

Article

# Alternative measures of underutilisation in the UK labour market

Considering broader measures of labour market availability – or underutilisation of the labour market – and indicators of mismatch between unemployment and vacancies across industries.

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Next release: To be announced

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# 1. Main points

- UK unemployment has fallen to historically low rates while the number of job vacancies has increased to record levels in recent quarters; the current rate of labour underutilisation by which we mean the inability of the economy to generate jobs for those who want to work is low.
- Broader measures of labour market availability incorporating those marginally attached to the labour force and the underemployed have also fallen to historically low rates, which provides further evidence of there being relatively little spare capacity in the labour market.
- There is weaker evidence to support a possible mismatch between vacancies and unemployment across industries.
- Low rates of underutilisation in the UK labour market predominantly reflect a general shortage of available labour, partly because of higher levels of inactivity since the coronavirus (COVID-19) pandemic.

# 2. Overview of vacancies and unemployment in the UK labour market

In Quarter 2 (Apr to June) 2022 the UK unemployment rate was recorded at a near historic low of 3.8%. Also during this quarter, the number of job vacancies rose to a record high of almost 1.3 million, exceeding the level of unemployment (Figure 1).

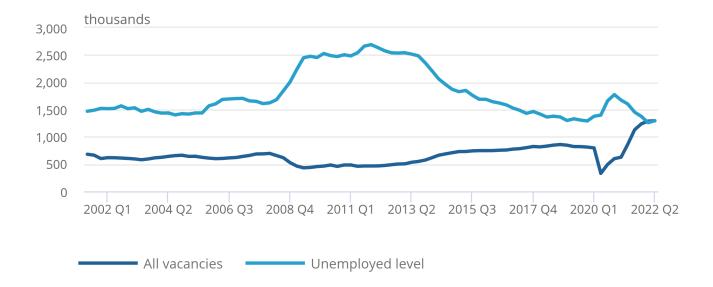
This evidence points to a strong recovery in the UK labour market since the lifting of restrictions to limit the spread of coronavirus (COVID-19). In particular, the surge in vacancies and <u>reports from businesses of worker shortages</u> show that labour underutilisation is low compared with historical measures.

Figure 1: The number of vacancies has exceeded the level of unemployment during 2022

UK unemployment level (aged 16 years and over) and number of vacancies, thousands, seasonally adjusted, Quarter 2 (Apr to June) 2001 to Quarter 2 2022

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UK unemployment level (aged 16 years and over) and number of vacancies, thousands, seasonally adjusted, Quarter 2 (Apr to June) 2001 to Quarter 2 2022



### Source: Office for National Statistics - Labour Market Overview

This article assesses the extent of underutilisation in the UK labour market in two dimensions by evaluating:

- broader measures of underutilised labour than simply unemployment, including those marginally attached to the labour force and the underemployed
- the degree of mismatch between the spread of unemployed workers and vacancies across industries

This may help us to understand whether the surge in vacancies since mid-2021 reflects a general shortage of workers, or alternatively because workers are available but not looking for jobs in the industries where vacancies are highest.

# 3. Unemployment measures

The International Labor Organization (ILO) defines unemployed people as:

- without a job, have been actively seeking work in the past four weeks and are available to start work in the next two weeks; or
- out of work, have found a job and are waiting to start it in the next two weeks

This definition is used not only by the Office for National Statistics (ONS), but also by the Eurostat members and most other member countries of the Organisation for Economic Co-operation and Development (OECD). There are, however, both narrower and broader measures, which may be useful to consider alongside the headline measure.

In 1976, Julius Shiskin, the Commissioner at the US Bureau of Labor Statistics (BLS), stated that "no single way of measuring unemployment can satisfy all analytical or ideological interests" and in response developed <u>a range of alternative unemployment and underemployment indicators</u>.

An <u>updated set of indicators</u>, U-1 to U-6, were developed by the BLS and have been published in <u>The Employment Situation</u> since 1996. While U-3 is the official measure of unemployment consistent with the ILO definition:

- narrower measures (U-1 and U-2), referred to as hardship measures, reflect the implications of unemployment may be harder for some than others, for example those who are long-term unemployed and those who were previously employed rather than a new entrant to the labour market
- broader measures (U-4, U-5, and U-6), referred to as cyclical measures, reflect that official unemployment figures may understate the full extent of labour availability, for example, by excluding inactive persons who want a job and those in employment but working fewer hours than desired

It is possible to construct <u>approximate measures that correspond to the principles of the BLS range of measures</u>, <u>which the ONS published in 2017</u>. This analysis forms the basis for the spectrum of unemployment measures used to evaluate underutilisation in the labour market over time.

