed that customers often did not know exactly what benefit they received, especially given recent changes to the benefits system. Applicants may thus have made an honest mistake when completing their application form.
- *Difficulties in locating and providing proof of benefits:* some suppliers noted that the type of individual who is eligible for a WHD rebate may also be someone who might struggle to retain, locate and copy the correct documentation (e.g. because they may not easily be able to photocopy proof of benefits). These individuals may thus have been unable to submit the necessary proof in time. This could, potentially, mean that the most vulnerable individuals were more likely to fail a verification check, and thus not receive a WHD rebate.
- *Possible overburdening of the manual verification provider:* one supplier questioned whether having one supplier responsible for almost all manual verification under the WHD scheme had resulted in an 'overburdening' of the organisation, such that they had not had the capacity to sufficiently 'chase' customers who had not provided the necessary proof. More sustained communication with non-respondent applicants, it was suggested, might have yielded a higher verification pass rate.

EQ3: How effective were the approaches of suppliers to the identification and verification of Broader Group customers?

Overall, energy suppliers did not believe that there was a significant problem with 'fraudulent' submission of applications for WHD rebates, despite the proportion of applications that failed the verification process. Instead, suppliers believed that the complexity of the benefits system, together with the difficulties that some Broader Group applicants experienced in complying with the verification process, accounted for the majority of the failed verification checks. It was noted that this would cease to be an issue if a DWP data match was carried out for all WHD rebate recipients. For more information on verification, see Analytical Report 1 (page 42).

Customer journey evaluation questions

EQ4: How was the customer journey experience for Core Group customers?

EQ4a (i): How and when did Core Group customers hear about the WHD scheme?

ICF carried out qualitative research with Core Group customers. This research found that Core Group interviewees had all heard about the WHD when they received the letter that was sent out by DWP from September onwards. Most Core Group interviewees could remember having received and read the DWP letter, and all of those individuals thought the letter was clear and straightforward to understand. Few interviewees could recall specific features of the letter, and thus could not comment on how clear they found the various elements (e.g. the Q&A section). Fieldwork took place approximately 6-7 months after the letters were sent out, which will have affected interviewees' recall. For more information, see Analytical Report 1 (page 20).

When asked what they thought the purpose of the WHD rebate was, the most common response amongst Core Group interviewees was that it was to help to pay for their *electricity* usage, particularly over the winter. It is likely that the source of this understanding is a combination of the DWP letter – which describes the rebate as “help with the cost of your electricity bill” – plus the actual payment mechanism (i.e. on the electricity account). There was no notable difference in opinion as to the purpose of the WHD scheme between matched and unmatched Core Group customers. This suggests that contact with the telephone helpline did not have a significant bearing on perceptions of the purpose of the WHD rebate. For more information, see Analytical Report 1 (page 21).

EQ4a: How did Core Group customers find the sweep-up process?

Several of the Core Group customers who were interviewed as part of the qualitative research that was carried out by ICF could not recall the sweep-up process (fieldwork was undertaken several months after individuals had called the telephone helpline). Interviewees who could remember contacting the telephone helpline all reported that they were satisfied with the service that they received. Interviewees who had called the helpline only to learn that they were not eligible for a WHD rebate (e.g. because they were not named on their electricity account) reported that they were given a clear explanation as to why they were ineligible. For more information, see Analytical Report 1 (page 22).

EQ4b (i): How and when did Core Group customers access the rebate?

How did Core Group customers access the rebate?

The method by which Core Group customers received their rebate depended on the nature of their electricity account:

