

Statistical bulletin

# Public service productivity, quarterly, UK: April to June 2024

UK total public service productivity, inputs and output, to provide a short-term, timely indicator of annual productivity estimates. These are official statistics in development.

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# 1 . Main points

- Public service productivity was estimated to be 2.6% lower in Quarter 2 (Apr to June) 2024 compared with the same quarter in 2023; this was caused by inputs growing faster than output.
- Public service productivity fell by an estimated 1.2% in Quarter 2 2024 compared with Quarter 1 (Jan to Mar) 2024, following a period of zero growth in Quarter 1 2024.
- Public service productivity in Quarter 2 2024 is estimated to be 8.5% below its pre-coronavirus (COVID-19) pandemic peak in Quarter 4 (Oct to Dec) 2019.
- Annualised quarterly estimates of public service productivity growth were revised from 2.6% to 1.0% in 2022, indicating that the recovery of public service productivity from the pandemic is taking longer than previously estimated.
- Annualised quarterly estimates suggest that public service productivity fell by 0.3% between 2022 and 2023.
- These latest estimates incorporate revisions made to output in the UK National Accounts Blue Book 2024, published on 31 October 2024.

These are official statistics in development, and we advise caution when comparing the latest estimates with those published before the coronavirus (COVID-19) pandemic, as the structure of inputs and outputs changed in response to the pandemic. The method is also under development which means the estimates are subject to revision as more up-to-date data become available. Read more in [Section 10: Data sources and quality](#).

## 2 . About these estimates

This release presents official statistics in development for total public service productivity, inputs and output. These statistics provide a short-term, timely indicator of our annual [Public service productivity: total data](#), which are [accredited official statistics](#). Our annual statistics include quality adjustment, but the data used to generate these quality adjustments are produced with a two-year lag. As such, the quarterly estimates in this release maintain the quality adjustment level of the latest annual statistics and take no account of change in quality in the latest periods. Methodological differences between our annual and quarterly statistics can be found in Section 9 of our [Sources and methods for public service productivity estimates](#).

Since the beginning of the [Public Services Productivity Review](#), the Office for National Statistics (ONS) has been working to improve how public service productivity is measured. A description of the first set of improvements is available in our [Improved methods for total public service productivity: total, UK, 2021 methodology](#). Additional methodological improvements will be included in our next annual [total public service productivity](#) release (accredited official statistics), which will be published in spring 2025. More information is available in our [Transforming our understanding of public services productivity blog post](#).

This release contains data that are consistent with our [Gross domestic product \(GDP\) quarterly national accounts bulletin](#). In line with the quarterly national accounts and the [National Accounts Revisions Policy](#), this release includes revisions as a result of the [Blue Book 2024 methodological changes](#). Details of these changes are described in [Section 10: Data sources and quality](#).

As mentioned in our [previous bulletins](#), comparing the latest estimates with pre-coronavirus (COVID-19) pandemic years should be done with caution, as the structure of inputs and output changed in response to the pandemic. Quarterly estimates should also be interpreted with caution because of the volatile nature of quarterly inputs estimation.

Please consider that all our data are seasonally adjusted. Over the last two quarters, the non-seasonally adjusted data on public service productivity, particularly inputs, show a different seasonal pattern than in the earlier time periods. This is because of policies and measures adopted by government departments following the COVID-19 pandemic. This new seasonality was not captured by the seasonal adjustment model for inputs, which produced estimates that do not fully reflect the current economic scenario. To revise the seasonal adjustment fully requires more quarters of post-COVID-19 data to enable a re-estimation of the trend of the new seasonality.

For this reason, supported by experts on seasonal adjustment, the ONS has treated data on healthcare inputs from Quarter 2 (Apr to June) 2020 until the most recent quarter as outliers, to reflect the impact of COVID-19 and subsequent effects. This means that these estimates will be subject to revision, as new data become available and seasonal adjustment is applied. More information on seasonal adjustment can be found in [Section 10: Data sources and quality](#).

Unless stated otherwise, all growth rates reported in this article are indexed to the base year of 1997.

### 3 . Quarter-on-previous-year productivity estimates

Because changes in productivity represent long-term structural trends, we advise looking at changes over a longer period. This helps to smooth any short-term fluctuations and provides a better indication of trend.

