

Article

Public service productivity, healthcare, England: financial year ending 2022

Estimates of productivity, output and inputs for public service healthcare in England.



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1 . Main points

- Public service healthcare productivity increased by 20.3% in the financial year ending (FYE) 2022, following a fall of 22.4% in FYE 2021, reflecting an increase in output while inputs remained essentially constant.
- Quality adjusted output increased by 19.6% in FYE 2022, while non-quality adjusted output increased by 20.6%.
- Total inputs fell by 0.6% in FYE 2022, as expenditure on goods and services to support healthcare services in England through the coronavirus (COVID-19) pandemic fell slightly, following a large spike of 24.2% in FYE 2021.
- Following the large fall in productivity in FYE 2021 and “bounce-back” in FYE 2022, public service healthcare productivity was 6.6% lower in FYE 2022 than in FYE 2020, while non-quality adjusted productivity was 6.3% lower.

2 . The second year impact of the coronavirus pandemic on public service healthcare productivity

This article focuses on the productivity, output and inputs of public service healthcare for England in the financial year April 2021 to March 2022 (FYE 2022). Updated figures for public service healthcare productivity for the UK in 2021 will be published in our [Public service productivity: total, UK, 2021 article to be released on 26 March 2024](#).

This is the second annual report published by the Office for National Statistics (ONS) on healthcare productivity estimates (based on financial year in England) where the findings are affected by the coronavirus (COVID-19) pandemic. As reported in our [previous bulletin](#), the pandemic caused widespread pressure and disruption, including new safety measures, urgent treatments taking priority, remote consultations and delayed diagnoses. The response to COVID-19 led to fundamental changes in the delivery of services. Productivity estimates have reacted accordingly, but comparisons over time are complex as it is difficult to consider how the present model would appear if the coronavirus pandemic had not occurred.

This article presents the first wave of improvements to the annual healthcare productivity measure since the beginning of the [Public Services Productivity Review](#). Changes reflect an improvement to measures of quantity output, quality adjustment and inputs, as described in our article [Improved methods for total public service productivity: total, UK, 2021](#) published on 8 March 2024.

The estimates presented in this article are not comparable with the [experimental nowcast measures of UK public service healthcare productivity in 2021 and 2022](#) that we published in November 2023. The experimental nowcasts relate to healthcare productivity for the UK and are on a calendar year basis, whereas the [national statistics](#) in this bulletin relate to England only and are on a financial year basis. The nowcast measures continue to be under methodological review and subject to improvement and revision.

We will continue to develop and improve our methods for estimating healthcare inputs, output and quality adjustment, and more data might become available in the future. This may lead to revisions of these estimates.

In reading this article, please consider that these estimates are not labour productivity for public services. They instead reflect the volume of services delivered to users relative to the volume of total inputs, which include labour, intermediate consumption (agency staff are included here as they are not direct employees of the health service) and capital. More details for each component of productivity are presented in [Section 9: Data sources and quality](#).

Note that, in this article, we refer to “quality” and “non-quality” measures. Where not otherwise stated, “output” and “productivity” refer to [quality-adjusted measures](#), otherwise we specify that these are non-quality adjusted.

3 . Healthcare productivity

Public service healthcare productivity is estimated by comparing growth in the total quantity of healthcare output provided (adjusted for quality where possible) with growth in the total quantity of inputs used, using inflation-adjusted volume measures. If output growth exceeds input growth, productivity increases, meaning that more output is being produced for each unit of input. Conversely, if input growth exceeds output growth, then productivity will fall.

