A FLASH IN THE PAN OR A PERMANENT CHANGE? THE GROWTH OF HOMEWORKING DURING THE PANDEMIC AND ITS EFFECT ON EMPLOYEE PRODUCTIVITY IN THE UK

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Purpose: This paper has three aims. First, it puts the pandemic-induced surge in homeworking into context by charting trends in homeworking in the UK since the early 1980s. Secondly, it examines what effect the growth in homeworking during the pandemic has had on employees' self-reported levels of productivity. Thirdly, it assesses whether the spike in homeworking is a flash in the pan or a permanent feature of the post-pandemic world.

Design/Methodology/Approach: The paper uses cross-sectional and longitudinal data taken from three nationally representative surveys of workers: (1) the Labour Force Survey, an official government survey carried out between 1981 and 2019; (2) a special module of the Opinions and Lifestyle Survey, also an official government survey, which has been run every week since the pandemic began in March 2020; and (3) the Understanding Society Covid-19 Study, an online survey of the same people interviewed on six occasions during 2020.

Findings: The recent surge in homeworking in the UK during the pandemic has been dramatic. Before 2020 it had taken almost 40 years for homeworking to grow by three percentage points, but its prevalence grew eight-fold virtually overnight as people were instructed to work at home if they can because of the pandemic. However, despite theories and predictions to the contrary, employees reported that their productivity was not adversely affected. Seven out of ten employees said that they were able to get as much done while working at home in June 2020 as they were able to do six months earlier. By September 2020, this proportion had risen to 85%.

Originality/Value: There is an urgent need to investigate what effect enforced, as opposed to voluntary, homeworking has had on employee productivity. In addition, in order to decide whether continued homeworking should be encouraged or discouraged, policy makers and employers need to know what effect continuing with these arrangements is likely to have on employee productivity. This paper answers these questions using robust survey data collected in the UK throughout 2020 complemented by evidence taken from a variety of employer surveys.

Social Implications: The paper argues that a higher level of homeworking is here to stay. Nine out of ten employees who worked at home during the pandemic said that they would like to continue working at home when they did not have to. Furthermore, those keenest to continue working at home were the most productive, hence providing a business case for a sustained increase in the prevalence of homeworking after the pandemic has past. Nevertheless, the experience of homeworking varies with those with higher domestic commitments reporting significantly lower levels of productivity.

Research Implications/Limitations: While there are solid theoretical reasons for the paper's findings, these data do not allow us to test all of the mechanisms involved. In addition, our outcome measure relies on employees' self-reports of how their hourly productivity changed when working at home and is not based on a direct measure of changes to output per hour. However, surveys of employers suggest that, on average, productivity has not been reduced by the pandemic-induced surge in homeworking.

Keywords: homeworking; employee productivity; lockdowns; the pandemic; Covid-19; the future of work.

Paper Type: Research Paper

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The primary data source for this paper is the Understanding Society Covid-19 Study and the April, May, June, July, September and November 2020 waves of the survey (Institute for Social and Economic Research, (2020) *Understanding Society: COVID-19 Study, 2020* [data collection] Sixth Edition, UK Data Service, SN: 8644, 10.5255/UKDA-SN-8644-2). Other data are taken from the Labour Force Surveys. These data are Crown Copyright and have been made available by the Office for National Statistics (ONS) through the UK Data Service. Neither the ONS nor the UK Data Service bear any responsibility for the analysis or interpretation of the data reported here. Finally, data from the Opinions and Lifestyle Survey (OPN) were extracted from publicly available sources. Darja Reuschke's time on this study was funded by the European Research Council, the Starting Grant WORKANDHOME (ERC-2014-STG 639403). We would also like to thank the three anonymous referees and the Special Issue Guest Editor for their very useful comments and suggestions on earlier versions of the paper.

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Introduction

Claims that homes will become the focus of economic activity are not new. Back in 1980, futurologists predicted that by the start of the new millennium the majority of work would be carried out in 'electronic cottages' with an 'emphasis on the home as the centre of society' (Toffler, 1980: 210). It was estimated that by 2010 '40 to 50% of the work activities of many managerial and professional activities are likely to be undertaken at home' (Scase, 1999: 28). Other estimates suggested that around 32% of the entire UK workforce would be working at home by 2006 (estimates reported by Lees, 1999: 16). However, even using a wide interpretation of 'homeworking', these predictions were well off the mark. For example, the use of the home as a place of work for at least one day a week was estimated to be around 13% in 2002, falling far short of what futurologists were predicting (Felstead *et al*., 2005, Table 1).

The outbreak of Covid-19 in the early part of 2020 completely changed this picture. To arrest the spread of the virus, policy makers across the world urged those who can to work at home. Homeworking rocketed in response. Across Europe as a whole 37% of the working population reported working at home in April 2020 because of the pandemic with homeworking rates close to 60% in Finland and above 50% in Luxembourg, the Netherlands, Belgium and Denmark (Eurofound, 2020). In the US around a third (35%) of the workforce in April 2020 reported ditching the daily commute and working at home instead (Brynjolfsson *et al*., 2020). Employers, too, changed their behaviour. Many high-profile companies – such as Google,

Twitter, Apple, Microsoft, Amazon and JP Morgan – closed their offices and ordered their staff to work at home (BBC News, 11 March 2020; *Financial Times*, 11 January 2021).

It is against this backdrop that this paper sets out to answer three research questions. First, how dramatic, in historical terms, has the change been in the UK and who has been affected most by the sudden requirement 'to work at home if you can'? Secondly, what effect did enforced homeworking during the pandemic have on employee productivity and were employers fears of a reduction realised? Thirdly, do employees want to continue to work at home and what effect is this likely to have on productivity?

These questions have sparked widespread interest in homeworking among economists, sociologists and geographers. However, in addressing them, many UK studies have either focused on particular sectors of the economy – such as law and local government (Parry *et al*., 2021), particular groups of workers – such as trade unionists (Taylor *et al*., 2021) – or one-off surveys on the effects of lockdown on patterns of work (e.g., Adams-Prassl *et al*., 2020a). This paper, on the other hand, is based on a series of regularly carried out nationally representative sample surveys of individuals carried out before and during 2020. It also draws on employer surveys to collaborate some of its findings. This marks the paper out from other studies which have used a more limited set of data focused on the early months of the pandemic (e.g., Felstead and Reuschke, 2020). Based on this wider source of evidence, the paper examines empirically the theoretical connections between homeworking and self-reported productivity during the pandemic. This offers a distinctive and novel contribution to the debate. Moreover, the evidence base allows us to examine productivity and its correlates from the employees' perspective. This analytical approach is in contrast to those who examine productivity by compiling different macro-level time series, matching official productivity data with plant-

level management surveys or carrying out polls of employer behaviour (e.g., Awano *et al*., 2018; Bloom *et al*., 2020).

The paper proceeds as follows. The next section reviews existing evidence of homeworking before Covid-19. The review pays particular attention to the long-term trends in homeworking, types of workers who worked at home before Covid-19 and the effect that homeworking has on employee productivity. It examines both the theories and the empirical evidence, most of which were developed or published before the worldwide lockdowns began. It also reviews the growing literature on homeworking which has begun to emerge as a result of the pandemic. The paper then outlines the three sources of new UK evidence, the definitions of homeworking used and the ways in which the scope of each of the surveys varies. All three data sources are based on robust representative sample surveys of workers to which independent researchers have access, either directly or through published sources. The paper uses a mixture of descriptive and multivariate techniques to analyse these data. The penultimate section of the paper presents new and up-to-date findings on: the scale and pattern of the recent growth in homeworking; the impact that homeworking has had on employee productivity; and the permanency or otherwise of the shift towards working at home. The paper ends with a section which summarises its main findings, identifies some of the paper's limitations and its implications for the future of work.

