

Article

# Homeworking hours, rewards and opportunities in the UK: 2011 to 2020

Working from home in the UK between 2011 and 2020, including the impact of the coronavirus (COVID-19) pandemic. Looking at indicators of productivity and work success such as pay, hours worked, bonuses, promotions and more, with industry, region and demographic breakdowns. Part of the Economic review: April 2021.

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# 1 . Main points

- Of the employed population, 35.9% did some work at home in 2020, an increase of 9.4 percentage points compared with 2019; this also includes a change in the type of people who worked from home in 2020.
- The average gross weekly pay of workers who had recently worked from home was about 20% higher in 2020 than those who never worked from home in their main job, when controlling for other factors; this continues a long running trend.
- People who mainly worked from home were less than half as likely to be promoted than all other workers between 2012 and 2017, when controlling for other factors.
- People who mainly worked from home were around 38% less likely on average to have received a bonus compared with those who never worked from home between 2013 and 2020, when controlling for other factors.
- People who completed any work from home did 6.0 hours of unpaid overtime on average per week in 2020, compared with 3.6 hours for those that never work from home.
- There is considerable regional variation in homeworking, not all of which is explained by differences in the types of industries that operate in each region.
- Homeworkers were more likely to work in the evenings compared with those who worked away from home in September 2020.
- The sickness absence rate for workers doing any work from home was 0.9% on average in 2020, compared with 2.2% for those who never worked from home in their main job.

## 2 . Important things to know about this analysis

This article looks at how different propensities of homeworking impact an individual's job outcomes and explores the characteristics of those who work from home. The unprecedented increase in homeworking in 2020, driven by the coronavirus (COVID-19) pandemic, has led many to consider the implications for this on productivity, and other labour market related outcomes. In this research we use objective indicators related to productivity that are consistent before and during the pandemic.

We use the Annual Population Survey (APS) for the years 2011 to 2019, to understand pre-pandemic trends and then compare this to 2020 data. Respondents are asked questions about their relationship with the labour market, including the extent to which they work from home.

Using these responses, we have split homeworking into four mutually exclusive categories which describe an individual's propensity to work from home. These are:

- Mainly work from home.
- Recently worked from home - i.e., those who do not work mainly from home but did some work at home during the reference week.
- Occasionally work from home - i.e., those who report neither mainly nor recently working from home, but who report sometimes doing work at home in their current job.
- Never work from home.

We also use the Time Use Survey (2015, April and September 2020) to gain further insight into the working day of those who work at and away from home.

Our analysis is different to other published research in two main ways. First, it doesn't rely on self-reported measures of productivity, as are often used in research into the effects of homeworking on productivity in 2020. These rely on the workers' perceptions of productivity, which may not align with economic and statistical measures. Second, we use metrics that can be measured before and during the pandemic. Many other studies have survey data from either before the pandemic, or during the pandemic, but rarely both. This aims to improve our understanding of the wider impact of homeworking on the economy and aggregate labour market.

We have used different survey weights in this analysis compared with other estimates of homeworking using the Annual Population Survey (APS) [published by the ONS](#). To combine information collected in different waves of the APS to generate mutually exclusive groups, we have combined weights in the dataset. Therefore, these weights are classed as experimental. See section 9 for more details.

The APS combines data from two waves of the main Labour Force Survey (LFS), collected on a local sample boost. LFS responses are weighted to official 2018-based population projections on demographic trends that pre-date the coronavirus pandemic. Rates published from the LFS remain robust; however, levels and changes in levels should be used with caution.

## **3 . Hours worked, overtime and sickness**

### **Hours worked**

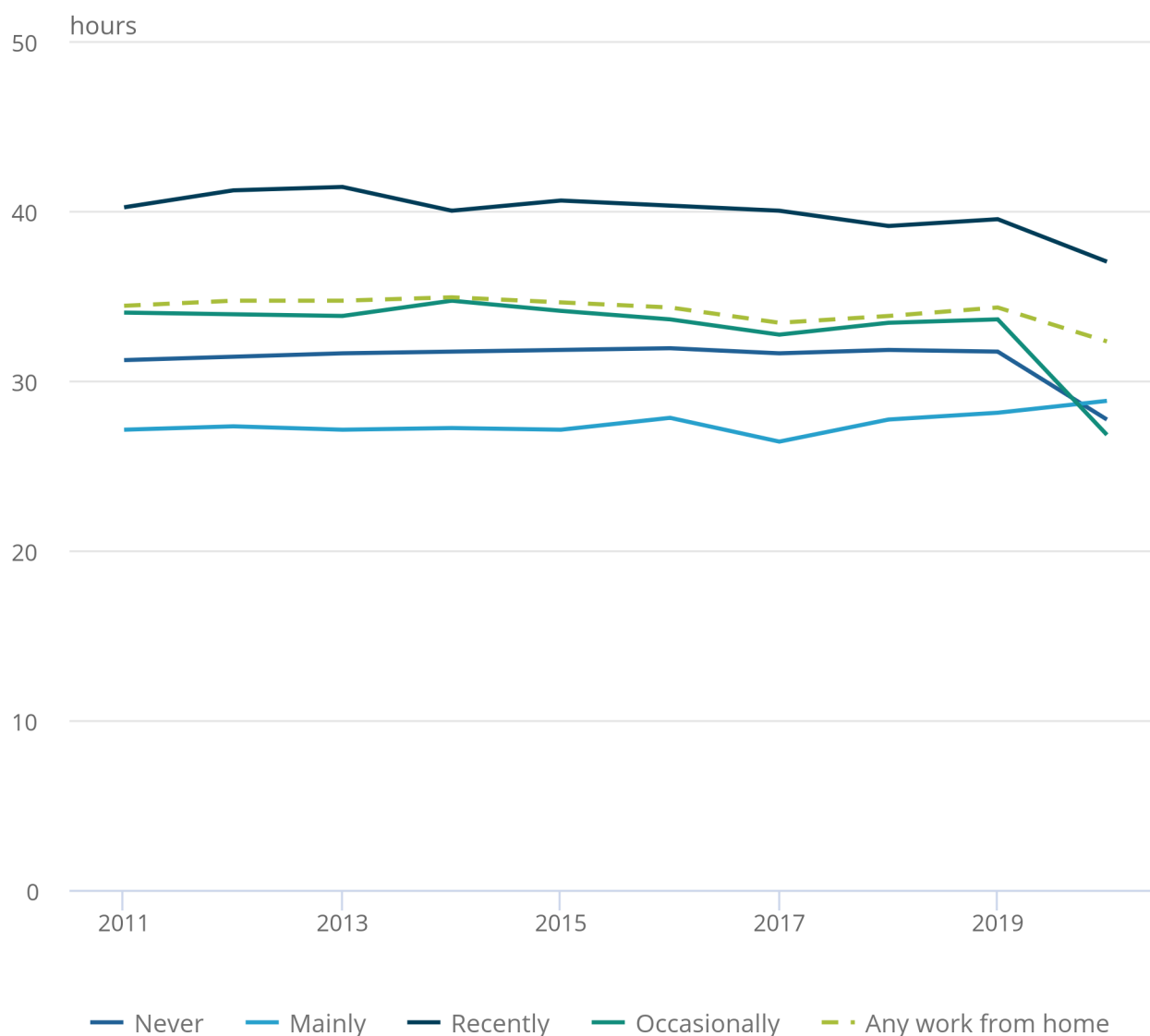
In 2020, those who worked from home to any degree worked more hours (32.3 on average per week) than those who never worked from home (27.7). As a result of workers being on furlough or temporarily away from work, the coronavirus (COVID-19) pandemic caused a reduction in average weekly hours worked in 2020. Compared with 2019, hours worked fell by a greater amount amongst those who reported never doing any work from home (negative 4.0) compared with those who did some work from home (a fall of only 2.0 hours). This is expected as homeworkers could continue to work despite coronavirus restrictions. For those that mainly worked from home, working hours increased slightly in 2020 (Figure 1).

