

Jobs and job quality between the eve of the Great Recession and the eve of COVID-19

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Abstract:

In 2019, the employment rate among 25- to 64-year-olds in the UK reached 80% – the highest on record, and considerably higher than the 76% rate recorded shortly before the Great Recession. In this paper, we investigate this growth across several dimensions. We analyse which sectors, demographic groups and regions accounted for the rise, and show the effect of certain policies and compositional changes on the employment rate. We also investigate how job ‘quality’ – in both financial and non-financial terms – has changed. We find that almost all demographic groups and regions saw a rise in employment, especially those with low pre-existing employment rates and those near the bottom of the income distribution. The growth in employment was entirely accounted for by a rise in jobs that can be done from home, making the workforce more resilient to the COVID-19 crisis – but the workforce also shifted towards those with childcare responsibilities, undoing some of that resilience. Hourly pay growth was very weak over the period, with the median actually slightly falling. Other indicators of job quality show a more mixed picture: employees seem to have greater attachment to their work and firm, but perceive less security and flexibility in their job.

JEL codes: J01, J21, J28, J31

Keywords: Employment, Jobs, Recovery, Job Quality, Great Recession, COVID-19

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I. Introduction

On the eve of the COVID-19 crisis, employment stood at its highest rate since records began, having increased strongly since the Great Recession. In this paper, we investigate what the inter-crisis period meant for the number and nature of jobs in the UK, and how this set the backdrop for what is happening now, including the economic vulnerabilities we face in the current crisis and the policy challenges that it will likely leave us with afterwards. The pre-COVID-19 labour market was certainly not without its shortcomings, and some of those have arguably been exposed further by the crisis. As the economy returns to something more normal, the same issues around pay and job quality will no doubt re-emerge. Meanwhile, there had also been some trends that were undoubtedly helpful in holding down poverty – most notably the sheer number of people and households with some paid work. The COVID-19 crisis jeopardises these, and the immediate pre-crisis period provides a benchmark for how much work there may be to do post-crisis to recover ground that has been lost.

In this paper, we analyse which demographic groups, regions and industries saw the highest growth in employment (Section III) and what forces were behind this growth (Section IV). We then quantify the extent to which the increase in employment was associated with changes in job quality (Section V). Throughout, we mainly focus on employment among those aged 25–64, as employment above these ages is relatively unusual (though becoming increasingly common), and trends in employment below 25 are complicated by more people staying in education for longer.

II. Data

We use four data sets in this paper, which we now describe in turn.

Labour Force Survey

The main data set that we use is the Labour Force Survey (LFS), for which the latest available data cover 2019. It is a quarterly survey of the UK population, with detailed information on labour market behaviour. The sample size in 2019 was around 53,000 individuals per quarter.

British Social Attitudes Survey

The British Social Attitudes Survey (BSAS) is a yearly survey of over 3,000 individuals collecting data on a wide variety of social, economic and political issues, including – in 2005 and 2015 – attitudes towards work and job satisfaction.

Family Resources Survey

For household income analysis, we use the Family Resources Survey (FRS), an annual survey of around 20,000 households with detailed information on incomes. We can simulate counterfactual incomes for FRS households using TAXBEN, the IFS tax and benefit microsimulation model (Waters, 2017). The latest data cover the financial year 2018–19.

Annual Survey of Hours and Earnings

The Annual Survey of Hours and Earnings (ASHE) is an employer survey of 1% of employee jobs (giving a sample of roughly 300,000) in April each year. It contains relatively precise data on earnings and hours worked, making it a useful source for understanding trends in hourly wages.

III. The rise in employment

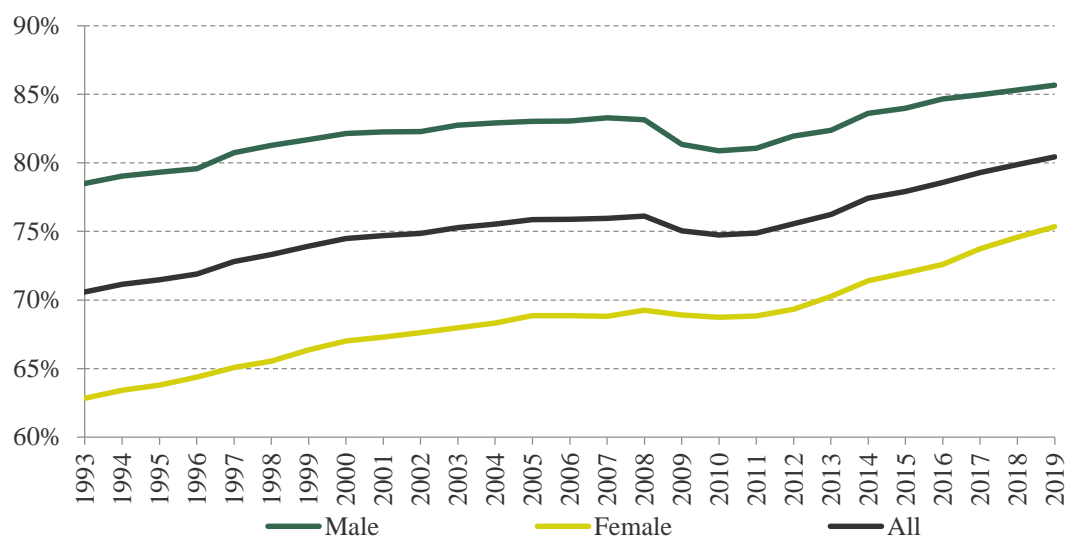
In this section, we describe the magnitude and nature of the growth in employment that was observed between 2007 and 2019. Subsection A presents longer-term trends in different types of employment by sex for those aged 25–64 and Subsection B shows what this will have meant for poverty.

Subsection C then investigates employment trends across demographic subgroups over the period, while Subsection D shows how the distribution of workers across industries has changed over time. Subsection E explores trends in employment from 2007 to 2019 for individuals aged 16–24. Last, Subsection F examines whether the changes observed in the workforce from 2007 to 2019 changed the vulnerability (in terms of employment losses or earnings reductions) of the UK workforce to the economic implications of the COVID-19 pandemic.

III.A Trends in employment rates

In 2019, around 28 million individuals aged 25–64 were in work, an employment rate of 80% – the highest since records began in 1971. As Figure 1 demonstrates, employment had increased strongly over the previous eight or so years, leaving the rate 4.5 percentage points (ppts) higher than its 2007 level of 76%.

Figure 1: Employment rates by sex



Note: Sample is individuals aged 25–64.

Source: Authors' calculations using Labour Force Survey, 1993 to 2019.

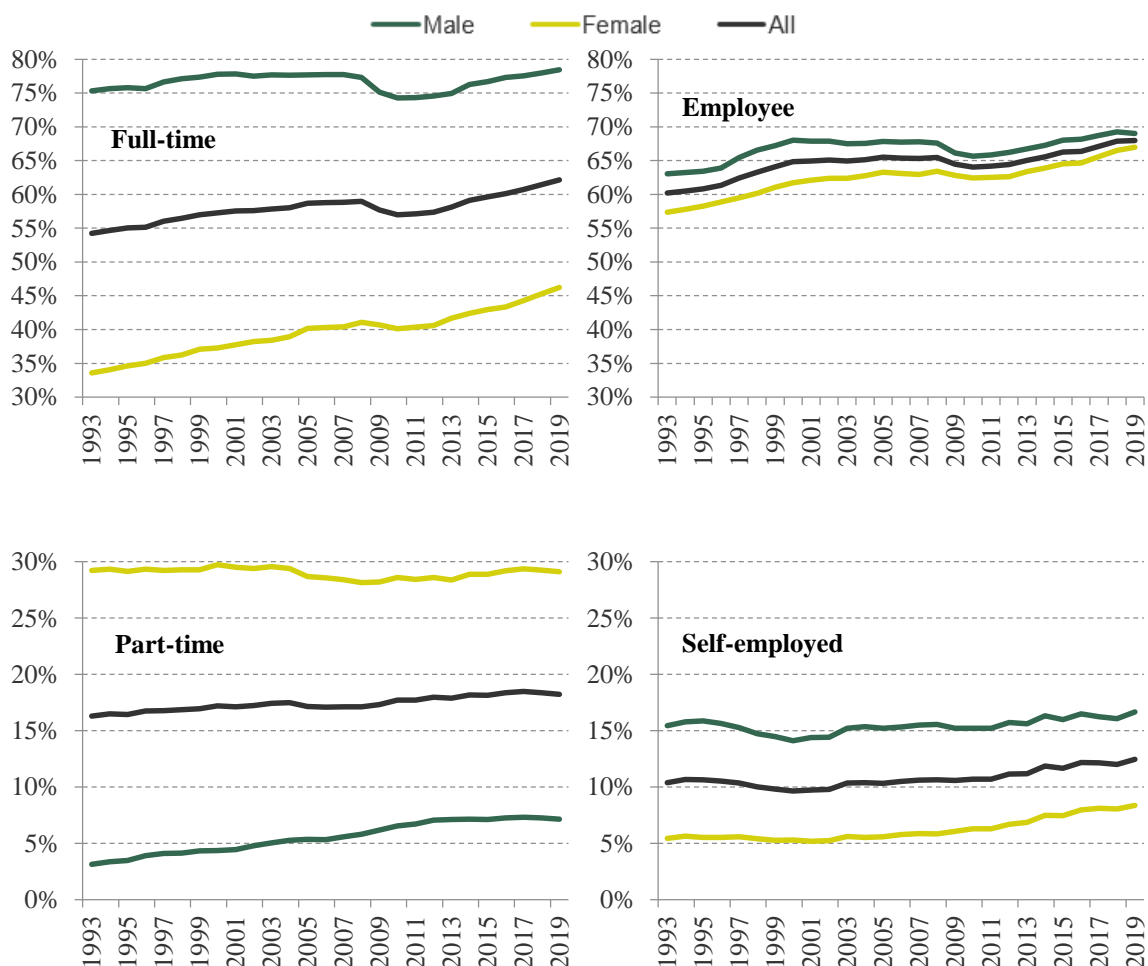
Most of the employment growth was driven by women. Female employment in 2019 stood 7ppts above its 2007 level, while male employment was just 2ppts above. This served to close the gender employment gap from 14ppts to 10ppts.

This can partly be explained by the huge change in working patterns at particular points in the life cycle observed for women over time, with far more women in their mid-to-late 20s and early 30s being in work in 2019. Women are having children both less frequently and later in life than they used to. When they do have children, they are also less likely to drop out of the labour market and tend to return to work faster (Roantree and Vira, 2018). In Section IV, we will explore two significant policy changes that especially affected women's labour supply.

Figure 2 demonstrates that much of the increase in the overall employment rate from 2007 to 2019 was driven by full-time employment. This is particularly true for female full-time work, which grew by 6ppts. In contrast, full-time male employment had only just returned to its pre-2007 level.

Roughly two-fifths of the growth in employment was seen in self-employment – a part of the workforce at which the government has found it especially difficult to precisely target insurance during the COVID crisis. While the share of the population working as employees dipped in the aftermath of the financial crisis, self-employment rates continued to rise. Cribb and Xu (2020) show that the rise in self-employment since 2007 was entirely driven by an increase in the ‘solo self-employed’, who operate on their own without employees.