Existing Theories and Evidence

Although it was a minority view, it was not universally accepted before the outbreak of Covid-19 that information technology had the potentiality to detach work from place and unleash a revolution in where work is done. In fact, there were some who argued that 'we are *not* seeing

a fundamental shift in work organisation' and that 'most forms of telework are essentially old wine in new bottles, albeit enhanced and improved by the use of computers' (TUC, 2001: 7, original emphasis). Some went even further by suggesting 'of all the shifts happening in the labour market at the moment, this [homeworking] seems the least revolutionary of the lot' (Flip Chart Fairy Tales, 2014). This was based on the proposition that much of the growth in homeworking before the pandemic could be explained by compositional change. This includes the growth in self-employment, the expansion of highly skilled occupational groups and the increased participation of women in the labour market. However, the empirical evidence suggests that, even before the pandemic, a fundamental shift in the location of work was underway with these compositional changes only explaining around a third of the growth in remote working between 1992 and 2015 (Felstead and Henseke, 2017).

For most researchers, the role that technology plays in this process is compelling: 'without doubt, technology is a big facilitator of homeworking' (Boys, 2020: 5). Data on the growing importance of computers at work and their ubiquity in the home are used to back up these claims. For example, in 2017 a computer was regarded as an essential tool to do half of all jobs (51%) compared to three out of ten jobs (30%) in 1997. Internet access in households has expanded even faster – rising from around 9% in 1998 to 96% in 2020 (ONS, 2020c). Furthermore, based our analysis of the LFS, around half (44.3%) of those working mainly at home in 1997 reported that they used both telephone and computer to do so. By 2019 this had risen to three-quarters (74.7%). The means to extend homeworking were in place well before the pandemic hit.

Nevertheless, before the pandemic homeworking was more prevalent among groups such as those working in more skilled occupations, those with higher qualifications and among older

workers (e.g., ONS, 2020b). These features of jobs are often taken as summary indicators of high trust work environments; that is, where work is more loosely controlled, employees have more autonomy and performance is measured in terms of output produced.

There is empirical evidence to support the theory that only the most trusted employees are allowed to work at home. Analysis of the Workplace Employee Relations Survey 1998, for example, shows that the entitlement to work at home is strongly associated with jobs in which employees have considerably more influence over the work process – the tasks to be done, the pace at which they are carried out and how they are to be done. More trusting management-employee relationships are also associated with a greater willingness to allow employees to work at home. Two-thirds (67.0%) of non-manual employees who had the option to work at home rated management-employee relations as 'good' or 'very good' compared to 55.4% of non-manuals who were not allowed to work at home. These differences also extend to the frequency with which employees' views were sought on matters such as staffing levels, pay and working practices (Felstead *et al*., 2002: Table 5).

Analysis carried out since the pandemic began has examined how feasible it is for jobs to be carried out at home. For example, researchers in the US have classified 867 different types of jobs according to whether or not they can be done at home (Dingel and Neiman, 2020: 3). The allocation process is based on responses given by job-holders to surveys carried out by the US Bureau of Labor Statistics. A total of 15 conditions have to be met for jobs to be considered appropriate for homeworking. These include the frequency with which email is used, the importance of outdoor work, the frequency of face-to-face interaction, the use of electrical and mechanical equipment, and exposure to hazards. This suggests that around a third of jobs in the US (37%) and a slightly higher proportion of jobs in the UK (43%) could be carried out at

home (Adams-Prassl *et al*., 2020b). Furthermore, research in the US suggests that the shift to homeworking in the pandemic has been most pronounced among: managerial, professional and related occupations; geographical areas with a higher share of these occupations; and individuals who possess higher qualifications and receive better pay (Brynjolfsson *et al*., 2020; Bick *et al*., 2020).

A pressing issue for employers is what effect the growth in homeworking has on employee productivity. Several theories suggest that it has a negative effect. The theory of learning as participation, for example, argues that employees improve their productivity by watching, listening and following how colleagues deal with everyday tasks (Sfard, 1998). These informal, unplanned and incidental exchanges of tacit knowledge are situated in everyday encounters which cannot easily be reproduced remotely. On this basis productivity is predicted to fall (Jewson, 2008). Similarly, theories of trust-building suggest that teams are most effective when individuals give commitments to deliver in the physical presence of others (Jarvenpaa and Leidner, 1999). Based on this theory, trust between team members will 'gradually dissipate over time without collocated, face-to-face social interactions' with consequential negative effects for productivity (Nandhakumar and Baskerville, 2006: 371).

Some theories, on the other hand, predict that homeworking can boost employee productivity. Social exchange theory, for example, has been used by organisational theorists to explain the motivations behind employee behaviours and attitudes (Gouldner, 1960; Blau, 1964). The theory is based on the idea that parties must abide by certain rules and norms of exchange that generate reciprocity (Cropanzano and Mitchell, 2005). In this context, the theory suggests that in exchange for being allowed to work at home (and having their jobs protected) employees will be prepared to make sacrifices. This includes doing unpaid work, working harder in order

to get noticed or putting in extra effort out of obligation to the employer and/or office-bound colleagues (Elsbach *et al*., 2012; Golden, 2007; Kelliher and Anderson, 2010).

Border theorists, in contrast, are less equivocal (e.g., Clark, 2000). They argue that the transition from home to work is not always easy and so, depending on the outcome, homeworking may have a detrimental or positive effect on productivity. It is argued that role conflict is more difficult where the borders between home and work are blurred as is the case of homeworking in 'normal' circumstances, but especially when it is forced on employees by government instruction and when parents are also expected to home school their children. Homes, for example, may not be suitable for homeworking with individuals having to make do by hastily converting their living room tables into desks and their kitchens into places of work and sites of learning. The effect is that non-work pressures may spill-over into working time making it difficult for individuals to concentrate on work tasks. Role conflicts are also spatial with the world of work and home occupying the same space (Reuschke, 2019). They are mental factors, too, with individuals having to convey a professional image, while also coping with domestic and family responsibilities. On this basis, border theory predicts that enforced homeworking will heighten these negative spill-overs and put downward pressure on employee productivity (Mirchandani, 2000; Crosbie and Moore, 2004).

However, working at home may allow some employees – such as those who do little housework – the opportunity to escape from the noise and disturbances encountered in the office environment (Banbury and Berry, 1998; Dutcher, 2012). It may also allow employees to avoid stressful and tiring commutes to and from work. For these reasons, homeworking may minimise role conflict and thereby provide the basis for increased productivity. According to border theory, then, the effect of homeworking on productivity depends on the permeability of

the border between work and non-work activities (temporally, spatially and mentally), and the protection it gives employees from the disturbances of the office.

The empirical evidence, too, is equivocal with some pre-pandemic studies suggesting that homeworking boosts productivity, while others suggesting the reverse. One of the former is a randomised control trial of a Chinese call centre which employed around 1,000 operators (Bloom *et al*., 2015). Volunteers were randomly divided into a treatment group who worked at home and a control group who continued to work in the office. The working at home group's productivity was 13% higher. They achieved this by increasing the hours they spent logged onto the system and by increasing the number of calls they dealt with per minute. Employees reported that they were more productive because working at home allowed them more autonomy (e.g., to make a tea/coffee or use the toilet whenever they wanted) and because the home was relatively quiet. However, volunteers were not selected completely at random. To qualify for selection, operators had to have been on the payroll for at least six months, have a broadband connection at home and a dedicated room to work in which to work.

