



Asking *Understanding Society* respondents to install in-home environment sensors:

Experiments with question wording

Owen Preston (he/him/his)
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University of Essex



Economic
and Social
Research Council

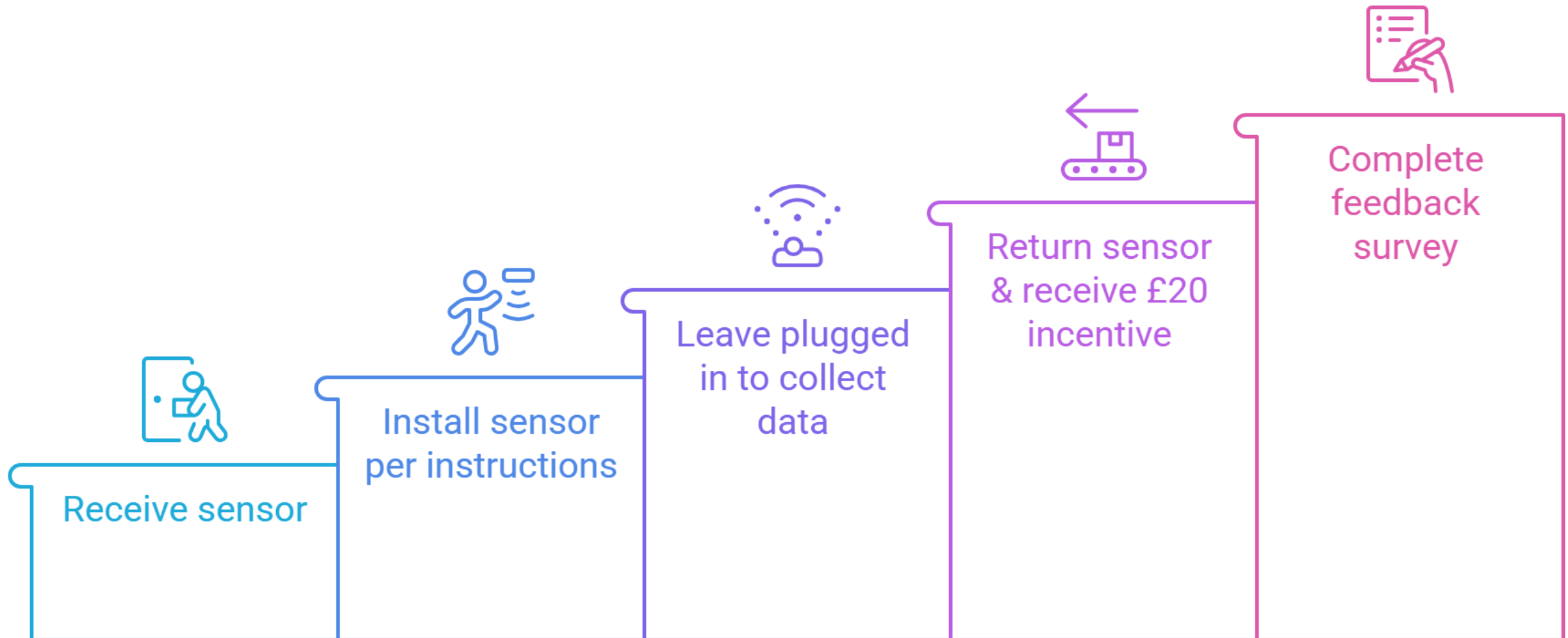
About the sensors



In-home environmental sensor

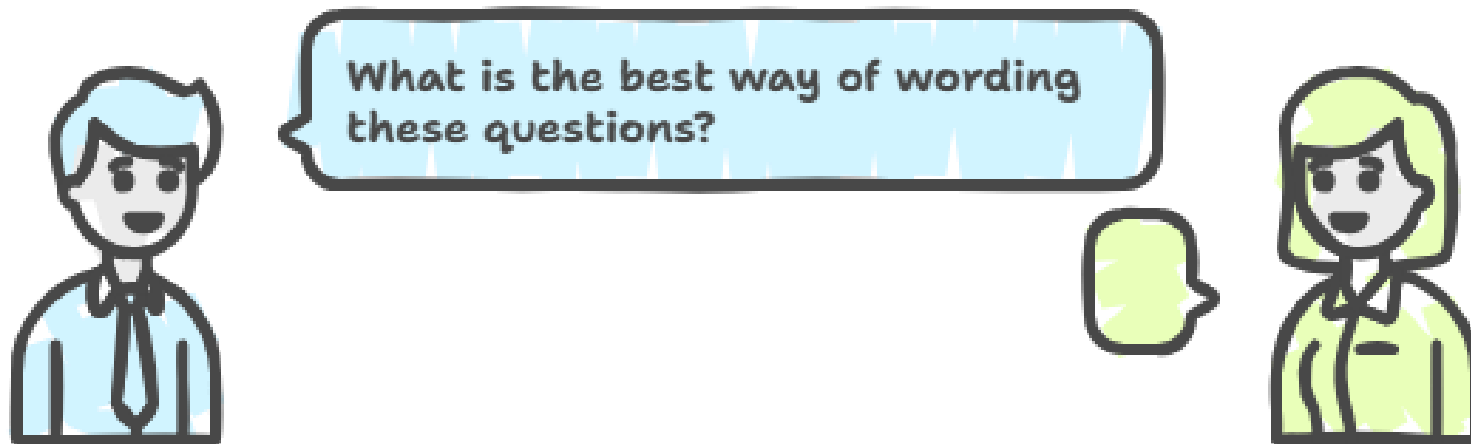
- Air temperature
- Light
- Noise levels
- Humidity
- Air particles/ pollutants

What did participants need to do?



Background & Context

- Persuading respondents to participate in these additional data collection tasks is challenging.
- So how do we maximise consent rates?



Research Questions

- RQ1: Does question format affect consent?
- RQ2: Do shorter study durations increase consent?
- RQ3: Does offering feedback influence consent?
- RQ4: What reasons do respondents give for their decisions?

Sample & Data

- Household panel

Probability sample in Great Britain of adults aged 16+

Interviewed annually using the same design as main survey but used for experimental methods testing

- Mixed modes: Web, CATI, CAPI

- UKHLS Innovation Panel Wave 17

Invitation asked in the household interview

1,340 households following exclusions: CATI respondents (n=64) and incomplete household data (n=69)

Invitation to sensor study

1. Full information in question text

To understand how conditions inside people's homes vary, we would like to invite some households to place a sensor in their home for a period of time. The sensor will record things about indoor conditions such as air temperature, humidity, noise levels (but not actual sounds), light levels, and the presence of certain gases and microscopic particles in the air. Information collected by these sensors would be linked to the answers you have given in this study.