**Figure 1: Homeworkers work a higher number of hours than those who never work from home**

Average weekly hours worked, by work from home status, UK, 2011 to 2020

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Average weekly hours worked, by work from home status, UK, 2011 to 2020



Source: Office for National Statistics – Annual Population Survey

Across full-time roles, homeworkers work consistently more hours than non-homeworkers. Those that recently worked from home worked the most hours per week on average in both part-time (21.1 hours) and full-time (39.4 hours) roles. For full-time workers, those who mainly worked from home completed more hours in 2020 (35.9) than those who never (32.7) or only occasionally (30.1) worked from home.

Full-time workers who worked mainly at home saw a fall in average hours between 2019 and 2020, while part-time workers saw a small rise – driving the increase in Figure 1.

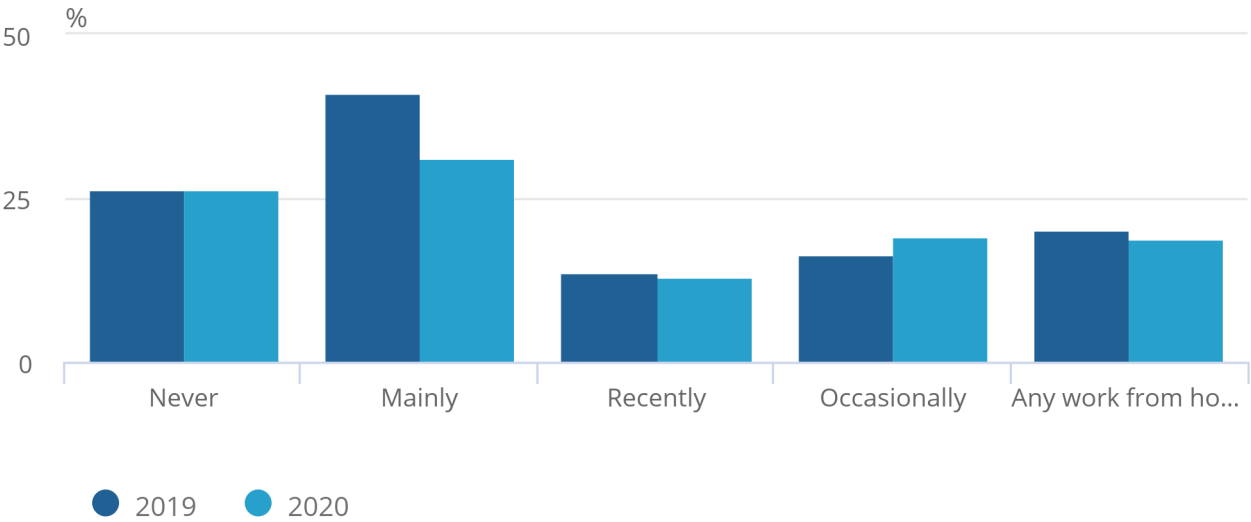
The mainly work from home group were disproportionally represented in part-time roles compared with the other working from home categories (Figure 2). Part-time workers who worked mainly from home worked fewer hours than all other part-time workers prior to 2020. Part of the motivation for working mainly from home part-time may be to accommodate for caring responsibilities or to facilitate an improved work-life balance.

**Figure 2: Those who mainly work from home in part-time roles saw hours increase slightly in 2020**

Proportion of workers in part-time roles, by work from home status, UK, 2019 to 2020

Figure 2: Those who mainly work from home in part-time roles saw hours increase slightly in 2020

Proportion of workers in part-time roles, by work from home status, UK, 2019 to 2020



Source: Office for National Statistics – Annual Population Survey

### The working day

The working day of homeworkers is longer but more flexible than those who work away from home, with later (but more varied) starts and more (and longer) breaks. However, homeworkers in the early part of the pandemic (April, Wave 1 2020) tended to keep hours close to typical office hours, perhaps because homeworking was new to many. By September (Wave 2 2020), homeworking schedules had shifted later, although not as late as evidenced in 2015.

### **Figure 3: Homeworkers were more likely to work in the evenings in September, when compared with April 2020, but this remains significantly less than the working pattern of homeworkers in 2015**

Total homeworkers who were working from home by time of day, Index 12:00 = 100, Great Britain, 2015 to 2020.

#### **Notes:**

1. Wave 1 reference period 28 March to 26 April 2020.
2. Wave 2 reference period 5 September to 11 October 2020.

[Download the data](#)

In April 2020, more homeworkers worked earlier in the morning, while fewer worked later in the evening, relative to the number of homeworkers completing work at midday. After 5pm, homeworkers were less likely to be working compared with those who worked away from home.

In September 2020, there was a shift in the working day as a greater proportion of homeworkers worked later in the morning and evening. Between 6pm and 11pm, homeworkers were more likely to be working compared with those who worked away from home. After 11pm, those who worked unsociable hours were likely based away from home.

The switch to homeworking meant that workers no longer needed to commute. Our analysis [Time spent in lockdown split by working pattern and day type](#) showed that between 2015 and April 2020, the average time spent travelling for those that worked from home fell from 57 minutes to six minutes. Figure 3 shows that in September 2020, a greater proportion of homeworkers worked in the evening, indicating that homeworkers continued to work during hours where they may have commuted.

In 2015, the proportion of people working from home increased around 4pm and 8pm. Overall, there were significantly fewer homeworkers in 2015 but more that worked flexibly and outside of traditional office hours. It is also likely that people took work home with them from their workplace to continue in the evening.

On average, homeworkers started work slightly later than those who worked away from home in April 2020. Workers at and away from home took approximately the same length of breaks throughout their working day.

Table 1: Homeworkers are working flexibly, by starting work later and taking longer breaks than those who work away from home.

	2015	April 2020		September 2020		
	Working away from home	Working from home	Working away from home	Working from home	Working away from home	Working from home
<b>Start time</b>	9:13 AM	12:47 PM	9:44 AM	10:15 AM	9:37 AM	10:45 AM
<b>Length of break</b>	59 mins	1 hr 51 mins	1 hr 20 mins	1 hr 19 mins	58 mins	1 hr 21 mins
<b>Number of breaks</b>	1.17	0.79	0.65	0.89	0.74	0.93

Source: Office for National Statistics and NatCen - Time use survey

#### Notes

1. Wave 1 reference period 28 March to 26 April 2020.
2. Wave 2 reference period 5 September to 11 October 2020.
3. The start time is the first time during the day that an individual records "work" in their diary.
4. The length of break is an average of the total time taken in between periods of work across an individual's diary.
5. The number of the breaks is the average number of times an individual stopped and restarted work during the same day.

In September 2020, homeworkers pushed their start time back to 10:45am, reflecting the shift in the working day. Those who worked away from home took shorter breaks on average. In both April and September 2020, homeworkers took more breaks than those who worked away from home, which shows how homeworkers have greater flexibility as to when they can start and stop work.

The average length of breaks for homeworkers was stable between April and September 2020, but significantly less than those of homeworkers in 2015. Homeworking in 2015 was more concentrated in the afternoon and evening, which shifted the average start time to the afternoon. Homeworkers in 2015 took fewer breaks from work, but they were likely to be longer.

The 2015 results show how homeworkers can work flexibly, by working later and by pausing work more to manage other commitments. Between April and September 2020, the start time, average length of break and the number of breaks taken all increased for homeworkers. This shows how during the coronavirus (COVID-19) pandemic, homeworkers have increased their flexibility throughout their working day.

