

# **Goodbye Warm Front: Evaluating the Delivery of Energy Efficiency Retrofits in Low-income Homes in England from 2005 to 2012**

International Energy Programme Evaluation  
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## UCL - London's research and teaching powerhouse

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UCL Energy Institute

Research is focused on the **nexus between energy demand, energy efficiency, indoor and urban environmental conditions and health.**

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- A research portfolio of over £22m of funding,
- Established a vibrant Doctoral Training Centre
- Work closely with government, academics and industry
- The Bartlett has the most world-leading research in its field in the UK (REF2014).
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## UCL Energy Institute

**Our Vision:** A globally sustainable energy system

**Strategic Focus:** Systems and Demand

**Aim:** understand the world and help to change it.

**Partnership:** – long term strategic – EDF, Arup, Cisco, Hitachi, Lawrence Berkley National Laboratory,

**Methods:** Multi-disciplinary, observation, data collection, analysis, energy epidemiology, model development and scenarios our laboratory is the “real world”

**Impact:** Inform government, industry, NGO's and to engage with the broader society



## Evaluating the Delivery of Energy Efficiency Retrofits in Low-income Homes in England from 2005 to 2012

### Outline:

- 1) The Warm Front Scheme (WFS)
- 2) The WFS Evaluation
- 3) Impact of WFS on vulnerable households
- 4) Findings for future policies



## The Warm Front Scheme - Background

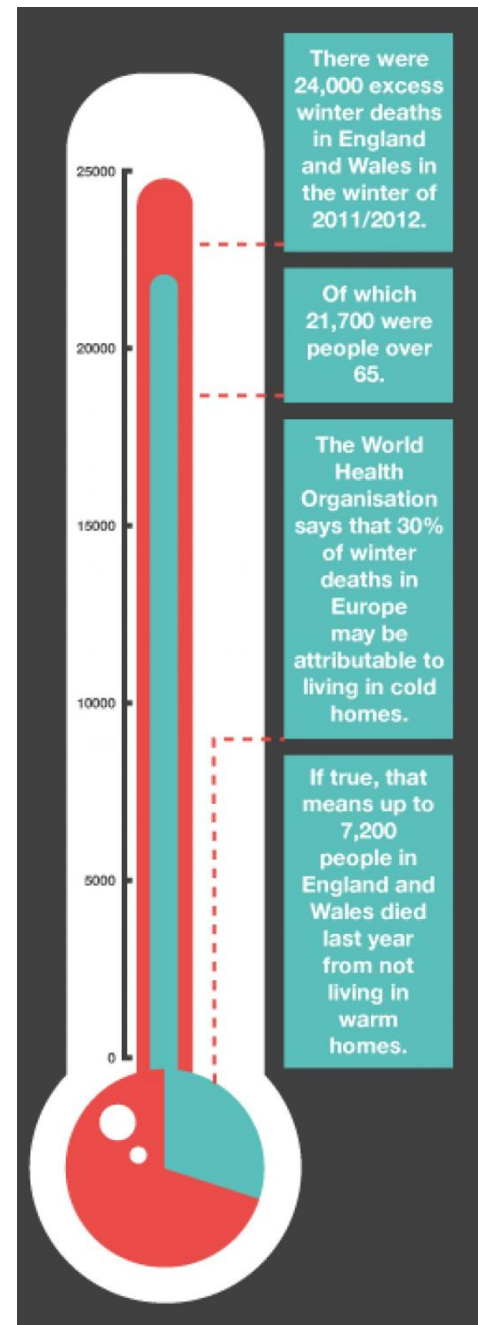
### Scheme Aims:

- Ensure the most vulnerable households did not **risk ill health** due to a cold, damp home
- Improve **energy efficiency** in vulnerable households and therefore reduce greenhouse gas emissions
- Reach **owner occupiers** and those living in the **private rented** sector
- Alleviate **fuel poverty**.