### US Bureau of Labor Statistics U-1 to U-6 indicators and definitions

### **U-1** definition

(Persons unemployed 6 months or longer)/ (Active population) %

Active population refers to the total number of persons aged 16 years and over either in employment or unemployed according to the ILO definition.

### U-2 definition

(Persons unemployed but with recorded previous employment)/ (Active population) %

Persons unemployed but with previous employment refers to those aged 16 years and over who are unemployed but have recorded a previous industry or occupation, so does not include the unemployed who are new entrants to the labour market or whose previous occupation/industry employed is missing.

### U-3 definition

(Total unemployed)/ (Active population) %

### **U-4** definition

(Total unemployed + discouraged workers)/ (Active population + discouraged workers) %

Discouraged workers refers to those aged 16 to 64 years who are not searching for work because they feel no suitable jobs are currently available.

### **U-5** definition

(Total unemployed + discouraged workers + marginally attached)/ (Active population + discouraged workers + marginally attached) %

Marginally attached workers refers to persons aged 16 to 64 years who want a job but are currently recorded as inactive because they have not searched for work within the last four weeks and/or not available to start within two weeks. Following previous ONS analysis, the classes of inactive workers who are defined as marginally attached is restricted to "students" and "those looking after family or home" as these groups are more likely to be available to start work.

### **U-6** definition

(Total unemployed + discouraged workers + marginally attached + (0.5 × total employed part time for economic reasons)/ (Active population + discouraged workers + marginally attached) %

Employed part-time for economic reasons refers to those aged 16 years and over who are currently working part-time because they are unable to find a full-time job. Each person is this category is weighted by 0.5 to reflect they are part-time unemployed.

Figure 2 plots the unemployment measures U-1 to U-6. We find that UK measures of underutilised labour increase as the definition becomes broader, as expected.

For Quarter 2 (Apr to June) 2022, the respective rates were:

- 1.5% for U-1
- 2.4% for U-2
- 3.8% for U-3
- 3.8% for U-4
- 5.9% for U-5
- 7.1% for U-6

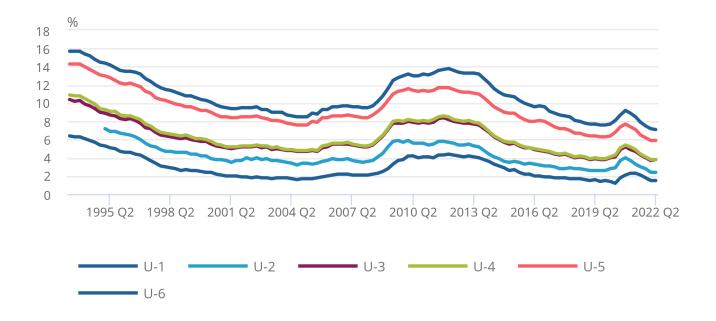
This also shows that these alternative unemployment measures all follow broadly the same trend, showing underutilisation in the labour market is relatively low by historical standards, whether we take a narrow or broad approach to measuring it.

Figure 2: All measures of underutilised labour are currently at or close to their lowest recorded rates

UK, %, seasonally adjusted, Quarter 2 (Apr to June) 1993 to Quarter 2 2022

Figure 2: All measures of underutilised labour are currently at or close to their lowest recorded rates

UK, %, seasonally adjusted, Quarter 2 (Apr to June) 1993 to Quarter 2 2022



Source: Office for National Statistics - Labour Market Overview

#### Notes:

- 1. Measures U-1 to U-6 are defined in Section 3: Unemployment measures.
- 2. The data series required to construct these rates began in Quarter 2 1993.

Figure 3 shows how the U-5 and U-6 measures compare with the headline U-3 rate. These are also at their lowest rates since these series began in 1993, which suggests that the additional supply of available labour over the ILO-defined unemployed is also relatively low.

This was not the case in the years following the global financial crisis in 2008 when the U-6 measure increased relative to U-3. In the aftermath of the coronavirus (COVID-19) pandemic, in contrast to the global financial crisis, there has been a smaller movement into marginally attached and underemployment and a greater shift into the more distant parts of inactivity.