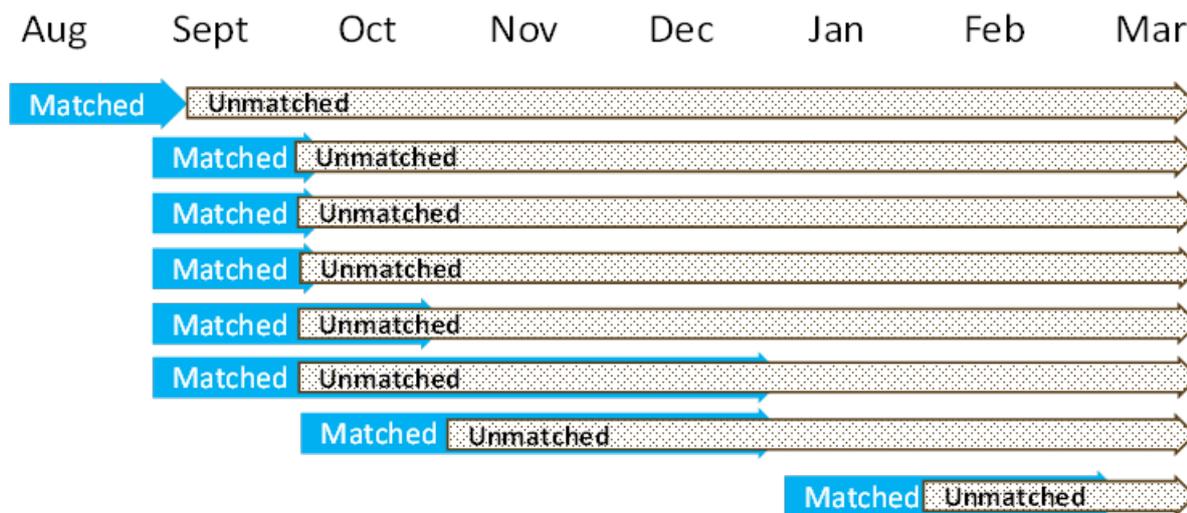
- *Customers who pay their bill by monthly direct debit, or pay on receipt of a bill:* the rebate was automatically credited to a customer's electricity account by their energy supplier.
- *Customers with prepayment meters:* energy suppliers deployed various methods to deliver the rebate to prepayment meter customers, including: sending vouchers by post, which customers had to exchange at a PayPoint facility or a Post Office; remotely crediting a customer's electricity meter; or payment by cheque (though this was largely in the early years of the WHD scheme). Some suppliers split the rebate into two or three vouchers of smaller denominations.

When did Core Group customers access the rebate?

Figure 2 shows the payment periods for matched and unmatched Core Group customers for eight of the nine energy suppliers¹⁹ that delivered rebates in year four of the WHD scheme. As this shows, matched Core Group customers typically received their rebates between (late) August and October, though customers of one supplier did not receive their rebates until January or February. Unmatched Core Group customers received their rebates slightly later, typically from October through to the end of March. This was because the sweep-up process ran through to March, and so suppliers received data files for unmatched customers right up to the end of the scheme year. For more information, see Analytical Report 1 (page 23).

Figure 2: Payment periods for matched and unmatched Core Group customers, for eight energy suppliers

¹⁹ One of the nine suppliers did not participate in the research



Source: ICF, based on energy supplier interviews

EQ4b (ii): Did Core Group customers experience any issues in accessing the rebate?

The Core Group customer journey was relatively simple and generally required little customer input. Interactions (the sweep-up) between customers and the WHD scheme 'infrastructure' seem to have worked well. Nevertheless, two issues with the Core Group customer journey were identified from qualitative interviews that were carried out by ICF²⁰ (for more information, see Analytical Report 1 (page 25):

- *Low levels of awareness of rebate receipt:* Interactions with Core Group customers suggest that awareness of receipt of the rebate was an issue. Significant numbers of Core Group customers, when contacted to request an interview, could not recall having received a rebate. Even amongst those who could remember receiving the rebate, there was often confusion about exactly when they first became aware that it had been paid. Low levels of awareness were likely to be a function of the fact that Core Group customers were not notified that the rebate had been paid to them. They received their DWP letter in September or October, after which there was no further communication as regards the timing of rebate payment. Whereas prepayment meter customers might have received vouchers in the post, people who paid their energy bills by direct debit or on receipt of a bill would only have realised they had been paid their rebate if and when they received (and read) their subsequent bill or statement.
- *Payment of the rebate after the winter heating season:* Several Core Group interviewees received their rebate in February or March, which is after the winter

²⁰ A total of 20 qualitative interviews were completed with Core Group customers, and so it was not possible to provide a comprehensive description of all of the issues that customers might have experienced in accessing the WHD rebate.

heating season. Moreover, as noted above, customers may not have actually learned that they had been paid a rebate until several months after it had been paid (if they realised at all). Some interviewees reportedly became aware of rebate payment in April or early summer, at which point they may not have been using their heating. Some Core Group customers expressed a preference for receiving their rebate earlier, ideally at some point before Christmas.

EQ4b: Did the form of rebate delivery affect Core Group responses to the rebate?