Figure 2: Part-time, full-time, self-employed and employee rates, by sex



Note: Sample is individuals aged 25–64.

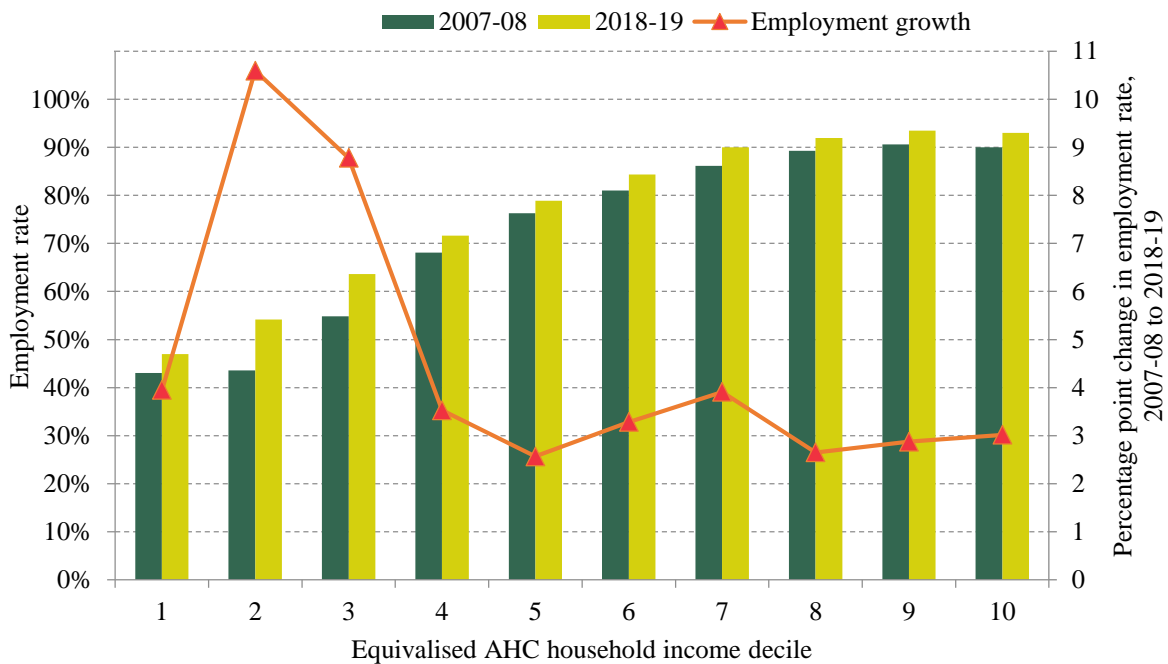
Source: Authors’ calculations using Labour Force Survey, 1993 to 2019.

III.B Employment and poverty

Given the size of the increase in employment from 2007 to 2019, it is natural to ask what impact this had on household incomes. In this subsection, we explore where in the household income distribution the employment growth occurred in order to gauge what employment growth has meant for the living standards of those who are disproportionately on low incomes.

Figure 3 shows employment growth from 2007 to 2019 by household income decile. Among 25- to 64-year-olds, those in the second and third household income deciles experienced the sharpest employment growth since 2007, with 11ppt and 9ppt increases in their employment rates respectively. Employment in the remaining deciles increased by around 3 to 4ppts. Not surprisingly, in 2019 employment rates were still much higher at the upper end of the household income distribution than the lower end.

Figure 3: Change in employment by household income decile, 2007–08 to 2018–19



Note: Incomes have been measured net of taxes and benefits and after housing costs have been deducted. All incomes have been equivalised using the modified OECD equivalence scale. Sample is individuals aged 25–64, though income deciles are calculated based on the whole population.

Source: Authors’ calculations using Family Resources Survey (FRS) 2007–08 and 2018–19 and a ‘top incomes’ adjustment using administrative tax data.

The income gains from the employment growth between 2007 and 2019 – and particularly from falls in household worklessness – were very much concentrated at the bottom. Though it is difficult to precisely estimate by how much employment growth will have kept poverty down, employment growth clearly was a key driver of income growth among low-income households. It is therefore likely to have been a significant factor in keeping poverty lower than it otherwise would have been. The danger in the current crisis resulting from the coronavirus pandemic is that much of this may be undone, likely leaving many low-income households vulnerable. Looking at the types of people who were brought into work from 2007 to 2019 and the quality of their jobs can therefore help provide a picture of the pre-coronavirus-crisis circumstances of those below and around the poverty line.

III.C Change in employment rates for different groups

We now turn to exploring in more detail where the growth in employment from 2007 to 2019 occurred.

Overall, the largest increase in employment was experienced by population subgroups that historically had lower employment rates. These include women, ethnic minorities, lone parents, older people and immigrants.¹ This can be observed in Figure 4, which presents the changes in the employment rates for different demographic groups from 2007 to 2019.²

Notably, employment rates increased for all of these groups³ with the exception of individuals with a degree, for whom the employment rate decreased by 1ppt. As discussed in further detail in Section IV.B, this is likely at least in part due to the huge rise (4.7 million) in the number of 25- to 64-year-olds with a degree between 2007 and 2019. This means that degree holders are simply a different kind of group, on average, from the group they were in the past, which probably makes accurate like-for-like comparisons over time impossible (the same is likely true among different groups of those without a degree).

Three groups saw particularly large increases in employment. First, single mothers' employment increased by 12ppts, a rise partly caused by policy reforms incentivising paid work (as discussed in Section IV.A).⁴ Most of this rise was in part-time employment (see Appendix Figures A1 and A2). It is worth noting that employment amongst lone parents, a central part of the Labour governments'

¹ Note that we do not present the employment rate for people with and without disabilities, given that there have been multiple changes in the survey questionnaire with regards to the definition of being disabled and we thus are not able to construct a consistent measure of disability over time (see figure 5.1 of Cribb, Norris Keiller and Waters (2018)).

² The extent to which changes in the employment rate by specific characteristics will have affected the overall employment rate will also depend on the number of people in each subgroup who were initially in work and the relative sizes of these groups. Appendix Table A1 shows the change in the number of people in each subgroup who are in work from 2007 to 2019, while Appendix Table A2 presents the change in the number of people in each subgroup as a share of the total population.

³ Excluding immigrants from the results presented does not change results substantially.

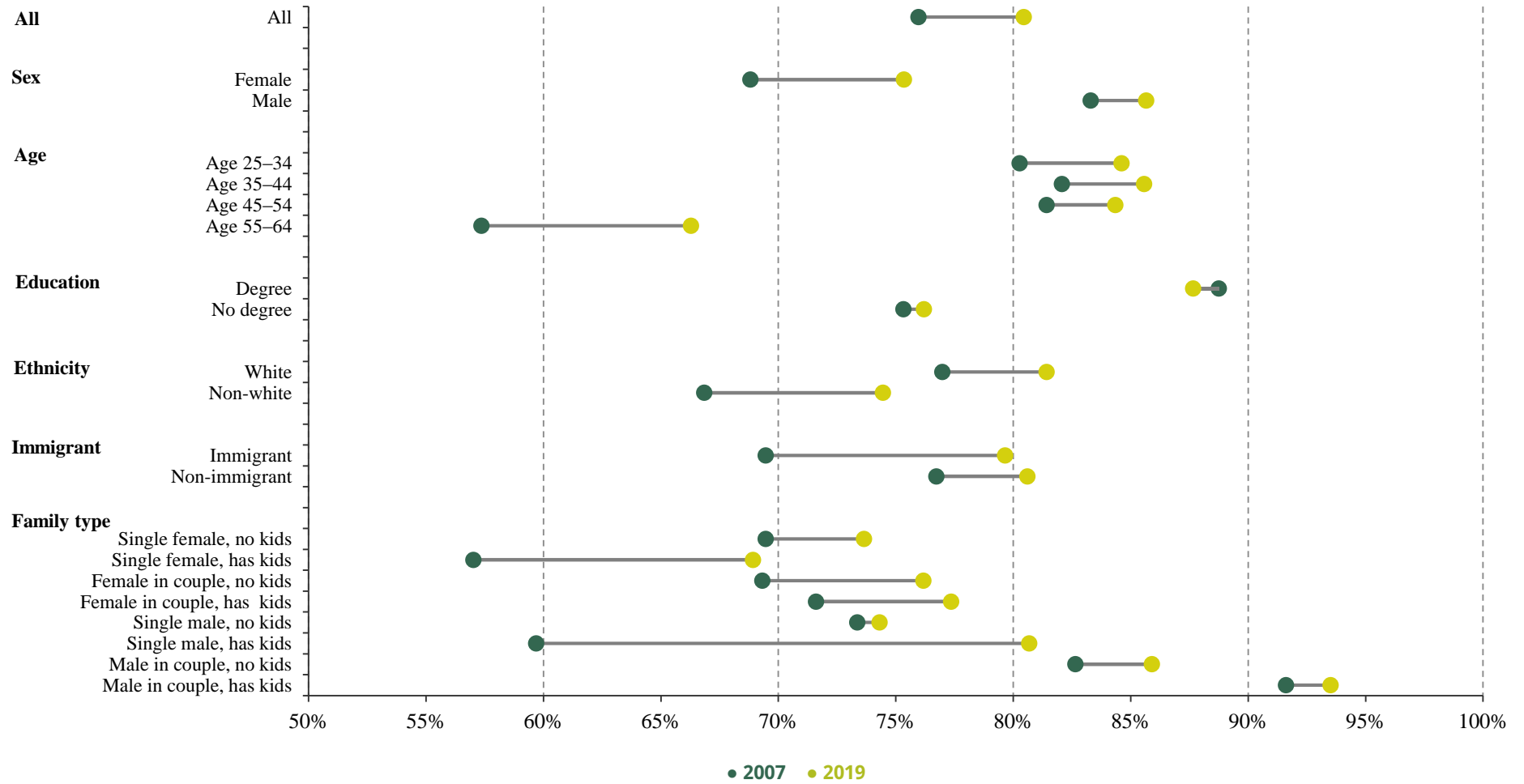
⁴ Single fathers saw an even larger rise, but are a very small group.

child poverty strategy, had already increased from 47% to 57% in the decade leading up to the Great Recession – a large increase of over 20%.

Second, the employment rate among those aged 55–64 increased by 9ppts. Again, a particular policy reform – the rising female state pension age – played a key role and is discussed in Section IV.A. Given this, it is not surprising that increasing employment among older workers was stronger among women (+13ppts) than men (+5ppts).

Third, immigrants saw a 10ppt rise in employment. Together with an increase in the number of immigrants in the UK, this led to around 2 million more immigrants in work. In Section IV.C, we explore whether the increase in the employment rate for immigrants can be explained by a change in their composition. The employment rate for non-immigrants also increased from 2007 to 2019, albeit to a lesser extent (4ppts). A common question in the policy debate is whether the substantial increase in the number of immigrants in the UK affected the employment of non-immigrants. While it is possible that the increase in the employment rate for non-immigrants would have been higher in the absence of immigrants, in general the empirical evidence suggests very little employment effects of that kind (Dustmann, Fabbri and Preston, 2005; Wadsworth, 2018).