## Overtime

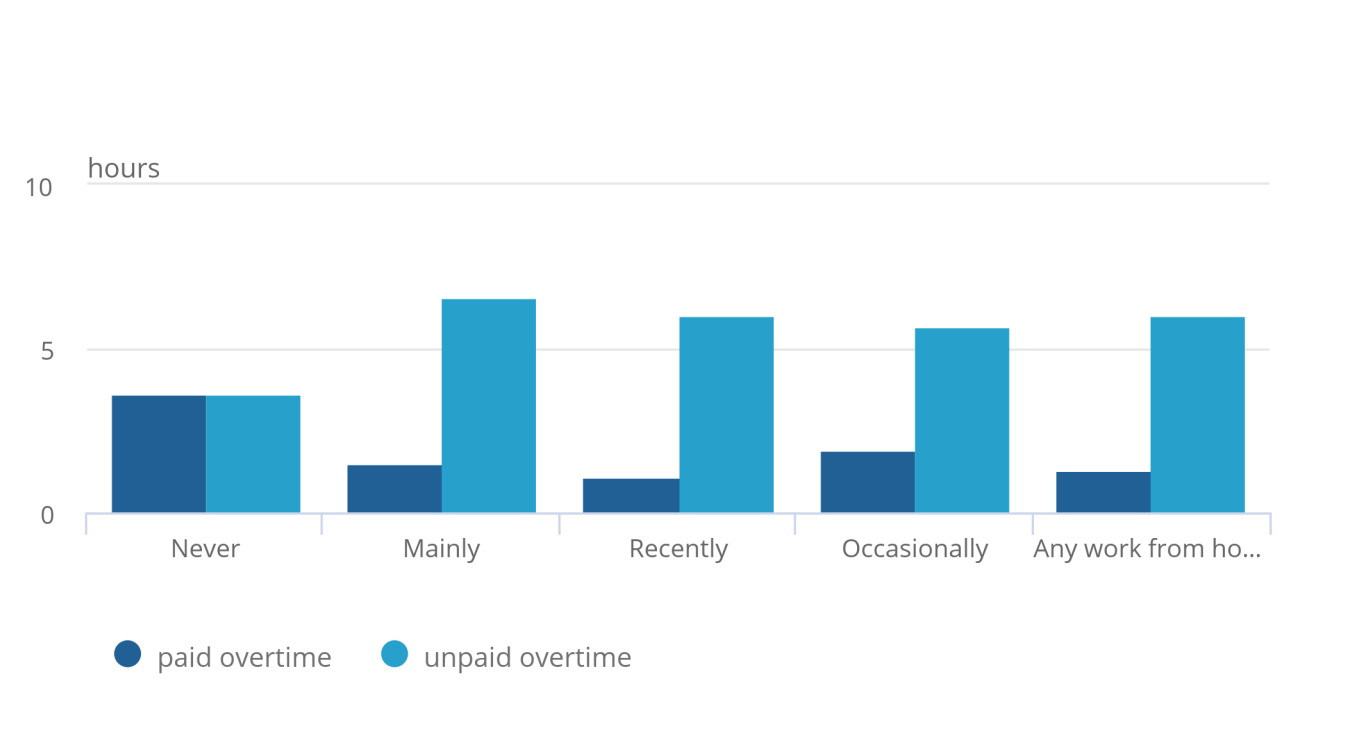
While total actual hours worked fell in 2020 because of COVID-19, the number of paid and unpaid overtime hours remained relatively unchanged across all homeworking and non-homeworking groups.

Figure 4: Homeworkers are more likely to do unpaid overtime

Total actual hours of paid and unpaid overtime, by work from home status, UK, 2020

Figure 4: Homeworkers are more likely to do unpaid overtime

Total actual hours of paid and unpaid overtime, by work from home status, UK, 2020



Source: Office for National Statistics – Annual Population Survey

While those who never worked from home did more paid overtime on average, homeworkers did more hours of unpaid overtime; this has been true for both full- and part-time workers since 2011.

Between 2011 and 2019, unpaid overtime was highest for those who had recently worked from home. However, in 2020 the hours worked by each homeworking group converged to around 6.0 hours. In contrast, the amount of unpaid overtime done by those who never worked from home remained largely unchanged at 3.6 hours per week on average.

Sickness

Consistent with [other Office for National Statistics \(ONS\) publications](#) we calculate the sickness absence rate as the percentage of working hours that are lost due to sickness absence.

Workers who did any work from home had a sickness absence rate of 0.9% in 2020, equivalent to 2.0 days lost per worker that year. Those that never worked from home had a higher sickness absence of 2.2% (equivalent to 4.3 days lost per worker).

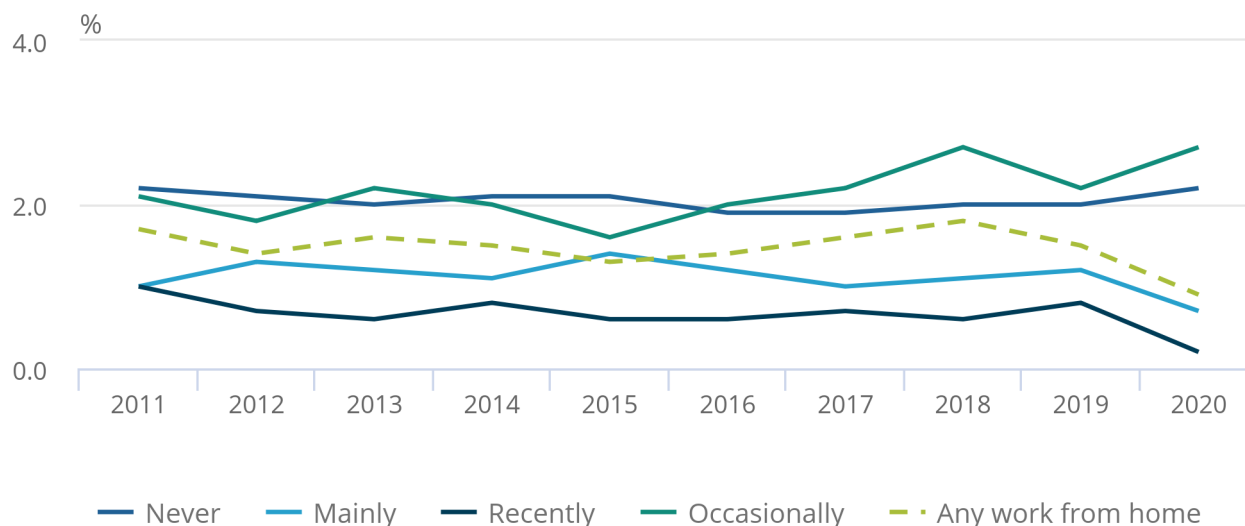


## Figure 5: Those who do any work from home have a lower sickness absence rate than office-based workers

Sickness absence rate, by work from home status, UK, 2011 to 2020

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Sickness absence rate, by work from home status, UK, 2011 to 2020



Source: Office for National Statistics – Annual Population Survey

Homeworkers who mainly or recently worked from home had a lower sickness absence rate than those who reported never or occasionally working from home. From 2019 to 2020, the sickness absence rate for those who mainly worked from home fell by 0.5 percentage points to 0.7%, equivalent to 1.5 days lost per worker. The rate for recent homeworkers fell by the same amount to 0.2% over the same period, meaning less than one day was lost on average in 2020 per worker. Despite the rise in COVID-19 cases, [homeworking may have led to less exposure to germs and minimised some of the usual sickness absences](#). When sick, homeworkers may not have travelled to a workplace to work but still felt well enough to work from home. By contrast, the sickness absence rate of those who reported only occasionally working from home increased to 2.7%, this was equivalent to 5.1 days lost per worker in 2020.

