Office for National Statistics

Article

Subregional productivity in the UK: July 2022

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 gross value added per hour worked, increased in more than three-quarters of the 41 International Territorial Level (ITL) 2 regions and in two-thirds of the 168 ITL3 regions in 2020.
- Between 2010 to 2020, Inner London West ITL2 subregion contributed the most to UK productivity growth, followed by Berkshire, Buckinghamshire and Oxfordshire, and Greater Manchester.
- In 2020, Tower Hamlets in London had the highest productivity, with a labour productivity almost three times greater than in rural Powys in Wales, the ITL3 region that had the lowest level of productivity.

2 . Measuring subregional labour productivity in 2020

Gross value added (GVA) per hour worked is the preferred measure of labour productivity. In 2020, in response to the coronavirus (COVID-19) pandemic, both the UK chained volume measure (CVM) GVA and hours worked declined substantially (by 10% and 11%, respectively). The falls in GVA ranged between minus 13% to minus 7% in International Territorial Level (ITL) 2 subregions. The hours worked declined between minus 16% and minus 6%.

In the majority of areas, the decline in hours worked was greater than the decline in GVA. As a result, CVM GVA per hour worked increased in more than three-quarters of the 41 ITL2 regions as well as in two-thirds of the168 ITL3 regions. Positive productivity growth was mainly because of the distribution of economic activity between industries. This was because relatively low-productivity industries (such as accommodation and food services, and retail) were most affected by restrictions to control the spread of COVID-19.

The accompanying datasets provide data on GVA per job, which is another measure of labour productivity. However, for 2020, GVA per job data needs to be treated with some caution. The productivity jobs metric only declined around 1% in the UK during 2020 as a result of the Coronavirus Job Retention Scheme (CJRS) which protected job status. Therefore, the average amount of hours worked per job will have been much lower than normal. In terms of productivity, this means large year-on-year declines in the levels of output per job for 2020. As such, GVA per job data for 2020 are not very representative of longer-term trends, and we recommend use of CVM GVA per hour worked for any long-term comparisons based around 2020 data. The remainder of this article focuses only on GVA per hour worked data.

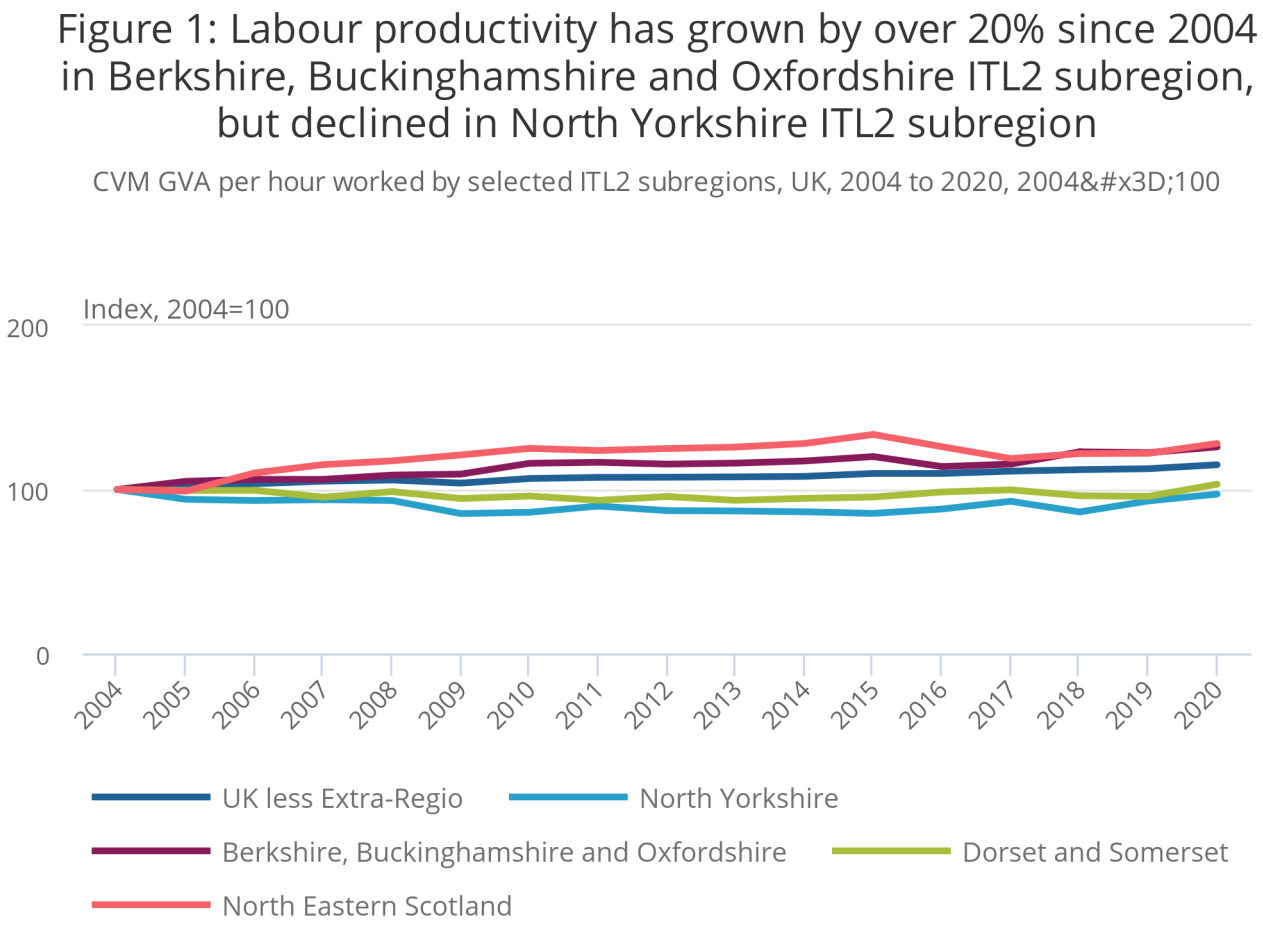
3 . Long-term trends in subregional labour productivity