Figure 3: The additional supplies of discouraged and marginally attached workers and additional underemployed workers are at their lowest recorded rates

UK, percentage points, seasonally adjusted, Quarter 2 (Apr to June) 1993 to Quarter 2 2022

# Figure 3: The additional supplies of discouraged and marginally attached workers and additional underemployed workers are at their lowest recorded rates

UK, percentage points, seasonally adjusted, Quarter 2 (Apr to June) 1993 to Quarter 2 2022



Source: Office for National Statistics - Labour Market Overview

#### Notes:

- 1. The additional supply of discouraged and marginally attached workers is measured by U-5 minus U-3.
- 2. The additional supply from underemployed workers is measured by U-6 minus U-3.
- 3. Measures U-1 to U-6 are defined Section 3, Unemployment measures.
- 4. The data series required to construct these rates began in Quarter 2 1993.

## 4. Other measures of labour market underutilisation

### **Eurostat – the unmet need for employment**

To better reflect the unmet need for employment, <u>Eurostat produces a measure of labour market slack for EU member countries</u>, which in addition to unemployed people includes:

- part-time workers who would like to work additional hours and are available to start
- people available to start work within the next two weeks who are either not seeking work, only passively sought work during the last four weeks or have found a job to start in more than three months
- people actively seeking work during the last four weeks and those who have found a new job but are not available to start work in the next 2 weeks

The basic structure is very similar to the U-6 measure by incorporating the economically inactive (who are either seeking work but not available to start, or available to start but not actively or passively seeking work), and those in part-time work but wanting more hours to those who are classified as being in unemployment (U-3).

Figure 4 shows this measure of underutilisation has fallen from 12.1% of the working age active population in Quarter 4 (Oct to Dec) 2020 to 9.2% in Quarter 2 (Apr to June) 2022, the lowest recorded since 2007. The relative contributions to this 2.9 percentage point fall were:

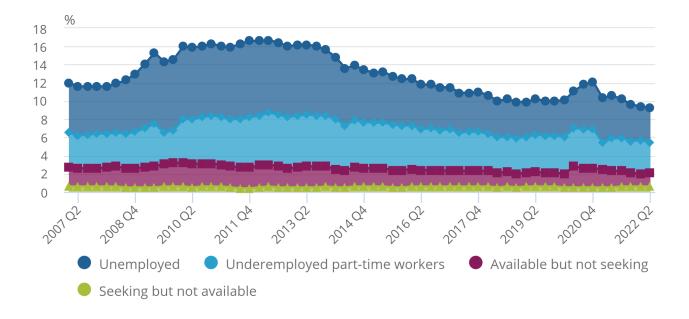
- 1.4 percentage points from falling unemployment
- 1.0 percentage points from lower underemployment in part-time workers
- 0.6 percentage points from lower numbers of inactive available but not seeking work
- an increase of 0.1 percentage points from more inactive seeking work but not available to start

Figure 4: UK labour market slack is at its lowest rate in 15 years

UK, proportion of active population (aged 16 to 64 years), seasonally adjusted, %, Quarter 1 (Jan to Feb) 2007 Q1 to Quarter 2 (Apr to June) 2022

# Figure 4: UK labour market slack is at its lowest rate in 15 years

UK, proportion of active population (aged 16 to 64 years), seasonally adjusted, %, Quarter 1 (Jan to Feb) 2007 Q1 to Quarter 2 (Apr to June) 2022



Source: Office for National Statistics – Labour Force Survey and authors' calculations

#### Notes:

1. Eurostat previously published these data for the UK, but in common with other European countries, applied to the age group 15 to 74 years and was non-seasonally adjusted.

### Federal Reserve Bank of Atlanta – the Z-POP ratio

The <u>utilization-to-population (Z-POP) ratio</u> is an estimate of the share of the working-age population that:

- · is working full-time, or
- is voluntarily working part-time, or
- does not want to work any hours

It is a capacity utilisation measure for the labour market, where the three above categories of workers would each answer "yes" to the question, "Are your labour services being fully utilised?". Figure 5 shows the Z-POP ratio for the UK working population (ages 16 to 64 years). In Quarter 2 2022, the ratio is at its highest recorded rate over the available data period at 94.3%. The trend in the Z-POP ratio is also very similar to the inverse of the U-6 rate (Figure 2), reflecting that the three components of the Z-POP ratio are simply the counterparts to the components making up the U-6 rate.