Considering differences in sex, the sickness absence rate for all workers in 2020 was higher for women (2.1%) compared with men (1.4%). Disaggregated by work from home status, men and women who mainly or recently worked from home had similarly low rates of sickness absence. However, for those who never or only occasionally worked from home, the sickness absence rate for women was substantially higher. In 2020, women who occasionally worked from home had a sickness absence rate of 3.9%, 2.0 percentage points higher than the equivalent for men.

## 4 . Pay and bonuses

Prior to 2020, people who worked mainly at home were paid on average 6.8% less than those who never worked from home, after controlling for relevant factors such as age, occupation and industry. However, the gap in pay between exclusive homeworkers and those who never work from home has been decreasing over time, as homeworking has become a more widely accepted and encouraged form of flexible working.

Conversely, people who did some homeworking (and some working away from home, such as in an office) fared better than those who either worked exclusively away from or at home. Those who recently or occasionally worked from home prior to the pandemic earned on average 23.4% and 12.0% more than those who never worked from home, respectively.

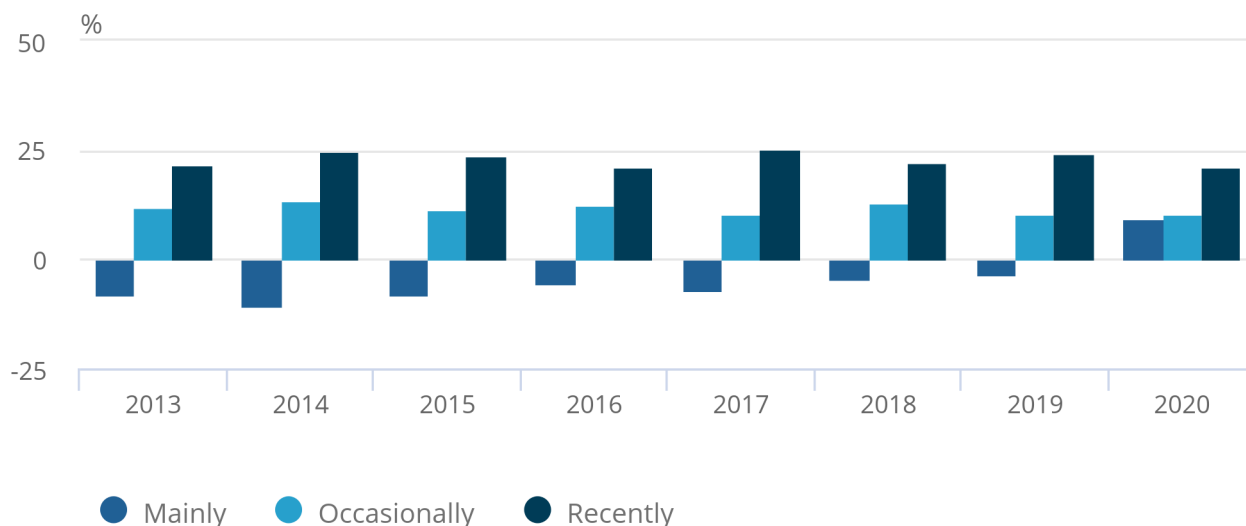
In 2020, those who mainly worked from home were paid 9.2% more on average than those who never worked from home as they were better able to continue working despite lockdown restrictions. In addition, more people moved into the mainly work from home category in 2020. Previous studies show [employees in higher-paying jobs are more likely to be able to work from home](#). As such, the compositional effect of a rise in homeworking will have increased the average pay of those who mainly worked from home.

**Figure 6: Prior to COVID-19, there was a wage penalty for those exclusively working from home, but a wage premium for those who combined home and office work**

Regression co-efficients, percentage difference in gross weekly pay (%) relative to never work from home, UK, 2013 to 2020

**Figure 6: Prior to COVID-19, there was a wage penalty for those exclusively working from home, but a wage premium for those who combined home and office work**

Regression co-efficients, percentage difference in gross weekly pay (%) relative to never work from home, UK, 2013 to 2020



Source: Office for National Statistics – Annual Population Survey

Notes:

1. All regression coefficients are weighted and statistically significant, except for the mainly working from home category in 2019 which is not statistically significant.
2. The adjusted R-squared of the regressions (a measure of how well they fit the data) were all between 0.570 and 0.636.

In addition to their basic pay, those who worked mainly from home were 37.7% less likely on average between 2011 and 2020 to have received a bonus than those who never worked from home. However, those who worked recently and occasionally from home were 41.9% and 27.6% more likely on average to receive a bonus, respectively, than those who never worked from home. The differences narrowed in 2020 after the onset of the pandemic. However, this is likely because of an economy-wide reduction in bonus payments that occurred to help firms cope financially with the effects of COVID-19.

## 5 . Promotions and training

Using the longitudinal Labour Force Survey (LFS), we follow the same individuals across survey waves (a total of five calendar quarters) between 2011 and 2017. We define a promotion as workers who gained a managerial or supervisory responsibility in a later wave that they did not have in an earlier wave, or who received a substantial pay rise (of 30% or more) across waves.

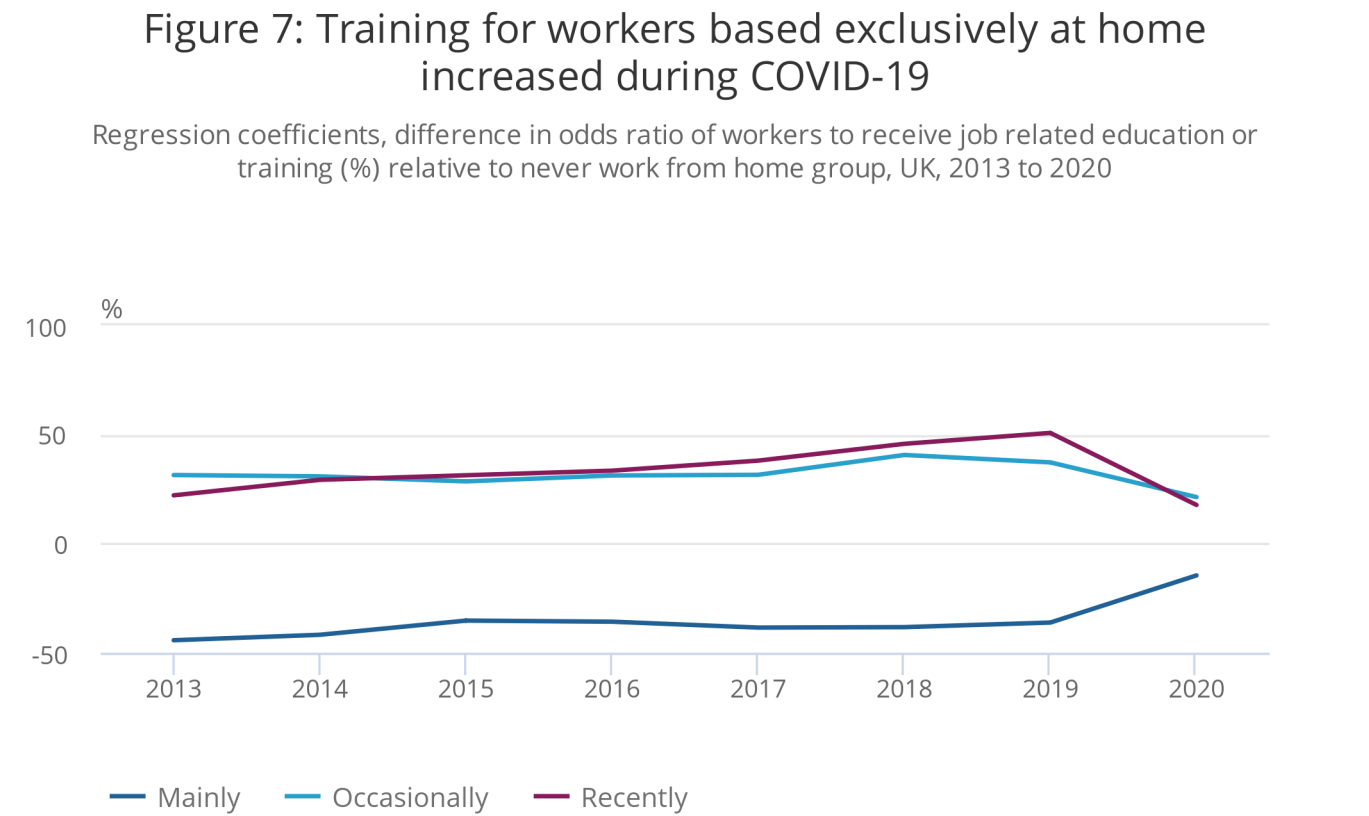
Workers who consistently worked mainly at home were less than half as likely to have received a promotion compared with workers who consistently worked mainly away from home. This finding is true even after controlling for a range of other factors, such as age, industry and occupation. Similarly, if a worker changed to mainly working from home, where previously they were mainly based away from home, they saw their chance of being promoted fall by nearly half.

