

Article

# Subregional productivity in the UK: June 2023

Estimates for subregional labour productivity measured as gross value added (GVA) per hour worked and GVA per filled job.

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# 1 . Main points

- Labour productivity, measured by output per hour worked, increased in 26 of 41 International Territorial Level (ITL) 2 subregions and in 96 of 179 ITL3 subregions between 2019 and 2021; in each case, both output and hours declined, but hours declined more.
- Labour productivity increased in 37 of the ITL2 subregions and 135 of the ITL3 subregions between 2004 and 2021.
- In 2021, Tower Hamlets in London had the highest productivity of the ITL3 subregions, with labour productivity over three times higher than that of the lowest ITL3 subregion, Powys in Wales.

## 2 . Trends in subregional labour productivity

Output per hour worked is the preferred measure of labour productivity, as hours worked are a more precise measure of labour input than jobs. Figure 1 shows chained volume measure (CVM) productivity growth (based on output per hour worked and indexed to the year 2004) over the 2004 to 2021 period for selected International Territorial Level (ITL) 2 subregions, along with the corresponding national data time series.

CVM output productivity removes the effect of inflation. This is useful for assessing time series trends since it allows us to understand whether there has been an increase in volumes of goods and services per unit of labour input, with the effects of price changes removed.

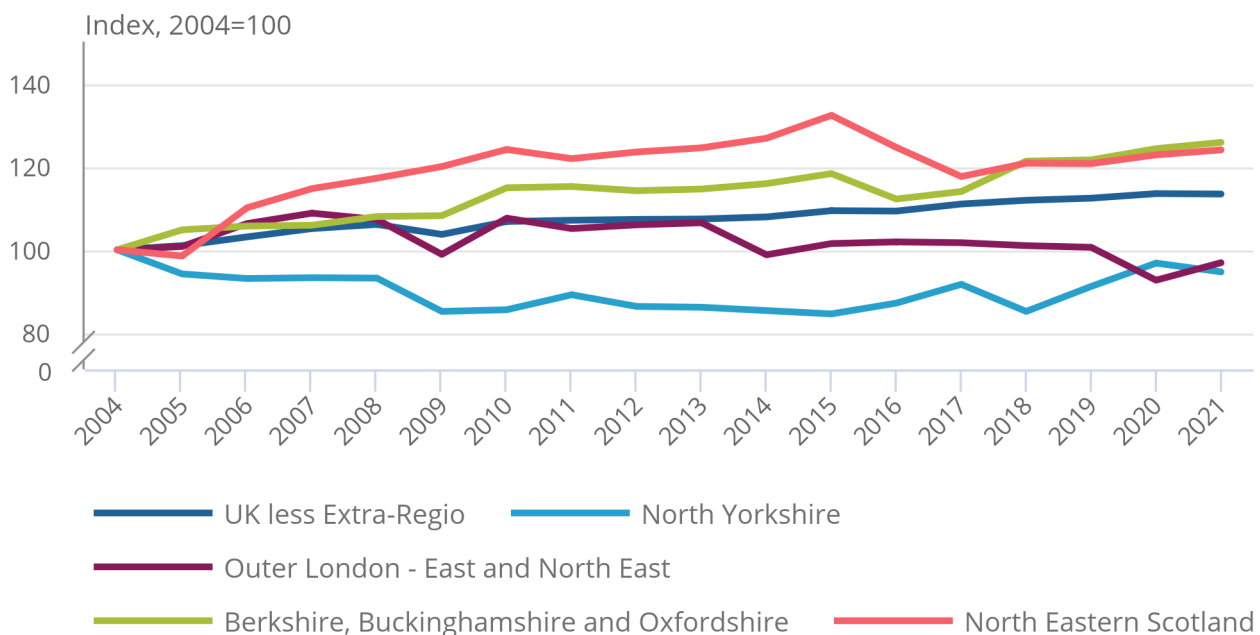
Productivity growth was higher than the UK productivity growth in over a quarter of ITL2 subregions (12 out of 41) over the period from 2004 to 2021. They include the ITL2 subregions of Berkshire, Buckinghamshire and Oxfordshire and North Eastern Scotland as shown in Figure 1. These subregions recorded the highest growth with labour productivity rising over 20% since 2004, while productivity in some regions, such as Outer London - East and North East and North Yorkshire declined over the period.

