Understanding Society
THE UK HOUSEHOLD LONGITUDINAL STUDY

Remote collection of biomeasures in Understanding Society: The UK Household Longitudinal Study

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UKRI Economic and Social Research Council

An initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by Verian and NatCen.

Early in the study (Waves 2 & 3), nurses collected a range of measures

- Blood pressure
- Height
- Weight
- Waist measurement
- Body fat
- Grip strength
- Lung function

https://www.understandingsociety.ac.uk/documentation/health-assessment/

Including blood samples

- Measures of fat
- Indicator of diabetes
- Measures of inflammation
- Measures of anaemia
- Liver & kidney function
- Hormones

- DNA
  - Genotyped data
  - Epigenetics
  - Proteomics
  - Polygenic scores

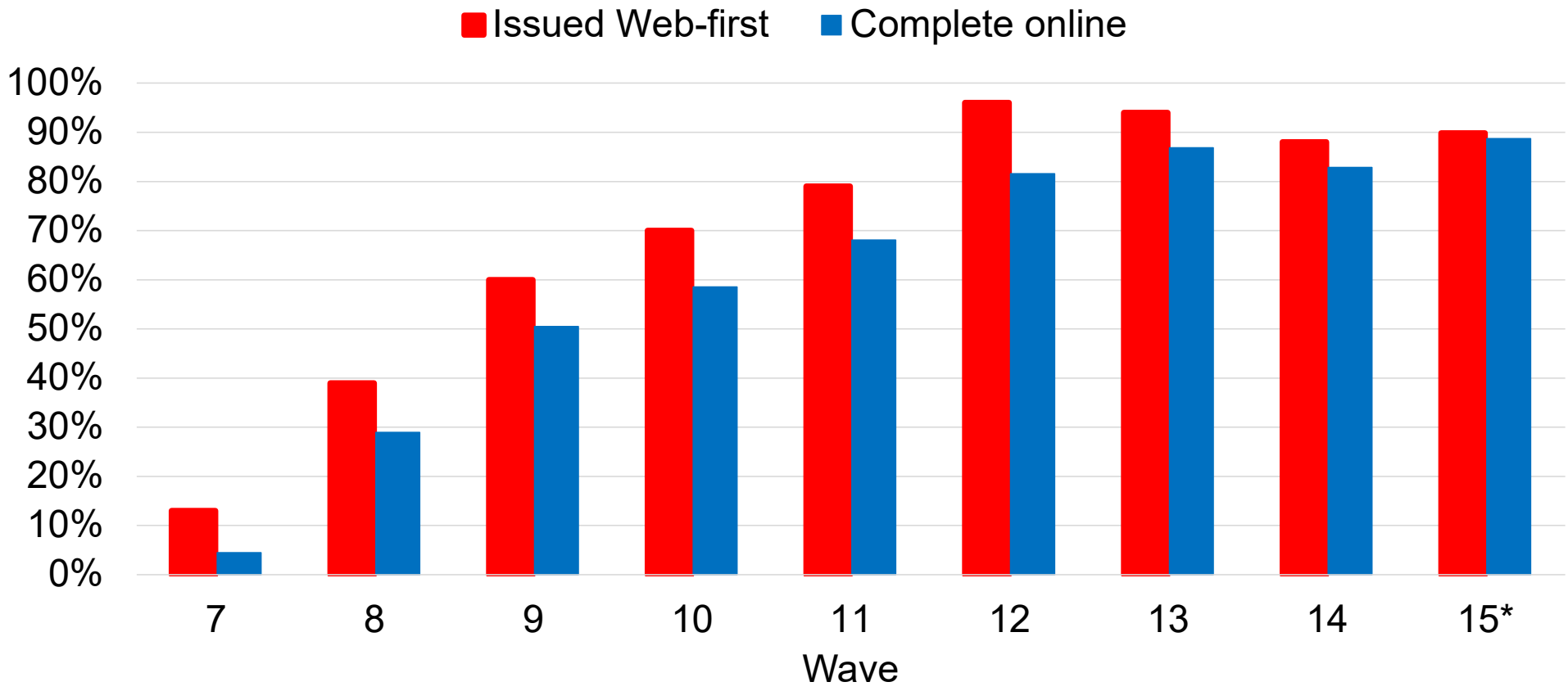
https://www.understandingsociety.ac.uk/documentation/omics/

Understanding Society is a *longitudinal* study

- High scientific value in having physical and bio-measures from the same people at two points in time
  - Understand the biological pathways that connect society and health
  - Measure the prevalence of undiagnosed/sub-clinical measures in different social groups
  - Enable the health impacts associated with macro-change in society to be investigated
  - Provide national representative benchmark of key biomarker measures

➢ Funding from the ESRC for a bio-marker wave: Wave 16 (2024-25)

But since the nurse visit, the study has since become a mixed-mode, even web-predominant, survey



The challenge now is how to collect biomeasures without nurses

- Or the use of clinics
- And limited use of interviewers

We experimented using the Innovation Panel (IP12, IP15) and the COVID-19 study

- Interviewer-led vs participant-led (with nurse visit as comparison at IP12)
- Dried blood spots (IP12)
- Hair (IP12)
- Body Volume/measurements (IP15)
- Capillary blood samples (COVID-19)