The form of rebate delivery was dictated by the nature of a customer's electricity account (i.e. whether they paid by direct debit, on receipt of a bill, or via a prepayment meter). As discussed above, the form of delivery was a determining factor in whether or not customers were aware that they had received their rebate, with direct debit and pay-on-bill customers sometimes unaware that they had been paid, or finding out about payment several months after the event. Qualitative research carried out by ICF found that one of the factors influencing customer decision-making on how to spend the rebate was the timing of its receipt, since a rebate received after the winter season had ended was less likely to be spent on energy for heating. Thus, a combination of the form of rebate delivery together with when the rebate was paid did seem to have some impact on how Core Group customers chose to spend the money. However, this was one of a number of factors shaping decision-making, alongside the temperature of a recipient's home, and their personal preferences in terms of how to spend the extra cash provided by the rebate (i.e. on energy use or on other household expenses).

EQ4a (ii): Was there any impact from repeated receipt of the rebate?

Qualitative research carried out by ICF found that there was no notable difference in the experiences of Core Group interviewees who had received the rebate once, and interviewees who had received the rebate on multiple occasions. Repeated receipt of the rebate did not seem to change how Core Group customers chose to use the money. In many respects this was to be expected: the rebate provided a one-off boost to recipients' disposable income, and was quickly spent on consumable goods, such as energy or food. It was typically not used, for instance, to make any lasting changes, such as an improvement to the energy efficiency of a recipient's home. The health benefits (where there were any) of the rebate might be expected to be cumulative (e.g. mitigation of chronic conditions), but the sample of Core Group interviewees did not indicate that they had found this to be the case.

EQ4b (iii): Did the rebate have an impact on whether Core Group customers were likely to switch suppliers?

ICF's qualitative research with Core Group customers included discussion of whether or not the WHD rebate would influence individuals' decision-making as regards switching energy suppliers. Many Core Group interviewees indicated that they had never switched suppliers and had no intention of doing so in the future. These individuals were typically satisfied with their current supplier, and were deterred by the 'hassle' associated with moving to a new supplier. The availability of the WHD rebate thus made no difference to these customers.

Of the Core Group interviewees who would consider switching suppliers in the future, most indicated that the availability of the WHD would not be a major factor in their decision-making. Typically, other considerations – price and customer service primarily – were more important to these customers. Other Core Group interviewees believed that all suppliers offered the WHD rebate (in fact it is only suppliers with more than 250,000 electricity customers), and thus that there was no reason to take into account the WHD rebate when comparing suppliers. Some Core Group interviewees indicated that they would make sure that a supplier that they were considering switching to did indeed offer the WHD rebate, since the additional income was too important for them to risk losing it. For more information, see Analytical Report 1 (page 32).

EQ5: How was the customer journey experience for Broader Group customers?

EQ5c (i): How and when did Broader Group customers hear about the WHD scheme?

ICF's qualitative research with Broader Group customers found that people heard about the WHD scheme from a range of sources, including from friends or family, via communication from their energy supplier, and by chance when browsing online (including their energy supplier's website, or GOV.uk). Some individuals in the sample of Broader Group customers had learned of the WHD scheme from a Children's Centre that they attended (the Centre provided advice to attendees on energy saving and bills).

Energy suppliers reported using various approaches to alert people to their WHD Broader Group schemes. Methods included: communicating with customers via email or postal mail-outs; briefing their contact centre staff to raise the WHD scheme with customers; and notifying third parties (such as Citizens Advice Bureaus, fuel poverty charities) that their WHD schemes had opened. All suppliers noted that their promotional activity was targeted and, to some extent, low-key. For example, suppliers reported that they would focus on previous WHD customers in their mail-out activities, or would target individuals who, based on their profile²¹, might prove to be eligible for a WHD rebate.

Some Broader Group interviewees believed that energy suppliers should promote the WHD more widely. These individuals had typically learned of the scheme 'by chance', when speaking to friends or by following weblinks when browsing online, and felt that more should be done to promote the rebate amongst people in similar circumstances. For more information, see Analytical Report 1 (page 38).

EQ5c: How did Broader Group customers find the rebate application and delivery process?

Rebate application

Qualitative research conducted by ICF found that most Broader Group interviewees reported that they had applied for their WHD by completing an online form. Some had applied by telephone, typically where they had phoned their energy supplier to enquire about the details of the WHD scheme, and had completed an application whilst on the telephone. Interviewees contacted via the Children's Centre indicated that their contact at

²¹ For example, individuals who had a history of getting into debt with their energy bills, or customers that are on means-tested benefits (even though it may not be known exactly what benefit they receive)

the Centre had completed their application form on their behalf. None of the interviewees reported that they had experienced any problems or difficulties when completing and submitting their application²². For more information, see Analytical Report 1 (page 40).