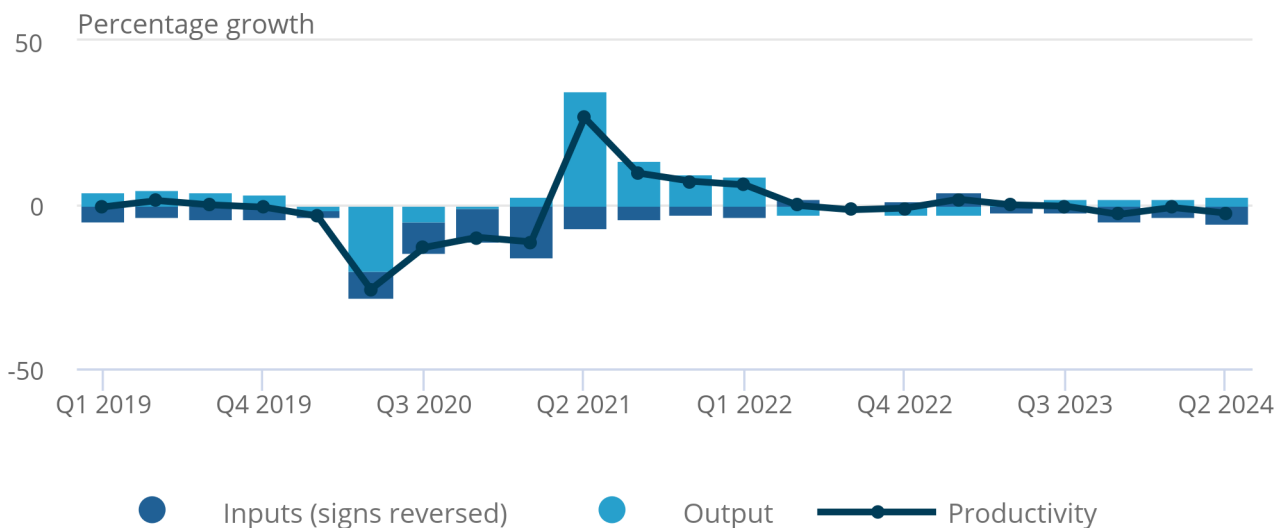
Total public service productivity was estimated to be 2.6% lower in Quarter 2 (Apr to June) 2024 compared with the same quarter in 2023. Over this period, inputs and output increased by 5.2% and 2.5%, respectively.

#### Figure 1: Public service productivity fell by 2.6% in Quarter 2 2024 compared with the same quarter a year ago

Quarter-on-same-quarter a year ago growth rates in public service productivity, inputs, and output, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 2 (Apr to June) 2024

Figure 1: Public service productivity fell by 2.6% in Quarter 2 2024 compared with the same quarter a year ago

Quarter-on-same-quarter a year ago growth rates in public service productivity, inputs, and output, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 2 (Apr to June) 2024



Source: Public service productivity from the Office for National Statistics

Notes:

1. Official statistics in development quarterly estimates of productivity are calculated using seasonally adjusted inputs and seasonally adjusted output.
2. This chart inverts the growth rates of inputs, as inputs increasing more than output reduces productivity.

## 4 . Quarter-on-quarter productivity estimates

Total public service productivity was estimated to decrease by 1.2% in Quarter 2 (Apr to June) 2024, compared with the previous quarter. Both inputs and output increased, by 2.1% and 0.9%, respectively.

This is the largest increase in inputs since Quarter 1 (Jan to Mar) 2023. It is primarily a result of increased healthcare inputs, but inputs increased for all service areas. Similarly, output increased for all service areas, except for justice and fire. Output growth for education was positive but close to zero in Quarter 2 2024.