In contrast, other studies suggest that homeworking reduces productivity (e.g., Van der Lippe and Lippényi, 2019). One such study is based on a large-scale survey carried out in 2015 across nine European countries. Data were collected from 259 establishments, 869 teams and 11,011 employees. The results suggest that individual work performance – measured by indicators such as planning to finish on time and being able to work efficiently – was lower the longer employees worked at home. Furthermore, managers' rated team productivity significantly lower if team members worked more than eight hours a week at home (roughly equivalent to one day a week).

Less is known about the effect that the widespread growth of enforced, as opposed to voluntary, homeworking has had on productivity levels during the pandemic. Existing evidence is piecemeal, sometimes contradictory and, of course, is still emerging. For example, an online survey of workers in the Netherlands suggests that respondents were 'slightly less productive' working at home during the pandemic than they were before restrictions were introduced (Rubin, 2020: 2). Furthermore, an online survey of Japanese workers revealed that while self-reported productivity levels were lower when working at home, this varied by prior experience of homeworking and the nature of the job. Highly educated and well-paid workers, who used to commute long journeys to work before the pandemic, reported a smaller drop off in their productivity (Morikawa, 2020). On the other hand, a Canadian study of workers suggests the reverse with a third of respondents reporting that their productivity had increased, not fallen, since they were told to work at home (Saba *et al*., 2020). However, variation is likely. A US survey of 653 business owners, for example, carried out in March/April 2020 suggests that productivity effects vary by industry and the educational level of those involved (Bartik *et al*., 2020).

In summary, previous research on the impact of homeworking on employee productivity provides contradictory answers and backing for different theoretical positions. Some offer empirical support for theories predicting that homeworking boosts productivity through, for example, a social exchange process of 'give and take' with employees working harder and longer when away from their normal place of work. By the same token, theories which suggest that homeworking puts downward pressure on productivity also receive empirical support. These theories include situated learning and team building, both of which rely on physical co-location. However, the usefulness of pre-pandemic empirical studies is limited. Such studies have tended to focus on those who volunteered or applied to become homeworkers and not

upon those who were instructed to work at home. In the light of these conflicting theories and predictions, one of the aims of this paper is to examine the effect that the sudden and involuntary shift to homeworking in the UK during the pandemic has had on employee productivity.

Data Sources and Measures

The paper analyses uses three surveys to shed light on the growth of homeworking in the UK, but over different time horizons. The longest running of these is the Labour Force Survey (LFS). By tracking the trajectory of homeworking since the early 1980s, this survey allows us to put the recent surge in homeworking into context. The LFS is a random probability sample survey of households in the UK. Almost 40,000 households are contacted and around 45,000 workers aged 16 and above are interviewed. In 1981, the LFS carried its first question on the location of work. Respondents were asked 'do you work mainly' in one of four locations: in your own home, in the same building or grounds as your home, in different places using home as a base, or somewhere quite different from home. Despite offering a unique perspective on the location of work, eleven years were to pass before the question was repeated. It reappeared in 1992 and has been asked in the same form ever since. We use the annual LFS for 1981 and the second calendar quarter LFS for the years 1992-2019. To examine the pattern of growth, we focus on those 16 and over and in paid employment in the week before interview. All the results are weighted and refer to all those in paid employment regardless of their employment status.

The second survey used in this paper is the Opinions and Lifestyle Survey (OPN). This is the smallest of the three surveys, but is the most frequently carried out. It allows us to track the

trajectory of homeworking throughout 2020 and beyond, and does so on a real-time and continuous basis. We focus on a question which was added to the survey in late March 2020 and has been asked ever since: 'In the past seven days, have you worked from home because of the coronavirus (Covid-19) pandemic?'. This question is asked of working adults only; that is, those 16 years old and above who have a paid job – either as an employee or self-employed – or do casual work for pay. Each survey is based on a randomly selected sample of around 2,500 adults in Britain and is carried out on an almost weekly basis. Response rates vary, but typically two-thirds of those invited to take part do so, either online and by telephone. The published results are weighted when reported to produce a representative picture of Britain at the time of the survey. The survey is carried out by the Office for National Statistics (ONS) and is used by the UK Government to inform its pandemic planning (e.g., Bank of England, 2020: 35). It is therefore a robust dataset.

The third survey used in this paper is the Understanding Society Covid-19 Study (USCS or Covid-19 Study for short). It provides information on homeworking shortly before the outbreak of Covid-19 and during 2020. Moreover, this survey uniquely captures information about changes in self-reported levels of productivity and future homeworking preferences. It therefore allows us to investigate who was affected most by the sudden requirement to work at home, what effect enforced homeworking had on their self-reported productivity and how keen they were to work at home even when they were not required to do so.

The Covid-19 Study is an extension of a much larger and longer running longitudinal household survey which tracks around 40,000 household members who were first interviewed in 2009-2010. It is known as the UK Household Longitudinal Study (UKHLS). All those who were interviewed in at least one of the last two waves of this survey (that is, in 2017-2018 or

2018-2019) and were aged 16 years and older in April 2020 were invited to take part in an additional study.

The USCS was carried out on six occasions during 2020 – in April, May, June, July, September and November. In this paper, we use data from all six surveys. The months of April, May and June coincide with the Spring lockdown.[1] The months of July, September and November, on the other hand, cover the period when restrictions were less stringent. Interviewees were invited to take part in an online survey. The survey was live for seven days towards the end of each month and took an average of 20 minutes to complete. The average response rate across the six surveys was 32.8% (Institute for Social and Economic Research, 2021: 11-12).

Crucially for this paper, respondents to all waves of the survey were asked: 'During the last four weeks how often did you work at home?' They were asked to choose one of the following: 'always', 'often', 'sometimes' or 'never'. Respondents were also asked: 'During January and February how often did you work at home?' They were given the same responses from which to choose. These baseline data were collected from each new respondent who joined the study.

To examine the changing nature of homeworking, we use a range of socio-economic indicators derived from respondents' answers. These include sex, age, employment status and earnings. Other indicators are taken from wave 9 of the UKHLS, which was carried out in 2017-2018. These include ethnicity, long-term health impairments, qualification level, occupation, industry and economic sector. In addition, we use data on domestic commitments in the multivariate analysis of employee productivity. Time spent doing housework is taken from the question:

[1] Throughout this paper, we use the term 'Spring lockdown' to refer to the UK national lockdown of April, May and June 2020.

'Thinking about last week, how much time did you spend on housework, such as time spent cooking, cleaning and doing the laundry?' The June survey also asked whether respondents spent any time on 'childcare or home schooling last week'.

Following the launch of the Covid-19 Study, researchers were invited to suggest additional questions to be included in future surveys. The authors of this paper successfully argued the case for the collection of data on the productivity effects of homeworking and whether the experience of working at home had diminished or enhanced employees' appetite for homeworking in the future. Draft questions were submitted and, after amendments, they were added to the June and September versions of the survey.

Respondents who reported working at home sometimes, often or always in the previous four weeks to the June 2020 survey were asked: 'Please think about how much work you get done per hour these days. How does that compare to how much you would have got done *per hour* back in January/February 2020 [and if they did not work at home in January/February 2020 a memory-jogger was added] when, according to what you have previously told us, you were not working from home?' (original emphasis).[2] The data collected allow a 'then and now' self-reported productivity comparison to be made. The response scales were: 'I get much more done'; 'I get a little more done'; 'I get about the same done'; 'I get a little less done'; and 'I get much less done'. Those who reported a fall in their productivity were asked: 'What is the main reason why you are getting less done these days than you did before the coronavirus pandemic?' They were asked to choose one from six possibilities: the need to provide

[2] The same question was asked of all respondents to the September version of the survey, hence the memory-jogger was removed.

childcare/home schooling; equipment difficulties; having to share space and facilities; a reduction in work; interruptions from others; and other reasons which were collected verbatim.