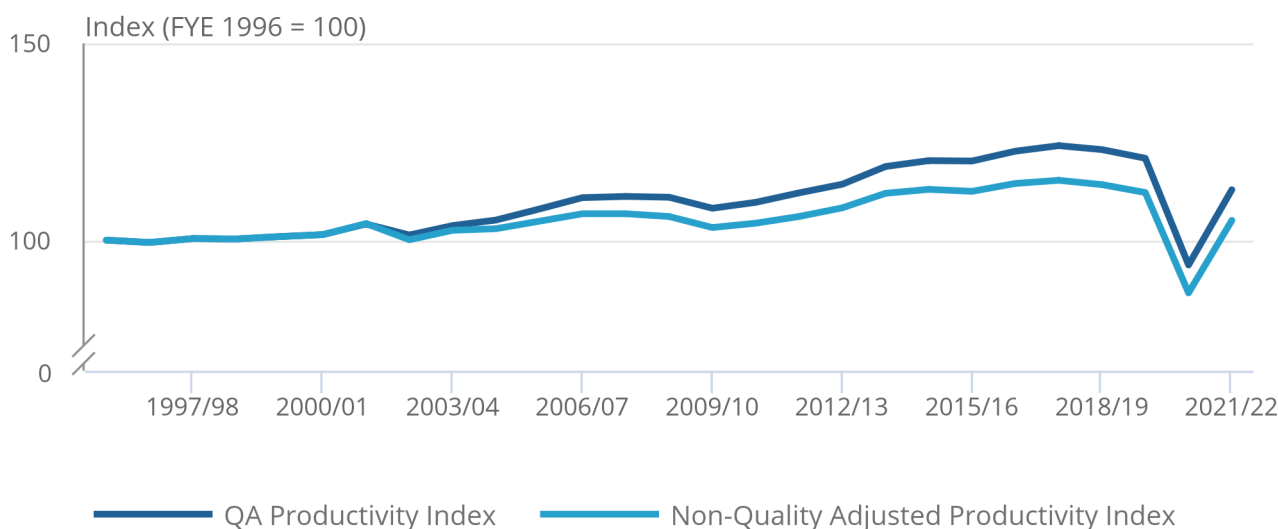
Healthcare productivity increased by 20.3% in the financial year ending (FYE) 2022. This large increase in productivity follows the sharp fall seen in FYE 2021. Notwithstanding the growth in FYE 2022, productivity has not yet recovered to its pre-coronavirus (COVID-19) pandemic level, remaining 6.6% lower than in FYE 2020. Non-quality adjusted healthcare productivity increased by a slightly larger 21.3% in FYE 2022, as the quality adjustment had a negative impact on healthcare output.

Figure 1: Public service healthcare quality and non-quality adjusted productivity increased substantially in FYE 2022

Public service healthcare quality and quantity productivity indices, England, financial year ending (FYE) 1996 to FYE 2022

Figure 1: Public service healthcare quality and non-quality adjusted productivity increased substantially in FYE 2022

Public service healthcare quality and quantity productivity indices, England, financial year ending (FYE) 1996 to FYE 2022



Source: Public service productivity from the Office for National Statistics

Notes:

1. Quality adjustment (QA) in healthcare was introduced from FYE 2002.
2. Quality growth may not match the difference in QA and quantity output growth because of rounding.

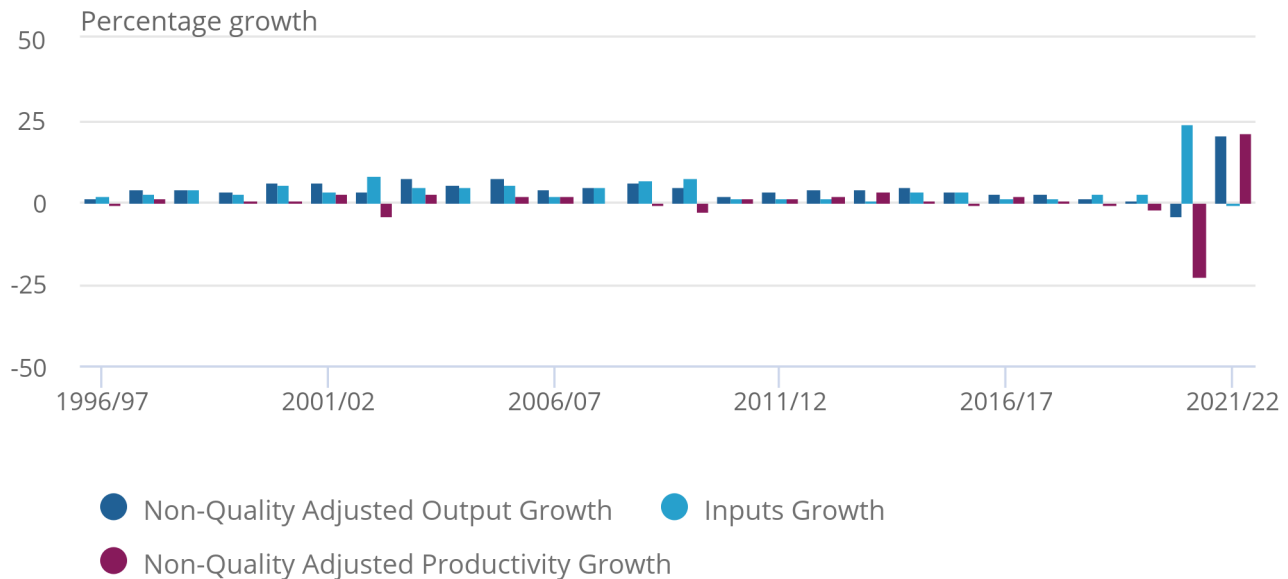
The increase in healthcare productivity in FYE 2022 reflects an increase in output while inputs remained essentially constant. This largely reflects the resumption of services that were previously impacted by the coronavirus pandemic, as explained in the following sections.