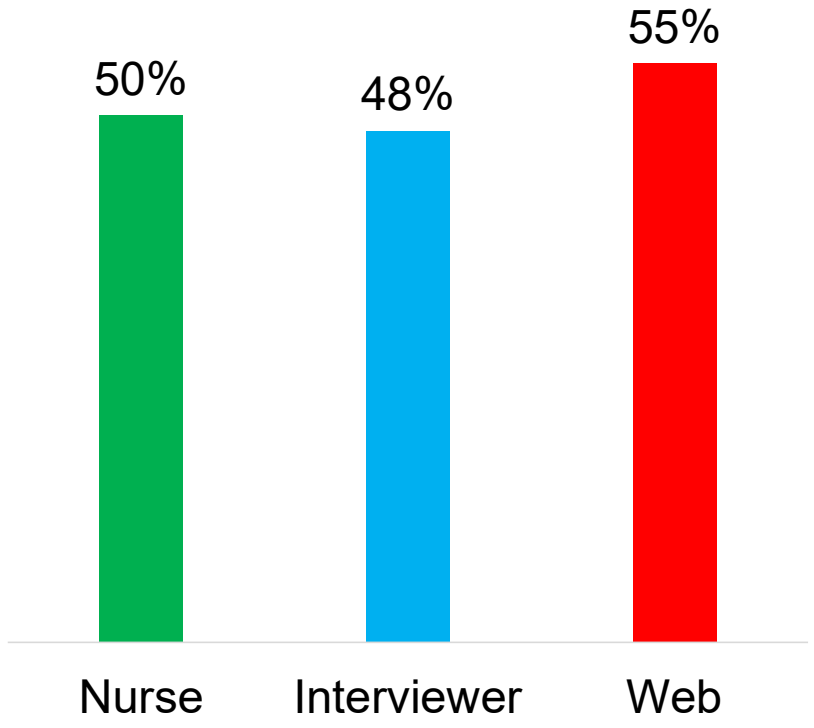
Tarek Al Baghal, Jonathan Burton, Thomas F Crossley, Michaela Benzeval, Meena Kumari, How Different Mixed-Mode Data Collection Approaches Impact Response Rates and Provision of Biomeasure Samples, Public Opinion Quarterly, 2025, https://doi.org/10.1093/poq/nfaf022

At IP12 (2019) we experimented with interviewer- and participant-led collection

- Compared to a nurse collection
- Blood pressure
  - Self-report (all)
  - Measured (interviewer / nurse)
- Height/weight measured (interviewer / nurse)
- **Hair sample and Dried Blood spots**
  - **Taken by nurse**
  - **Kit left by interviewer / sent to online**

Higher response to the survey for those issued web-first

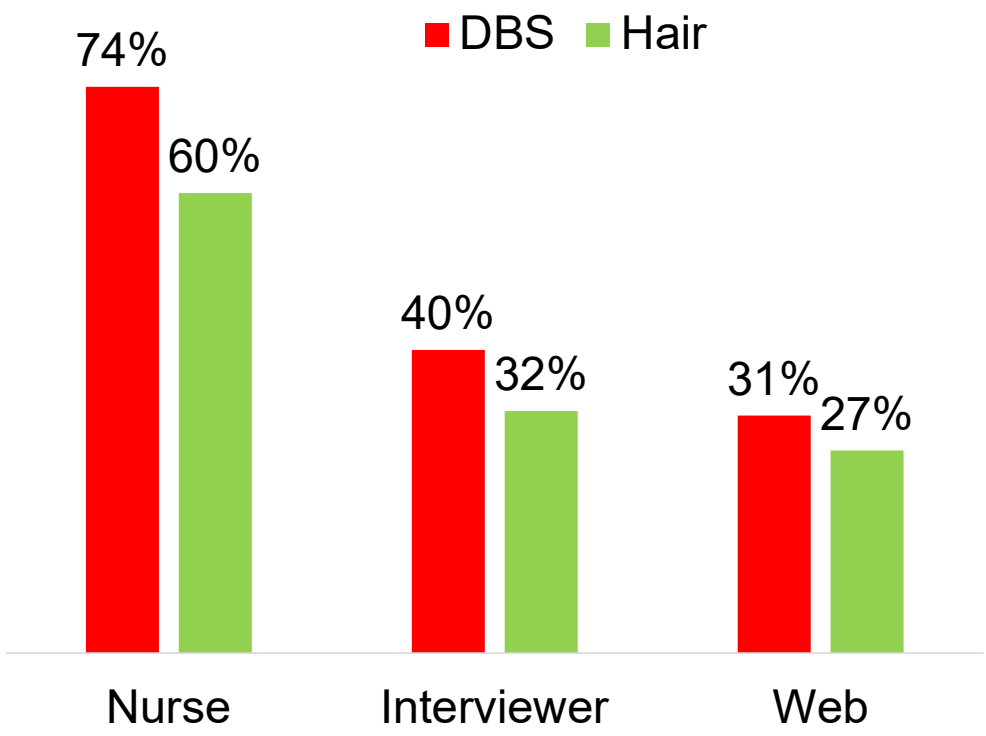
- Response to the survey
  - Highest in web-first
  - No difference between interviewer-first or nurse



Response among all issued adults

But, as expected, higher return of samples from those with a nurse visit

- Return rate for samples (hair/DBS)
  - Highest for nurses
  - Interviewer-led higher than participant-led
- But offering **feedback** of results was most effective for web and interviewer modes



