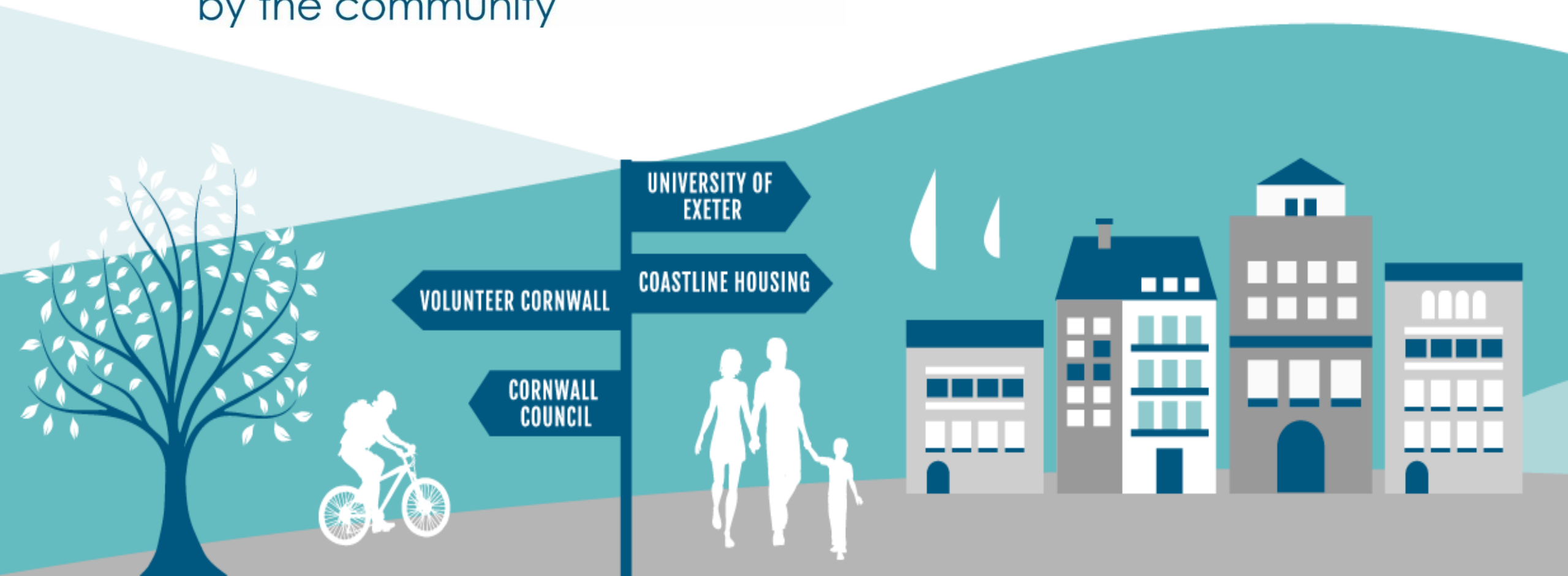


Smartline



Smart wellbeing inspired
by the community



Presentation Outline

- Introduction to the Smartline project
- Data insights
- Perspective from Coastline Housing
- Questions

Partnership & funding



European Union

European Regional
Development Fund



South West
Academic Health
Science Network



The Smartline story

Using home sensors and tablet computers
Smartline will create a digitally
connected community amongst the
350 households within Camborne,
Pool, Redruth and Illogan.

Enterprises

Smartline will work with Cornish enterprises to **develop** the next generation of smart technology to **improve wellbeing** in the homes of the future, based on the **needs** of the households and the data collected from Smartline participants.

Community



AIR TEMPERATURE



ELECTRICITY CONSUMPTION



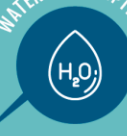
GAS CONSUMPTION



AIR QUALITY



AIR HUMIDITY



WATER CONSUMPTION

Research

Smartline **brings together** an interdisciplinary team of epidemiologists, economists, geographers, mathematicians and sociologists to **explore** the potential for business **innovation** to **improve health and wellbeing**.

Enterprises

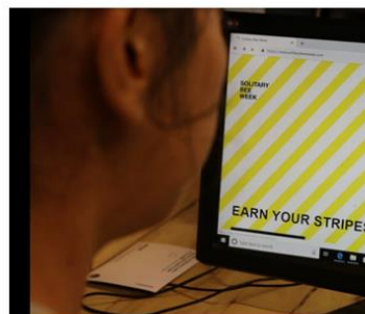


Smart wellbeing inspired
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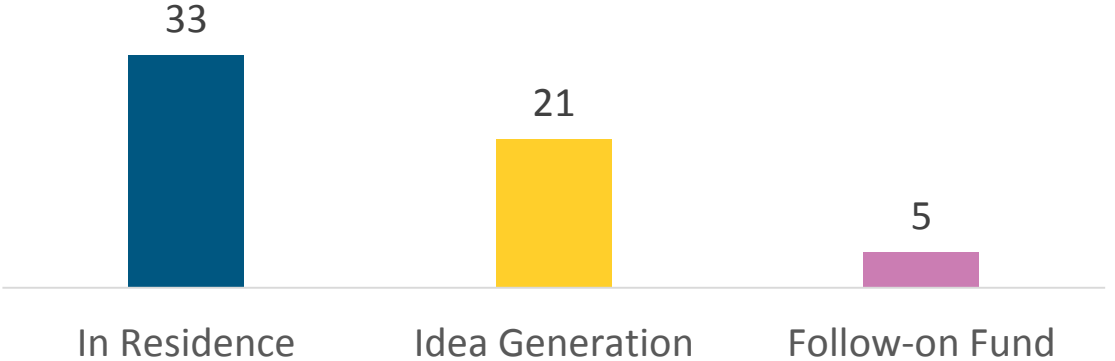
Enterprise Support

Stimulating and supporting Cornish SMEs' research, development and innovation

- Knowledge exchange
- Idea generation grants
- In residence schemes
- Follow on research
- Follow on grants



Enterprise Engagement



Community



Smart wellbeing inspired
by the community

Community Support

Digitally connecting communities to help them take back control of their health and wellbeing.

- Recruited approx. 300 participants from social housing
- Located across 4 towns of Camborne, Pool, Illogan and Redruth in Cornwall
- Installed sensors in all homes and completed surveys with participants



Community Projects



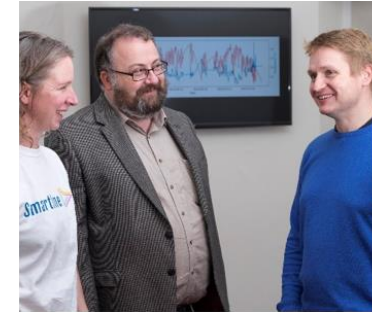
Research



Smart wellbeing inspired
by the community

Research

Discovering the potential for science and innovation in eHealth & eWellbeing



Research Impact



"The knowledge and research that Smartline has enabled us to access has meant we have learnt so much about our DadPad product and its audience. Crucially too, it has helped us expand and test our ideas extending our reach across the County and the UK."