Figure 2: Non-quality adjusted healthcare productivity increased by 21.3% in FYE 2022

Annual change in public service healthcare non-quality adjusted output, inputs and non-quality adjusted productivity growth, England, financial year ending (FYE) 1997 to FYE 2022

Figure 2: Non-quality adjusted healthcare productivity increased by 21.3% in FYE 2022

Annual change in public service healthcare non-quality adjusted output, inputs and non-quality adjusted productivity growth, England, financial year ending (FYE) 1997 to FYE 2022



Source: Public service productivity from the Office for National Statistics

Notes:

1. Growth of components may not sum to overall growth because of rounding.

4 . Healthcare output

Hospital and community healthcare services (HCHS), the largest component of public service healthcare output, grew by 15.9% in the financial year ending (FYE) 2022, following a fall of 14.8% in FYE 2021.

This is partly a result of a “bounce-back” in the volume of services that were negatively affected during the coronavirus (COVID-19) pandemic in FYE 2021, such as elective treatment and outpatient consultations that were delayed or cancelled. This reflects HCHS volumes broadly returning to pre-coronavirus levels where output is now 1.3% below FYE 2020 estimates.

Primary care services also showed a positive trend, with output growing by 40.2% in FYE 2022 compared with FYE 2021, to reach a level 5.1% higher than FYE 2020 estimates. This was driven by substantial “bounce-back” growth in dental services and general practice output, as shown by a fall of 25.1% in FYE 2021.

Publicly funded healthcare output from non-NHS providers fell by 4.8% in FYE 2022, following an increase of 18.9% in FYE 2021. Despite this, volume levels were still higher than those seen before FYE 2021.

Community prescribing, the smallest component of output, grew by 5.1% in FYE 2022. While this is below its average annual growth rate of 6.6% since FYE 1997, it still represents the fastest growth since FYE 2017.

Combining these four healthcare components, non-quality adjusted healthcare output grew by 14.8% in FYE 2022.

Additionally, [COVID-19 related testing, tracing and vaccination services](#) were introduced as an output in this data series in FYE 2021. The volume of output from these services approximately doubled in FYE 2022, following increases in symptomatic testing, the establishment of mass asymptomatic testing, and the rollout of the mass vaccination campaign. Accounting for these services increases healthcare output growth in FYE 2022 from 14.8% to 20.6%, having also contributed to slowing the overall fall in healthcare output in FYE 2021 from 10.8% to 4.1%.

