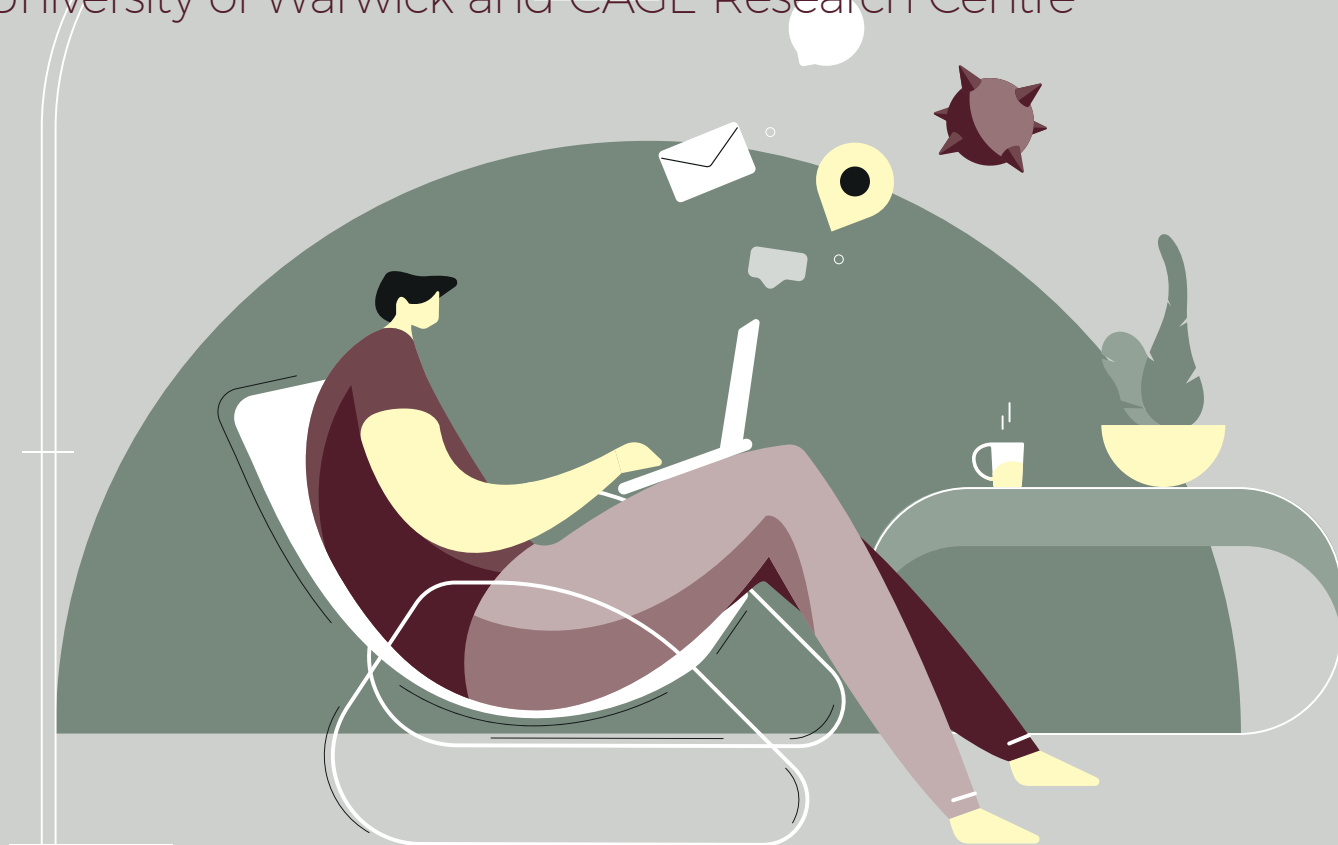# Chapter 2: Remote work and the post-pandemic UK labour market

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2.1 Introduction

The 'forced experiment' with remote work since March 2020, brought on by the COVID-19 pandemic, has led to predictions that the UK labour market will feature much higher levels of remote work from now on. As COVID restrictions in the UK are slowly lifted, the key questions are: how much remote work will remain, and what will be the consequences for different types of workers?

This chapter provides some insights into the future of remote work in the UK based on recent data, with three main focal points:

▶ **The UK has reached an upper limit:** The increase in remote work might be less than expected based on early pandemic hype. We argue that a 20–30% ceiling on the level of remote work in the labour market looks likely to hold, at least in the short run. This is because the expansion of remote work during the pandemic has been concentrated on areas where remote work was expected to be more feasible: the professional and managerial occupations.

▶ **Some jobs are changing:** The pandemic has led to a lot of experimentation with how work is undertaken. The data does indicate that the 'frontier' of what kind of work can be done remotely has been pushed out in administrative and sales occupations, but there is still a large range of occupations where the feasibility for remote work has not shifted.

