

# LFS User Workshop



**Martina Helme**

ONS Social Survey Operations – Labour Force Survey Research Team

---

**26 May 2022**

# Session 1

## Survey history and design

- Background/history
- Methodology  
(questionnaire content, sampling, imputation, data collection)
- Changes made in response to COVID-19

# What is the Labour Force Survey?

- A survey of the employment circumstances of the UK population
- Largest continuous household survey in the UK
- Over 1000 variables (questions and derived variables) covering:



# Overall Sample Design



- People living in private households and nurses in NHS accommodation
- Students in halls of residence or boarding schools should be included at their parents address
- The Postcode Address File (PAF) is the main sampling frame
- NHS sampling frame and the Telephone Directory also used
- Other communal establishments are excluded from the sample
- Random sample, stratified by postcode
- Representative of the whole UK population (with a few exceptions)

# LFS Sample

- Around 75,000 households sampled each quarter for the LFS and around 40,000 households take part
- This equals around 90,000 individuals every quarter
- Sample intended to be representative of the entire population
- Therefore each case weighted by age, sex and geography
- $65 \text{ million people} \div 90,000 =$  each respondent is equivalent to approximately 800 people
- 75+ households and multiple households will have much larger weights
- The LFS is not of a sufficient size to allow for analysis at below Regional level



# The LFS Wave Structure

JM20	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
AJ20	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
JS20	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
OD20	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
JM21	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5

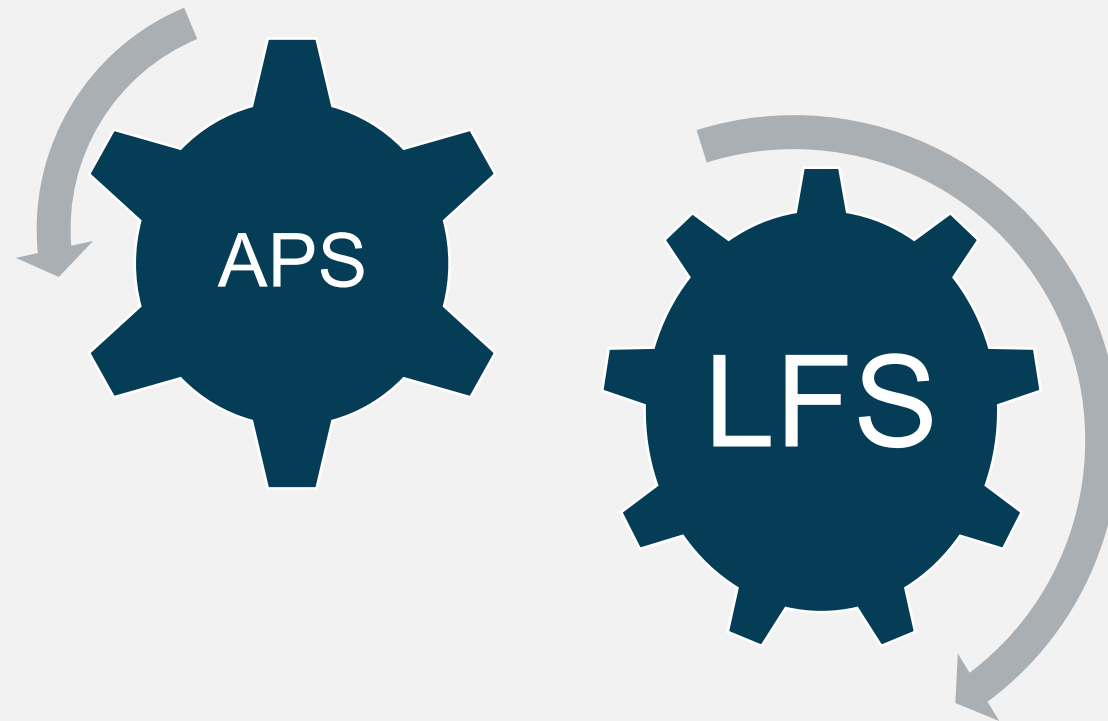
- Respondents are interviewed for five successive waves at three-monthly intervals
- 20% of the sample is replaced every quarter

# Annual Population Survey (APS) Sample

- Main purpose of the APS is that analysis can be conducted at **Local Authority level**
- The 'boost' cases ensure a set number of cases for each Local Authority are targeted
- Around 200,000 households are contacted...
- Around 140,000 households take part,...
- Equates to around 280,000 individuals



# What is the connection between LFS and APS?



# The LFS Boost Wave Structure

2017	Wave 1	Wave 2	Wave 3	Wave 4
2018	Wave 1	Wave 2	Wave 3	Wave 4
2019	Wave 1	Wave 2	Wave 3	Wave 4
2020	Wave 1	Wave 2	Wave 3	Wave 4
2021	Wave 1	Wave 2	Wave 3	Wave 4

- England, Scotland and Wales all fund Local Labour Force Survey interviews (LLFS, Boost or Enhancement cases)
- Respondents are interviewed for four successive waves at 12-monthly intervals
- 25% of the sample is replaced every quarter

# The APS Wave Structure

The APS is made up of LFS W1 and W5, and the LFS Boost W1-4

2017	LFS W1	LFS W5	Boost W1	Boost W2	Boost W3	Boost W4
2018	LFS W1	LFS W5	Boost W1	Boost W2	Boost W3	Boost W4
2019	LFS W1	LFS W5	Boost W1	Boost W2	Boost W3	Boost W4
2020	LFS W1	LFS W5	Boost W1	Boost W2	Boost W3	Boost W4
2021	LFS W1	LFS W5	Boost W1	Boost W2	Boost W3	Boost W4

# Imputation

## Rolled forward imputation

- A successful interview at one wave followed by a non-response at the next
- Rolled forward cases appear as IOUTCOME = 6 on LFS and APS 'person' and 'household' micro data
- Rolled forward imputation only occurs once and only for LFS main cases

