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COVID-19 and Mode Selection Effects in *Understanding Society*

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Understanding Society

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Non-technical summary

The COVID-19 pandemic, and associated lockdown, meant that face-to-face interviewing had to be suspended on *Understanding Society: The UK Household Longitudinal Study* in March 2020. We were fortunate that the study already employed a mixed-mode design, with CAPI, CATI, and web versions of the questionnaire already being used. When face-to-face interviewing was suspended, all adult sample members were invited to complete their annual interview online. Those who did not complete online were issued to interviewers, who then tried to make contact and conduct the interview by telephone. However, we do not have up to date telephone numbers for all of the sample members, and some sample members were unwilling to complete either online or by telephone. Conversely, some of those who had not participated in the survey recently may have been more willing to take part. These changes to the survey context and modes have the potential to affect the representativeness of those sample members who did participate. In this analysis of the April to December sample, comparing their participation in 2020 with that in 2019, we find that around three-quarters of those who had completed in CAPI in 2019 took part in 2020 using a different mode. Around one-quarter of those who had not responded in 2019 did respond in 2020. Overall, the response rate for the 2020 sample was just 1.5 percentage points lower than the response in 2019. This differs between the sample types, with smaller differences in the 2019 samples that were web-first and ring-fenced, but larger in the group that had been in the CAPI-first low web propensity sample. This is a recurring finding – response in 2020 was lower among those in the low web propensity sample. We find that response in 2020 was particularly lower for those in the higher age groups, those who live alone, and those with lower levels of education. An analysis of the unweighted sample composition indicates that there are significant differences in the responding sample in 2020, but that these differences are relatively small in magnitude, under 2 percentage points. However, researchers should be aware of the potential for these differences to affect analyses and so use the correct weights or control for factors that may affect response in their models.

COVID-19 and mode selection effects in *Understanding Society*

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Abstract: The COVID-19 pandemic meant that face-to-face interviewing had to be suspended on *Understanding Society*: The UK Household Longitudinal Study in March 2020. When face-to-face interviewing was suspended, all adult sample members were invited to complete their annual interview online, with a telephone follow-up for non-responders. The changes to the survey context and modes have the potential to affect the representativeness of respondents. Overall, the response rate for the 2020 sample was just 1.5 percentage points lower than the response in 2019, however this differs by sample characteristics. There are small but significant differences in the responding sample in 2020.

Keywords: COVID-19, mixed mode, selection effects.

JEL classification: C81, C83

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Data Citation: Wave 11 data are available from the UK Data Archive: University of Essex, Institute for Social and Economic Research. (2021). Understanding Society: Waves 1-11, 2009-2020 and Harmonised BHPS: Waves 1-18, 1991-2009. [data collection]. 14th Edition. UK Data Service. SN: 6614, DOI: 10.5255/UKDA-SN-6614-15. Wave 12 data will be available as part of the *Understanding Society* calendar year 2020 release (forthcoming).

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1. Introduction

In March 2020, the spread of the COVID-19 caused the enforcement of a general lockdown and the suspension of multiple activities, including face-to-face interviewing. This affected the continuous fieldwork of *Understanding Society* and a substantive part of the fieldwork design. Prior to the lockdown, adults in the majority of households (around 70% in early 2020) were invited to complete online, with those who had not completed within the first five weeks allocated to an interviewer for a face-to-face interview using a CAPI script. Adults in the remaining 30% of households had been issued directly to interviewers. Towards the end of each fieldwork period, interviewers then attempted to contact and interview nonrespondents by telephone, using a CATI script. An important consequence of the suspension of face-to-face interviewing was that participants who would have received a visit from an interviewer had to be moved to the web or CATI modes. In the adapted design, adults in all households were initially invited to complete the online version of the questionnaire, and after five weeks, the nonrespondents were issued to interviewers for a telephone interview. This sudden switch of modes could have affected respondents' behaviour and, therefore, the survey estimates. This report addresses the magnitude and effects of the CAPI fieldwork suspension on the response rates and sample composition.

Before the fieldwork suspension in March 2020, *Understanding Society* was a sequential mixed-mode survey with three fieldwork protocols: 1) a CAPI-first subsample of a 20% random selection of households that had been issued to CAPI-only or CAPI-first since the start of the survey ("ring-fenced"); 2) a CAPI-first subsample comprising the 10% of the households with the lowest predicted web response propensities ("low propensity"); and 3) the web-first subsample that included adults in the remaining 70% of the households who were invited to complete the questionnaire online, and the nonrespondents issued face-to-face ("web-first"). The suspension of the face-to-face fieldwork meant that a group of sample members were invited to participate online for the first time – the two CAPI-first subsamples – while many others had to change the interview mode from the previous year, from CAPI respondents to the web or CATI respondents. Although the changes in the fieldwork strategy have been documented (Burton et al., 2020), this working paper is the first evaluation of the effects of switching modes.

This working paper addresses three research objectives: 1) we assess the volume of sample members that switched modes from 2019; 2) we analyse the response rates for the overall sample and some relevant subgroups before and after the CAPI fieldwork suspension; 3) we analyse the change in sample profile comparing respondents from 2019 and 2020. To answer these questions, we compare the sample issued between April and December 2020 (waves 11 and 12), after the mode changes were implemented, and the same sample issued the previous year (2019, waves 10 and 11).

This working paper has four sections. First, we present a literature review about the changes in survey modes because of the COVID-19 pandemic and the possible effects of a mode switch. The second section covers the research design and the methods of the analysis. The third section outlines the results of the analysis. Finally, the fourth section presents the conclusions of the analysis.

2. Background

The outbreak of the COVID-19 pandemic in the early 2020s brought significant changes to many aspects of social and economic life. These changes also affected different aspects of survey research, especially face-to-face data collection (Nind et al., 2020). Between March and May 2020, social surveys were forced to adapt their design to the pandemic context and the possibility that the COVID-19 situation would spread in time. The adaptation to the COVID-19 pandemic included changes in data collection modes and in the content of the questionnaires, to maintain the flow of high-quality information that allows a better understanding of the pandemic and its social and economic consequences.

Adapting survey modes to the COVID-19 pandemic

The most important effect of COVID-19 on survey research was the suspension of face-to-face data collection, which affected some studies during the fieldwork, such as *Understanding Society*. Research teams were faced with postponing data collection or implementing the necessary changes to continue fieldwork. The latter option was chosen in most cases, replacing home visits with CATI interviews or self-administered modes. For instance, the suspension of the face-to-face interviewing coincided with the fieldwork of two side surveys of the Panel Survey of Income Dynamics (PSID) in the United States: the Child Development Supplement (CDS) and the Transition into

Adulthood Supplement (TAS) surveys (Sastry et al., 2020). The original CDS-19 design included data collection using telephone and face-to-face interviewing. While telephone data collection continued with little interruption after the COVID-19 outbreak, all study elements that required interviewer visits were replaced by telephone interviews and postal delivery protocols (e.g. diaries). In the case of TAS-19, although the role of face-to-face interviewing was much smaller than in CDS-19, the suspension of fieldwork affected, above all, those panel participants for whom fewer contact details were available.

The Survey of Health, Ageing and Retirement in Europe (SHARE), a cross-country longitudinal study of the population aged 50 and over, was in the middle of wave 8 fieldwork in March 2020. The target population of this study was vital in deciding to switch to the telephone survey versus a self-administered mode (Scherpenzeel et al., 2020). The German Family Panel (pairfam), a longitudinal survey composed of a sample of four cohorts (1971-1973, 1981-1983, 1991-1993 and 2001-2003), was in the midst of wave 12 data collection when the COVID-19 spread. Following the face-to-face fieldwork suspension, the research team agreed to complete the wave 12 fieldwork using telephone interviews and a self-administered paper questionnaire for the most sensitive questions (Gummer et al., 2020).

