

Ireland's Home Energy Saving scheme: an ex-post billing analysis.

Jim Scheer and Matthew Clancy
SEAI, Energy Modelling Group

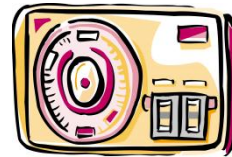
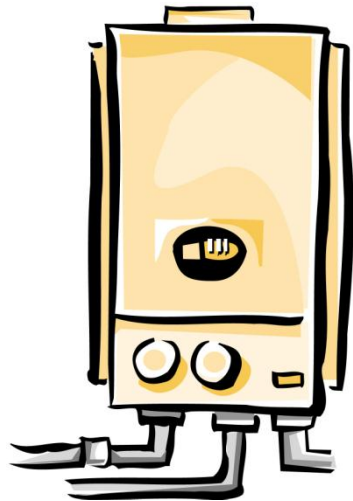
November 2011

- Scheme and study overview
- Method
- Results
- Conclusions
- Lessons and practical solutions

Scheme overview

Home Energy Savings grant scheme

- Grants for roof and wall insulation, high efficiency boilers and heating controls
- €180m spent on upgrades 2009/2010 in total
- Over 62,000 homes upgraded



Measure savings achieved by scheme participants via a billing analysis

Motivation

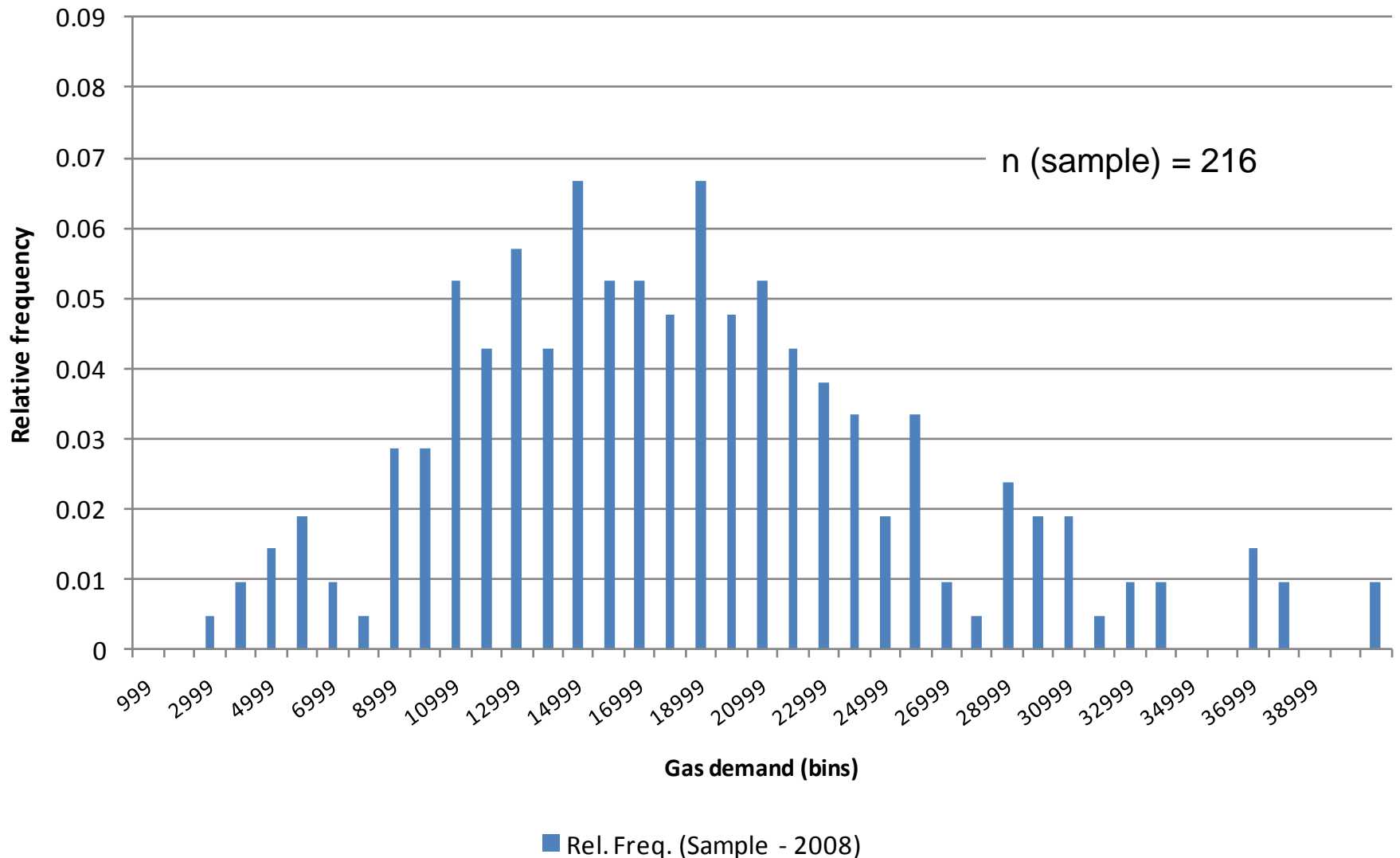
- Shift from engineering calculations to measurement
- Inform policy design
- Justify government spending
- Contribute to the evidence base for benefits of EE
- Legal requirement - EU legislation (Energy Services Directive)