Figure 5: The utilisation-to-population ratio (Z-POP) is currently at its highest recorded rate

UK, Z-POP ratio (ages 16 to 64 years), seasonally adjusted, %, Quarter 2 (Apr to June) 1992 to Quarter 2 2022

Figure 5: The utilisation-to-population ratio (Z-POP) is currently at its highest recorded rate

UK, Z-POP ratio (ages 16 to 64 years), seasonally adjusted, %, Quarter 2 (Apr to June) 1992 to Quarter 2 2022



Source: Office for National Statistics – Labour Market Overview and authors' calculations

## Time-related underemployment

Defining underemployment as simply those who are part-time but unable to find full-time employment has two drawbacks:

- it does not consider the actual number of hours currently worked or the actual number of additional hours desired
- it fails to recognise that full-time workers may also want additional hours

Time-related underemployment is defined by the ILO as those wanting to work more hours, available to do so, and currently working a number of hours below a specified threshold. Following this, <u>ONS analysis on measuring time-related underemployment in the UK labour market</u> defined the underemployed as:

- looking for an additional job or replacement job with longer hours, or who wanted to work longer hours in their current (main) job
- were available to start working longer hours within two weeks
- whose usual weekly hours were 40 or less for people aged under 18 years or 48 or less for people aged 18 years and over

The underemployment rate is then calculated as the proportion of underemployed people of the total active population.

An <u>assessment of spare capacity in the labour market might also consider the extent to which people wish to reduce hours worked as well as increase them</u>. In fact, most full-timers who report a desire to change hours would prefer to reduce rather than increase them. Overemployment is defined as "those wanting fewer hours with less pay".

Figure 6 shows the rates of under- and overemployment in the UK labour market and the balance between them. Changes in the rates of underemployment and overemployment have generally moved in the opposite direction to each other. For instance, in the aftermath of the global financial crisis, the rate of underemployment exceeded the rate of overemployment in the UK labour market.

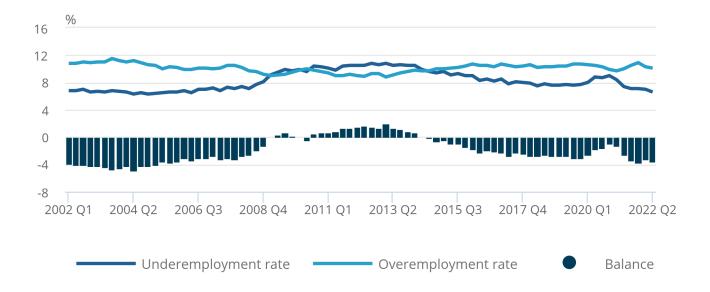
In the latest quarter (Quarter 2 2022), the balance between the two rates has returned to levels observed prior to the global financial crisis in 2008.

# Figure 6: The balance between over- and under-employment rates in the UK labour market has returned to pre-global financial crisis levels

UK, rates of underemployment and overemployment (aged 16 years and over) and the balance between them, non-seasonally adjusted, %, Quarter 2 (Apr to June) 2002 to Quarter 2 2022

# Figure 6: The balance between over- and under-employment rates in the UK labour market has returned to pre-global financial crisis levels

UK, rates of underemployment and overemployment (aged 16 years and over) and the balance between them, non-seasonally adjusted, %, Quarter 2 (Apr to June) 2002 to Quarter 2 2022



Source: Source: Office for National Statistics - Labour Market Overview

#### Notes:

1. Rates of underemployment and overemployment have been adjusted to reflect missing responses in the Labour Force Survey.

A more precise measure of underemployment would consider the specific number of additional hours that are desired. The volume of underemployment is the aggregate number of additional hours sought by the underemployed.

By adding this figure to the total usual hours worked provides an estimate of the total potential hours of work available in the economy. The rate of underutilised hours owing to underemployment is then the proportion of total potential hours accounted for by the volume of hours of underemployment.

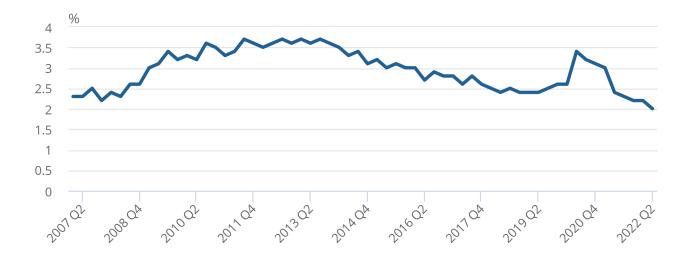
Figure 7 presents a time series of the rate of underutilised hours owing to underemployment in the UK. Like other measures of underemployment, a pickup in this rate is clearly observed during the global financial crisis and the coronavirus (COVID-19) pandemic, but in recent quarters has fallen back to the lower rates last observed in 2007. This provides further evidence of present low rates of underutilisation in the labour market by historical standards.