Figure 4: Change in employment rates by various characteristics, 2007 to 2019



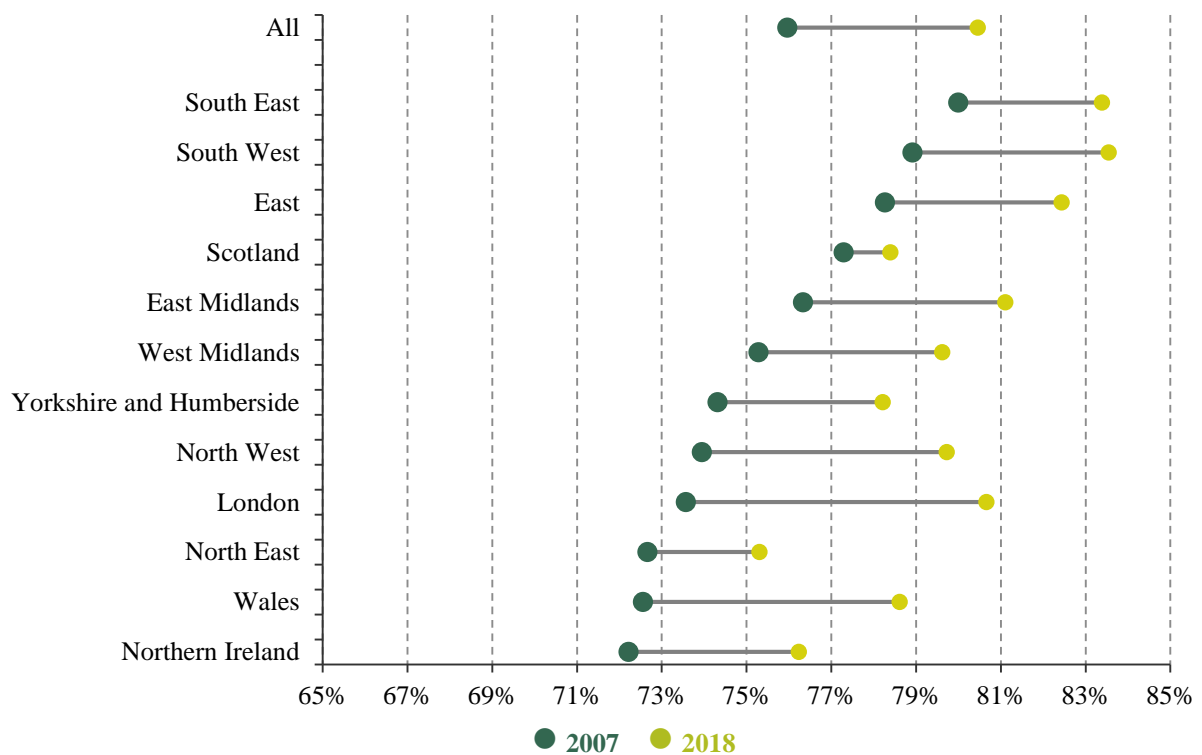
Note: 'Immigrants' are defined as those who first lived in the UK aged 16 or older. Sample is individuals aged 25-64.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

Figure 5 presents changes in the employment rates between 2007 and 2019 by region. Every region shared in the employment growth over this period, though with considerable variation. On average, the lower-employment parts of the UK saw faster growth (with the exception of Northern Ireland and the North East).

The change in employment rates of non-immigrants by region was similar to that of the total population, with the exception of London, where the employment growth for non-immigrants was considerably (3ppts) lower. We do not find substantial differences in employment growth across regions by sex: for every region, female employment growth was around 2–7ppts higher than that of males (overall female employment growth was 4ppts higher).

Figure 5: Change in employment rates by region, 2007 to 2019



Note: Sample is individuals aged 25–64.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

The preceding evidence has shown the largest growth in employment among women, immigrants and Londoners. One might ask whether the especially strong growth among these groups masked reduced

employment among others. Evidence for this is hard to find, however. For example, even for non-immigrant men living outside of London, the overall employment rate increased by 1ppt from 2007 to 2019, though this was driven by an increase in part-time employment. Full-time employment in 2019 for this group was at the same level it was in 2007.

III.D Change in distribution of workers across industries

So far, we have investigated the sorts of people who saw increases in employment over the period; we now turn to the industries they worked in. Table 1 shows the change in the number of workers in each industry in absolute terms and as a share of the total workforce.

Table 1: Change in number and share of workers by industry, 2007 to 2019

	Number of workers (million)			As share of workforce		
	2007	2019	Diff. (%)	2007	2019	Diff. (ppts)
Wholesale, retail, transportation	4.4	4.5	2%	18%	16%	-1.7
Manufacturing	3.1	2.6	-15%	13%	9%	-3.2
Human health and social health activities	3.1	3.9	26%	13%	14%	1.4
Professional activities incl. finance	2.5	3.7	48%	10%	13%	3.2
Education	2.5	3.0	24%	10%	11%	0.9
Construction	2.1	2.0	-2%	8%	7%	-1.2
Public admin and defence, social security	1.9	1.9	3%	8%	7%	-0.7
Administrative and support services	1.3	1.3	-4%	6%	5%	-0.8
Accommodation and food services	0.8	1.1	38%	3%	4%	0.7
Miscellaneous	1.0	1.5	51%	4%	5%	1.4
Information and communication	1.0	1.3	20%	4%	5%	0.3
Agriculture, forestry & fishing, mining & quarrying	0.4	0.4	-7%	2%	1%	-0.3
Electricity, gas, water supply, waste management etc.	0.3	0.4	23%	1%	1%	0.1

Note: Miscellaneous includes arts, entertainment and recreation as well as other service activities, activities of households as employers and activities of extraterritorial organisations and bodies. Sample is individuals aged 25–64.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

Two public-sector-dominated industries – health and education – both saw significant increases over the period. An ageing population is likely to have boosted work in the former, with the strongest increases among those working in residential and social care. The rise in the number of people working in education (0.5 million) appears to have been driven by those working in the private sector or universities, with the increase there considerably greater than the rise in the number employed in public sector education (0.1 million (Cribb, Davenport and Zaranko, 2020)).

There were also significant increases in the number of workers in the hospitality sector, in particular catering, as well as in professional activities, with more people working in management consultancies, head offices, engineering and architecture. There were falls in the share of workers working in wholesale, retail and transportation, and in manufacturing – with the latter being the continuation of a long-run decline in the sector.

Overall, these trends show increases in typically lower-paying industries (such as accommodation and food services or human health) as well as higher-paying ones (such as professional services). Section V looks at this issue further, investigating whether the increase in the employment rate from 2007 to 2019 was accompanied by a change in the pay and quality of jobs.

III.E Younger workers

Thus far, our focus has been on workers aged 25–64. We now briefly investigate employment patterns among younger workers (16–24). While almost all demographic groups saw an increase in employment from 2007 to 2019, those aged 16–24 saw a 3ppt decline. We examine this decline further in Table 2, which lists the economic activity of 16- to 24-year-olds in 2007 and 2019. There are two things to note from the table. First, because unemployment fell across the period, the decline in labour force participation (employment or unemployment) was considerably larger than the fall in employment alone. Second, this decline was entirely accounted for by an increase in the share of 16- to 24-year-olds in full-time education (likely driven in part by the raising of the school (or training) leaving age). Among those *not* in full-time education, the 16–24 employment rate increased by 2ppts.

Table 2: Economic activity of those aged 16–24, 2007 and 2019

	2007	2019	Change (ppts)
Employee	55.6%	52.1%	–3.5
Self-employed	2.3%	2.7%	0.4
Unemployed	10.2%	7.6%	–2.6
Long-term sick	1.4%	2.1%	0.6
In full-time education	23.2%	29.7%	6.5
Looking after family	4.2%	2.3%	–1.8
Other inactive	3.1%	3.5%	0.4

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

III.F How did labour market trends affect economic exposure to the COVID-19 crisis?

At the time of writing, it had become clear that the strong employment growth the UK experienced over recent years is likely to have – at least partially, and at least temporarily – reversed as a result of the COVID-19 crisis. Firm shutdowns, economic uncertainty, and temporary falls and possibly permanent changes in demand for particular goods and services are all factors that will have led to job losses and could lead to more (Costa Dias et al., 2020). In this subsection, we look at the extent to which the growth in employment between 2007 and 2019 was concentrated among jobs and individuals that are more or less vulnerable to the employment impacts of COVID-19.

We identify three types of workers who are particularly at risk of being unable to work as a result of the crisis: first, those working in a sector that has been largely or entirely shut down because of the lockdown measures, including air travel, hospitality and non-food retail;⁵ second, workers with young children and no non-working adult in the household, who may struggle to find childcare;⁶ and third,

⁵ We use the list of sectors compiled by Joyce and Xu (2020), except we use two- rather than four-digit Standard Industrial Classification (SIC) levels.

⁶ We do not classify an individual as having ‘childcare responsibilities’ if they are a key worker, since schools and childcare are still open to the children of these workers.

those whose job makes it difficult or impossible to work from home.⁷ Conversely, one group – those classified by the government as key workers – are less exposed financially to the COVID-19 crisis, but often more exposed to health risks.

Previous research has shown that certain types of individuals are particularly likely to be in these sorts of groups. Younger workers, low earners and women are more likely to work in shut-down sectors (Joyce and Xu, 2020). Low earners are also less likely to be able to work from home, whereas those living in the South are more likely (Costa Dias et al., 2020). Key workers are predominantly female and lower-earning (Farquharson, Rasul and Sibieta, 2020a and 2020b). We add to this evidence in Table 3, which shows the growth in employment from 2007 to 2019, split into the four categories described above.

All of the growth in (16–64) employment from 2007 to 2019 can be accounted for by additional jobs that can be done from home. The workforce has also shifted towards key workers. These changes make workers as a whole more resilient to the COVID-19 shock than they would have been in 2007. However, both in absolute terms and as a fraction of the workforce, more people are at risk of being unable to work because of childcare responsibilities. This is unsurprising given the large increase in employment amongst parents. Furthermore, there was a slight increase in the number of people working in shut-down sectors.

⁷ We define an individual as being unable to work from home if they (a) have an occupation where, according to Costa Dias et al. (2020), fewer than half of workers can work from home; (b) are not a key worker; and (c) do not have a vulnerable person in their family.