"The increase in remote work might be less than expected based on early pandemic hype."
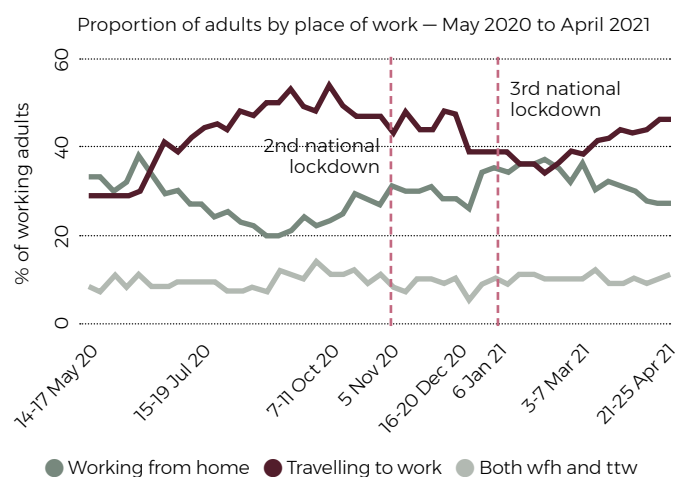
▶ **Restructuring risks are coming into view:** There are early indications that a set of jobs in middle-income administrative and sales occupations face a potential displacement or restructuring risk from the rise of remote work. Specifically, there has been significant drop in the share of vacancies advertised for administrative and sales occupations. It's not clear how much of this drop is temporary as government economic support policies have frozen the usual pattern of labour market flows. The economic consequences of a comprehensive displacement of administrative, office-based occupations are similar in their potential scope to the impact of artificial intelligence (AI) technologies in areas such as road transport (e.g. autonomous vehicles) or call centres (e.g. chatbots).

2.2 Upper limits

The data collection efforts of the Office for National Statistics (ONS) allow us to track work patterns on a weekly basis. Figure 1 shows information from the weekly ONS Opinions and Lifestyle (OPN) survey (see overleaf). The proportion of working adults who worked exclusively from home (WFH) ranged between 20% and 39% over the course of 2020 and early 2021. A further 10% both WFH and travelled to work, while 40–50% exclusively travelled to work outside their home.

Figure 1: Place of work during the pandemic

Proportion of adults by place of work — May 2020 to April 2021

● Working from home ● Travelling to work ● Both wfh and ttw

Note: This figure shows data on place of work from the ONS Opinion and Lifestyle Survey (OPN) (which has only been conducted since May 2020). The y-axis plots the percentage of working adults according to each place of work: travelling to work always, working from home always, and both working from home and travelling to work.

Office for National Statistics (ONS) data

Opinions and Lifestyle Survey (OPN)
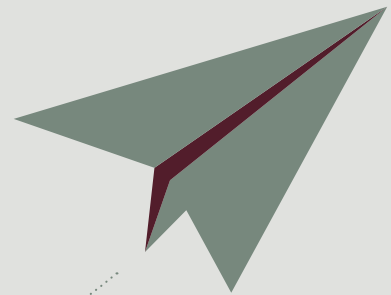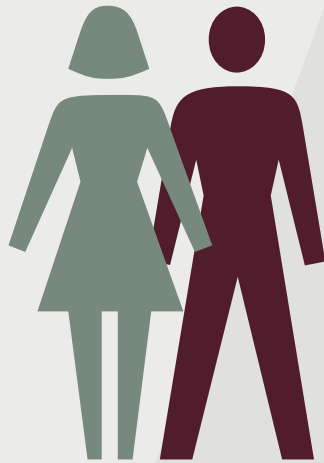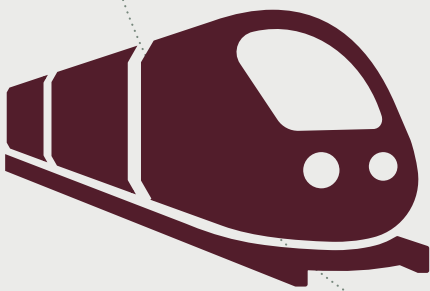
50%

APPROXIMATE NUMBER OF EMPLOYEES TRAVELLING TO WORK DURING THE PEAK OF LOCKDOWN

6,000

APPROXIMATE NUMBER OF ADULTS CONTACTED WEEKLY BY OPN

72%

AVERAGE RESPONSE RATE TO OPN SURVEY

THE OPN PROVIDES RAPID answers to questions of current policy interest, with a focus on public awareness of new policies. It began in late March 2020 as a weekly survey designed to provide information on how the COVID-19 pandemic was affecting people, households and communities in Great Britain. Around 6,000 adults are contacted every week, with the achieved sample approximately 4,000–4,500 individuals, an average response rate of 72%. Data collection is conducted predominantly by an online self-completion questionnaire.

The fluctuations in work patterns seen in Figure 1 bear the mark of social distancing policies. The most open period in September 2020 saw the full-time WFH share fall to 20%, with another 10% of employees in the partial WFH category. This estimate from September represents our best information for what the near future might look like. Surveys of employee preferences with regard to remote work indicate that many prefer a hybrid model of work locations (Mizen, Bloom and Taneja 2021).

So the most likely scenario for a (hopefully) social distancing-free late 2021 or early 2022 would be a shift of some full-time WFH employees into the part-time group. The overall labour market would therefore take the form of an 80:20 (or possibly 70:30) split between non-remote and remote work. That said, this is an average — remote work will be more or less prevalent across sectors or firms based on how the production of different goods and services is tied to face-to-face interactions.

A striking aspect of the OPN data is that even at the peak of lockdown restrictions, around 50% of employees still travelled to a workplace on a full-time basis. This might surprise those working in the professional or managerial sector, where working remotely appears to have been the norm. There are still many jobs where working remotely is not feasible, and other data that we cover in the next section indicates that the scope for adapting these jobs to remote modes is limited.

2.3 The remote-work frontier has been pushed out, but only slightly

This part of the analysis uses online job vacancy data from the information company, Burning Glass Technologies (BGT). This data offers the opportunity to look at labour market trends at a high frequency and with rich information about the detailed occupational structure of vacancies. Further details are provided in Appendix A.

The measure of remote work used in this chapter is based on a text algorithm that searches for phrases associated with remote work, first developed by Duchini, Simion and Turrell (2020) (see Appendix A). Figure 2 shows the share of vacancies offering remote-work opportunities by the nine major groups of the Standard Occupational Classification (SOC). This shows very large jumps in the share of remote-work vacancies across occupations. Relative to pre-2020 levels, these jumps are most pronounced in administrative and sales occupations.