Rebate delivery

For direct debit and pay-on-bill customers, the delivery of the WHD rebate was straightforward, since energy suppliers remotely credited their electricity account. As discussed previously, however, customers might not realise that they had received their rebate. Prepayment meter customers typically received the rebate in the form of vouchers, which they had to take to a shop or similar facility to redeem, and top-up their electricity account. Broader Group interviewees reported that this had been straightforward, largely because they were experienced in topping-up their meter. Nevertheless, the redemption rate for WHD vouchers (Core and Broader Group combined) ranged from 91%-92% to 99% in year four of the WHD scheme, which meant that some people did not manage to access their rebate. For more information, see Analytical Report 1 (page 45).

EQ5d (i): How and when did Broader Group customers access the rebate?

How did Broader Group customers access the rebate?

The delivery of the rebate to Broader Group customers followed the same approach as for the Core Group. The delivery mechanism for the rebate depended on how the recipient settled their electricity account:

- For customers who paid their bill by monthly direct debit, or on receipt of a bill: the rebate was credited to a customer's electricity account.
- For customers with prepayment meters the rebate was usually delivered in the form of vouchers which customers had to exchange at a PayPoint facility or a Post Office, though remotely crediting a customer's electricity meter and payment by cheque were also used.

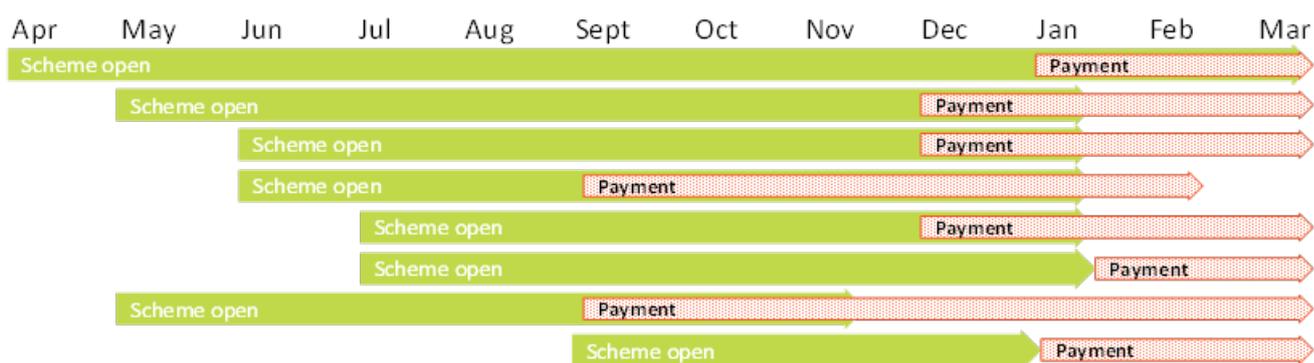
When did Broader Group customers access the rebate?

Figure 3 shows the payment periods for Broader Group customers for eight of the nine energy suppliers²³ that delivered rebates in year four of the WHD scheme. As this shows, Broader Group customers typically received their rebates between December and the end of March, though customers of some energy suppliers only started to receive their rebates from January onwards. Customers of two energy suppliers started to receive their rebates from September onwards. For more information, see Analytical Report 1 (page 45).

²² It should be noted that that the sample consisted of individuals who had successfully applied for a WHD rebate, and applicants who were unsuccessful, or who were unable to even apply, might have a different perspective

²³ One of the nine suppliers did not participate in the research

Figure 3: Broader Group scheme opening and payment periods, for eight energy suppliers



Source: ICF, based on energy supplier interviews

EQ5d (ii): Did Broader Group customers experience any issues in accessing the rebate?

A total of 35 qualitative interviews were completed by ICF with Broader Group customers. These may not have identified all of the issues that customers might have experienced in accessing the WHD rebate. Whilst the Broader Group customer journey is less 'automated' than was the case for the Core Group (since Broader Group customers must find out about the scheme and submit an application), qualitative fieldwork suggests that customers' experiences were largely positive, with few problems encountered. Two main issues were raised by interviewees:

- *Payment of the rebate after the winter heating season:* with most suppliers not starting to pay rebates until December / January, Broader Group customers often received their rebate at a point in the year when energy consumption was decreasing. Furthermore, direct debit and pay-on-bill customers may not have realised that the rebate had been paid until several months afterwards. Some Broader Group customers expressed a preference for receiving their rebate earlier, ideally at some point before Christmas.
- *Rebate payment mechanism:* some Broader Group interviewees with prepayment meters suggested that the rebate would be more useful if it was paid directly to the gas meter, since this was ultimately where they ended up spending the money that they had saved in not having to top up their electric meter.