Figure 1 shows productivity growth based on chain volume measure (CVM) gross value added (GVA) per hour worked and indexed to the year 2004, over the 2004 to 2020 period for selected International Territorial Level (ITL) 2 regions. It also shows the corresponding national data time series.

The CVM removes the effect of inflation. This is useful for assessing time series trends as 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 prices changes removed.

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

CVM GVA per hour worked by selected ITL2 subregions, UK, 2004 to 2020, 2004=100



Source: Office for National Statistics – Subregional productivity

Productivity growth was higher than the UK productivity growth in around one-third of ITLs regions (12 out of 41) over the period from 2004 to 2020. They include the ITL2 regions of Berkshire, Buckinghamshire and Oxfordshire, and North Eastern Scotland as shown in Figure 1. These subregions recorded the fastest growth, with labour productivity rising over 20% during the period since 2004. Productivity levels in Dorset and Somerset, and North Yorkshire were below the UK average and remained relatively unchanged over the same period.

Figure 2 shows the contribution of all ITL2 subregions to total UK labour productivity growth between 2010 to 2020. Inner London West, Berkshire, Buckinghamshire and Oxfordshire, and Greater Manchester ITL2 subregions contributed the most to UK GVA per hour growth (0.9, 0.5 and 0.4 percentage points, respectively). These regions typically combined large economic size with strong growth in productivity.

Cornwall and Isles of Scilly, Herefordshire, Worcestershire and Warwickshire, and Northumberland and Tyne and Wear also had strong productivity growth over the period. However, their overall co-contribution to UK productivity growth was lower because they are smaller economic regions.

The positive allocation effect in Figure 2 indicates that, on average, inputs and outputs moved from lower to higher productivity areas over the 2010 to 2020 period.

Figure 2: Inner London West, Berkshire, Buckinghamshire and Oxfordshire and Greater Manchester made the largest contributions to UK productivity growth over the 2010 to 2020 period

Contributions to UK CVM GVA per hour growth, ITL2 subregions grouped by ITL1 regions and countries, 2010 to 2020