Method - Analysis

- Compared difference in sample and population 2007/2008 demand (pre-upgrade)
- Compared sample 2008 v 2010
- Compared population 2008 v 2010
- Net savings in sample due to EE upgrade = sample savings – population reduction
- Compared sample and population characteristics
- Compare ex-ante and ex-post savings estimates

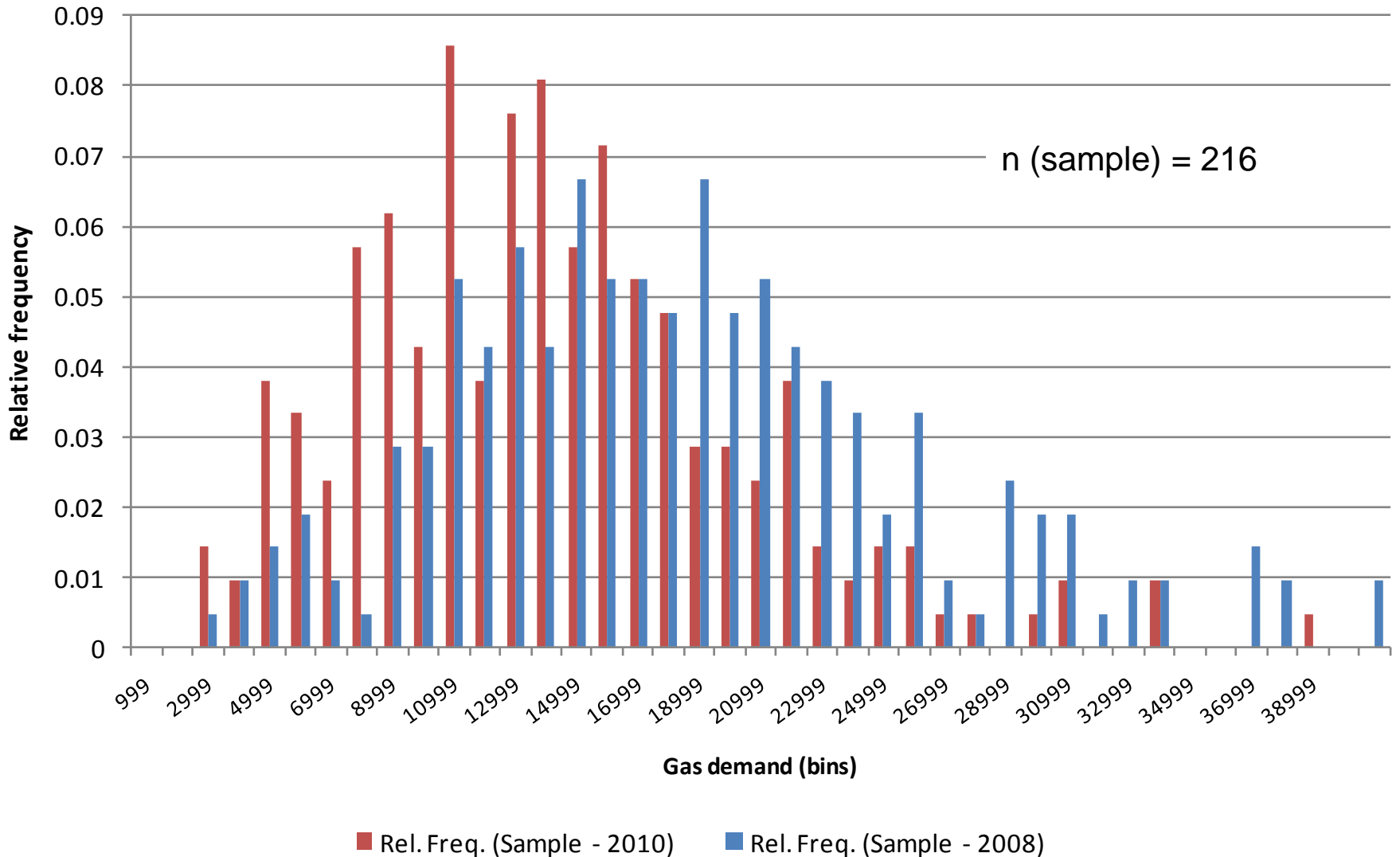
Before and after gas demand

Sample 2008 (before upgrades)