Figure 2: Share of remote-work vacancies across SOC1 occupations

Share of vacancies mentioning remote work (by 1-digit SOC)

● 2018 ● 2019 ● 2020 ● 2021
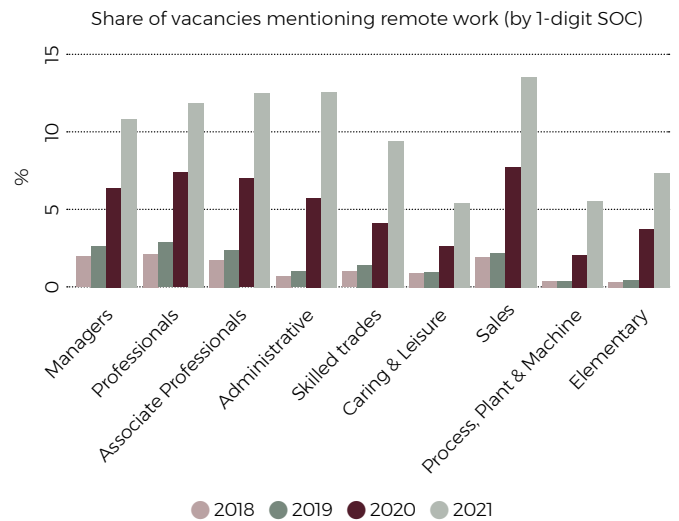
Note: This figure shows the share of vacancies by 1-digit SOC occupation and year in the text of the BGT advertisements that contain remote-work keywords. Details of these remote-work keywords are listed in Appendix A. Source: BGT vacancies data (see sidebar for details).

It is useful to consider how to benchmark these changes against the pre-pandemic labour market. Figure 3 relates these changes to a measure of the pre-existing potential for remote work at occupation level. This measure (from Hensvik, Le Barbanchon and Rathelot 2020) is based on occupation-level data on average hours worked at home from the American Time Use Survey. Intuitively, it can be thought of as representing the pre-2020 occupational 'frontier' for the feasibility of working remotely. US data is used here as it has the most detailed occupational breakdown available. Furthermore, it can be argued that any correlation between this US measure and UK remote working practices will reflect the intrinsic feasibility of remote work for an occupation rather than country-level factors.

The results in Figure 3 show that this measure of feasibility does a good job of explaining the rise in remote work for most occupations. For the professionals group, for example, the estimate indicates that the expansion of remote work vacancies was in line with the established feasibility of working from home. However, for the administrative and sales groups there were significant increases above established feasibility. The estimates indicate that around 25% of the rise in vacancies for these occupations was a distinct effect that went beyond what could have been expected based on trends before the pandemic.

Figure 3: Conditional change in remote-work shares across SOC1 occupations

Notes: R squared = 0.125; SOC1 = Managers is set as the default (constant) group
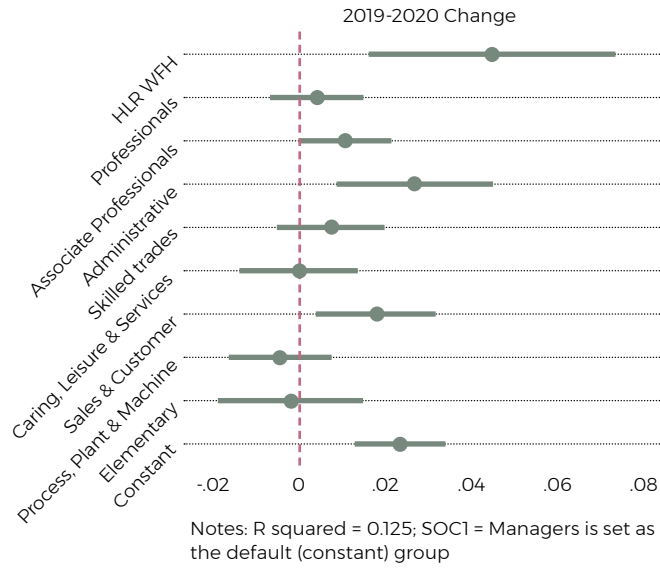
Note: The regression uses robust standard errors. Coefficient estimates and 95% confidence intervals on SOC1 dummy variables in a regression of the change in the SOC4-level share of remote-work vacancies between 2019 and 2020. A control for the Hensvik et al. (2020) measure is also included in this regression (denoted HLR WFH). The constant reported in this regression represents the effect for the baseline SOC1 group of managers. Source: BGT vacancies data collapsed to SOC4 level.

It may be wondered whether this shift in the remote-work frontier for administration simply reflects a shift in the types of jobs being advertised, such as an increase in the share of telephone-sales vacancies. However, this does not seem to be the case. Figure 4 shows the share of all vacancies across five bands of pre-2020 feasibility. The SOC4 occupations within administrative and sales were split into five groups according to the level of remote-work feasibility. The fact that the shares are flat across the different years implies that the composition of vacancies has not changed. The frontier of what can be done remotely for administrative and sales occupations has moved out evenly across all the jobs in these groups. In short, there has been a general reassessment of the feasibility of remote work in administration and sales.