**Figure 1: Labour productivity has grown by over 20% since 2004 in the Berkshire, Buckinghamshire and Oxfordshire ITL2 subregion, but declined in the North Yorkshire ITL2 subregion**

Chained volume measure (CVM) output per hour worked by selected ITL2 subregions, 2004 to 2021, 2004 equals 100

Figure 1: Labour productivity has grown by over 20% since 2004 in the Berkshire, Buckinghamshire and Oxfordshire ITL2 subregion, but declined in the North Yorkshire ITL2 subregion

Chained volume measure (CVM) output per hour worked by selected ITL2 subregions, 2004 to 2021, 2004 equals 100



Source: Office for National Statistics

Figure 2 shows CVM output growth plotted against changes in total hours worked for each ITL2 subregion over the 2004 to 2021 period.

The 45 degree line in the figure indicates points at which the percentage change in output and the percentage change in hours worked are equal, resulting in no change to overall productivity. Subregions above the line had an increase in productivity.

Figure 2 shows how areas can have an increase in productivity despite very different economic growth outcomes. For example, hours worked increased by 2% a year between 2004 and 2021, and output by 3% a year, in both Inner London - East, and Inner London - West. By contrast, there were four subregions (Lancashire, Outer London - South, Southern Scotland and Northern Ireland) where total hours worked declined over the 2004 to 2021 period, alongside output growth of between 0% and 1%.

Elsewhere, North Eastern Scotland achieved the second highest productivity growth over the period, with minimal growth in average annual hours worked and 1% average annual output growth. Bedfordshire and Hertfordshire had the same output growth, but this was accompanied by an almost equivalent growth in hours worked, resulting in only a low-level productivity growth over the period.

## **Figure 2: CVM output and hours worked growth from 2004-2021 was highest in Inner London.**

**Average annual growth rates of Chained Volume measure output and Hours Worked, ITL2 subregions, 2004 to 2021**

Download the data

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The overall changes in productivity in ITL2 subregions between 2004 and 2021 can be broken down into different time periods as shown in Figure 3. The 2004-2008 period covers a period of strong output and productivity growth before the 2008 recession; 2008-2011 covers the impact of the recession and immediate recovery period; 2011-2019 covers a period of relatively subdued productivity growth before the 2019-2021 period examines the influence of the COVID-19 pandemic.

The years between 2004 and 2008 were characterised by relatively higher productivity growth in many subregions compared with other periods. This is evident from the points in Figure 3 located far above the line detailing output growth higher than hours worked growth for these subregions. The highest productivity growth occurred in North Eastern Scotland, Inner London - West, and East Yorkshire and Northern Lincolnshire, which all had productivity growth of 3% to 4% per year (this equates to 11% to 17% over the four-year period). For context, the productivity growth registered by the top four performing subregions over the whole 2004 to 2021 period was between 21% to 26%.

The period of 2008 to 2011 comprises the first year of the 2008 recession and the immediate recovery period. There were 19 subregions that experienced declines in both hours worked and output during this period, compared with just 7 subregions that experienced growth in hours and output. The overall productivity impact was mixed, with 23 out of 41 regions experiencing an increase in productivity during this period.

2011 to 2019 saw growth in hours worked and output, with most areas registering productivity growth and only 8 out of 41 areas registering small falls in productivity. Only a couple of areas saw a relatively high productivity growth, such as Lincolnshire, and East Yorkshire and Northern Lincolnshire, both of which grew around 2% per year. However, it was more typical for areas to have experienced a smaller increase in productivity over the period. The annual average productivity growth was between 0% and 1% in 24 out of the 41 ITL2 subregions.