The sensor will be in your home for **up to 6 months** (if ff_esensdurw17 = 1) **up to 12 months** (if ff_esensdurw17 = 2) **up to a year** (if ff_esensdurw17 = 3) **up to 24 months** (if ff_esensdurw17 = 4) **up to 2 years** (if ff_esensdurw17 = 5), and the team will contact you to arrange its return when it is time to do so.

A personalised report giving a summary comparing the conditions in your home to the average home will be sent to you once we have analysed the data. (if ff_esensbw17 = 1)

Once you have returned the sensor, you will receive £20 as a thank you.

If you agree:

- We will send your name, address, telephone number, and – if you have provided it – email address to researchers at the University of Glasgow, who are partnering with Understanding Society to collect these data using sensors.
- The University of Glasgow researchers will send you a sensor with simple instructions on how to use it.
- The sensor will just need to be plugged in and left in a room until it is time to return it. You will not need to do anything with it until it is time to send it back.
- When it is time to return the sensor, the University of Glasgow will contact you to arrange returning it via a courier service that they will pay for.
- You will be asked to complete a short questionnaire about where the sensor was located while it was in your home and your experiences with this task.
- Data from the sensor will be passed back to Understanding Society and connected to the answers you have given in this study.
- We will make the combined anonymous data available for academic and policy research purposes only.
- Access to the data will be restricted and controlled, to make sure that researchers use the information responsibly and safely.

