

Subnational economic activity statistics: user guide

Explains how to compare our estimates of regional activity.

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1 . Background

There has been an increase in public demand for more timely, higher frequency and more granular subnational estimates of economic activity, reflecting the interest in better understanding the wider trends and performances of regional economies. Historically, this has been a statistical challenge for national statistical institutes given the conceptual and practical challenges in the process of collecting information at the local level.

In recent years, we have transformed the production of our estimates of subnational activity, particularly estimates of gross value added (GVA), improving their timeliness, frequency, and granularity (Section 2). Some of these are available in our three publications:

- [Annual regional accounts](#): these include annual estimates of gross domestic product ([GDP](#)) and [GVA](#) that are available for the 12 International Territorial Level (ITL)1, 41 ITL2 and 179 ITL3 levels of geography, and 374 local authority districts across the UK; these are published one year after the latest reference year, providing our most comprehensive estimates of regional activity, including at the lowest industry level available (Section 3)
- [Regional GDP](#): quarterly estimates of GVA are produced for the nine English regions and Wales, which are published six months after the latest reference quarter; these are available for the top-level 20 industries (Section 4)
- [Model-based estimates](#): nowcasts of quarterly GVA for the 12 ITL1 regions of the UK – the nine English regions, Northern Ireland, Scotland and Wales – are our most timely estimates, published around eight weeks after the latest reference quarter; no industry-level information is included (Section 5)

However, given the underlying data and methodology to produce these regional estimates differ, one challenge has been in understanding how best to reconcile these official estimates to provide a consistent picture of the subnational economy. As such, we have produced this guide on how to interpret our estimates of regional activity.

We focus on the timeliness, accuracy, and coherence of these three publications, which covers how these are compiled and how these are reconciled together to provide coherent estimates of the UK and subnational economies. We also provide recommendations on how and when to use these different regional estimates.

2 . Regional activity – GVA or GDP

In the [UK National Accounts](#), gross domestic product (GDP) is measured by the output, income and expenditure approaches. For early estimates of GDP, we lead on the output approach where gross value added (GVA) is considered a proxy for GDP. GVA is equal to output minus intermediate consumption, thereby capturing the goods and services that are used up in the production process [note 1]¹.

Regional activity can be measured as GVA or GDP. However, the levels of and changes in [GVA and GDP](#) are not the same [note 2]². Our industry-level estimates of regional activity refer to GVA, not GDP. It is only in the annual Regional accounts publication where there are any estimates of regional GDP. This is then reflected in how we produce these quarterly estimates of regional GVA, including how these are constrained to our UK headline estimates of GVA. Northern Ireland and Scotland produce their own independent estimates of regional activity.

The [Northern Ireland Composite Economic Index](#) (NICEI), produced by the Northern Ireland Statistics and Research Agency (NISRA), is a GVA-based estimate. It is based on the market output produced by the production, construction and services industries, which is primarily based on deflated turnover. It also includes output from the agriculture industry provided by the Northern Ireland Department for Agriculture, Economy and Rural Affairs and reflects non-market output that is produced, capturing changes in public sector employment.

The [Scottish Government](#) produces quarterly estimates of volume GDP for Scotland. These are also GVA-based estimates of GDP using the output approach. These are produced using similar data sources and methods to those used by the Office for National Statistics (ONS) for the UK. The first estimate of volume GDP is published around two months after the latest reference quarter, followed by a more comprehensive set of quarterly national accounts, which is around four months after the quarter. Experimental monthly estimates of GDP are also available around two months after each reference month.

Notes for: Regional activity – GVA or GDP

1. GVA is equal to GDP less taxes (plus subsidies) on products.
2. In those years that have been fully balanced in a Supply and Use Tables (SUTs) framework, the quarterly change in GVA is aligned to be within a tolerance of the quarterly change in GDP.

3 . Regional accounts

The [Regional accounts](#) estimates of gross domestic product (GDP) and gross value added (GVA) are published once a year from 1998 onwards, which provide the most comprehensive regional information that is available (Figure 1). These are published at the International Territorial Level (ITL)1, ITL2 and ITL3 levels [note 1]¹ of geography as well as for local authorities, combined authorities and other economic regions. These are produced according to the same concepts in the UK National Accounts – including producing current price and volume estimates of regional GVA.