The longitudinal study Refugees in the German Educational System (ReGES), whose target population is refugees recruited before starting elementary school and adolescents aged 14-16 in secondary education, replaced face-to-face fieldwork in wave 7 – scheduled from February to May 2020 – with a telephone survey (Will et al., 2020). Also, in Germany, the Establishment Panel, a longitudinal survey that collects information from 16,000 businesses with a sequential mixed-mode design that combines web/mail and face-to-face, replaced CAPI interviews with CATI. In the case of the Labour Market and Social Security Survey, an annual longitudinal survey with a mixed CATI and CAPI design, the face-to-face phase of the fieldwork was suppressed (Sakshaug et al., 2020). The cohort study Growing Up in Ireland (GUI) also altered the plans for the 13-year sweep, scheduled for the second half of 2020, when the Irish government enforced restrictions that limited face-to-face interviewing. This face-to-face survey switched to a telephone and web mixed-mode design, although they could not adapt the cognitive testing and the collection of physical measurements to the new design (McNamara et al., 2021).

Understanding Society and COVID-19

Understanding Society: the United Kingdom Household Longitudinal Study (UKHLS), is a household panel representative of the UK population that began in 2009. At that time, the panel consisted of approximately 40,000 households and 100,000 individuals. The participants in the panel come from samples selected at different times between 1991 and 2014. First, the main UKHLS sample, the General Population Sample, is representative of the United Kingdom and was selected in 2009. Second, the former British Household Panel Survey (BHPS) sample joined *Understanding Society* at wave 2. In addition, to study some ethnic minority groups in the UK, *Understanding Society* includes an Ethnic Minority Boost (EMB) sample, selected at wave 1, and an Immigrant and Ethnic Minority Boost (IEMB) sample added at wave 6.

Understanding Society samples were selected using probability methods. The General Population Sample is representative of the UK and was selected using different sample designs in Great Britain and Northern Ireland. In Great Britain, postal sectors (clusters) stratified by region, social class, population density, and ethnic minority density were selected first and then a number of postal addresses selected in each sector. In Northern Ireland, addresses were selected directly from the Land and Property Services Agency list without clustering (Lynn, 2009). The BHPS sample consists of 8,000 households that were still active in 2009 when *Understanding Society* started. These households were from the original BHPS sample (1991) or the Scotland, Wales (2000) or Northern Ireland (2001) boost samples. The Ethnic Minority Boost (EMB) and the Immigrant and Ethnic Minority Boost (IEMB) households were selected from a set of postal sectors with an above-average proportion of these groups based on the 2001 and 2011 censuses, respectively (Berthoud et al., 2009; Lynn et al., 2018).

Understanding Society sample members are invited to take part annually. The fieldwork of each wave of the study takes place over two years. Therefore, there is a one year overlap between the fieldwork of each two consecutive waves. The sample for each wave of the study is divided into 24 monthly samples, and the fieldwork to complete each takes over five months (Buck & McFall, 2012). *Understanding Society* began as a CAPI survey with limited use of telephone interviewing to complete a few outstanding interviews at the end of the fieldwork period. This design remained unchanged for the first 6 waves. From wave 7 onwards, an increasing proportion of households have been invited to complete the survey online, reaching 70% of the sample at wave 10

(Carpenter & Burton, 2017). Although the extent of face-to-face interviews to collect data declined from wave 7 onwards, the role of this mode remained important.

Before the COVID-19 pandemic, households were allocated to three fieldwork protocols. First, the "ring-fenced" protocol covers a random sample of 20% of households selected to maintain the original CAPI-only design. Second, the 10% of households predicted to be least likely to respond to a web survey ("low web propensity" protocol) are issued to CAPI-first to avoid sample selection and preserve data quality. The third protocol, "web-first", comprises the remaining 70% of the sample invited to participate in a sequential – web and CAPI – mixed-mode design. In the web-first protocol, sample members are invited to a web interview and nonrespondents after five weeks are issued to CAPI. In all three field protocols, the role of the face-to-face interview is fundamental, either because it is the primary mode – ring-fenced and low propensity – or because of its role in increasing the response rate in the sequential mixed-mode design – web-first.

At the moment of the face-to-face fieldwork suspension due to COVID-19, samples corresponding to wave 10 (year 2), wave 11 (years 1 and 2), and wave 12 (year 1) were in the field (Figure 1). Specifically, the last two months of wave 10 – November and December of year 2 – were finishing the fieldwork period; months 11 to 15 of wave 11 – November and December of year 1 and from January to March of year 2 – were at different stages of the fieldwork progress; months 1 to 3 of wave 12 – January to March of year 1 – were at relatively early stages of fieldwork.

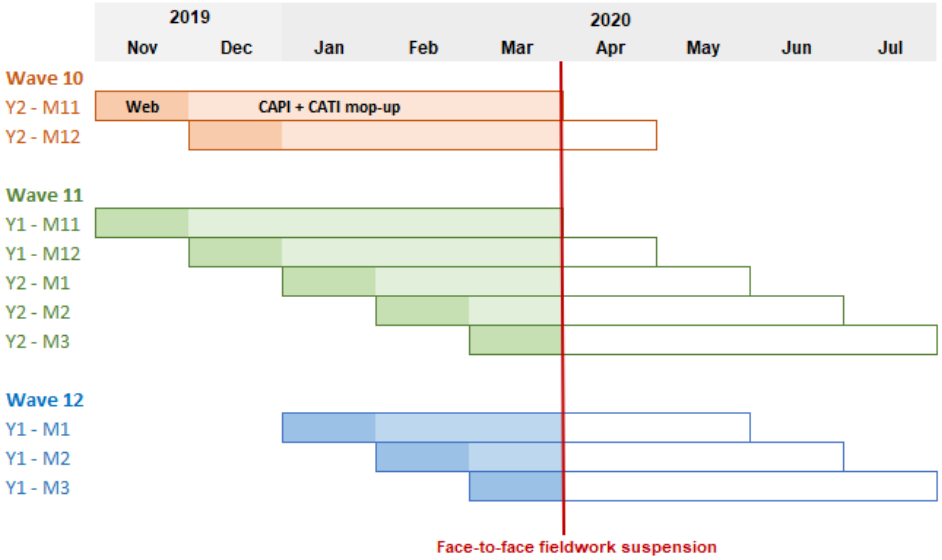

Figure 1. Monthly samples in the field at the time of face-to-face fieldwork suspension.

The mixed-mode design of *Understanding Society* was fundamental to give a prompt response to the COVID-19 pandemic and adapt the fieldwork strategy. The scripts for CAPI, CATI and web modes already existed in March 2020 for the three waves in the field. At the time of the fieldwork suspension, the *Understanding Society* team had to decide about how to continue data collection for the samples that were currently in the field, and modify the survey design to be able to continue data collection for the samples scheduled from April onwards. First, participants who had been issued but not completed their interview at the time of the suspension received a letter inviting them to complete the online questionnaire and announcing that, if they were unable to respond, an interviewer would contact them to conduct the survey by phone. Second, the sample members who were part of the April or subsequent samples were moved to a sequential mixed-mode design. In this design, participants were first invited to complete a web questionnaire, and the nonrespondents were issued to CATI (Burton et al., 2020).

Mode transitions and mode effects

The COVID-19 pandemic caused the suspension of face-to-face fieldwork affecting a significant number of surveys. This abrupt suspension of fieldwork led to changes in the survey modes design, mainly replacing CAPI data collection with CATI, web or

mail. These changes could rely on the abundant evidence and literature produced in the subfield of mixed-mode designs and mode effects in the last years (de Leeuw, 2018). Although the spread of mixed-mode designs and mode transitions have affected longitudinal and cross-sectional surveys, this review focuses on the former to contextualise the mode changes in *Understanding Society* due to the COVID-19 pandemic.