The number of sensors available for this study is limited, so not everyone who agrees to have a sensor will be sent one. It may also be that those who are happy to help with this part of the research may have to wait until later in the year for a sensor to be available.

Please read this leaflet on "In-Home Sensors" for further information.

Do you give permission for us to pass your name, address, telephone number, and email address to the University of Glasgow so they can send you a sensor to place in your home for **up to 6 months** (if ff_esensdurw17 = 1) **up to 12 months** (if ff_esensdurw17 = 2) **up to a year** (if ff_esensdurw17 = 3) **up to 24 months** (if ff_esensdurw17 = 4) **up to 2 years** (if ff_esensdurw17 = 5)?

2. Key information in question text, rest in help text

To understand how conditions inside people's homes vary, we would like to invite some households to place a sensor in their home for a period of time. The sensor will record things about indoor conditions such as air temperature, humidity, noise levels (but not actual sounds), light levels, and the presence of certain gases and microscopic particles in the air. Information collected by these sensors would be linked to the answers you have given in this study.

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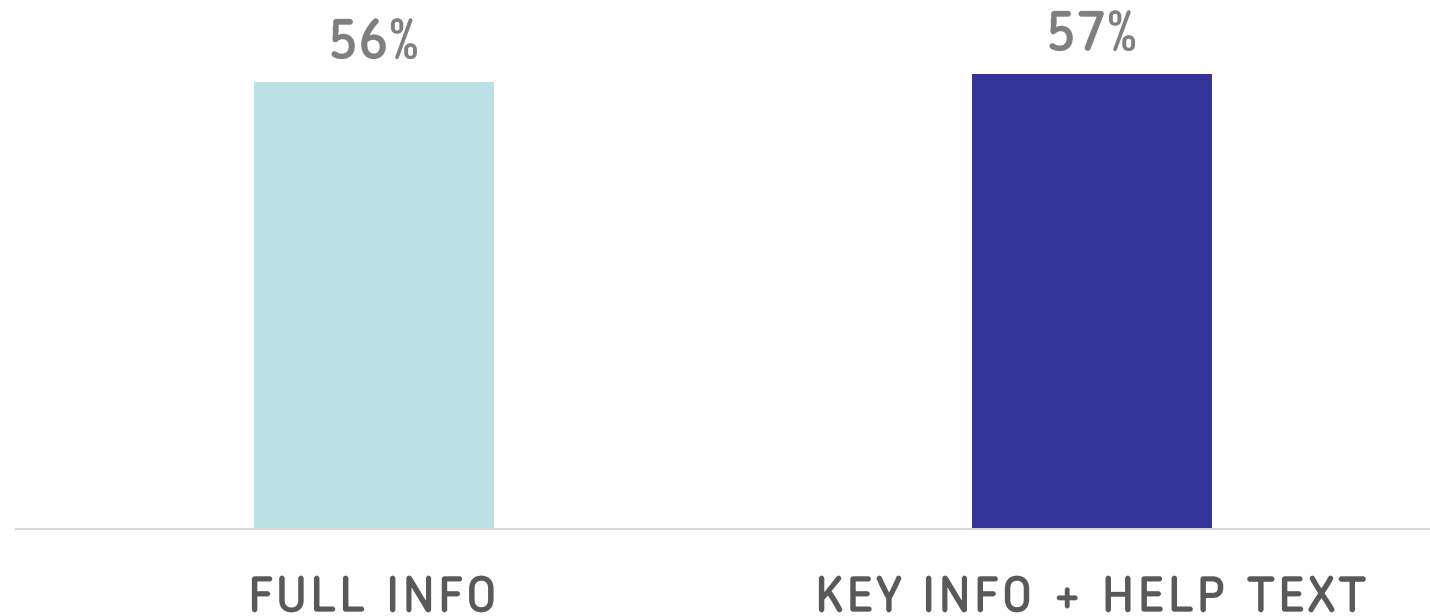
Do you give permission for us to pass your name, address, telephone number, and email address to the University of Glasgow so they can send you a sensor to place in your home for **up to 6 months** (if ff_esensdurw17 = 1) **up to 12 months** (if ff_esensdurw17 = 2) **up to a year** (if ff_esensdurw17 = 3) **up to 24 months** (if ff_esensdurw17 = 4) **up to 2 years** (if ff_esensdurw17 = 5)?