Table 3: Change in number and share of workers by COVID-vulnerable groups, 2007 to 2019

	Total number of people (million)			As share of total workforce		
	2007	2019	Diff. (%)	2007	2019	Diff. (ppts)
Aged 25–64						
In a shut-down sector	3.6	4.1	13%	15%	15%	0.1
Childcare responsibilities	2.9	3.7	29%	12%	13%	1.7
Cannot work from home	10.1	10.4	3%	41%	38%	-3.4
Key worker	6.5	7.6	17%	26%	27%	1.1
Age 16–24, not in full-time education						
In a shut-down sector	0.9	0.9	-5%	29%	30%	1.4
Childcare responsibilities	0.1	0.1	-51%	4%	2%	-2.1
Cannot work from home	1.9	1.6	-14%	59%	56%	-3.1
Key worker	0.6	0.6	3%	19%	22%	2.5
Aged 16–64						
In a shut-down sector	5.1	5.5	8%	18%	17%	-0.2
Childcare responsibilities	3.0	3.8	25%	11%	12%	1.5
Cannot work from home	12.7	12.7	0%	44%	40%	-3.7
Key worker	7.2	8.3	15%	25%	26%	1.2

Note: We define people as being in a shut-down sector if they report working in one of the sectors Joyce and Xu (2020) class as being largely or entirely shut down by the lockdown. These include (two-digit SIC codes in brackets): retail (47), passenger transport (49 and 51), accommodation and food (55 and 56), travel (79), arts and leisure (90–93), personal care (96) and domestic services (97). Note that key workers working in these industries (for example, food retail under 47) are not defined as working in an affected industry. The sample of people with ‘childcare responsibilities’ includes people who are in work but not key workers, have children aged 0–9 and do not have a partner who is out of work. Key workers are identified based on the methodology used in Farquharson, Rasul and Sibietta (2020a). Classification of ability to work from home is based on Dingel and Neiman (2020). The sample ‘cannot work from home’ is individuals in occupations where fewer than half of workers are predicted to be able to work from home (pre-crisis) and who are not key workers who do not have a vulnerable person in their family.

Source: Authors’ calculations using Labour Force Survey, 2007 and 2019.

When we zoom in on younger workers not in full-time education, the patterns are a little different. As shown by Joyce and Xu (2020), they were particularly likely to have been working in a shut-down

sector in 2019. That had only become truer since 2007 – people had increasingly been starting their careers in occupations such as hospitality (Costa Dias, Joyce and Norris Keiller, 2020). On the other hand, in 2019, fewer younger workers had childcare responsibilities, and they were more likely to be able to do their work from home, than in 2007. They were also more likely to be key workers than they used to be, with the greater financial resilience but greater health risks that this brings in the current crisis.

The increase in the employment rate from 2007 to 2019 was relatively widespread, with almost all demographic groups seeing a rise. Increases were typically larger for those groups and regions with lower employment rates to begin with. While some of this growth was in work that is relatively shielded from the current crisis, the increase in female participation that has driven much of the overall increase in employment means that more workers are at risk of being unable to work because of childcare responsibilities. To what extent and for how long the COVID-19 crisis will hinder their career progression and employment prospects remains to be seen, although the immediate evidence on how much women's work is being disrupted during the crisis is not encouraging (Andrew et al., 2020).

IV. Understanding the rise in employment

In the previous section, we reported the magnitude and nature of the growth in employment seen between the Great Recession and the COVID-19 crisis. We now turn to examining the causes behind that growth. We investigate two causes that can be analysed fairly reliably: specific policy reforms and the changing composition of the population. After discussing these, we look specifically at understanding the rising employment rate of immigrants.

IV.A Policy reforms

There have been a number of reforms since 2007 that could affect employment. Among these are reductions in income tax, increases in VAT, cuts to both in- and out-of-work benefits, changes to

work search requirements for some benefit recipients, expansions of childcare subsidies, and sharp increases in the minimum wage for those over the age of 25.

A complete assessment of the employment impacts of these policies is beyond the scope of this paper. Instead, we focus on two reforms that target specific groups and appear to have had a significant effect: increases in work search requirements for lone parents with young children and the increase in the female state pension age. We examine these in turn.

Prior to 2008, lone parents with a child under the age of 16 were eligible for income support – a means-tested out-of-work benefit. Income support is paid at the same rate as jobseeker’s allowance, the UK’s unemployment benefit. The difference between the two is that while the recipient of jobseeker’s allowance must look for work and meet regularly with a ‘work coach’ to be eligible, the same is not true for recipients of income support. Between 2008 and 2012, the government implemented the lone parent obligation (LPO), which restricted entitlement to income support in four stages: limiting it first to lone parents with a child aged under 12, then under 10, then 7, then 5.

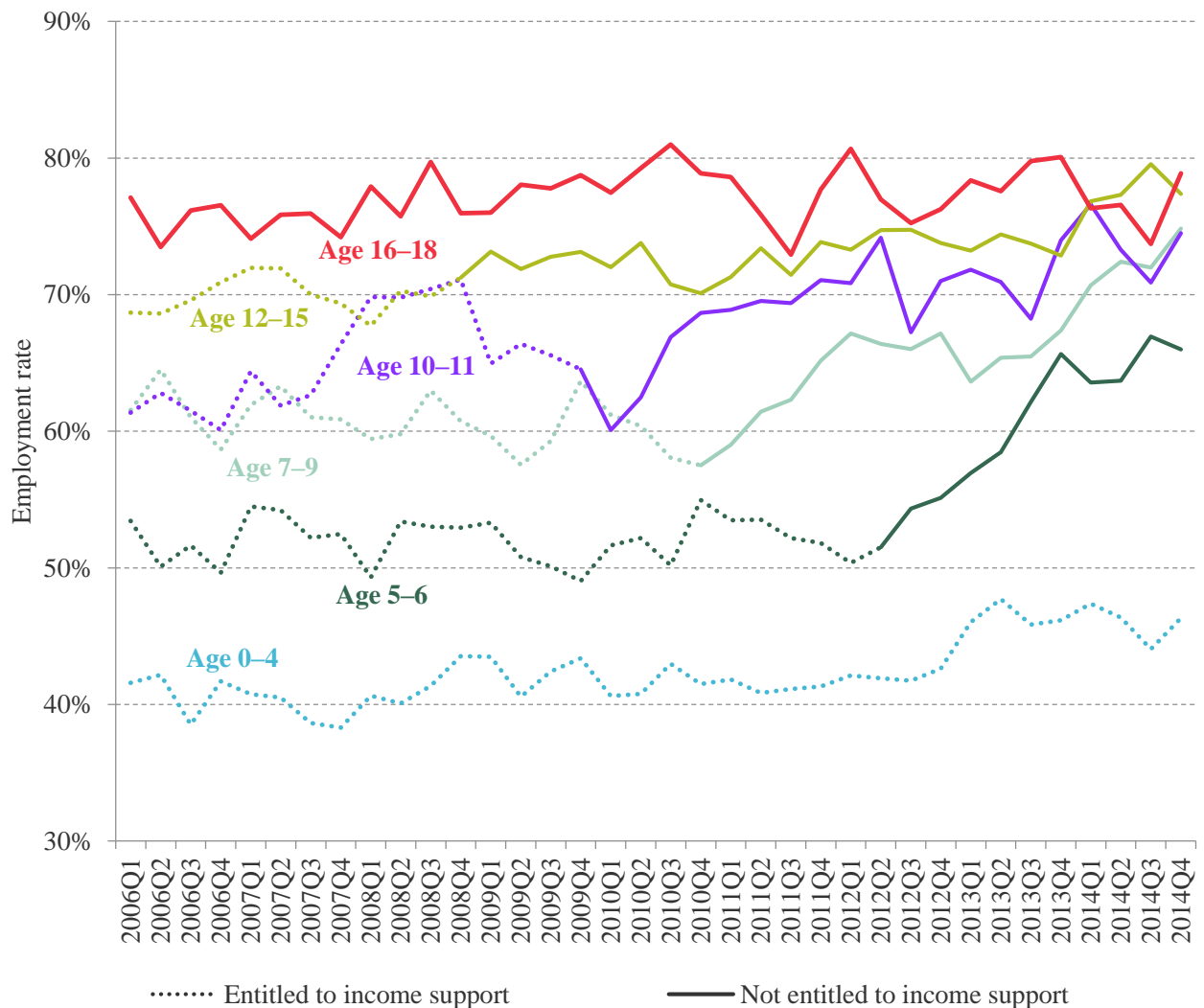
Figure 6 shows employment rates for single mothers between 2006 and 2014, split by the age of their youngest dependent child.⁸ The figure also indicates whether such women were entitled to income support or not at a given point in time. Note that four of the groups shown lost eligibility to income support over the period, while one (those with a child aged 0–4) was eligible throughout and one (those with a youngest child aged 16–18) were ineligible throughout. Prior to the LPO’s introduction, single mothers’ employment rates varied significantly with the age of their youngest child, with those with very young children having an employment rate of around half that of those with the oldest children.

⁸ Single fathers were affected by the policy just the same as single mothers. However, there are relatively few single fathers with dependent children living with them, and they may differ significantly from single mothers, so we exclude them from the figure.

The figure shows that the employment rates of the two groups who were unaffected by the policy (youngest child aged 0–4 and aged 16–18) were fairly constant over the period studied.⁹ By contrast, the employment rates of the four groups affected by the LPO persistently increase significantly following – but not before – the loss in entitlement to income support. Larger increases are seen for mothers with younger children. For example, the employment rate of single mothers with a youngest child aged 12–15 was about 3ppts higher 18 months after the implementation of the LPO on them, whereas those with a child aged 5–6 saw a rise of 14ppts over the equivalent period.

⁹ There is a small amount of variation with the recession and recovery, and a modest increase in the employment rates of those with the youngest children in 2013.

Figure 6: Employment rates and entitlement to income support among single mothers, by age of youngest child



Note: The figure shows entitlement or otherwise to income support on the grounds of caring for a young child. Individuals could also be entitled on other grounds, such as incapacity. The figure shows when entitlement to income support was removed for new claimants; existing claimants could continue to claim for a period (determined by their child’s exact age and not longer than 14 months) after that point.

Source: Authors’ calculations using Labour Force Survey, 2006–14.

We can study this policy more formally with a difference-in-difference approach. Specifically, we categorise single women in the LFS into five treatment groups, split by the age of the youngest child as in Figure 6. We run the following regression:

$$e_{i,a,t} = \alpha_a + \tau_t + \beta_k D_{t,a,k} + \delta X + \varepsilon_i$$

where $e_{i,a,t}$ is a dummy indicating the employment status of individual i in treatment group a in quarter t . α_a and τ_t are treatment group and time fixed effects respectively. $D_{t,a,k}$ is a series of four dummies indicating whether t is before the LPO was applied to group a , 0–5 quarters after, 6–10 quarters after, or 11+ quarters after (these periods are indexed by k). X holds a series of controls.¹⁰

We find 6–10 quarters after the LPO was implemented, it had increased employment rates among affected lone mothers (those with a youngest child aged 5–15) by around 5.3ppts.¹¹ That translates to an increase in employment among (25- to 64-year-old) lone mothers as a whole of 3.5ppts, accounting for about a third of the total increase in employment among lone mothers between 2007 and 2019.

This is a relatively large increase in employment compared with what one can normally expect from a welfare reform. That certainly does not mean that the policy is unambiguously advantageous, however. Single mothers who remain out of work after the LPO was implemented clearly lose out – as they either look for work (time which they presumably would rather spend doing something else), or they do not look for work and so cease to be eligible for out-of-work benefits. And at least some of those single mothers who went into employment as a result of the reform are likely to be worse off than they would have been, if we look more broadly than just at their total income – they could, after all, have worked under the old (more generous) welfare regime but did not.