## Donor imputation (employment focused)

- Non-response at wave 1 or a second consecutive wave of non-response
- Non-responder cases appear as IOUTCOME = 3 only on LFS and APS 'household' micro data
- Donor imputation occurs for LFS and APS cases



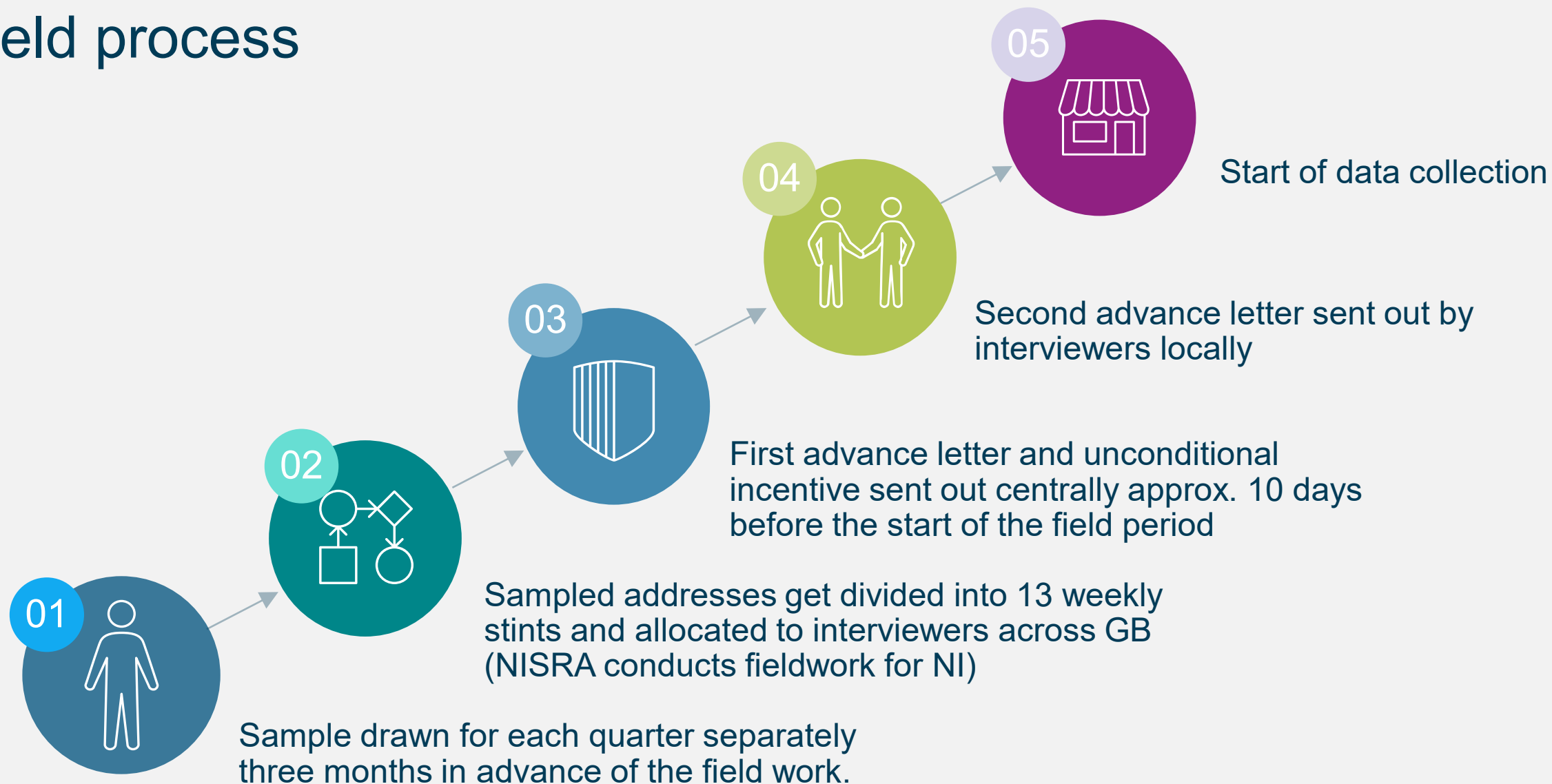
# Data collection (pre-COVID)

- CAPI (Computer Assisted Personal Interviewing)



- Scotland north of Caledonian Canal all done by telephone unit
- Approximately 600 field interviewers and 200 telephone interviewers
- Respondents can answer for others in the household = **Proxy Interviews**
- Around **1/3** of LFS data collected in this way

# Field process



# Variable frequency

- Certain variables are wave specific
- Others are quarter specific

<b>SIDFTFQN</b> <i>Please use showcard</i> Which of the options on this card best describes how you think of yourself? Please just read out the number next to the description.  Enter a numeric value between -9 and 99		<b>EQ</b> <b>W1F</b> <b>IHS</b>
<b>ONS</b> ✓ <b>GOV</b>		<b>PERSONAL ONLY</b>
<b>MATLVE</b> ...and was your maternity leave (in the week ending Sunday the ...) ... <i>Code one only</i> 1 a legal entitlement (statutory maternity leave/absence), 2 or leave your employer has allowed (contractual maternity leave)? 3 don't know		<b>UK</b> <b>AJ</b> <b>MAIN</b>
<b>ONS</b> ✓ <b>GOV</b> ✓ <b>SPL</b> ✓ <b>EUL</b> ✓		
Applies if on maternity leave IF YLESS6=3 AND SEX=2		

# Data quality at point of collection (1)

We provide showcards for questions such as nationality, ethnicity and sex ID

 SID1

{For 1 1 1, please use showcard 1}

Which of the options on this card best describes how you think of yourself?  
Please just read out the number next to the description.

The numbers on each card are different for each person

# Data quality at point of collection (2) – Soft checks

Forms Answer Navigate Options Help Show Watch Window

LFS0321 Household\_Information Person[1] Person[2] Household\_Reference\_Person Benefit\_unit Information\_about\_next\_interview Timing\_administration\_and\_household\_outcome

MR JOE BLOGGS (1)  
What period did this cover?