We produce [balanced estimates of regional GVA \(PDF, 268KB\)](#), where we reconcile the income and production approaches. This is done at the ITL2 level to provide a single measure of economic activity within a region, based on our widest range of [high-quality regional indicators](#), which reflect survey and administrative information.

Estimates for ITL1 countries and regions are then formed by aggregating the balanced ITL2 estimates. Lower-level estimates for ITL3 regions and local authorities are produced by disaggregating the balanced ITL2 estimates. For market sector industries, this apportionment process uses the same Value Added Tax (VAT) turnover returns that are used to inform the quarterly measure of regional GVA.

Industry-level estimates are also published at each geographic level without breaching confidentiality regulations. This currently comprises 81 industries at the ITL1 level, 72 industries at ITL2, 48 at ITL3 and 34 for local authorities and other economic regions.

Figure 1: The regional accounts provide our most comprehensive estimates of regional activity

Gross domestic product per head for UK local authorities, 1998 to 2020

Notes:

1. The City of London is not shown on the map because its gross domestic product (GDP) per head is a large outlier value.
2. Natural breaks have been used to classify the data into ranges.

Download the data

[.xlsx](#)

Regional GDP estimates are produced by taking the total balanced GVA for a region, then adding VAT and other taxes on products and subtracting subsidies on products. Most of these taxes are disaggregated using information from the Office for National Statistics (ONS) Country and regional public sector finances (CRPSF) at the ITL1 level, and a variety of other administrative and survey data for lower levels of geography. The subsidies (and some taxes) are allocated using balanced GVA for specific industries in receipt of those subsidies.

The regional accounts are typically published in December, around 12 months after the latest reference year. This includes a provisional estimate for the latest calendar year [note 2]², as this has not yet been fully balanced in a Supply and Use Tables (SUT) framework at this stage. This explains why the estimates for this provisional year are subject to higher levels of uncertainty.

One challenge is the timing of the publication of the regional accounts. There is at least a three-month period where it is not fully consistent with the latest national accounts, which can become more challenging over time, given the revisions policy for the national accounts. For the more recent periods, the national accounts are open for revision on a more frequent basis, while the regional accounts are only revised once a year.

In this minimum three-month period, there will not be consistency in the latest estimates of headline UK GVA and these constrained regional estimates. This complicates how we produce fully reconciled estimates of UK and regional GVA, particularly as this becomes more challenging through the year, which then impacts upon the more timely and higher frequency estimates. We recommend that users consider these timing effects as part of any research that looks to compare these regional estimates with the latest headline UK estimates.

Notes for: Regional accounts

1. ITL1 covers the nine English regions, Northern Ireland, Scotland and Wales. ITL2 covers the 41 sub-regions – these are mainly groups of counties and unitary authorities. ITL3 refers to the 179 local areas, which are principally individual counties and unitary authorities.
2. There is currently a delay in the publication of the regional accounts, which has been caused by the impact of the coronavirus (COVID-19) pandemic. It is planned to return to a regular timetable incrementally over the next few years.

4 . Short-term regional indicators

We publish quarterly estimates of regional gross value added (GVA) for the nine English regions and Wales, which are based on Value Added Tax (VAT) returns of firm-level turnover. These are published as rates of changes and as indices at the 20 industry level from Quarter 1 (Jan to Mar) 2012 to the latest available quarter, which is produced on an approximate six-month lag.

Where HM Revenue and Customs's (HMRC's) VAT turnover is the data source for an industry, these are then regionalised based on the employment structure of that business, where VAT turnover for each business is allocated to each region based on their employment share within any region. Regional estimates of VAT are produced using our [Inter-Departmental Business Register \(IDBR\)](#). The IDBR is the main sampling frame for our business surveys, but it is also an invaluable source of information on the employment and structure of every business in the UK. This information allows us to apportion the VAT turnover for each business based on their employment share within any region.

These are our most reliable high-frequency estimates of regional economic activity. Given that quarterly regional gross domestic product (GDP) is primarily based on firm-level estimates of VAT turnover, we benchmark our quarterly regional GVA estimates to the annual regional accounts by industry and region to the latest year published, given this provides our most reliable estimates of the levels and change in volume GDP at the regional level. This includes the provisional year that is also produced as part of the regional accounts.