The second policy we examine is the rise in the female state pension age (SPA). Before 2010, women could start to receive their state pension upon turning 60. The Pensions Acts 1995 and 2011 legislated

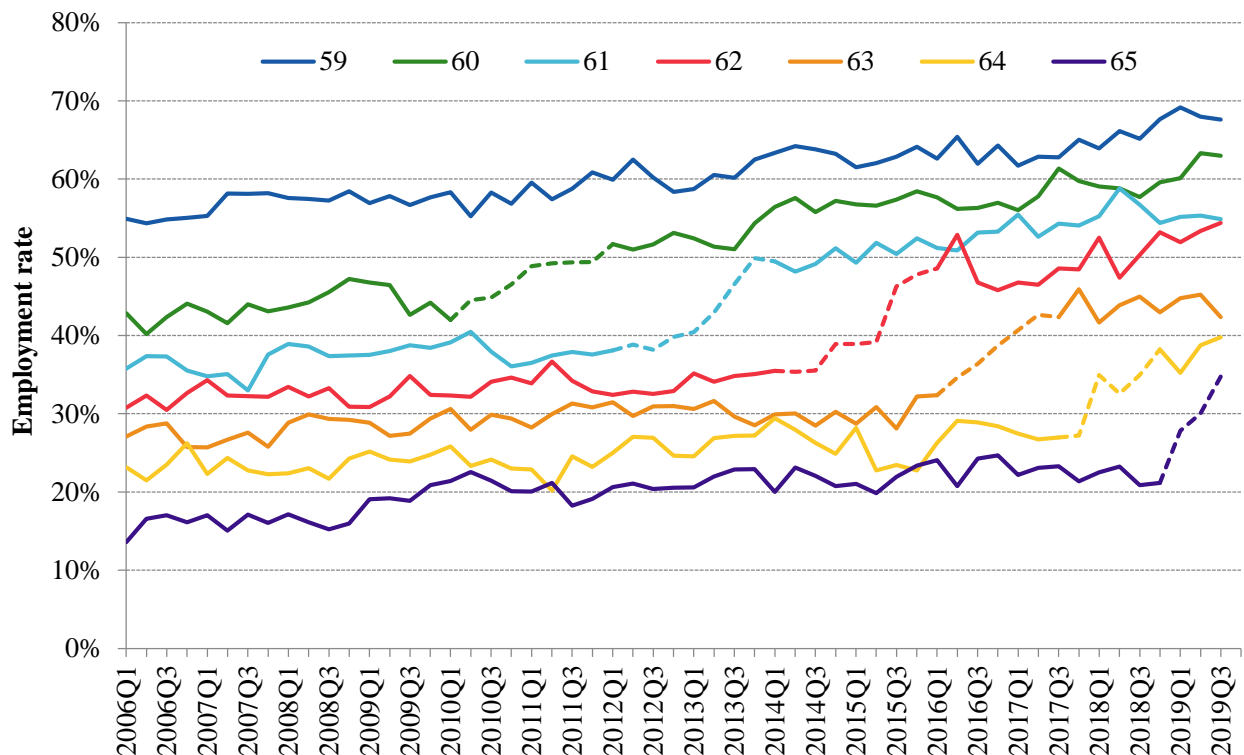
¹⁰ Controls are: dummies for region, age, number of dependent children (interacted with year), qualification, ethnicity, housing tenure, and treatment group interacted with quarter of year (i.e. Q1–Q4).

¹¹ Avram, Brewer and Salvatori (2018) use administrative data to examine the effect of the LPO on existing claimants of income support, and also find a significant increase in claimants entering employment as a result of the policy.

for that age to steadily rise to 66 between April 2010 and September 2020, affecting women born after April 1950 (those born later seeing a larger rise in their SPA).

Figure 7 shows employment rates for women aged 59–65. The dashed lines indicate the period over which the female SPA was rising from below to above the corresponding age. In other words, it indicates the period over which state pension entitlement was being removed for women of a given age. The figure generally shows a slow increase in employment rates for all age groups over most of the period examined, but a much sharper increase specifically when state pension entitlement was being removed. Although our focus in this paper is on those aged 16–64, the female SPA is currently in the process of increasing to 66, and the figure indicates a similar increase in employment for women aged 65.

Figure 7: Female employment rates by age



Note: Dashed lines indicate the period when the female SPA was rising from below to above the corresponding age.

Source: Updated calculations of Cribb, Emmerson and Tetlow (2016) from Labour Force Survey.

Cribb, Emmerson and Tetlow (2016) find that the rise in the female SPA from 60 to 62 increased employment rates among affected women by 6.3ppts. Assuming that the rise from 62 to 65 had the same effect, then the two policies we have examined (the LPO and the rise in the female SPA) caused an increase in the female 16–64 employment rate of 1.0ppt and the overall employment rate of 0.5ppts – accounting for, respectively, 16% and 11% of the rise between 2007 and 2019.

IV.B Changing composition of the population

The previous subsection showed that two policies have had a significant effect on the employment rates of particular groups. We now examine changes in the composition of the population, which have a weaker relationship to specific reforms but which may account for some of the change in overall employment. Appendix Tables A2 and A3 give an indication of some of these compositional changes. For example, between 2007 and 2019, the share of the population aged 45–54 – a relatively high-employment group – increased by 1.5ppts, while the share of immigrants – a lower-employment group – increased by 5.4ppts. These compositional changes can affect the headline employment rate.

We can more systematically estimate the contribution of changes in composition to changes in employment rates by using a Oaxaca–Blinder decomposition (Oaxaca, 1973; Blinder, 1973). The intuition here is that we measure the relationship between various individual characteristics and employment rates, and then estimate a counterfactual employment rate in a world where those relationships remain at their 2007 level but the composition of the population looks like it did in 2019. The difference between the counterfactual employment rate and the actual 2007 employment rate is the ‘compositional effect’ – the impact of the change in the composition of the population on headline employment. The part of the actual growth in employment not explained by the compositional effect measures how much more or less likely someone with a given set of characteristics was to be employed in 2019 relative to 2007.

Formally, we regress employment (E) on a set of individual characteristics (X) in 2007 and (separately) 2019. We collect the coefficients ($\hat{\beta}$) for each year, and then perform the following decomposition, where \bar{X} is the average value of the covariate:¹²

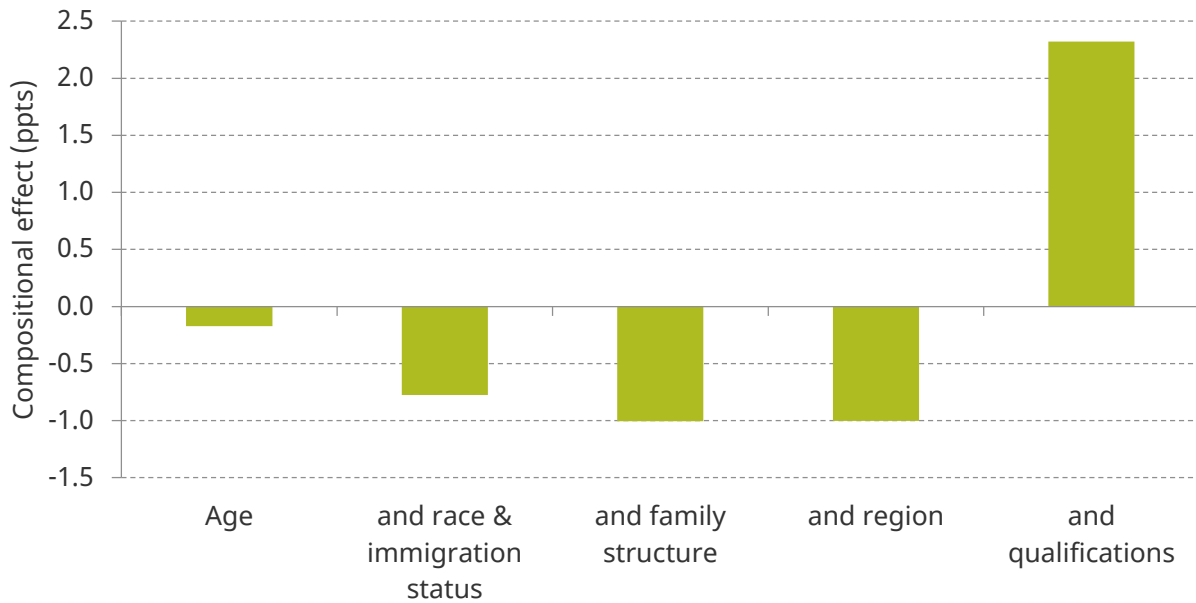
$$E_{2019} - E_{2007} = \underbrace{\hat{\beta}_{2007}(\bar{X}_{2019} - \bar{X}_{2007})}_{\text{Compositional effect}} + \underbrace{(\hat{\beta}_{2019} - \hat{\beta}_{2007})\bar{X}_{2019}}_{\text{Remaining change}}$$

We begin by analysing the effect of changes in the age composition of the population. The share of the population aged 55–64 – a relatively low-employment group – rose, which tends to reduce the overall employment rate. Overall, changes in the age composition contribute –0.2ppts to the employment rate, as shown in Figure 8.¹³ The interpretation of this is that, all else equal, the difference in the age make-up of the UK between 2007 and 2019 would cause employment to fall by 0.2ppts. The figure then shows the compositional effect of changes in the population as we sequentially add other characteristics. A shift towards non-whites and immigrants pushed down on employment further. Incorporating changes in family structure causes another drop in the compositional effect, partly thanks to a larger fraction of women with younger children (a group who are less likely to work). Including region makes very little difference. However, when we include changes in the composition of the population with respect to educational qualifications, the compositional effect increases substantially – a consequence of many more people with further education and degrees.

¹² Another way of performing the decomposition is to replace $\hat{\beta}_{2007}$ in the first term with $\hat{\beta}_{2019}$, and \bar{X}_{2019} in the second term with \bar{X}_{2007} . These two approaches give different results, but there is no analytical reason to prefer one to the other. In our applications, the differences are small; we report the average effects from the two.

¹³ We do these decompositions only for those aged 16–59 because in 2007 women in the LFS aged 60 or over who were not in work were not asked about their qualifications.

Figure 8. Effect of compositional population changes on employment, 2007 to 2019



Note: Sample includes those aged 16–59. All covariates are interacted with sex, and sex itself is included as a covariate for all regressions. ‘Family structure’ consists of four dummies indicating single or couple, with or without children; and dummies for the age of the youngest child.

Source: Authors’ calculations using Labour Force Survey, 2007 and 2019.

Taking these results at face value, the compositional changes in the population with regards to age, race, immigration status, family structure and region served to *reduce* employment by about 1ppt – making the actual increase in employment all the more surprising. But if we also account for the growth in qualifications, the sum effect of these compositional changes is to increase employment by 2.3ppts – enough to account for about half of the total increase in employment.

What should we make of these results? Whether or not to include qualifications depends on exactly why those with better qualifications are more likely to be employed. We can think of the decompositions with and without qualifications as representing two extreme scenarios. On one extreme, the entire reason for the correlation between qualifications and employment is causal: the *only* reason that better-qualified people are more likely to be employed is their qualifications. On the other extreme, having better qualifications has *no* causal effect on employment rates, and the observed correlation is exclusively due to better-qualified people being more likely to have other characteristics

which are themselves the reason for their higher employment rates; and the composition of the population has not changed with regards to these other characteristics.