Conversely, when a worker moved out of mainly working from home into mainly working away from home, we find their chances of promotion was no longer significantly different to those that already worked mainly away from home. These results are consistent with previous literature which suggests homeworkers may be overlooked when being considered for a promotion due to reduced face-to-face interaction with colleagues and managers. This may contribute to slower career progression for those who work exclusively from home.

We also look at the likelihood of workers in each work from home status to have received job related education or training. Figure 7 shows that prior to 2020, those who mainly worked from home were on average about 40% less likely to have received job related education or training compared with those who never worked from home in their main job. Conversely, workers in the recently and occasionally work from home categories were on average around 35% more likely to receive training compared with those that never worked from home. As before, this is after controlling for a range of other factors such as age, industry and occupation.

Figure 7: Training for workers based exclusively at home increased during COVID-19

Regression coefficients, difference in odds ratio of workers to receive job related education or training (%) relative to never work from home group, UK, 2013 to 2020



Source: Office for National Statistics - Annual Population Survey

Notes:

1. This chart uses coefficients from logistic regressions, converted to an odds ratio. All regression coefficients are weighted and statistically significant.

However, in 2020 the likelihood of home-based workers to have received training relative to workers based away from home increased. This may be due to increased inclusion of homeworkers in education or training initiatives. Also, as many offices were closed in response to the pandemic, office-based training decreased. This meant more training was delivered virtually, and so became more accessible to homeworkers.

## 6 . Characteristics and location of homeworkers

Prior to 2020, the categories of homeworking displayed different characteristics, particularly amongst those who worked mainly from home. These workers were more likely to be part-time workers, female, and work fewer hours. In 2020, given the unprecedented increase in homeworking, the characteristics of the homeworking group changed.

Before 2020, on average 73.4% of people who never worked from home were in a full-time role. For those who recently or occasionally worked from home, this rose to 85.2% and 81.7% respectively. In comparison, the incidence of full-time work was much lower amongst those who mainly worked from home at 56.7%. As women were disproportionately represented in part-time roles, mainly working from home was the only category with more women than men at 52.0% in 2020.

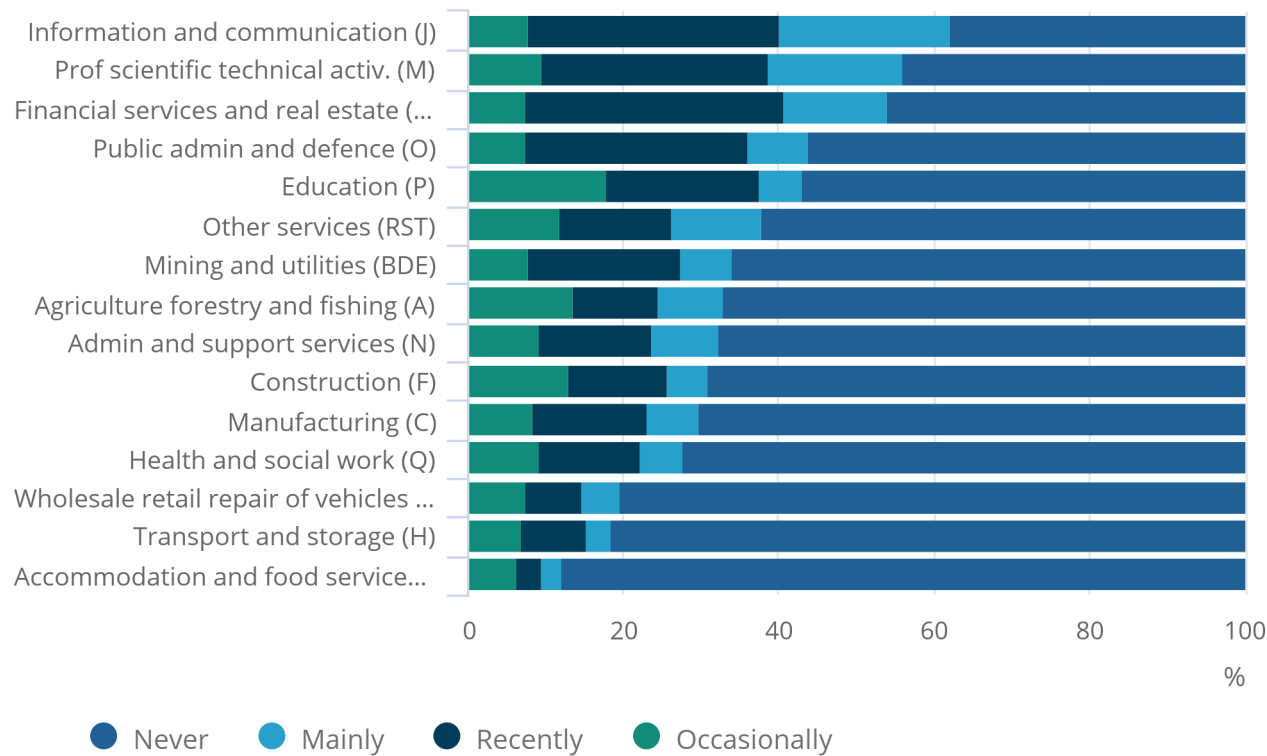
In 2020, the industry with the highest proportion of any homeworking was information and communication, with 62.0% of workers having mainly, recently, or occasionally worked from home. This was followed by professional, scientific, and technical activities (56.1%) and financial services (54.2%). By contrast, the industries with the lowest incidence of homeworking at any level was accommodation and food services (12.3%), transport and storage (18.6%) and retail (19.7%). This variation across industries is largely due to [differences in the demand for and opportunities to work from home](#).

**Figure 8: Less than half of workers in the Information and communication industry never worked from home in 2020**

Industry sector, by work from home status (%), UK, 2020

Figure 8: Less than half of workers in the Information and communication industry never worked from home in 2020

Industry sector, by work from home status (%), UK, 2020



Source: Office for National Statistics - Annual Population Survey

The proportion of workers who had never worked from home remained high for several industries in 2020. Some of those who reported having never worked from home may have been based in locations such as warehouses, shops, and factories rather than in an office. Hence, these workers may have been furloughed as switching to working from home was not viable.

It should also be noted that the Annual Population Survey (APS) covers January to December 2020. This means workers may have responded to the question on where they “mainly” work before the onset of the national lockdown in March 2020 in which many were forced to work from home.