Julian Bose, Inspire Cornwall

"This research will give us the evidence we need to encourage the Government and construction industry to incorporate biodiversity alongside energy and water when developing sustainable housing."

Faye Clifton, Green&Blue



Technology



Smart wellbeing inspired
by the community

Sensors and data collection

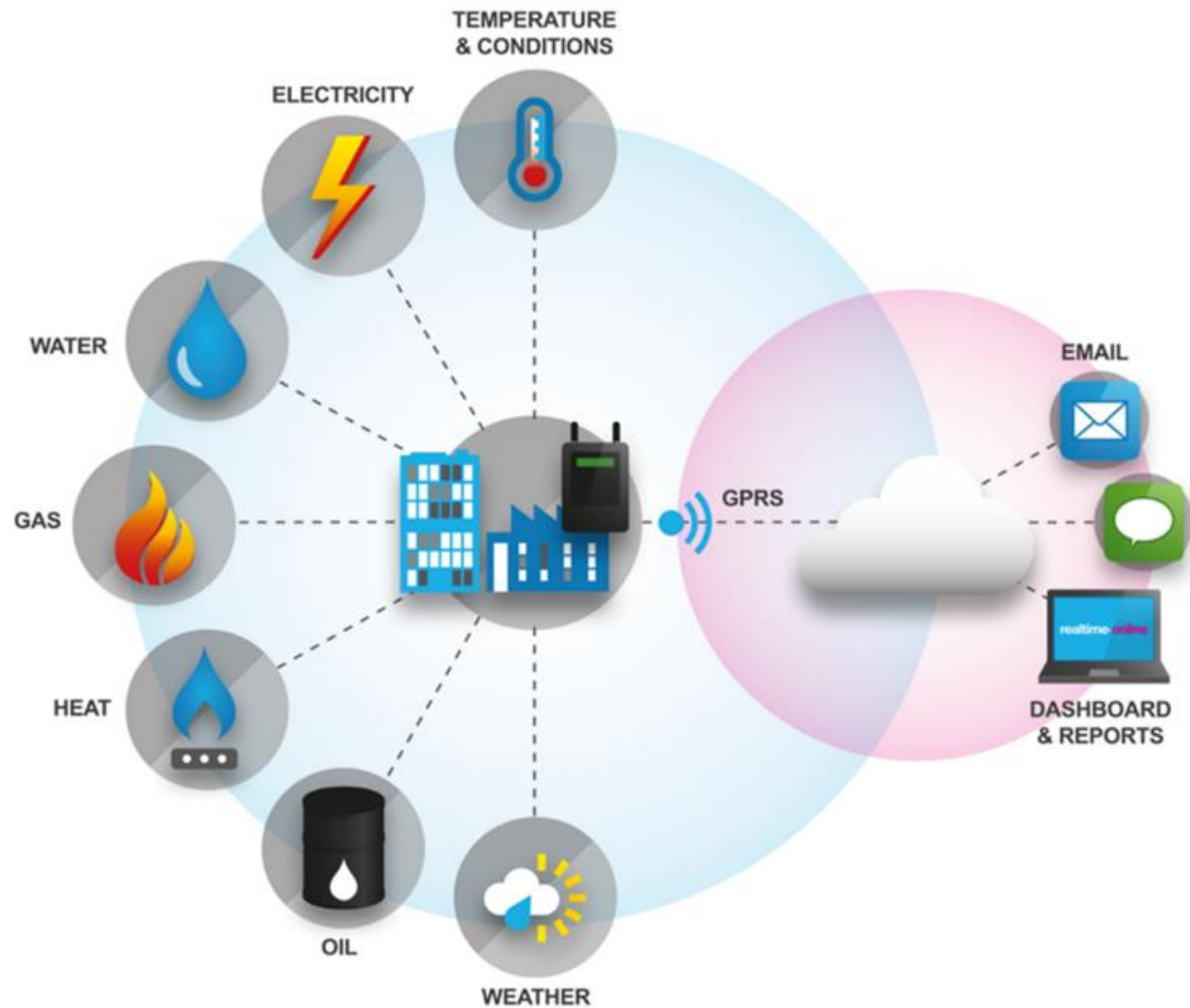
- UK Manufacturer of wireless energy and condition monitoring transmitters
- End to end solution which includes specification, installation
- Web based software Realtime-Online™ dashboard reporting suite
- Circa 35,000 wireless RF reporting points on RealtimeOnline™ Globally
- Over 1,500 cellular internet gateways

