

LFS & APS User Up-date

Martina Helme, Petya Kozhuharova, and Bob Watson
Office for National Statistics, UK

UKDS Annual LFS/APS User Conference 2022

Outline

- Brief overview of survey up-dates
- Impact on LFS response and sample bias
- Weight adjustments to reduce bias
- Future developments

Brief overview of survey updates

Continued work to address impact of pandemic

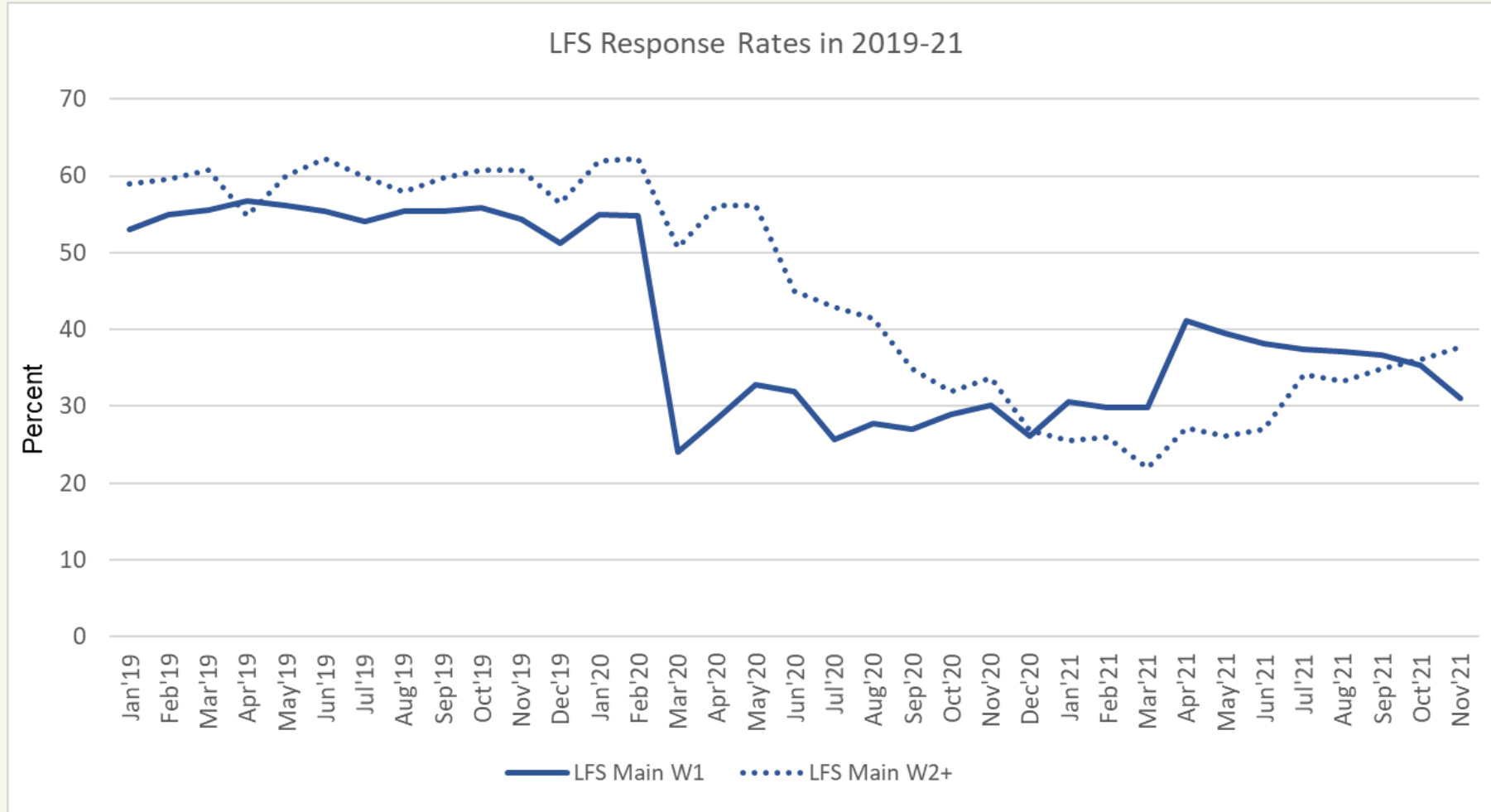
- Response rate halved by mode change in March 2020
- Top-up of LFS wave 1 sample with July 2020
- Phone contact details obtained through
 - Tele matching (6-7% of cases)
 - Online portal (9-10% of cases)
 - Knock to Nudge (55-60% of cases)
 - Other contacts (6-7%)

What is 'Knock to Nudge (KtN)'?