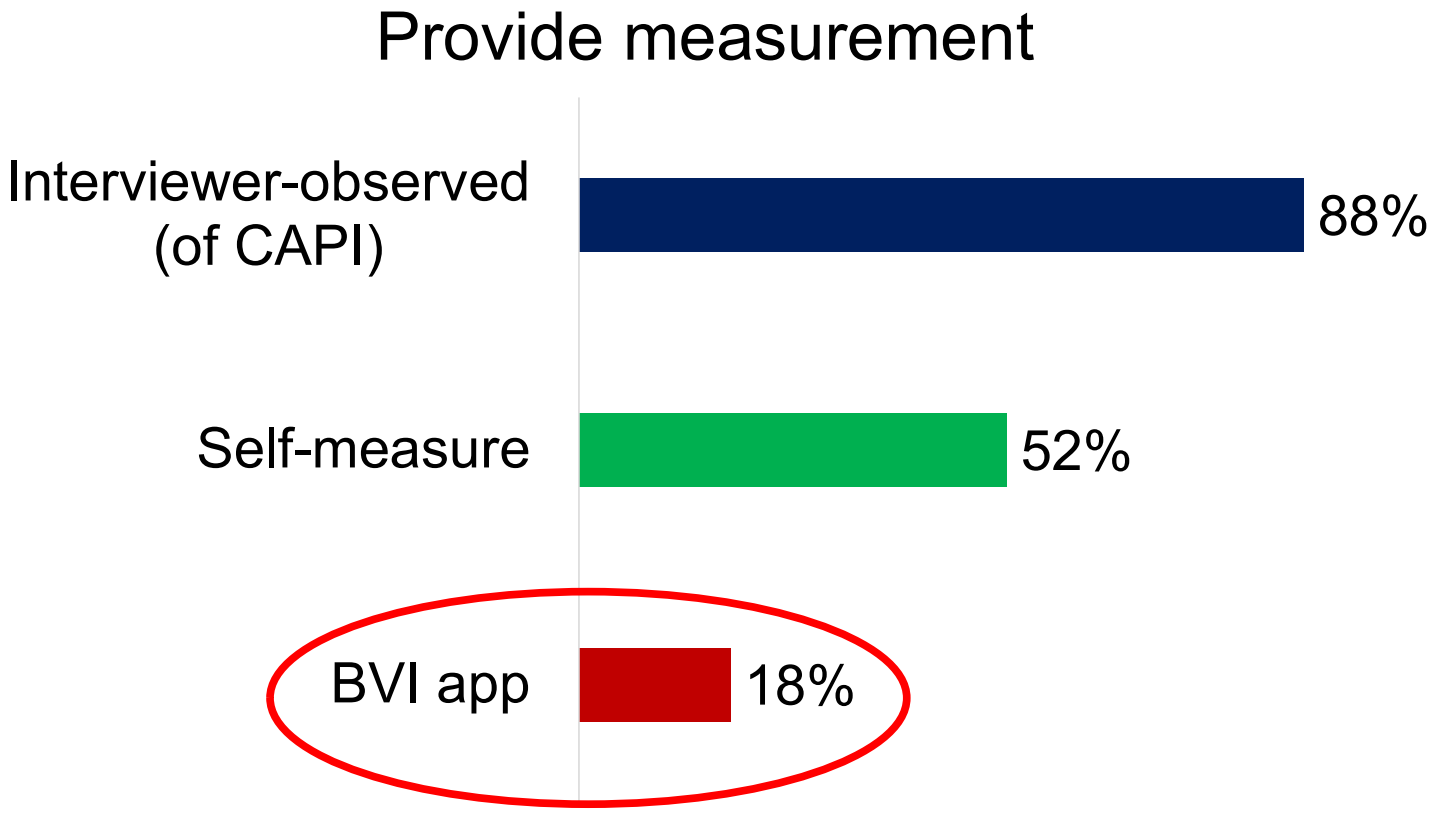
Benzeval, M., Andrayas, A., Mazza, J. *et al.* Does the feedback of blood results in observational studies influence response and consent? A randomised study of the Understanding Society Innovation Panel. *BMC Med Res Methodol* **23**, 134 (2023). https://doi.org/10.1186/s12874-023-01948-y

COVID-19 study also tested participant-led collection of blood samples

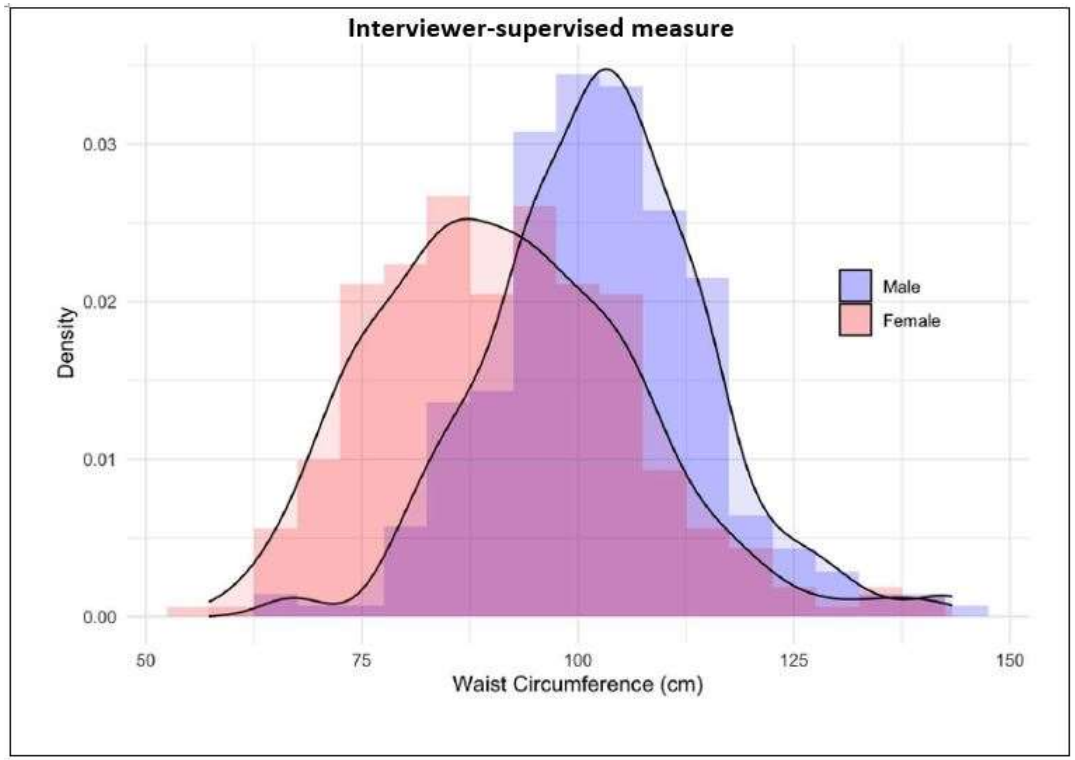
- Web-only, 1 week fieldwork
- March 2021
- Consent for kit to be sent in questionnaire
- Thriva send kit with instructions
- Participants return the kit
- 78% consent, 52.5% return kit = 41% overall

