Office for National Statistics

Statistical bulletin

Public service productivity, quarterly, UK: January to March 2023

Experimental estimates for UK total public service productivity, inputs and output to provide a short-term, timely indicator of the future path of the annual productivity estimates.

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Next release:
To be announced

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1 . Main points

- Public service productivity has remained fairly stable since Quarter 2 (Apr to June) 2021
- Public service productivity rose by 0.6% in Quarter 1 (Jan to March) 2023 compared with the previous quarter, following an increase of 0.7% in the previous quarter.
- Public service productivity rose by 0.9% in Quarter 1 2023 compared with the same quarter a year ago.
- Experimental annual estimates suggest that public service productivity rose by 1.7% in 2022, following an increase of 7.3% in 2021.

The estimates are not a measure of the productivity of an individual worker within the public sector but 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 health and education services because of their relative size. Caution should be used when comparing the latest estimates with pre-pandemic years, as the structure of inputs and output changed in response to the coronavirus (COVID-19) pandemic.

2 . About these estimates

This release presents experimental estimates for total public service productivity, inputs and output. This provides a short-term, timely indicator of the future path for the National Statistics estimates of total public service productivity, which are produced with a two-year lag.

Estimates of productivity, inputs and output up to 2020 are reported on an annual basis and use data from our Public service productivity, total, UK, 2020 article. Further information about the annual National Statistics release can be found in our Public service productivity: total, UK Quality and Methodology Information (QMI).

Experimental estimates differ from the annual estimates, as described in Section 9 of our Sources and methods for public service productivity estimates. Importantly, experimental estimates do not include changes in quality adjustment. For more information on our methods, see Section 7: Measuring the data.

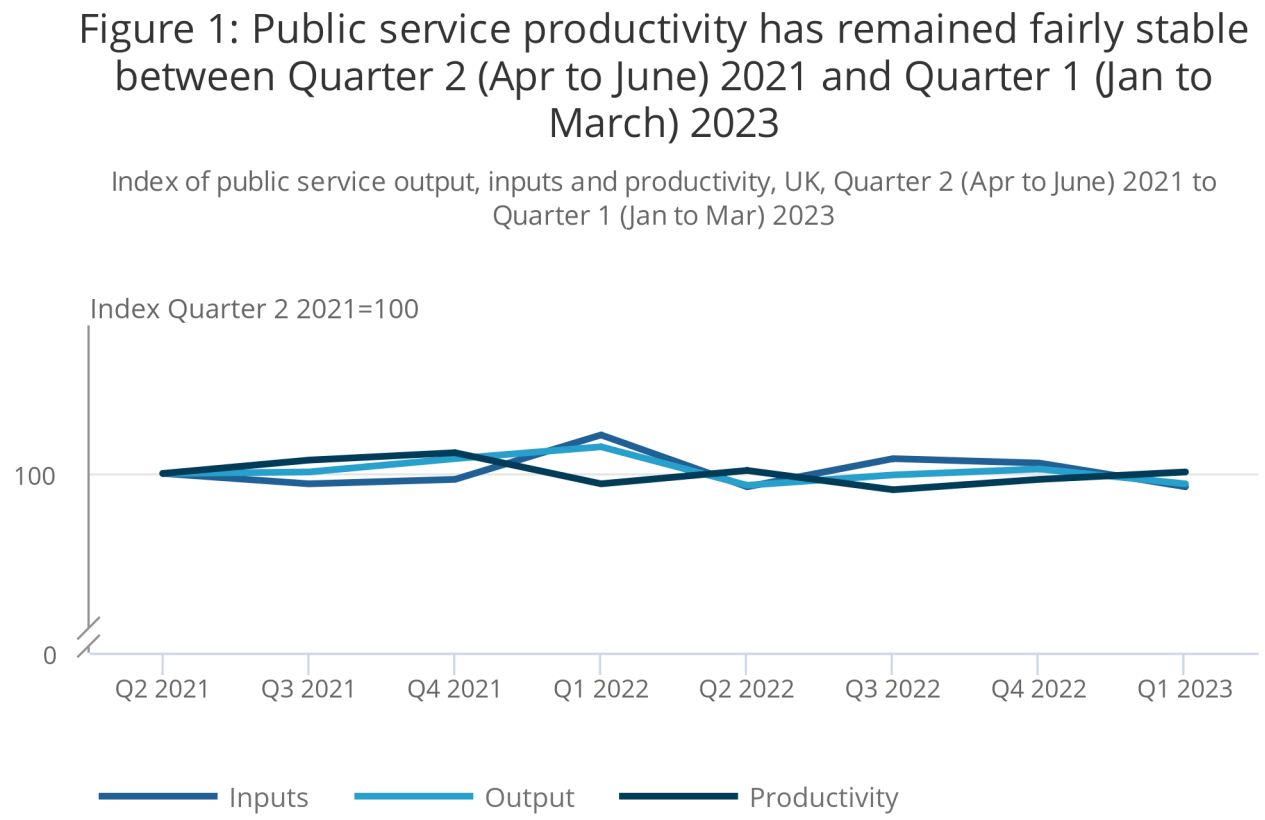
Unless stated otherwise, all growth rates reported in this article are based on the index 1997=100.