## The Warm Front Scheme - Background

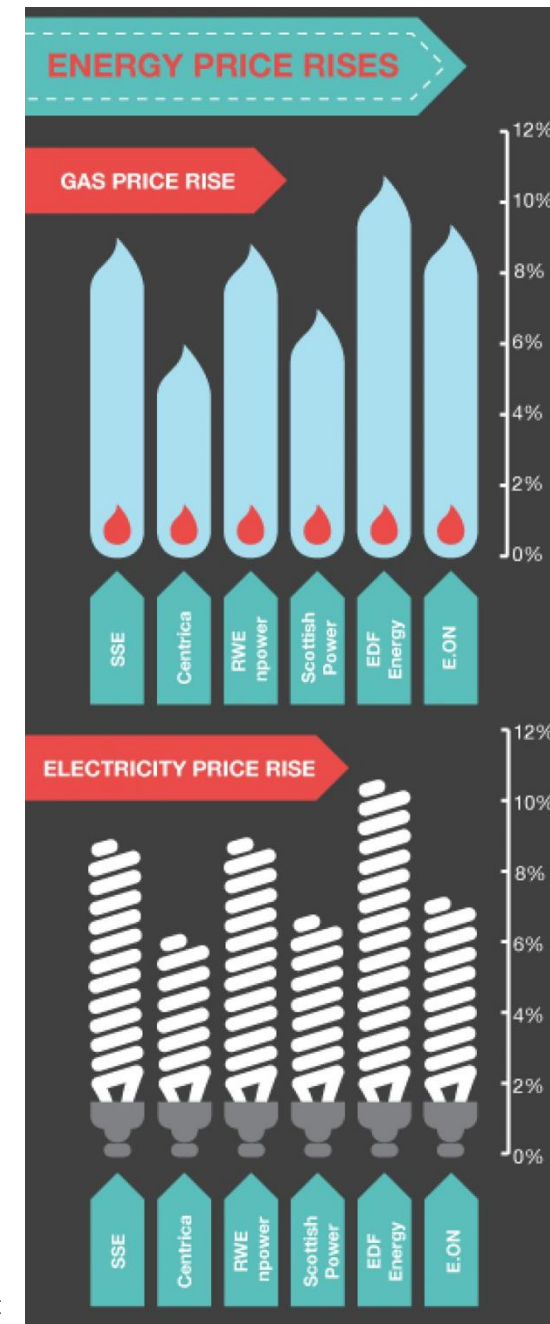
- The Warm Front scheme was the main flagship policy of the UK Government's 2001 **Fuel Poverty Strategy**.
- The strategy targeted the three **main factors** that influence fuel poverty in England:
  - Dwelling energy efficiency,
  - Fuel prices, and
  - Household income.
- A household was in 'fuel poverty' if they needed to spend at least **10% of their income to heat** the house to an acceptable level.
- **Vulnerable households** were defined as those containing **children, the elderly, sick or disabled**.





## The Warm Front Scheme - Background

- The WFS provided a range of **energy efficient heating and insulation retrofits** to private tenure households.
- The **eligibility criteria** included households in receipt of at least one of the principal **means-tested or disability-related benefits**: Child Tax Credit, Pension Credit, Disability Living Allowance.
- From April 2011 **non-mean tested** were removed, and properties that were **poorly insulated** and/or did not have working central heating were added.
- **Maximum grant** available for the WFS period with a peak of **£3,500** (£6,000 for oil heating system or renewable technology was recommended).



## The Warm Front Scheme - Background

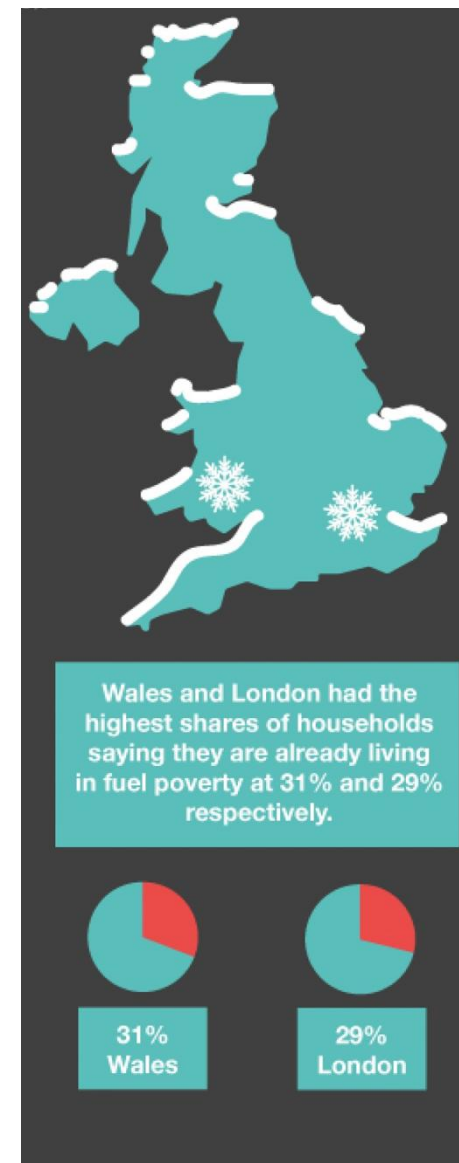
- The **delivery** of the WFS was predicated on the **identification** of households in receipt of state **means-tested benefits**.
- The **targeting and delivery** of the energy efficiency retrofit to vulnerable households is **limited** by the ability to **identify** fuel poor households from available data.
- Many **vulnerable homes may be 'unseen'** due to: language barriers or ethnicity, or unable to access government programmes because they lack the means or awareness of such programmes.



## The Warm Front Scheme - Background

Evidence on the delivery of **means-testing** programmes shows that the **take-up** of the benefit **can be low** due to:

- Subject to problems of **stigma**,
- Limited by **complex enrolment** procedures,
- **Administrative burdens**, and
- **Confusion over eligibility** criteria (particularly if they change).



## The Warm Front Scheme - Background

### Applying to the scheme



- Most householders described the application process as **straightforward**
- Some were more proactive than others in their pursuit of their application



### Grant levels



- Initially sceptical applicants were **delighted to find measures were paid for in full** by the scheme
- By the time of installation, some had very clear **expectations of grant amounts**, but did not always understand how these grants were spent

### Expectations of timescales



- Applicants often expected long waits and were pleasantly **surprised by how soon they received measures**
- Some customers dropped out because of long waiting times, or were diverted from the scheme early by referral organisations which could access other help for them sooner

## The Warm Front Scheme - Background

The **management** of the WFS was contracted to a **scheme provider** who oversaw the day-to-day operation and ensured the scheme **tackled fuel poverty in a cost-effective manner**.