If you agree:

- The University of Glasgow researchers will send you a sensor with simple instructions on how to use it.
- The sensor will just need to be plugged in and left in a room until it is time to return it. You will not need to do anything with it until it is time to send it back.
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Results:

RQ1: Does question format affect consent?





Experimental Design

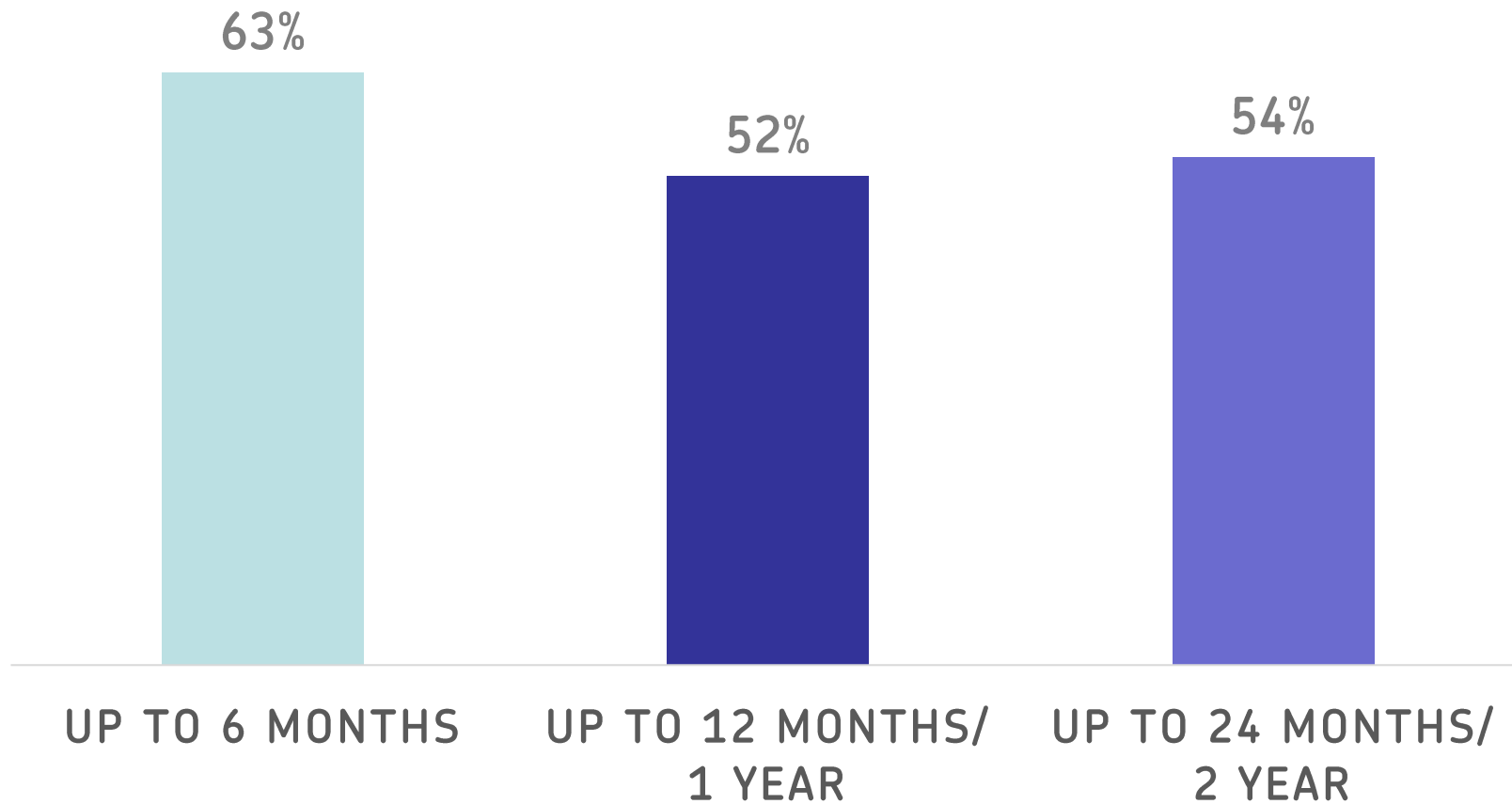
Objective burden (study duration)