☒ 1. One week  
☐ 2. Two weeks  
☐ 3. Three weeks  
☐ 4. Four weeks  
☐ 5. Calendar month/five week month  
☐ 7. Two months  
☐ 8. Eight times a year  
☐ 9. Nine times a year  
☐ 10. Ten times a year  
☐ 13. Three months  
☐ 26. Six months  
☐ 52. One year

Gross99 70000 Net99  
GrsExp  
GrsPrd 1 NetPrd  
BandG BandN  
UsGrs99 UsNet99  
UsuGPay UsuNPay  
IncChk

Active Signal

MR JOE BLOGGS (1)  
Gross weekly pay = £70000.00. This seems high.  
Please check the amount and period covered with the respondent.  
Press 'S' to suppress this message.

Questions involved	Value
QIndiv[1].QRouting.QEarning.GrsPrd	One week
QIndiv[1].QRouting.QEarning.Gross99	70000

Suppress Close Goto

# Data quality at point of collection (3) – Hard checks

Forms Answer Navigate Options Help Show Watch Window

LFS0321 Household\_Information Person[1] Person[2] Household\_Reference\_Person Benefit\_unit Information\_about\_next\_interview Timing\_administration\_and\_household\_outcome

Age at end of reference week should be 31  
Check with respondent and enter agreed age.

❗ If D.O.B. not known record respondent's (or your) estimate of age.

❗ Enter code 99 if aged 99 or more

Enter a numeric value between 0 and 99

	PerNo	RelTxt	Title	FstNme
Line[1]	1	person1	Mr	Joe
Line[2]	2			
Line[3]				
Line[4]				
Line[5]				
Line[6]				
Line[7]				
Line[8]				

MarChk	Liv12W	HRPIId	Estimate

Hard Error

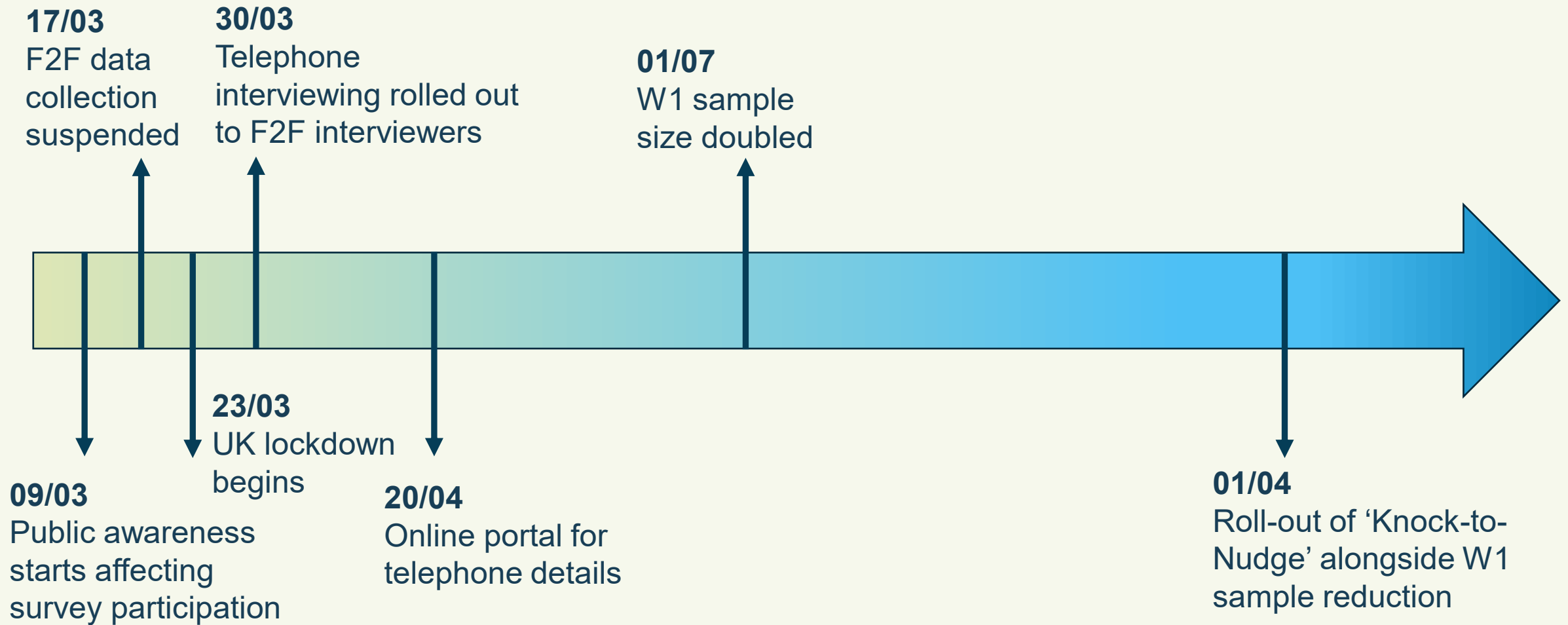
Age does not match date of birth

Questions involved	Value
QHIdInfo.QResident.Line[1].Age	30
QHIdInfo.QResident.Line[1].DteOfBth	01/01/1990