Using the [Standard Occupational Classification \(SOC\)](#) major groups, we find that the propensity for homeworking in 2020 was highest amongst the top occupation groups and lowest in elementary occupations - this true for both full-time and part-time workers. Of those employed as managers, directors, and senior officials, 51.0% engaged in some level of homeworking in 2020, compared with just 4.7% of workers in elementary occupations. These findings are consistent with our article [Which jobs can be done from home?](#)

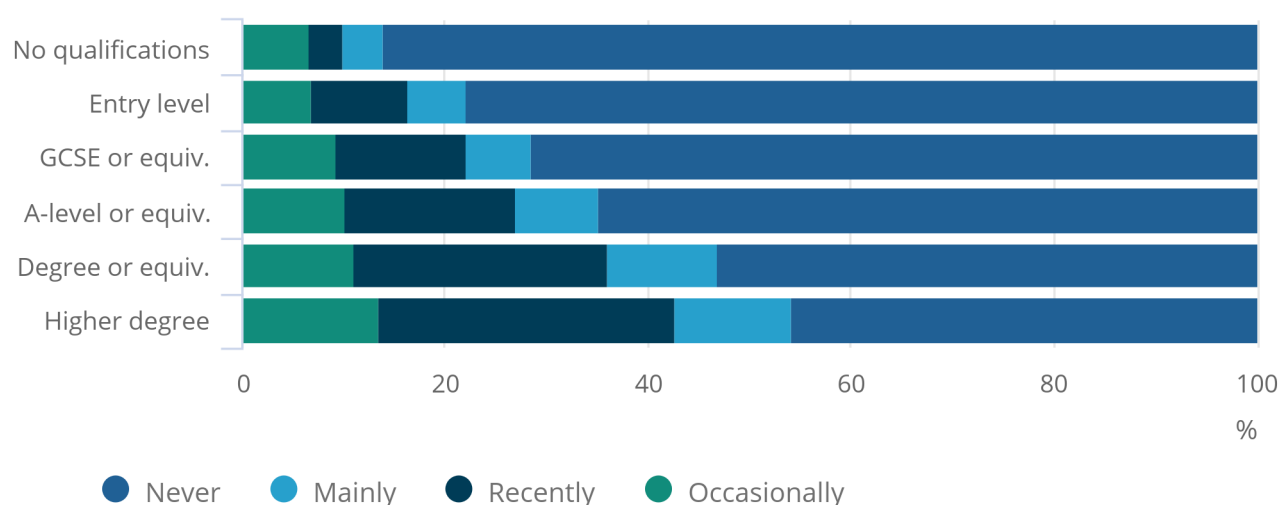
Between 2011 and 2020 the propensity for homeworking increased with educational attainment. Of workers with a degree level qualification, 46.9% completed some level of homeworking, compared with 13.9% of workers with no qualifications.

**Figure 9: Over half of workers who hold a higher degree or equivalent do some work from home**

Highest qualification/trade apprenticeship attained, by work from home status (%), UK, 2020

Figure 9: Over half of workers who hold a higher degree or equivalent do some work from home

Highest qualification/trade apprenticeship attained, by work from home status (%), UK, 2020



Source: Office for National Statistics – Annual Population Survey

Workers who work from home to any degree are also more likely to have managerial responsibilities in both full- and part-time roles than those who have never done any work at home. In 2020, 21.9% of those who never work from home reported having managerial responsibilities, compared with 34.9% of those who mainly work from home. The proportion of workers with managerial responsibilities is higher still for those who occasionally and recently worked from home at 42.2% and 40.4% respectively. These differences hold even after controlling for other relevant factors such as age, sex and education.

## Geographic variation

There is substantial variation in the degree of homeworking across the UK. This reflects both the types of industries in each region, but also unexplained regional differences that could stem from employee or employer preferences, skills, or infrastructure. Some factors affecting homeworking take-up across the UK, including broadband speeds, were explored in our [Technology intensity and homeworking in the UK article](#).

Figure 10 shows the proportion of workers in each NUTS 3 (Nomenclature of Territorial Units for Statistics) region who reported any homeworking in 2018, 2019 and 2020. Urban areas tended to have higher rates than rural areas, with some notable exceptions.

London and surrounding areas had the highest rates of working from home in 2020, with many areas in Scotland and the North having the lowest. The City of Edinburgh and Orkney Islands had higher levels of homeworking compared with the rest of Scotland. Areas of note with low homeworking rates were Thurrock, Birmingham, Lincolnshire, Blackpool, South Ayrshire, and parts of Northern Ireland.

### **Figure 10: London and surrounding areas have the highest rates of working from home in 2020**

Proportion of workers that completed some work from home, broken down by NUTS 3, UK, 2018 to 2020

#### **Notes:**

1. The choropleth shows a map of the UK broken down into [Nomenclature of Territorial Units for Statistics \(NUTS\) areas](#), level three.
2. The scale ranges from 0.1 to 0.6. A lower value represents a lower proportion of workers that worked from home. For example, if an area is coloured red, the proportion of workers that completed some work from home ranges between 10% and 20%.

[Download the data](#)

Across all NUTS1 areas working from home became a more popular method of working in 2020. This increase was driven by those who mainly and recently worked from home, with a decrease in occasionally homeworking.



**Figure 11: Northern Ireland had the lowest proportion of home workers of all the NUTS1 regions**

Proportion of workers that completed some work from home, broken down by NUTS1 region, UK, 2020

## Figure 11: Northern Ireland had the lowest proportion of home workers of all the NUTS1 regions

Proportion of workers that completed some work from home, broken down by NUTS1 region, UK, 2020



Source: Office for National Statistics - Annual Population Survey

London reported the highest proportion of homeworkers in 2020 as 43.0% worked from home at some point in the past year, up from 31.0% in 2019. Northern Ireland had the lowest proportion of home workers of all the regions; however, home working was still significantly larger (26.0%) in 2020 compared with 20.0% in 2019.

One of the reasons London had the highest rates of homeworking was because of the types of industries that predominate in London. Financial and professional services industries had a working from home rate of around 50% in 2020, compared with the UK average of 38.0%. Since London had a higher proportion of its workforce in these industries, this contributed to higher rates of homeworking in that region.

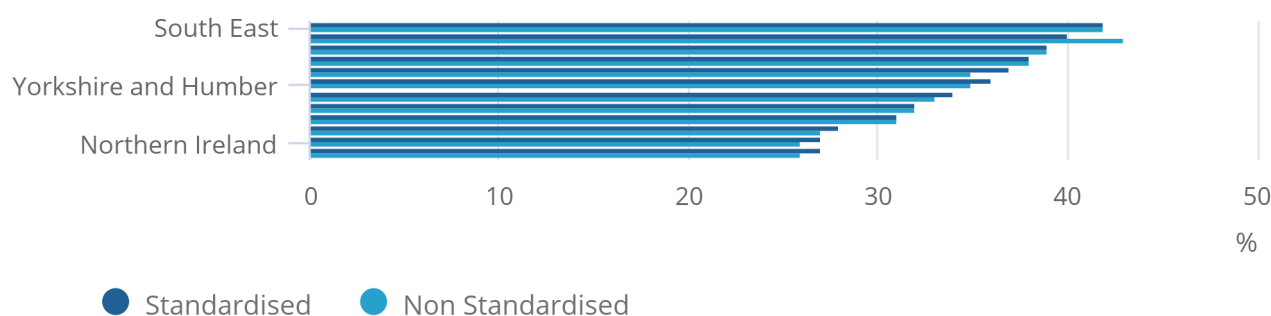
However, the industry make-up is not the only factor which affected homeworking. Figure 11 standardises the industry mix in each region, and shows there is still considerable regional variation in homeworking rates. Removing the industry effect assumes all regions have the same industry mix as the UK, and accounts for 127,000 workers or 3% of London's 43% of home workers.