In 2019 to 2021, the pandemic caused a decline in hours worked and output in nearly all ITL2 areas. In the majority of areas, the decline in hours worked was greater than the decline in economic output. As a result, output per hour worked increased in more than half of the 41 ITL2 subregions.

In a period of declining economic output and hours worked, the subregions with the largest productivity growth were those where output declined less than hours worked. For example Cheshire's average annual hours worked declined by 5%, but its output declined by only 1%, resulting in an increase in productivity. By contrast, productivity declined in Eastern Scotland because of declining output and growing hours.

Note that the data for 2019 to 2021 shown in Figure 3 are a combination of the changes from 2020 to 2021, when UK output and hours worked both grew by 8%, and the changes between 2019 and 2020, when output and hours worked fell by 10.5% and 11.4% respectively.

## **Figure 3: Productivity growth varied over different periods between 2004 and 2021.**

**Average annual growth rates of CVM output per hour worked, ITL2 subregions, 2004 to 2008, 2008 to 2011, 2011 to 2019, 2019 to 2021.**

[Download the data](#)

[.xlsx](#)

## 3 . Labour productivity levels of UK subregions in 2021

### International Territorial Level (ITL) 2 subregions

In 2021, Inner London West continued to have the highest labour productivity, measured by output per hour worked (measured in current prices). It was 54% above the UK average and 64% above the median International Territorial Level (ITL) 2 subregion. Overall, 10 out of the 41 ITL2 areas had labour productivity above the UK average. Eight of these areas were located in the Greater South East. The others were the Eastern Scotland and Cheshire ITL2 subregions.

Around half of ITL2 subregions (20 out of 41) had labour productivity 10% or more below the UK average. The lowest levels of productivity are typically found in rural or coastal areas. For example, the productivity level of the Cornwall and Isles of Scilly ITL2 subregion was around 24% less than the UK average.

### ITL3 subregions

Figure 4 shows labour productivity for all ITL3 subregions in Great Britain, grouped by ITL1 countries and regions in 2021.

Differences in productivity levels across ITL3 subregions are relatively large. In 2021, Tower Hamlets in London had the highest productivity, with a productivity level almost three times greater than in rural Powys in Wales, the ITL3 subregion that had the lowest level of productivity.

**Figure 4: The majority of ITL3 subregions with productivity above the UK average are located either in London or in the South East of England region.**

Current Price output per hour worked for all ITL3 subregions in Great Britain grouped by ITL1 regions and countries, smoothed, 2021, UK=100

Notes:

1. Smoothed data use a weighted moving average of up to five years. This includes the year in question, and the two previous and two subsequent years, where possible. This reduces volatility in the data that arises from smaller sample surveys.

[Download the data](#)

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### Local Authority Districts

Local authority district productivity data are the lowest level geography for which data are published in this publication.

Figure 5 shows the levels of labour productivity in 2021 for all the local authority districts in UK relative to the UK average. It shows that the local authority districts with highest levels of productivity are generally located in the Greater South East of England, with the Rushmoor, City of London and Runnymede local authority districts having the highest levels of labour productivity.

**Figure 5: Many local authorities with high levels of productivity are located to the West of London in the South East region.**

Current Price output per hour worked, local authority districts, UK, smoothed, 2021, UK=100

## Notes:

1. Smoothed data use a weighted moving average of up to five years. This includes the year in question, and the two previous and two subsequent years, where possible. This reduces volatility in the data that arises from smaller sample surveys.

## Download the data

[.xlsx](#)

For users interested in labour productivity data for smaller geographical areas between 2009 and 2020, it is available in the [UK GVA and productivity estimates for other geographies](#) dataset within our [Disaggregating annual subnational gross value added \(GVA\) to lower levels of geography](#) release. Analysis using last year's dataset (2009-2019) is available in the linked [article](#).