The September 2020 version of the Covid-19 Study asked all respondents who were in work about how they thought their productivity had changed since the start of the year. They were also asked to quantify the scale of the change. If they said that they were able to get more done per hour they were asked: 'Thinking about how much more you get done these days, would you say that what you can do in an hour now would previously have taken you: 1. Up to an hour and a quarter; 2. Between an hour and a quarter and an hour and a half or 3. More than an hour and a half?' If they said that they got less done, they were asked: 'Thinking about how much less you get done these days, would you say that what you can do in an hour now would previously have taken you:1. Between 45 minutes and an hour; 2. Between 30 and 45 minutes; or 3. Less than 30 minutes?'. For example, taking one hour to do what previously took less than 30 minutes suggests that self-reported productivity had more than halved (i.e. fallen by more than 50%). These data allow us to quantifiably compare self-reported productivity levels according to where employees worked at the time of interview.

It should be noted that nowhere in any of these questions was productivity itself mentioned, instead the emphasis was placed on work done per hour. However, the data rely on respondents' powers of recall and not upon direct measures of output and hours worked from which labour productivity is traditionally derived (Felstead *et al*., 2020). Nevertheless, the government requirement that employees work at home if they can (in force in the Spring lockdown and to a lesser extent at other times throughout 2020) minimises the 'selection effect' of only the most trusted and productive being allowed to work at home.

To gauge workers' appetite for homeworking in the future, respondents who reported working at home in the June and September surveys were asked: 'Once social distancing measures are relaxed and workplaces go back to normal, how often would you like to work from home?' The response options were: 'always', 'often', 'sometimes' or 'never'.[3] This question was not asked of those not working at home at the time of the survey.

A cross-sectional weight was derived for each survey in the Covid-19 Study. These weights are used throughout this paper. The analysis focuses on those who reported that they were working for at least one hour in the previous week before interview. For the productivity and future intentions analysis we focus on employees, but for the trends and changing nature of homeworking we focus on those in employment regardless of their employment status (which we refer to as 'workers').

Findings

Patterns of Growth

Our first task is to put the recent change in homeworking into a broader historical context. This enables us to gauge the significance of the change, and identify the type of jobs and individuals who have been affected most. Time series data for the UK paints a picture of a long-term shift towards homeworking before the outbreak of Covid-19. But the change was gradual rather than dramatic (see Figure 1). In the year immediately before the Spring lockdown, one in twenty (4.7%) of those employed worked mainly at home, double the proportion reporting that they worked mainly at home in 2003 and triple the proportion in 1981 (1.5%).

[3] The September version of the question replaced the word 'relaxed' with the words 'fully relaxed'.

‘Put Figure 1 about here’

According to the Understanding Society Covid-19 Study (USCS) 5.7% of the employed population were exclusively working at home in January/February 2020. This proportion is one percentage point higher than the 2019 LFS estimate, but the questions and response scales are not directly comparable. Most notably, the LFS offers a number of ways in which the home may be used such as a base from which work tasks are carried out. The LFS also focuses on the main place of work and so, unlike the USCS, it does not offer options such as sometimes, often and always, and apply a time frame to the answer given. The Covid-19 Study, therefore, produces more nuanced estimates of respondents’ current work location and asks individuals to recall where they worked at the beginning of 2020. This suggests that 6.1% of workers often worked at home in January/February 2020, but three times as many sometimes worked at home (17.7%). Around seven out of ten (70.6%) did not work at home at all which implies that they were either working at an employer’s/client’s premises and/or doing work elsewhere. More interestingly, these data suggest that homeworking surged dramatically in the Spring lockdown. The proportion reporting that they worked exclusively at home rose eight-fold from 5.7% of workers in January/February to 43.1% in April. It fell thereafter reaching 23.5% in September before rising to 28.7% in November as local lockdowns and restrictions were reintroduced (see Figure 2).

‘Put Figure 2 about here’

The OPN data suggests that the prevalence of homeworking remained high throughout 2020 and beyond (see Figure 3). During the Spring lockdown between 40-50% of workers were

carrying out work at home, but the proportion fell to around one in four workers (27%) in late August 2020 as restrictions were lifted. Since then, however, the proportion has risen as full-scale lockdowns have been reintroduced. However, one should also bear in mind that the OPN estimates differ from estimates produced by the Covid-19 Study. This is because the OPN uses a different definition of homeworker which includes all those who have carried out any of their work at home because of coronavirus.

'Put Figure 3 about here'

Despite the sharp rise in homeworking during the pandemic, its growth has not been evenly spread. The largest surges were recorded among the most privileged segments of the labour market – the better educated, the higher skilled and the higher paid. For example, according to data from the USCS, the proportion of graduates reporting that they worked exclusively at home rose from 8.0% before lockdown to 59.2% during the Spring lockdown (see Tables 1 and 2). On the other hand, the growth in homeworking among those with no qualifications was more muted despite starting from a relatively low base. It rose by just five percentage points during the Spring lockdown with the vast majority (84.0%) of lowly qualified workers working outside the home.

'Put Tables 1 and 2 about here'

Similarly, while homeworking grew across all occupational groups during the Spring lockdown, it grew particularly rapidly among the higher skilled occupational groups. For example, during the April-June 2020 period a majority of those working as managers, professionals, associate professionals (e.g., computer assistants, buyers and estate agents), and

administrative and secretarial staff (e.g., personal assistants, office clerks and bookkeepers) reported that they did all of their work at home. This was up from 5-9% before lockdown. However, workers operating in lower skilled occupations continued to use the factory, shop or office as their workplace both before and during the Spring lockdown. For example, more than four out of five operatives and elementary workers (e.g., machine operators, assemblers and labourers) reported that none of their work was carried out at home.

The pay profile of homeworkers also changed with the net annual pay of workers who did all of their work at home rising from around £20,000 before the pandemic began to around £27,250 during the Spring lockdown. On the other hand, the pay profile of those who worked at home often or sometimes fell, while the pay profile of those who worked outside of the home declined slightly. This suggests the shift towards homeworking was strongest among the higher paid.

Certain industries and regions also saw dramatic rises in the prevalence of homeworking. For example, during the Spring lockdown approaching two-thirds of those working in banking and finance (63.0%), over a half of those based in London (54.3%) and approaching a half of those based in the South East (45.5%) reported that they did all of their work at home during the Spring lockdown. These proportions were up from around 7% before the pandemic began.

However, the growth of homeworking was fairly evenly spread among workers with different personal demographic profiles. For example, the growth in the proportions exclusively working at home rose at a similar rate among black, Asian and ethnic minority (BAME) workers as it did among others. The same goes for disability and gender. The only exception is age where the growth of homeworking was more pronounced among younger workers.

Consequences for Employee Productivity

The paper's second aim is to examine what effect the sudden rise in homeworking has had on self-reported levels of productivity. According to the Covid-19 Study, two-fifths (40.9%) of employees who worked at home always, often or some of the time reported in June 2020 that they were able to get as much work done then as they did six months earlier. Over a quarter (28.9%) said that they got more done, while 30.2% said that their productivity had fallen (see Table 3). On the whole, then, homeworking in the Spring lockdown did not appear to have had a significant effect on productivity levels. By September 2020, the situation had improved a little more with just 15.2% of employees who worked at home reporting that their productivity had fallen.