3 . Quarterly productivity estimates

Since Quarter 2 (Apr to June) 2021 public service productivity has remained relatively stable. Inputs are 0.9% smaller than they were in Quarter 2 2021 and output 0.7% smaller. Productivity has increased by 0.1% since Quarter 2 2021.

Figure 1: Public service productivity has remained fairly stable between Quarter 2 (Apr to June) 2021 and Quarter 1 (Jan to March) 2023

Index of public service output, inputs and productivity, UK, Quarter 2 (Apr to June) 2021 to Quarter 1 (Jan to Mar) 2023



Source: Office for National Statistics

Notes:

1. Experimental quarterly estimates of productivity are indirectly seasonally adjusted, calculated using seasonally adjusted inputs and seasonally adjusted output.

This, however, hides a degree of shorter-term volatility. For example, productivity increased by 0.6% in Quarter 1 2023 compared with the previous quarter. This is because of inputs falling by a proportionately larger amount than output (negative 1.5%, compared with negative 1.0%). Quarter-on-quarter estimates should be interpreted with caution because of the volatile nature of quarter-on-quarter inputs estimation.

Both inputs and output fell for:

- healthcare
- military defence
- central government

Social protection saw an increase in both inputs and output.

An increase in inputs and a decrease in output was seen for:

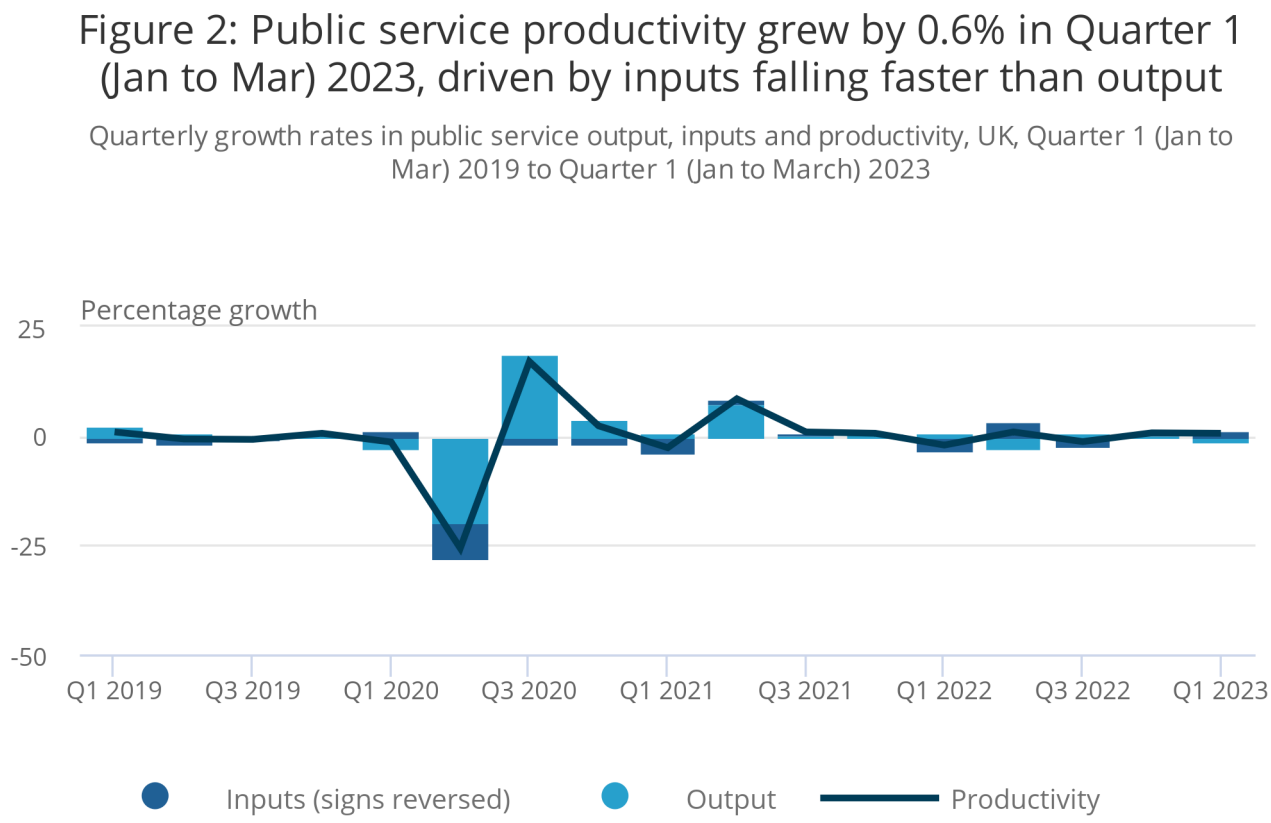
- education,
- justice and fire
- local government