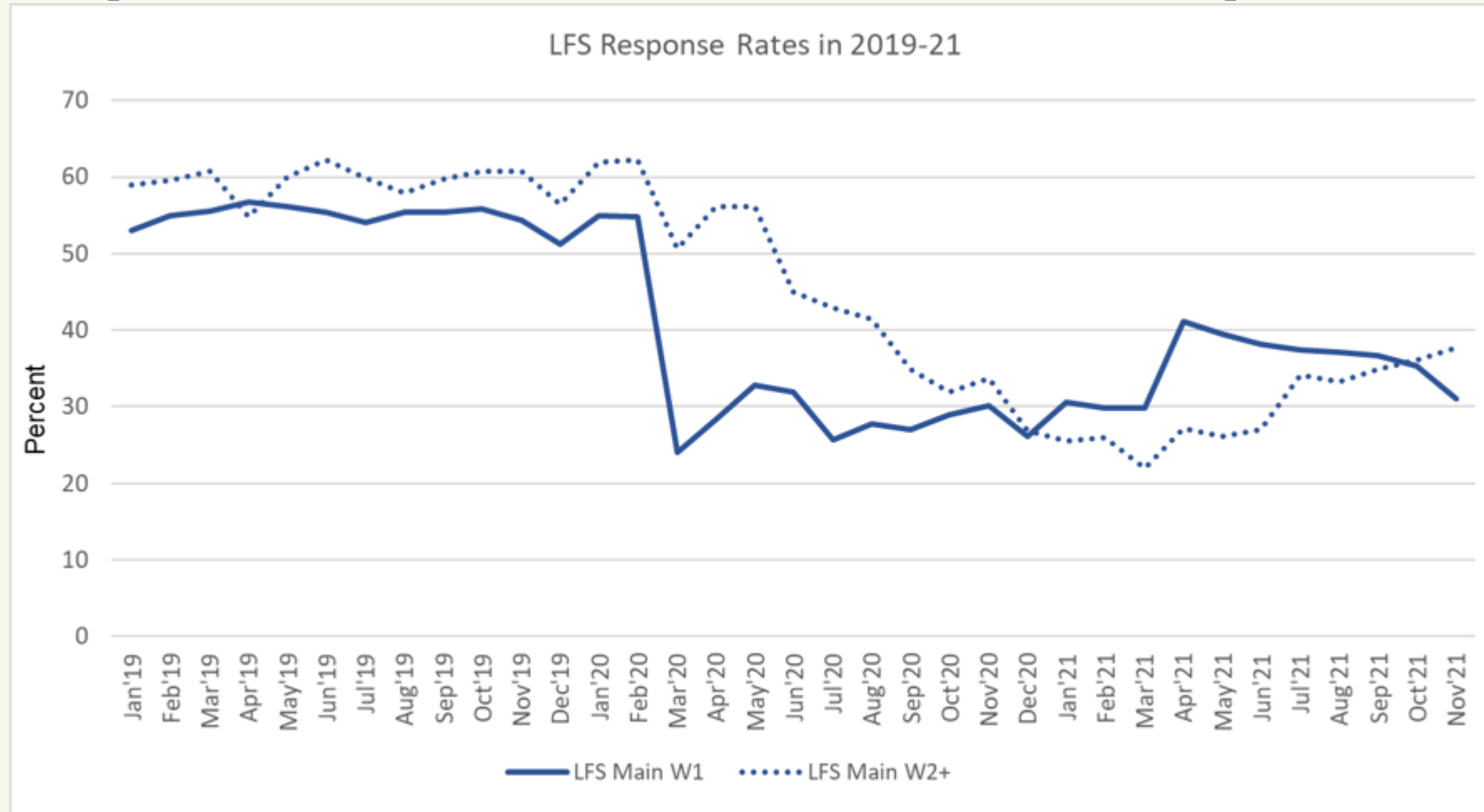
Suppress Close Goto

# Changes to the LFS/APS since the start of the pandemic

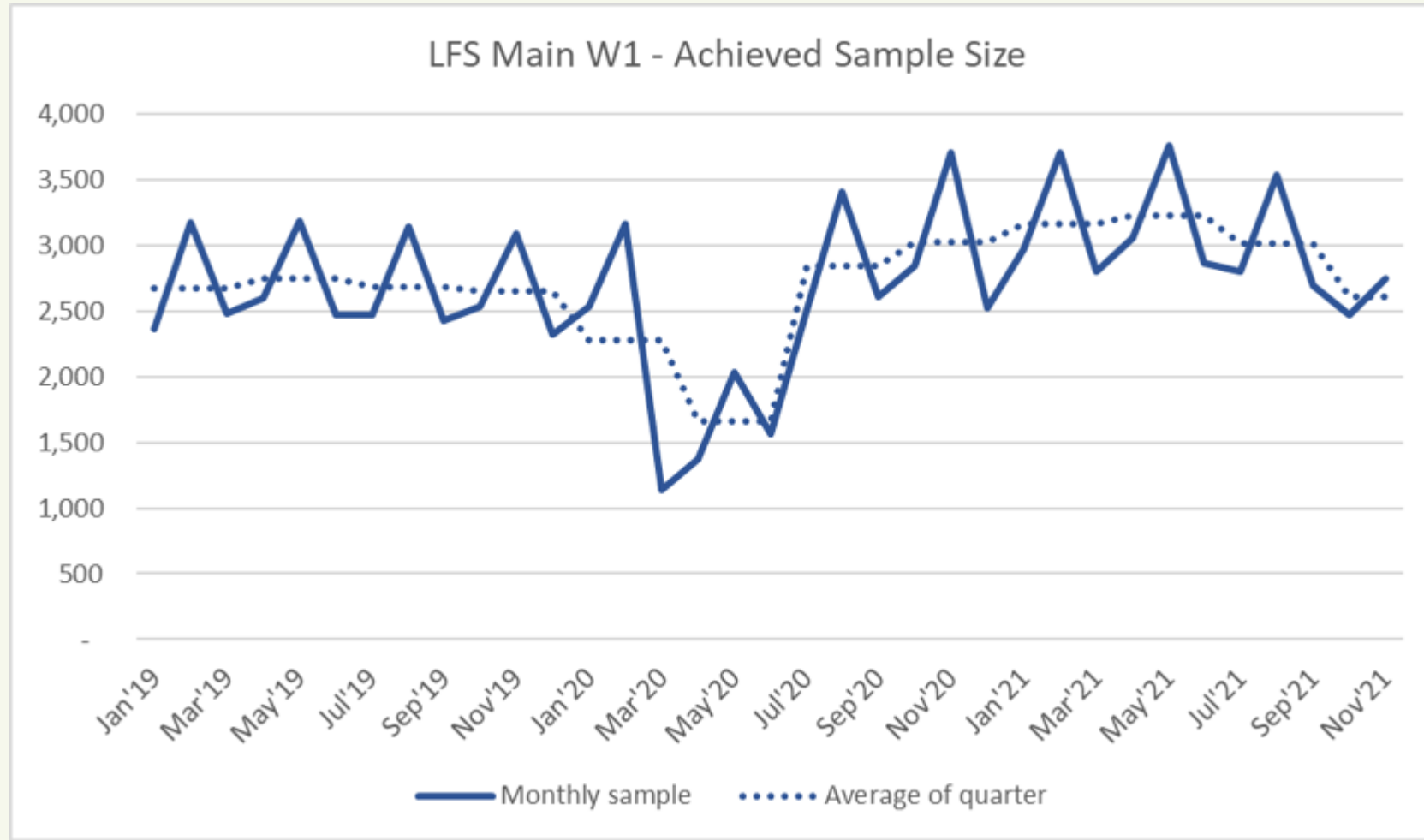
# Timeline of events



# Impact of COVID-19 on