invisible systems
DELIVERING INFORMATION



realtime-online
www.realtime-online.com

How it works

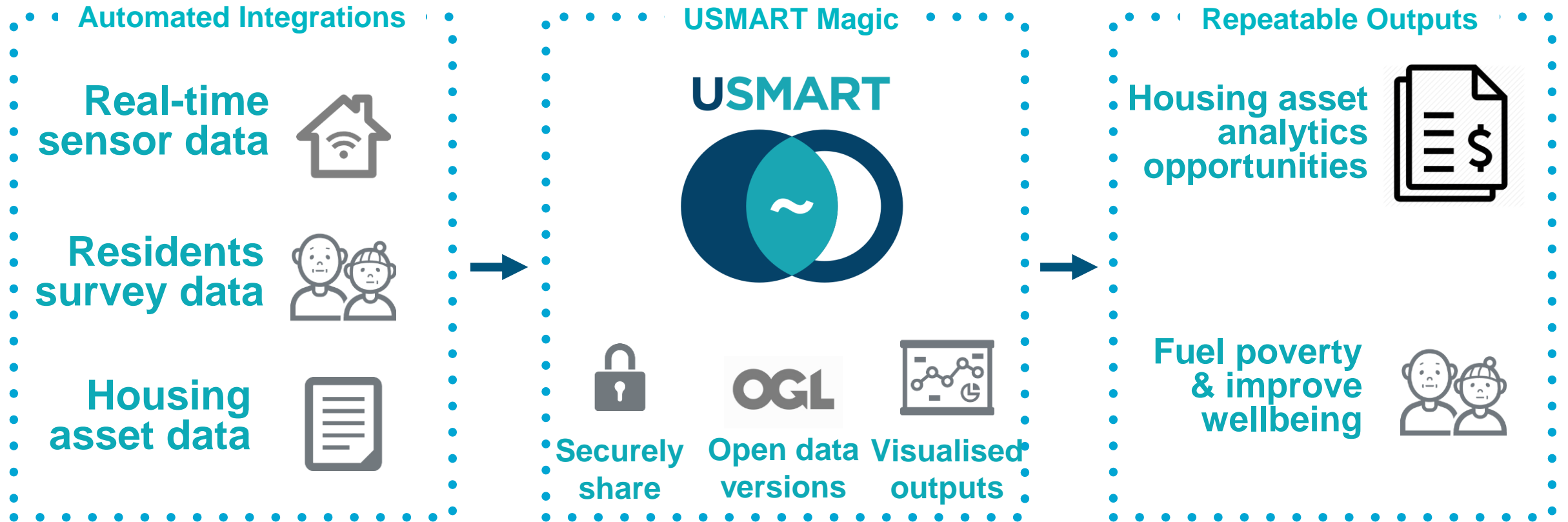


Wireless RF Sensors

GPRS Cellular Gateway

Web based software

USMART data innovation & insights platform



Data Insights

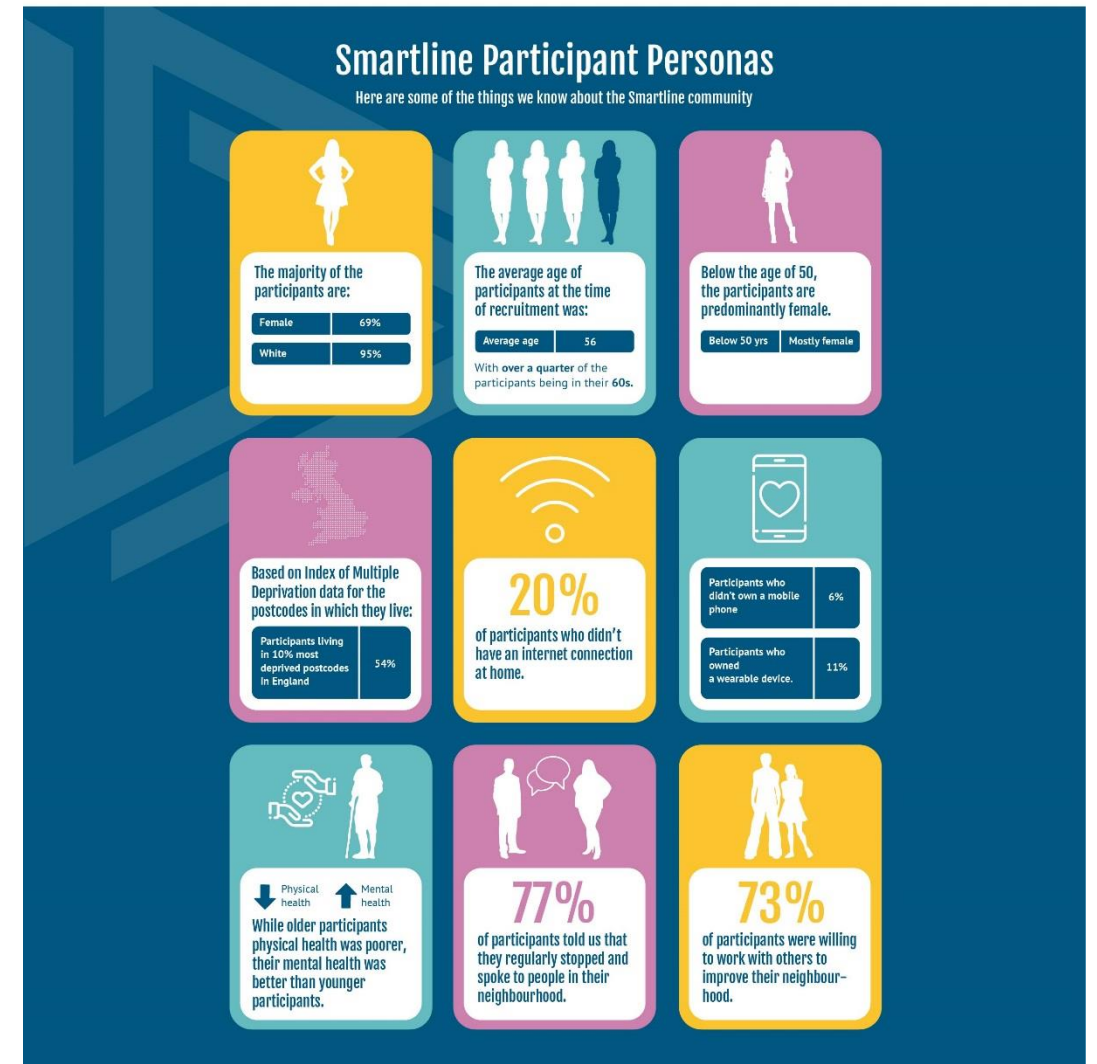


Smart wellbeing inspired
by the community

Participant Personas

Here are some of the things we have learnt about the Smartline participants through surveys:

- Majority are white female.
- Average age of 56.
- 54% live in 10% most deprived postcodes in England.
- 6% didn't own a mobile phone, while 11% owned a wearable device.
- Just over 20% of participants didn't have an internet connection at home.



Heating insight

When participants were asked about heating we found that:

84.2% answered that their home was adequately heated

27.7% avoid turning on their heating because of cost



Heating insight

A: 1 working-age adult, living in a flat, who heats and ventilates in few rooms.

B: 1 or 2 working-age adults, living in a flat, who heat and ventilate in most rooms.

C: 1 or 2 working-age adults, living in a flat with low levels of insulation.

D: 2 or more working-age adults, living in a house or bungalow, who spend less than 20 hours a day indoors.

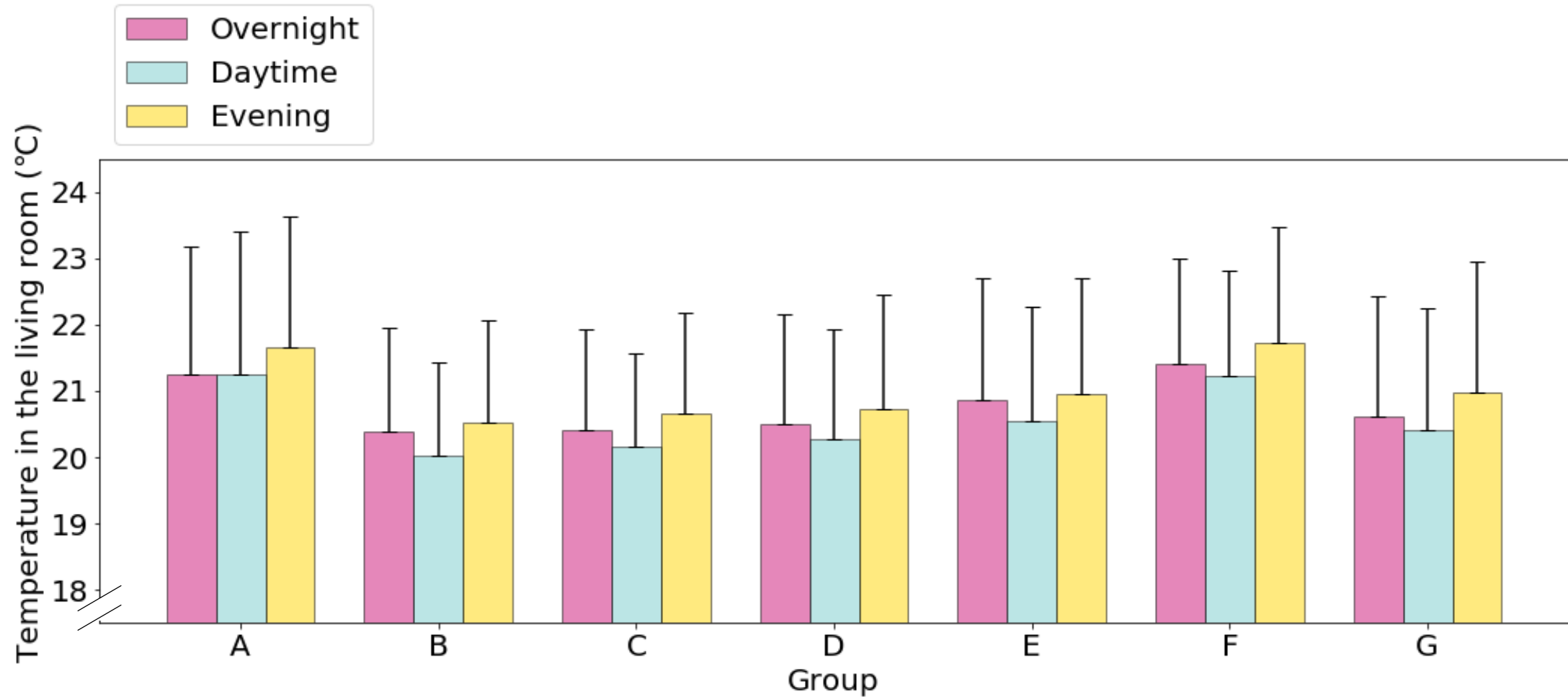
E: 1 or 2 working-age adults with children from 0 to 17.