If the former view is correct, then the right decomposition is the one that includes qualifications – since the increase in average qualifications across the population represents a compositional ‘improvement’ in the likelihood of employment. If the latter view is correct, then the right decomposition is the one that excludes qualifications – more people getting better qualifications has no causal impact on their employment prospects and so we do not want to count that change as a change in the composition of the population.

In reality, the correct view is likely to be somewhere in between – the increase in average qualifications probably did have a causal impact on employment rates, but part of the reason that those with better qualifications are more likely to be employed is because such people have other characteristics which improve employment prospects. Because we do not know precisely where on this spectrum the correct view lies, it is difficult to say whether the compositional changes in the population served to reduce employment or increase it. What we can rule out is that these compositional changes explain *all* of the growth in employment. At least half remains unexplained by these factors, even if the correlation between qualifications and employment is entirely causal.

IV.C Employment among immigrants

As shown in Figure 4, the employment rate of immigrants increased substantially from 2007 to 2019. To what extent can this be explained by compositional changes in the immigrant population? Table 4 shows the composition and employment rates of immigrants in 2007 and 2019 by their country of birth and the age they left full-time education. There was a clear shift from low-educated to more highly educated immigrants. At the same time, the immigrant population tilted towards those from the (mainly eastern European) ‘rest of Europe’ group and away from Africa, the Americas and Oceania. Both of these effects represent a movement towards immigrant groups that are more likely to be employed. The change in composition with regards to country of birth may have been driven in part

by the loosening of restrictions on immigration from eastern Europe and tighter controls on immigration from outside the European Economic Area seen over the period.

Table 4: Composition and employment rate of immigrants, 2007 and 2019

	Composition (thousands in parentheses)			Employment rate (thousands in parentheses)		
	2007	2019	Change	2007	2019	Change
Age left education						
Still in education	1.6% (50)	1.1% (57)	-0.5ppts (8)	38.9% (19)	35.7% (20)	-3.2ppts (1)
16 or younger	22.6% (725)	15.1% (801)	-7.5ppts (75)	52.0% (377)	64.4% (516)	12.5ppts (139)
17-18	21.3% (684)	20.9% (1,106)	-0.5ppts (421)	71.2% (487)	81.9% (905)	10.7ppts (418)
19 or older	54.5% (1,750)	63.0% (3,338)	8.4ppts (1,588)	79.4% (1,390)	85.1% (2,841)	5.7ppts (1,451)
Country of birth						
EU14	14.8% (501)	14.5% (789)	-0.3ppts (288)	78.5% (393)	89.0% (702)	10.5ppts (309)
Rest of Europe	18.7% (632)	29.9% (1,633)	11.3ppts (1,001)	77.6% (491)	86.6% (1,414)	9.0ppts (923)
Asia	34.2% (1,159)	33.0% (1,801)	-1.2ppts (642)	59.2% (687)	70.5% (1,269)	11.2ppts (583)
Africa	20.0% (678)	15.1% (824)	-4.9ppts (146)	69.3% (470)	76.9% (633)	7.6ppts (164)
Other	12.3% (416)	7.5% (409)	-4.8ppts (-7)	75.4% (314)	81.6% (334)	6.2ppts (20)

Note: 'Immigrants' are defined as those who first lived in the UK aged 16 or older. 'EU14' refers to the 14 countries other than the UK that were part of the European Union before 2004 – Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and Sweden. Sample is individuals aged 25-64.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019. Survey respondents with missing education or country of birth information are excluded from the respective statistics. For this reason, the sum of immigrants by age left education does not match the sum by country of birth.

Again we can more formally assess the contribution of the compositional change in immigrants to the change in the immigrant employment rate with a Oaxaca–Blinder decomposition. We examine the effect of changes in the population along the same dimensions as in the decomposition described above, plus country of birth (grouped as in Table 4). This shows that, of the 10ppt increase in immigrant employment, about 2ppts can be explained by compositional changes¹⁴ – a meaningful contribution, but still only a fifth of the overall rise. It is possible that the UK’s relatively low unemployment rate compared with many European nations following the Great Recession increased the frequency of immigration to the UK specifically for work. This could have increased the *non*-compositional effect.

V. How did the quality of jobs change between the Great Recession and the COVID-19 crisis?

Thus far, we have described the rise in employment between 2007 and 2019 and we have examined its causes. But the relationship between families’ living standards and paid work is dependent upon not just the number of workers, but also the nature of the jobs they do. In this section, we investigate how job quality changed over the period. By ‘job quality’ we mean the value that workers might get out of the job they have, rather than a broader notion such as how well the job contributes to societal welfare.

The most straightforward indicator of job quality is hourly pay, since it measures the financial reward a worker receives for an hour of their time. Figure 9 shows changes in real hourly earnings among employees (aged 25–64) across the wage distribution between 2007 and 2019, split by sex. Women saw faster growth than men, with female hourly pay rising almost across the board and all but the bottom 10% of male wages actually falling. Wage growth has also been a little stronger at the middle than the top, and much stronger at the bottom than the middle – a consequence partly of rises in the

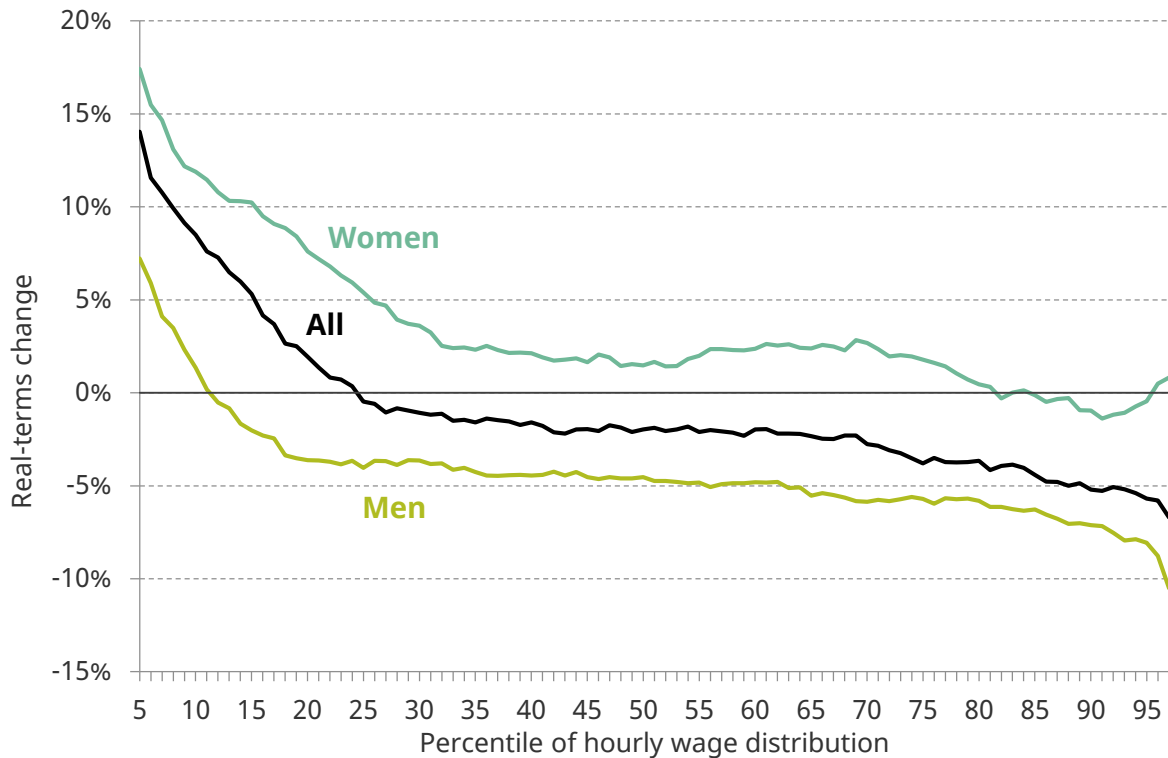
¹⁴ We include the age that the individual left education in this decomposition. We use this rather than their highest qualification, because of difficulties in comparing qualifications from different countries. If we exclude age left education, the compositional effect falls to 0.4ppts.

minimum wage (as discussed in Cribb, Norris Keiller and Waters (2018)). (Note that if we examine household total earnings, rather than individual hourly pay, the opposite trend emerges, with growth weaker further down the distribution than further up.)

However, these differences by sex and across the distribution should not distract from the key result from Figure 9: by historical standards, the decade or so following the recession was a very bad one indeed for pay growth. At the median, overall hourly pay fell by about 2%; even at the 10th percentile, it only grew by 9%. In comparison, in the decade before the recession, median hourly earnings grew by 24%.¹⁵ In other words, whereas we would usually expect job quality as measured by wages to improve over time, between 2007 and 2019 there was, for most jobs, no improvement at all – and even among lower-paid jobs the improvement was fairly meagre.

¹⁵ This statistic relates to all employees, rather than those aged 25–64.

Figure 9: Change in real hourly employee earnings, 2007 to 2019 (aged 25–64)



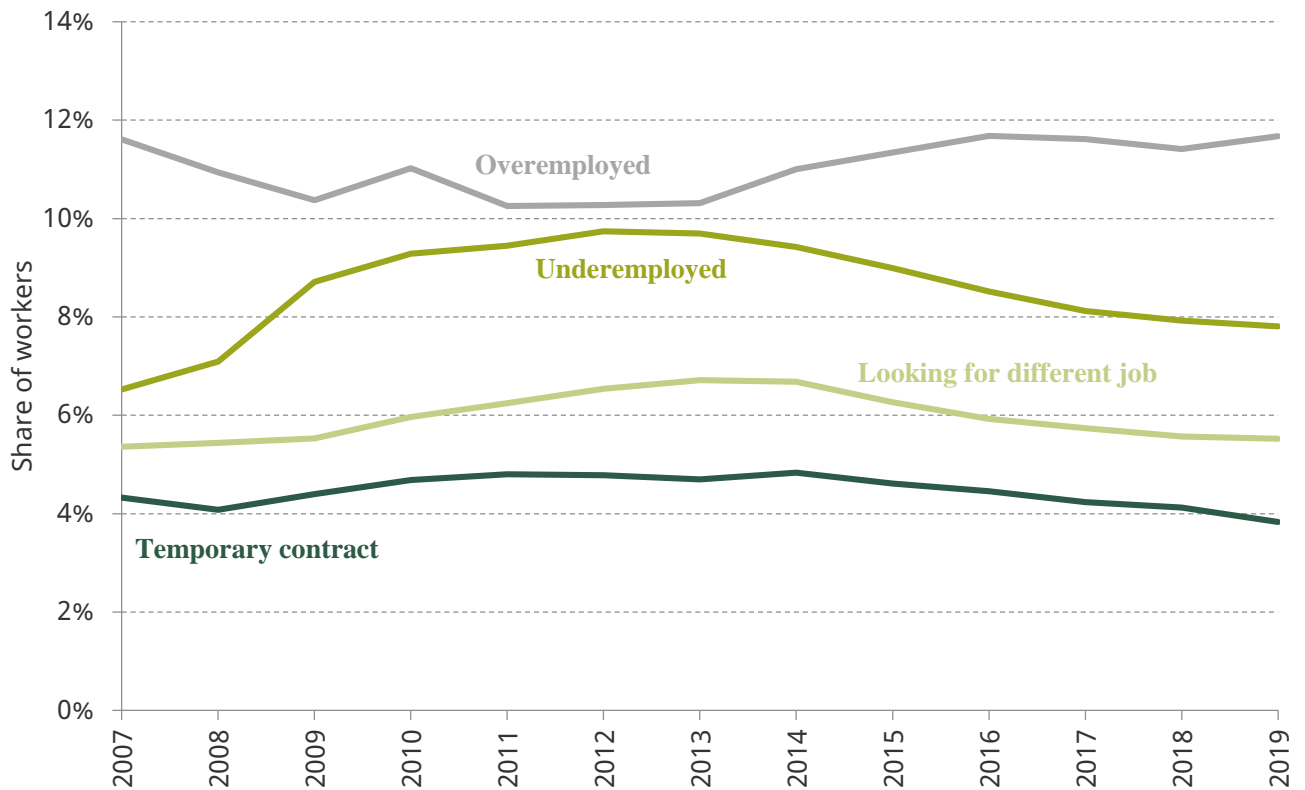
Note: Earnings are deflated with CPIH. Percentiles 1–4 and 98 and 99 are excluded because of high statistical uncertainty.