LFS Response Rates



# Impact of COVID-19 on LFS achieved sample size



# Impact of COVID-19 on profile of LFS W1 sample (1)

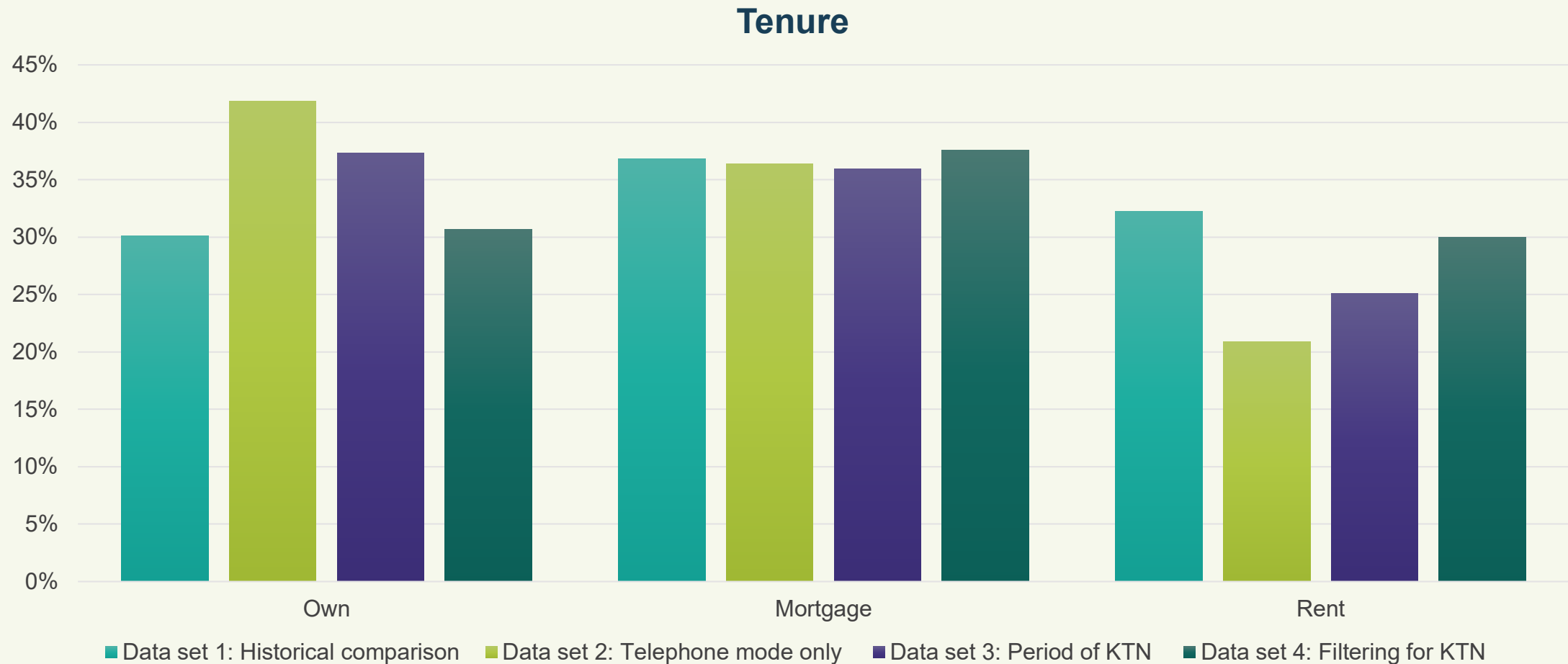
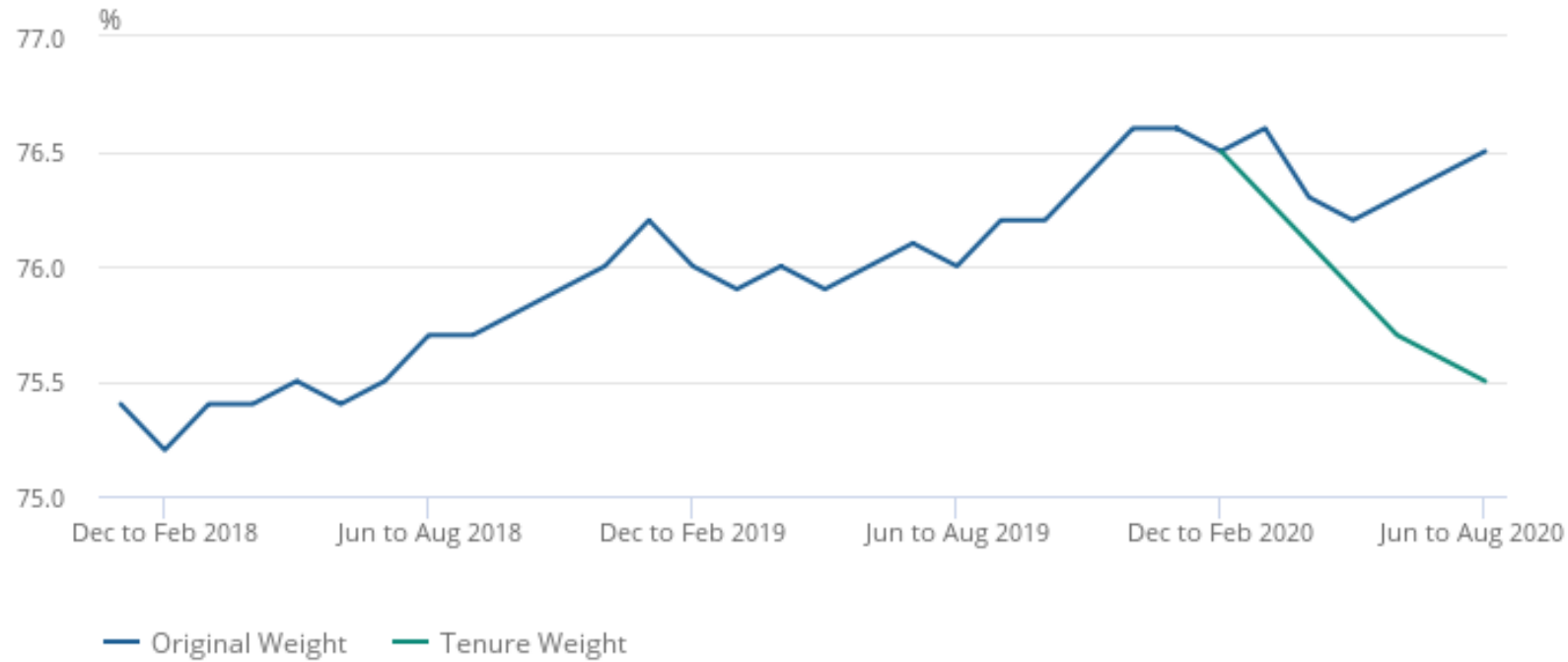