EQ5d: How easy / difficult was it for Broader Group customers to make use of the rebate for heating?

A distinction can be drawn between customers with dual fuel accounts and customers with standalone gas and electricity accounts. Broader Group interviewees with dual fuel accounts typically treated this as a single 'energy' account, and were thus able to spend the rebate on gas or electricity interchangeably (even though the rebate was paid to their

electricity account). For customers with standalone gas and electricity accounts, the rebate was used to pay for future electricity use, but the savings that they made by not having to set aside money to pay for this future electricity use could instead be spent elsewhere, including on gas for heating. Broader Group interviewees with prepayment meters, for example, reported that the rebate had kept their electric meter topped up for anything between two and five months, meaning that the amount of money they would set aside for their electric meter each week could instead be spent directly on their gas meter. Overall, therefore, regardless of their rebate payment method, Broader Group customers reportedly found it simple to allocate their rebate to heating *if they so wished*.

EQ5c (ii): Was there any impact from repeated receipt of the rebate?

Qualitative research by ICF found that there was no notable difference in the experiences of Broader Group interviewees who had received the rebate once, and interviewees who had received the rebate on multiple occasions. Repeated receipt of the rebate did not seem to change how Broader Group customers chose to use the money. In many respects this was to be expected: the rebate provided a one-off boost to recipients' disposable income, and was quickly spent on consumable goods, such as energy or food. It was typically not used, for instance, to make any lasting changes, such as an improvement to the energy efficiency of a recipient's home. The health benefits (where there were any) of the rebate might be expected to be cumulative, but the sample of Broader Group interviewees did not indicate that they had found this to be the case.

EQ5d (iii): Did the rebate have an impact on whether Broader Group customers were likely to switch suppliers?

ICF's qualitative research with Broader Group customers included discussion of whether or not the WHD rebate was a factor in their decision-making as regards switching energy suppliers. By way of context, most Broader Group interviewees had switched at some point, with price and customer service the most significant push (or pull) factors. Whilst comparisons should be treated with caution given small sample sizes and the sampling methodology, Broader Group interviewees were more likely to have switched than Core Group interviewees.

Many Broader Group interviewees indicated that they would take the WHD rebate into account when comparing suppliers. The additional income that the rebate brought, and the difference it made to their household budget, meant that many interviewees would only consider moving to a supplier that offered the WHD. Other interviewees, on the other hand, reported that the WHD was of little or no significance in their decision-making. It was notable amongst interviewees, however, that there was limited awareness of the Broader Group schemes offered by other suppliers, and thus whether eligibility criteria varied between schemes. Most Broader Group customers had only looked at their electricity supplier's WHD scheme.

EQ5: How was the customer journey experience for Broader Group customers?

Overall, qualitative research suggests that the WHD would be a consideration for many Broader Group individuals if they were looking to switch suppliers. Individuals did not want to lose out on the rebate, though few interviewees had actually checked whether they would do so if they were to switch suppliers. For more information, see Analytical Report 1 (page 54).

Impact evaluation questions

EQ6: What has been the impact of the rebate on fuel poverty?

EQ6a: Could the same / higher impact be achieved via different and lower / same cost means such as direct cash payments?

UCL conducted analysis to compare the WHD and Winter Fuel Payment to test whether a similar impact on household fuel expenditure could be achieved using a similar or less costly payment type. The WFP is a direct cash payment of between £100-£300 for eligible individuals (those of pension age and living in the UK). The analysis used an approach called 'Regression Discontinuity Design' (RDD) to determine presence of a labelling effect due to the WHD or Winter Fuel Payment in conjunction with survey data from the Living Cost and Food Survey (LCFS) on household weekly expenditure.

UCL's analysis found that there is limited evidence that both the WHD and Winter Fuel Payment households spend an increased proportion of their income on fuel after receiving their WHD rebate or Winter Fuel Payment. The magnitude of the effect is similar for the limited evidence in both cases. There thus appears to be no difference in the impact of financial support on energy expenditure when considering different methods of payment, i.e. through a direct cash payment (the Winter Fuel Payment) or a rebate on the electricity bill (WHD).

Both the WHD and WFP models were sensitive to aspects of the design of the study (the assumptions for RDD) as well as model structure. The study therefore finds that, in terms of a labelling effect, there is no identifiable difference between the direct cash payment used for the WFP and the method used by the WHD. For more information, see Analytical Report 2 (page 37).

EQ6b: Is the value of the benefits sufficient to justify the cost of the rebate process?

