

# Evaluating the Impacts of the Kirklees Warm Zone Scheme

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# Why this study is important

- We need to know more about the extent to which retrofit schemes actually work.
- To what extent do they change domestic energy use, reduce fuel poverty, reduce carbon emissions?
- To what extent are outcomes affected by performance gaps and rebound effects?
- How do they impact on lower, middle and upper income households?
- What is the direct cost-benefit case, what are the broader indirect benefits?
- There are few large scale, ex post evaluations of the actual impacts of retrofit schemes.

# The KWZ Scheme (1)

- One of the largest retrofit schemes completed in the UK to date.
- Ran from 2007 to 2010 with a budget of £21m
- Initiated by Kirklees Council, managed Yorkshire Energy Services (not for profit) with insulation installed by the private sector.
- Offered free energy assessments and surveys and, where technically feasible, free loft and cavity wall insulation to all households in the area.
- Of the 176,000 households in the area, 134,000 had a preliminary (doorstep) assessment, 111,000 of which went on to have a fuller survey and 51,000 households had measures installed.
- A total of 64,000 measures were installed, including insulation in 43,000 lofts and 21,000 cavity walls.

# The KWZ Scheme (2)

- 30% participation rate was secured through sustained marketing and repeated household visits from a trusted provider that placed great emphasis on customer care and the quality of installations.
- It also relied on the provision of insulation measures at no cost with steps (such as assisted loft clearances) taken to limit disruption in participating households.
- KWZ makes a good case study for a large-number, *ex post* analysis because of its scale, geographical and temporal concentration the data on KWZ activity that was collected by the local authority.