Figure 1: In June to August 2020, the adjusted employment rate was 1.0 percentage points lower than under usual weights

UK employment rates (aged 16 to 64 years), not seasonally adjusted, between November to January 2018 and June to August 2020



Source: Office for National Statistics – Labour Force Survey

Figure 2: In June to August 2020, the adjusted unemployment rate was 0.2 percentage points higher than under usual weights

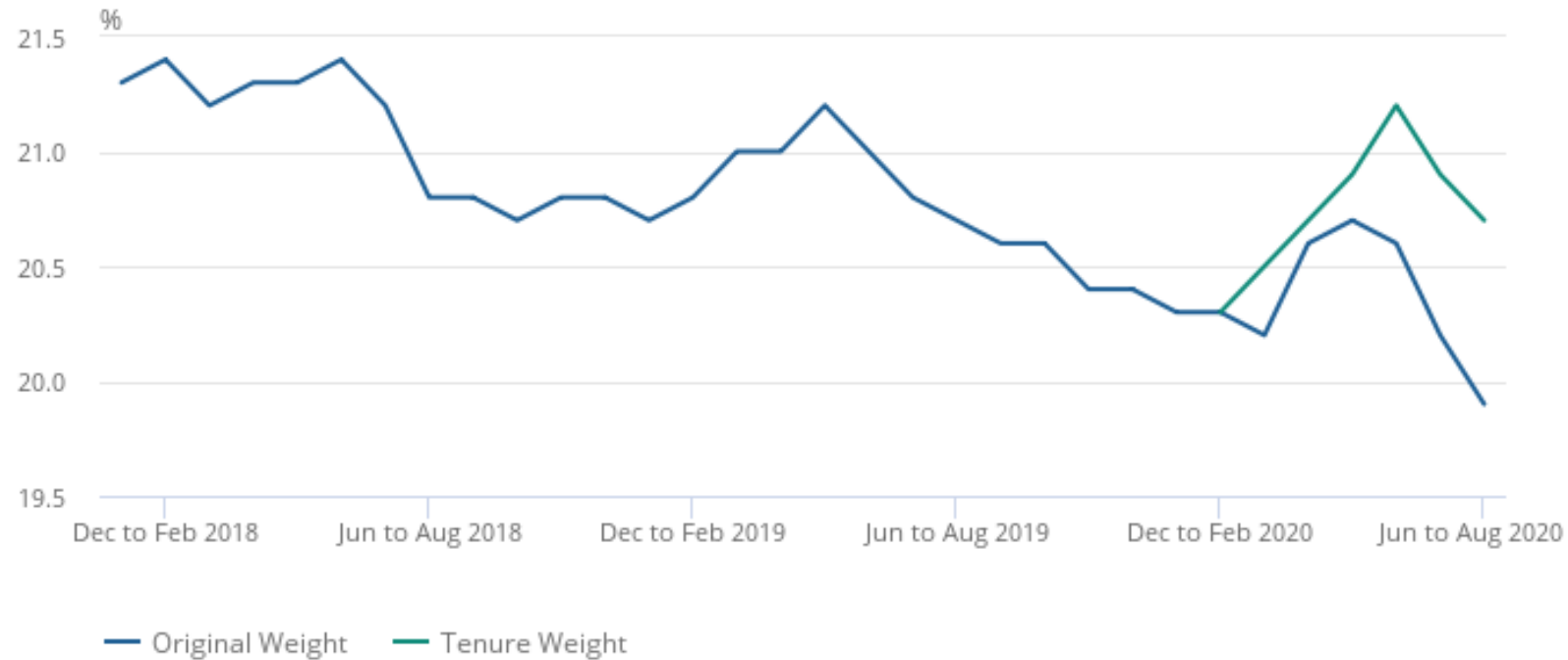
UK unemployment rates (aged 16 years and over), not seasonally adjusted, between November to January 2018 and June to August 2020