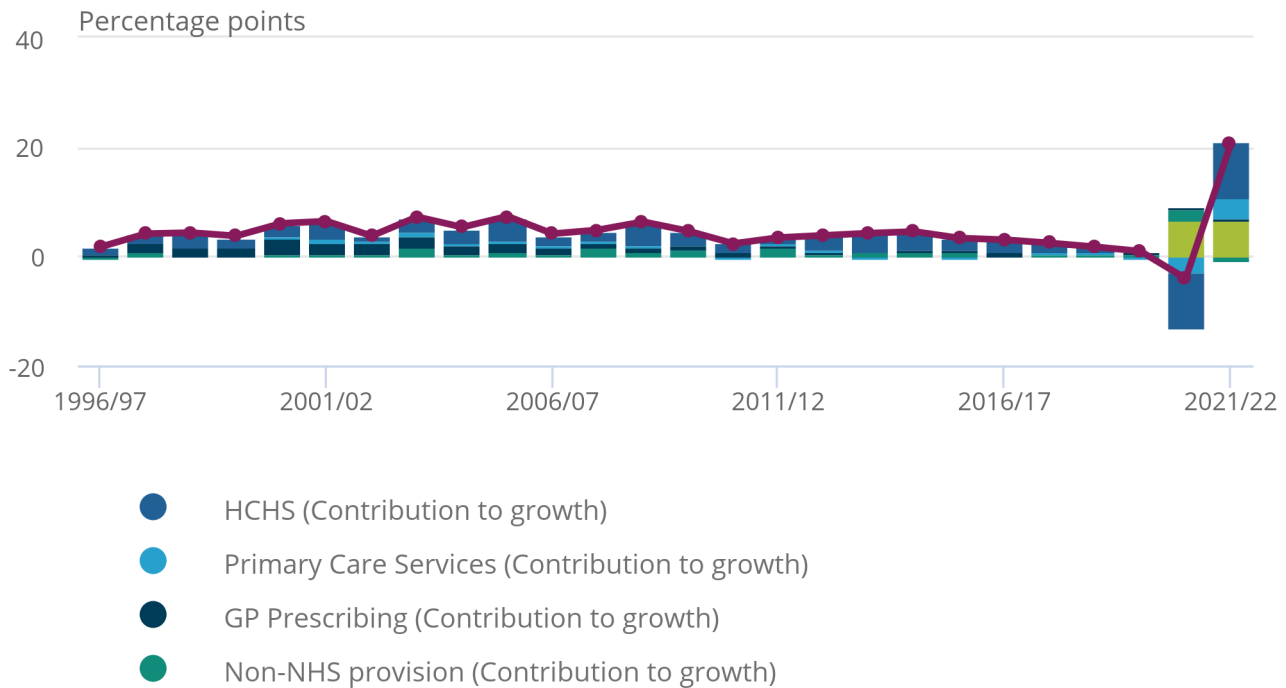
In addition to the annual growth rates just described, Figure 3 shows the contribution to growth of each component of the non-quality adjusted healthcare output.

Figure 3: Public service healthcare non-quality adjusted output grew strongly in FYE 2022

Contributions to annual change in public service healthcare non-quality adjusted output volumes by component, England, financial year ending (FYE) 1997 to FYE 2022

Figure 3: Public service healthcare non-quality adjusted output grew strongly in FYE 2022

Contributions to annual change in public service healthcare non-quality adjusted output volumes by component, England, financial year ending (FYE) 1997 to FYE 2022



Source: Public service productivity from the Office for National Statistics

Notes:

1. HCHS refers to Hospital and Community Health Services.
2. Primary Care Services was called Family Health Services until [the publication](#) in 2020.
3. COVID-19 response refers to testing, tracing and vaccination services.
4. The sum of components of quantity output may not equal total output because of rounding.
5. The contribution to growth for each component depends on both its growth rate and its weight in total output.
6. Excludes quality adjustment.

5 . Healthcare output quality

Quality adjustment reduced healthcare output growth by 0.9 percentage points in the financial year ending (FYE) 2022. This compares with quality adjustment having increased healthcare output growth by 0.4 percentage points in the previous year.

This fall was driven by decreases in reported patient experience, most notably for GP and dental services. During FYE 2022 where primary care services increased by 40.2%, patient experience surveys reported that, among other things, patients found it more difficult than in previous years to contact their GP practices and were less satisfied with the appointment options offered to them, although we cannot say whether this was the main cause of changes in overall patient satisfaction.