Figure 4: Compositional Change in Administrative and Sales occupations
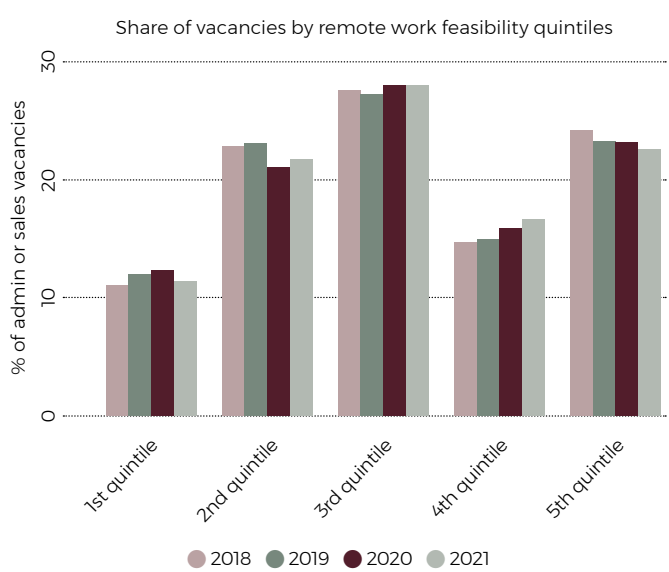
Note: The five quintiles of remote-work feasibility are constructed by dividing the SOC4 occupations into five groups based on the value of the Hensvik et al. (2020) measure of remote-work feasibility. Source: BGT vacancies data.

2.4 Early signs of 'restructuring risk' are coming into view

This section considers the implications for employment of these structural shifts in remote working. However, first we must recognise that since March 2020 the labour market has been in an unusual state of 'suspended animation'.
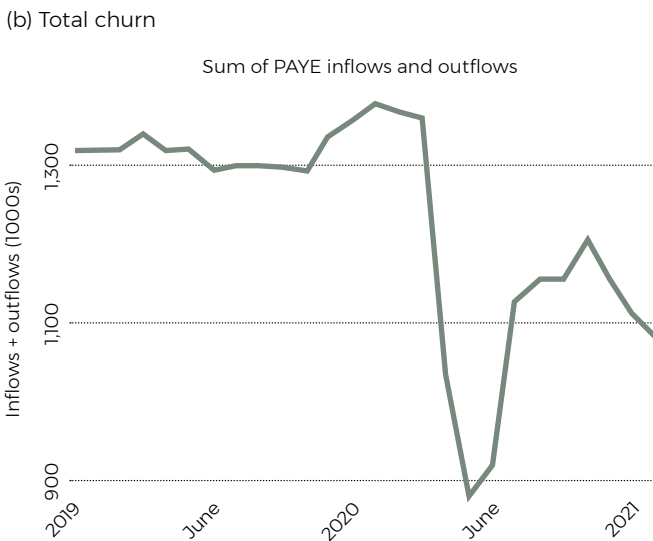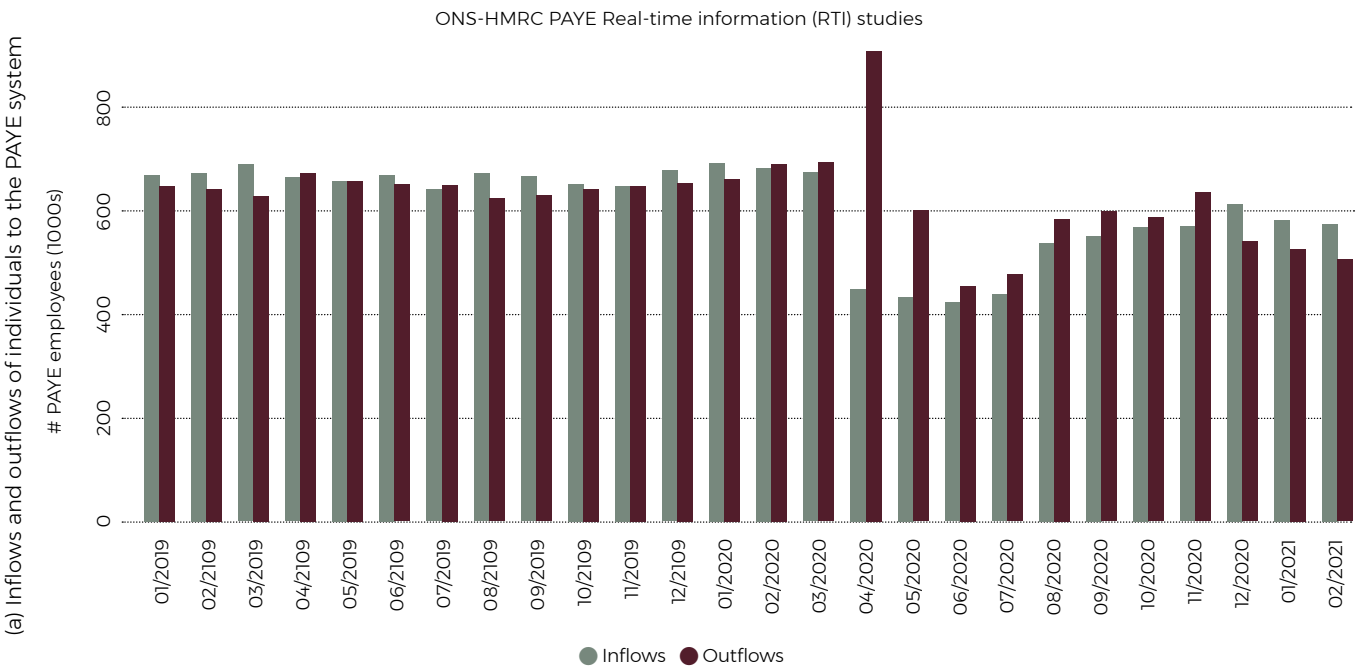
Figure 5 shows tax inflows and outflows using data from the ONS HMRC-PAYE Real Time Information (RTI) release, which is derived from administrative tax data. Before the pandemic, there were around 600,000 inflows and outflows from PAYE employment per month. This represents new people joining or leaving employer payrolls and is therefore a good representation of the regular 'churn' of the labour market.