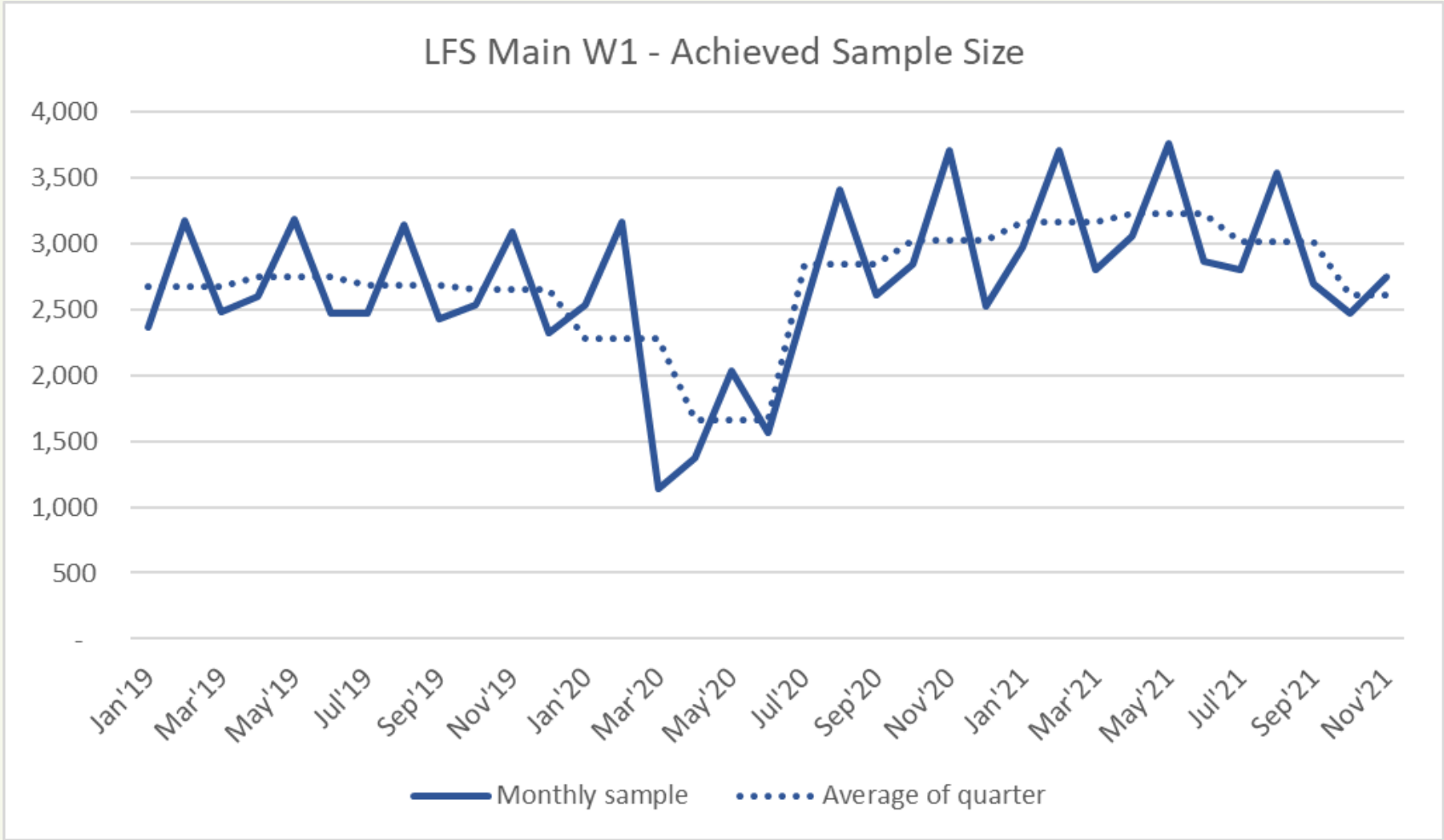
- Introduced with April 2021
- Cases without phone contact details are assigned to an F2F interviewer
- Interviewer will make 3 call attempts to obtain phone contact details at the doorstep followed by a telephone interview if successful
- KtN is currently conducted mainly on wave 1 cases, but only on wave 2-5 where phone contact details were incorrect or supplied late or where these cases are in the area of wave 1 cases.