Figure 7: The rate of underutilised hours owing to underemployment has declined sharply over the last year

UK, the rate of underutilised hours owing to underemployment as a proportion of total potential hours available, %, non-seasonally adjusted, Quarter 1 (Jan to Mar) 2007 to Quarter 2 (Apr to June) 2022

# Figure 7: The rate of underutilised hours owing to underemployment has declined sharply over the last year

UK, the rate of underutilised hours owing to underemployment as a proportion of total potential hours available, %, non-seasonally adjusted, Quarter 1 (Jan to Mar) 2007 to Quarter 2 (Apr to June) 2022



Source: Office for National Statistics – Labour Force Survey and authors' calculations

# 5. The Beveridge curve and mismatch

### The Beveridge curve

There is a well-known negative relationship between the unemployment rate and the vacancy rate, commonly referred to as the Beveridge curve – named in honour of the British economist and social reformer William Beveridge. Business cycle movements would cause movements up and down the curve, capturing changes in labour demand and labour supply. For instance, in a recession an economy would typically experience a relatively high unemployment rate and a relatively low vacancy rate. If the economy were to then improve, it might move up the Beveridge curve to a point where the unemployment rate is lower and the vacancy rate is higher.

An outward shift in the Beveridge curve, might follow if the economy becomes less efficient at matching unemployed workers to vacancies. This would suggest that the unemployment rate in the economy is now higher because of impediments or frictions preventing those unemployed workers from filling the vacancies available. Such a shift might be evidence of greater mismatch in the labour market – that is a separation between the location of the demand and supply of labour across regions, industries, and skills.

Figure 8 shows empirical evidence on the UK Beveridge curve. Between 2001 and 2020 there is a clear negative relationship between the unemployment and job vacancy rates. However, with the onset of the coronavirus (COVID-19) pandemic, the Beveridge curve has become almost vertical. With the imposition of lockdown restrictions, the vacancy rate fell substantially, but unprecedented support to the labour market through the furlough and other schemes prevented a corresponding increase in the unemployment rate.

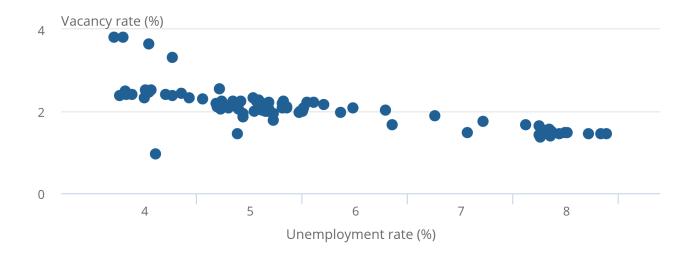
Since the reopening of the economy in the second half of 2021, there has been a surge in vacancies with little further reduction in the unemployment rate, giving the impression that the Beveridge curve might be shifting upwards. Is this an indicator of mismatch in the post-coronavirus pandemic economy, or does it simply reflect that at the current low rates of unemployment there is insufficient surplus labour leaving posted job vacancies unfilled?

Figure 8: The UK Beveridge curve has broken down since the start of the coronavirus (COVID-19) pandemic

UK, the Beveridge curve, seasonally adjusted, Quarter 2 (Apr to June) 2001 to Quarter 2 2022

# Figure 8: The UK Beveridge curve has broken down since the start of the coronavirus (COVID-19) pandemic

UK, the Beveridge curve, seasonally adjusted, Quarter 2 (Apr to June) 2001 to Quarter 2 2022



Source: Office for National Statistics - Labour Market Overview

### Notes:

1. The unemployment rate and job vacancy rate are both measured relative to the total active population aged 16 years and over.