Download the data

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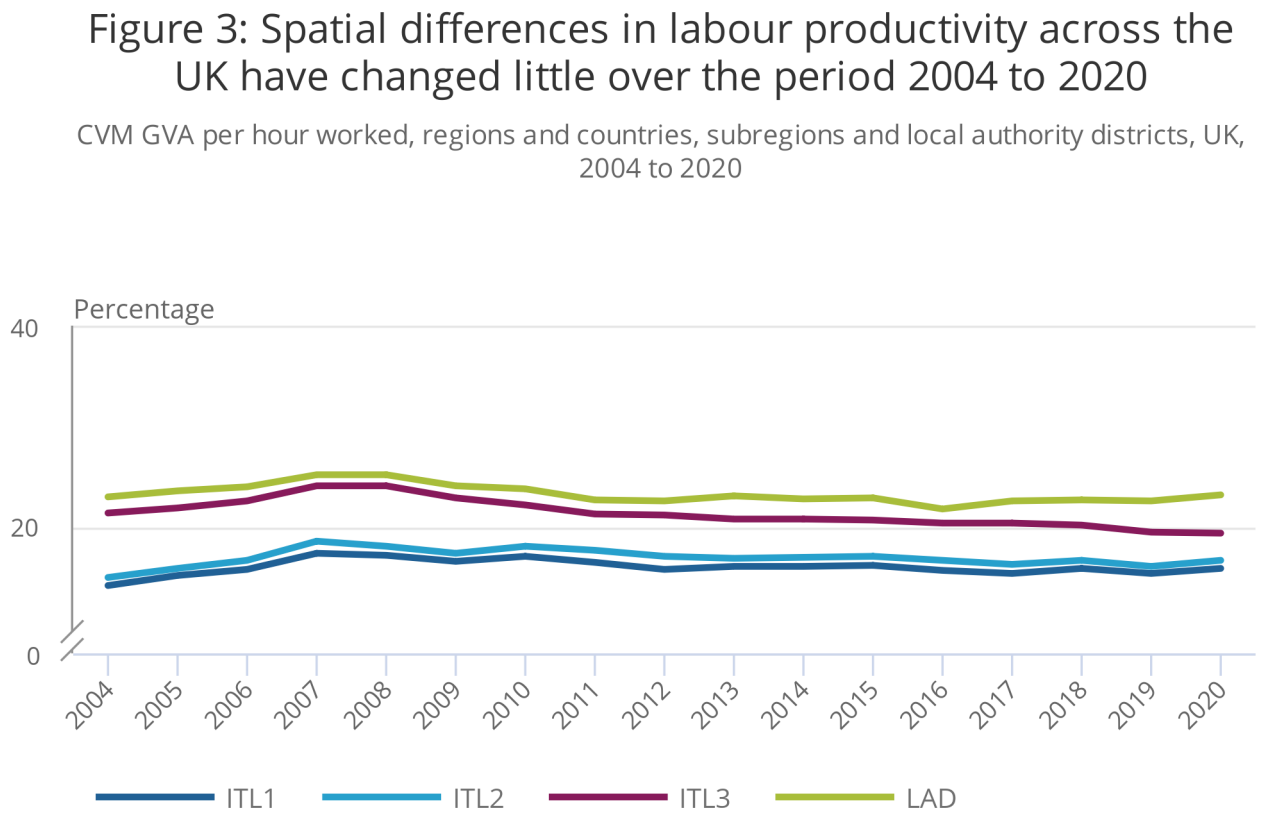
Figure 3 shows the coefficient of variation (CV) of CVM GVA per hour worked for different geographic levels between 2004 and 2020. It is a commonly used standardised measure of dispersion of a distribution (expressed as a percentage) showing whether the areas are becoming more or less similar in terms of their average labour productivity. It is a way of assessing whether productivity disparities are increasing or declining. The CV shows that spread in average productivity differences were widening slightly before the financial crisis of 2007, before they narrowed again. This suggests that productivity differences between the areas that existed in 2004 have persisted over this period. Note that productivity differences between smaller geographies are higher than across larger geographies.

Figure 3: Spatial differences in labour productivity across the UK have changed little over the period 2004 to 2020

CVM GVA per hour worked, regions and countries, subregions and local authority districts, UK, 2004 to 2020



Source: Office for National Statistics – Subregional productivity

The relative rankings of ITL2 subregions, in terms of their average productivity levels, have changed very little over the period 2004 to 2020. This is indicated by high values of the rank coefficient (see Glossary), particularly after the recovery from the financial crises in 2007. The rank correlation coefficient equals 0.87 for 2004 to 2010, and 0.93 for 2010 to 2020.