As Figure 5(a) shows, there was a large spike of exits early in the pandemic (consistent with rising unemployment in mid-2020) and there have been more muted flows since then. Figure 5(b) shows the sum of inflows and outflows (churn) to get a better idea of how the fluidity of the labour market has changed. It shows that since the pandemic began (as of February 2020), churn has been running at around 1.1 million inflows and outflows per month, compared with 1.3 million in 2019 — a 15.4% fall.

A big contributing factor here is the impact of the Coronavirus Job Retention Scheme or 'furlough', a government support scheme that has helped employers pay workers who have not been able to do their jobs because of pandemic restrictions. On average, 4 million workers per month have been on furlough since the start of the scheme — about 13.8% of the payrolled workforce in 2019. However, this still leaves a reasonable amount of the fall in churn to be explained and, in any case, the complex rules around partial furlough make it hard to conclude that this part of the labour market can be considered as completely frozen.

The data on labour market flows indicates that a notable consequence of the pandemic has been a slowdown in the regular process of reallocation in the economy. 'Reallocation' occurs when certain activities stop operating and release their labour and capital resources back into the economy to be redeployed in new activity. A big concern regarding exiting the pandemic economy is that this 'creative' redeployment and the opportunity for efficiency gains in the long term will be lost. However, before considering this it's worthwhile to try and understand what kind of reallocation has been taking place during the pandemic.

Figure 5: Labour market churn during the pandemic

ONS-HMRC PAYE Real-time information (RTI) studies

(a) Inflows and outflows of individuals to the PAYE system

PAYE employees (1000s)

● Inflows ● Outflows

(b) Total churn

Sum of PAYE inflows and outflows

Inflows + outflows (1000s)

Note: This figure shows information on labour market inflows and outflows based on the ONS HMRC-PAYE Real Time Information (RTI) release. Figure 5 (a) shows inflows and outflows broken down separately, while Figure 5 (b) gives a time series plot of inflows plus outflows.

Vacancy trends during the pandemic

The BGT vacancy data shows where labour market inflows have still been taking place during the pandemic. Figure 6 highlights vacancy shares per month over a five-year period for three SOC1 occupational categories that summarise the evolution of this side of the labour market. The share of managerial vacancies is largely steady, but there has been an incomplete recovery in the shares for administrative and sales occupations. These groups are still around 1% lower than their pre-pandemic level in terms of their shares, and the problem is exacerbated by the fact that the volume of all vacancies has fallen. For the ONS data on vacancies and jobs in the UK (Office for National Statistics, 2021), this fall in the number of total vacancies is around 19% when comparing the periods February–April 2021 and December 2019–February 2020.

Figure 6: Vacancy shares for selected SOC1 occupations

Vacancy shares by selected SOC1 — BGT data
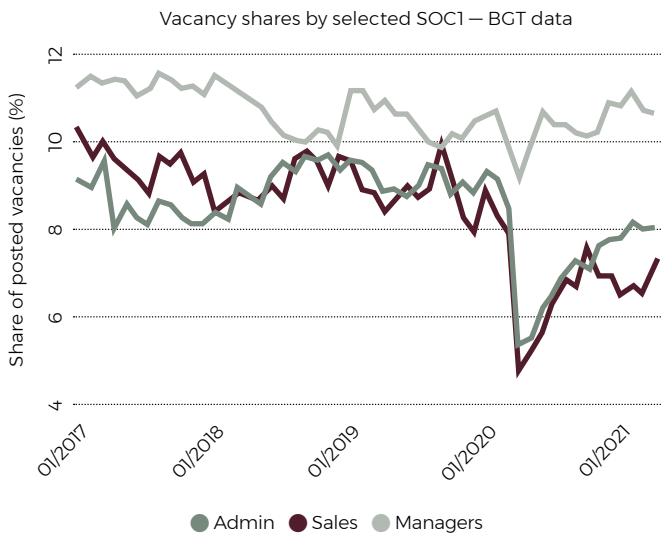
Notes: This figure shows the total share of posted vacancies for three SOC1 groups (professionals, administrative occupations and sales occupations) on a monthly basis since January 2017. For example, vacancies for professional occupations represented 11% of all BGT recorded vacancies in February 2021. Source: BGT vacancies data.

That is, there have been fewer vacancies to 'go around' and these occupational groups (administration and sales) make up a smaller share of vacancies overall. In practice this means that there has been a major reduction in the availability of entry and mid-level office work.

The change in vacancies over 2019 and 2020 within these SOC1 groups is shown in Figure 7, which breaks them down according to SOC3 occupations and calculates the percentage change in vacancies for each between 2019 and 2020. This shows that secretarial and other administrative occupations have been the hardest hit within the administrative SOC1 group, with a 25–35% fall in vacancies. This pattern of falls would be consistent with firms cutting back on hiring on-site office workers during the pandemic. Receptionists are the classic example – there is no demand for such a position if social distancing is in effect and offices are closed. Other similar affected occupations would be office managers and clerical assistants, which are both part of the 'other administrative' group looked at later on in this chapter.

The fall in vacancies across sales occupations is more evenly distributed, although managers seem to have been insulated. Notably, there are still large falls in the customer service sub-group, which is heavily concentrated on call centre-style operations.