Source: Authors' calculations using the Annual Survey of Hours and Earnings, 2007 and 2019.

Going beyond purely financial measures, Figure 10 analyses changes in job attributes and whether workers are looking for another job. Two measures relate to hours: underemployment and overemployment rates, where the worker would rather work more or fewer hours than he or she actually does. The figure also shows the share of workers who are on a temporary contract and the share who are looking for a different job. One measure that the figure does not include – and which is frequently the subject of political and media attention – is zero-hours contracts (where the employee is not guaranteed any hours). We exclude this indicator because of measurement difficulties. The number of workers reporting being on a zero-hours contract in the LFS increased dramatically

between 2012 and 2016 (especially 2012 to 2013). While that may in part reflect a genuine increase in their frequency, it is also likely partly driven by a greater awareness of zero-hours contracts.¹⁶

Figure 10: Job quality indicators



Note: Lines show the fractions of workers aged 25–64. ‘Underemployment’ is only asked of respondents who are not looking for another job.

Source: Authors’ calculations using Labour Force Survey, 2007–19.

With the exception of overemployment, all of the measures in the figure tell a similar story. Following the onset of the recession and the decline in employment, these indicators worsened. Even after employment started to recover (after 2011), these indicators continued to worsen until 2012–14, perhaps as unemployed workers getting back into work accepted jobs they would in other times have turned down. After 2014 these indicators began to decline, and by 2019 they were roughly back to

¹⁶ This point, and a comparison with business surveys of zero-hours contracts, is discussed in greater detail in Office for National Statistics (2018).

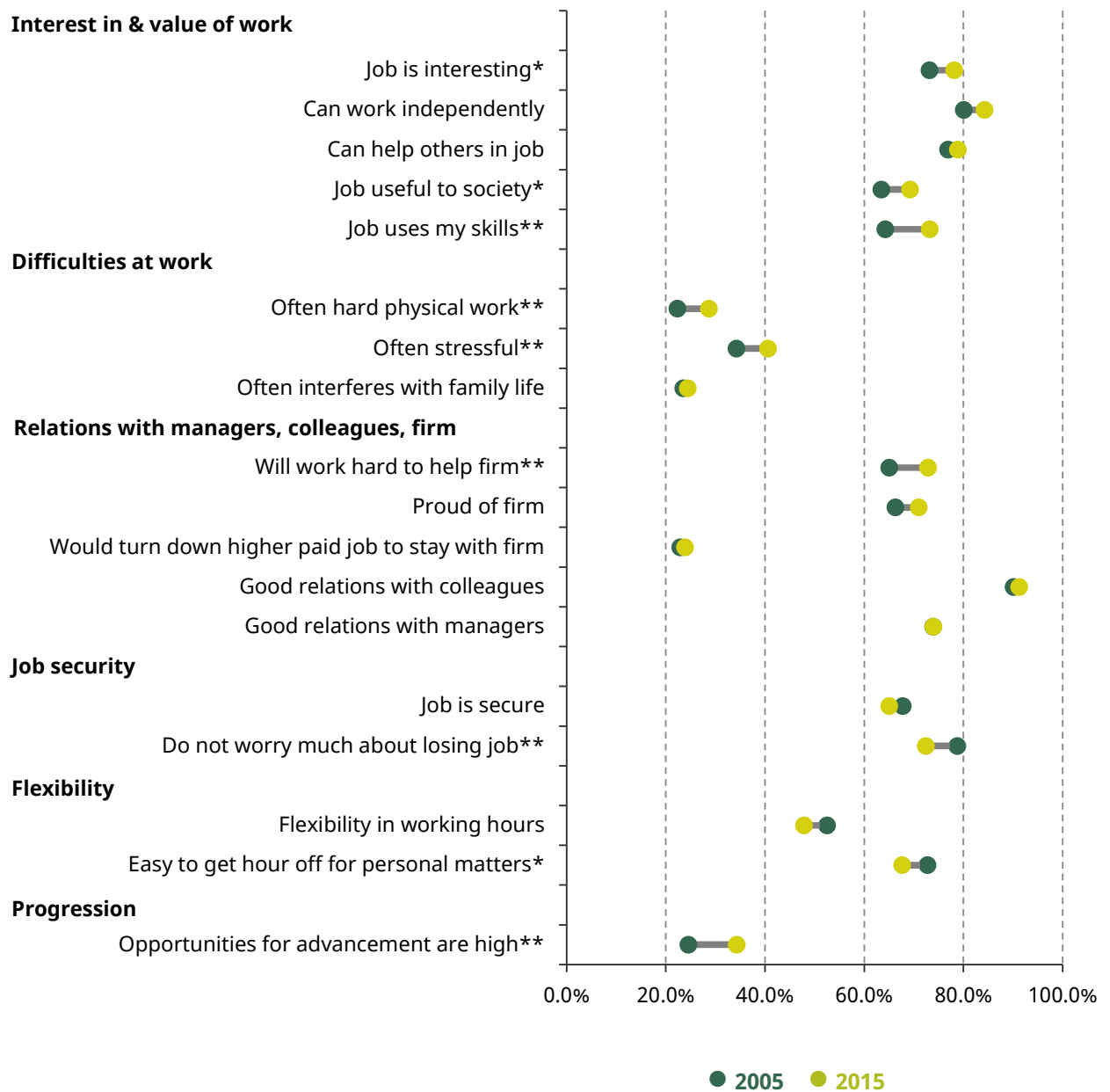
their pre-recession levels, though underemployment remains slightly elevated. The rate of overemployment shows the mirror image – it became slightly less frequent following the recession, and then increased back to its pre-recession level. Changes since the recession in these indicators are very similar for men and women, although in all cases the level is somewhat higher for women (indicating poorer job quality). If we restrict our attention to non-immigrant men outside of London – a group that one might think would have potentially done less well out of the job growth – the patterns are very similar. Trends are also similar if we look just at those in the bottom quarter of the earnings distribution, though the levels of underemployment are much higher and overemployment much lower.

Another way of measuring job quality is analysing workers' attitudes to and perceptions of their job. Figure 11 displays a variety of job quality indicators using data from the British Social Attitudes Survey (BSAS). The questions are only asked of BSAS respondents in 2005 and 2015 – a slightly different period from the one that we analyse in the rest of this paper. Sample sizes in BSAS are relatively small, and so we indicate statistically significant differences with asterisks.

The figure shows several dimensions along which job qualities have improved, and several along which they have worsened. Workers were more likely to consider their job interesting and valuable in 2015 than they were in 2005. There is some evidence that their relationship with the firm they work for improved. And the fraction reporting that 'opportunities for advancement are high' in their job increased from 25% to 34%. However, workers were more likely to report difficulties at work, including stress and (perhaps surprisingly) hard physical work. There is also some evidence that in 2015 they considered their job less secure than they did in 2005. Though it might be thought that greater flexibility can be the flipside of less security (for example, because some gig economy workers have reduced employment rights but more control over their hours of work from one week to the next), in fact perceptions of flexibility also appear to have, if anything, worsened on average over the period. Investigating differences in these trends across different subgroups is hampered by BSAS's small sample sizes. Insofar as we can detect any differences across subgroups, it appears that the increase in 'difficulties at work' was driven almost entirely by those in the bottom half of the

earnings distribution, while the improvement in ‘interest in and value of work’ was more concentrated among women.

Figure 11: Attitudes to and perceptions of job, 2005 and 2015, workers aged 25–64



Note: * indicates a statistically significant difference at the 10% level; ** indicates a statistically significant difference at the 5% level.

Source: Authors’ calculations using British Social Attitudes Survey, 2005 and 2015.

Taken together, we see a mixed picture for changes in job quality between the Great Recession and the current crisis. By the end of the period, workers appeared to be more interested in their work, have a better view of the firm they work for, and perceive better opportunities for advancement. There was relatively little change in dissatisfaction with hours worked, and in the frequency of people on a temporary contract or looking for a different job. But on some dimensions, job quality declined: workers reported greater difficulties at work such as stress, less flexibility and less security. Moreover, hourly pay – the aspect of job quality that we would usually expect to steadily improve over time – fell across three-quarters of the distribution, a very poor showing by historical standards.

VI. Conclusion

The two key characteristics of the labour market over the period bookended by the Great Recession and the onset of the COVID-19 crisis were the strong employment growth and the weak pay growth. The former was widely shared, and was strongest for those demographic groups that started out with low employment rates – including immigrants, lone parents and older workers. Specific policy reforms account for part of the rise in the latter two groups, and the steadily increasing educational qualifications among the population may also have contributed to the overall increase in employment. Some of the rise in employment was in sectors such as hospitality which are vulnerable to the current crisis, particularly among younger workers – although overall the workforce shifted slightly away from sectors that have been shut down during the pandemic – and much of the increase was driven by the self-employed, who have in some respects been a relatively vulnerable group during this crisis too, whom the government has struggled to comprehensively insure. There was also a shift towards the occupations now classed as key workers. Fortunately from the point of the view of the current crisis, all of the employment growth since the Great Recession had been in jobs that can be done from home. The weak pay growth probably stands out as the worst attribute of the labour market over the period: at the median there was no growth at all, and though wages grew faster at the bottom, the pace was fairly meagre by historical standards. Other characteristics of job quality give a more mixed picture. While employees seem to have greater attachment to their work and their firm, they also perceive less security and flexibility in their job.

In terms of living standards and poverty, there were certainly plenty of challenges before the COVID-19 crisis – the weakness in earnings growth and benefit cuts had been putting a lot of pressure on incomes at the bottom. But there is no question that large falls in unemployment, and particularly in household worklessness, had been a significant factor in keeping poverty lower than it would otherwise have been. The danger in the current crisis is that so much of that will be undone, and there is nothing in its place to prevent more vulnerable households from falling into hardship. One of the huge challenges going forward will be trying to ensure that, by the time the temporary increases in support are unwound, employment is bouncing back quickly.