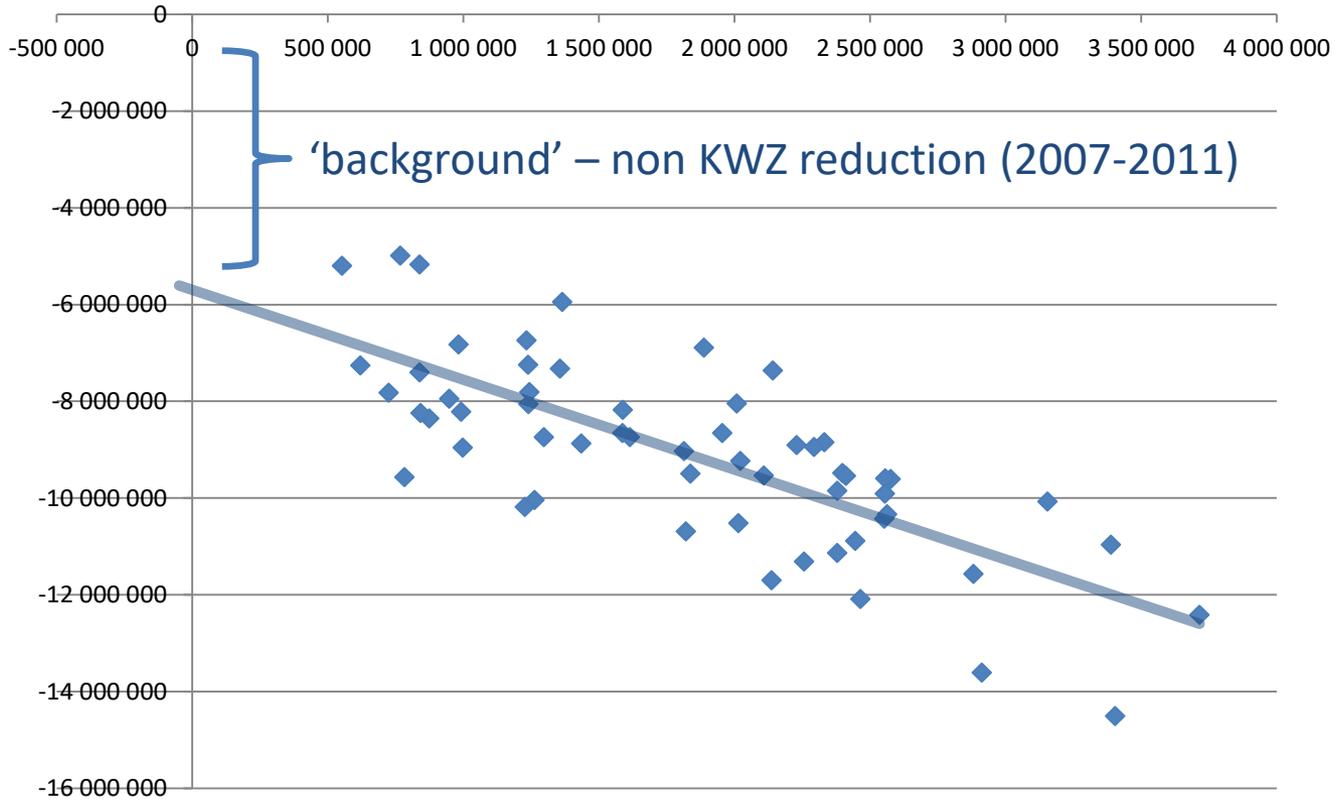
# Our Approach

- Data set 1 – on 176,000 households (inc. size, age, type) and insulation measures pre and post KWZ.
- Data set 2 – on household energy at MLSOA level (inc. domestic gas, economy 7, electricity usage) for 58 MLSOAs
- Corrected for changes in numbers of meters and weather
- We predict energy savings from KWZ insulation using two models
- CERT (RdSAP) model used up to 2012
- BRE model developed for Committee on Climate Change
- We examine correlations between actual reductions in energy demand and predicted impacts of different levels of KWZ activity to separate background trends from KWZ impacts.

# Correlating Actual and Predicted Impacts

Predicted Impacts (Model 1)