The scheme manager was responsible for:

- Central **applications** service and call centre;
- **Marketing** of the scheme;
- Managing the **supply chain** of both surveyors and installers;
- Customer **complaints** service; and,
- **Aftercare** service for gas boilers installed.

## The WFS evaluation

In 2013, during the close-out period of the WFS, DECC undertook an **end-of-scheme process evaluation**.

The **qualitative research explored the delivery process** of the scheme and engagement with stakeholders and recipient with 40 in-depth interviews with key policy and scheme management representatives, stakeholders, and across the supply chain; and, 35 in-depth interviews with applicants to the WFS.

The **quantitative analysis explored the impact** on the retrofit sector, delivery times, cost of measures, targeting of retrofits, and customer complaints.

## The WFS evaluation

The aims of the WFS process evaluation were:

- To assess the **effectiveness of delivery** of the scheme, including:
  - Its **management and its engagement** with stakeholders and customers;
  - **Benefits or dis-benefits** of the scheme on the **supply chain**; and,
  - The **delivery of the scheme in practice**.
- To identify those features of the scheme that **did and did not work well** with the intention of using
- To use the findings to **inform the development and delivery of future energy efficiency schemes** targeting the fuel poor, e.g. the Energy Company Obligation

## The WFS evaluation

In delivering the WFS, a **key evaluation question** was:

- How **effective was the targeting of the scheme** in reaching households in need?

In this research, we focus on:

- The **targeting of the WFS** and those factors that might have **affected the rate of uptake** of the retrofits.



## The WFS evaluation - Method

### Data:

Scheme level analysis used data to determine the **incidence of retrofits** provided over the scheme evaluation period.

The number of **households assisted was compared against benefit recipients** from national statistics.

Neighbourhood level statistics on fuel poverty risk was used to assess the **targeting of the retrofits among areas of high vulnerability** to determine whether areas of high benefit receipt coincided with areas of high Warm Front retrofits.

Scheme level data was used to **examine the impact of changes in the eligibility** of the programme and the impact that had on both number of households assisted and the rate of application and rejections.



## The WFS evaluation - Method

The analysis of those **household factors affected the rate of** application used: details on whether a dwelling received a measure and reported details on their **age, ethnicity, ownership status and the route** through which they entered the scheme.

Dataset	Level (Records)	Description (Selection)
Installers	Installers (N= 1,218)	Information on installers (i.e. companies), including: name, number of measures installed, and total value of work.
Inspections	Household (N= 558,793)	Information on inspections, including: inspectors, date of creation and inspection, and working days between.
Complaints	Household (N= 47,638)	Details on complaints, including: type, status, date, resolution, installer, and deliverable.
Referral	Household (N= 2,455,075)	Details on referrals, including: date, channel, source, tenure, ethnicity, and age band.
Measures	Measure level (N= 9,937,130)	Details on each measure, service or administrative feature for a dwelling, including: type of measure installed, service provided and administration offered.
Hard to treat & reach	Household (N= 832,011)	Details on household hard-to-treat or hard-to-reach status and features.
Benefits	Benefit level (N=4,329,322)	Details on type of benefits received by households (including multiple per household)
Survey	Household (N= 493,534)	Details on referral to survey (from 2008 onward), including: date of application and survey and working days.

## The WFS evaluation - Results

### Warmth, heating & hot water



- Many got **working heating and hot water** again, or for the first time
- Several noticed improvements in warmth but a few still felt cold
- Some said it gave them peace of mind and felt **happier/ healthier**

*“The difference it’s made now, when my family come, you wouldn’t really sit there [in the living room] before, but they do now. They come and stay longer now, they don’t have to wear their coats...”*



### Use & behaviour

- Some felt comfortable using new heating equipment
- A few couldn’t operate controls properly
- One or two were more interested in energy efficiency
- Most have not done other major work on house