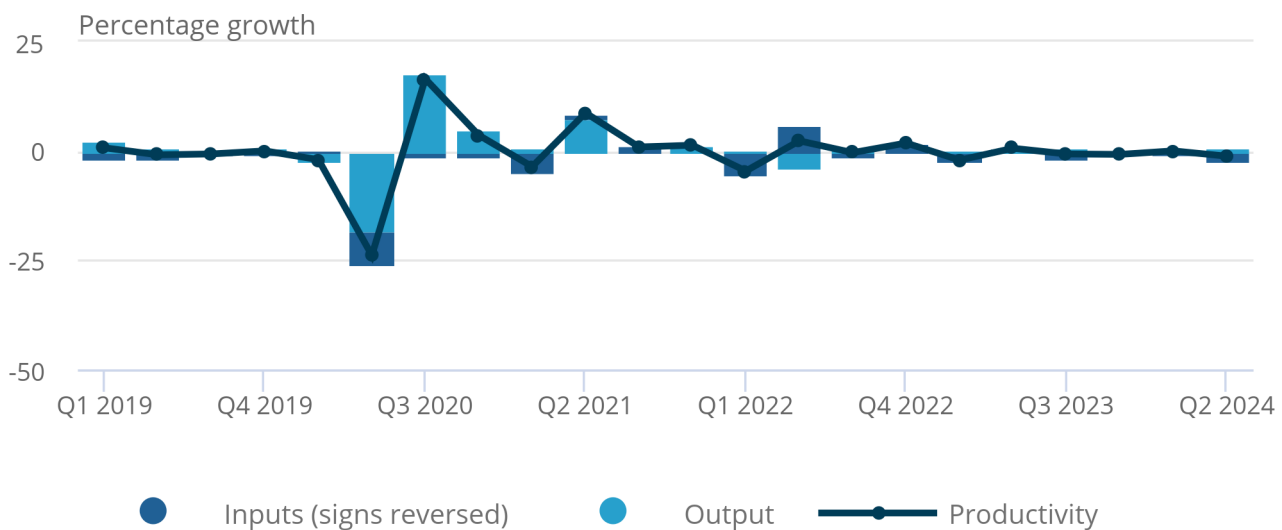
Military defence, central government, and local government service areas all adopt an "output-equals-inputs" convention. For more information, see our [Sources and methods for public service productivity estimates methodology](#). This convention assumes that the volume of inputs used to create the volume of output is equal when input cannot be directly measured. For this reason, estimated productivity is constant at zero by assumption.

### Figure 2: Public service productivity decreased by 1.2% in Quarter 2 2024 compared with Quarter 1 2024

Quarterly growth rates in public service productivity, inputs, and output, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 2 (Apr to June) 2024

### Figure 2: Public service productivity decreased by 1.2% in Quarter 2 2024 compared with Quarter 1 2024

Quarterly growth rates in public service productivity, inputs, and output, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 2 (Apr to June) 2024



Source: Public service productivity from the Office for National Statistics

Notes:

1. Official statistics in development quarterly estimates of productivity are calculated using seasonally adjusted inputs and seasonally adjusted output.
2. This chart inverts the growth rates of inputs, as inputs increasing more than output reduces productivity.

## 5 . Post-2019 estimates

The coronavirus (COVID-19) pandemic had a large impact on public services. In 2020, inputs rose, reflecting the extra resources provided to public services to deal with the pandemic. Conversely, output fell in 2020, as many services were delivered in a different way than in 2019, with additional costs and mandatory restrictions present for certain services.

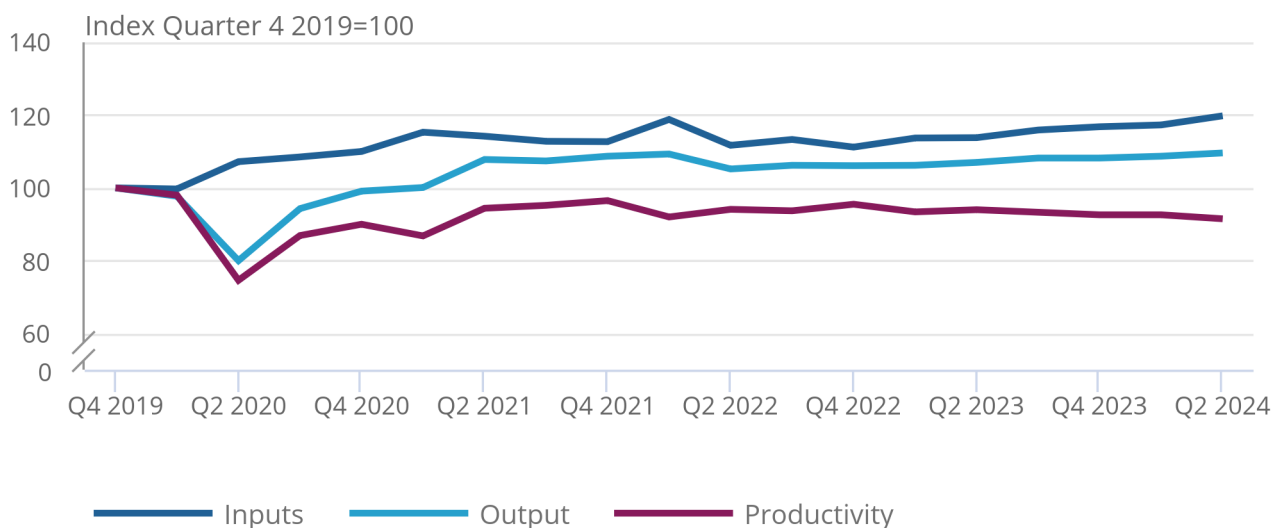
Our quarterly estimates show a decline in productivity of 25.4% from Quarter 4 (Oct to Dec) 2019 to Quarter 2 (Apr to June) 2020, and a recovery of 22.7% from Quarter 2 2020 to Quarter 2 2024. Productivity was 8.5% lower in Quarter 2 2024 than in Quarter 4 2019. This reflects changes in the severity of the cases being addressed by public services, as well as the delivery of these services.