There is some indication that falls in education and health output are linked to the industrial action taking place in this quarter. However, we are not able to isolate the impact of these strikes from other factors affecting these sectors.

Military defence, central 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. The "output-equals-inputs" convention states that output volume is assumed to be equal to the volume of inputs used to create them. In this case, productivity is constant.

Figure 2: Public service productivity grew by 0.6% in Quarter 1 (Jan to Mar) 2023, driven by inputs falling faster than output

Quarterly growth rates in public service output, inputs and productivity, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 (Jan to March) 2023



Source: Office for National Statistics

Notes:

1. Experimental quarterly estimates of productivity are indirectly seasonally adjusted, calculated using seasonally adjusted inputs and seasonally adjusted output.
2. This chart inverts the growth rates of inputs.

4 . Annual productivity estimates

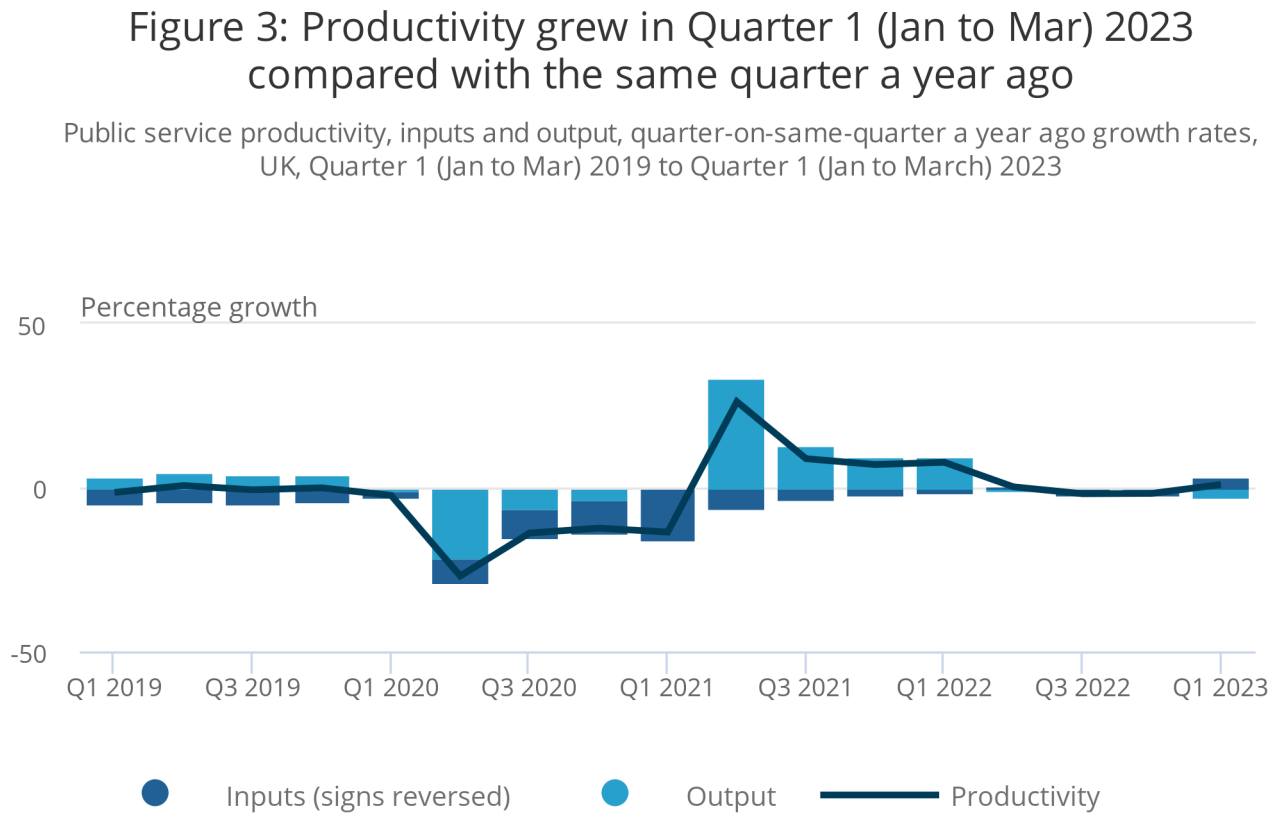
Productivity for total public services was 0.9% higher in Quarter 1 (Jan to Mar) 2023, compared with the same quarter a year ago. Over this period, inputs decreased by 3.4%, while output decreased by 2.5%.