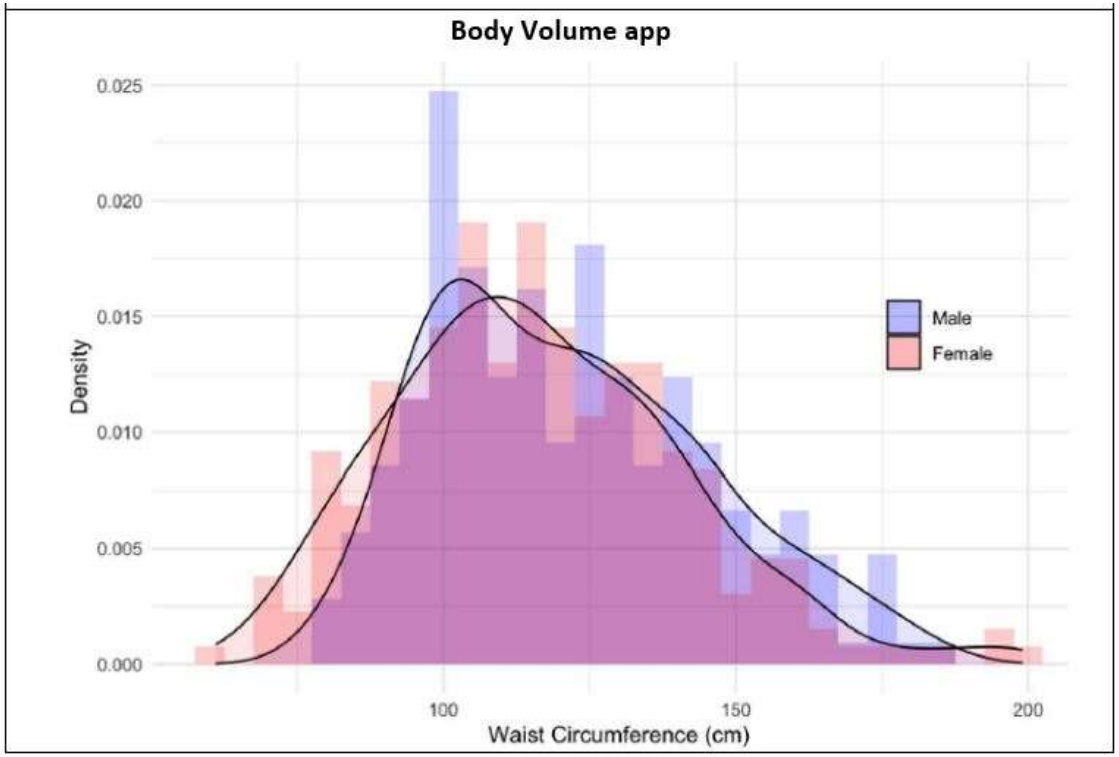
Can we use apps to collect health-related measures?

- IP15
- Waist/hip measurement
- Test Body Volume Index app (BVI)
- **Low take-up**