F: 1 adult aged 66+, living in a flat, who spends more than 20 hours a day indoors.

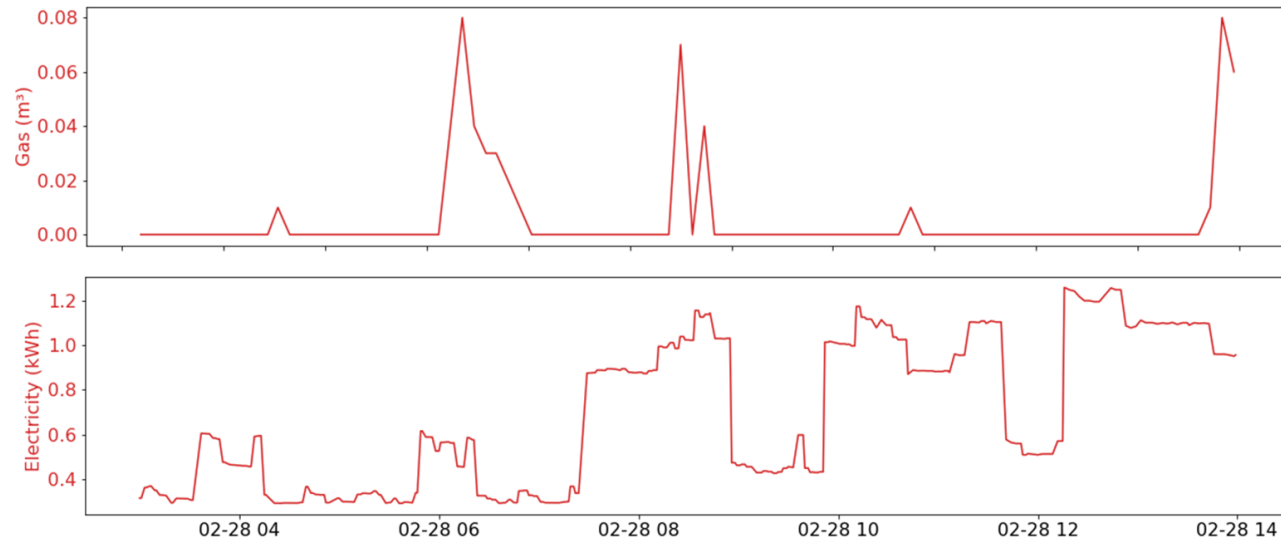
G: 1 adult aged 66+, living in a house or bungalow, who spends less than 20 hours a day indoors.



Household temperatures

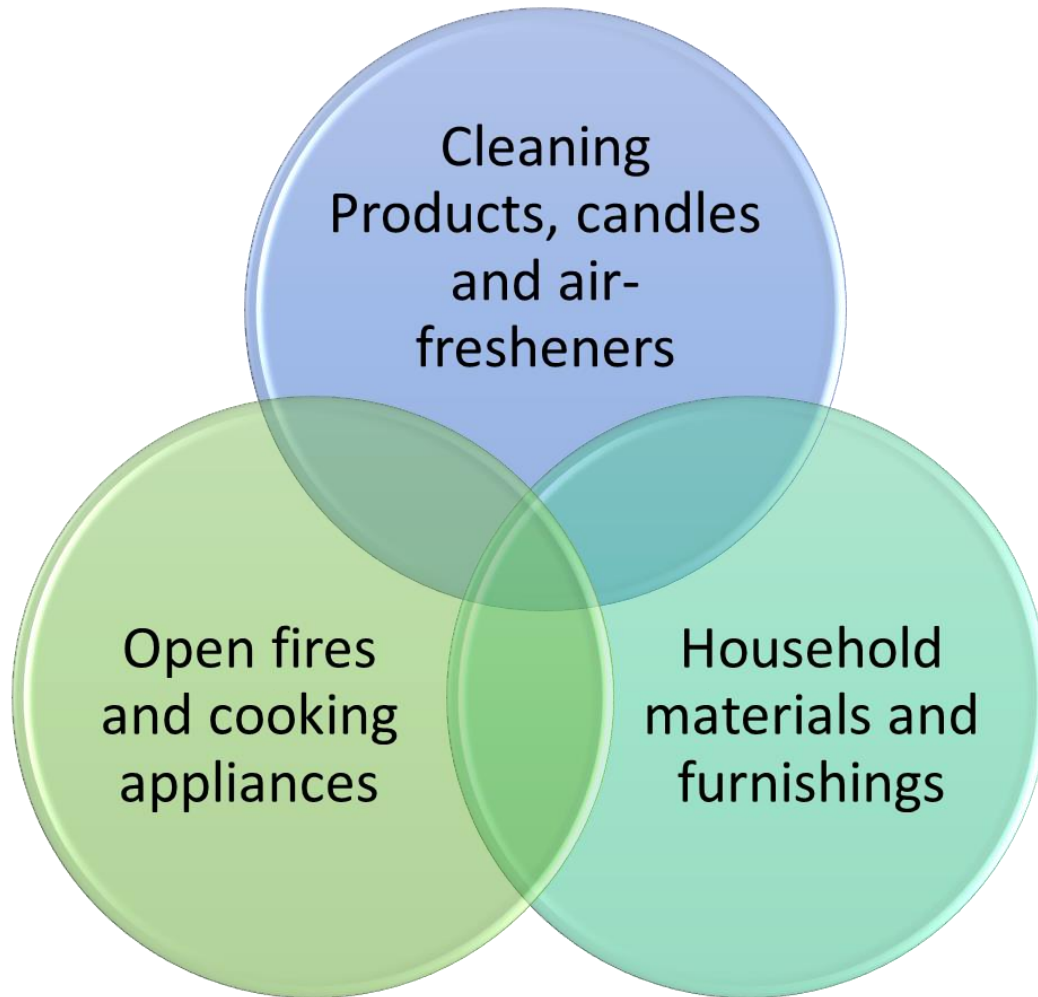


Energy and heating



THE SMART HOME CO.