The main concern when changing survey modes is the impact on data quality, especially in panel studies, where mode transitions can affect estimates of longitudinal change (Cernat, 2015; Cernat & Sakshaug, 2021). Mode effects can affect survey estimates through selection and/or measurement. On the one hand, sample members are not equally likely to participate across modes, and some subgroups of the population might be more inclined to take part in the survey if, for example, the questionnaire is administered by an interviewer (Dillman et al., 2014). In addition, if the average response propensities of the population subgroups differ across modes, the mode effects can affect the sample composition. Some recent studies point to a difference in response propensities and survey estimates after the impact of COVID-19 and the change in survey modes (Coates & Aston, 2021; Rothbaum & Bee, 2021). On the other hand, the same respondent may answer differently to the same question depending on the mode (Burton & Jäckle, 2020; Cernat, 2015). In this working paper, we focus on the effect of mode transition on the response propensities and sample composition.

In recent years, some longitudinal studies have introduced changes in their data collection strategies to improve the balance between survey costs and data quality. Most of these design changes introduced the use of a web mode in combination with an interviewer-administered mode. The use of web data collection can help to improve response rates among some subgroups of the population that are more likely to respond to an online questionnaire while reducing costs compared to an interviewer-administered survey (de Leeuw, 2018). For example, The Canadian Labour Force Survey implemented a substantive change in the data collection strategy in 2015, introducing a web and mail mode to address participants from wave 2 onwards while using CAPI for the sample recruitment at wave 1, the primary mode in the past (Statistics Canada, 2017). Next Steps, a cohort study that follows a sample of people born in England in 1990, switched from CAPI to a web-first sequential mixed-mode

design for the age 25 sweep. The mixed-mode design combining web, telephone, and CAPI lead to a 50% response rate, although the lack of a control – CAPI-only – group prevents evaluating the effect of the transition (Brown & Calderwood, 2020).

Other longitudinal studies used an experimental design to transition from a CAPI-only to a sequential mixed-mode design to assess the impact on the response rates. The National Longitudinal Study of Adolescent to Adult Health, based on a representative sample of adolescents recruited in the United States in the 1994-95 academic year, transitioned from a face-to-face to a sequential mixed-mode design combining web or mail with a CAPI follow-up for the nonrespondents. The results of the experiments show minimal and statistically nonsignificant differences between the CAPI control group and the mixed-mode experimental group response rates (Biemer et al., 2021). The Innovation Panel of *Understanding Society* transitioned from a CAPI data collection strategy with a minor intervention of CATI to a sequential mixed-mode strategy that combines web and CAPI to reduce data collection costs while maintaining data quality (Jäckle et al., 2015). The survey experiment conducted in the Innovation Panel from wave 5 to wave 8 compared the web and CAPI sequential mixed-mode strategy with a CAPI-only control group. The results show that at the first wave of the experiment, the response rate of the mixed-mode group was slightly lower than that of the CAPI-only group (Jäckle et al., 2015); however, after three waves of the experiment, the differences had disappeared and were even slightly positive (Bianchi et al., 2017). Further research has found that the mixed-mode design produces a similar response rate to the CAPI-only protocol only if higher survey incentives are offered (Gaia, 2017). The sequential mixed-mode design was later implemented, in an experimental form, in the main study of *Understanding Society*, with minimum effects on response rates (Carpenter & Burton, 2017).

Another possible transition involves substituting the CAPI mode with CATI. This transition maintains the role of the interviewer, although the aural interaction prevents using visual elements such as showcards. Also, the degree of contact with the respondent is lower in CATI than CAPI, which affects the degree of privacy and reduces the risk of social desirability bias (Dillman et al., 2014). The role of the interviewer was the main reason argued by several research teams to transition to CATI after the suspension of the face-to-face fieldwork due to the COVID-19 pandemic (e.g. Gummer et al., 2020; Sakshaug et al., 2020; Will et al., 2020). Some longitudinal

studies have conducted experiments or transitioned from CAPI to CATI in the last years. The National Child Development Study (NCDS), a cohort study of a sample of the British population born in 1958, introduced a mode experiment in the 55 years survey where participants were allocated to CATI or a sequential mixed-mode design combining web and CATI. After the transition from CAPI at the 50 years survey, the response rate was higher than at the previous sweep, where the data collection was face-to-face. However, the lack of an experimental design does not allow to conclude that the boost in the response rate was due to the mode transition (Brown & Calderwood, 2020). In wave 2 of the Innovation Panel of *Understanding Society*, an experiment tested a sequential mixed-mode design that combined CATI and CAPI for the nonrespondents against the usual CAPI-only design. The mixed-mode design resulted in a significantly lower response rate compared to the CAPI-only design (Lynn et al., 2010). In addition, the response propensities were significantly lower for older respondents, unemployed or those without a mobile phone (Lynn, 2011), although the sample composition was similar between the mixed-mode and CAPI-only groups (Lynn, 2013).

3. Data and methods

This working paper looks into the effects on response rates and sample composition of the suspension of the face-to-face fieldwork due to the COVID-19 pandemic in *Understanding Society*. An experimental design would allow us to assess these effects; however, the mode change implemented in *Understanding Society* was forced by the pandemic, and the design and implementation of an experiment was not a possibility. Instead, the entire sample had to be issued using a web-first design where nonrespondents were contacted using CATI. Therefore, the evaluation of the modes transition can only be approached by comparing the outcomes – response rates and sample composition – before and after the spread of the COVID-19 pandemic and the face-to-face fieldwork suspension. This quasi-experimental design is not exempt from issues, the principal being that the pre-post design without a control group does not allow to disentangle the selection mode-effects from other events associated with the COVID-19 pandemic and lockdowns. For example, the general lockdown could have made it easier to contact certain population groups, such as working-age adults, regardless of the change of modes.

The fieldwork for each wave of *Understanding Society* expands over two years. The sample is allocated to 24 groups that sequentially start the fieldwork at the beginning of each month. The usual fieldwork for each monthly sample takes over five months and comprises five weeks of web data collection, then around nineteen weeks of CAPI fieldwork and the use of CATI in the last four of those weeks to complete some interviews. For the analysis, we use the subsample of participants eligible for an adult interview (aged 16 or older) allocated to the monthly samples issued to the field before the outbreak of the COVID-19 pandemic and one year later, in 2020, after the CAPI fieldwork suspension (Figure 2). This includes monthly samples that started their fieldwork period between April and September 2019 – year 2 of wave 10 and year 1 of wave 11. Most of these participants and a few new entrants were eligible for an adult interview a year later, in 2020, after the COVID-19 forced the suspension of the face-to-face interviewing. The data used from 2020 corresponds to the monthly samples issued to the field between April and September 2020 – year 2 of wave 11 and year 1 of wave 12.