And poor measurement



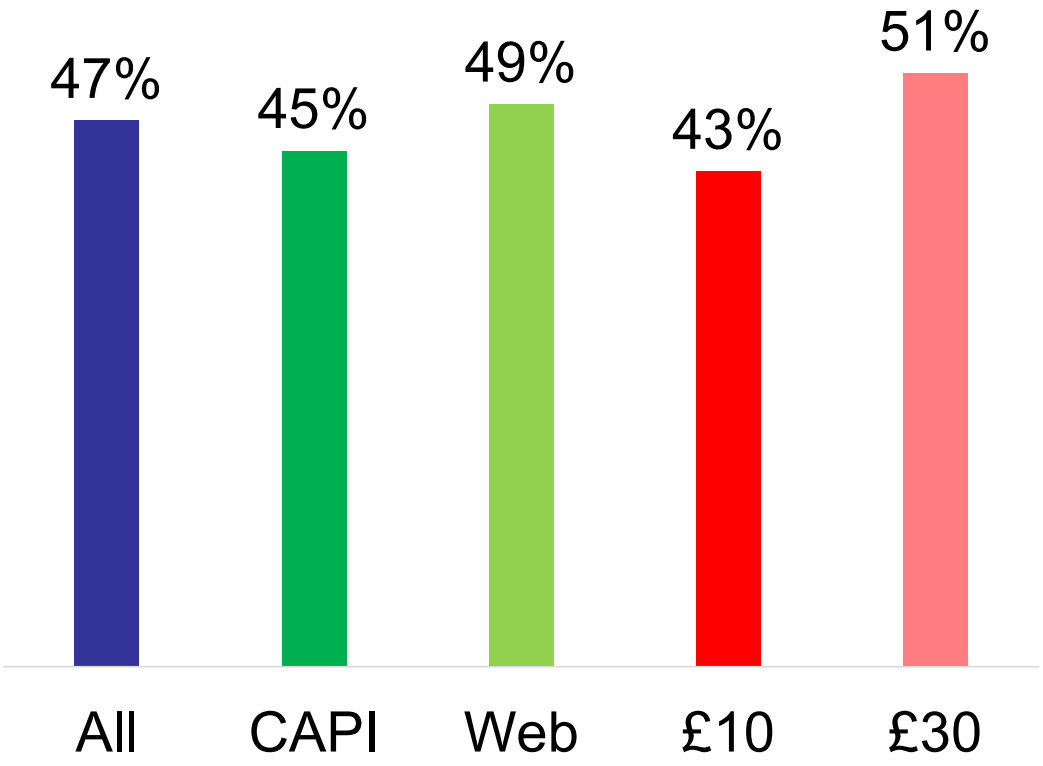


Interviewer-supervised measure

BVI app

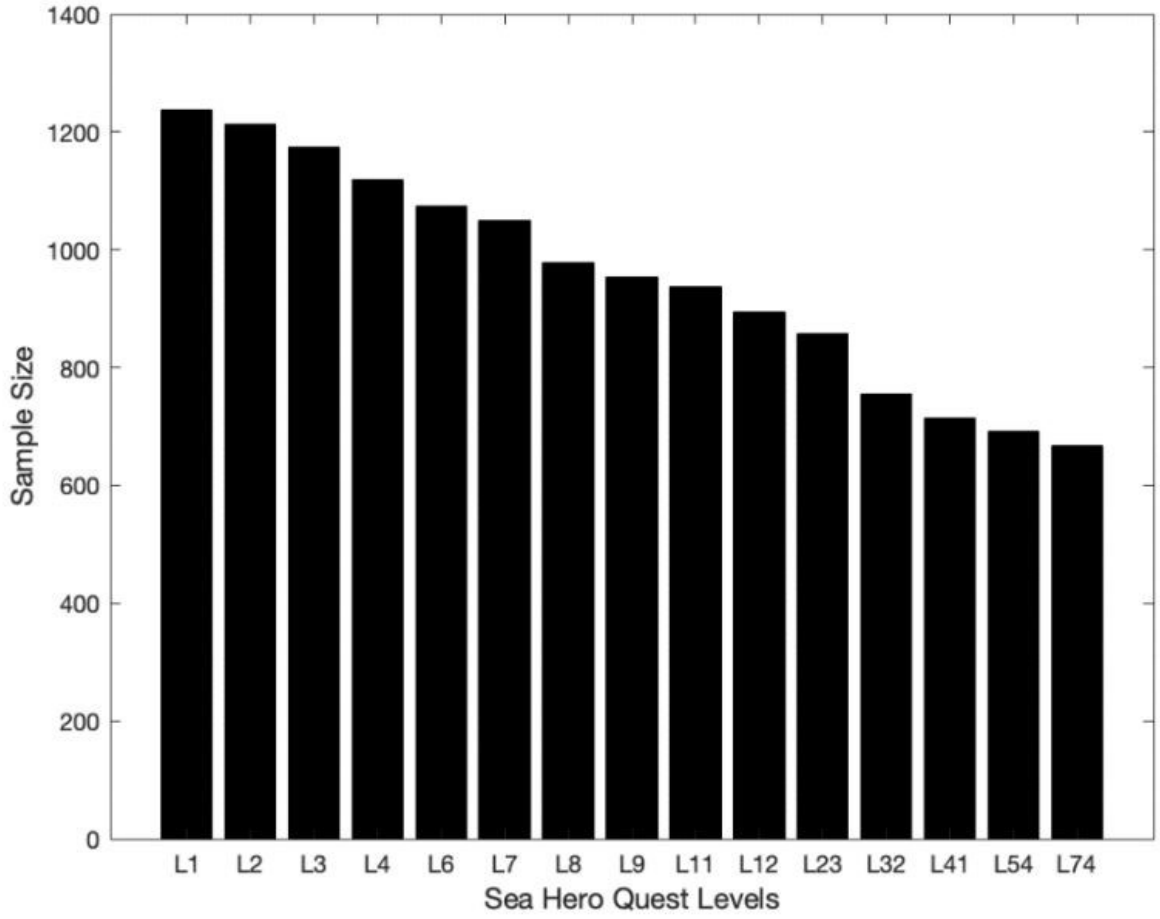
Sea Hero Quest – better take-up

- IP16 spatial awareness app
- Designed for Alzheimer's Research UK to identify early signs of dementia



Sea Hero Quest – high level of retention

- 96% who downloaded played at least one level
- 73% played at least until level 11
- More than half completed the game



Coutrot, Al Baghal, Spiers, 2024

Lessons from development

- It is possible to collect biomeasures with interviewers and participant self-collection
- Return of samples lower on web
  - But are positively affected by offers of feedback
- Participants can provide their own BP, waist/hip measures
  - Measurement error, but can be corrected using validated measures from interviewers

The Wave 16 pilot (Feb-June 2023)

- Uses the Understanding Society pilot sample
- Mixed mode: 60% web-first, 40% CAPI-first
- £20 incentive
- +£10 “early bird” bonus for web-first for completion in the first few weeks