Impact on LFS response and sample bias

Impact of COVID-19 on LFS Response Rates

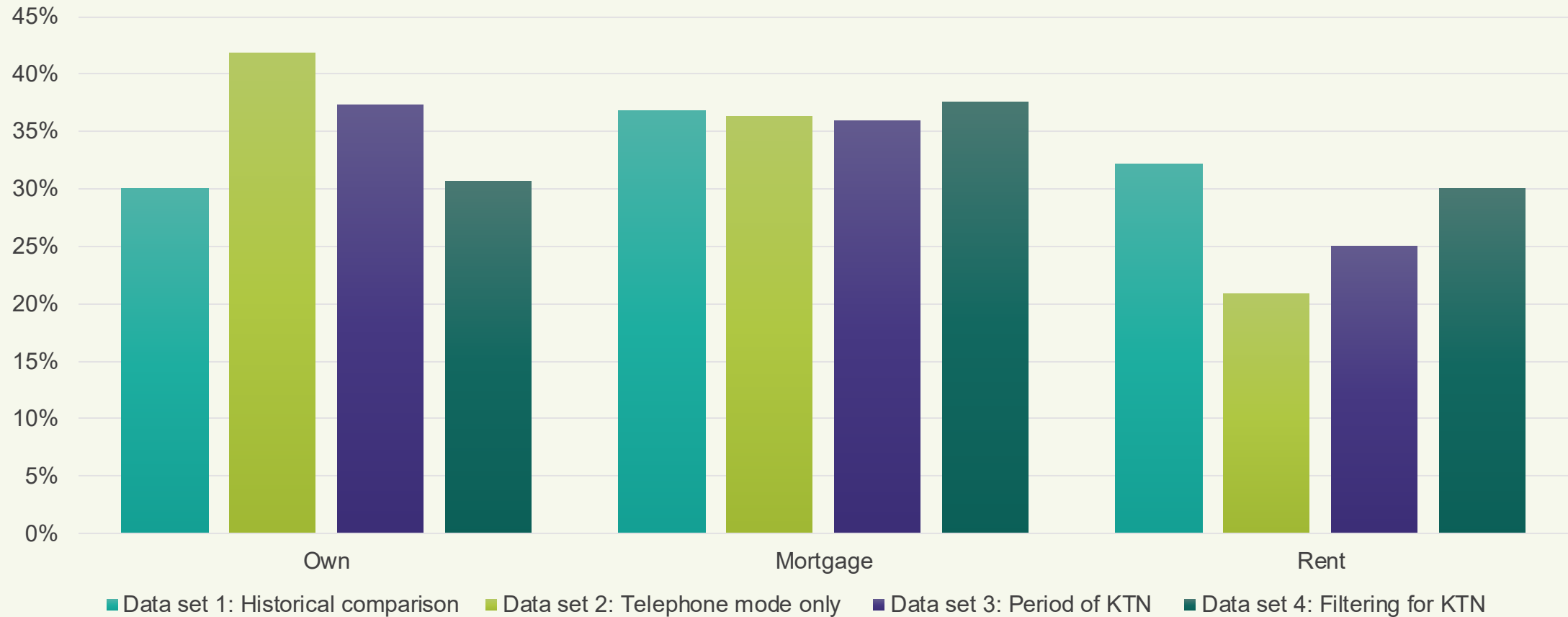


Impact of COVID-19 on LFS achieved sample size



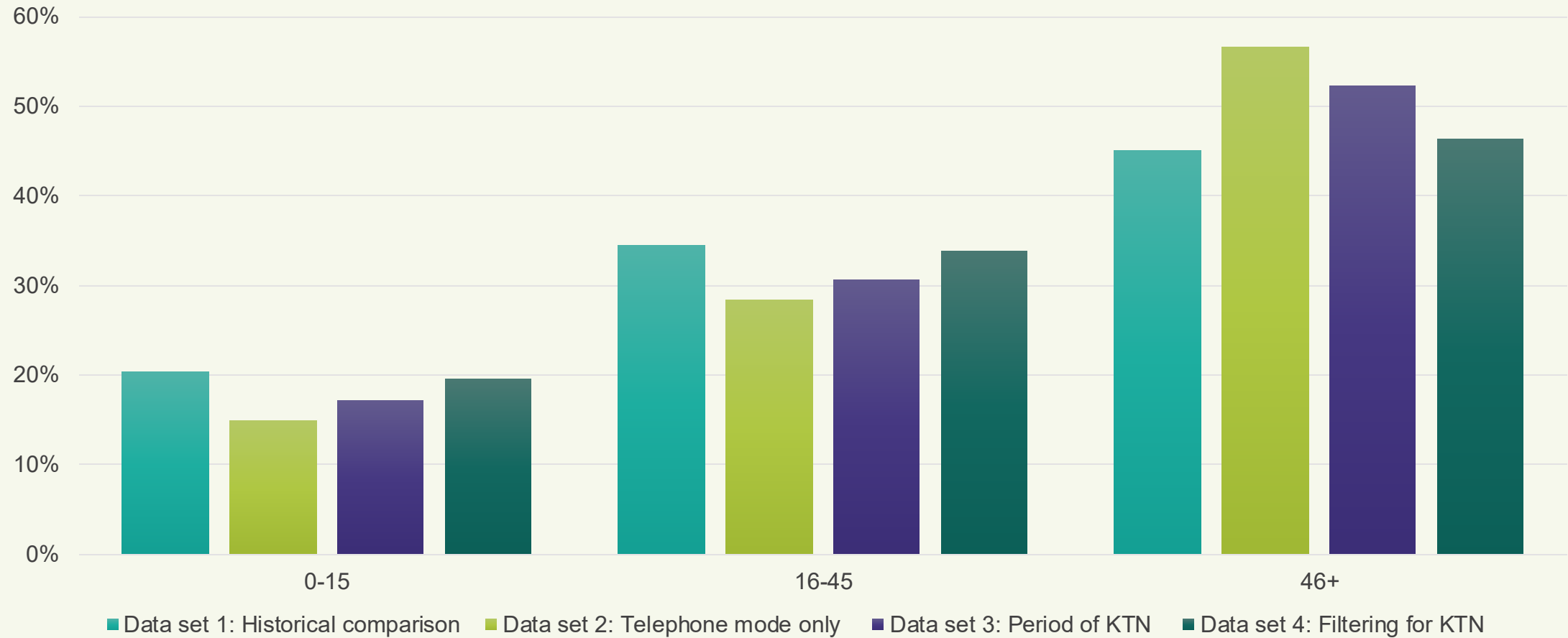
Impact of COVID-19 on profile of LFS W1 sample (1)