We continue to update the latest quarters in line with the UK National Accounts until the next annual Regional accounts publication, specifically quarterly UK GDP by industry. We improved the methodology in 2022 to constrain to quarterly GDP at current prices and by industry for all periods. We constrain the volume quarterly GDP estimates at the International Territorial Level (ITL)1 level to quarterly UK GVA for the latest quarters.

Regional GDP for the nine English regions and Wales is primarily based on VAT administrative records, which is one of the many inputs that feed into compiling the UK National Accounts. The regional figures for Northern Ireland and Scotland GDP are not directly used in the process to estimate UK GDP, although these quarterly indicators are conceptually in line with how UK GVA is estimated in the UK National Accounts.

Figure 2: Our regional GVA estimates provide our best insights into how the 12 ITL1 regions have been performing in recent quarters

Quarterly changes in regional gross value added (GVA) at the International Territorial Level (ITL)1 level, UK regions and constituent countries, Quarter 4 (Oct to Dec) 2019 to Quarter 3 (July to Sept) 2021

Notes:

1. This also includes the latest available estimates for [Scotland](#) and [Northern Ireland](#) as of 31 May 2022 for these periods, reflecting the publication of GVA for the nine English ITL1 regions and Wales. More timely available estimates are available for Quarter 4 2021 at this stage for Scotland and Northern Ireland, which are not included here.

Download the data

[.xlsx](#)

5 . Model-based estimates

Given the interest in having more timely estimates, we have recently developed [model-based nowcasts of regional GVA](#) as part of research carried out by the Economic Statistics Centre of Excellence (ESCoE). These are produced only eight weeks after the reference period for the 12 International Territorial Level (ITL)1 regions – there are no other available regional estimates at this time. These estimates:

- reflect the historical relationships between regional and UK activity, capturing how sensitive regional growth is to UK growth
- capture how growth in region x has translated into growth in region y, reflecting historical relationships between the regions
- incorporate the persistence of regional growth from one quarter to the next, reflecting the estimated historical relationships within the regions
- estimate historical relationships between other macroeconomic variables and regional growth

These will be subject to higher level of uncertainty, given that these have been modelled, which is based on our understanding of historical regional performance. As such, these nowcasts for these periods are currently not able to pick up any local shocks, until they have been processed in our quarterly regional gross domestic product (GDP) estimates and those produced by Scotland and Northern Ireland. Economic Statistics Centre of Excellence (ESCoE) researchers are investigating additional regional predictors to include in the nowcast periods, which would have the potential to pick up the effects of local shocks if reflected in those faster indicators. This will also look at whether this improves the predictive power of these nowcasts for the 12 ITL1 regions.

We recommend that users only look at the nowcast estimates for the latest quarter(s) that are not covered by the official quarterly estimates that are published – see Figure 3. These model-based estimates of regional output in the quarters are constrained so that these are consistent with the latest headline estimate of UK gross value added (GVA), as published in the latest First quarterly estimate.