Asthma and indoor air pollution



Asthma

- 12% of the UK population.
- Up to 36% in more deprived areas.
- Costs the National Health Service £1.1 billion each year.
- 250,000 deaths annually.

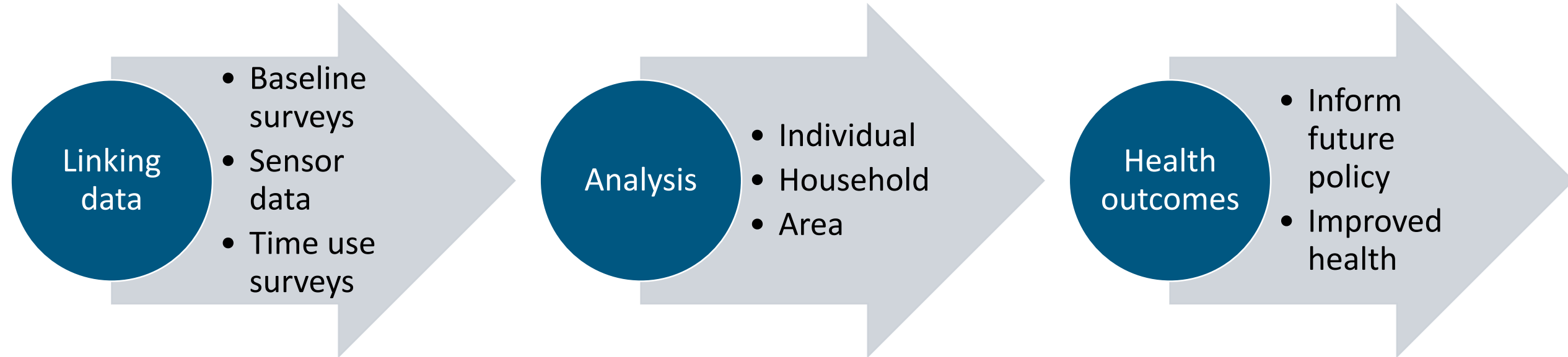
Time indoors

- 70-90%
- Varies across groups.

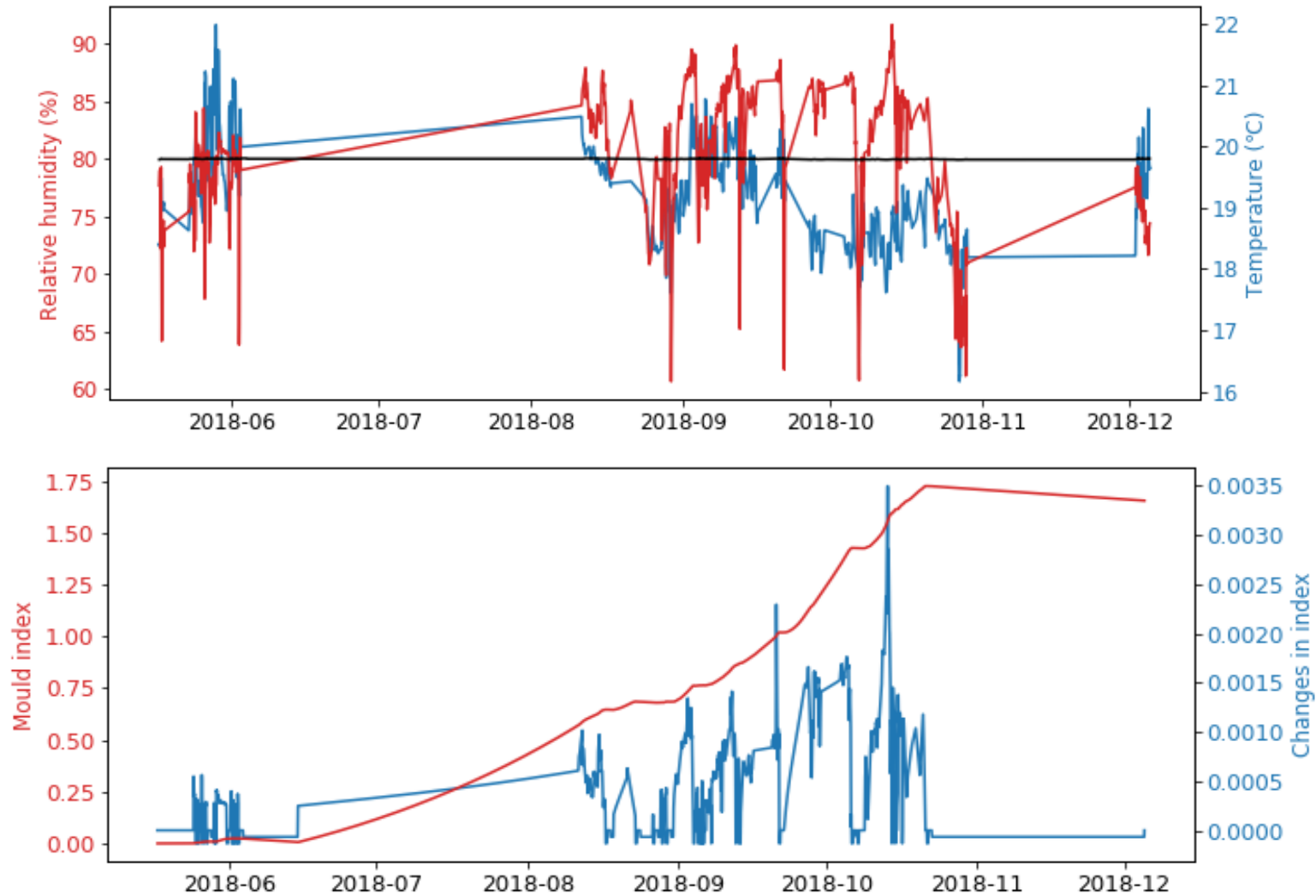
Research

- Little on indoor environment and asthma in adults.
- Particularly women.

How Smartline will inform policy



Predicting mould



Reference: VTT model (Hukka & Viitanen, 1999, VTT Technical Research Centre).