4 . Labour productivity levels of UK subregions in 2020

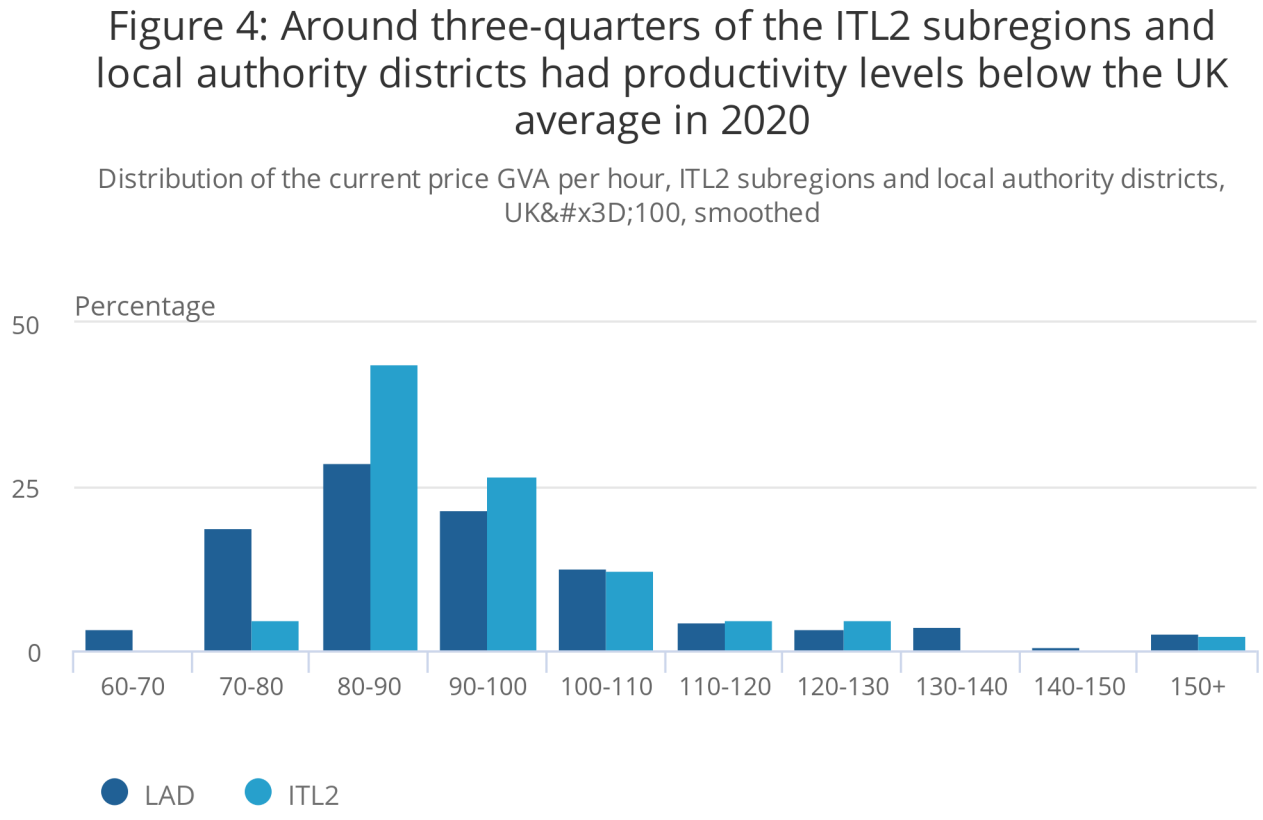
International Territorial Level (ITL) 2 regions

In 2020, Inner London West continued to have the highest labour productivity, measured by real economic output (gross value added (GVA)) per hour worked (measured in current prices). It was 53% above the UK average and 70% above the median ITL2 region. 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 Eastern Scotland and Cheshire ITL2 regions.

At the other end, around half (19 out of 41) ITL subregions had a 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 Cornwall and Isles of Scilly ITL2 region was around 23% less than the UK average. Figure 4 shows the distribution of labour productivity levels of the ITL2 regions together with the distribution of the local authority districts relative to the UK average. This demonstrates that the majority of areas have a productivity level below the UK average and also that, as would be expected, there is wider variation found in smaller geographical areas such as local authorities.

Figure 4: Around three-quarters of the ITL2 subregions and local authority districts had productivity levels below the UK average in 2020

Distribution of the current price GVA per hour, ITL2 subregions and local authority districts, UK=100, smoothed



Source: Office for National Statistics – Subregional productivity

ITL3 regions

Figure 5 shows labour productivity in all ITL3 subregions in Great Britain, grouped by ITL1 countries and regions in 2020.

Differences in productivity levels across ITL3 regions are relatively large. In 2020, Tower Hamlets in London had the highest productivity, almost three times greater than in rural Powys in Wales, the ITL3 subregion that had the lowest level.

Figure 5: 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 GVA per hour worked for all ITL3 subregions in Great Britain grouped by ITL1 regions and countries, smoothed, 2020, 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

Local authorities

Local authority productivity data are the lowest-level geography for which data are published in this article.

Figure 6 shows the levels of labour productivity in 2020 for all the local authority districts in Great Britain, relative to the UK average. It shows that the districts with highest levels of productivity are generally located in the Greater South East of England with Rushmoor, City of London, and Elmbridge having the highest levels of labour productivity.