### Industry mismatch index

An indicator of industrial mismatch can be formed by comparing the distribution of vacancies across industries with the distribution of workers available to each industry. <u>Jackman and Roper (1987) used this principle to create a measure of structural unemployment (SU)</u>:

$$SU = rac{1}{2}U\sum_{i=1}^{I}|\hat{u}_i-\hat{v}_i|$$

Where:

U is the total stock of unemployed workers and for each industry  $i = 1, ...., I, u_i$  and  $v_i$  are each industry's respective percentage shares of the total unemployed and total vacancies.

Unemployment for each industry is based on the industry of the previous employment of that unemployed individual, so only includes those in unemployment who report previously being in a job.

An industrial mismatch index  $(I_{JR})$  can be formed by normalising structural unemployment on total unemployment as follows:

$$I_{JR} = rac{SU}{U} = rac{1}{2}\sum_{i=1}^{I}|\hat{u}_i - \hat{v}_i|$$

This measures the proportion of unemployed workers who are mismatched relative to the job vacancies available at any point in time. For instance, if  $I_{JR}$  =0 then all unemployed workers and job vacancies are in the same industry, so there is no labour market mismatch. On the other hand, if  $I_{JR}$  =1 then unemployed workers and job vacancies are in entirely different industries and there is perfect mismatch.

Figure 9 plots a time series of the Jackman-Roper mismatch index. This shows two recent periods where the degree of mismatch across industries had increased sharply in the UK labour market:

- at the onset of the global financial crisis in 2008 there was a sharp increase in unemployment concentrated in the manufacturing and construction sectors
- at the start of the coronavirus pandemic there was a large increase in the relative proportion of job vacancies in the health sector compared with all other industries

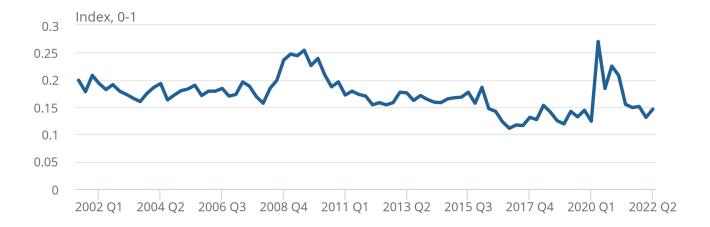
However, the current level of the mismatch index is not particularly high compared with the historical average. It should be noted that in addition to industry mismatch, workers may be mismatched by skill and education or by occupation. Our preliminary analysis found that those in employment saw a small rise in occupational switching in the first half of 2020 compared with the same period in 2019, while graduate skill mismatch in the UK fell between Quarter 3 (July to Sep) 2019 and Quarter 3 2020.

Figure 9: The current level of industry mismatch in the UK labour market is relatively low

UK, the Jackman-Roper mismatch index, seasonally adjusted, Index, Quarter 2 (Apr to June) 2001 to Quarter 2 2022

# Figure 9: The current level of industry mismatch in the UK labour market is relatively low

UK, the Jackman-Roper mismatch index, seasonally adjusted, Index, Quarter 2 (Apr to June) 2001 to Quarter 2 2022



### Source: Authors' calculations

#### Notes:

1. The index takes the value between 0 and 1 and reflects the ratio of structural unemployment to total unemployment.

# 6. The supply of labour

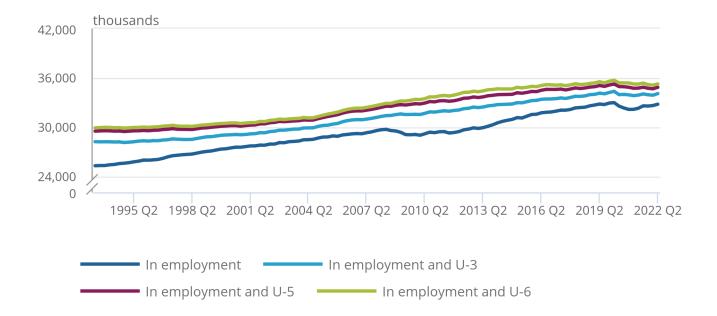
Broader measures of labour market underutilisation are low by their historical standards. Shortages of available labour are evident when looking at the overall labour supply in the UK economy. Figure 10 shows that the UK active population – those in employment and in unemployment – has fallen by 274,000 people during the coronavirus (COVID-19) pandemic in the two years to Quarter 2 (Apr to June) 2022. This marks the first sustained fall in the level of labour market participation since the recessions in the early 1980s and 1990s, and unlike those two previous occasions, this has occurred during a period of historically low unemployment.