Wave 16 pilot measures

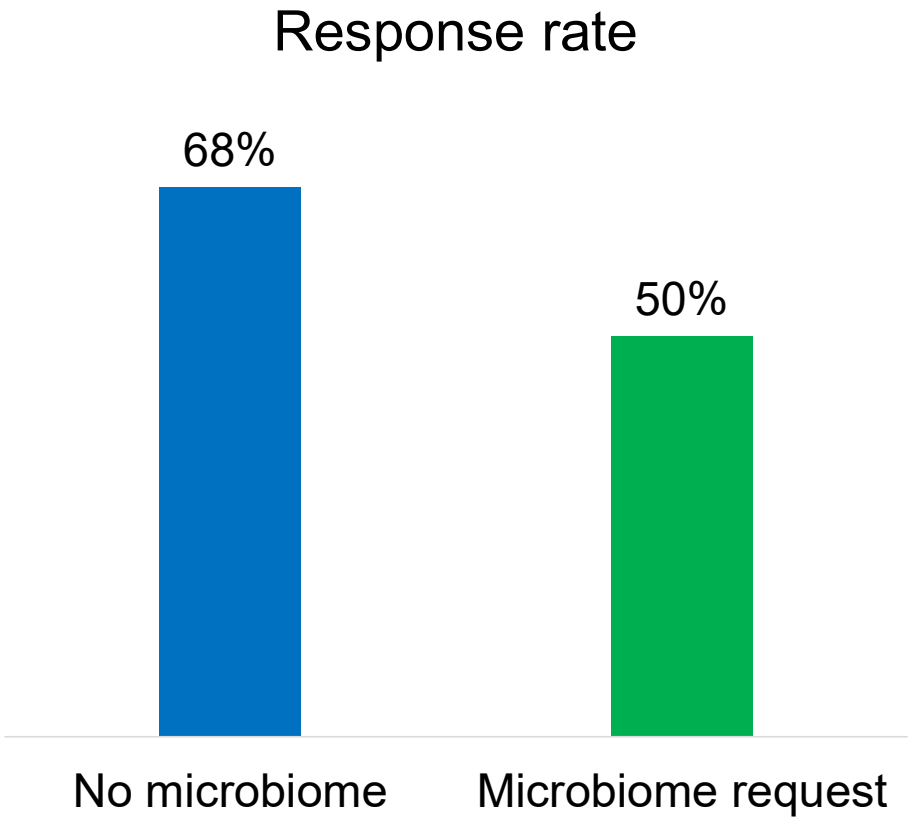
- Blood pressure
  - Self-measure for web; interviewer-measured in CAPI
- Waist/hip measures
  - Self-measure for web; supervised measure in CAPI
- Height/weight – interviewer-measured in CAPI only
- Blood sample (capillary) kit sent after interview if consented (+£5 on return of sample)
- Microbiome kit sent after interview if consented (+£5 on return of sample)

Microbiome – new for Understanding Society

- Gut microbiome: implicated in depression, anxiety, dementia, obesity and metabolic syndrome.
- Recent evidence suggests that the environment plays a greater role in shaping gut microbiota than genetics
- Association of environmental and social factors with the gut microbiota requires further investigation
- Experiment
  - **Half the sample** allocated to be asked for permission to send a collection kit
- Kit sent after interview
  - DNA Genotek OMNIgene GUT kit with instructions on how to provide a stool sample

However, mentioning microbiome in the advance letter affected response to the survey

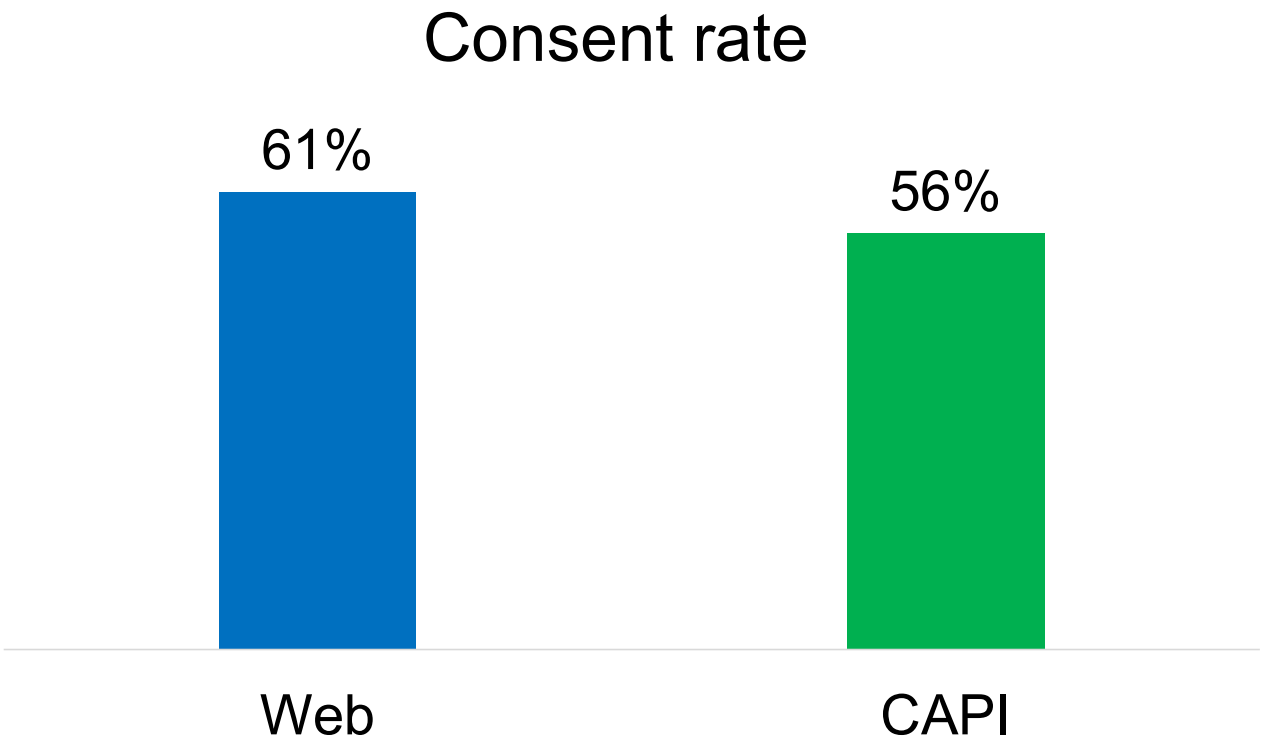
- Request to send a kit included in the questionnaire
- But information about this measure also included in advance materials