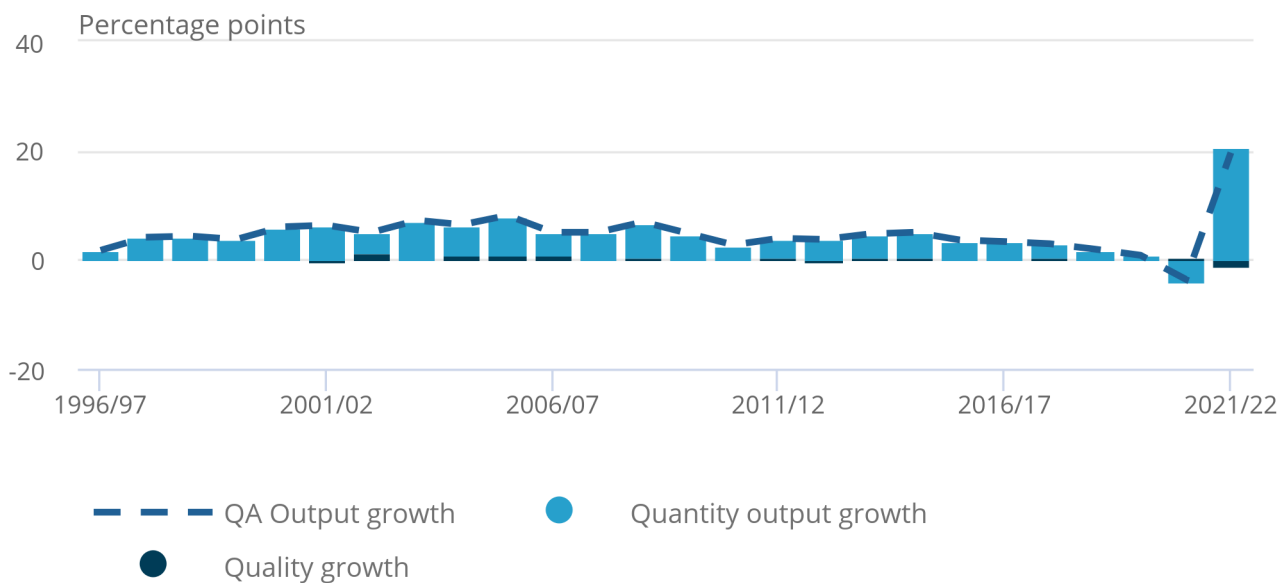
After adjusting for quality, healthcare output grew by 19.6% in FYE 2022; this is the largest increase recorded in our data time series, which began in FYE 1996.

Figure 4: Quality adjustment had a negative impact on the output in FYE 2022

Public service healthcare quantity and quality adjusted output growth rates, England, financial year ending (FYE) 1997 to FYE 2022

Figure 4: Quality adjustment had a negative impact on the output in FYE 2022

Public service healthcare quantity and quality adjusted output growth rates, England, financial year ending (FYE) 1997 to FYE 2022



Source: Public service productivity from the Office for National Statistics

Notes:

1. Quality adjustment (QA) in healthcare was introduced from FYE 2002.
2. Quality growth may not match the difference in QA and quantity output growth because of rounding.

6 . Healthcare inputs

Total inputs for healthcare fell by 0.6% in England in the financial year ending (FYE) 2022. This is the first fall of inputs since the start of the data time series in FYE 1996, following a record growth of 24.2% in FYE 2021.

The contraction in FYE 2022 was primarily driven by a decrease in intermediate consumption of goods and services, the largest component of inputs by expenditure share, which fell by 4.1%. This follows the largest growth seen within the data time series, of 46.9% in FYE 2021, because of additional operational procurement in response to the coronavirus (COVID-19) pandemic. This included items such as additional personal protective equipment, and goods and services associated with the operation of NHS Test and Trace. Labour and capital inputs increased by 3.7% and 0.5%, respectively.