Figure 10: The upward trend in the size of the UK active population has been reversed since Quarter 1 (Jan to Mar) 2020

UK, number of persons, thousands, seasonally adjusted, Quarter 2 (Apr to June) 1993 to Quarter 2 2022

# Figure 10: The upward trend in the size of the UK active population has been reversed since Quarter 1 (Jan to Mar) 2020

UK, number of persons, thousands, seasonally adjusted, Quarter 2 (Apr to June) 1993 to Quarter 2 2022



### Source: Office for National Statistics – Labour Market Overview

Broader measures of labour supply constructed using the U-5 and U-6 measures in place of the level of ILO-defined unemployment (U-3) do not offset the downward trend (see Figure 10) as they did during the period of the global financial crisis in 2008 to 2009. In fact, the measured falls in activity from Quarter 1 (Jan to Mar) 2020 to Quarter 2 2022 are even greater at 399,000 and 437,000, respectively.

These recent movements in the labour supply predominantly reflect growing numbers of working age (aged 16 to 64 years) inactive who do not want a job, which increased by 595,000 between Quarter 1 2020 and Quarter 2 2022. In particular, our recent analysis has emphasised the movements out of the labour market by those aged 50 years and over since the start of the coronavirus (COVID-19) pandemic. A rise in long-term sickness has also been an important factor in explaining recent increases in inactivity. Our report on sickness absence in the UK labour market found that UK sickness absence rate increased in 2021, curtailing a long downward trend, with almost one in four absences during the year reported to be related to COVID-19.

### 7. Measures of underutilisation in the UK labour market data

### A01: Summary of labour market statistics

Dataset | Released 19 July 2022

Labour market statistics summary data tables.

### EMP16: Underemployment and overemployment

Dataset | Released 17 May 2022

Underemployment and overemployment in the UK. This table is updated four times a year in February, May, August, and November.

### INAC01 SA: Economic inactivity by reason (seasonally adjusted)

Dataset | Released 19 July 2022

Economic inactivity (aged 16 to 64 years) by reason (seasonally adjusted). These estimates are sourced from the Labour Force Survey, a survey of households.

### UNEM03: Unemployment by previous industrial sector

Dataset | Released 19 July 2022

Unemployment by previous industrial sector. These estimates are sourced from the Labour Force Survey, a survey of households.

### VACS02: Vacancies by industry

Dataset | Released 19 July 2022

Vacancies by industry.

# 8. Data sources and quality

For data sources and quality information, please see Sections 6 and 7 of our <u>Labour market overview</u>, <u>UK: August 2022 bulletin</u>.

### 9. Related links

### Sickness absence in the UK labour market: 2021

Article | Released 22 April 2022

Sickness absence rates of workers in the UK labour market, including number of days lost and reasons for absence.

## Movements out of work for those aged over 50 years since the start of the coronavirus pandemic

Article | Released 14 March 2022

The movement of people in the UK aged 50 to 70 years leaving the labour market during the coronavirus (COVID-19) pandemic and how this has changed for different sectors and demographic groups. Data from the Labour Force Survey.

# Reasons for workers aged over 50 years leaving employment since the start of the coronavirus pandemic Article | Released 14 March 2022

Main findings from the Over 50s Lifestyle Study, looking at motivations for those aged 50 to 70 years leaving work during the coronavirus (COVID-19) pandemic in Great Britain (GB) from March 2020, including why they left and whether they intend to return.

# Impact of coronavirus on people aged 50 to 70 years and their employment after the coronavirus pandemic Article | Released 14 March 2022

Qualitative findings from semi-structured interviews on the Over 50s Lifestyle Study. Looking at the impact of the coronavirus (COVID-19) pandemic on the lifestyles of people aged 50 to 70 years in Great Britain since March 2020, including their employment status, financial circumstances, and health.

### Changing trends and recent shortages in the labour market, UK: 2016 to 2021

Article | Released 20 December 2021

Changing trends and shortages in the labour market and how this affects different occupations and demographic groups. We look at where workers have entered or left the workforce and how this has changed in recent years. Interactive data visualisations also allow detailed exploration of different measures and changing patterns.

### Measuring labour market underutilisation

Article | Released 19 October 2017

A survey of existing measures of unemployment and underemployment in the UK and investigates alternative measures based on international practice.

## 10. Cite this article

Office for National Statistics (ONS), released 5 September 2022, ONS website, article, <u>Alternative measures of underutilisation in the UK labour market</u>