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Appendix

Table A1: Number of people in work by various characteristics, 2007 and 2019

	Number in work (million) 2007	Number in work (million) 2019	Difference (%)
All	24.6	27.7	12.6%
Female	11.3	13.1	16.2%
Male	13.3	14.6	9.5%
Age 25–34	6.4	7.6	18.3%
Age 35–44	7.6	7.2	–5.4%
Age 45–54	6.5	7.6	16.7%
Age 55–64	4.1	5.4	30.1%
Degree	6.3	11.0	75.2%
No degree	17.6	16.2	–7.6%
White	22.5	24.2	7.8%
Non-white	2.1	3.5	62.1%
Immigrant	2.4	4.4	84.9%
Non-immigrant	22.2	23.3	4.9%
Single female, no kids	2.2	2.7	22.4%
Single female, has kids	1.0	1.1	17.5%
Female in couple, with kids	3.7	4.4	17.6%
Female in couple, no kids	4.4	4.9	11.5%
Single male, no kids	2.9	3.2	11.3%
Single male, has kids	0.1	0.1	27.7%
Male in couple, with kids	5.2	5.8	11.6%
Male in couple, no kids	5.2	5.5	6.2%

Note: Sample is individuals aged 25–64.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

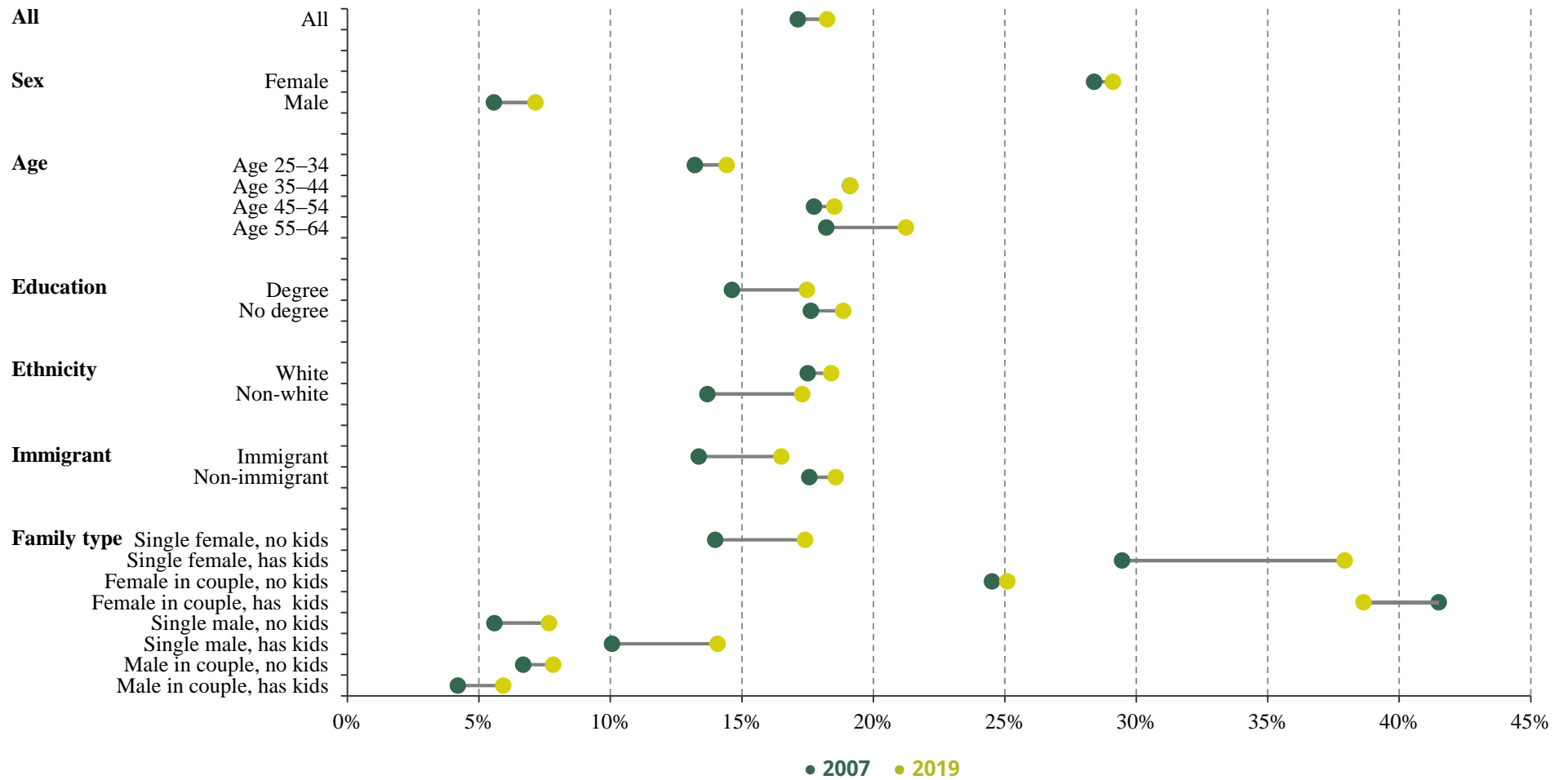
Table A2: UK population by various characteristics, 2007 and 2019

	Percentage of population, 2007	Percentage of population, 2019	Difference (ppts)
Female	50.6%	50.5%	-0.1
Male	49.4%	49.5%	0.1
Age 25–34	24.6%	26.0%	1.4
Age 35–44	28.5%	24.3%	-4.2
Age 45–54	24.6%	26.1%	1.5
Age 55–64	22.3%	23.6%	1.3
Degree	23.2%	37.0%	13.8
No degree	76.8%	63.0%	-13.8
White	90.1%	86.4%	-3.7
Non-white	9.9%	13.5%	3.7
Immigrant	10.5%	15.9%	5.4
Non-immigrant	89.5%	84.1%	-5.4
Single female, no kids	9.8%	10.7%	0.8
Single female, has kids	5.2%	4.7%	-0.4
Female in couple, with kids	16.1%	16.5%	0.4
Female in couple, no kids	19.5%	18.6%	-0.9
Single male, no kids	12.2%	12.6%	0.4
Single male, has kids	0.5%	0.4%	-0.1
Male in couple, with kids	17.4%	17.9%	0.5
Male in couple, no kids	19.3%	18.5%	-0.8

Note: In order to calculate the percentage of people with(out) a degree, we drop those for whom we do not observe education. Sample is individuals aged 25–64. Groups do not add up perfectly to 100% as we include observations that have missing information on the various characteristics.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

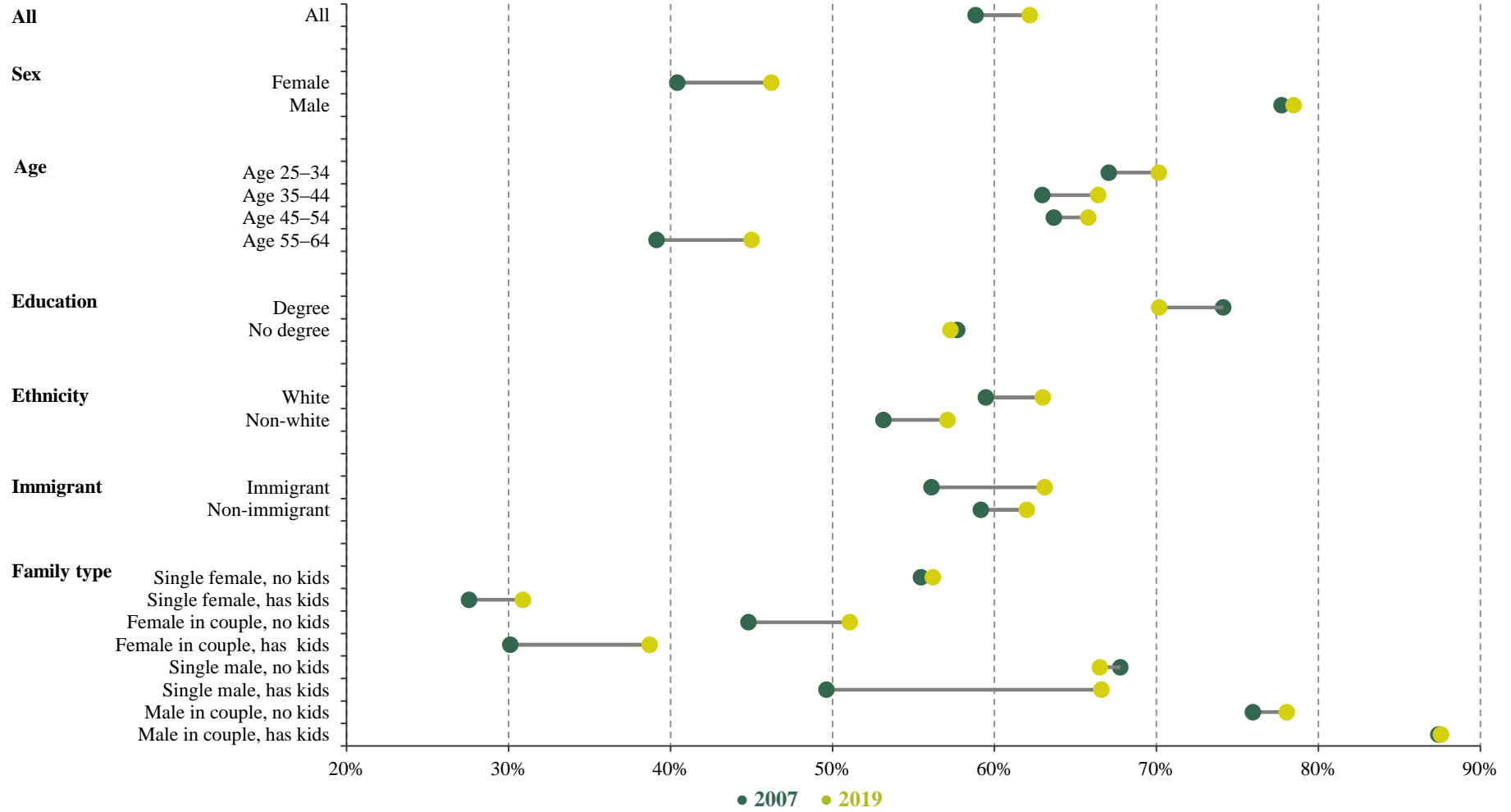
Figure A1: Change in part-time employment by various characteristics, 2007 to 2019



Note: 'Immigrants' are defined as those who first lived in the UK aged 16 or older. Sample is individuals aged 25-64.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

Figure A2: Change in full-time employment by various characteristics, 2007 to 2019



Note: 'Immigrants' are defined as those who first lived in the UK aged 16 or older. Sample is individuals aged 25-64.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.

Table A3: Change in employment rates amongst couples, 2007 to 2019

	Both are in work	One member of the couple is in work, one out	Both are out of work
2007	68%	24%	8%
2019	74%	21%	5%

Note: The sample comprises individuals aged 25–64 in a couple for whom we have information on their partner.

Source: Authors' calculations using Labour Force Survey, 2007 and 2019.