**Figure 12: Standardising the industry mix explains only some of the regional variation in homeworking rates**

Proportion of workers that have completed any work from home by region, standardised and non-standardised, UK, 2020

## Figure 12: Standardising the industry mix explains only some of the regional variation in homeworking rates

Proportion of workers that have completed any work from home by region, standardised and non-standardised, UK, 2020



Source: Office for National Statistics - Annual Population Survey

### Notes:

1. "Standardised" means that the average proportion of workers by industry for the UK has been applied across all regions.
2. London has a higher proportion of industries that are more likely to employ homeworkers. Standardising the regions removes this disproportionate industry effect.

## 7 . Implications and discussion

Our analysis suggests that the rewards for homeworking were typically less for those who exclusively worked from home - being on average paid less, less likely to get a bonus, less likely to get promoted, and less likely to receive training, even after controlling for a range of other factors. This may suggest that they were less productive than those who never worked from home, either by causal effect (that is, working mainly from home makes you less productive) or selection (that is, less productive people choose to work mainly at home). However, it could also reflect biases in the labour market, with people who worked mainly from home being overlooked for promotions and bonuses due to a lack of visibility at work. It could also reflect a preference for non-monetary benefits, such as flexibility and a shortened commute.

People who did some homeworking, such as those categorised into recently working from home, tended to see a higher reward from homeworking than those who either worked exclusively away from or at home. They are also more likely to hold managerial responsibilities and have attained higher qualifications. These findings remain true after controlling for a range of other factors, such as industry, occupation, working pattern and sex. This may suggest that people who combine homeworking with working away from home are more productive than those who never work from home.

In 2020, the outcomes of each homeworking category converged in many metrics, as more people became homeworkers. Homeworkers were better able to access training in 2020 than they once were, and the pay penalty for those who worked exclusively from home reversed.

Evidence from the Time Use Survey suggested homeworkers in the early part of the pandemic kept hours as if they were working away from home despite a reduced commute. This contrasts with 2015 data which showed homeworkers kept very different hours. However, later in 2020 the working day of homeworkers became longer and more varied again.

A range of survey data finds a mixed picture on attitudes to homeworking (see Section 8). Our evidence suggests that the success of homeworking varies enormously between those that worked mainly at home, and those that mixed homeworking with working away from home. This suggests flexibility towards homeworking in future might be key to its success.

As restrictions are lifted workers will begin a gradual return to their usual workplace, although uncertainty remains over [which changes in demand for homeworking will prove temporary and which will persist \(PDF, 689KB\)](#). If accelerated homeworking trends persist then an increased availability of jobs that offer remote working may allow the current labour pool to expand. This dislocation makes jobs accessible to a higher number of people, irrespective of where they live. This would reduce the level of skill mismatch in the economy as workers are [better able to match their skills to new openings in the labour market](#). This would imply a more efficient allocation of labour, which could therefore have [potential implications for aggregate productivity](#).

However, from a firm perspective, there may be a larger benefit to productivity from employees interacting in the workplace compared with the expansion in the labour supply from homeworking. This is because workers gain skills by learning from each other, [an important factor in boosting innovation](#). If homeworking can replicate this level of interaction, such as through advancements in technology, there is potential for these two factors to complement each other, rather than work against each other as they do in the workplace.

## 8 . Background data and literature

Prior to the coronavirus (COVID-19) pandemic, the proportion of people working from home had been increasing steadily; facilitated by improvements to technology and increased demand for flexible working arrangements. The proportion of the employed population (employees and self-employed workers) who did any work from home reached 26.6% in 2019, an increase of 2.7 percentage points since 2011. Over this period the proportion of workers who reported recently or mainly working from home had increased steadily as workers moved out of the never and occasional homeworking groups.

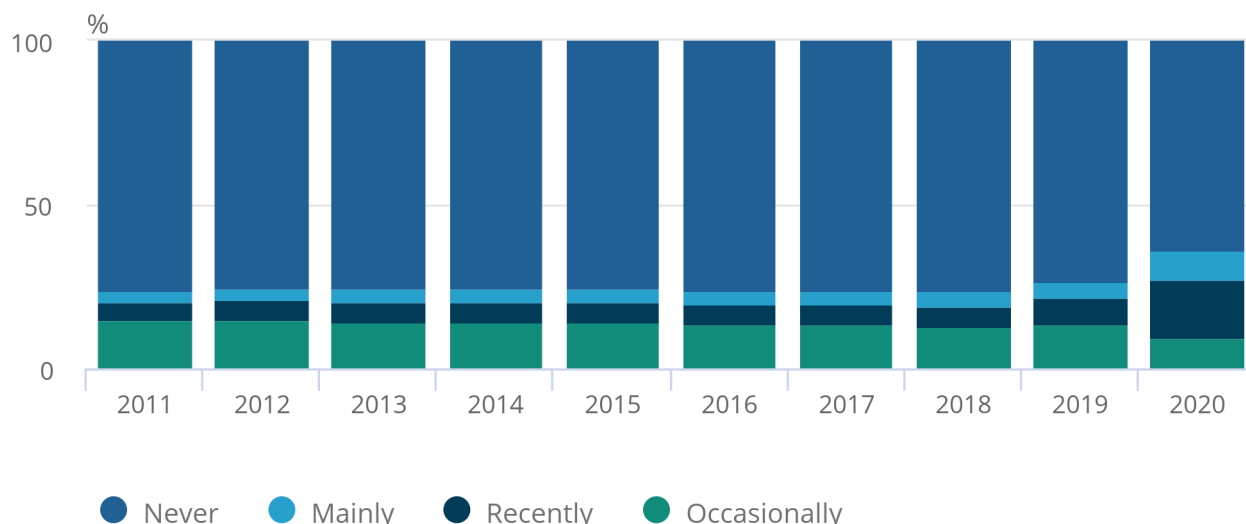
In 2020, 36.0% of workers reporting doing some level of homeworking – an increase of 9.4 percentage points compared with 2019. This can be largely attributed to COVID-19 “stay at home” measures introduced by the government in March 2020.

**Figure 13: The proportion of the employed population who report never working from home has fallen.**

Percentage (%) of workers (aged 16 years and over) by work from home status, UK, 2011 to 2020

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Percentage (%) of workers (aged 16 years and over) by work from home status, UK, 2011 to 2020



Source: Office for National Statistics – Annual Population Survey

[Evidence on the impact on productivity resulting from greater working from home is not clear \(PDF, 1.39MB\)](#). A reduced commute, fewer workplace distractions and lower rates of absenteeism are often cited as reasons why someone who works from home may be more productive than those who work away from home. However, [increased opportunity for shirking due to a lack of supervision and the intrusion of home responsibilities \(such as caring\) may contribute to a productivity penalty associated with working from home](#).

Of the limited research on the productivity impacts of homeworking, Bloom et al. (2015) is the most widely reported. This study found a [positive effect of working from home on hours worked, employee productivity, and retention \(PDF, 0.98MB\)](#). It was based on employees who volunteered, and after the experiment some preferred to return to the office. Dutcher (2012) also found positive effects of working from home (telecommuting) on productivity, but only for more engaging (creative) tasks.

Other evidence of the effects of homeworking during the pandemic suggests positive results. Bloom et al. (2021) found better than expected experiences of homeworking, reduced stigma, and adaptation by businesses, in a survey in the US. They predicted homeworking to stay substantially elevated after the pandemic, albeit with a wide range of preferences over how many days will be worked from home. They expect this to have small positive impacts on productivity.

Other authors suggest that businesses will benefit most by choosing to either go fully remote, or fully back to the office, since running both arrangements [may be more costly than committing to one](#). However, this views productivity from the business-perspective, whereas analysis in this article examines homeworking and productivity from the individual perspective. It is plausible that individuals benefit from mixing homeworking with working away from home, whereas businesses lose out in the form of higher costs.