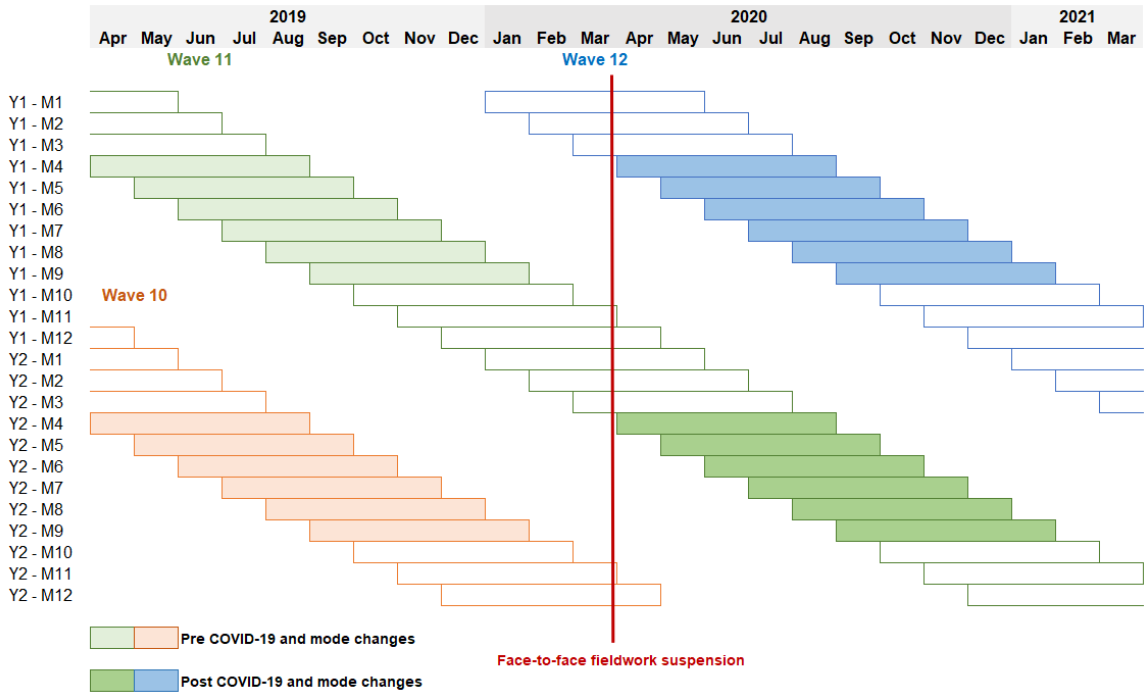

Figure 2. Quasi-experimental design based on the monthly samples issued to the field.

The response rates presented in this working paper were calculated by dividing the number of adult interviews completed by participants – excluding proxy interviews – over the total number of sample members eligible for an adult interview in the 2019

and 2020 periods. The comparability of these response rates faces some challenges. First, the 2019 and 2020 samples are not identical; some participants became ineligible between 2019 and 2020; others dropped from the study (e.g. died, the household did not respond in the last two waves); a few of them became eligible, entered, or rejoined the study in 2020. The criteria to issue a sample member to the field are complex but remain unchanged in waves 10 to 12 and were unaffected by the pandemic, which allows us to compare both samples. In addition, the analysis of the differences between the 2019 and 2020 response rates and sample composition took into account this partial overlap of the samples using logit models with clustered standard errors. These models accounted for the original clustered sample design and the repeated measures of the participants issued in 2019 and 2020 (Petersen, 2009). Second, some groups of the population have suffered the impact of COVID-19 to a greater extent, such as the elderly, which could affect the response rates. To mitigate the problem of unidentified mortality, we identified the deceased participants using data from population registers in the United Kingdom (Kamisnka, 2021).

The field protocols of *Understanding Society* (i.e. ring-fenced, low propensity and web-first) allow us to explore the mode effects of different types of transitions. The ring-fenced sample – a random selection of 20% of the households – allows us to explore the transition from a CAPI-only fieldwork strategy to a web and CATI design. The low propensity group allows us to learn about the effect of a mode transition from CAPI to the web in a sample of participants less likely to engage with a web survey. We expect this group to be more negatively affected by the mode change than the ring-fenced sample. Finally, the web-first protocol suffered relatively minor changes: the main mode of data collection – web – was maintained, while the second mode, CAPI, was replaced by CATI. In the analysis, we compare the response rates among the three fieldwork protocols that were in place in 2019.

The response rates and sample profile analyses use a set of auxiliary variables from participants' responses prior to their participation in 2019. These variables include sociodemographic measures (gender, age, ethnicity, and whether they live with their children), socioeconomic variables (employment and education level), and household characteristics (rurality, housing ownership status, household type, and household income). For a small number of participants, the information for these variables prior

to 2019 was missing. In such cases, the information – mainly household grid – from waves 10, 11, or 12 were used to impute the information.

4. Results

The results section first presents the mode transitions between 2019 (waves 10 and 11) and 2020 (waves 11 and 12). Second, we analyse the response rates before and after the changes in the fieldwork protocols. Finally, we compare the sample profile for the 2019 and 2020 respondent samples.

Mode transitions between 2019 and 2020

Table 1 contains the breakdown of mode of completion combination by fieldwork protocol in 2019 for the participants eligible for an adult interview in 2020 (i.e. ring-fenced, low propensity, and web-first). It also differentiates the nonresponding and ineligible participants regardless of the mode they were invited to complete the survey.

From the sample issued in 2020, 28.1% of the sample members switched from CAPI in 2019 to other modes or did not respond. Most participants in the ring-fenced (64.3%) and low propensity (69.5%) groups, who were issued CAPI-first, completed a face-to-face interview in 2019, while this percentage is only 12.3% in the web-first group. In the ring-fenced subsample, a random selection of 20% of the households who had never been invited to take the web survey, most (57.5%) of those who did a face-to-face interview in 2019 completed the online questionnaire in 2020 while 25.7% agreed to a telephone interview, and 16.8% did not respond. These figures are slightly different among the CAPI respondents from the low propensity group, where 40.1% completed online, while 33.9% responded to the CATI interview, and only 26% refused to participate. As expected, the proportion completing online is higher in the ring-fenced sample (57.5%), a random sample of the households, than in the low propensity subsample (40.1%), which comprises the households predicted to be less likely to respond to the web survey.

In the web-first group, in 2019 all adults were invited to take part in the web survey and the nonrespondents were issued to the face-to-face mode. In contrast to the panel members in the low propensity or ring-fenced groups, the CAPI respondents in 2019 had therefore previously refused, or at least failed, to take part online. This partly

explains the higher nonresponse rate in this group – over three-in-ten (30.8%) – compared to the low propensity (26%) and ring-fenced (16.8%) groups. In addition, over four-in-ten (44.2%) participants of the web-first group that completed a CAPI interview in 2019 took the telephone interview and just over one-in-four (25.1%) completed the online questionnaire.

Table 1. Sample members by combination of mode of completion for the sample issued in 2020 (unweighted)

		Full sample		Ring-fenced		Low propensity		Web first	
2019	**2020**	**% sample**	**% 2019 mode**	**% sample**	**% 2019 mode**	**% sample**	**% 2019 mode**	**% sample**	**% 2019 mode**
CAPI	CATI	9.4	33.5	16.6	25.7	23.6	33.9	5.4	44.2
CAPI	Web	12.1	43.2	37.0	57.5	27.9	40.1	3.1	25.1
CAPI	Nonrespondent	6.6	23.4	10.8	16.8	18.1	26.0	3.8	30.8
CATI	CATI	0.2	38.8	0.2	32.4	0.3	55.6	0.2	37.9
CATI	Web	0.2	36.1	0.3	52.9	0.1	16.7	0.1	33.7
CATI	Nonrespondent	0.1	25.2	0.1	14.7	0.2	27.8	0.1	28.4
Web	CATI	2.3	5.0	0.3	3.4	0.3	7.9	3.2	5.0
Web	Web	39.2	84.0	7.6	83.7	2.8	78.9	53.0	84.1
Web	Nonrespondent	5.1	11.0	1.2	12.9	0.5	13.2	6.9	10.9
Nonrespondent	CATI	1.7	8.0	1.7	7.1	2.1	8.9	1.6	8.2
Nonrespondent	Web	3.9	18.6	4.9	20.8	4.1	17.6	3.6	18.0
Nonrespondent	Nonrespondent	15.3	73.4	17.0	72.1	17.2	73.5	14.6	73.8
Ineligible	CATI	0.3	8.0	0.4	14.7	0.4	15.1	0.3	6.3
Ineligible	Web	1.0	26.7	0.8	32.0	0.4	14.0	1.2	27.1
Ineligible	Nonrespondent	2.5	65.3	1.3	53.3	2.1	71.0	2.9	66.6
N		31,776		6,144		3,174		22,458	

Another group of interest is the nonrespondents in 2019 since the change in fieldwork protocols and the circumstances surrounding the COVID-19 pandemic could have modified their behaviour. In 2019, 20.9% of sample members did not respond to the adult questionnaire. Most of the nonrespondents (73.4%) in 2019 did not complete the interview in 2020 either, while 18.6% completed online and 8.0% on the telephone. The three fieldwork protocols show similar figures for the group of nonrespondents in 2019.