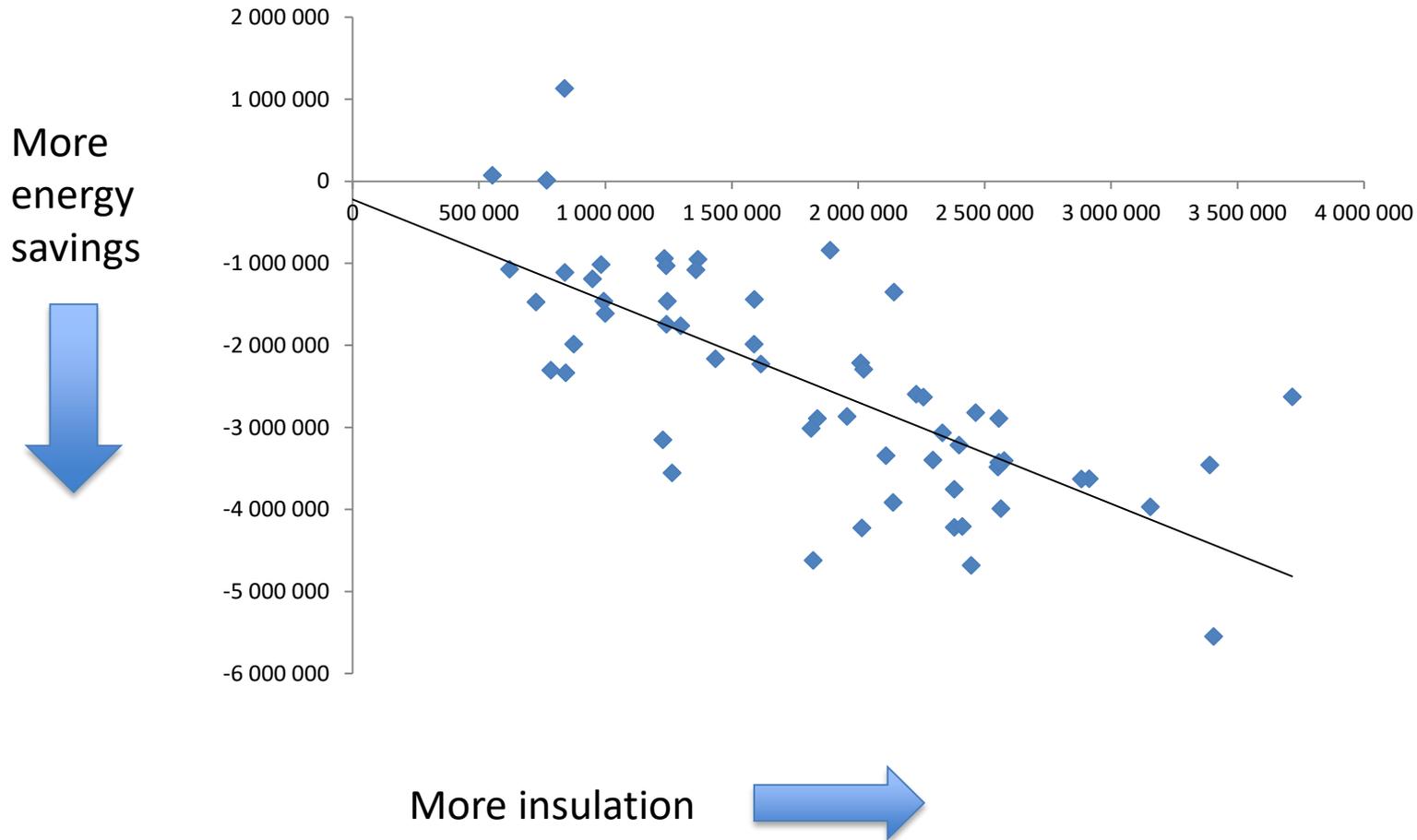
More energy savings



More insulation



# Correlating Actual and Predicted Impacts After Adjusting for Background Trends



# Impacts Across Income Groups

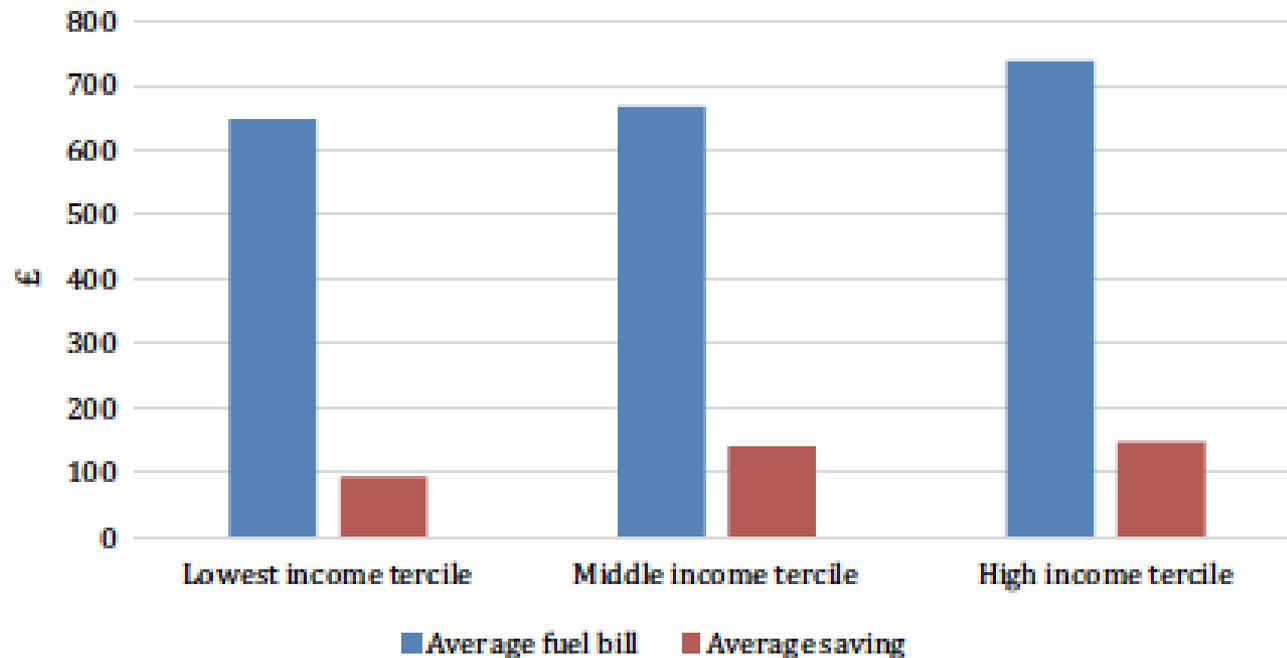


Fig. 3. Average 2011 fuel bills and energy savings for lower, middle and upper income areas.

# Key Findings (1)

- BRE model assumes that 44% of the full technical energy saving potential of insulation would be realized in practice.
- Results suggest 76% of potential is actually realized in practice, with 53% of the technical potential realized in the lowest income areas, but 85-93% in the middle and highest income areas.
- CERT model assumes that 50% of the of the full technical energy saving potential of insulation would be realized in practice.
- Results suggest 62% is actually realized in practice, with 49% of the technical energy savings potential secured in the lowest income areas, but 70-71% in middle and higher income areas.

# Key Findings (2)

- Losses due to performance gaps and rebound effects are roughly as predicted in lower income areas but are lower than predicted in middle and upper income areas.
- Poorer households split the benefit between improved quality of life and monetary savings. This addresses fuel poverty. Middle and upper income households save more energy and benefit most monetarily.

# Key Findings (3)

- In aggregate, we identify a reduction of 4.2% in 2007 levels of household demand for energy for space and water heating that can be attributed to KWZ and a further 12.3% that is independent of KWZ.
- For participating households, this amounts to an average per household KWZ reduction in energy use of 2,655 kWh over the 2007-2011 period due to KWZ, compared to 2177kWh reductions from background trends.

# Key Findings (4)

- For its initial investment of £21m, KWZ has generated reductions in energy bills totaling £6.2m a year at 2011 energy prices.
- This is equivalent to an average annual saving of £125 per year at 2011 energy prices for each participating household, which represents a saving on the total average household energy bill of 10.6%.
- In 2011, Kirklees commissioned studies which estimated the non energy related local economic impact at £39m and the health benefits at £3.9m over 5 years.