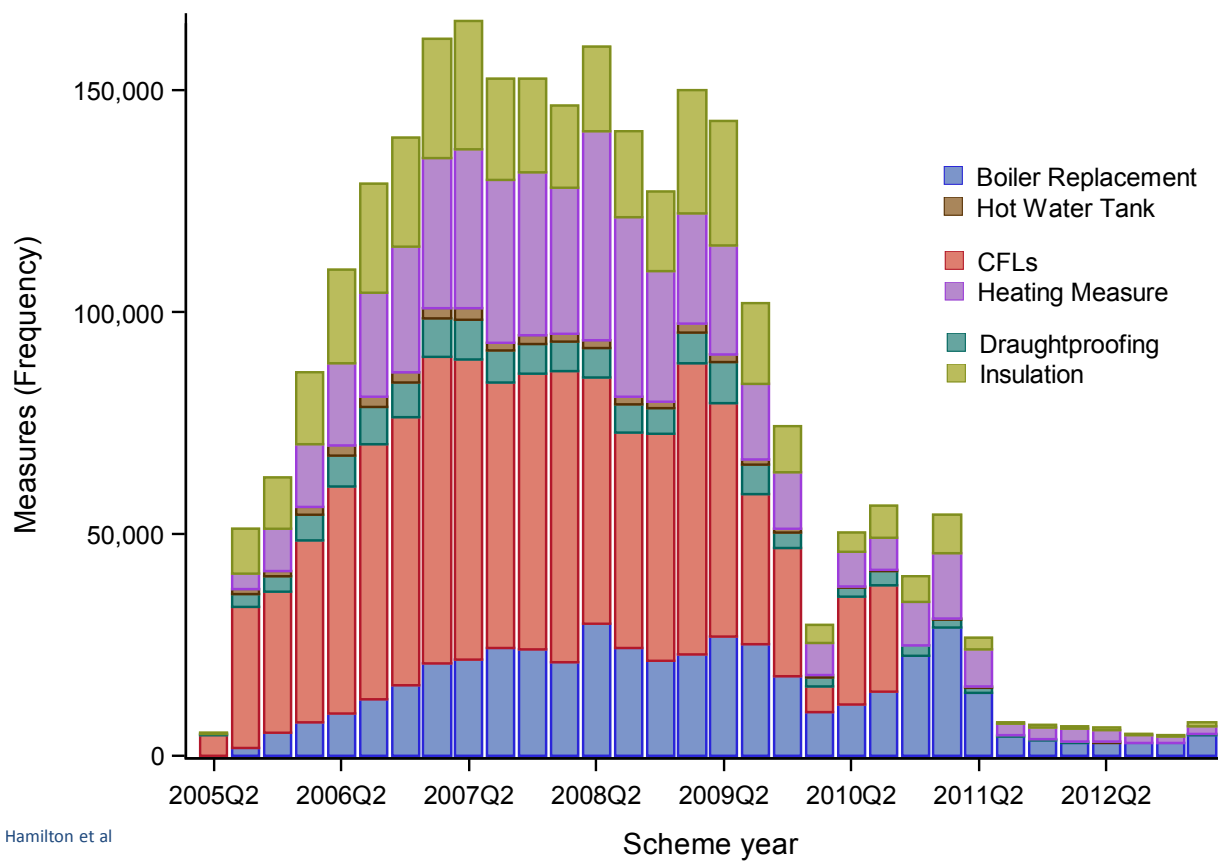


### Energy bills

- **Few noticed a difference in heating costs**
- Several put this down to rising energy prices

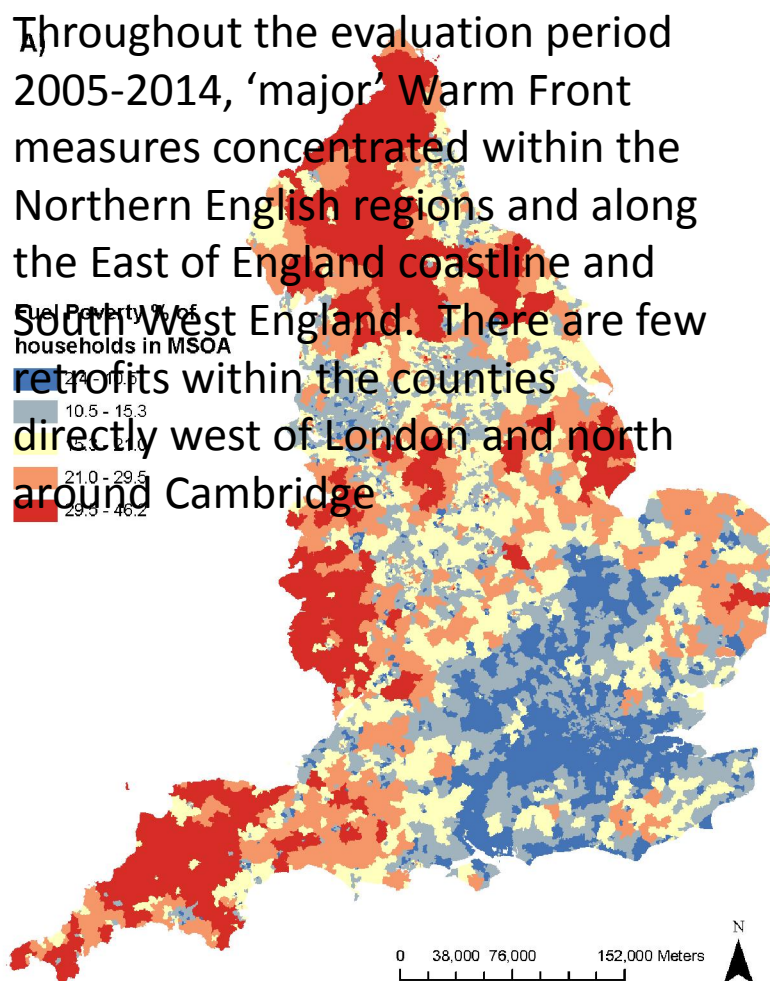
## The WFS evaluation - Results

The WFS assisted over **1.5 million households** from 2005 to 2013, with ~1M properties receiving a major measure. Proportion of successful applicants living in 'hard-to-treat' properties were a major target group for the program, rising to 80% of all homes assisted in 2013.