Source: Office for National Statistics – Labour Force Survey

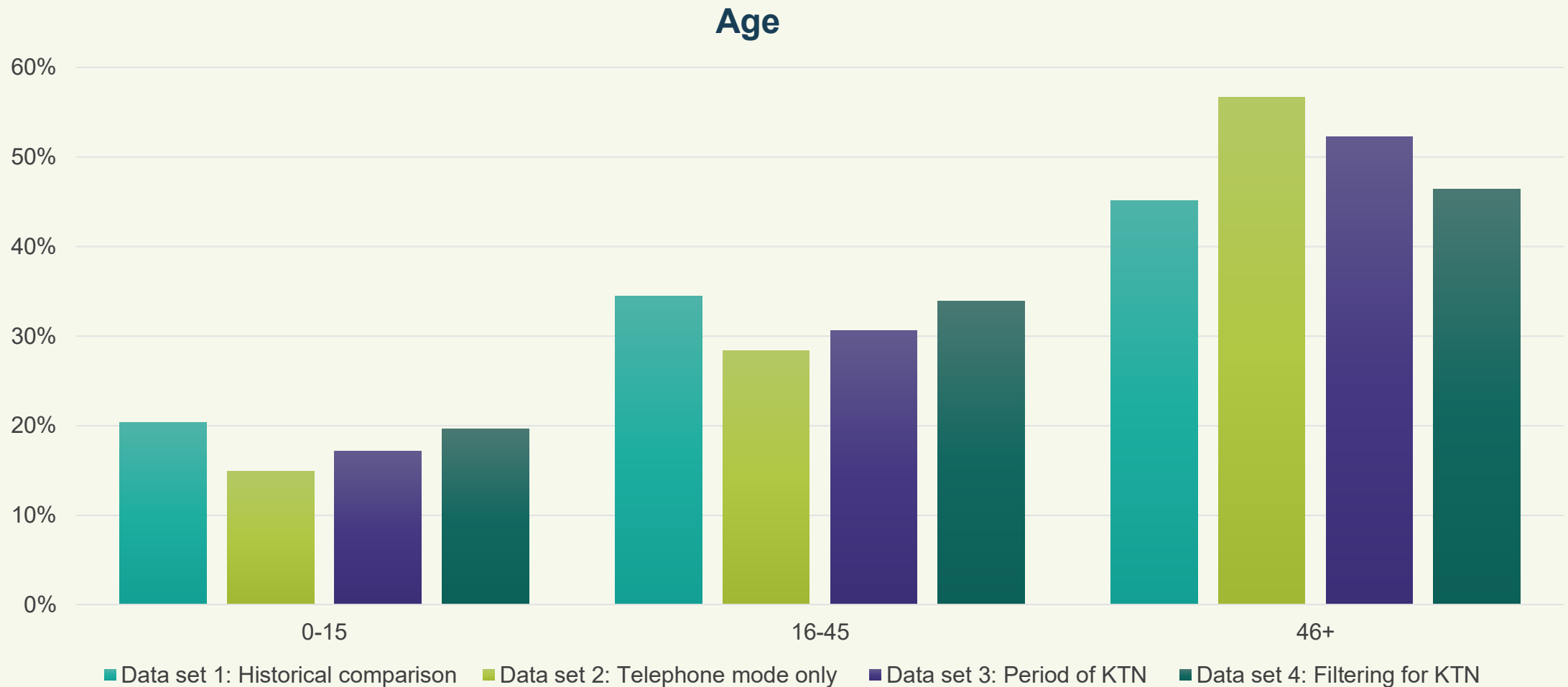
**Figure 3: In June to August 2020, the adjusted economic inactivity rate was 0.8 percentage points higher than under usual weights**

UK economic inactivity rate (all people aged 16 to 64 years), not seasonally adjusted, between November to January 2018 and June to August 2020