The main services causing the decrease in this quarter's inputs were:

- healthcare
- military defence
- central government

Figure 3: Productivity grew in Quarter 1 (Jan to Mar) 2023 compared with the same quarter a year ago

Public service productivity, inputs and output, quarter-on-same-quarter a year ago growth rates, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 (Jan to March) 2023



Source: Office for National Statistics

Notes:

1. Experimental quarterly estimates of productivity are indirectly seasonally adjusted, calculated using seasonally adjusted inputs and seasonally adjusted output.

2. This chart inverts the growth rates of inputs.

Please note that these estimates are subject to revisions because of improvements to source data and methodology. For more information on the sources of revisions, see Section 3 of our Public service productivity: quarterly, UK, July to September 2019 article.

In general, because changes in productivity represent long-term structural trends, we advise looking at changes over a longer period of time. This helps to smooth any short-term fluctuations. Comparing quarters with the same quarters a year ago provides a rolling annual estimate of productivity and is therefore a good indication of the future path of the National Statistics annual estimates. These estimates include additional data sources that are less timely than those used for quarterly estimates.

Figure 4 places the inputs, output, and productivity in an annual context over a longer time series, combining the data from our National Statistic with experimental data. Data from 2021 onwards are experimental, while estimates between 1997 and 2020 are instead taken from our latest annual Public service productivity datasets.

Experimental estimates suggest that annual total public service productivity rose by 1.7% in 2022, reflected by an increase of output by 1.9% compared with a smaller increase in inputs of 0.3%. This followed an increase in productivity of 7.3% in 2021 and an estimated fall of 15.2% in 2020.

In 2020 inputs rose, reflecting the extra resources provided to the public services to deal with the coronavirus (COVID-19) 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. In 2021 and 2022 output grew faster than inputs, as fewer restrictions were present and new services such as test, trace and vaccinations were introduced.