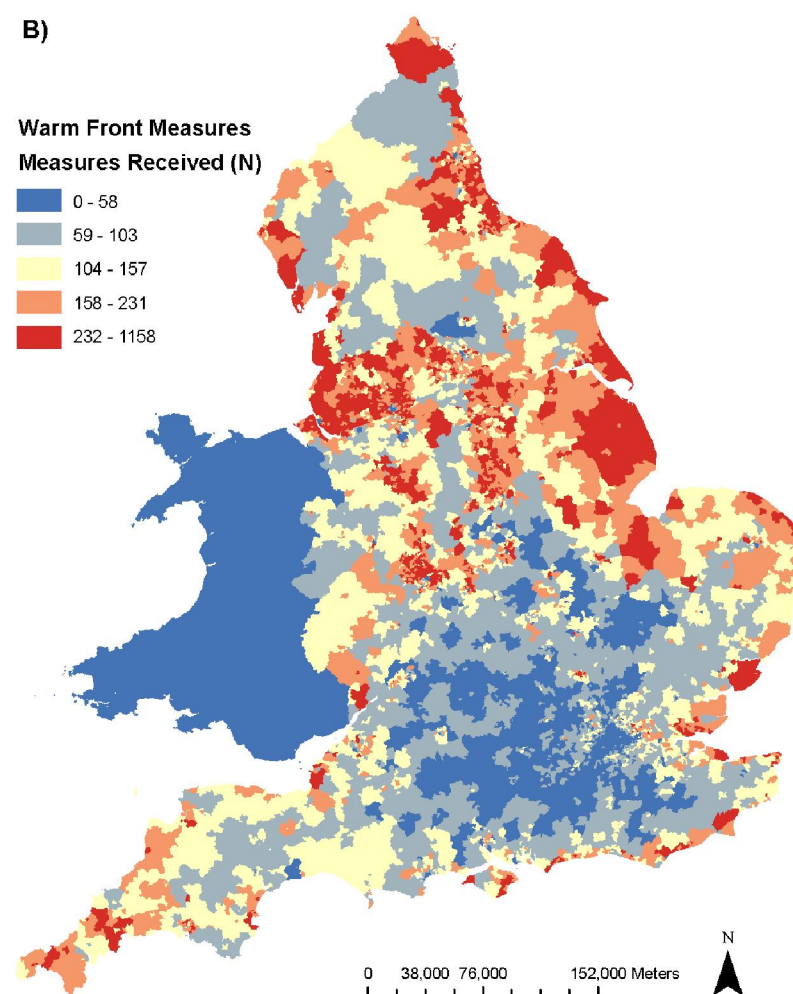
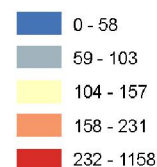
## The WFS evaluation - Results

Throughout the evaluation period 2005-2014, 'major' Warm Front measures concentrated within the Northern English regions and along the East of England coastline and South West England. There are few retrofits within the counties directly west of London and north around Cambridge.



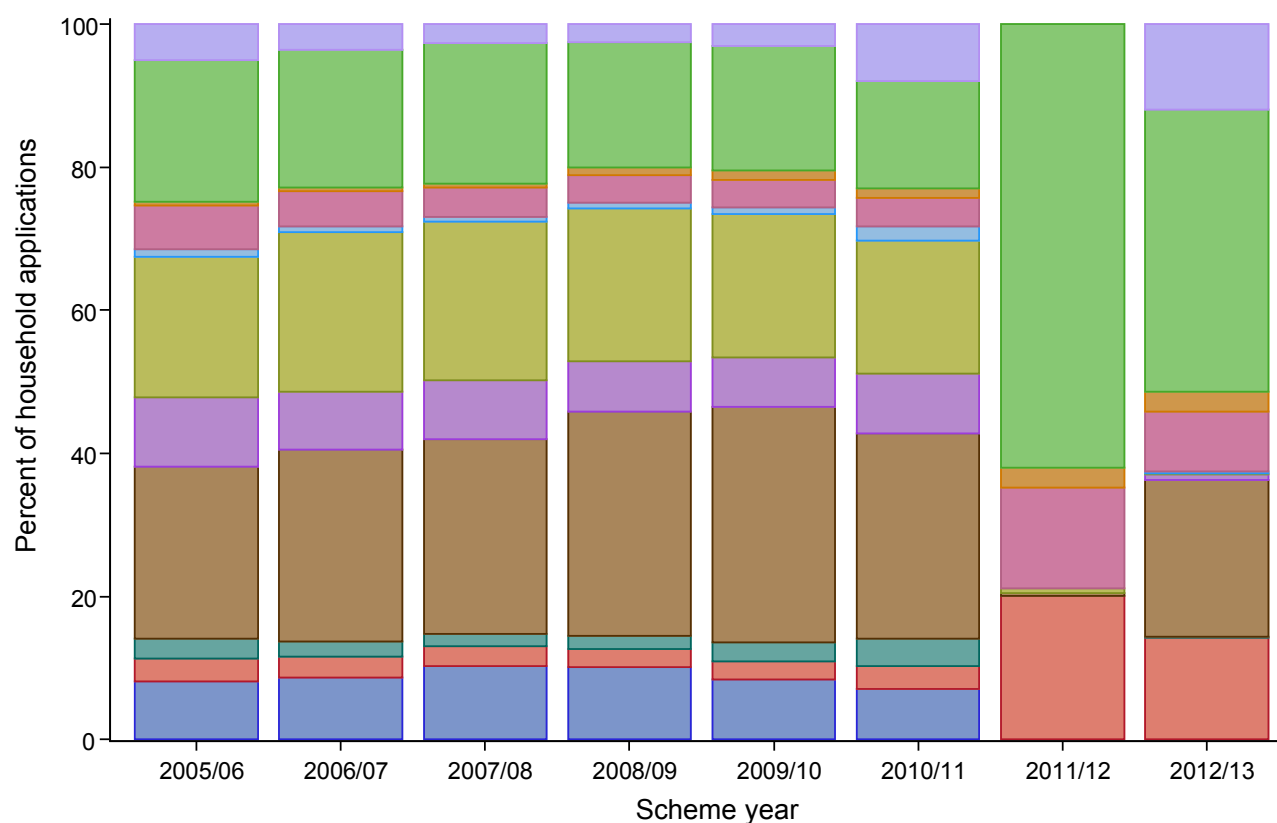
B)