UCL conducted an analysis using a model that quantified the change in indoor environmental conditions and the health impacts of housing energy efficiency and fuel payment measures. The analysis found that households in receipt of the WHD could benefit from a small improvement in indoor wintertime temperature. Specifically, UCL found that households in receipt of the WHD could on average see an increase in temperature of around 0.25 °C during wintertime conditions (i.e. when the temperature was 5 °C outdoors). The modelling showed that proportionately more WHD eligible households live in flats than dwellings, most are present or ex-council flat tenants, and most live in post-1945 flats. WHD eligible households tended to live in dwellings that were

more energy efficient with much lower ventilation heat losses, reflecting the dwelling typology they live within. For more information, see Analytical Report 2 (page 39).

The health impact analysis found that there was a potential improvement in health over 15 years of life (average of over 65 year olds) for both the Core Group and Broader Group eligible households, as measured as a positive change in Quality Adjusted Life Years (QALYs). The corresponding change in health for the Core Group households, including benefits to cardio-respiratory health, and common mental disorder, was a benefit of approximately 6,100 QALYs over a 15-year period for the WHD scheme eligible group and a per capita improvement of 50 QALYs per 10,000 persons. The Broader Group health improved (which also included impacts on childhood asthma, given that many Broader Group households contained young children) by approximately 33,000 QALYs over the period, with a per capita improvement of 30 QALYs per 10,000 persons. For more information, see Analytical Report 2 (pages 32, 35, & 50).

The modelling suggests that the WHD would result in generally only a small improvement in temperature (and therefore health) due the type of dwellings that WHD eligible households lived in. Because most of those in receipt of the payment live in dwellings that had a higher average energy performance level, there was a greater probability that the rebate would not be needed to increase indoor temperatures.

The RDD analysis showed limited evidence of a labelling effect. Without a labelling effect, the benefits to the household would be no different than an equivalent increase in income. Households would be able to spend this money on the goods and services they needed or valued most. As lower-income homes (in the core group), these households will likely already be making trade-offs on important expenditures. As income is fungible, the goods and services they purchase with the WHD may be goods and services other than heating, particularly if the households are already spending a disproportionate amount of income to meet heating requirements.

If the limited evidence of a labelling effect is taken to be sufficient evidence of its existence, then the rebate process introduces a technical 'economic inefficiency' in the expenditure patterns of households. Rather than allocating their resources to the goods and services they need or value most, a labelling effect would indicate that the households are spending more on heating than they would otherwise though it is unlikely that this would be beyond their heating requirements.

EQ7: What has been the impact of providing price support directly on energy bills?

EQ7a: Has the rebate increased energy consumption?

UCL conducted analysis that showed that there was limited evidence that a labelling effect existed for the WHD scheme. Using the RDD method, the UCL analysis found limited evidence of a labelling effect of the WHD payment. While a statistically significant result of a positive labelling effect was found in a minority of cases, the result was sensitive to the model structure and estimation method. The magnitude of the effect size was consistent across model structure and estimation method, providing some evidence of an effect and simply a lack of statistical power due to limited sample size and imperfect identification of recipient households.

Taking the more conservative approach, the assumption of no effect, the WHD payment would still have resulted in an increase in energy expenditure due to increase in income but not by any more than an equivalent unlabelled increase in income. The marginal fuel share for the sample analysed at the mean income was 7.91% and 7.88% with an additional £2.40/week added, so approximately £10.92 of the £140 transfer would have been spent on heating, in the average recipient household.

For Surface RDD, there is more evidence of a labelling effect, though this was not completely robust to model structure and estimation method. For the same sample and using the significant finding in Specification 1 of Surface RDD with both bandwidths set at 5, the marginal fuel share for WHD households was 9.50% at the mean income and 9.69% with an additional £2.40/week added. This means they would have spent approximately £13.46 of the £140 transfer on heating. For more information, see Analytical Report 2 (page 35).

EQ7b: How has the rebate been used by customers?

Quantitative research into how customers used the rebate

The RDD analysis conducted by UCL showed that there was limited evidence of the presence of a labelling effect of the WHD on fuel expenditure. The modelling was unable to robustly reject the null hypothesis that WHD recipient households treated the additional payment as a pure income increase. A labelling effect would indicate an economic inefficiency, as it would mean that households were not spending the increased income on those items or services they needed or valued the most.

UCL's analysis showed that the WHD payment was not necessarily used for heating (but rather as a general increase in how much money a household has to spend). This may reflect the type of dwelling that WHD recipients live in, such as smaller and more energy efficient flats. The WHD payment that is used on fuel would likely result in some improvement in indoor temperature, particularly in houses that are less efficient, and therefore would result in health benefit.