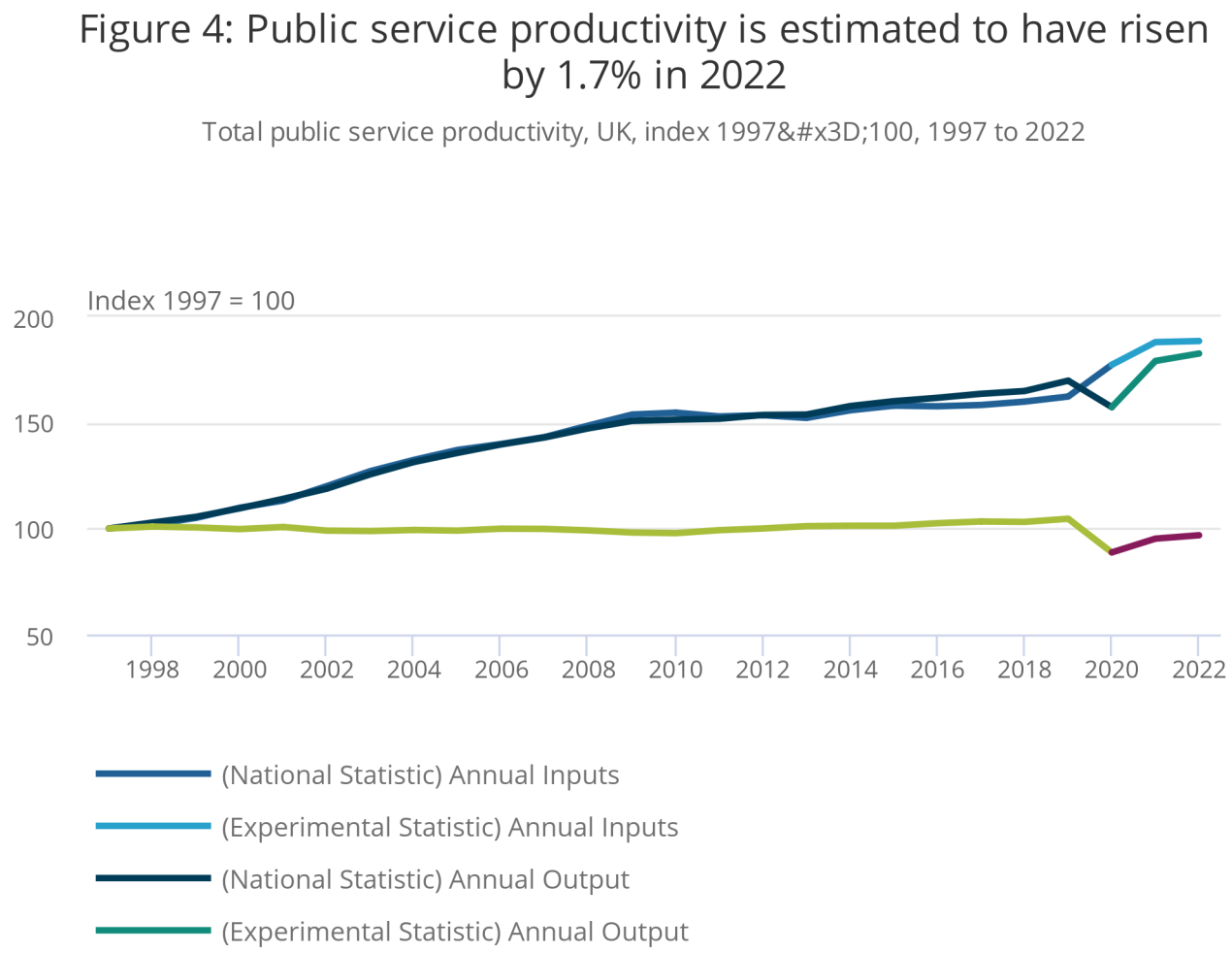
It is worth noting, the pandemic caused widespread cost pressures and disruption to public service outputs, including:

- new safety measures
- urgent healthcare treatments taking priority
- remote consultations
- remote learning within education
- support for care homes
- restrictions to courts and tribunals

Therefore, comparing pre and post pandemic productivity is difficult and estimates of this nature should be treated with caution.

Figure 4: Public service productivity is estimated to have risen by 1.7% in 2022

Total public service productivity, UK, index 1997=100, 1997 to 2022



Source: Office for National Statistics

Notes:

1. Estimates for 2021 and 2022 are experimental statistics.
2. Estimates from 1997 to 2020 are National Statistics.

Output estimates use data on changes in the quantity of various services delivered, but do not include data on changes in the relative quality of these services. Data including quality adjustment for 2021 will be published with a two-year lag, as many of these quality factors require data collected with a lag.

These experimental statistics should be treated with caution until our Public service productivity dataset annual estimates are available.