Figure 7: Change in vacancies for SOC3 Administrative and Sales occupations, 2020 versus 2019

(a) Administrative

Vacancy changes by SOC3 — Administration

(b) Sales

Vacancy changes by SOC3 — Sales
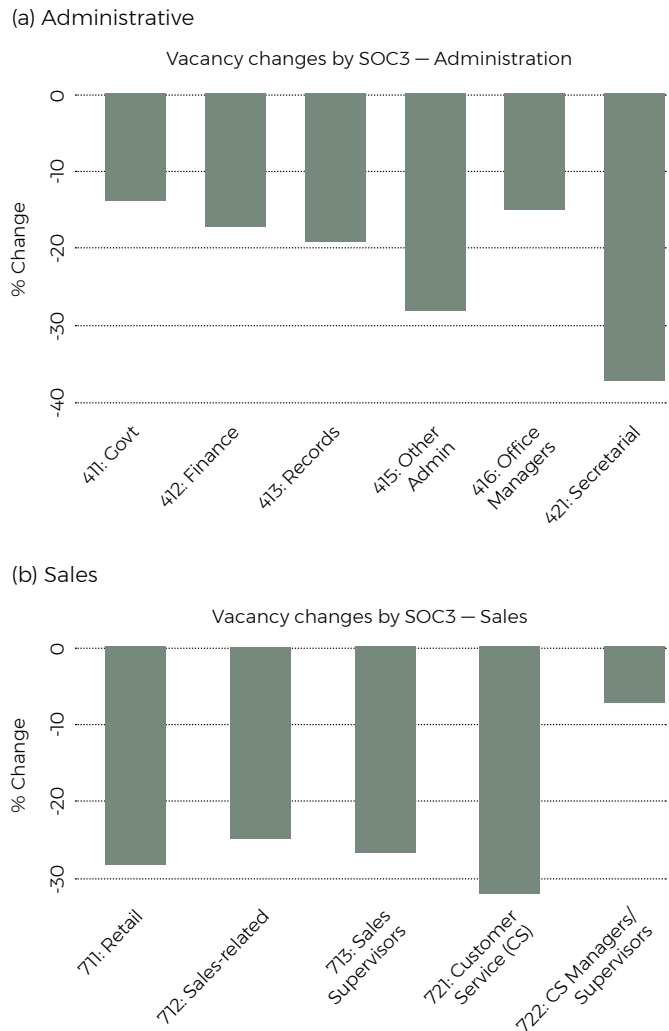
Note: This figure shows the percentage change in vacancies at the SOC3 level between 2020 and 2019 for the BGT database. Calculated based on calendar year total for each year (January–December).

The trends so far in the administrative and sales occupations indicate a potential pattern for post-pandemic labour market adjustments. Specifically, cutting back face-to-face office activity through increased remote work is likely to have an impact on the administrative staff whose functions are most complementary to physical office space. Similarly, as e-commerce grows, retail-oriented sales positions will also face restructuring or elimination.

A key empirical question for the post-pandemic labour market is the extent of the occupational rebalancing that might occur. It is important not to exaggerate the potential scope of this. Figure B1 in Appendix B shows that there were small drops in the share of administrative and sales vacancies over both 2020 and 2021. ONS vacancy

data shows evidence of a drop in administrative vacancies relative to those for professionals (Figure B2, Appendix B). However, even if there is minimal change at the aggregate level, there is clear potential for concentrated impacts that mirror earlier periods of change in the labour market.

Restructuring scenarios for the post-pandemic labour market

So far during the pandemic, policy has focused on freezing the labour market in its 2019 form via policies such as furlough; however, readjustment when these policies end is inevitable. It is not possible to accurately forecast the extent or speed of this readjustment, but the size of the labour segments facing restructuring risk can be quantified.

An instructive comparison here is the impact of artificial intelligence (AI). Although the smooth or systematic impact of AI is also hard to predict accurately, it is possible to work out the parameters of some specific scenarios that involve new technologies. In short, there are a range of 'super-invention' technologies that can be clearly anticipated. For example, a roll-out of autonomous vehicles is likely to take place over the next 5–15 years, which has the potential to affect the (heavily male) driving workforce. Similarly, advances in 'chatbot' technology are likely to displace human call centre operators. The potential job losses or 'displacements' that arise in relation to specific technological or organisational changes can be referred to as cases of 'restructuring risk'. They are a sub-category of the overall displacement risks that are associated with general economic shocks (for example, the closure of a factory due to import competition or a recession).

Figure 8 shows the labour market shares of a range of occupations that can be classed as vulnerable to 'future shocks', i.e. disruptions due to new technologies or organisational developments such as the rise of remote work. This indicates that the office administrative group (SOCs 415 and 421) are each comparable in size to the driving workforce (transport drivers, SOC 821), which represents about 3% of total employment. The call centre group (SOC 721) represents around 1.5% of employment. Other transport workers (SOC 823) are also included, which represents workers in areas such as air and rail transport who could plausibly be affected by a general post-COVID reduction in travel (e.g. business travel).

Figure 8: Employment shares (2019) for selected occupations at risk of 'future shock' disruption

Employment shares (2019) for 'Future Shock' occupations
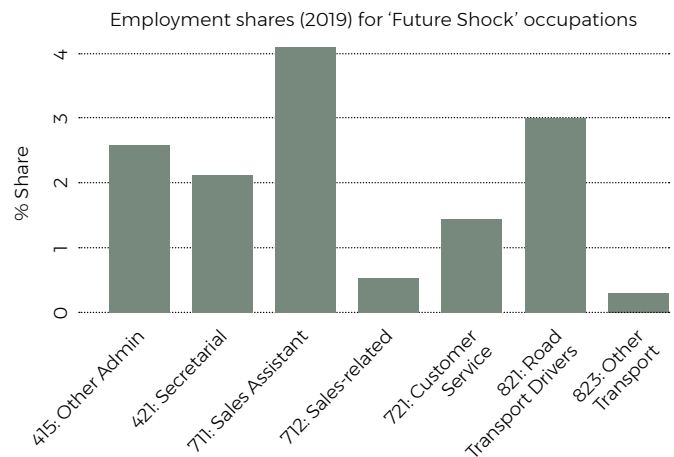
Note: This figure shows the employment shares of selected SOC3 occupations calculated from the UK Labour Force Survey (2019).