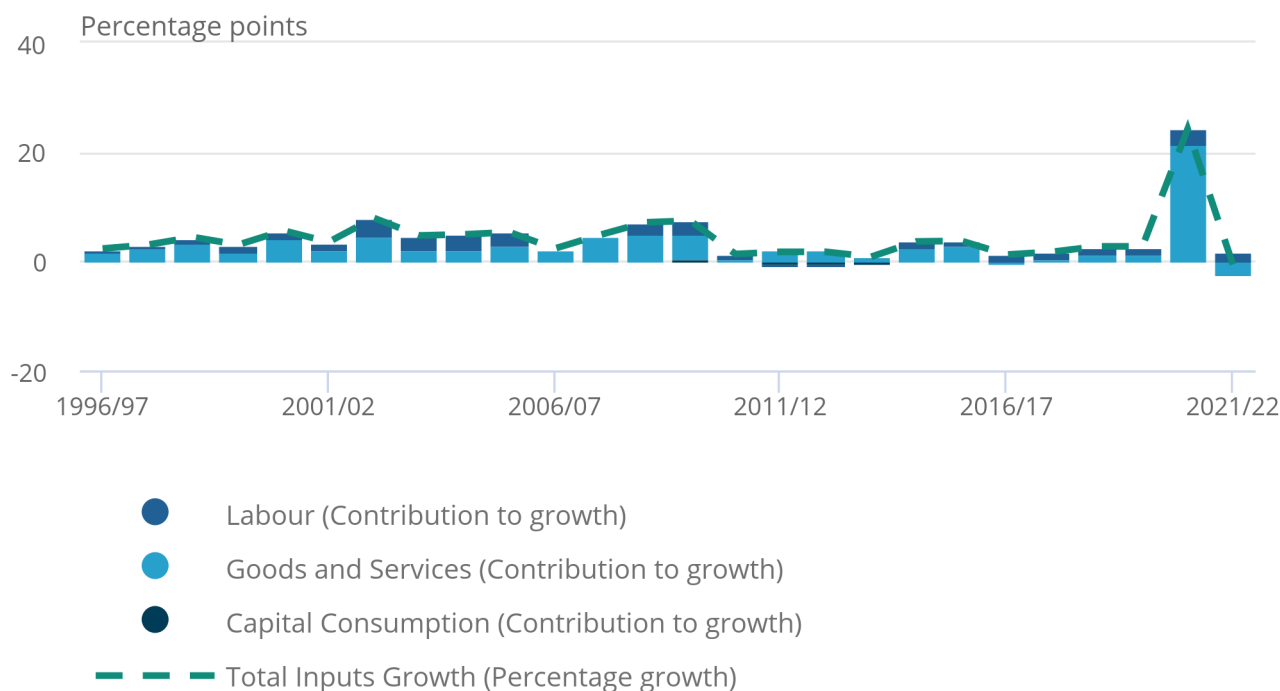
The contribution to annual change in inputs by component is shown in Figure 5. Looking at the entire data series on inputs, the compound annual growth rate (CAGR) is equal to 3.6% between FYE 1997 and FYE 2020, falling to negative 0.6% between FYE 2021 and FYE 2022. This method, which is used to smooth out the volatile nature of annual growth rates by taking an average over several years, enables users to better visualise the impact of the coronavirus pandemic on the components considered.

Figure 5: Healthcare inputs saw a fall of 0.6% in FYE 2022

Contributions to annual change in public service healthcare input volumes by component, England, financial year ending (FYE) 1997 to FYE 2022

Figure 5: Healthcare inputs saw a fall of 0.6% in FYE 2022

Contributions to annual change in public service healthcare input volumes by component, England, financial year ending (FYE) 1997 to FYE 2022



Source: Public service productivity from the Office for National Statistics

Notes:

1. Figure 5 shows the inputs growth by component after weighting by their share of total expenditure.
2. Contributions to growth may not sum to overall growth because of rounding.
3. As the data used do not include the number of overtime hours worked, general increases in the amount of overtime worked are not reflected in the inputs.

7 . Public service productivity, healthcare, England data

[Public service productivity estimates: healthcare, England](#)

Dataset | Released 22 March 2024

Public service healthcare growth rates and indices for inputs, quality and non-quality adjusted output and productivity, totals and components. England, financial years ending 1996 to 2022.

8 . Glossary

Public service healthcare productivity

Productivity is a measure of the amount of service provided (which can be either quality-adjusted or non-quality-adjusted output) for the quantity of inputs used. “Public service” relates to the fact that all healthcare services paid by the public sector are included in this measure.

Quantity output

The quantity of output is the amount of healthcare services provided and is mostly measured using the number of healthcare activities performed, weighted by the cost of each activity.

Quality adjustment

In line with the [recommendations of the Atkinson Review \(PDF, 1.05MB\)](#), a quality adjustment is applied to the estimate of healthcare quantity output to control for the success of the service in meeting selected outcomes. For more information, see our report, [Quality adjustment of public service health output: current method \(PDF 153KB\)](#).