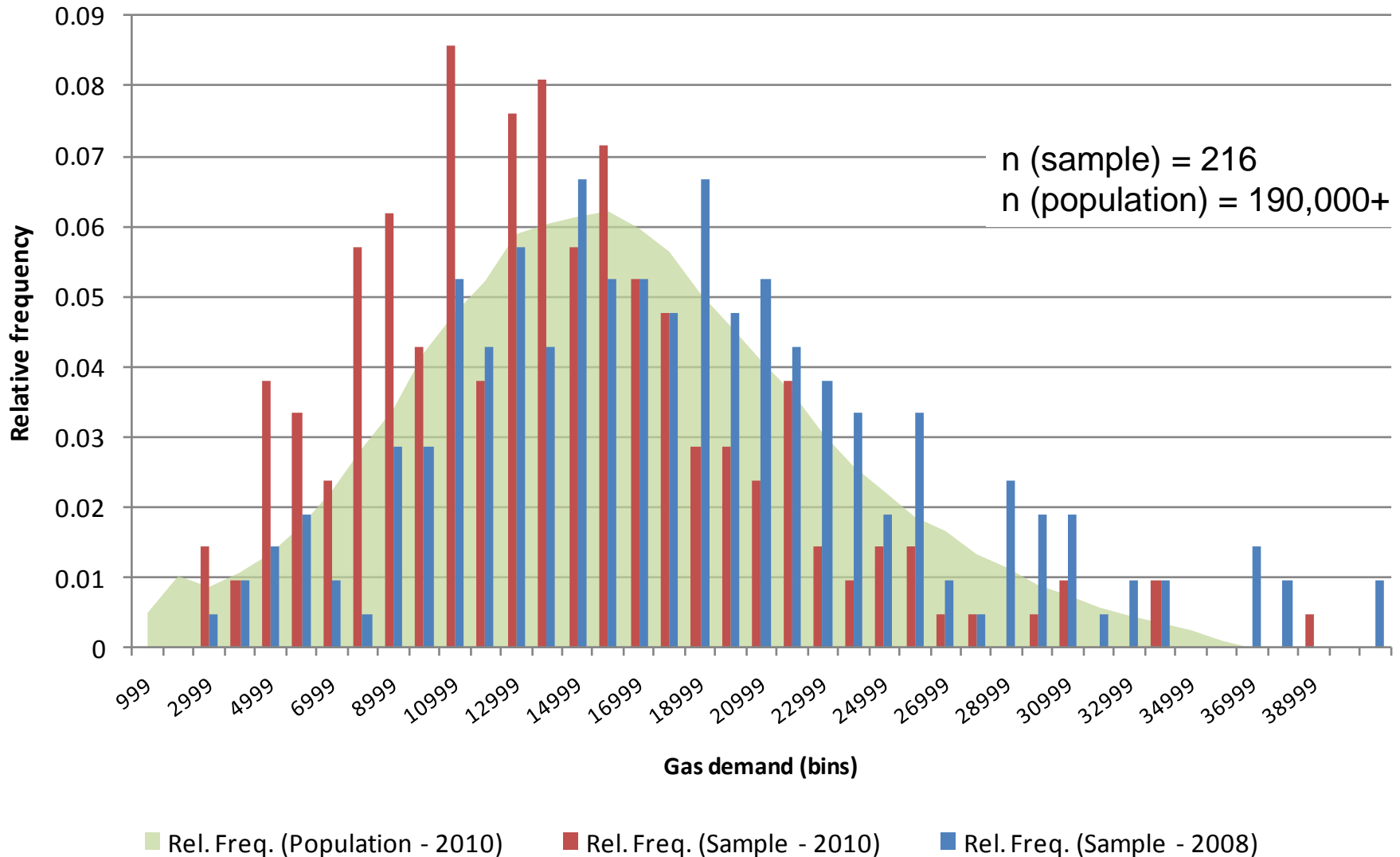
Before and after gas demand

Sample 2008 (before upgrades) v Sample 2010 (after upgrades)



Before and after gas demand

Sample 2008 (before upgrades) v Sample 2010 (after upgrades)



Headline results - savings

- 22.4% gas demand reduction (4,065 kWh)
- 12.8% electricity demand reduction (565 kWh)
- Ex-ante estimates 25% higher than observed reductions (rebound)



Headline results – survey feedback

- In addition to energy savings participants reported:
 - Improved comfort and wellbeing (health)
 - Reduced dampness
 - Perceived increase in value of dwelling
 - (reduced use of secondary electric heating)



Sample and population comparisons

- Dwelling characteristics

	Statistically same?	Comment
Age of dwelling	No	Sample and population varied for a few age cohorts
Floor area	Yes	Sample mean floor area within 3m ² of population average (117 - 120m ²)
Dwelling type	No	Gas homes typically more urban (less detached dwellings)

- Homeowner characteristics

	Statistically same?	Comment
Occupancy levels	No	Sample 2.5 occupants, population 2.8
Homeowner occupation	No	Higher proportion working in sample compared to population

Conclusions

- The scheme is working – Average participant can expect to save around 20% on heating bills and some electricity (13%) if using for secondary heating
- Based on our engineering calculations, a 25% rebound is estimated for this cohort of scheme participants
- ‘Other benefits’ are important for enrollment to the scheme
- Further work required to obtain data that is ‘scalable’

Lessons learnt

- *You can't always get what you want...* Working with what you have can still yield interesting results
- Important to have good relationship with data holders
- Sample v population comparisons easier with good survey
- Important to describe potential bias in sample



← Sampling is important...

Practical solutions (?)

- Use online tools (surveys, submission of data)
- Seek larger sample (conclude on basis of housing types, occupancy levels, household income, upgrades etc)
- Enroll the willing into multi-annual studies
- Build relationships with data holders... Legislation can help!
- Require consent to access billing information as a condition of support (grants, advice etc)

Thank you.

jim.scheer@seai.ie



Ireland's EU Structural Funds
Programmes 2007 - 2013

Co-funded by the Irish Government
and the European Union

*The Sustainable Energy Authority of Ireland is financed
by Ireland's EU Structural Funds Programme co-funded
by the Irish Government and the European Union.*