### Figure 3: Public service productivity in Quarter 2 2024 is 8.5% lower than it was in Quarter 4 2019

Index of public service productivity, inputs, and output, UK, Quarter 4 (Oct to Dec) 2019 to Quarter 2 (Apr to June) 2024

### Figure 3: Public service productivity in Quarter 2 2024 is 8.5% lower than it was in Quarter 4 2019

Index of public service productivity, inputs, and output, UK, Quarter 4 (Oct to Dec) 2019 to Quarter 2 (Apr to June) 2024



Source: Public service productivity from the Office for National Statistics

#### Notes:

1. Official statistics in development quarterly estimates of productivity are calculated using seasonally adjusted inputs and seasonally adjusted output.

## 6 . Annual estimates

As mentioned in [Section 2: About these estimates](#), the Office for National Statistics (ONS) publishes annual statistics on [total public service productivity](#), which are produced with a two-year lag to give time for data to become available. These are accredited official statistics. This bulletin focuses on our quarterly official statistics in development for total public service productivity, inputs, and output. We also present annualised quarterly estimates by averaging inputs and output volumes across four quarters of a year. These provide an annual estimate of inputs, output, and productivity for two years beyond the latest accredited official annual estimates.

### Annualised quarterly estimates

Figure 4 places productivity, inputs and output in an annual context over a longer period. It combines the accredited, annual estimates from between 1997 and 2021 discussed in our [Public service productivity: total, UK, 2021 article](#), with annualised data from our quarterly official statistics in development from 2022 onwards.

Annualised quarterly estimates from our official statistics in development suggest that annual total public service productivity decreased by 0.3% in 2023 (revised down from a fall of 0.2%). Both inputs and output increased in 2023, with inputs growing faster than output.

This was the first annual fall in productivity since 2020 and the start of the coronavirus (COVID-19) pandemic. Productivity is estimated to have increased in 2021 by 6.5% and in 2022 by 1.0% (revised down from our estimate of 2.6% growth last quarter).

In 2021 and 2022, output grew faster than inputs, because fewer restrictions were present compared with the previous year. Most of the activities cancelled during the COVID-19 pandemic were slowly reintroduced, including:

- non-urgent healthcare treatments
- activities in courts and tribunals
- pupils returning to attend lessons in schools

In addition, new services such as NHS Test and Trace, and COVID-19 vaccinations were introduced.