5 . Public service productivity: quarterly, UK, January to March 2023 data

Public service productivity: quarterly, UK, January to March 2023
Dataset | Released 10 July 2023
Experimental statistics on UK public service productivity. Includes estimates of inputs, output, productivity, and revisions compared with estimates from the previous quarter.

6 . Glossary

Public services

These are services delivered by 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.

Direct output measurement

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

Quality adjustment

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

Classification of the Functions of Government

The Classification of the Functions of Government (COFOG) is the structure used to classify government activities. It is defined by the United Nations Statistics Division.

Service area

The way we refer to the breakdown of public services into nine areas, closely following COFOG.

Intermediate inputs

Also referred to as "goods and services", or "intermediate consumption" (the UK 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.

Deflator

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

7 . Measuring the data

Data sources

Different sources and methods are used to produce the experimental quarterly statistics and the National Statistics.

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

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

Data sources and methods differ from the annual publication, depending on data availability and appropriateness 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).

The National Statistics also uses different deflators to those used in this release to estimate those volumes of inputs. As such, estimates are not directly comparable between the quarterly and the annual publications.

This release does not provide adjustments for the quality in public service output, whereas the National Statistics does for some public output.

Measuring public service productivity

Productivity is calculated by dividing output by the respective inputs used to produce it. Productivity will, therefore, 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, showing the cumulative trend over time.

For total UK public services, estimates of output and inputs are made up of aggregated series for individual public services, weighted together by their relative share of total expenditure on public services (expenditure weight). Inputs are composed of labour, goods and services, and consumption of fixed capital.

Expenditure data, used to estimate most inputs growth, are taken from our Gross domestic product (GDP) quarterly national accounts, UK: January to March 2023 bulletin. The quarterly national accounts also provide estimates of government output, based on direct measures where they are available and indirect measures where they are not.

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 (that comprise of labour, intermediate consumption, and capital). The measure is dominated by health and education services because of their relative size.

The estimates are not a measure of the productivity or efficiency of an individual worker within the public sector. For instance, while children within school received fewer hours of education at the start of the coronavirus (COVID-19) pandemic, a teacher may still have had to undertake additional work to modify lesson plans for remote learning.

Similarly, the resource required to deliver some services within the NHS may have increased because of additional restrictions, such as the use of personal protective equipment (PPE), but the overall volume of NHS services may still have declined.

Public service productivity within this statistic only focusses on the education received by end users, or the healthcare services received by end users, rather than the productivity of an individual teacher or an individual nurse to deliver a discrete task.

These estimates should be considered a first estimate on public service productivity. The Office for National Statistics (ONS) will continue to develop and improve its methods, which may lead to revisions of these preliminary estimates.

8 . Related links

Productivity overview, UK: January to March 2023
Article | Released 7 July 2023
The main findings from official statistics and analysis of UK productivity, presenting a summary of recent developments.

Public service productivity: quarterly, UK, October to December 2019
Article | Released 7 April 2020
Experimental estimates for UK total public service productivity, inputs and output to provide a short-term, timely indicator of the future path of the annual productivity estimates.

Improved methods for total public service productivity: total, UK, 2019
Methodology | Last revised 20 January 2022
Explaining methodological improvements to education quality adjustment, children's social care, and healthcare output, used in the upcoming public service productivity article.

Public service productivity, healthcare, England: financial year ending 2021
Article | Released 29 March 2023
Estimates of output, inputs and productivity for public service healthcare in England.

Public service productivity, adult social care, England: financial year ending 2021
Article | Released 25 July 2022
Trends in publicly funded adult social care inputs, quantity and quality of output, and productivity in England, between financial year ending 1997 and financial year ending 2021.

Sources and methods for public service productivity estimates
Methodology | Last revised 11 May 2022
Sources and methods information for the public service productivity: total, UK publication, detailing the main concepts, output and inputs measures by service area.

International comparisons of the measurement of non-market output during the COVID-19 pandemic
Methodology | Last revised 21 February 2022
A joint Office for National Statistics – Organisation for Economic Co-operation and Development exploration of international differences in the methodologies used to measure non-market output and analysis of the implications for international comparisons of gross domestic product during the coronavirus (COVID-19) pandemic.

9 . Cite this bulletin

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