Figure 6: Many local authorities with high levels of productivity are located to the West of London in the South East region

Current Price GVA per hour worked, local authority districts, Great Britain, smoothed, 2020, UK=100

Download the data

.xlsx

For users interested in labour productivity data for smaller geographical areas, please note that experimental data up to 2019 for towns and travel to work areas (TTWAs) are available in our Productivity in towns and travel to work areas, UK: 2019 article.

5 . Subregional productivity data

Subregional productivity: labour productivity by UK ITL2 and ITL3 subregions
Dataset | Released 6 July 2022
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 6 July 2022
Annual labour productivity (gross value added (GVA) per hour worked and GVA per filled job) indices by city regions.

Subregional productivity: labour productivity indices by economic enterprise region
Dataset | Released 6 July 2022
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 6 July 2022
Annual labour productivity (gross value added (GVA) per hour worked and GVA per filled job) indices by local authority districts.

6 . 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).

GVA per hour worked

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

GVA 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 measures of economic performance of a nation or an area.

Rank correlation coefficient

Spearman’s Rank correlation coefficient is a technique which can be used to summarise the strength and direction (negative or positive) of a relationship between two variables. Spearman's correlation coefficient measures the strength and direction of association between two ranked variables.

7 . 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 labour productivity, for in-year comparisons between areas, and constant price (CVM) labour productivity, for assessing time series trends. Labour productivity is measured by gross value added (GVA) per hour and GVA 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.

Please note that for Northern Ireland, data are only available for the GVA per filled job metric.

Components of productivity data

Productivity estimates presented in this article use GVA, productivity jobs and productivity hours data. The methodology ensures subregional measures of GVA, 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 uses Blue Book 2021 consistent GVA data provided for a range of geographies in our Regional economic activity by gross domestic product, UK: 1998 to 2020 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.

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

Please note that for Northern Ireland, hours data are not available for ITL3 or local authority subregions.

Revisions

Differences in the productivity data, compared with last year's publication, can arise either through revisions in the GVA or labour market data. Changes to the labour market data were made for 2019 only in line with revisions to the Business Register and Employment Survey. However, there were wider revisions for all years to the GVA.

The regional GVA data are revised each year to reflect changes in the national GVA estimates published annually in UK National Accounts, The Blue Book. There are also sometimes changes to the methods of regional disaggregation adopted that can lead to revisions in the final data.

Blue Book 2021 introduced a new framework to estimate GVA, including the implementation of double deflation. Double deflation applies different price indices (deflators) to total output and intermediate consumption separately. More information on the methodology is available in our Producing an alternative approach to GDP using experimental double deflation estimates article. This approach is considered international best practice for estimating the volume of GVA under the System of National Accounts (SNA) 2008 (PDF, 9MB).

This has resulted in certain industries having their GVA revised up or down across the entire span of years that we cover, and this change to the national figures filters down to all lower-level geographic areas. Impact of Blue Book 2021 changes on UK gross domestic product by industry can be found here.

For 2020 data, nine new government subsidies were introduced to assist businesses and consumers during the coronavirus (COVID-19) pandemic. Eight of these new subsidies are classified as subsidies on production (transaction code D.39) and are measured directly by the income approach to GVA (and indirectly by the production approach). These include the Coronavirus Job Retention Scheme and the Self-employed Income Support Scheme, more commonly referred to as the furlough scheme. These subsidies also include various funds provided directly to support small businesses and industries suffering particular hardship. The other new subsidy was the Eat Out to Help Out scheme, which is classified as a subsidy on products (transaction code D.31). This type of subsidy is not measured as part of GVA but does feature in the measurement of GDP.

Please note that all revisions are applied fully through the back series so that the whole time series is consistent, ensuring continuity between different years.

Please also note that the most recent year of data is marked as provisional in the regional GVA tables and can be expected to be revised the following year as further input data are received by the Office for National Statistics. In other words, the 2020 data in this output use provisional GVA data, which can be expected to be revised next year. As part of the release of GVA data, revisions triangles are available highlighting the size of revisions made for current basic prices and for chained volume measures.

8 . Related links

Regional labour productivity, UK: 2020
Bulletin | Released 16 June 2022
Regional output per hour and output per job, and an experimental analysis of the performance of output per hour levels and growth by industry and region.

Regional economic activity by gross domestic product, UK: 1998 to 2020
Bulletin | Released 30 May 2022
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 (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.