## 4 . Subregional productivity data

[Subregional productivity: labour productivity by UK ITL1, ITL2 and ITL3 regions and subregions](#)

| Released 20 July 2023

Annual labour productivity (gross value added (GVA) per hour worked and GVA per filled job) indices by UK ITL2 and ITL3 subregions.

[Subregional productivity: labour productivity by city regions](#)

Dataset | Released 20 July 2023

Annual labour productivity (gross value added (GVA) per hour worked and GVA per filled job) indices by city regions.

[Subregional productivity: labour productivity by economic enterprise regions](#)

Dataset | Released 20 July 2023

Annual labour productivity (gross value added (GVA) per hour worked and GVA per filled job) indices by economic enterprise regions.

[Subregional productivity: labour productivity by local authority districts](#)

Dataset | Released 20 July 2023

Annual labour productivity (gross value added (GVA) per hour worked and GVA per filled job) indices by local authority districts.

## 5 . Glossary

### Gross value added (GVA)

An estimate of the volume of goods and services produced after subtracting the volume of intermediate goods and services used in the production process (intermediate consumption).

### Output

Output refers to gross value added (GVA), which is an estimate of the volume of goods and services produced by an industry within a geographic area, and in aggregate across industries for a geographic area.

### Output per hour worked

A measure of productivity: GVA divided by the hours worked to create it.

## Output per job

A measure of productivity: GVA divided by the number of filled jobs used to create it.

## International Territorial Levels (ITL)

[International Territorial Levels \(ITL\)](#) is the new UK geographies classification system. This has superseded the Nomenclature of Units for Territorial Statistics (NUTS) classification system.

## Labour productivity

The quantity of goods and services produced per unit of labour input. It is a widely used measure of economic performance of a nation or an area.

## Greater South East

Area comprising London, East (of England) and the South East ITL1 regions.

# 6 . Data sources and quality

The data in this release are classified as Experimental Statistics.

The release includes productivity datasets covering International Territorial Level (ITL) 1, ITL2, and ITL3 geographies, enterprise regions, and city regions.

They include current price ("nominal") labour productivity, for in-year comparisons between areas, and chained volume measure ("real") labour productivity, for assessing time series trends. Labour productivity is measured by output per hour and output per job. Both smoothed and unsmoothed estimates are included for nominal data.

The release also includes productivity data for local authority districts. Because of volatility within the data, the local authority dataset only includes smoothed nominal data.

## Productivity data in 2020 and 2021

In 2020 and 2021, output per job data should be treated with some caution. The productivity jobs metric only declined around 1% in the UK during 2020 because of the Coronavirus Job Retention Scheme (CJRS) which protected job status, a policy which remained in place until 2021. This means that the average amount of hours worked per job was much lower than normal.

In terms of productivity, this means large year-on-year declines in the levels of chained volume measure (CVM) output per job for 2020 was followed by a large increase in 2021. As such, output per job data during this period are not representative of longer-term trends, so we recommend use of real output per hour worked for any long-term comparisons based around 2019 to 2021 data.

## Components of productivity data

Productivity estimates presented in this article use output, productivity jobs and productivity hours data. The methodology ensures subregional measures of output, jobs and hours are consistent with the regional totals. The methodology is therefore concerned with how best to apportion the regional totals to the subregional areas, detailed in this section.

## Gross value added

The productivity data included in this article directly use Blue Book 2022 consistent output data provided for a range of geographies in our [Regional economic activity by gross domestic product, UK: 1998 to 2021 bulletin](#).

## Jobs

At the ITL1 regional level, data are benchmarked to the national "productivity jobs" series, which is compiled from four components:

- employee jobs
- self-employed jobs
- government-supported trainees (GST)
- members of Her Majesty's Forces

For subregional geographies, the "total jobs" data series, a workplace-based measure of jobs, is used to apportion regional productivity jobs to the local authority districts geography level. These local authority data are then aggregated to ITL2 and ITL3 subregions, enterprise and city regions to make up the full "productivity jobs" data series for subnational levels.