Data from the [Business Insights and Conditions Survey \(BICS\)](#) suggests that some industries have had a much more positive experience of homeworking in 2020 than others. Surveys in early 2021 suggested that increased homeworking had been negative for productivity in around a third of businesses, positive in around 10%, and the remainder saw no change. However, in some industries such as information and communication, the picture was typically more positive.

Data from the Chartered Institute of Personnel and Development (CIPD) also finds a mixed picture. They find a [roughly similar proportion of organisations saw increases in productivity as decreases](#), with many in the middle. They emphasise the need for [flexibility, choice and adaptation](#) to make a success of homeworking.

Other organisations including the Organisation for Economic Development (OECD) also recognise the importance of choice for homeworking to be successful, as [some people and some roles are likely to work better at home than others](#). They note the need for complementary investments in physical and intangible capital (such as managerial skills).

Our analysis relies on indicators of productivity, both drivers and consequences. For instance, standard micro-economic theory states that [wages are closely related to the marginal productivity of workers](#). Therefore, in competitive labour markets it is assumed that employers pay higher wages to more productive workers. So, we look at the wage differential between homeworkers and non-homeworkers to provide a loose proxy for their productivity. The results of previous literature on this approach is mixed, some studies suggest a wage penalty for working from home while others suggest positive wage effects.

Bonuses and promotions are signals of work success and therefore may indicate high productivity and/or the existence of visibility bias. Sickness absence, training, overtime and working patterns are all related to productivity as well. Arntz, Yahmed and Berlingieri (2018) suggest that homeworking will affect both contractual and overtime working hours. However the extent to which this may result in a wage/career penalty or premium varies across different groups of workers. Lippe and Lippényi (2019) hypothesise that [the more hours an individual works from home, the less productive they become](#).

## 9 . Methodology

### Annual Population Survey

The majority of the analysis in this article uses data from the Annual Population Survey (APS), which is the annual version of the Labour Force Survey (LFS). The LFS is a large representative survey of households in the UK.

Using three variables, we have defined four homeworking statuses:

- Mainly - those who report their main place of work as "in their own home" as opposed to "home as a base", "same ground as home" or "another place entirely" (offices, factories, and so on.)
- Recently - those who do not "mainly" work at home, but reported doing some work at home in the reference week
- Occasionally - those who do not "mainly" work at home, and did not report doing any work at home in the reference week, but say they do "ever" work from home
- Never - anyone not covered in the groups above

These depend on APS variables HOME, HOMED(1-3), and EVHM98. See the [APS User Guide](#) for more details.

In practice, these groups are likely to be far less clear cut than our categorisation implies. We do not know, for instance, the number of hours people work from home or away from home in the "recently" and "occasionally" groups, so these may represent a wide range of work arrangements. We do not know where workers are based if they "never work from home" - there are many workplaces, such as offices, shops, factories, and warehouses.

Questions on the APS relating to homeworking did not change in 2020 in response to the coronavirus (COVID-19) pandemic. This may or may not have aided the consistency of the data, since interpretation of the question may have changed. It is unclear how respondents who were forced to work from home during 2020 (who previously would have worked away from home) would respond to the question on where they "mainly" work. The proportion of respondents in both "mainly" and "recently" groups increased in 2020, and the difference between these groups may have become less clear.

## Weighting

We have used slightly different survey weights in this analysis compared with other estimates of homeworking using the Annual Population Survey (APS) [published by the ONS](#). Therefore, this method of weighting should be considered experimental.

The question that asks about where people mainly work (HOME) is asked to respondents every wave, while questions on work location in the reference week (HOMED(1-3)) and "ever" working from home (EVHM98) are only asked to respondents in Wave 1. As we are combining these variables to produce the mutually exclusive work from home groups in this analysis, we also combine the weights associated with the "Wave 1" and "any wave" parts of the dataset.

For respondents who 'mainly' work from home (which relies only on the "any wave" information) we use the "any wave" weight (PWT14/18). For respondents who "recently" or "occasionally" work from home we use their "Wave 1" information, and hence "Wave 1" weight. In doing so, these respondents effectively account for some of the 'any wave' respondents. As such, the weights of those who "never" work from home are scaled down, such that the population total adds up correctly. More details are available by contacting the authors.

## Regression analysis

In regression analysis we try to explain the variation in one variable with observable characteristics. For instance, we explain wages using a range of characteristics about the person, including their age, industry, occupation, and homeworking status. Since we are primarily interested in the effect of the homeworking status on wages, we say we "control for" or "account for" the other explanatory factors, such as industry. That is to say, the effects of homeworking on wages are after accounting for the different rates of pay in different industries. The controls for each regression are given in the data tables, but are typically industry (SIC07) section (relatively high-level industries), major occupation groups (SOC10), age, age squared (there is often thought to be a non-linear relationship between age and various labour market outcomes), sex, and working pattern (part-time or full-time).

All regressions are weighted, but results are consistent with unweighted data. Regressions for promotions, bonuses and receiving work-placed training are logistic regressions. This means they aim to model a binary outcome, for instance the receipt of a bonuses or not. Regressions for wages are standard linear Ordinary Least Squares (OLS) regressions which aim to model a continuous variable, i.e. wages.

## Promotions

Whether respondents are promoted is not collected on the LFS, so we derive a new experimental measure for it. Using the longitudinal LFS, which connects responses from the same respondents over time, we identify promotions by comparing their responses in Wave 1 with Wave 5 (a year later). Respondents who have a managerial or supervisory responsibility in Wave 5, but didn't in Wave 1, are said to have been "promoted". In addition, respondents receiving a pay rise of 30% or more (regardless of their managerial status) are also said to have been "promoted".

Promotion is a somewhat subjective term, and may mean different things in different businesses, industries, and sectors. We were unable to find any other examples of researchers defining promotions using the LFS. We welcome feedback on this measure.

## **Classifications and variables used**

We use a number of classifications in this analysis:

- Industry - SIC 2007
- Occupation - SOC 2010
- Rural and urban areas - Rural Urban 2011 Classification
- Regions - NUTS 1, NUTS 2 and NUTS 3
- Ethnicity - harmonised UK ethnicity categorisation as in LFS

We use the following APS variables:

- Pay - grsswk
- Bonuses - erncm(1-11)
- Workplace training - ed13wk

## **Time Use Survey**

We also use data from the Time Use Survey (TUS) run by the ONS in partnership with NatCen for analysis on the working day. The TUS was run in 2015, and again in April and September (Wave 1 and 2) 2020. The design of the survey was similar, but not identical between 2015 and 2020. Some small changes were also made between the waves in 2020. As such, comparisons over time should be made with caution.

The TUS asks respondents to complete a diary of their activities during the day in 10-minute blocks. Each activity is one of a list of activity options, which include "working away from home" and "working from home". We first identified those who completed any activity that counts as "work" and then disaggregated by the location in which this activity was completed. Please contact the authors for more detailed information on activities.

We identify breaks as any period where non-working activity takes place, surrounded by working activity. We identify the mean start time as the average time that a respondent does the activity "working away from home" or "working from home" for the first time that day. Since the diary starts at 4am, some respondents (e.g. night-shift workers) are already working at the start of the time frame, so we do not observe their start time. Likewise, the diary ends at 3:59am so we do not observe the finish time for some workers.

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## 10 . Related links

### [Coronavirus and homeworking in the UK labour market: 2019](#)

Article | Updated on 24 March 2020

The extent to which different people in the labour market work from home, either on a regular or occasional basis.

### [Coronavirus and homeworking in the UK: April 2020](#)

Bulletin | Updated on 8 July 2020

### [Which jobs can be done from home?](#)

Article | Updated on 21 July 2020

Analysis of accessibility to homeworking by occupation, sex and ethnicity.

### [Technology intensity and homeworking in the UK](#)

Article | Updated on 1 May 2020

Recent trends and insights into technology as an enabler for homeworking