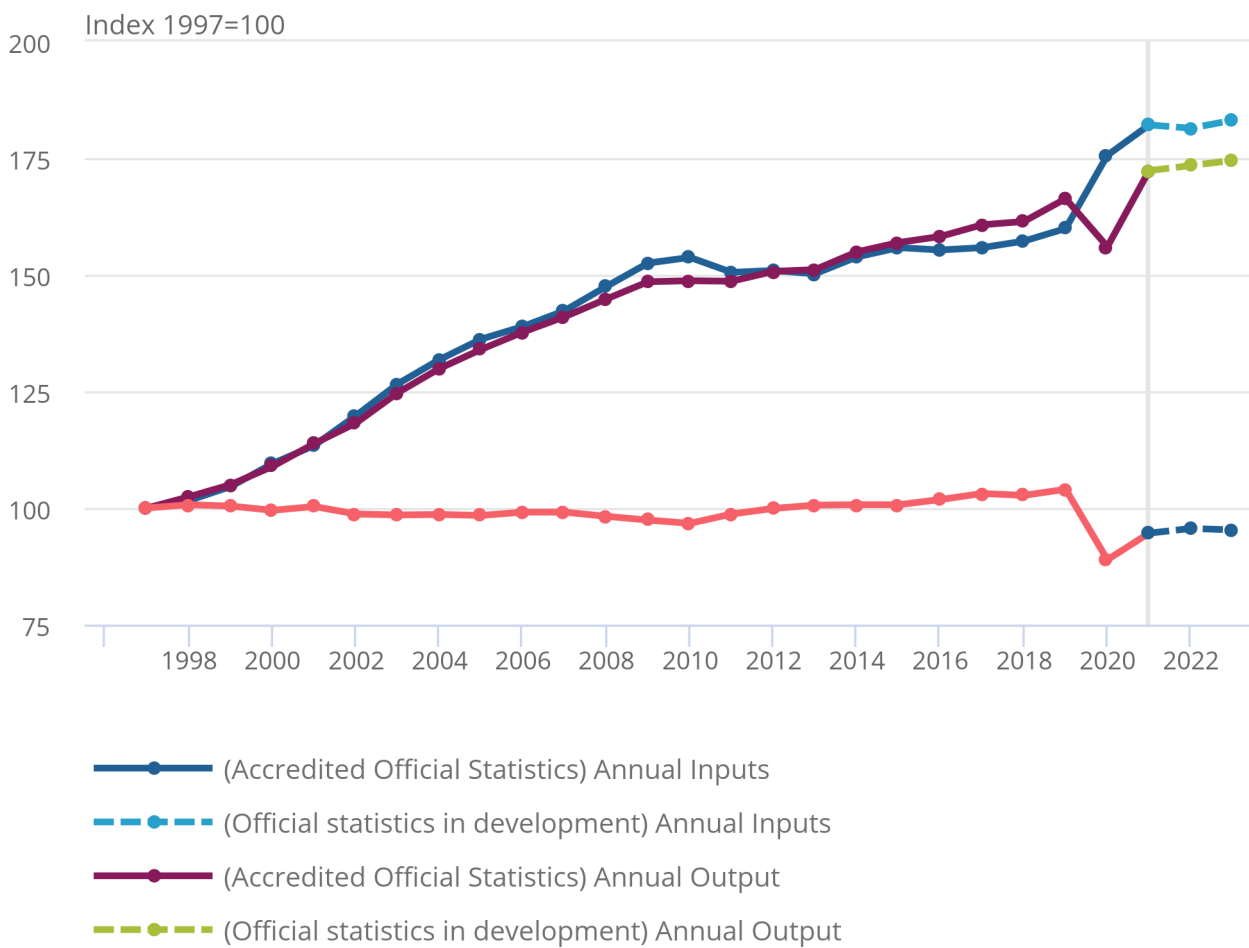
**Figure 4: Public service productivity is estimated to have fallen by 0.3% in 2023**

Total public service productivity, UK, 1997 to 2023

Figure 4: Public service productivity is estimated to have fallen by 0.3% in 2023

accredited  
official  
statistics

Total public service productivity, UK, 1997 to 2023



Source: Public service productivity from the Office for National Statistics

Notes:

1. Estimates for 2022 and 2023 are official statistics in development and are annualised quarterly estimates.
2. Estimates from 1997 to 2021 are annual accredited official statistics.

Annualised quarterly estimates differ from our [total public service productivity accredited official statistics](#) because we use different data sources and do not currently apply changes to quality adjustments in our quarterly estimates (more information can be found in [Section 10: Data sources and quality](#)). Therefore there is no additional quality adjustment in the annualised quarterly data we have used to derive our 2022 and 2023 estimates, compared with the last full year of quality-adjusted accredited official statistics.



As our annualised quarterly estimates for 2022 and 2023 are official statistics in development, they should be treated with caution until our [accredited official statistics for these years](#) become available.