Smartline data

- RH and temperature
 - living room
 - main bedroom

- Mould indices
 - living room
 - main bedroom



- Mould responses
 - presence
 - smell
 - living room
 - main bedroom

Register for access

How to access the data

- 1 Register your interest at www.smartline.org.uk/data
- 2 USmart Login details will be provided
- 3 Access Smartline Data via USMART <https://usmart.io/#/>

Perspective from Coastline Housing



Drivers for involvement

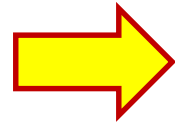


Making a difference

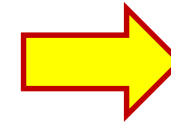


Using data to prevent issues

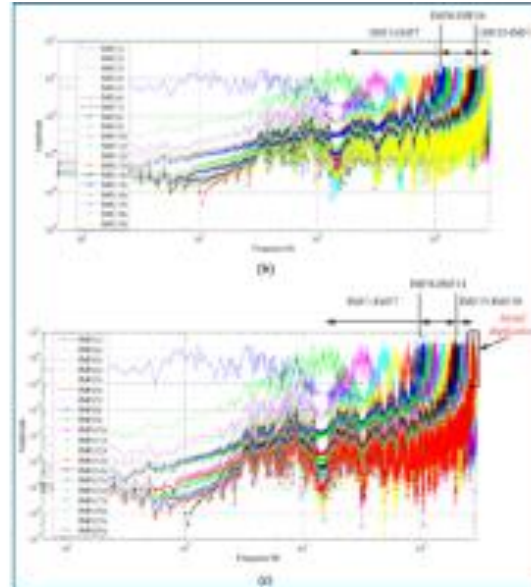
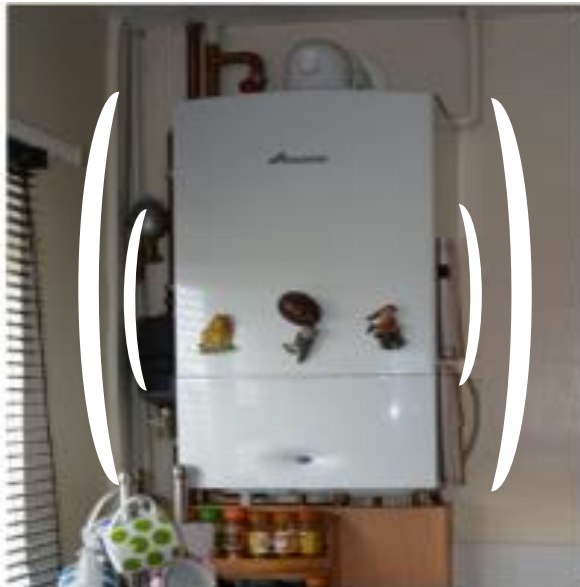
Early morning the boiler detects fault developing.
It sends an automated message to the call centre...



Fault signal received
identifying the replacement
part



Automated notification sent.
Call centre receive message
which is also received by Blue
Flame



Utilising IoT

IoT technology could be used to deliver a number of solutions for our customers, including:

- Customer requires certain heat level
- Pick the closest engineer with correct part
- Have part delivered to property
- If complex fault have temporary heating on van
- Alert next of kin and update
- Calculate the cooling time of the property
- Inform engineer regularly
- Initiate evacuation to 'safe property'
- Re-order parts as van stock



Potential Proactive Solutions

More areas to explore;

- Signs of financial stress
- Humidity Issues
- Overheating
- Under heating
- Change in behaviour
- Lack of movement or restricted movement in property
- Automated repairs
- Automated servicing reminders
- Online booking, community events, shared interests



Other technical solutions



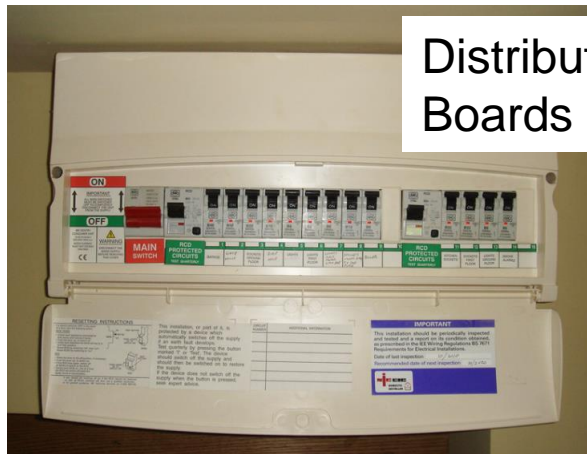
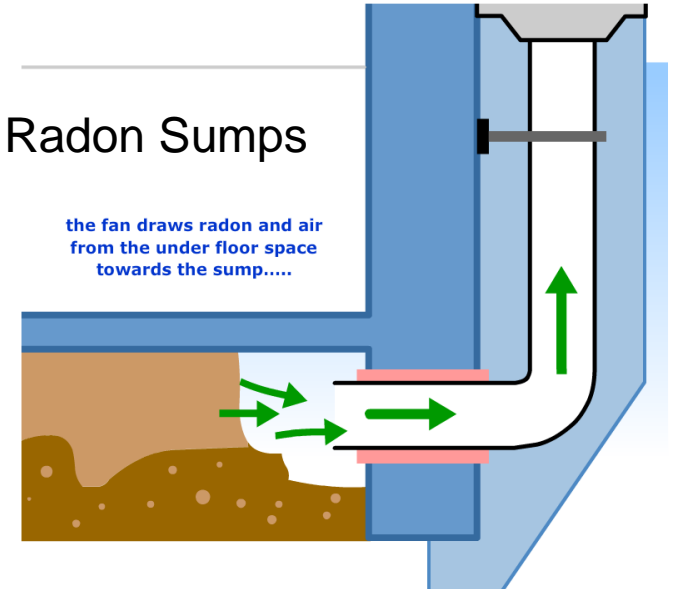
Extract Fans

Positive Pressure Units



Positive Input Ventilation

Radon Sumps



Distribution Boards

Leak Detectors.



Fire & CO2 Detectors.