Response rates

Table 2 presents the unweighted response rates of the 2019 and 2020 adult samples for the full sample and split by fieldwork protocol, based on all adults issued to the field[1]. The criteria for issuing a sample member to the field are complex, though they generally require the sample member to have participated in at least one of the previous three waves. But the key point is that the criteria did not change between 2019 and 2020 and, in neither case, were influenced by post-pandemic participation outcomes, so the outcomes for the two years are comparable. The overall response rate barely changed between 2019 and 2020. The overall response rate dropped 1.5 percentage points (p.p.) after the COVID-19 pandemic. The figures are similar for the web-first – a decline of 1.4 p.p. – and ring-fenced – an increase of 1.8 p.p. – groups. In contrast, the low web propensity subsample experienced a substantial drop of 8.7 p.p. following the impact of the COVID-19 pandemic.

The change in response rates varied across groups defined by sociodemographic characteristics. The sociodemographic variables included in the analysis were measured prior to the 2019 data collection to enable the comparison between the 2019 and 2020 response rates. The 65+ age group was the most affected by the change in survey design, experiencing a drop of 4.4 p.p. in the response rate after the COVID-19 pandemic began. Regarding the fieldwork protocols subsamples, the 65+ group experienced a drop of 15.1 p.p. in the low propensity subsample compared to 4.3 p.p. in the ring-fenced sample and just 2.6 p.p. in the web-first subsample. The rest of the age groups present smaller changes in the response rates between 2019 and 2020. However, there are some significant differences in the low propensity and ring-fenced subsamples. The 45-64 group in the low propensity subsample suffered a drop in the likelihood to respond (7.3 p.p.). In contrast, in the ring-fenced subsample, the 45-64 group shows a higher propensity to respond in 2020 than in 2019 (5.2 p.p.), while the younger panel members (16-29) increased the response rate by a similar amount (4.7 p.p.).

In terms of ethnic background, white British sample members significantly decreased their likelihood to participate in the full sample (1.9 p.p.), especially in the low propensity CAPI-first subsample (9.5 p.p.) and, to a lesser extent, in the web-first group (2.0 p.p.). In the low propensity subsample, the participants in the "other background"

[1] Note that unweighted response rates are generally lower than design-weighted response rates, as the survey over-samples some relatively low-response population subgroups.

group suffered a drop of 16.1 points in the response rate, although this difference faded in the full sample and is no longer significant (2.1 p.p.).

Socioeconomic characteristics are also related to changes in the propensity to respond between 2019 and 2020. Those with no children of their own in the household decreased their participation rate by 1.4 p.p. compared to the 1.7 p.p. of the panel members who live with their children. Also, the urban residents show a drop in the response rate (1.6 p.p.) in line with the average change in the full sample. However, neither of these differences were significant. The drop in response rates between 2019 and 2020 is strongly associated with education level. Those with no formal qualifications were 8.4 p.p. less likely to respond in 2020, and those with "other qualifications" were 4.7 p.p. less likely to respond, while those with 'A' levels or higher qualifications were no less likely to respond in 2020 than they were in 2019. The drop in propensity for those with no qualifications was especially pronounced in the low propensity subsample (a 17.9 p.p. drop in response rate), compared to 4.7 p.p. in the ring-fenced sample and 6.0 p.p. in the web-first subsample. A similar pattern can be observed amongst participants with "other qualifications".

Those not in paid employment also suffered a substantial drop in the response rate between 2019 and 2020 (4.4 p.p.), mainly in the low propensity group (12.9 p.p.). Regarding house ownership status, participants renting their accommodation show an above-average drop in response rate (3.3 p.p.), while this difference in the low propensity group reaches 12.9 p.p. Also, the response rate of the participants who own their houses decreased by 2.0 p.p., 9.5 p.p. in the low propensity group.

Household characteristics, especially household type, are also related to changes in response rates. Participants over pensionable age who live alone show a fall in response rates of 7.4 p.p. In the low propensity subsample, the reduction in the response rate for this subgroup reached 19.3 p.p.; in the ring-fenced subsample, the drop was 6.5 p.p. and 4.0 p.p. among web-first participants. A similar trend is seen for older couples of pensionable age living alone, though the fall in response rate is smaller. In the full sample, the response rate of this group dropped by 3.6 p.p. after the COVID-19 outbreak. This change is more remarkable in the low propensity subsample, where the response rate of the older couples dropped by 15.3 p.p. Adults in lone parent households also suffered an above-average drop in the response rate of almost five points (4.5 p.p.). Again, this negative change is more profound in the low propensity group (8.7 p.p.)

compared to the web-first (4.5 p.p.). Finally, the response rate for couples with no children slightly increased (1.6 p.p.) for the full sample, while the boost was substantial in the ring-fenced sample (8.2 p.p.).

With respect to household income, the full sample figures show a gradient change in the response rates from negative values for the first quintile (5.8 p.p.) to a positive change in the highest-income group (1.9 p.p.). This variation is more abrupt in the low propensity subsample. The response rates from the first three income groups registered drops ranging from 14.1 p.p. to 6.1 p.p., while the highest household income group of participants just reduced their participation by 0.4 p.p.

Table 2. Response rates by sample subgroups (unweighted)

	Full sample		Ring-fenced		Low propensity		Web-first		N (2020)
	2019	2020	2019	2020	2019	2020	2019	2020	
Total	71.8	70.3***	67.9	69.7**	70.7	62.0***	73.0	71.6**	31,776
Sex									
Male	67.6	66.2**	62.3	64.3*	65.0	56.2***	69.5	68.0*	14,807
Female	75.4	73.9***	72.9	74.2	75.6	66.9***	76.1	74.8**	16,969
Age									
16-29	56.4	56.6	50.9	55.6**	58.3	53.2*	57.7	57.5	6,878
30-44	68.1	67.4	63.5	64.8	65.2	59.5*	69.6	68.8	6,757
45-64	75.2	74.8	69.8	75.0***	74.2	66.9***	76.9	75.8	10,704
65+	83.5	79.1***	82.3	78.0***	81.5	66.4***	84.2	81.6***	7,437
Ethnicity									
White British	77.9	76.0***	74.2	76.1**	76.5	67.0***	79.2	77.2***	22,914
Black	53.2	52.7	48.9	44.4	58.7	56.7	53.8	54.6	1,525
Asian	61.3	60.8	60.3	60.1	59.4	54.2*	62.0	62.5	4,293
Other	68.0	65.9*	64.1	65.7	73.4	57.3***	68.3	67.1	2,181
Missing	1.9	7.6***	1.8	9.1**	1.6	4.3	2.0	7.6***	863
Own children in household									
No child	72.0	70.6**	68.2	70.2**	70.1	61.0***	73.4	72.1*	2,4192
Children	71.1	69.4**	67.2	68.0	72.6	65.5***	72.0	70.3**	7584
Urban or rural area									
Urban area	70.4	68.8***	67.1	67.8	67.0	57.7***	71.7	70.2**	24,443
Rural area	76.2	75.3	70.7	75.8***	76.3	68.4***	78.0	77.1	7,333
Highest qualification									
Degree	79.7	80.5	76.7	79.8**	78.0	76.8	80.6	81.0	7,909
Other higher	77.7	78.2	72.9	76.3	73.4	72.4	79.4	79.3	3,573
A level	72.0	71.4	67.3	69.0	68.0	63.0*	73.9	73.1	6,483
GCSE	72.8	71.5*	68.5	71.4*	71.3	64.3***	74.3	72.6*	6,445
Other qualification	75.8	71.1***	74.2	69.9*	78.8	60.0***	75.7	73.7	2,426
No qualification	72.2	63.8***	72.2	67.5*	74.5	56.6***	71.2	65.2***	2,871
Missing	20.7	18.3	16.5	17.5	25.8	20.9	21.4	18.1*	2,069
In paid employment									
Yes	71.8	71.7	66.7	70.5***	70.1	65.7**	73.4	72.7	17,826
No	71.8	68.5***	69.5	68.7	71.2	58.9***	72.6	70.2***	13,950
House owned or rented									
Owned outright	79.8	77.8***	77.7	77.2	76.1	66.6***	80.8	79.3**	10,312
Mortgage	70.3	70.4	64.3	69.2***	67.7	65.0	72.1	71.3	12,563
Rented	64.7	61.4***	60.8	60.9	69.5	56.6***	64.9	62.7**	89,01
Household type									
1 adult pensionable age	88.6	81.2***	89.4	82.9***	89.7	70.4***	87.9	83.9***	2,156
1 adult under pensionable age	80.3	80.3	76.1	79.4	82.3	66.1***	81.0	82.3	1,886
Lone parent	63.2	58.7**	56.2	54.5	67.8	59.1*	64.2	59.7*	1,079
Couple pensionable age	85.6	82.0***	81.5	79.9	81.4	66.1***	87.3	83.9***	4,706