Warm Front Measures  
Measures Received (N)



## The WFS evaluation - Results

The **major beneficiaries** of the scheme are households in receipt of the Child Tax Credit, the Pension Credit and the Disability Living Allowance. In 2011, the eligibility criteria were and energy efficiency introduced.



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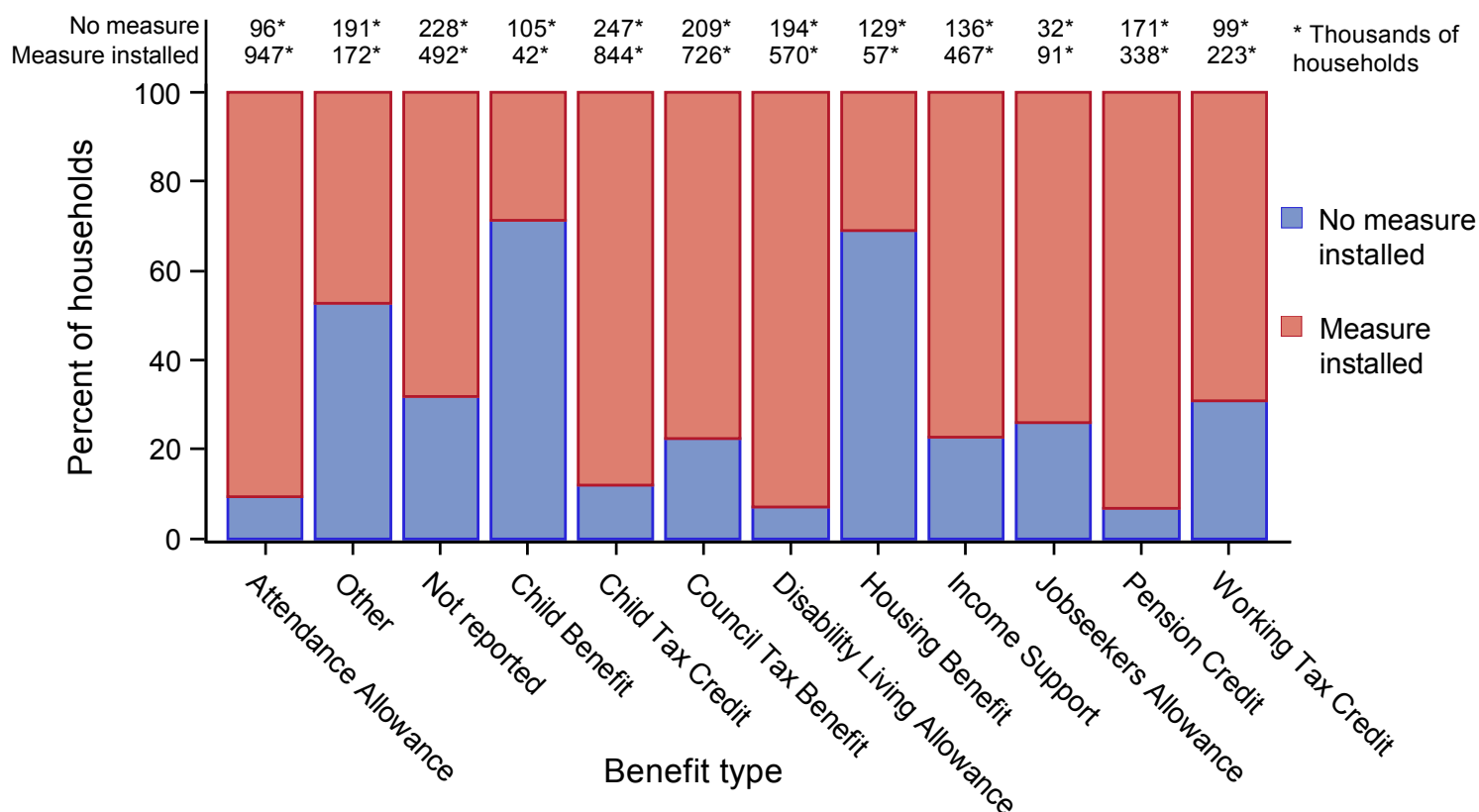
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Attendance Allowance    Other    Child Benefit    Child Tax Credit  
 Council Tax Benefit    Disability Living Allowance    Housing Benefit    Income Support  
 Jobseekers Allowance    Pension Credit    Working Tax Credit    Not reported

'Other' includes all benefit types with <1% of total applications (3.3% of scheme); N.B. households may receive multiple benefits

## The WFS evaluation - Results

It shows that the majority of Disability Living Allowance, Child Tax Credit and Pension Credit recipients received a measure (~92%). Applicants in receipt of **other benefits had varying levels of success.**