This is a very small group, around 0.25%, and only increases by another 0.15% if a generous definition that encompasses other groups (such as transport associate professionals, SOC 351, which includes aircraft pilots and controllers) is used.

The practical question for policy in the 2020s is how quickly disruption might unfold, as this will influence the size of the adjustment challenge. For example, the 3% figure for the UK driving workforce physically represents approximately 830,000 workers, who are mainly male with an average age of 47. The adjustment of these workers will clearly be easier if there is a 10–20-year transition to autonomous vehicles, rather than the sort of swift, decimating disruption that hit industries such as video/DVD retail and newspaper advertising in the 2000s and 2010s.

Brynjolfsson, Rock and Syverson (2019) have sketched out scenarios for the roll-out of autonomous vehicles that include benign countervailing effects, i.e. increases in overall jobs due to the productivity impacts of the technology. However, the record of technologically driven worker displacements, such as the post-1970s decline in manufacturing, is not good. The Edin et al. (2020) study of technology-related occupational decline in the United States and Sweden found large, negative lifetime earnings effects (around 8–11%) for workers at the lower end of the wage distribution.

The suddenness of the pandemic means that remote work has the potential to be a swiftly disruptive force, in this case targeted at an overall labour market segment that represents 4.5% of the workforce in the case of the most affected (i.e. administrative occupations). Monitoring the evolution of this part of the labour market is therefore a priority for labour market analyses in 2022, as social distancing is withdrawn.

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Appendices

## Appendix A: Measuring remote work in vacancy data

The main dataset for this chapter comes from the online job vacancies information maintained by the information company, Burning Glass Technologies. BGT is a well-known vendor of online job vacancy information for both commercial and academic use. The company webscrapes information across online sources and de-duplicates entries in order to capture the universe of vacancies in a given country as comprehensively as possible.

The UK iteration of the BGT data used in this chapter begins in 2011 and comprises approximately 30 million vacancies in total. The name of the firm or organisation posting a vacancy can be directly identified for 30% of all vacancies, with the remainder being vacancies advertised via a third-party recruiter. All of the vacancies are used in this research to construct aggregate and occupation-level datasets, with vacancies restricted to the subset when doing firm-level analysis.

A straightforward approach is taken to characterising vacancies as offering remote-work opportunities. Specifically, 15 keywords or phrases that signal remote work were identified, such as 'work from home', 'home-based', 'tele-commuting' or 'virtual job'. A given vacancy is classified as remote if at least one of these keywords or phrases is used in the advertisement. The search is based on words found at https://timewise.co.uk and the official definition of flexible work arrangements by the Advisory, Conciliation and Arbitration Service (ACAS). This vocabulary is complemented with other expressions identified via a data-driven approach (these additional expressions were found in the BGT data).

Figure A1 shows the frequency of the terms, which are organised into three clusters. The first cluster, for 'home-based' work, is the largest. As a robustness exercise, a sample of 400 job vacancies was manually audited to test for false negatives, i.e. vacancies that could plausibly be classified as remote-work positions but that were not picked up by the algorithm. Only 2/100 false negatives and 2/100 false positives were identified. On reviewing the algorithm and adding some terms, it was not possible to eliminate false negatives.

Figure A1: Remote-work keywords in BGT data, 2017–2021
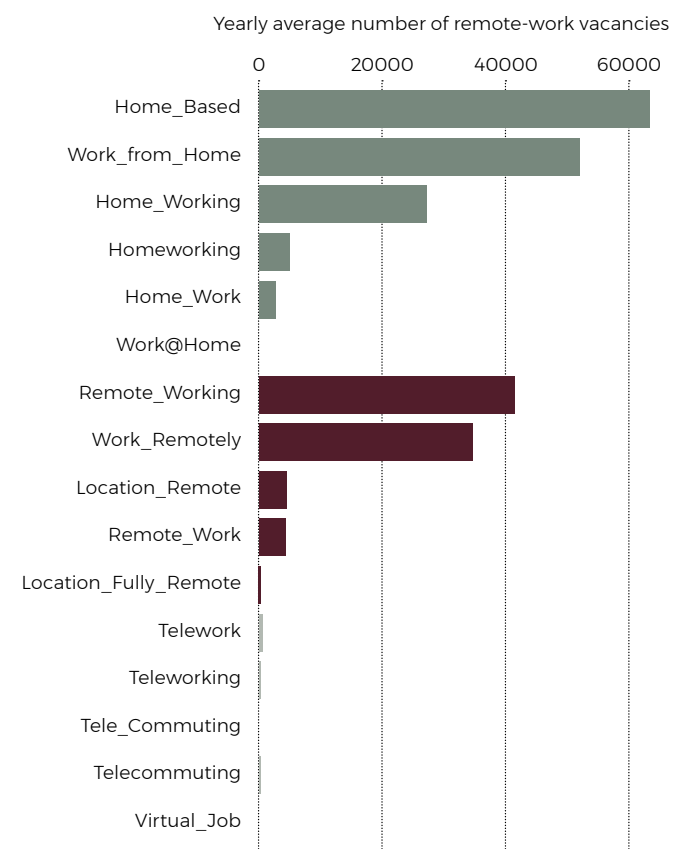
Note: This figure shows the breakdown of the remote-work keywords used to classify vacancies. The length of each bar represents the yearly average number of remote-work vacancies in the period 2017–2021. The colour coding indicates different groupings of words, which are listed on the y-axis.