Couple, no children	78.3	79.9*	73.9	82.1***	70.7	72.6	79.9	80.0	3,098
Couple, one or more children	70.9	70.0	66.8	69.5	71.1	67.4	72.0	70.4*	6,802
Other	61.5	60.9	56.3	59.0*	62.1	55.7***	62.9	62.4	12,049
Household income (quintile)									
Q1	68.7	62.9***	63.8	62.0	70.8	56.7***	69.8	64.4**	6,329
Q2	71.1	68.7***	70.4	71.0	70.9	58.4***	71.3	70.0	6,279
Q3	72.0	70.8	68.7	69.9	70.3	64.2**	73.2	72.1	6,361
Q4	73.1	73.3	67.5	71.2**	71.5	69.5	75.0	74.3	6,409
Q5	73.8	75.7***	69.2	74.2***	69.5	69.1	75.2	76.5*	6,398

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Unweighted response rates; Denominator for each percentage presented is all sample members aged 16 or over issued to the field; numerator is the number who completed a full individual interview, either in person, excluding proxy interviews. The independent variables included in this table were measured before 2019 to enable the comparison of the response rates before and after the COVID-19 outbreak.

Participants with a lower level of education show a drop in the response propensities relative to those with a university degree. The odds ratios of the group with other qualifications decreased in 2020 in the low propensity subsample. Similarly, the odds ratios of those with no qualifications show a significant decrease between 2019 and 2020 in the full sample and the low propensity and web-first models. These changes suggest that participants with a lower education level either suffered more intensively the circumstances arising from COVID-19 or the changes in fieldwork protocols that excluded the face-to-face mode.

The multivariate models presented below help identify how the factors related to response have changed after the COVID-19 pandemic and the changes in fieldwork protocols once we have controlled for other factors. Figure 3 shows the groups that registered significant changes in the magnitude of the odds ratio between 2019 and 2020. The full models can be found in Appendix A. The results of the models indicate that being older and living alone or lacking cognitive skills – low education level – explain the change in the response propensity between 2019 and 2020, especially in the low propensity subsample.

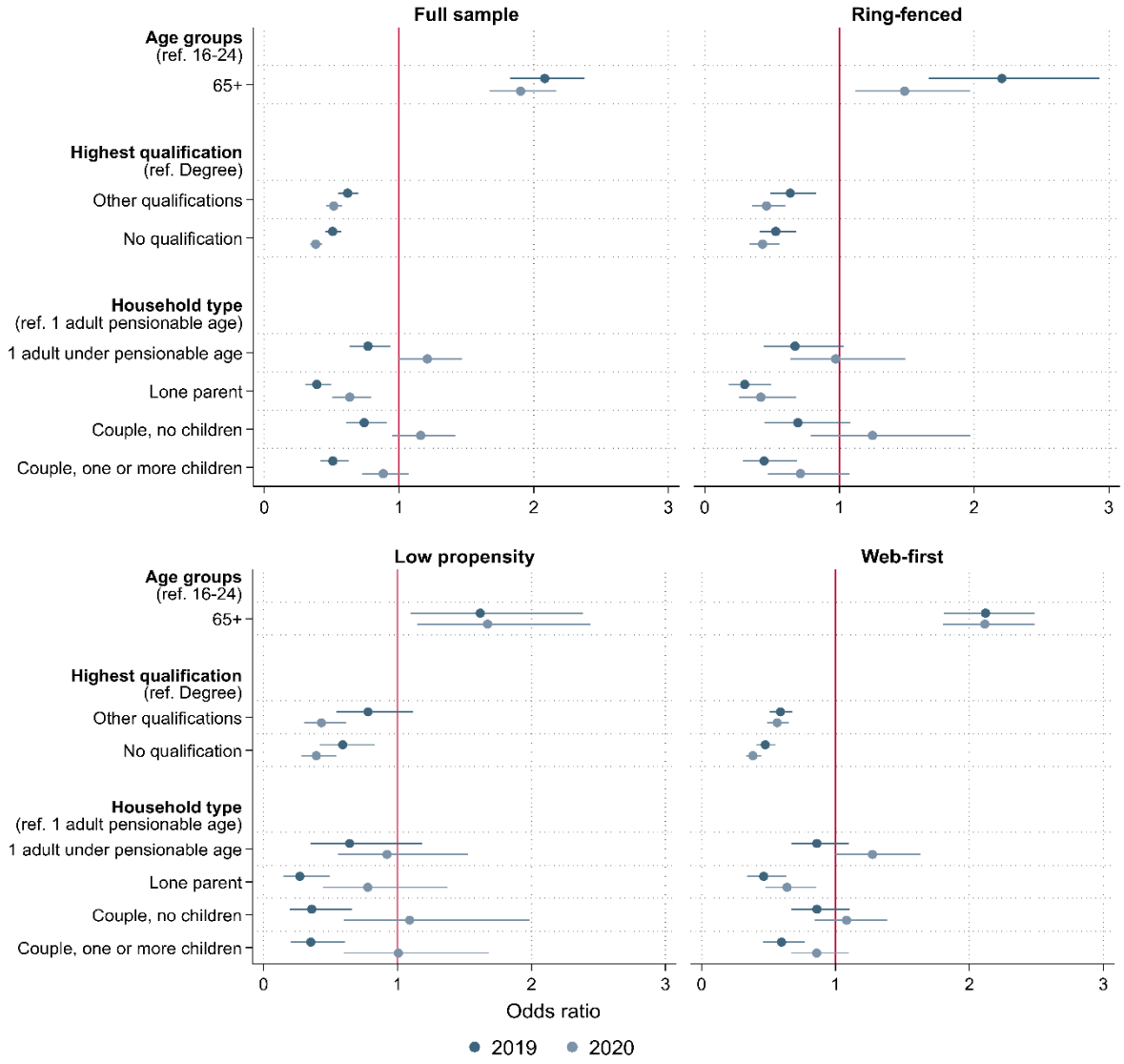

Figure 3. Main results from the logistic regression models of response in 2019 and 2020 (unweighted). The plots show the groups that registered significant changes in the magnitude of the odds ratio between 2019 and 2020.