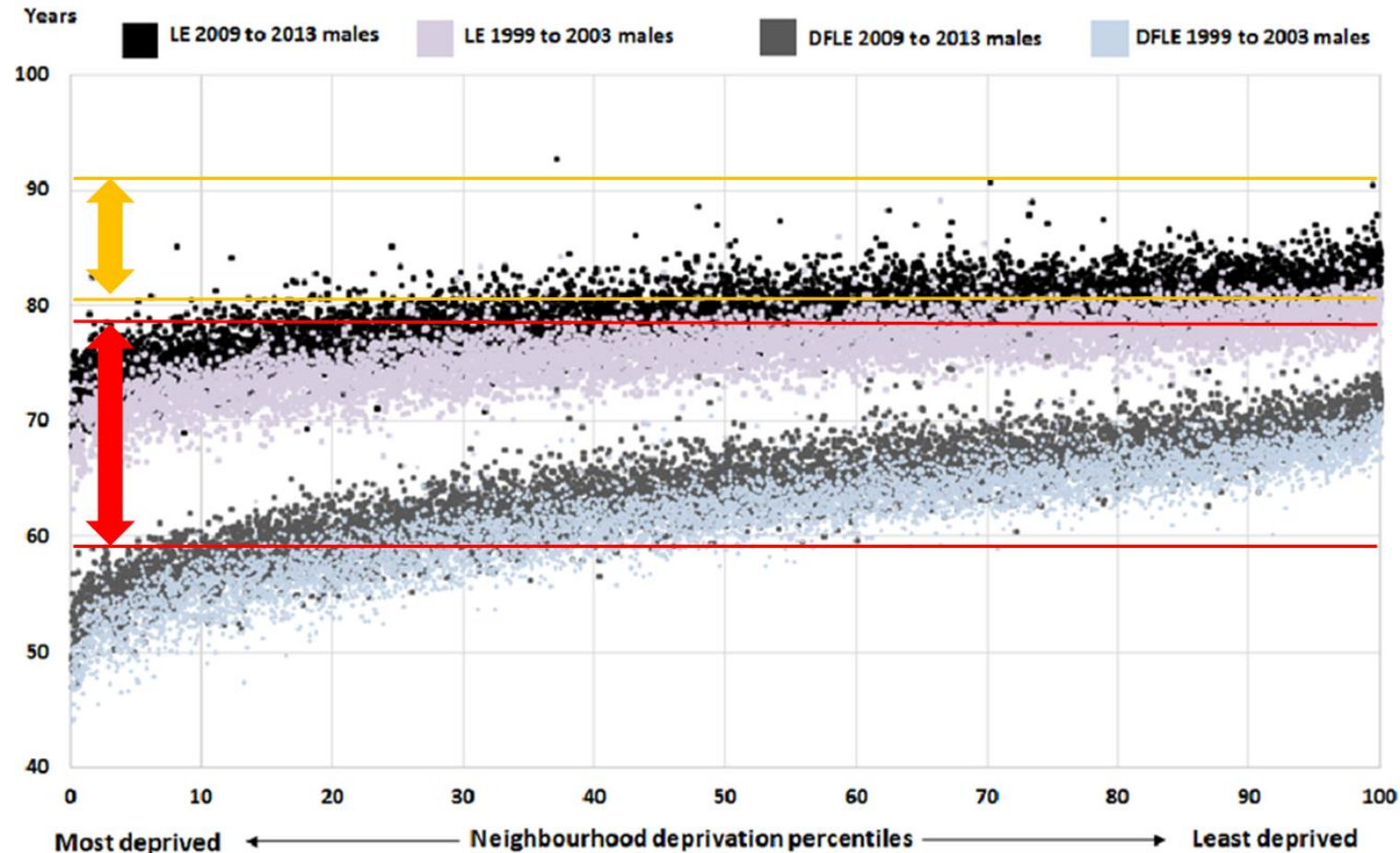
Linking home, health and quality of life

“
Our home is not just a dwelling place. It should be a place of comfort, shelter, safety and warmth... it is the main setting for our health throughout our lives
”

*Reference: Kevin Felton, Public Health England



Life expectancy linked to deprivation

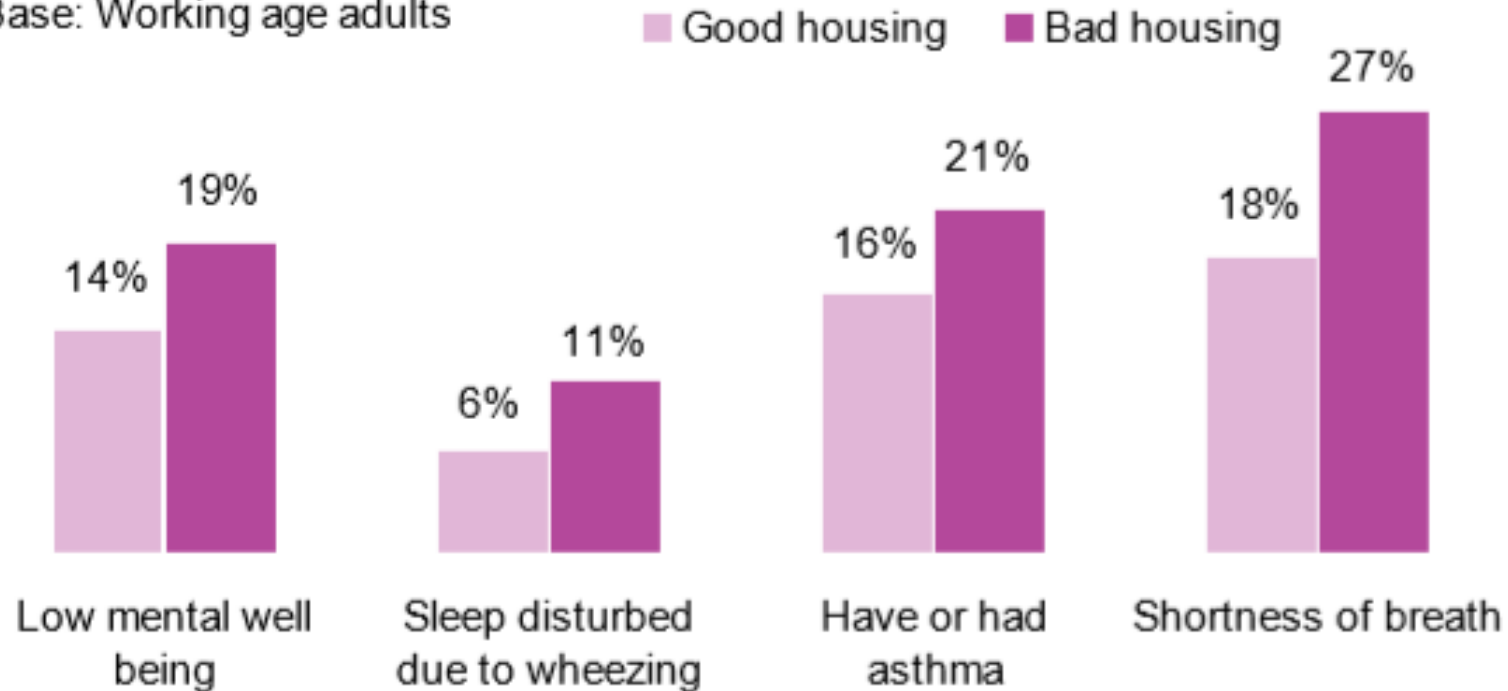


Reference: Health Expectancies at birth by Middle Layer Super Output Areas, England, Inequality in Health and Life Expectancies within Upper Tier Local Authorities: 2009 to 2013. Office for National Statistics

Health impacts of poor housing

Figure 4.4 Working age adults with health problems by bad housing status

Base: Working age adults



Reference: People living in bad housing – numbers and health impacts. Public report commissioned by Shelter and produced by NatCen Social Research.