'Put Table 3 about here'

Those who reported that they were not able to get as much done per hour while working at home were asked to identify the main reason for this. Three out of ten employees (28.6%) said that they had less work to do and around a similar proportion (26.8%) said that they had to provide care/home schooling and a fifth (20.1%) identified other reasons. These included a lack of motivation/focus/concentration, changes to how work was carried out because of Covid-19, limited access to workplace resources and less frequent interaction with colleagues.

The results of the multivariate analysis suggest that those who worked exclusively at home in June 2020 were most likely to report themselves as more productive rather than less (see Table 4). However, those who reported higher domestic commitments – such as doing housework and carrying out home schooling and/or childcare – reported that their productivity was

significantly lower. This is in line with border theory which suggests that the invasion of home commitments is pronounced when work is carried out while also at home. This was especially the case in the Spring lockdown when schools were closed. During this time, parents were expected to care for their children, liaise with schools and even home school their children, hence we focus our attention on the June 2020 data when these pressures were greatest.

'Put Table 4 about here'

The significant negative interaction effects between home schooling/childcare and the intensity of homeworking provides empirical support for the difficulties employees faced in maintaining productivity while also provisioning for children. However, while these results do not vary by gender, the reasons given for falling self-reported productivity do with women more likely than men to cite interruptions from family members as one of the three main causes of reduced productivity.

On the other hand, longer working hours is positively associated with increased self-reported productivity. This provides empirical support for theories which suggest that homeworking may lead to over-working as employees go the extra mile to prove that they are working effectively, out of obligation to their employer or in order to get noticed. However, this may come at a cost with homeworkers finding it more difficult to reconcile home and work life, working longer hours than they used to, and more frequently feeling drained and isolated (Eurofound, 2020: 35-43). Pre-pandemic research in the UK also supports this suggestion (Felstead and Henseke, 2017). These consequences need to be a feature of future research.

The September 2020 wave of the Covid-19 Study asked all workers to report how their productivity had changed since the pandemic began. Some employees who did none of their work at home reported that their productivity had fallen compared to the situation before the pandemic. For example, businesses operating during the pandemic were required to follow strict social distancing procedures which limited human-to-human contact. This may have slowed down the labour process and therefore put downward pressure on self-reported levels of employee productivity. On the other hand, a slightly higher proportion of those who did none of their work at home reported that they were able to get more done with quieter roads, for example, allowing quicker and more frequent home delivery. However, the productivity effects were more marked among those who worked at home and were in the upward direction. For example, double the proportion of full-time homeworkers reported that their productivity had increased compared to those who did none of their work at home, whereas comparable proportions reported a fall in output per hour (see Figure 4).

'Put Figure 4 about here'

Despite the self-reported nature of these data, evidence assembled by the Bank of England – and taken from the LFS and ONS – suggests that prior to Covid-19 lower productivity industries were lower users of homeworking (Bloom *et al*., 2020: Figure A10). Evidence gathered from employers also suggests that productivity has not been reduced by the increase in homeworking. For example, in September 2020 an ONS survey asked 5,5000 employers about the effect that homeworking was having on employees' productivity (ONS, 2020a). A majority said that productivity had not changed (51.9%), but around a quarter (23.9%) said that productivity had fallen and a similar proportion said it had either increased or that they did know what effect it had had (24.3%). Other employer surveys also suggest that, on average,

productivity has not been reduced by the recent surge in working at home. For example, the Chartered Institute of Personnel and Development (CIPD) conducted a survey of 1,046 establishments. It found that around a third of employers (37%) said that homeworking had made no difference to employee productivity. A similar proportion of employers reported that it had either had a small positive effect (18%) or a small negative effect (22%). A smaller share of employers perceived stronger impacts, again in both directions, with 11% reported strong positive effects and 6% strong negative effects (Brinkley *et al*., 2020:14-17).

Future of Work

The third aim of this paper is to assess whether employees want to continue to work at home in the future and what effect this might have on their productivity. According to the Covid-19 Study, nine out of ten (88.2%) of employees who worked at home in June 2020 reported that they would like to continue working at home in some capacity with around one in two employees (47.3%) wanting to work at home often or all of the time (see Table 5). The appetite for working at home had increased slightly by September 2020 to 93.3%.

'Put Table 5 about here'

Putting data on future homeworking preferences together with self-assessed evaluations of the effect of homeworking on productivity suggests that the upsurge in interest in homeworking is unlikely to be detrimental to productivity. Two-thirds (65.5%) of employees who reported that they were able to produce much more per hour while working at home in June 2020 wanted to work at home often or all of the time in the future. In comparison, just 6.4% of employees who did not want to work at home in the future said that their productivity was much higher when

they worked at home. This 'selection effect' is likely to be advantageous to employers keen to bounce-back strongly from the impact of Covid-19.

However, we do not know from these data if employees' preferences have changed because of the experience of working at home during the pandemic. Nor do we know if pre-pandemic levels of homeworking reflected employers' unwillingness to allow their staff to work in this way. Nevertheless, the survey evidence from employers presented in this paper suggests that higher levels of homeworking will persist given the relatively benign effects employers report it has had on employee productivity alongside the savings that can be made from reducing the office estate.

Conclusion

For many decades before the outbreak of Covid-19, homeworking has been growing in the UK. The shift has been enabled by information technology which allows workers to be on call 24/7 and wherever they happen to be. However, the shift has been slow and incremental until the outbreak of Covid-19. Within the space of a few weeks the prevalence of homeworking shot up eight-fold from 5.7% of the workers to 43.1%. The shift was most pronounced among the highest paid, the better qualified, the higher skilled and those living in economically prosperous areas. Findings in this paper show that the pandemic-induced growth in homeworking favoured the most privileged, hence confirming some of the early US-based research (e.g., Brynjolfsson *et al*., 2020; Bartik *et al*., 2020).

Before the pandemic, the spread of homeworking may have been held back by fears among employers that employees would not be able to learn from one another, form effective teams

and that their effort levels might fall when out of sight. However, the evidence presented in this paper does not support these fears. Two-fifths (40.9%) of homeworkers reported that they were able to get as much work done in June 2020 as they were six months earlier. Over a quarter (28.9%) said that they got more done, while 30.2% said that their productivity had fallen. However, by September 2020 more homeworkers were reporting that their productivity had risen than fallen since the pandemic began. Nevertheless, the results are not wholly conclusive. Instead, they give support to conflicting theoretical predictions, such as social exchange theory which predicts a rise in productivity when work is carried out at home, and situated learning and team building theories which predict a fall. Moreover, the multivariate results show that these reported productivity effects varied according to household factors such as the need to provide home schooling and the number of hours spent provisioning the household (such as cooking and cleaning). This suggests that the nature of the household had an important impact on the productivity effects of homeworking when social restrictions were at their most stringent. This adds another perspective to the debate which has so far focused on productivity variations associated with qualifications, pay and geographical location (e.g., Brynjolfsson *et al*., 2020; Bick *et al*., 2020; Morikawa, 2020).

While the findings presented in this paper provide an important contribution to many of the debates raised by the pandemic-induced growth of homeworking, the productivity data in particular have limitations. Respondents were asked to compare their productivity at the time of the survey with their productivity several months before. This method raises three problems (cf. Van der Lippe and Lippényi, 2019). First, respondents may not recall what they were able to do per hour several months ago and therefore may not be able to make an accurate comparison. Secondly, respondents may over-estimate current over past performance in order to paint themselves in a favourable light. Thirdly, the productivity measure used in this paper

relies on employees' self-reports of how their hourly productivity changed when working at home and is not based on a direct measure of changes to output per hour.