## Annual nowcast under development

Figure 4 shows the annualised quarterly estimates of public service productivity. These differ from the estimates published in our [Public service productivity, UK: 1997 to 2022 article](#), which are based on the experimental nowcast approach. The ONS first released these estimates in November 2023. The nowcasting approach differs from the annualised quarterly statistics because it incorporates further data sources and applies different techniques, with the aim of improving upon the annualised quarterly estimates until the annual data become available. The nowcast measures published in November 2023 continue to be under methodological review and an update on this work will be published on 11 December 2024.

## 7. Revisions to public service productivity estimates

Our public service productivity estimates follow the [National Accounts Revisions Policy](#) and, in line with this policy, this release contains data that are consistent with [Blue Book 2024](#).

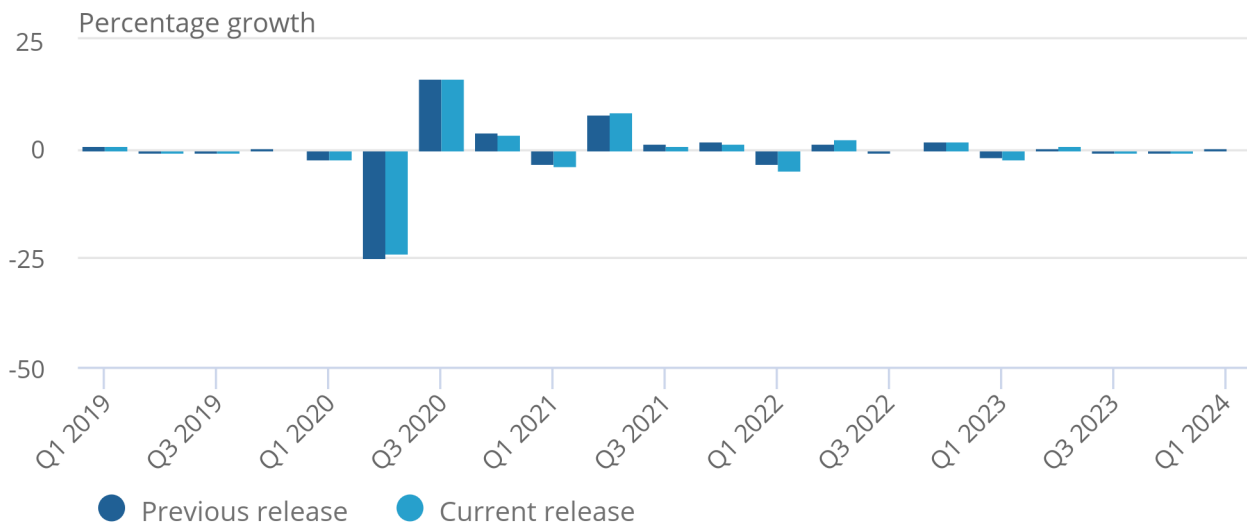
Figure 5 shows the estimates published in our [previous bulletin](#), and the revised estimates on public service productivity, following the changes mentioned in [Section 10: Data sources and quality](#).

### Figure 5: Public service productivity quarter-on-quarter growth

Total public service productivity growth, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2024

Figure 5: Public service productivity quarter-on-quarter growth

Total public service productivity growth, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2024



Source: Public service productivity from the Office for National Statistics

For more detailed information on revisions to productivity, inputs, and output, please see Table 4 in [our accompanying dataset](#).

## 8 . Data on Public service productivity: quarterly, UK April to June 2024

[Public service productivity: quarterly, UK](#)

Dataset | Released 19 November 2024 Official statistics in development on UK public service productivity. Includes estimates of inputs, output, productivity, and revisions compared with estimates from the previous quarter.

## 9 . Glossary

### Deflator

A price index used to remove inflation effects from current price estimates of expenditure to provide a volume estimate.

### Direct output measurement

Using a cost-weighted activity index to estimate the non-quality adjusted output of a service provided. For example, the number of students in state schools can be adjusted for attendance to produce an estimate of total hours of schooling delivered each year. This differs from indirect output measurement, where output is assumed equal to inputs.

### Intermediate inputs

Also referred to as "goods and services", or "intermediate consumption" (the national accounts term). Intermediate inputs include goods and services used up in the provision of a public service, such as utilities, energy, professional services, and medical supplies, among others.

### Nowcast

The [nowcasts published in November 2023](#) are a product of the observed annualised quarterly series in 2021 and 2022 and the relationship between the observed annual series and annualised quarterly series in 1997 to 2019 (excluding 2020 because of the impact of the coronavirus (COVID-19) pandemic). They are produced using an experimental, dynamic regression approach (an extension of autoregressive integrated moving average (ARIMA) modelling). In this method, annualised quarterly data are used as predictors of the unavailable annual data.