Tenure



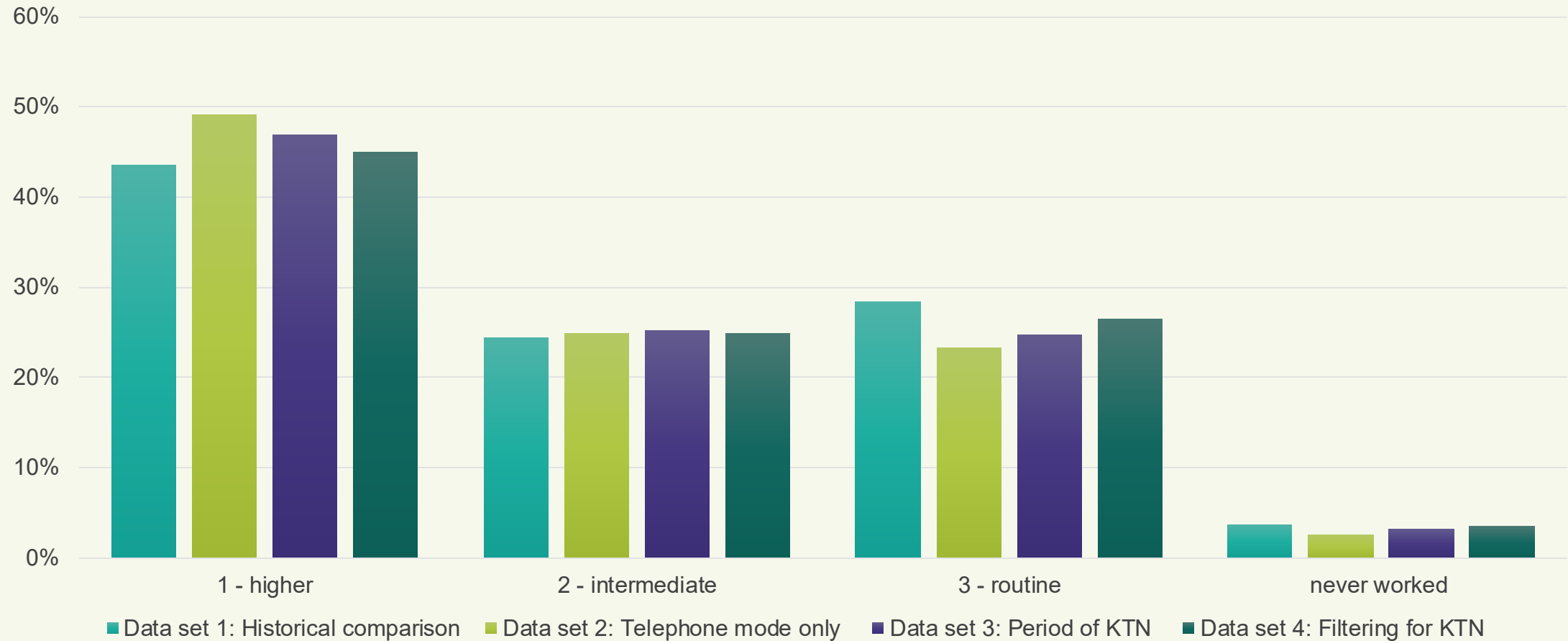
Impact of COVID-19 on profile of LFS W1 sample (2)