The "total jobs" data series comprises employees (from the Business Register and Employment Survey (BRES)), self-employment jobs (from the Annual Population Survey (APS)), government-supported trainees (from the Department for Education and Department for Work and Pensions) and HM Forces (from the Ministry of Defence).

## Hours

"Productivity hours" is the sum of employee hours, self-employment hours, hours worked in government training schemes and hours worked by HM Forces.

The Annual Population Survey (APS) is used to estimate the average hours worked per employee job by industry at ITL3 subregions. The BRES (for the period since 2009) and the Annual Business Inquiry (for the period before 2009) are used to calculate the number of employee jobs by industry for each local authority. To calculate employee hours within each local authority, the local authority employee job count is multiplied by the average hours of the ITL3 for each industry.

The APS is also used to estimate the average hours worked per self-employed job. However, because of sample size, self-employed jobs are grouped by sex and part-time classification, instead of by industry, at ITL3 subregions. To calculate self-employed hours within each local authority, the local authority self-employed job count (also based on APS) is multiplied by the average hours of the ITL3 to which it belongs for each sex and part-time classification grouping.

For government training schemes and HM Forces, the regional totals are allocated to subregions based on each subregion's share of regional employee plus self-employment hours, as calculated in the previous stage.

This year is the first release including Northern Ireland Council and ITL3 hours and productivity per hour data. Northern Ireland hours data are calculated using the Annual Survey of Hours and Earnings (ASHE) survey.

Once calculated, local authority hours data are constrained regionally to the ITL1 productivity hours data to ensure consistency with regional productivity data. The regionally constrained local authority data are aggregated to ITL2 and ITL3 subregions, enterprise and city regions.

## Revisions

Differences in the productivity data, compared with last year's publication, can arise either through revisions in the output or labour market data. Changes to the labour market data were made for 2020 only in line with revisions to the Business Register and Employment Survey. However, there were wider revisions for all years to the output. The revisions to output are discussed in our [Regional economic activity by gross domestic product, UK: 1998 to 2021 bulletin](#) and summarised briefly below.

This year, output data were revised because of methodological changes for education services in the non-market sector. The revised approach more closely mirrors the approach used in the national accounts by measuring the output of non-market education using activity data on the number of pupils educated in each phase of state-funded schools, weighted by their cost. We have also improved the measurement of public administration and defence to better reflect the distribution of armed forces personnel across the UK.

This year we also have a more complete allocation of the various government subsidies that were introduced to help people and businesses cope during the coronavirus (COVID-19) pandemic. This has resulted in additional revisions to output, as we have been able to replace some modelled data with better quality estimates.



## 7 . Related links

### [Regional economic activity by gross domestic product, UK: 1998 to 2021](#)

Bulletin | Released 25 April 2023

Annual estimates of economic activity by UK country, region and local area using gross domestic product (GDP). Estimates are available in current market prices and in chained volume measures and include a full industry breakdown of balanced regional gross value added (GVA(B)).

### [Productivity in towns and travel to work areas, UK: 2019](#)

Article | Released 30 March 2022

An analysis of labour productivity data for towns and Travel to Work Areas (TTWAs) in the UK in 2019. Bringing together our productivity estimates for specific geographies and new analysis exploring the industry structure of towns.

### [Mapping regional differences in productivity and household income](#)

Interactive article | Released 17 May 2021

Exploration of economic inequality in the UK at the NUTS3 level using gross disposable household income (GDHI) and productivity (gross value added, GVA).

### [Understanding spatial labour productivity in the UK](#)

Article | Released 3 May 2019

Analysis of labour productivity across different areas of the UK, including discussion on the sources and drivers of productivity differences between areas.

## 8 . Cite this article

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