Qualitative research into how customers used the rebate

ICF carried out qualitative interviews with Core and Broader Group customers which included discussion of how people had used their WHD rebate. Whilst this research could not determine the overall change in energy consumption across the population of rebate recipients, it did provide some insight into the way in which the rebate influenced customer's decision-making as regards energy consumption.

Leaving aside electricity use for heating (e.g. where customers had electric storage heaters), very few Core or Broader Group customers had increased their electricity use following receipt of the WHD rebate. Interviewees typically noted that they used as much electricity as they needed and, prior to receiving the rebate, had not been holding back on electricity use because they could not afford it. A few Broader Group interviewees reported that they had increased their use of electricity as a result of receiving their WHD rebate, by using electricity-intensive household appliances such as a washing machine or tumble-dryer) more frequently (e.g. because they had young children, or in one case because of a disability). These interviewees had refrained from using these appliances as much as they would have liked due to the cost incurred, but having their electricity accounts in credit following receipt of the rebate had meant they felt they could afford to use more electricity. For more information, see Analytical Report 1 (page 50).

In cases where Core and Broader Group interviewees reported that they had increased their use of energy for heating after receiving their WHD rebate, they had typically had the heating on for a few hours longer each day than would otherwise have been the case, rather than by increasing the temperature that their thermostat was set to. The decision as to whether or not to spend the rebate to use more energy for heating seems to be a reflection of personal preference, and the circumstances of the recipient. Amongst Core and Broader Group customers, factors that appeared to have influenced interviewees' decision-making as regards the use of energy for heating included:

- *The temperature of an individual's home:* some interviewees had elected to use more energy for heating after receiving the rebate because they could not normally afford to heat their home to the level that they wanted (some lived in poorly insulated and/or draughty homes). Other interviewees chose not to use more energy for heating because their homes were already warm enough. Some Core Group interviewees who reported that their home was colder than they would have liked noted that they did not want to increase their energy use even after receiving a rebate, but instead preferred to 'make do' by wearing additional clothing in cold weather.

EQ7: What has been the impact of providing price support directly on energy bills?

- *Whether there were young children in the home, and/or individual(s) with an illness or disability:* if there was somebody spending time in the home who, it was felt, needed to be warm (e.g. young children, or individuals with an illness or disability that was affected by cold conditions), then interviewees would often use more energy for heating after receiving their rebate.
- *The timing of rebate payment:* as discussed in more detail in Section 3 of this report, many Core and Broader Group customers received their WHD rebate after the main winter heating season, at which point their energy needs were reduced, and they did not feel the need to spend the rebate on increased energy consumption.

Core and Broader Group interviewees reported that they also used the rebate – or the money ‘freed up’ by not having to set aside money to pay their electricity bill – to pay for other types of household expenditure. This included food and other bills. Interviewees also reported that the rebate had been used to pay for ‘special’ items, including Christmas presents, furniture, a contribution towards a holiday, and a donation to charity. One interviewee had invested the rebate. These qualitative results echo the quantitative results, and suggest that WHD beneficiaries tended to use the rebate according to their own perceived needs. For more information, see Analytical Report 1 (page 51).

EQ7c: Has the rebate improved recipients’ wellbeing?

Quantitative modelling of wellbeing impacts

UCL conducted analysis which showed that WHD scheme eligible households tended to already be warmer and use less energy than the non-eligible dwellings, due to the type of dwellings they lived in. Nevertheless, the increase in predicted wintertime temperatures due to the WHD scheme payments may provide some improvements in cardio-respiratory related health and mental health for those eligible households. The benefits tended to be on average greater amongst the Core Group than the Broader Group, due to the former’s age (i.e. over 65) and their existing underlying risk of diseases affected by temperature.

WHD scheme eligible dwellings could potentially increase their temperatures by as much as 0.25 °C (standardised to 5°C external), with a corresponding increase heating fuel expenditure of 940 kWh/year. The corresponding change in health for the Core Group households, including benefits to cardio-respiratory health, and common mental disorder, was a benefit of approximately 6,100 QALYS over a 15-year period for the WHD scheme eligible group and a per capita improvement of 50 QALYs per 10,000 persons. The Broader Group health improved (which also include impact on childhood asthma) by approximately 33,000 QALYs over the period, with a per capita improvement of 30 QALYs per 10,000 persons. These are relatively small increases in health and these impacts reflect the low risk of cold-related deaths among the wider population and the treated households compared to other diseases. For more information, see Analytical Report 2 (page 39).