Age



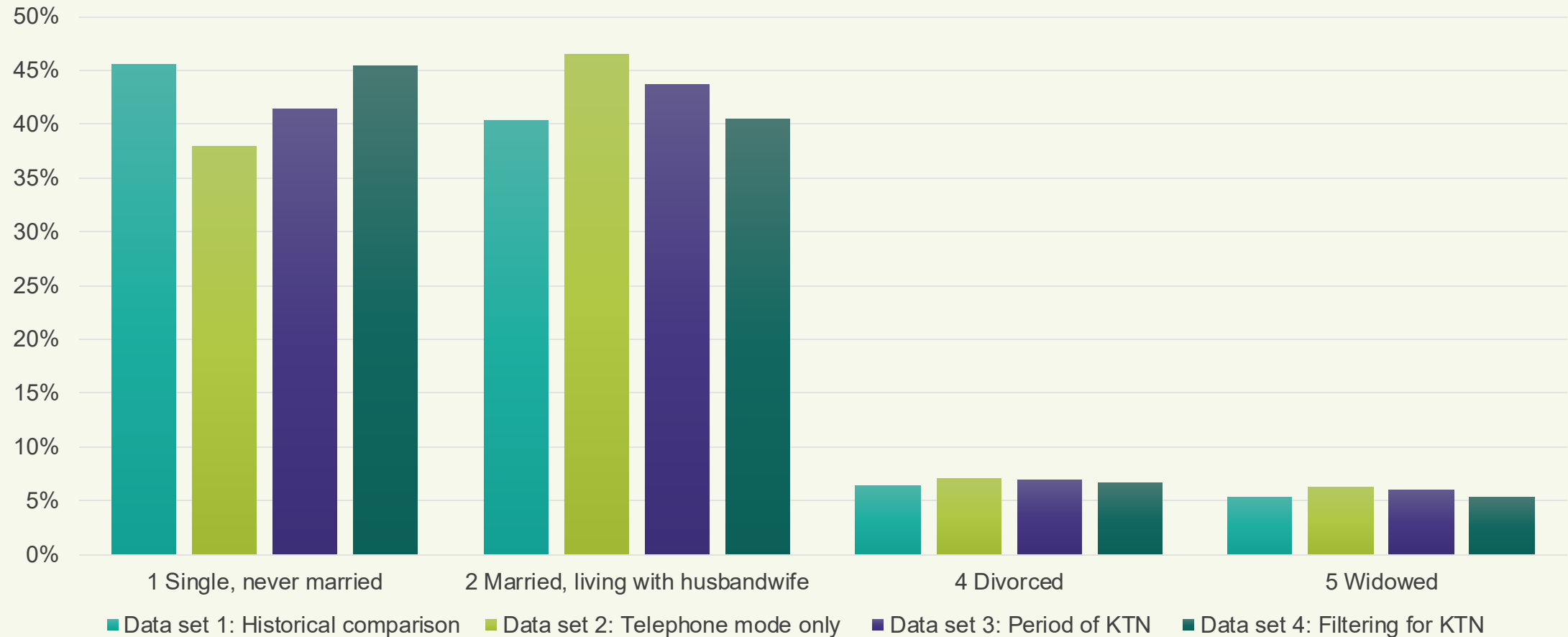
Impact of COVID-19 on profile of LFS W1 sample (3)

NSSEC (clustered)