The paper also has an analytical drawback. Apart from examining the association that domestic commitments and home schooling has on the productivity of homeworkers, we cannot examine other mechanisms involved since the Covid-19 Study has limited data on the work situation of respondents. Furthermore, in the long-term productivity levels may wane as employees are not in face-to-face contact with their colleagues, and therefore not able to learn from one another and build effective teams. In addition, employees' motivation may decline as homeworkers miss out on the socialability of the traditional workplace. That said, employer surveys suggest that homeworking is here to stay. For example, the Institute of Directors (IoD) carried out a survey in September 2020 of around 1,000 company directors. It found that nearly three quarters said they intended to carry on allowing staff to work at home. Furthermore, more than half said they were planning to reduce their long-term use of office space and more than one in five reported their usage would be significantly lower (IoD, 2020). Similarly, a survey of 573 businesses carried out by the CBI suggests that employers are planning for higher levels of homeworking than in the past . Almost half (47%) predicted that in two or three years' time the majority of their staff would be working in split locations – half the time in the office and half of the time working at or from home. This is up from one in ten (8%) employers in 2019 (CBI, 2020: 4-5). The environmental benefits of increased levels of homeworking through a reduction in the need to travel have been widely noted. However, the displacement of traffic to other routes, and the heating and light of poorly insulated homes are issues which also need to be factored into full-scale environmental impact assessments. Despite this, the Welsh Government has already announced that it expects 30% of workers to be working remotely after the pandemic has past (Welsh Parliament, 2021).

The new findings presented in this paper, along with those produced by others, suggest that higher levels of homeworking than in the past will be a key characteristic of the 'new normal'. Nine out of ten of employees who worked at home during the pandemic would like to continue working at home in some capacity when social distancing restrictions are fully lifted. Moreover, around one in two employees would like to work at home often or all of the time. The employee and employer evidence also suggests that while homeworking is not detrimental to productivity, those with high domestic commitments find it difficult to maintain productivity levels and may therefore seek to spend more of their time working away from home when social distancing restrictions are fully lifted. This suggests that while the growth of homeworking is not a flash in the pan and is likely to become a permanent feature of the new world of work, many will seek to have the best of both worlds by working at home and in a variety of other places, including the office.

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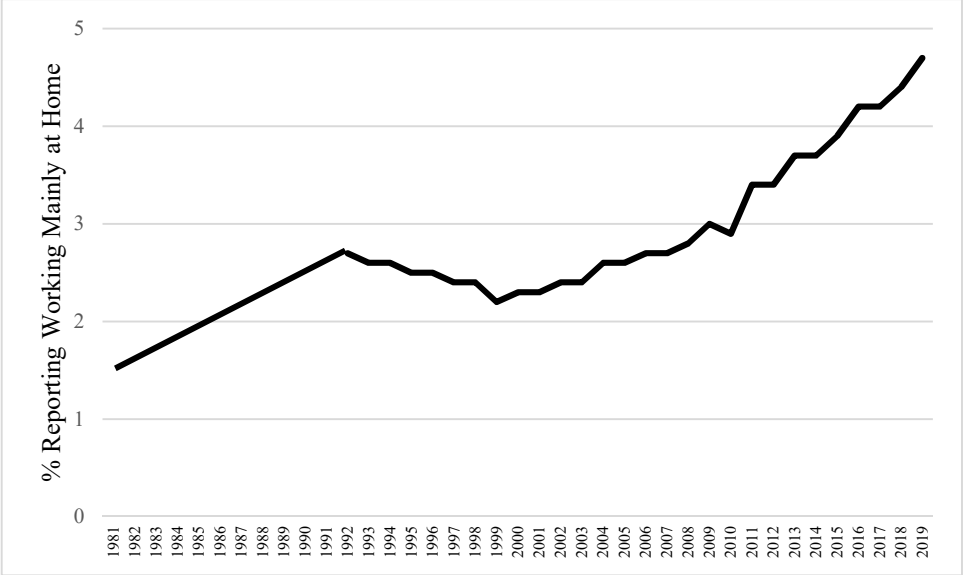
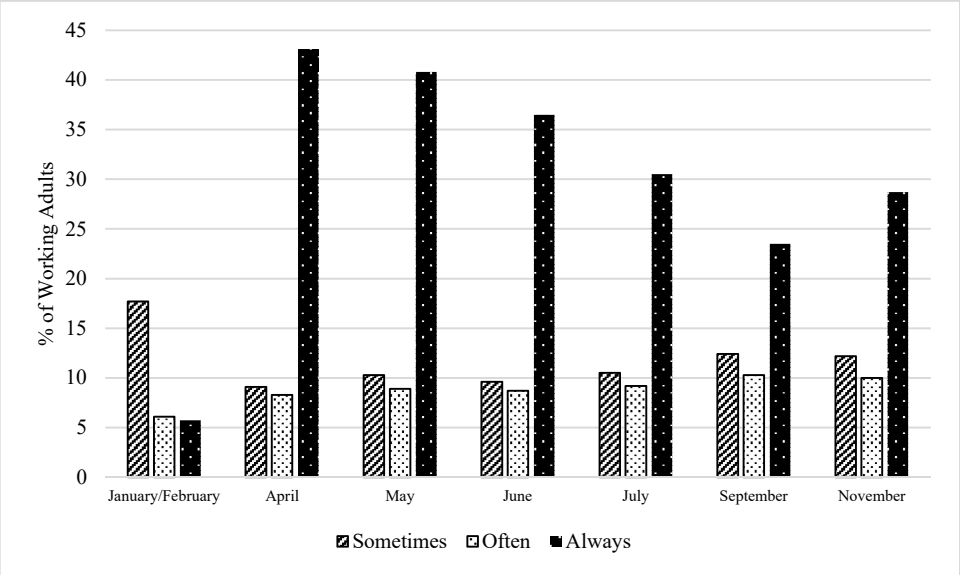
Figure 1:
Trends in Mainly Working at Home, 1981-2019: Labour Force Survey Evidence



Note:
This figure is based on those aged 16 or over and were in paid employment in the week before interview; those who did not give a valid response to the work location question are excluded. For each year, the data have been weighted to compensate for differential response rates to the survey.

Source: own calculations based on the Annual Labour Force Survey 1981 and quarter 2 Labour Force Surveys for years 1992-2019.

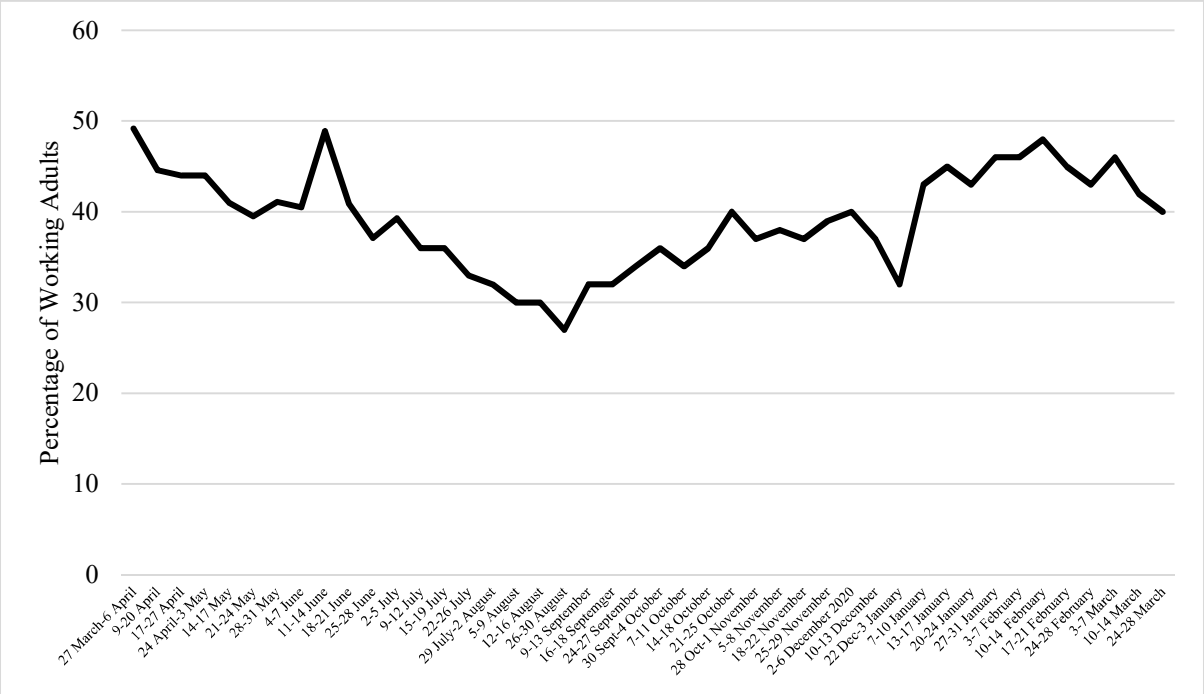
Figure 2:
Prevalence of Homeworking in the UK During 2020: Understanding Society Covid-19 Study Evidence