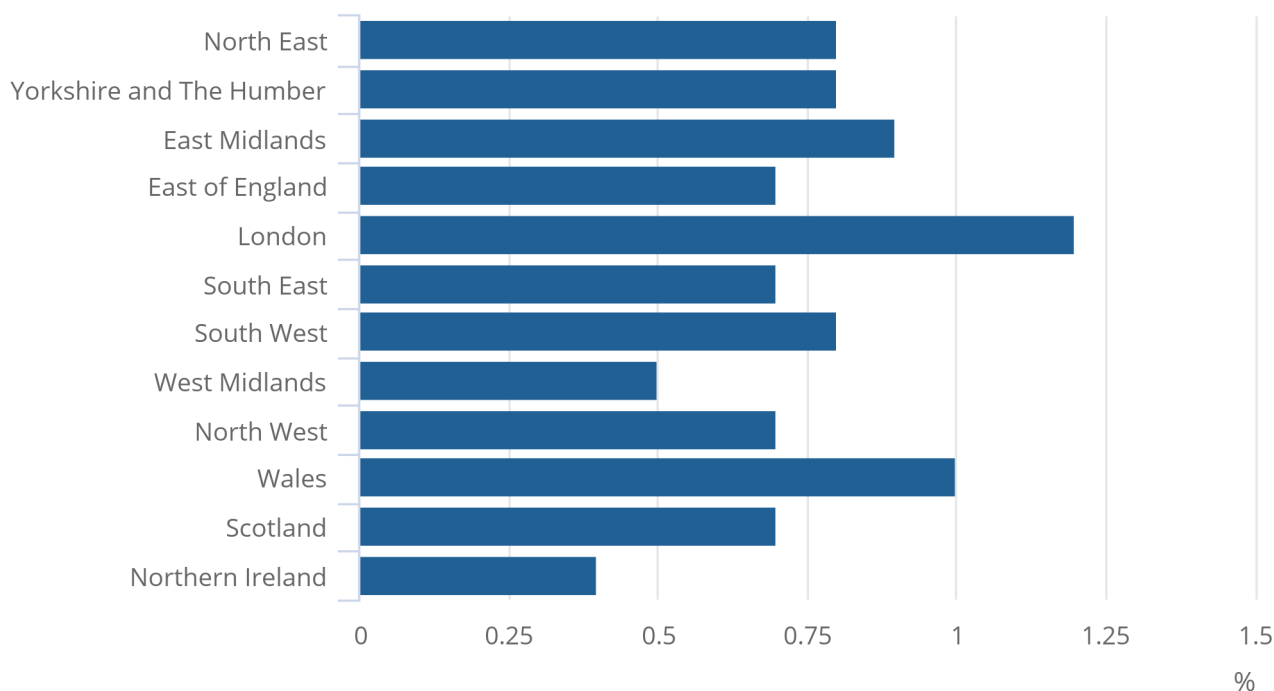
For those who are interested in looking at the performance of ITL1 regions, we would advise looking at the official quarterly estimates and these nowcast estimates together. Official estimates are data-driven, while users should focus on the nowcast only on the quarters when official estimates are not available.

Figure 3: Nowcast estimates provide our most timely insight into the change in regional GVA at the ITL1 level in the latest quarter

Model-based nowcast estimates, UK regions and constituent countries, Quarter 1 (Jan to Mar) 2022

Figure 3: Nowcast estimates provide our most timely insight into the change in regional GVA at the ITL1 level in the latest quarter

Model-based nowcast estimates, UK regions and constituent countries, Quarter 1 (Jan to Mar) 2022



Source: Office for National Statistics – Model-based early estimates of regional gross value added in England, Wales, Scotland and Northern Ireland: Quarter 1 (Jan to Mar) 2022

Notes:

1. Model-based estimates of these 12 ITL1 regions are constrained to the first estimate of quarterly UK GDP for the latest quarter, which would have been 0.8% for Quarter 1 2022.
2. At the time of publication, there were no available estimates for any ITL1 region for Quarter 1 2022. There were also not any available estimates for Quarter 4 2021 for these regions, except for Scotland and Northern Ireland. We recommend that users consider these official estimates for these two regions.

6 . Other publications

There are other regional publications, which might be of interest.

- [Flexible geography](#): this provides a breakdown of regional gross value added (GVA) from local authorities to smaller areas, which allows users to look within an existing region to analyse variations at a local or neighbourhood level and provide small area “building blocks” to produce estimates of GVA for areas that have not been possible before; these include Parliamentary constituencies, towns and cities, and travel to work areas.
- [Annual Business Survey](#): this produces regional estimates of [approximate gross value added](#) for industries down to four- or five-digit level; these estimates can be volatile in terms of annual movements and are not designed to be used as a time series; however, for users who require detailed industry granularity, these estimates can be used to model a division within the regional accounts industries or as independent estimates; the Northern Ireland Statistics and Research Agency (NISRA) also produce estimates from their [Annual Business Inquiry](#), which provides further insights on “approximate GVA”
- [Historic estimates](#): for regional estimates prior to 1998, the only estimates that are available exist in hard copy statistical journals and in ad hoc publications that collated these [historical data](#) for years back as far as 1966; their principal limitation is that they are not consistent with the current regional accounts or other estimates of economic activity

7 . Timeliness, accuracy and coherence

There is a trade-off in the production of regional estimates of economic activity, as there are constraints on producing timely, high-frequency and granular regional estimates. We have responded to this challenge by producing a suite of regional publications in response to these user demands. This section provides an overview of the features of the annual regional accounts and our quarterly estimates of regional gross value added (GVA), including our model-based estimates.