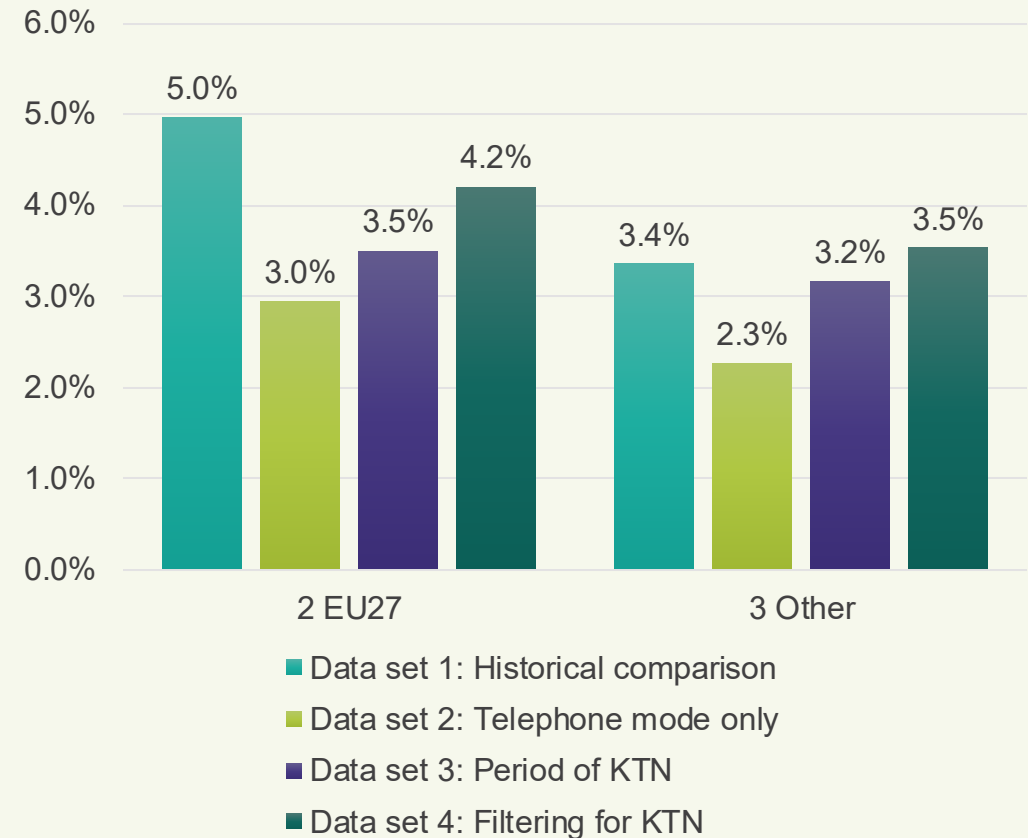
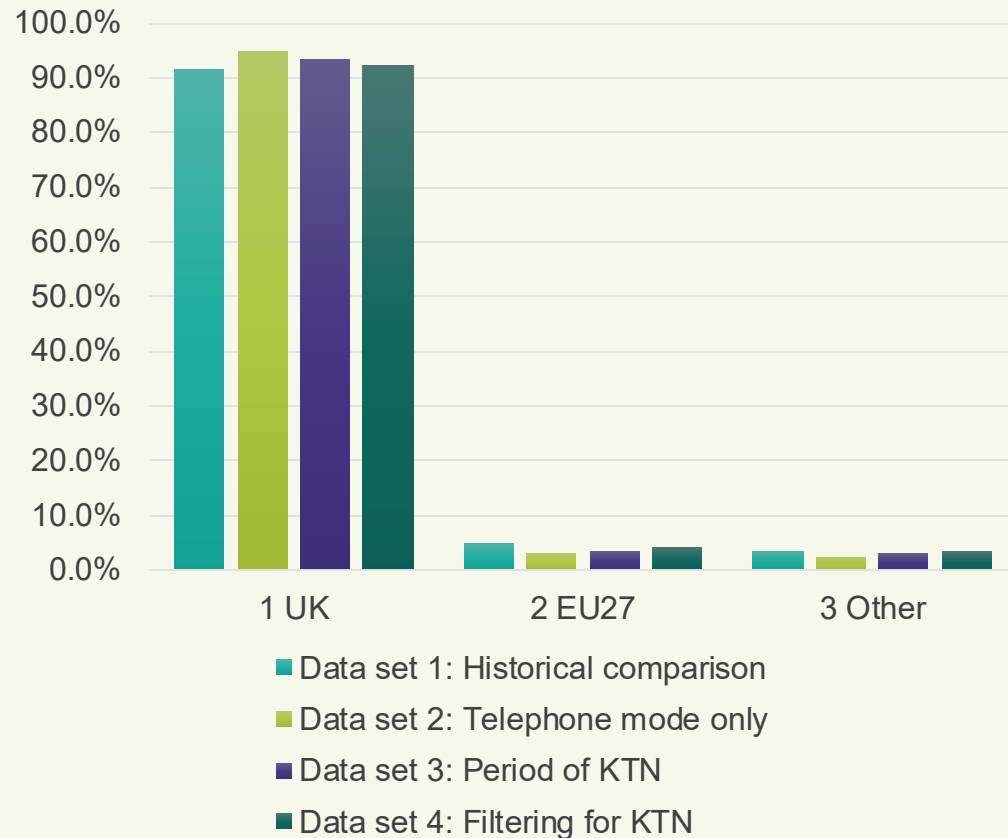
Impact of COVID-19 on profile of LFS W1 sample (4)