### Public services

These are services delivered or paid for by government (central or local). If paid for by the government, they may be delivered by a private body – for example, the provision of nursery places by the private sector, where these places were funded by the government.

### Quality adjustment

A statistical estimate of the change in the quality of a public service, using an appropriate metric. For example, safety in prisons is part of the public order and safety adjustment.

### Service area

The way we refer to the breakdown of public services into seven areas, closely following standard industrial classification (SIC) codes.

## Standard Industrial Classification

SIC applied to the collection and publication of a wide range of economic statistics.

# 10 . Data sources and quality

## Data sources

This release uses expenditure data from the quarterly UK National Accounts, split into seven categories:

- healthcare
- education
- social protection
- justice and fire
- military defence
- central government services
- local government services

Data sources and methods differ from our annual publication because they depend on data availability on a quarterly or annual basis. For example, some inputs measures that are available on an annual basis as direct measures are not available on a quarterly basis. These missing quarterly direct input measures may only be obtainable using indirect measures (deflated expenditure).

Our [total public service productivity estimates](#) (accredited official statistics) also use different deflators to those used in this release to estimate the volumes of inputs. As such, estimates are not directly comparable between our quarterly and annual publications.

This release does not provide adjustments for the quality in public service output whereas our accredited total public service productivity estimates do, for some public output.

Estimates of productivity, inputs and output up to 2021 are reported on an annual basis and use data from our [Public service productivity, total: UK, 2021 article](#). Further information about our annual, accredited official statistics can be found in our [Public service productivity: total, UK, QMI](#).

Our quarterly, official statistics in development estimates differ from our annual, accredited official estimates, as described in Section 9 of our [Sources and methods for public service productivity estimates methodology](#). Importantly, quality adjustments are not applied to our quarterly estimates.

Our quarterly estimates are not a measure of the productivity of an individual worker within the public sector. Instead, they reflect the volume of services delivered to end users, relative to the volume of total inputs required to deliver these services. The measure is dominated by healthcare and education services because of their relative expenditure share.

## Revisions

The estimates shown in this bulletin reflect the revisions included in the [Gross domestic product \(GDP\) quarterly national accounts, UK: April to June 2024](#). In line with the [National Accounts Revisions Policy](#), this release contains data that are consistent with [Blue Book 2024](#), which includes methodological changes, improvements to data sources and updated data.

First, health output is now benchmarked to the more comprehensive measure of healthcare output to the end of the financial year ending March 2022. This improves our measurement of 2021 and gives us more information about 2022 activity, despite only covering the first three months of the year. The annual benchmark includes additional activities not captured in our short-term health data. Some of these activities, such as ambulance services, mental health and community health, are growing less rapidly in the financial year ending March 2022 than the services that make up the timelier quarterly measure, which include elective care, general practice activity and dental services. Furthermore, the annual benchmark includes data from the devolved nations. We anticipate future revisions to healthcare volume output relating to benchmarking to be smaller in post-coronavirus (COVID-19) periods, particularly in light of [improvements to healthcare volume output in the quarterly national accounts](#).

Second, education service output was revised upwards in 2020 and 2021 because of revised estimates of pupil numbers receiving education in this period.

Third, central and local government data were revised throughout the open period, because of departmental updates and updated capital consumption data.

Fourth, government consumption mainly sees revisions because of updated data for several components.

In addition, following the national accounts approach, we have [moved the base year from 2019 to 2022](#) to reflect changes in the composition of the economy following the coronavirus (COVID-19) pandemic, having suspended rebasing during the pandemic in line with international best practice. For example, the health sector, which increased its share of the economy during the pandemic, remains larger in 2022, as the sector catches up post-coronavirus.

The estimates published in this bulletin are also affected by quarterly revisions of the seasonal adjustment methods. We will continue to review the seasonal adjustment methods in our accredited official statistics, when new quarters are added to our estimates. Future quarters may deliver data that affects our view of seasonal adjustment timings, if we discover this is a turning point in seasonal behaviour.

Finally, we have introduced the use of the average weekly earnings (AWE) deflators for the labour component from Quarter 1 (Jan to Mar) 2022, onwards.