Another variable that shows relevant changes between 2019 and 2020 is the type of household. In general, changes in the coefficients indicate that the difference in the propensity to respond between adults in pensionable age living alone and the rest of the groups have shortened. This trend is more pronounced in the low propensity group. The difference between adults in pensionable age living alone and lone parents, couples with no children or couples with one or more children households significantly decreased between 2019 and 2020. This change is explained by the disproportionate drop of the response propensities among elderly people living alone compared to the other household types after COVID-19. Before COVID-19 and the suspension of the face-to-

face fieldwork, households of one person over 65 had the highest response rate – 88.6 in 2019, 10.3 p.p. higher than couples with no children and 17.7 points higher than couples with children. However, after the mode transition, the response rate of elderly people living alone dropped 7.4 p.p. while for couples living without children the response rate increased by 1.7 p.p. and for couples with children it dropped by only 0.9 p.p. Thus, differences between the elderly people living alone and the other two groups eroded to 1.3 p.p. and 11.2 p.p., respectively, no longer being significant. Also, these variations indicate that elderly people living alone are experiencing more difficulties adapting to the changes introduced by COVID-19 than older adults in general – the differences for the coefficients of the 65+ group are not significant except for the ring-fenced subsample.

Sample balance

Table 3 summarises the profile of those who responded to the adult interview (excluding proxy interviews) before and after the changes implemented in the field protocols. The table presents the unweighted percentages for the participants' characteristics measured before the COVID-19 outbreak to compare the sample profile before and after the pandemic. Significant differences are observed for most variables given the large sample size and the repeated measures design, although the magnitude of the differences remains within +/- 2 p.p. in all cases and within +/- 1 p.p. for 32 out of 39 subgroups.

Table 3. Sample profile by year (unweighted)

	2019	*2020*	
	%	**%**	**Sig.**
Sex			
Male	44.1	43.9	
Female	55.9	56.1	
Total	100.0	100.0	
Age			***
16-29	16.3	17.4	
30-44	20.6	20.4	
45-64	35.4	35.8	
65+	27.7	26.3	
Total	100.0	100.0	
Ethnicity			***
White British	77.6	78	
Black	3.8	3.6	
Asian	12	11.7	
Other	6.6	6.4	
Missing	0.1	0.3	
Total	100.0	100.0	
Own children in household			***
No child	75.7	76.4	
Children	24.3	23.6	
Total	100.0	100.0	
Urban or rural area			
Urban area	75.5	75.3	
Rural area	24.5	24.7	
Total	100.0	100.0	
Highest qualification			***
Degree	27.6	28.5	
Other higher	12.2	12.5	
A level	20.7	20.7	
GCSE	20.2	20.6	
Other qualification	8.3	7.7	
No qualification	9.3	8.2	
Missing	1.8	1.7	
Total	100.0	100.0	
In paid employment			***
Yes	56	57.2	
No	44	42.8	
Total	100.0	100.0	
House owned or rented			***

Owned outright	36.1	35.9	
Mortgage	37.9	39.6	
Rented	25.9	24.5	
Total	100.0	100.0	
Household type			***
1 adult pensionable age	8.6	7.8	
1 adult under pensionable age	6.7	6.8	
Lone parent	2.9	2.8	
Couple pensionable age	17.7	17.3	
Couple, no children	10.6	11.1	
Couple, one or more children	20.9	21.3	
Other	32.6	32.9	
Total	100.0	100.0	
Household income (quintile)			***
Q1	18.3	17.8	
Q2	19.9	19.3	
Q3	20.3	20.2	
Q4	20.6	21	
Q5	20.9	21.7	
Total	100.0	100.0	
N	24,349	22,338	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The independent variables included in this table were measured before 2019 to enable the comparison of the sample profile before and after COVID-19 outbreak.

5. Conclusions

This working paper aims to shed light on the effect of COVID-19 and the suspension of face-to-face fieldwork on the response rate and sample composition of the *Understanding Society* sample. To this end, a quasi-experimental design has been employed in which the sample of participants in 2019 (waves 10 and 11) is compared to the 2020 sample (waves 11 and 12). The main limitation of this analysis relates to the quasi-experimental design; It is not possible to disentangle whether the observed differences are due to the change in the modes or to other circumstances arising from the COVID-19 pandemic.

This paper answers three research questions. First, we sought to determine the volume of participants who have been affected by the face-to-face fieldwork suspension and the replacement of CAPI with CATI. A 28.1% of the sample issued to the field in 2020 had completed a CAPI interview in 2019, while in the new wave after COVID-19, these

respondents were most likely to opt for the web questionnaire (43%, compared to 34% who responded by CATI and 23% who did not respond). This pattern is observed in the ring-fenced and low propensity groups, while the preferred mode was CATI among web-first participants who had participated by CAPI in 2019. Another interesting finding is that more than a quarter of the 2019 nonrespondents issued in 2020 participated: 19% completed a web questionnaire, while 8% responded to the telephone interview. Overall, 41% of those who participated in both 2019 and 2020 switched modes.

Second, we aimed to determine the variation in the response rates after the suspension of the face-to-face fieldwork for the overall sample and some relevant subgroups. The overall response rate fell by just 1.5 p.p. between 2019 and 2020, although this drop was more substantial among participants assigned to the low web propensity fieldwork protocol (CAPI-first) in 2019, reaching 8.7 p.p. Multivariate models show that the drop in response propensities between 2019 and 2020 is related to age and education level, but with some nuances. Older people living alone (but not all older people) and those with a low level of education are the profiles most affected by the drop in response rates. This finding indicates that the lack of adequate support and skills could have shaped the differences in response propensities.

The analysis of the changes in response rate by fieldwork protocol in 2019 gives us relevant information. The ring-fenced group, a random sample of 20% of the households, transitioned from a CAPI-only protocol to a sequential mixed-mode design combining web and telephone. This group exhibited a slight increase in response rate (1.8 p.p.), although it is not possible to disentangle the part due to the mode change from other consequences of the COVID-19 pandemic. This finding is consistent with other studies, where the transition from CAPI to the web combined with another interviewer-administered mode had a negligible effect on the response rates (Bianchi et al., 2017; Biemer et al., 2021; Carpenter & Burton, 2017). However, it should be noted that incentives may have been partly responsible for this change. First, the incentives are higher in the sequential mixed-mode design than in the CAPI-only design. While participants receive the same unconditional incentive in both fieldwork protocols (£10), in the mixed-mode design, participants can get an additional £10 conditional incentive if they respond to the web questionnaire within the first five weeks. Along these lines, Gaia (2017) showed that the higher incentives of the mixed-modes design were partly

responsible for the similarity in response rates between the mixed-mode and CAPI-only groups in the Innovation Panel. Second, as part of an experiment conducted in Understanding Society, one-third of the 2020 sample at wave 12 received an unconditional incentive of £20, twice the usual amount, while another third was offered a £20 conditional incentive, also twice the usual amount. Participants in the low propensity and web-first groups were also affected by this experiment to the same extent.

The rest of the sample was divided in 2019 into the low web propensity – issued to a CAPI-first design – and web-first protocols – issued to a web and CAPI sequential design. The results, as expected, are radically different. The change in modes affected the low web propensity group, who was used to receive the visit of an interviewer, as in the ring-fenced sample. The difference is that, in the low web propensity group, the assignment of these cases to a CAPI-first protocol was due to the predicted low propensity to respond in web mode. Amongst this low web propensity group, the probability of response fell by 8.7 p.p. between 2019 and 2020, in contrast to the increased response rate of the ring-fenced group. This finding indicates that, despite the successful transition of some studies from CAPI to a mixed-mode design regarding response rates, some population groups would be negatively affected. For the group with a low web response propensity, it might be appropriate to consider alternative designs with an emphasis on approach by CAPI or CATI. In this vein, other studies have shown that a mixed-mode design does not always improve the response rates compared to a single-mode design (Lynn et al., 2010). In contrast, the web-first group maintained a similar response rate in 2019 and 2020, just 1.4 points lower. In this case, the impact of the mode switching was less of an issue compared to the other groups, as the web survey remained the primary mode.