Marital Status



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

Nationality



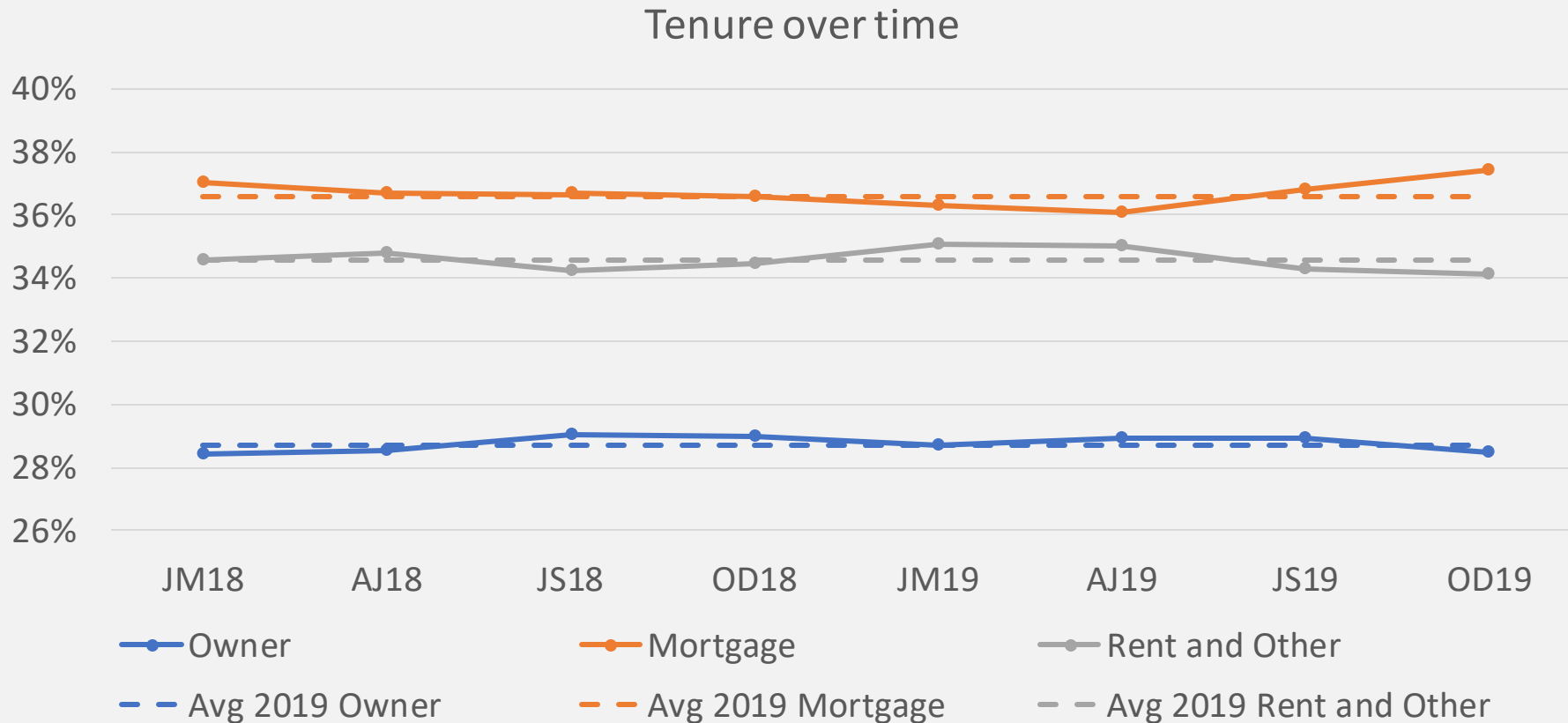
Methodology adjustments to reduce bias

Non-response adjustment

- The design weights of the households that joined after the change in data collection (from W10 of Q1 2020 onwards) were adjusted
- Probabilities of response are calculated based on GB region and aggregate level census factors IMD quintiles, OAC and Urban/Rural
 - This was only done for GB as NI postcodes were not available, during 2022 reweighting we will include NI as well

Introduction of tenure weights (JM20 onwards)

- Relatively constant (i.e. relatively predictable) thus suitable variable to be used in mitigation action in the short to medium term



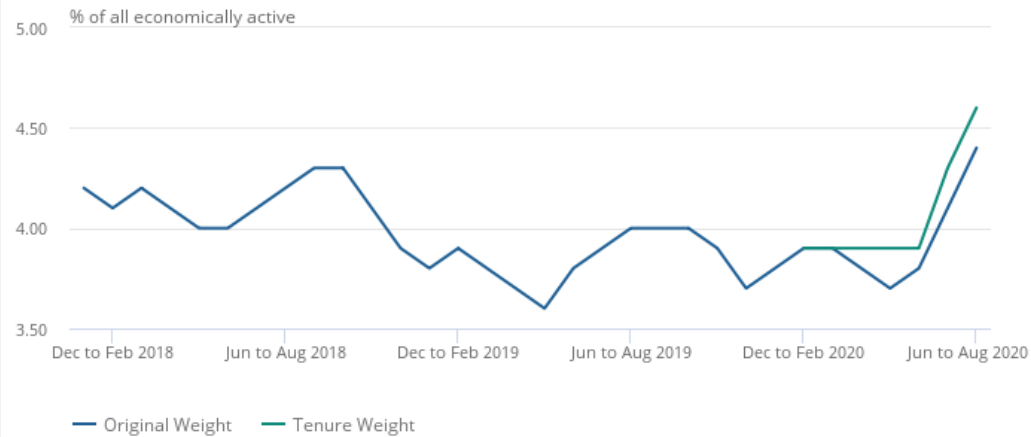
Introduction of tenure weights (JM20 onwards)

- We use the average LFS tenure across the four quarters of 2019 as a basis for weighting in addition to our prior calibration bands.
- The general effect is that those characteristics that are more present in "owned outright" housing will be reduced in the weighted estimates, while those characteristics more prevalent in "rented" housing will increase. This relates not just to personal characteristics but also employment status and type of employment.
- Because the weights come from the 2019 survey, without an external source to update them, they are not suitable for use in the long term.