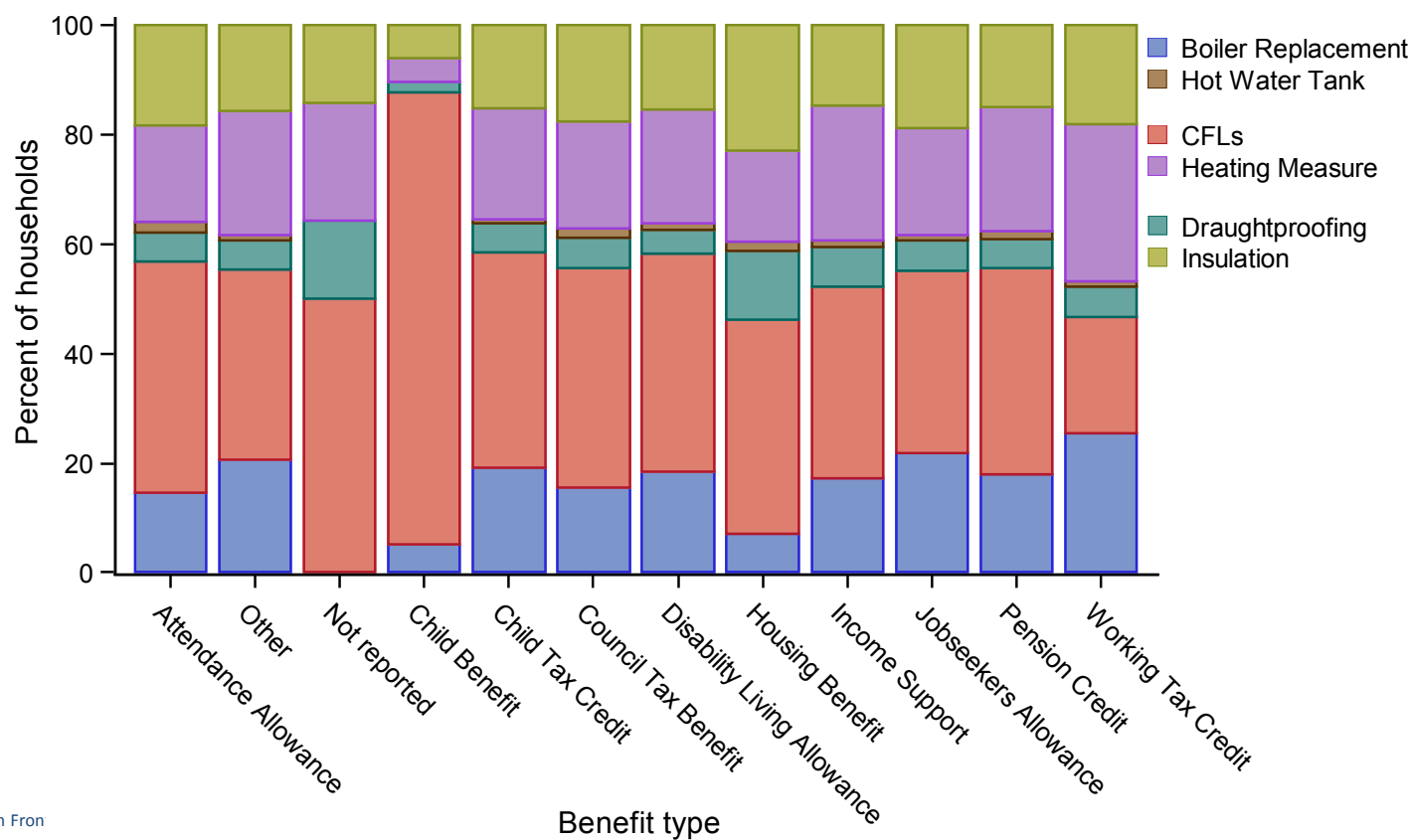
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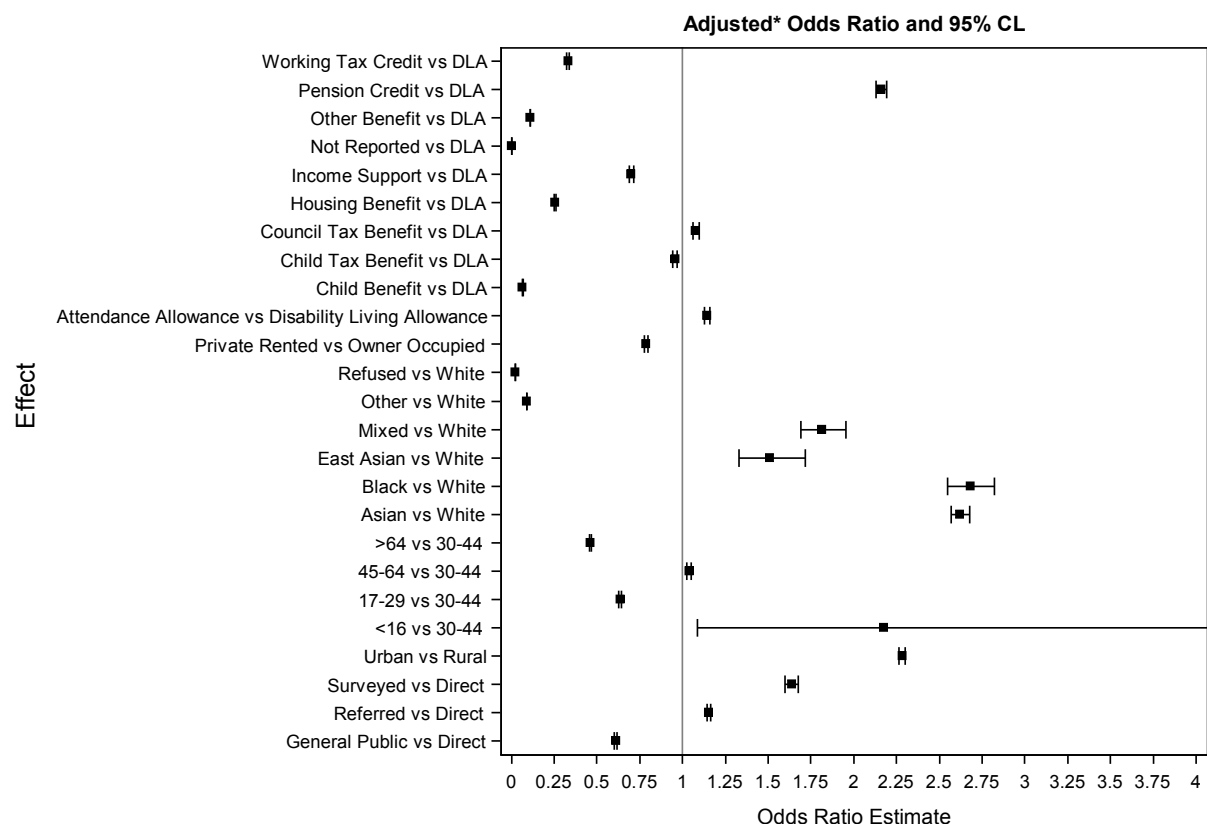
## The WFS evaluation - Results