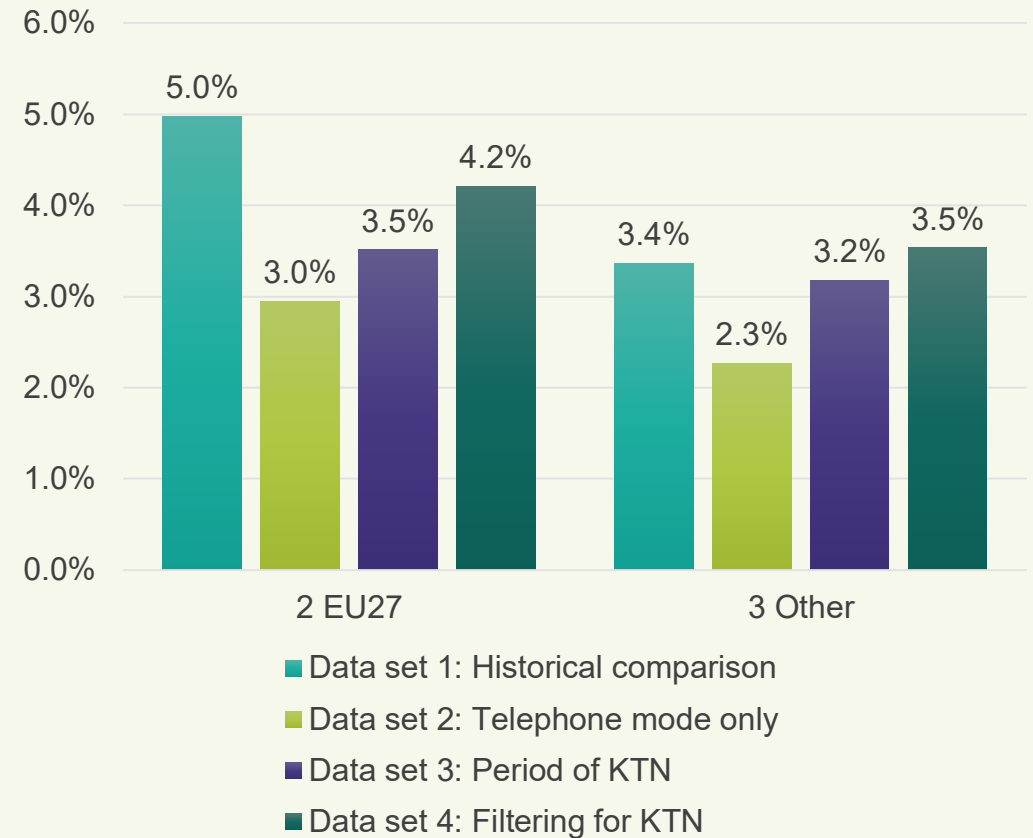
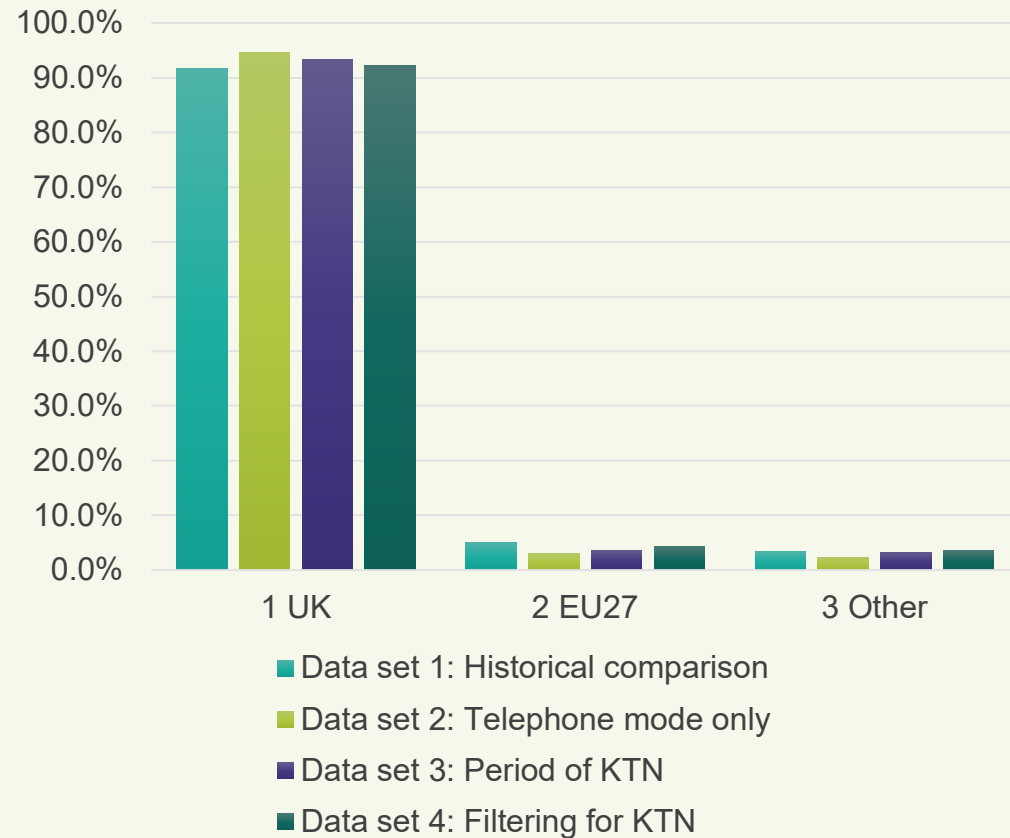
**Source: Office for National Statistics – Labour Force Survey**

# Impact of COVID-19 on profile of LFS W1 sample (2)



# Impact of COVID-19 on profile of LFS W1 sample (5)

## Nationality



# Using RTI data to estimate EU and non-EU born subpopulations?

- We want to estimate year-on-year population growth in each rolling quarter in 2020 onwards
- Very few observations from RTI are available to fit a statistical model
- Use simple assumptions to derive an expression of change in population growth rates in terms of change in RTI-based employee growth rates
  - Oct-Dec 2019 (OD19) is the base period: Population growth is known
- Assumptions
  - Change in the population growth rate of the non-UK sub-populations is in the same direction as the change in their RTI employee growth rate
  - The magnitude of change in population growth rate does not exceed that of change in RTI employee growth rate

# Impact on the population size by country of birth

LFS year-on-year change in population levels by country of birth – Figures in 1000s

Period	Labour Force Survey			RTI-based method		
	UK	Non-UK	All	UK	Non-UK	All
January - March 2020	575	-192	383	96	302	398
April - June 2020	773	-394	379	34	265	299
July - September 2020	1,253	-880	373	16	214	230
October - December 2020	1,569	-1,203	366	-2	112	110

# Questionnaire up-dates

- **Sickness absence**
- Reasons respondent was **away from work** or **worked fewer hours** in the reference week
- Reasons respondent **worked more hours than usual** in the reference week
- Reasons why the respondent was **paid less than usual**
- **State benefits** (furlough, SEISS)
- **Home/flexible working**

# Survey changes since AJ20 as a response to COVID-19

- Collection of email address for each household (Main W1-4, Boost W1-3) to allow respondents to be contacted via email in case the postal system is disrupted.
- Telephone interviews for entire sample – phone numbers obtained through
  - Tele-matching entire W1 sample
  - Online portal to collect telephone numbers of respondents
  - Introduction of 'Knock-to-Nudge'
- LFS W1 sample size increase by 100% JS20-JM21, by 60% AJ2-JS21, by 50% OD21-JM22 onwards
- Adjusted weight calibration using tenure, and RTI based population growth rates to address bias in the estimates.

# Future plans

# What the future holds

- Up-date to weights planned for 2022.
  - ✓ Weight adjustment based on comparison with [RTI data](#)
  - ✓ Detailed [methods paper](#)
- Currently working on a roadmap back to in-house/F2F interviewing (large-scale trial planned in spring 2022 exc. LFS)
- Ongoing development of the Labour Market Survey
  - ✓ LMS together with a combination of admin data will replace the LFS
  - ✓ On-line first
  - ✓ Mixed mode data collection
  - ✓ Latest results from the 2019 mixed-mode test published on ONS website

# More information on the LMS

- [LMS Technical Report](#)
- [LMS Characteristics Report](#)
- [LMS Comparative Estimates Report](#)

# Q&A