Impact of tenure weights

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

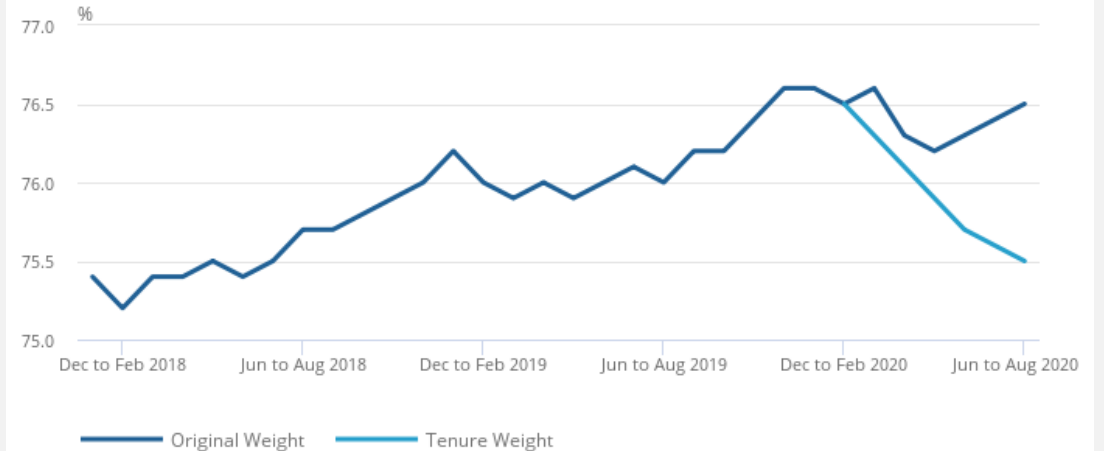
UK unemployment rates (aged 16 years and over), not seasonally adjusted, between November to January 2018 and June to August 2020



Source: Office for National Statistics – Labour Force Survey

Figure 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

Age group	Country of birth	Jan-Mar 19 - Apr-Jun 19	Jan-Mar 20 - Apr-Jun 20	Difference
18-24	UK	49.7	47.6	-2.1
	Non-UK	56.7	65.6	8.9
18-24 excluding students	UK	51.0	46.7	-4.3
	Non-UK	57.0	65.5	8.5
25-74	UK	30.4	27.4	-3.0
	Non-UK	41.0	41.6	0.6
25-44	UK	42.5	38.4	-4.1
	Non-UK	45.8	45.8	0.0
45-74	UK	24.6	22.0	-2.6
	Non-UK	34.8	36.8	2.0
Under 75	UK	34.4	31.0	-3.2
	Non-UK	41.6	43.3	1.7

Further investigations

- Attrition rates decreased in UK born after pandemic but increased in non-UK born in all age groups
- EU born dropped out more out of sample than non-EU born

**estimates of
strative source)**

Period	RTI data		LFS data	
	Year-on-year percentage change in total employees		Year-on-year percentage change in total employment	
	EU	Non-EU	EU	Non-EU
Oct-Dec 2018 to Oct-Dec 2019	2.6	8.4	1.6	3.8
Mar-Jan 2019 to Mar-Jan 2020	0.5	7.1	-0.6	4.0
Apr-Jun 2019 to Apr-Jun 2020	-2.7	4.3	-9.1	1.7
Jul-Sep 2019 to Jul-Sep 2020	-4.6	2.4	-16.2	-4.8

sufficiently

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

Method

- Let $\theta_{RTI,JS20,EU}$ denote the RTI employee total growth rate of the EU born population between JS20 and JS19
- Adjust RTI year-on-year percentage changes in non-UK subpopulations by differencing UK nationals' rates

$$\theta_{RTI,JS20,EU,adj} = \theta_{RTI,JS20,EU} - \theta_{RTI,JS20,UK}$$

$$\theta_{RTI,JS20,non-EU,adj} = \theta_{RTI,JS20,non-EU} - \theta_{RTI,JS20,UK}$$

- Let $\gamma_{OD19,EU}$ denote the population growth rate of the EU born population between OD18 and OD19
- Population growth rate for EU born since pandemic, $\gamma_{JS20,EU,adj}$ for JS20 quarter, satisfies

$$\gamma_{JS20,EU,adj} - \gamma_{OD19,EU} \cong b(\theta_{RTI,JS20,EU,adj} - \theta_{RTI,OD19,EU,adj})$$

Where $0 < b \leq 1$

- b is set to $\frac{1}{2}$ to minimise mean prediction error

Evaluation and impact on estimates

Period	LTIM(000s)		RTI-based estimates (000s)	
	EU	Non - EU	EU	Non - EU
OD16	133	179	170	156
OD17	99	199	92	174
OD18	75	205	59	198
OD19	50	282	56	329

Period	LFS (000s)			RTI – based estimates (000s)		
	UK	Non - UK	All	UK	Non - UK	All
JM20	575	-192	383	96	302	398
AJ20	773	-394	379	34	265	299
JS20	1253	-880	373	16	214	230
OD20	1569	-1203	366	-2	112	110

Future developments

Future developments

- Face-2-face trials on ONS social surveys – further consideration on roll-out to LFS
- Up-date of reweighting over the course of 2022 using latest RTI data
- As further sources for estimates of the population become available (e.g. Census 2021), performance of LFS reweighting model will be assessed and further reweighting may take place if needed

Thank you

ONS LFS Survey Research contact:

Martina.Helme@ons.gov.uk

ONS Methodology contact:

Petya.Kozhuharova@ons.gov.uk

ONS Labour Market contact:

Bob.Watson@ons.gov.uk