With the exception of Child Benefit and Not Reported, the **proportion of measures across recipients was fairly consistent**, with similar uptake of boilers, heating systems and insulation.





## The WFS evaluation - Results



Referred and subsequent measure=1

\*ORs adjusted for referral channel, rurality, household age, ethnicity and tenure

- **‘General public’** referrals had lower odds of having a measure installed compared to direct referrals.
- **Older householders (65+)** more likely to have a measure installed compared to younger households (<44)
- **Non-white British households** had a higher odds ratio of having a measures installed compared to White British households\*



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\*White British households made up more than 75%, of all households assisted.

## The WFS evaluation – Discussion points

### Impact of Warm Front:

Interviews found that many Warm Front customers and stakeholders **spoke of cold, damp, inadequately heated or unheated homes.**

Warm Front offered an **opportunity to have adequate and safe heating** installed in their home for the first time.

Many customers described the **trials of living without heating and hot water** after boilers had broken and they had been **unable to afford a replacement.**

## The WFS evaluation – Discussion points

### Uptake of Retrofits and Targeting:

In the interviews, the scheme manager, and many of those generating referrals, said they believed that the **referrals system reached some of the most vulnerable customers of Warm Front**, and brought them to the scheme when they would otherwise not have found it.

The MSOA mapping of the Warm Front recipients and the prevalence in risk of households being in fuel poverty suggest that the **targeting of measures was generally aligned with high concentrations of fuel poverty\***.

\*Several areas where the number of measures provided did not seem to match the fuel poverty risk, particularly in the South West regions.

## The WFS evaluation – Discussion points

### Changes in Eligibility:

Many interviewed stakeholders suggested that using **benefit payments** as a proxy for identifying the fuel poor was challenging and **did not effectively identify those households at risk**.

Policy stakeholders said the **changes in eligibility criteria** during the lifetime of the scheme were **an attempt to improve this targeting**.

Stakeholders said that relatively **sudden changes** to the conditions of referrals meant **demand lagged behind the ‘availability’** of the scheme.

The **changes in the eligibility coincided with a substantial drop in funding and therefore the number of households** assisted by the scheme. Up to that point, the preceding three years saw assistance rates of over **100,000 households per quarter**.

## The WFS evaluation – Discussion points

### Application Success:

Stakeholders described how the **referral system helped** those with **lower literacy**, or those who were otherwise **less able at completing paper work**, to be guided through the application process.

The research found that households who were in receipt of **pension credits** (i.e. elderly), **non-white** and living in **owner-occupied** housing had **higher odds of applying and receiving a retrofit**.

This suggests that the evidence supports the above processes for reaching out and converting vulnerable and marginal communities.

## The WFS evaluation – Conclusions

Our study found that:

- The **uptake** of vulnerable households was **somewhat less than the expected** target population size.
- **Ethnic minority households made a smaller proportion** of those who applied to the scheme, but were **more likely to receive** a measure if they did apply.
- The number of households who made a **contribution was very small** but that it comprised a reasonable **large total value** of the grant given.

## The WFS evaluation – Conclusions

Warm Front was able to capture a **significant proportion of the target population** over the scheme period examined.

The implication for policy development is that:

**Successful delivery of retrofits in vulnerable populations** will require further effort to **overcome language barriers** to increase the total number of applicants for marginal communities and target elderly and rural populations.



**Thank you!**

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