Impact on the NHS

**£1.4
billion**

The estimated annual
cost of poor housing to
the NHS in England

Home standards

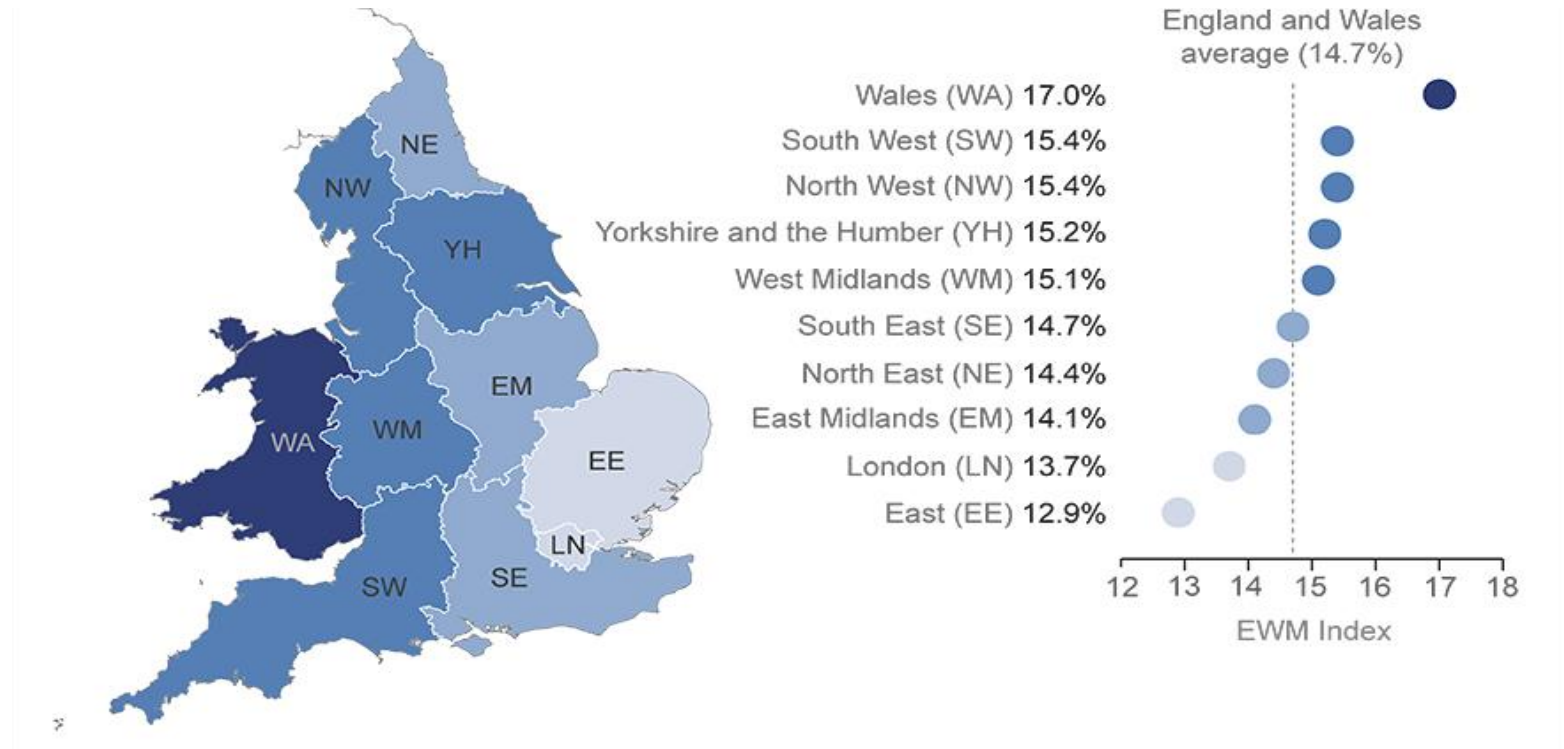
“We know that up to 50% of privately rented accommodation does not meet the decent homes standard.”

Councillor Mitchell - Portfolio holder for Homes in Cornwall

Levels of excess winter deaths

50,100

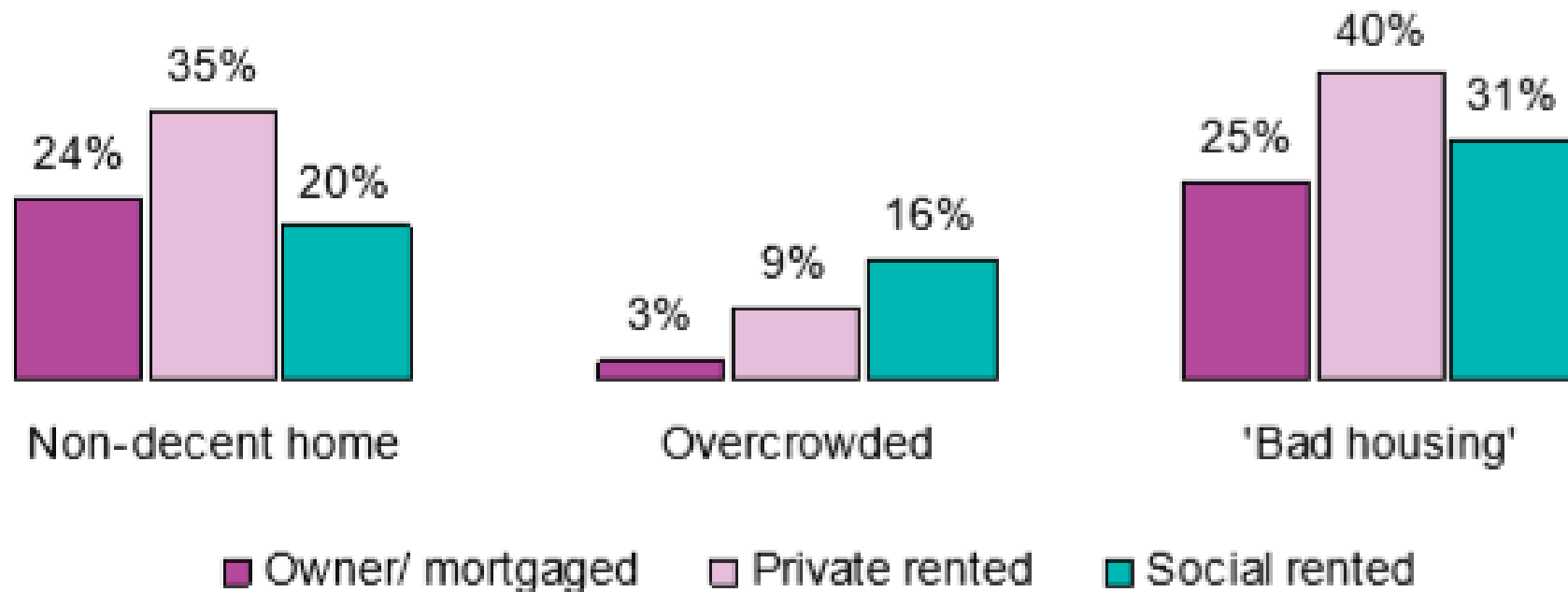
Excess Winter Deaths in England and Wales in 2017-18. The highest since the winter of 1975-76



Life expectancy linked to deprivation

Figure 3.2 People living in bad housing, by tenure type

Base: All respondents, by tenure type



Solving the issues

“What good does it do to treat people, and to send them back to the conditions that made them sick”

Professor Sir Michael Marmot
University College London



“The connection between health and the dwellings of the population is one of the most important that exists”

Florence Nightingale 1860
Green Futures Supplement 2003

Smartline benefits for Coastline Housing

- Improvements to the internal environments to promote positive health & well-being
- Validate the solutions to identify best practice resolutions.
- Encourage Social Enterprises to offer solutions, reduce customer isolation and create a real sense of community
- Develop pro-active maintenance solutions to streamline resolutions whilst delivering a first class service
- Use technology to support customers who want to live in their homes for longer
- Above all else leave a positive evidenced based legacy for using technological solutions, encouraging community and share the findings with our Industry



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European Regional
Development Fund



South West
Academic Health
Science Network

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