## Measuring public service productivity

Productivity is calculated by dividing output by the respective inputs used to produce it. Therefore, productivity will increase when more output is being produced for each unit of inputs used. Estimates of inputs, output, and productivity are given both as growth rates between consecutive periods and as indices, to show the cumulative trend over time.

Our official statistics in development quarterly estimates of productivity are seasonally adjusted. In official statistics, it is common for the time series to have regular, repeating, predictable variation (for example, the increase in retail sales in December). To help users interpret the series, national statistical institutes use a statistical method called seasonal adjustment to remove these effects. We use the X11 algorithm in the X-13 ARIMA-SEATS software to perform seasonal adjustment.

As explained in [Section 2](#), from Quarter 1 2022 until the most recent quarter, our new seasonally adjusted method follows these three steps.

1. Create new healthcare inputs seasonally adjusted estimates, which include outliers from Quarter 2 (Apr to June) 2020 until Quarter 2 2024.
2. Calculate the difference between the healthcare outlier model and the healthcare inputs standard seasonally adjusted model.
3. Apply the difference between these models to the seasonally adjusted total inputs, adjusted by the expenditure share of healthcare, from Quarter 1 2022 until the most recent quarter.

This adjustment better reflects the trend in non-seasonally adjusted inputs data compared with the previous seasonally adjusted model. These estimates will be subject to revision as new data become available.

For total UK public services, estimates of inputs are made up of aggregated series for individual public services, weighted together by their relative share of total expenditure on public services in current price (expenditure weight).

Inputs are composed of labour, goods and services, social transfers in kind, and consumption of fixed capital. Expenditure data, used to estimate most inputs growth, are taken from our [GDP quarterly national accounts, UK: April to June 2024 bulletin](#).

Output reflects the total of the general government final consumption expenditure (GGFCE). The quarterly national accounts provide estimates of government output, based on direct measures, where they are available, and indirect measures, where they are not.

Public service productivity uses the expenditure of public services, which defines general government final consumption expenditure (GGFCE). While including services where employees are central or local government, it also includes publicly funded private providers. This differs from the public sector, which extends to include public corporations but excludes publicly funded, private providers to avoid double-counting.

Public service productivity is measured differently to labour productivity and multi-factor productivity and is not directly comparable. It reflects the volume of services delivered to end users relative to the volume of total inputs (which comprise labour, intermediate consumption, and capital). The measure is dominated by healthcare and education services because of their relative size.

These estimates should be considered a first estimate on public service productivity. The Office for National Statistics (ONS), together with HM Treasury and other government departments, will continue to develop and improve its methods, as part of the [Public services productivity review](#). This may lead to revisions of these preliminary estimates.

## 11 . Related links

### [Productivity flash estimate and overview, UK: July to September 2024 and April to June 2024](#)

Statistical Bulletin | Released 15 November 2024

Productivity flash estimates for Quarter 3 (July to Sept) 2024, based on the GDP first quarterly estimate and labour market statistics, and productivity overview for Quarter 2 (Apr to June) 2024.

### [Public Sector Management Practices Survey pilot, UK: 2023](#)

Article | Released 21 October 2024

The Public Sector Management Practices Survey (PSMPS) is a new survey of management practices in public sector organisations. These are official statistics in development.

### [GDP quarterly national accounts, UK: April to June 2024](#)

Statistical Bulletin | Released 30 September 2024

Revised quarterly estimate of gross domestic product (GDP) for the UK. Uses additional data to provide a more precise indication of economic growth than the first estimate.

### [Public service productivity: total, UK, 2021](#)

Article | Released 26 March 2024

Updated measures of output, inputs, and productivity for UK public services between 1997 and 2021: service area breakdown, quality adjustment, latest revisions.

### [Improved methods for total public service productivity: total, UK, 2021](#)

Methodology | Last revised 8 March 2024

Explaining data and methodological improvements to education and healthcare inputs, output and quality adjustment, used in the upcoming public service productivity article.

### [Public Services Productivity Review progress report: February 2024](#)

Article | Released 20 February 2024

Update on progress toward making improvements to public services productivity measures as part of the Public Services Productivity Review.

## 12 . Cite this bulletin

Office for National Statistics (ONS), released 19 November 2024, ONS website, statistical bulletin, [Public service productivity, quarterly, UK: April to June 2024](#)