1. Up to 6 months
2. Up to 12 months
3. Up to a year
4. Up to 24 months
5. Up to 2 years

The sensor will be in your home for up to 6 months {if ff_esensdurw17 = 1} up to 12 months {if ff_esensdurw17 = 2} up to a year {if ff_esensdurw17 = 3} up to 24 months {if ff_esensdurw17 = 4} up to 2 years {if ff_esensdurw17 = 5}, and the team will contact you to arrange its return when it is time to do so.

Results:

RQ2: Do shorter study durations increase consent?





Experimental Design

Personal benefit (feedback offer)

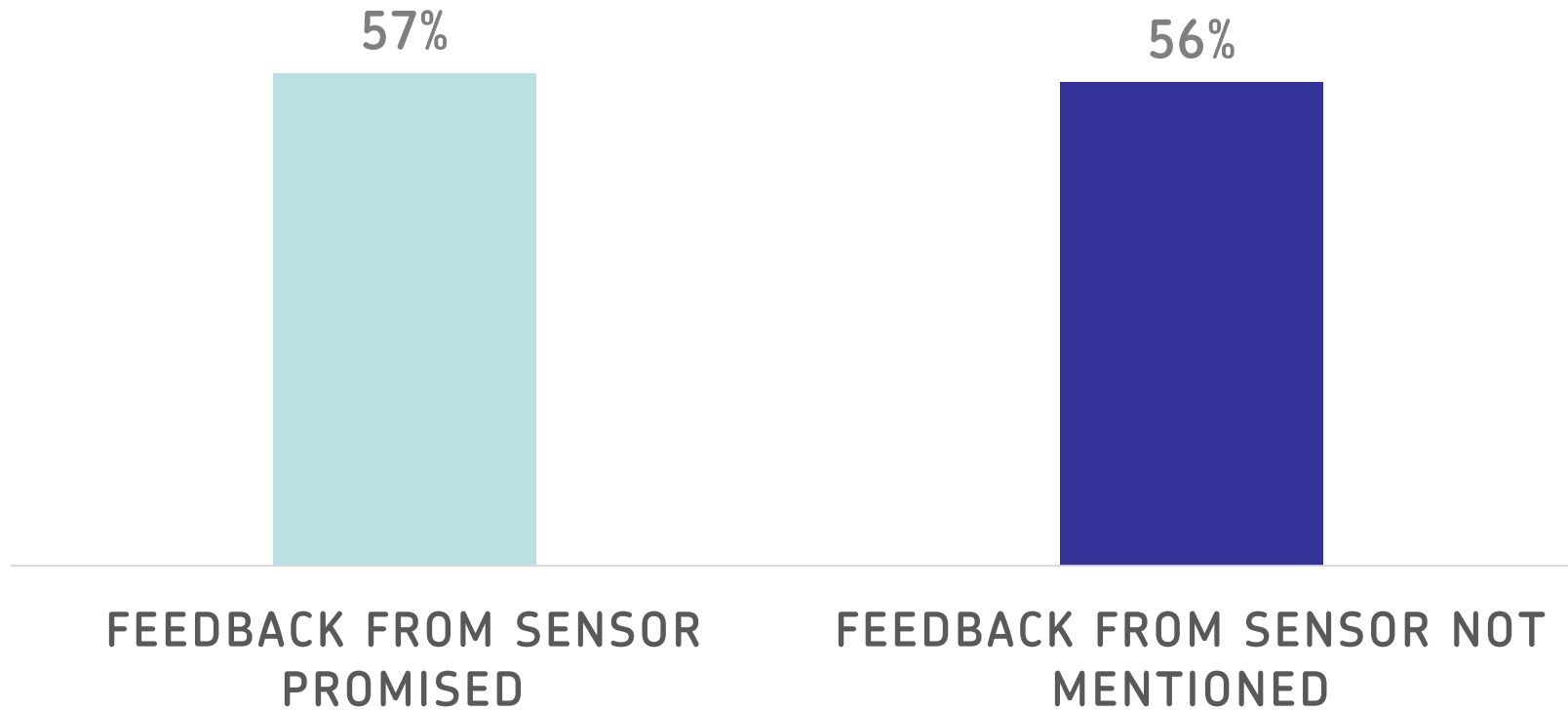
1. Feedback from sensor promised

A personalised report giving a summary comparing the conditions in your home to the average home will be sent to you once we have analysed the data. {if ff_esensfbw17 = 1}

2. Feedback from sensor not mentioned

Results:

RQ3: Does offering feedback influence consent?



Experimental Design

Reasons for their decision

- Regardless of consent or not, all respondents asked what reasons affected their decision
- Could select all reasons that applied

Results:

RQ4: What reasons do respondents give for their decision to consent?

Reason for consent given	% of respondents
contributes to research	69
wanted feedback report / learn about indoor conditions	64
sounded interesting	52
wanted £20 incentive	40
trust the organisations involved	39
seems easy	37
normally agree to these sorts of requests	19

Results:

RQ4: What reasons do respondents give for their decision to *not* consent?

Reason for consent NOT given	% of respondents
not interested	40
not wanting to share information	25
worried about my contact details being overshared	15
£20 incentive is too small	12
no benefit for me	9
unclear how researchers benefit from having this data	7
seems too difficult	5
none of the above selected	15

Debrief Survey



In-home sensor study

End of study questionnaire

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Imagine you were being asked to do this sensor study for the first time. Based on your experience, how likely would you be to participate?

Please tick one answer.

- ☐ Very likely
- ☐ Somewhat likely
- ☐ Somewhat unlikely
- ☐ Very unlikely
- ☐ Don't know
- ☐ Prefer not to say

Contradiction 1

- Modest consent rate for sensor study (56%)
- Despite the task being easy/ non-invasive
- Corroborated by participants:
 - easy, acceptable (75% very easy, 22% somewhat easy)
 - would do again (70% very likely, 26% somewhat likely)
- However, still non-compliance (11% not always on)
- IP respondents are probably more cooperative

Contradiction 2

- Receiving personalised feedback was the 2nd most cited reason for consenting (64%)
- Yet no effect of feedback on consent rates.
- Does feedback function as an additional benefit rather than a primary motivator for consent?
- Might feedback instead influence compliance?
- Why does feedback fail to act as a significant incentive in this context compared to other medical or bio-sample studies?

Contradiction 3

- Consent was higher for shorter study durations (6 months)
- 86% of debrief respondents were willing to keep the sensor installed for longer
- ‘Foot-in-the-door’ effect, whereby participants are more willing to extend involvement after experiencing the study than to commit to a long duration upfront?
- Alternatively, effects may reflect reduced uncertainty once participants understand the true burden of participation?

Other insights from debrief survey

“Just a bit worried about my electric bill.”

“I think you do also need to be clear with people that the sensor needs a power source, because effectively, I've now paid for the sensor through my electricity bill, and electric isn't cheap! ...should have been clear from the outset.”

Acknowledgements

- Research team

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Annette Jäckle Jonathan Burton Owen Preston Jim Vine	Mick P. Couper	Simon Elam Martin Pullinger	Qunshan Zhao Mingyu Zhu

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References

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Questions?



Owen Preston (he/him/his)
op16174@essex.ac.uk
[linkedin.com/in/owen-preston](https://www.linkedin.com/in/owen-preston)



Reminders of Discussion Topics

1. Low uptake despite low burden
2. Feedback valued but not motivating consent
3. Shorter commitments increase consent, but participants report willingness to continue

Considerations for future sensor studies



1. Format: Visual layout does not drive consent
2. Duration: Shorter durations matter
3. Feedback: Minimal impact (even when tailored to energy-saving motivations)
4. Reasoning: More info upfront captures interest & reassures