Request to send a kit to collect a small sample of blood

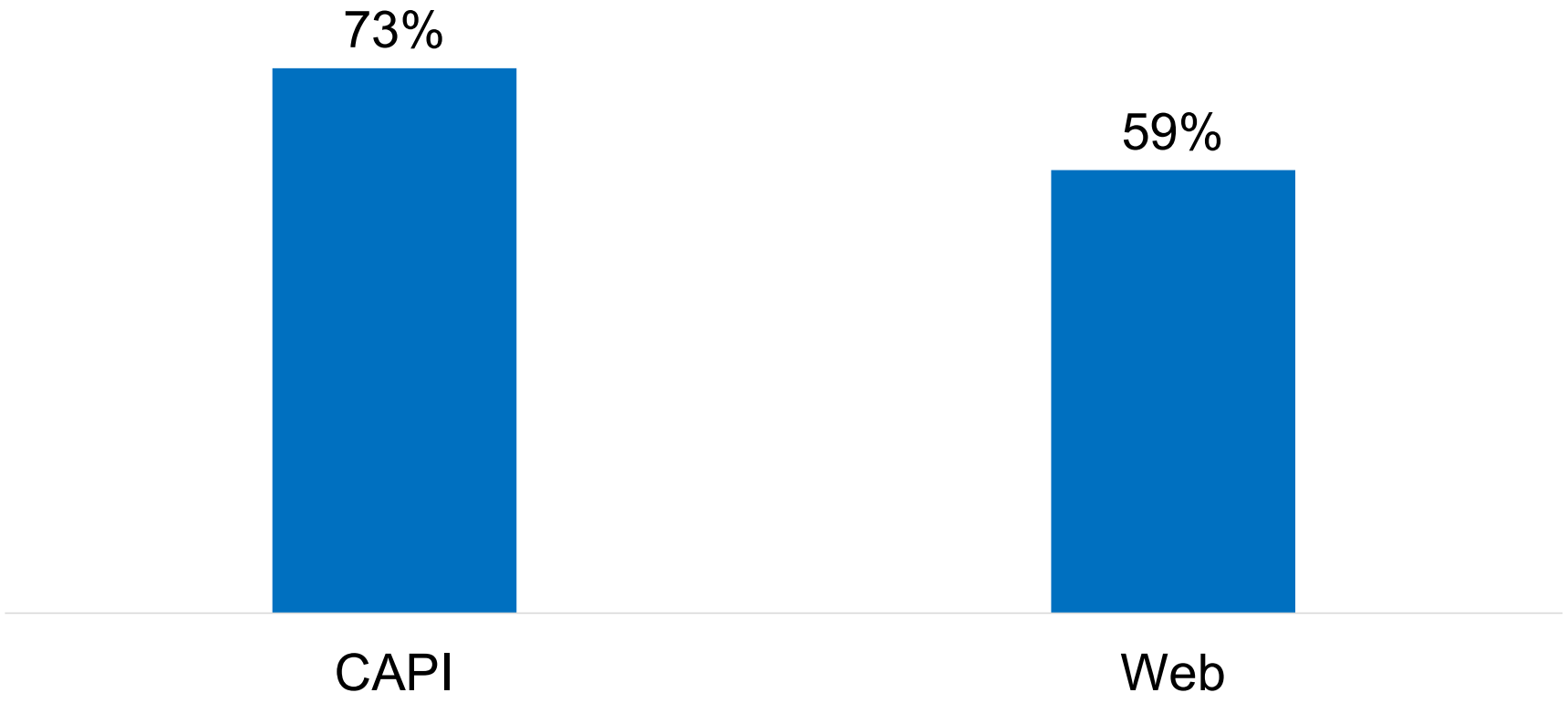
- Blood sample kits sent out centrally by Thriva, so posted to online and CAPI
- Posting samples back to Thriva, receive £5 incentive
- Blood sample analysed for:
  - cholesterol (total cholesterol and HDL)
  - triglycerides and blood sugar levels (HbA1c)
  - vitamin C, vitamin B1, vitamin B2, vitamin B6, vitamin B12, vitamin A, vitamin E and vitamin D
  - + DNA (separate consent)

Consent to send the microbiome kit moderate and not affected by mode of interview