Note:
These data report adults 16 years old and over in the UK who worked at least one hour in the week before interview. The data have been weighted.

Source: own calculations based on the Understanding Society Covid-19 Study, April, May, June, July, September and November 2020.

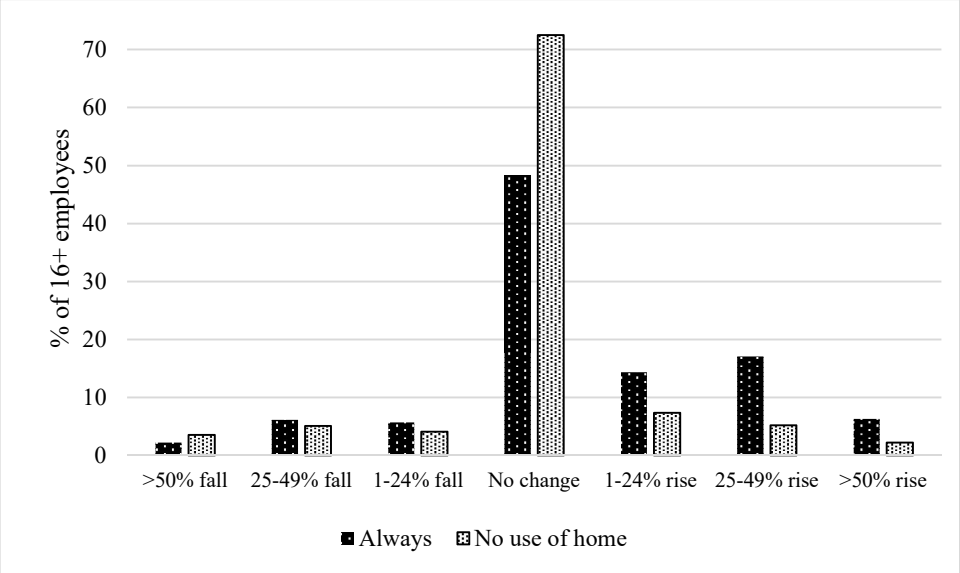
Figure 3:
Homeworking During the Pandemic: Opinions and Lifestyle Survey Evidence, March 2020 to March 2021



Note:
These data report working adults aged 16 and over in Britain who reported that they have worked at home in the past seven days.

Source: based on data taken from ONS (2021).

Figure 4:
Quantified Perceived Productivity Effects of the Pandemic by Working at Home Intensity, September 2020



Source: own calculations from the Understanding Society Covid-19 Study, September 2020.

Table 1:
Use of the Home as Workplace Before the Pandemic, January/February 2020

Socio-economic Characteristics	Office/factory work (no use of home as workplace) (1)	Use of the Home as Workplace		
		Sometimes (2)	Often (3)	Always (4)
	Row percentages/absolute values[1]			
Sex				
Male	69.6	18.4	6.7	5.3
Female	71.6	16.9	5.4	6.1
Age				
16-29	83.1	11.5	2.8	2.7
30-44	67.9	20.2	7.0	4.9
45-59	66.6	20.1	6.6	6.7
60 and above	68.5	14.7	7.6	9.3
Ethnicity				
Black, Asian and ethnic minority (BAME)	66.2	20.3	6.2	7.4
White	71.2	17.3	6.0	5.5
Health				
Long standing impairments	70.6	16.7	6.3	6.3
No impairments	70.5	18.1	6.0	5.5
Highest qualification[2]				
Degree	51.7	29.8	10.5	8.0
Vocational degree	71.6	17.0	5.8	5.6
A-level or equivalent	78.9	13.9	3.5	3.7
GCSE or equivalent	84.4	7.7	3.3	4.5
Other qualification	84.3	6.1	3.3	6.3
No qualifications	89.0	5.6	2.2	3.2
Pay				
Net annual earnings	£18,692	£28,556	£28,577	£20,084
Employment status				
Employee	75.2	16.7	5.1	3.0
Self-employed	44.8	20.7	10.6	23.9
Occupation				
Managers & directors	50.1	29.8	11.5	8.6
Professionals	46.0	36.3	12.3	5.4
Associate professionals	60.5	23.6	8.2	7.8
Administrative & secretarial	73.1	15.3	62	5.4
Skill trades	84.6	10.0	2.0	3.4
Personal services	82.6	7.9	3.3	6.2
Sales	91.7	4.9	1.2	2.2
Operatives	86.5	8.8	0.1	4.7
Elementary	91.8	6.1	1.1	1.1
Industry				
Agriculture, forestry and fishing	71.9	7.7	2.4	18.0
Energy and water	55.1	27.5	11.7	5.7
Manufacturing	79.4	13.0	3.7	3.9
Construction	73.4	16.9	5.6	4.1

Distribution, hotels and restaurants	85.9	8.8	2.1	3.2
Transport and communication	62.0	20.2	9.3	8.5
Banking and finance	55.4	26.8	9.8	7.9
Public administration, education and health	68.8	21.3	5.9	4.1
Other services	58.1	18.9	8.9	14.2
Sector				
Private firm or business	75.5	14.9	5.8	3.8
Other type of organisation	69.1	23.3	5.1	2.5
Region				
North East	75.9	14.3	4.2	5.6
North West	75.4	13.6	5.0	6.0
Yorkshire and Humber	73.5	18.5	3.9	4.0
East Midlands	74.0	15.5	5.5	5.0
West Midlands	77.2	12.9	5.3	4.6
East of England	68.6	19.8	6.2	5.4
London	61.8	21.8	9.2	7.3
South East	64.7	21.2	7.5	6.5
South West	65.5	20.4	6.5	7.7
Wales	76.5	14.6	5.2	3.8
Scotland	74.7	15.8	4.5	5.0
Northern Ireland	75.0	15.1	5.3	4.6

Note:

1. The table reports all workers aged 16 and over who worked at least one hour in the week before the survey. These baseline data are taken from the April, May and June 2020 surveys (11,453 respondents – unweighted).

Source: own calculations of the Understanding Society Covid-19 Study, April, May and June 2020.