Figure A2: Monthly evolution of remote-work vacancies

Share of vacancies mentioning remote work


● Weighted ● Unweighted
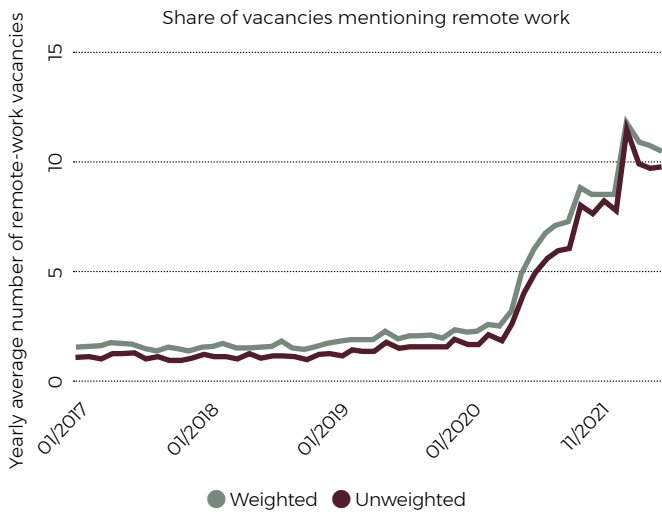
Notes: This figure shows the share of remote vacancies in total vacancies in the BGT data. The weighted measure pools across all vacancies (i.e. it is the weighted aggregate), while the unweighted measure is the mean across SOC4 occupations.

The share of remote vacancies in total vacancies is shown in Figure A2 on both a weighted and unweighted basis. The unweighted measure calculates the mean across occupations, while the weighted measure pools the vacancies into one aggregate measure before calculating the remote-work shares. Both measures show comparable increases in the share of remote-work vacancies, reaching 11–12% by early 2021.

This is notably lower than the incidence of remote working seen in the ONS OPN data. In part this will be because the two data sources differ in qualitative coverage — the OPN covers the existing 'stock' of employees, while the BGT vacancies data measures one aspect of the 'flow'. That said, the gap is large, and a major question for further analysis is whether the availability of remote-work options is going unstated in job advertisements. In principle, this does not affect the basic analysis of remote-work trends as long as stock measures are correlated with vacancy-based flow measures at the occupation level. The research team is currently in the process of matching the OPN and BGT data at the occupation level to conduct this validation exercise.

Appendix B: Other evidence on vacancy trends

Figure B1: Vacancy shares by SOC1 occupation and year

Vacancy shares by SOC1 — BGT data

● 2018 ● 2019 ● 2020 ● 2021
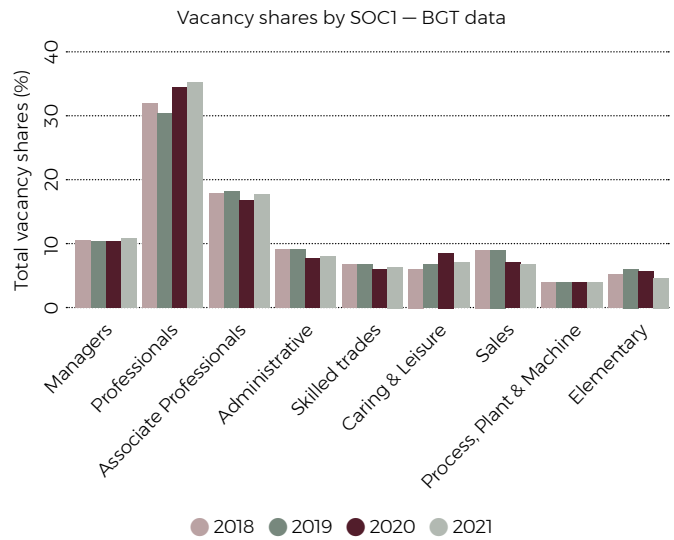
Notes: This figure shows the total vacancy shares of SOC1 groups across years in the BGT data. Source: BGT vacancies data.

Figure B2: Evidence from ONS vacancy series

ONS vacancies/employment ratio

● Administrative ● Professionals
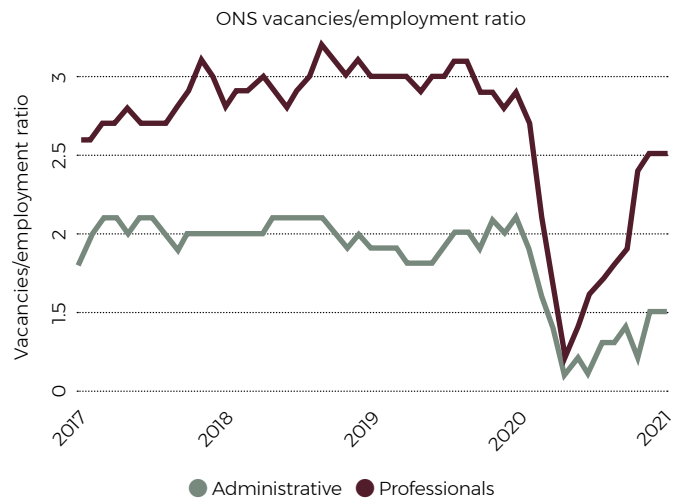
Notes: This figure shows the vacancy to employment ratios from the aggregated files for the ONS Vacancy Survey . Information is presented on the professionals and administrative categories as these can be most closely compared to the definitions constructed using BGT data. Source: ONS Vacancy Survey (aggregated data).

"The UK iteration of the BGT data used in this chapter begins in 2011 and comprises approximately 30 million vacancies in total."