Inputs

Inputs are resources used to produce healthcare services. Inputs are different from expenditure and instead are expressed in volume terms. This means that an increase in staff pay will not increase inputs, but an increase in staff numbers will. Inputs can be measured directly, such as by cost-weighted staff numbers or indirectly, using appropriately deflated expenditure.

Weighting

Weighting refers to the relative importance of changes in individual inputs or output components to changes in the overall inputs or output index. The weight assigned is usually based on cost and so an increase of one high-cost activity, such as a hip replacement, will have a greater effect on output growth than one low-cost activity, such as an outpatient consultation.

9 . Data sources and quality

Quality and methodology

Improvements on healthcare quantity output, quality adjustment and inputs have been included in this publication.

For quantity output we improved the following components, which form part of the primary care output:

- dental services
- ophthalmic services
- NHS 111 and 111 online
- preventive care (public health)

For quality output we have added changes to:

- GP outcomes quality adjustment
- patient experience quality adjustment

In addition, a review of the inputs, specifically the value of goods and services used in the provision of healthcare activities (intermediate consumption), showed that we are using the best existing data. Therefore, only small improvements were required, such as the inclusion of legal and audit services. We have also updated the weights used to calculate labour inputs, to make them more aligned with our measure of full-time equivalent staff. The overall impact of these changes is minimal.

More information can be found in our article [Improved methods for total public service productivity: total, UK, 2021](#).

Furthermore, in reading these statistics, these aspects should be considered.

Inputs:

- goods and services inputs since financial year ending (FYE) 2021 include, alongside [the procurement of typical goods and services](#), measures for additional operational procurement in response to the coronavirus (COVID-19) pandemic, such as additional personal protective equipment, and goods and services associated with the operation of NHS Test and Trace
- labour inputs consider full-time equivalent staff numbers, including all [NHS bank staff](#); agency staff (including staff working for outsourced services such as cleaning) are included in goods and services as they are not direct employees of the health service
- we use appropriate deflators to obtain an estimate of input volume growth; since FYE 2019, a specific deflator for agency staff expenditure has been produced by the Department of Health and Social Care within the [NHS Cost Inflation Index](#)

Output:

- since FYE 2021, for output we have included, alongside the measures used in the previous years, [NHS Test and Trace and the COVID-19 vaccination](#), applying the same methods established for the UK National Accounts; these were new health services established to manage and mitigate the impact of COVID-19 and represent a sizeable contribution to public service healthcare output in FYE 2021
- we have used alternative data sources to estimate output growth for some hospital and community health services where this was not possible using our regular data sources, as we did with FYE 2021; more information can be found in our article [Improved methods for total public service productivity: total, UK, 2021](#)

Quality adjustment:

- as in previous estimates, a [quality adjustment \(PDF, 152KB\)](#) is applied to the quantity output index where a positive (negative) quality adjustment indicates that the quality of healthcare services provided has improved (diminished), as defined by the selection of indicators used in the quality adjustment

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in our [Public service productivity: total, UK QMI](#).

Acknowledgements

The authors would like to thank colleagues from the University of York, the Department of Health and Social Care, and NHS England, for the provision of quality adjustment data and comments.

10 . Related links

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

Article | 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 service productivity, UK: 1997 to 2022](#)

Article | Released 17 November 2023

An overview of UK annual public service productivity between 1997 and 2020, and a new experimental measure for the path of annual UK public service productivity in 2021 and 2022.

[Public service productivity: total, UK, 2020](#)

Article | Released 28 April 2023

Updated measures of output, inputs and productivity for UK public services between 1997 and 2020: service area breakdown, quality adjustment, latest revisions.

[Measuring the economic output of COVID-19 testing, tracing and vaccinations: April 2020 to June 2021](#)

Methodology | Last revised 30 September 2021

An overview of our approach to measuring coronavirus (COVID-19) testing, tracing and vaccination services in government output.

[Public service productivity: healthcare: QMI](#)

Methodology | Last revised 2 February 2021

Quality and methodology information on public service healthcare productivity.

[Methodological developments to public service productivity, healthcare: 2021 update](#)

Methodology | Last revised 18 January 2021

Methodological changes to public service healthcare productivity, including improved measures of primary care output.

11 . Cite this article

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