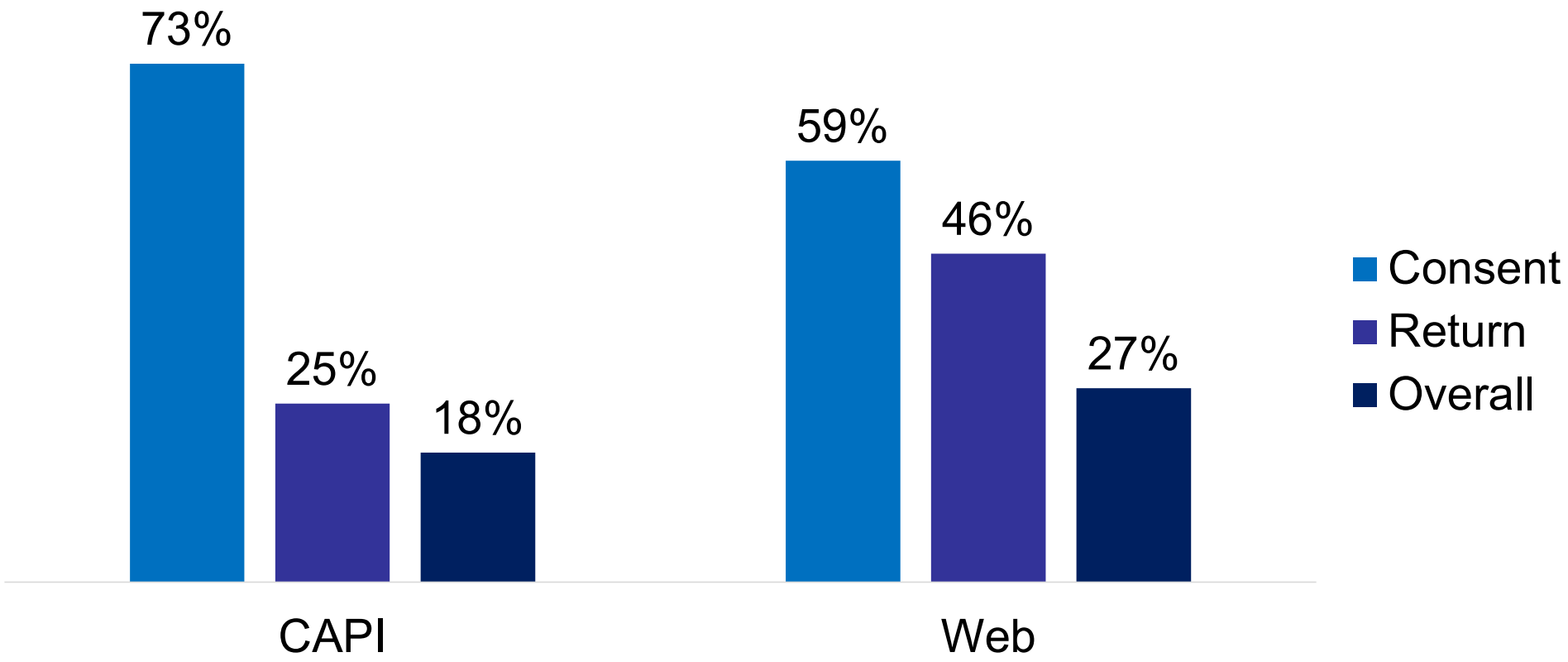


- **Return rate of 69%**
- Overall return: 36% of eligible respondents

Those interviewed in-person more likely to agree to have a blood kit sent to them



But less likely to return the blood sample



Other results

Self-measured

- Blood pressure (pre-interview)
  - 60% for Web-first online
  - 32% for CAPI-first who completed online
- Waist/hips (pre-interview)
  - 73% both, 4% only waist for Web-first online
  - 37% for CAPI-first completed online

Interviewer-measured

- Blood Pressure
  - 80.5% consent (of these 92% with 3 readings)
- Interviewer-observed waist/hip
  - 80% consent
- Height – 86% consent
- Weight – 85% consent

Wave 16 main-stage design similar to the pilot but with some changes

- Blood pressure
  - Self-measure for web; interviewer-measured in CAPI
- Waist/hip measures
  - Self-measure for web; supervised measure in CAPI
- Height/weight – interviewer-measured in CAPI only
- Blood sample kit sent after interview if consented (+£5)
- **No microbiome**
- **+ request to link to NHS data**
- **+ bio-validation of 5% of cases**

Fieldwork design for Wave 16

- Launched January 2024
- Standard web-first/CAPI-first split
- BUT – those web-first households who had a nurse visit at W2/3 or cognitive measures at W3 re-allocated to CAPI-first
  - Aim to improve take-up of physical measures and consent to send blood kit
  - Increase number/quality of longitudinal measures

Early indications that we were not meeting our targets

- Summer review of communications, questions, fieldwork design
- Wave 16 conducted under NHS Research Ethics Committee
  - Ethics amendment submitted 3rd September 2024, approved 20th September
- Most changes implemented for the December sample onwards

Lower response for people where we re-allocated them to CAPI-first

- Indications that people who had taken part online for some years did not want an interviewer visit
- No longer eligible for ‘early bird’

➢ Extend £10 bonus to completion in any mode

➢ More explanation in the advance materials about why we’re sending an interviewer

➢ Provision of web log-in if they really want to take part online

Lower provision of blood pressure and lower consent to blood kit

- 44% provide BP (60% in pilot)
- 47% of web respondents consent to blood kit (59% in pilot)

➢ Add a £5 incentive for providing BP

➢ Increase incentive for providing blood sample from £5 to £10

➢ Mention feedback from blood earlier in consent question

Low return of blood samples

- Around 40% - similar to pilot but below COVID-19 (53%)
  - Added a telephone reminder
  - Work with Thriva to improve kit packaging
  - Send second kit if blood sample is not usable
  - Send new version of kit to those who had previously consented but not returned sample

Early signs of improvement…

- Response rate for those we had switched modes
  - 46% (Q1+2) to 66% (Dec/Jan)
- Providing BP measure
  - 44% (Q1-3) to 56% (Dec-May)
- Consent to blood kit
  - Web respondents: 47% (Q1-3) to 55% (Q5)
- Returned blood kits
  - Second kit increased return from Q1-4 sample by 5-7pp
- Telephone reminder adding ~40 samples/month

Some early lessons

- A pilot is useful for testing processes
- It can weed out significant difficulties (BVI app, microbiome)
- Less useful in predicting response/take-up on a ‘real’ sample
- Other design choices hard to replicate on a pilot (mode switch)
- Need on-going monitoring to pick up early warning of issues
- Value of working with partners to review and update protocols (Understanding Society team, Verian, NatCen, Thriva)
- Need to build in time to implement changes
- Continual cycle of monitor-assess-adapt

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