Regional accounts (ONS)

Timeliness

These are annual estimates, published with an approximate 12-month lag. This includes the provisional estimate produced for the latest calendar year.

Accuracy

These are pseudo bottom-up estimates at International Territorial Level (ITL)1 and ITL2, capturing income and production at the local level; top-down ITL3 and local authority estimates are also available.

The ITL1 and ITL2 estimates are based on a wide range of survey and administrative data, while UK totals are based on the annual national accounts. The methodology conforms as far as possible to those recommended in the [Manual on regional accounts methods](#) produced by Eurostat.

Coherence

These are constrained to the latest annual national accounts at the time of publication, although there is an approximate three-month window where these are not fully aligned.

Recommendation

The most comprehensive regional information that is available. These are published at the ITL1, ITL2 and ITL3 levels, local authorities, combined authorities and other economic regions.

Quarterly regional GDP (ONS)

Timeliness

These are quarterly estimates, published with an approximate six-month lag for the nine English ITL1 regions and Wales.

Accuracy

These are experimental estimates, which are mainly “top-down”. These are based on Value Added Tax (VAT) estimates of turnover, which capture the returns of 1.7 million businesses. Regional estimates are based on the apportionment of VAT turnover.

Coherence

These are constrained to UK gross value added (GVA) by industry for the quarterly path, which are then benchmarked to the regional accounts by industry and region.

Recommendation

The official high-frequency estimates, which show the rates of changes in GVA by industry and region.

Nowcast estimates (ONS)

Timeliness

These are quarterly estimates, published with an approximate eight-week lag for all 12 ITL1 regions.

Accuracy

These are model-based ITL1 estimates, which are primarily based on historical relationships. This model includes macroeconomic indicators, such as CPI (Consumer Prices Index) inflation, the oil price, the Bank Rate, and the exchange rate, as well as UK and regional estimates of GVA.

Coherence

These are constrained to official estimates of headline UK GVA for the latest quarter.

Recommendation

The timeliest estimates of ITL1 quarterly regional GVA, at almost the same timeframe as quarterly UK GDP.

8 . Data sources

[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)).

[GDP, UK regions and countries: July to September 2021](#)

Bulletin | Released 31 May 2022

Quarterly economic activity within the countries of the UK (England, Wales, Scotland and Northern Ireland) and the nine English regions (North East, North West, Yorkshire and The Humber, East Midlands, West Midlands, East of England, London, South East and South West).

[Model-based early estimates of regional gross value added in England, Wales, Scotland, and Northern Ireland: Quarter 1 \(Jan to Mar\) 2022](#)

Bulletin | Released 7 June 2022

Experimental model-based estimates of quarterly regional gross value output for the nine English regions, Wales, Scotland, and Northern Ireland.

9 . Glossary

Gross domestic product (GDP)

A measure of the economic activity produced by a country. There are three approaches used to measure GDP: - the output approach - the expenditure approach - the income approach

Chained volume estimates (CVM)

These time series have the effects of inflation removed by considering changes in quantity between consecutive periods, holding prices from previous periods constant.

Gross value added (GVA)

The value generated by any unit engaged in production and the contributions of individual sectors or industries to gross domestic product.

ITL (International Territorial Level)

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

10 . Related links

[UK National Accounts. The Blue Book: 2021](#)

Compendium | Released on 29 October 2021

National accounts statistics including national and sector accounts, industrial analyses and environmental accounts.

[Regional accounts methodology guide: June 2019](#)

Methodology | Released on 13 June 2019

What comprises the UK regional accounts, how various regional estimates are compiled, the different data used in compilation and concepts underpinning the process.

[Model-based estimates of regional GVA: an overview](#)

Methodology | Released on 8 October 2021

An overview of the econometric model used for producing experimental model-based quarterly estimates of regional gross value added (GVA) output for the UK, at International Territorial Level 1 (ITL1).