Qualitative research into wellbeing impacts

ICF carried out qualitative research with Core and Broader Group interviewees who had used more energy for heating as a result of receiving the rebate. Some of these individuals reported that they were more comfortable in their homes due to the higher temperatures. A few interviewees believed that a warmer home was important in preventing poor health, for instance because they or family members had respiratory conditions such as asthma. Some Broader Group interviewees with young children in the home reported that they had experienced fewer colds and other illnesses, which they attributed to being in a warmer home. Any health benefits were self-reported and subjective; whilst interviewees' answers were probed, it was not possible to verify the accuracy of responses.

Core and Broader Group interviewees also noted that receiving the rebate had provided 'peace of mind' in relation to keeping up with energy bills, and household expenses more generally (food, rent, and other types of expenditure). Several interviewees noted that they found it difficult to keep up with bills, and thus that the extra cash provided by the rebate had been very helpful over the winter period, when bills and other expenses (e.g. Christmas) were at their highest. The rebate thus improved recipients' wellbeing, in the sense of reduced stress in budgeting and keeping up with household expenses. For more information, see Analytical Report 1 (pages 31 and 52).

EQ7d: What was the net benefit / impact of the WHD for individual recipients and society?

UCL's research found that there was a moderate value to the societal health benefits over the 15-year modelling period, which on a per capita basis was equal to £150 and £132, for the Core and Broader Groups respectively. The cost of providing the WHD rebate over the 15-year period was approximately £1200 per capita (assuming a 1.75-person household size). These societal benefits were accrued to the wider economy, for example through quality of life or employment gains. These gains do not consider potential impacts on the NHS budget expenditure on cold-related disease treatment. For more information, see Analytical Report 2 (page 50).

Conclusions

This final chapter presents the conclusions of the study team on whether the WHD scheme achieved its two key objectives²⁴.

Objective 1: "to remove a significant number of households from fuel poverty and improve the thermal comfort and health of assisted households"

- The WHD scheme was not targeted specifically at individuals in fuel poverty. Core and Broader Group eligibility was defined by reference to the customer's receipt of certain benefits. This made the WHD scheme comparatively straightforward to implement but these benefits, while good indicators of vulnerability, are imperfect markers of fuel poverty. Other indicators (notably the energy performance of a home) are likely to be more reliable predictors of whether someone lives in a cold home, and is in fuel poverty. Data on those indicators may not, however, be as complete or as current as the benefits data.
- The evaluation evidence suggests that the WHD rebate should improve the thermal comfort of recipients, by providing them with additional income that they could choose to spend on heating. Qualitative research provided insights into recipients' decision-making, and suggested that the decision as to whether or not to use the rebate to increase the use of energy for heating was largely based on personal preference. Factors that influenced the decision for those interviewed included: how warm recipients' homes were; the time of year that they received – or noticed they had received – their rebate; whether they had young children in the home; and whether they had a disability or long-term illness that meant they were typically at home in the day. Modelling undertaken by UCL found that there was no significant labelling effect associated with the WHD scheme; that is, households in receipt of the rebate spent it according to their needs (which would have included heating) and typically treated the payment as an increase in income. UCL found no evidence that the name and presentation of the scheme caused a larger share of the additional income to be allocated to heating than would have been expected of an unlabelled cash payment.
- UCL modelled the impacts of the WHD scheme on the health of rebate recipients, and found that, where consumers had elected to increase the temperature of their homes, this was associated with benefits to cardio-respiratory health. Qualitative research conducted by ICF found examples where rebate recipients (or family

²⁴ DECC (2011) The Warm Home Discount Scheme: Final Stage Impact Assessment

members) had noticed health benefits which they attributed to a warmer home, for instance if they had respiratory conditions such as asthma.

Objective 2: “to help to mitigate the burden of rising energy prices on low-income households, who will be worse affected than higher income households”

- Qualitative research conducted by ICF illustrated how receipt of the rebate supported individual low-income households for whom energy bills were sometimes a significant worry. The rebate had typically funded households' electricity usage for several months, releasing cash to be spent elsewhere (such as on gas use for heating). Interviewees reported that receiving the rebate had a positive impact on their mental wellbeing, with some noting that it had provided 'peace of mind' in relation to the challenge of keeping up with bills and other household expenses. The WHD targeting mechanism meant, however, that not all rebate recipients were low-income households. Whilst Core Group eligibility was based on means-tested benefits, energy suppliers' Broader Group schemes used other measures of vulnerability (e.g. unemployment, having a disability). Rebate recipients will have included some individuals on higher incomes.