Finally, we compared the sample composition before and after the COVID-19 changes in fieldwork. The comparison of the sample profile shows only small differences though some of these are significant due to the large sample size. The differences are all within +/- 2 percentage points and, for most cases, stay below +/- 1 percentage point. This finding aligns with Lynn (2013) and Bianchi et al (2017), who observed that sample composition was minimally affected despite finding different response propensities for some sample subgroups.

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7. Appendix A: logistic regression models

	Full sample		Low propensity		Ring-fenced		Web-first	
	2019	2020	2019	2020	2019	2020	2019	2020
Female	1.431***	1.467***	1.532***	1.612***	1.575***	1.578***	1.382***	1.409***
	(0.033)	(0.034)	(0.077)	(0.087)	(0.119)	(0.112)	(0.038)	(0.040)
Age (ref. 16-29)								
30-44	1.251***	1.197***	1.145	0.986	0.987	1.051	1.321***	1.268***
	(0.061)	(0.063)	(0.131)	(0.118)	(0.155)	(0.162)	(0.076)	(0.079)
45-64	1.717***	1.658***	1.496***	1.641***	1.562***	1.567***	1.812***	1.673***
	(0.069)	(0.069)	(0.132)	(0.162)	(0.186)	(0.186)	(0.087)	(0.084)
65+	2.082***	1.903***	2.206***	1.484**	1.618*	1.672**	2.120***	2.115***
	(0.141)	(0.126)	(0.319)	(0.214)	(0.319)	(0.322)	(0.172)	(0.174)
Ethnic background (ref. White British)								
Black	0.444***	0.491***	0.466***	0.366***	0.594*	0.907	0.430***	0.495***
	(0.032)	(0.037)	(0.077)	(0.063)	(0.142)	(0.222)	(0.037)	(0.044)
Asian	0.674***	0.730***	0.766*	0.676**	0.745	0.905	0.649***	0.744***
	(0.039)	(0.044)	(0.097)	(0.082)	(0.126)	(0.167)	(0.044)	(0.055)
Other	0.820***	0.805***	0.859	0.807	1.151	0.849	0.774***	0.804**
	(0.047)	(0.049)	(0.119)	(0.119)	(0.240)	(0.158)	(0.054)	(0.058)
Missing	0.015***	0.084***	0.017***	0.090***	0.011***	0.051***	0.016***	0.086***
	(0.004)	(0.020)	(0.009)	(0.040)	(0.012)	(0.032)	(0.005)	(0.018)
Children	1.117	0.899	1.259	0.956	1.387*	1.016	1.041	0.872
	(0.064)	(0.053)	(0.156)	(0.127)	(0.215)	(0.155)	(0.075)	(0.063)
Rural area	0.975	1.001	0.887	1.072	1.331*	1.239	0.966	1.001
	(0.043)	(0.045)	(0.084)	(0.102)	(0.170)	(0.149)	(0.054)	(0.056)
Education (ref. Degree)								
Other higher	0.788***	0.810***	0.736**	0.742*	0.673*	0.757	0.817**	0.829**
	(0.040)	(0.042)	(0.077)	(0.086)	(0.122)	(0.133)	(0.050)	(0.051)
A-levels	0.759***	0.711***	0.702***	0.635***	0.660**	0.619**	0.792***	0.748***
	(0.031)	(0.031)	(0.065)	(0.065)	(0.096)	(0.094)	(0.039)	(0.038)
GCS	0.729***	0.680***	0.694***	0.670***	0.720*	0.623**	0.739***	0.690***
	(0.032)	(0.031)	(0.067)	(0.070)	(0.110)	(0.095)	(0.039)	(0.037)
Other qualifications	0.619***	0.515***	0.635***	0.458***	0.780	0.432***	0.588***	0.565***
	(0.038)	(0.031)	(0.085)	(0.063)	(0.143)	(0.078)	(0.043)	(0.041)
No qualification	0.507***	0.382***	0.527***	0.429***	0.591**	0.393***	0.476***	0.384***
	(0.031)	(0.023)	(0.068)	(0.057)	(0.102)	(0.065)	(0.036)	(0.029)
Missing	0.143***	0.120***	0.123***	0.113***	0.167***	0.154***	0.148***	0.117***
	(0.012)	(0.010)	(0.021)	(0.021)	(0.051)	(0.043)	(0.013)	(0.011)
In paid employment (ref. In paid employment)								
Not in paid employment	0.987	0.916*	1.017	0.933	0.922	0.899	0.981	0.914*
	(0.034)	(0.033)	(0.078)	(0.074)	(0.099)	(0.094)	(0.040)	(0.039)
House ownership status (ref. Bought outright)								
Mortgage	0.878*	0.890*	0.755**	0.841	0.897	0.996	0.900	0.898

	(0.044)	(0.046)	(0.082)	(0.099)	(0.146)	(0.158)	(0.055)	(0.055)
Rented	0.767***	0.709***	0.736**	0.684**	0.881	0.836	0.755***	0.723***
	(0.041)	(0.038)	(0.082)	(0.081)	(0.134)	(0.115)	(0.051)	(0.048)
Household type (ref. 1 adult pensionable age)								
1 adult under pensionable age	0.769**	1.210	0.670	0.972	0.642	0.921	0.861	1.276
	(0.077)	(0.119)	(0.147)	(0.211)	(0.201)	(0.237)	(0.108)	(0.160)
Lone parent	0.390***	0.634***	0.297***	0.416***	0.271***	0.778	0.464***	0.638**
	(0.048)	(0.073)	(0.077)	(0.104)	(0.084)	(0.225)	(0.073)	(0.095)
Couple pensionable age	0.739***	0.956	0.537***	0.777	0.561*	0.840	0.902	0.939
	(0.063)	(0.072)	(0.094)	(0.122)	(0.141)	(0.170)	(0.097)	(0.094)
Couple, no children	0.741**	1.161	0.691	1.245	0.359***	1.090	0.861	1.083
	(0.077)	(0.119)	(0.158)	(0.292)	(0.111)	(0.333)	(0.111)	(0.137)
Couple, one or more children	0.509***	0.883	0.440***	0.710	0.352***	1.006	0.597***	0.859
	(0.054)	(0.087)	(0.100)	(0.149)	(0.098)	(0.264)	(0.078)	(0.109)
Other	0.377***	0.603***	0.325***	0.464***	0.262***	0.615*	0.435***	0.607***
	(0.033)	(0.048)	(0.061)	(0.077)	(0.059)	(0.125)	(0.048)	(0.065)
Household equivalized income in quintiles (ref. Q1)								
2	0.943	0.992	1.144	1.196	0.828	0.901	0.909	0.959
	(0.055)	(0.060)	(0.149)	(0.161)	(0.141)	(0.132)	(0.065)	(0.071)
3	0.938	0.974	1.108	1.036	0.866	1.096	0.916	0.934
	(0.056)	(0.061)	(0.144)	(0.137)	(0.158)	(0.174)	(0.067)	(0.072)
4	0.917	0.970	1.008	0.951	0.874	1.221	0.907	0.933
	(0.055)	(0.063)	(0.133)	(0.135)	(0.169)	(0.221)	(0.066)	(0.072)
5	0.857*	0.983	0.980	0.979	0.696	0.962	0.835*	0.951
	(0.054)	(0.066)	(0.133)	(0.145)	(0.161)	(0.214)	(0.062)	(0.075)
N	33,927	31,776	6,861	6,144	3,396	3,174	23,670	22,458

Exponentiated coefficients from logistic regression models

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Dependent variable: Full adult response in 2019 or 2020.