Table 2:
Use of the Home as Workplace During the Spring Lockdown, April-June 2020

Socio-economic Characteristics	Office/factory work (no use of home as workplace) (1)	Use of the Home as Workplace		
		Sometimes (2)	Often (3)	Always (4)
	Row percentages/absolute values[1]			
Sex				
Male	43.6	9.1	7.9	39.4
Female	39.6	10.2	9.4	40.9
Age				
16-29	46.0	7.3	6.4	40.2
30-44	37.1	9.8	9.9	43.2
45-59	41.8	10.5	8.6	38.9
60 and above	46.9	9.1	8.4	35.7
Ethnicity				
Black, Asian and ethnic minority (BAME)	38.8	10.8	7.6	42.8
White	41.7	9.5	8.9	39.9
Health				
Long standing impairments	43.4	9.1	7.7	39.8
No impairments	40.7	9.8	9.1	40.4
Highest qualification				
Degree	18.2	10.7	11.9	59.2
Vocational degree	43.4	13.6	9.3	33.7
A-level or equivalent	48.0	9.9	7.7	34.4
GCSE or equivalent	69.7	5.9	4.6	20.8
Other qualification	73.7	6.6	6.5	13.3
No qualifications	84.0	5.8	1.4	8.9
Pay				
Net annual earnings	£18,333	£22,880	£24,231	£27,265
Employment status				
Employee	43.6	8.8	8.4	39.2
Self-employed	29.6	14.5	8.2	47.6
Occupation				
Managers & directors	27.0	11.3	11.0	50.8
Professionals	18.3	10.8	13.4	57.4
Associate professionals	17.6	8.3	9.0	65.1
Administrative & secretarial	29.9	9.0	9.3	51.8
Skill trades	71.0	13.3	3.9	11.8
Personal services	63.8	11.2	7.3	17.7
Sales	64.8	5.8	3.7	25.7
Operatives	85.1	5.0	2.0	8.0
Elementary	83.9	4.7	2.4	9.1
Industry				
Agriculture, forestry and fishing	60.9	12.3	4.5	22.4
Energy and water	27.3	10.2	5.6	56.9
Manufacturing	56.9	9.0	6.4	27.7
Construction	51.5	12.7	6.5	29.3

Distribution, hotels and restaurants	69.8	8.2	3.8	18.1
Transport and communication	38.1	5.5	6.0	50.4
Banking and finance	22.3	7.0	7.7	63.0
Public administration, education and health	37.0	12.1	12.8	38.1
Other services	27.6	11.4	9.9	51.1
Sector				
Private firm or business	48.3	7.1	6.0	38.5
Other type of organisation	33.4	12.1	13.0	41.4
Region				
North East	46.4	10.2	11.0	32.4
North West	42.1	8.2	10.0	39.8
Yorkshire and Humber	50.0	10.3	7.2	32.4
East Midlands	50.6	9.3	7.9	32.2
West Midlands	50.6	7.9	8.6	32.9
East of England	40.6	11.7	8.5	39.3
London	30.9	7.7	7.2	54.3
South East	33.3	10.8	10.4	45.5
South West	42.2	11.1	8.4	38.4
Wales	45.9	9.5	9.6	35.2
Scotland	35.9	9.8	7.6	46.7
Northern Ireland	54.0	10.0	6.1	30.2

Note:

1. The table reports all workers aged 16 and over who worked at least one hour in the week before the survey. The figures are rolling averages of the results for April, May and June 2020 (7,130, 6,587 and 6,579 unweighted respondents respectively).

Source: own calculations of the Understanding Society Covid-19 Study, April, May and June 2020.

Table 3:
Perceived Productivity Change and Intensity of Homeworking, Employees

Perceived Productivity Change	Use of the Home as Workplace			
	All – sometimes, often or always (1)	Sometimes (2)	Often (3)	Always (4)
	Column percentages			
(a) June 2020				
I get much more done	13.5	9.1	10.0	15.5
I get a little more done	15.4	11.9	13.5	16.9
I get the same done	40.9	46.8	38.4	39.8
I get a little less done	21.0	16.5	25.1	21.1
I get much less done	9.2	15.6	13.0	6.6
(b) September 2020				
I get much more done	17.6	12.6	16.9	20.5
I get a little more done	18.4	16.1	24.2	17.1
I get the same done	48.8	55.1	43.0	48.0
I get a little less done	12.4	13.4	12.8	11.7
I get much less done	2.8	2.8	3.1	2.7

Notes:

1. The table reports all employees aged 16 and over who worked at least one hour in the week before the survey and did at least some of their work at home (3,477 respondents – unweighted for panel a; 2,797 respondents unweighted for panel b).

Source: own calculations of the Understanding Society Covid-19 Study, June and September 2020.

Table 4:
Perceived Productivity Change[1] and Use of the Home as Place of Work, Employees: OLS Regressions

	Model 1	Model 2	Model 3	Model 4
(a) Intensity of Homeworking				
Often working at home	-0.07	-0.03	-0.05	-0.02
(base=sometimes)	(0.08)	(0.08)	(0.08)	(0.08)
Always working at home	**0.23*** **	**0.19*** **	**0.19*** **	**0.27*** **
	(0.06)	**(0.06)**	**(0.06)**	**(0.07)**
(b) Domestic Commitments				
Number of hours doing		**-0.01** **	**-0.01*** **	**-0.01*** **
housework		**(0.01)**	**(0.00)**	**(0.00)**
Home schooling/childcare		**-0.21*** **	**-0.26*** **	0.16
(base=none)		**(0.05)**	**(0.07)**	(0.14)
(c) Working Time Commitments				
Number of weekly working		**0.02*** **	**0.02*** **	**0.02*** **
hours		**(0.00)**	**(0.00)**	**(0.00)**
(d) Interaction Effects				
Often working at home X				**-0.45** **
home schooling/childcare				**(0.20)**
(base=sometimes and/or no				
home schooling/childcare)				
Always working at home X				**-0.49*** **
home schooling/childcare				**(0.17)**
(e) Controls				
Socio-economic characteristics[2]	No	No	Yes	Yes
(f) Model Parameters				
Constant	**-0.09**	**-0.55*** **	**-0.48** **	**-0.56*** **
	(0.05)	**(0.09)**	**(0.20)**	**(0.21)**
R^2	0.01	0.06	0.10	0.10
Number of weighted observations	2,367	2,367	2,367	2,367

Note:

1. As a summary measure, we create a perceived productivity change index by allocating scores of +2, +1, 0, -1 and -2 according to the responses given in response to the change in productivity question (see text). The same pattern of results is produced using ordered probit regressions.
2. These controls are a sex dummy, three age dummies, a co-habitation dummy, a child under 5 dummy, a child under 16 dummy, eight occupational dummies, eight industry dummies and eleven regional/country dummies.

* $p<0.1$; ** $p<0.05$; *** $p<0.01$. Unweighted samples 2,789 for each of the four models.

Source: own calculations of the Understanding Society Covid-19 Study, June 2020.

Table 5:
Future Working at Home Preferences and Perceived Productivity Change, Employees

Intensity of Homeworking and Perceived Productivity Change	Working at Home Preferences After Social Distancing (row percentages)			
	Never	Sometimes	Often	Always
Intensity of homeworking (June 2020)				
All of those working at home – sometimes, often or always	11.8	40.9	34.1	13.2
Sometimes	29.2	56.8	10.8	3.2
Often	17.2	49.8	30.9	2.1
Always	5.8	34.5	41.2	18.6
Perceived productivity change since working at home (all intensities)				
Much higher	6.4	28.1	41.7	23.8
Much lower	29.2	45.5	21.2	7.1

Note:
1. The table reports employees aged 16 and over who worked at least one hour in the week before the survey and did at least some of their work at home (3,479 respondents – unweighted).

Source: own calculations of the Understanding Society Covid-19 Study, June 2020.