

Public sector productivity: Mapping the metrics



2025

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Executive summary

During 2024 and 2025, the Royal Society of Edinburgh (RSE) investigated Scotland's productivity challenges through a series of events, some organised in partnership with other organisations. In the first instance the RSE considered the overall challenges in the UK and dived deeper into the factors that affect Scotland's performance, followed by an analysis of the micro dimension, asking how we can improve productivity within our SMEs. The last event in the series took the form of a roundtable organised in collaboration with the Office for National Statistics and the Scottish Leaders Forum. The event focused on exploring how to measure public sector productivity in a manner that helps guide policy decisions and ultimately improves public sector efficiency.

At the centre of these discussions stood the Office for National Statistics' recently published two-year review of public service measures and the proposed 120 recommendations to deliver a world-leading set of metrics for the whole of the UK.

Participants reflected on the opportunities for improving public service productivity by designing policies in response to a set of cross-sector metrics at the macro level. However, they also noted that there are significant challenges associated with identifying universally comparable productivity metrics for such a broad base of services. Moreover, there are regional differences to account, both in terms of metrics used, but also in what is valued in terms of outcomes for public services in different parts of the UK.

Introduction

1. During 2024 and 2025, the Royal Society of Edinburgh investigated Scotland's productivity challenges. We first considered the overall challenges in the UK and dived deeper into the factors that affect Scotland's performance, then we turned to the micro dimensions, looking at the state of Scottish businesses and how we can improve productivity within our SMEs.
2. For the final chapter of our productivity series, we have explored the obstacles the public sector faces at both Scottish and UK level in boosting not only its productivity output but also its outcomes. This included considering current challenges and opportunities across the UK, but especially in Scotland, including factors such as the availability of limited public finances and perceived changes in public opinion and public confidence in governmental action at different levels, asking how we can improve the efficiency and quality of our treasured public services.
3. In collaboration with the Office for National Statistics and the Scottish Leaders Forum, we hosted a roundtable exploring how to measure public sector productivity in a manner that helps guide policy decisions and, more importantly, how to improve public sector efficiency. During the session, held on the 24th of April 2025, we heard from Richard Heys (Deputy Director for Well-being, Innovation and Productivity and Deputy Chief Economist) and Katherine Kent (Deputy Director Well-being, Innovation and Productivity (Acting) and Joint Head of Profession for Operational Research) from the ONS about the two-year review of public service measures and the proposed 120 recommendations to deliver a world-leading set of metrics for the whole of the UK. Many of these relate to the specific challenges faced by aggregating data across the devolved governments, which often operate different service designs and collect data in different formats. We also heard from the Scottish Government's Statistician Unit Head, Gayle Mackie, who set out why public service productivity is important in Scotland; what the Scottish Government has learned from the ONS work and potential future activities.
4. This work should be considered alongside the roundtable that the RSE hosted on public service reform in 2024 which outlined the need to turn "rhetoric into reality."¹ That discussion focused on the kinds of shifts in public service practice that need to occur if Scotland's public services are to be effective and sustainable in the long term.
5. Building on these activities and the roundtable discussion, this paper reflects on "how, when, and why" a clearer understanding of good-quality public sector productivity data helps to inform the kinds of decisions and actions required to make progress on a programme of nationwide reform, which can improve the effectiveness of public services in fiscally challenging times.

¹ RSE, 2024, *Public service reform in Scotland: how do we turn rhetoric into reality?* <https://rse.org.uk/programme/advice-paper/public-service-reform-in-scotland-how-do-we-turn-rhetoric-into-reality>

ONS: Public services productivity review

Background to the ONS review

6. The challenges around measuring public sector productivity are by no means new. This review² is the latest phase of a long-term investigation. The question of how to measure and understand public services, particularly their productivity, has been a long-standing issue. This is mainly due to the importance of public sector services to economic welfare; and their significant costs - around 20% of GDP in the UK and 25% in Scotland.³ How you measure and analyse these services is, therefore, essential in understanding the current state of the public purse and the broader economy. At times, when there is more constraint on public finances, there tends to be a greater focus on how to improve the efficiency of public services. But measuring efficiency, when it is in the context of public services, is often met with questions about their quality – are the resources we input increasing the outputs, and then are the outputs aligned with the quality we would expect from our public services? In short, are the resources given to the public sector achieving the desired outcomes?
7. It is clear then that when it comes to public services, we do not just want to get more out of the resources we put in, we also want to ensure that we have effective (high quality) public services, and this leads us on to what metrics should be used to determine whether our public services are efficient and effective.
8. The first major initiative that aimed to tackle this issue was the Atkinson review in 2005, and the new principles enshrined within this review set out the need to not only think about “outputs” but also about their quality. The most relevant principles in relation to quality-adjusted metrics are the following:
 - Principle B: the output of the government sector should in principle be measured in a way that is adjusted for quality, taking account of the attributable incremental contribution of the service to the outcome.
 - Principle C: account should be taken of the complementarity between public and private output, allowing for the increased real value of public services in an economy with rising real GDP.

² Office for National Statistics, 2025, *National Statistician's Independent Review of the Measurement of Public Services Productivity*. <https://uksa.statisticsauthority.gov.uk/publication/national-statisticians-independent-review-of-the-measurement-of-public-services-productivity/>

³ Scottish Government, 2024, *Public Sector: economic overview*. <https://www.gov.scot/publications/economic-overview-public-sector-scotland/pages/4/>

- Principle D: formal criteria should be set in place for the extension of direct output measurement to new functions of government. Specifically, the conditions for introducing a new directly measured output indicator should be that (i) it covers adequately the full range of services for that functional area, (ii) it makes appropriate allowance for quality change, (iii) the effects of its introduction have been tested service by service, (iv) the context in which it will be published has been fully assessed, in particular the implied productivity estimate, and (v) there should be provision for regular statistical review.⁴
9. In essence, the challenges within accounting for quality-adjustment are around the transition mechanism, which goes from “costs” to “inputs” and “outputs” to “outcomes.” As an example within the health service, the ONS would analyse how many full-time members of staff, capital assets and goods and services are involved to measure cost and inputs. Then, examining the outputs, they would consider the number of GP appointments, operations, etc., are undertaken utilising these inputs. However, this analysis is not straightforward, as some operations are more complex than others, making it difficult to determine the outcomes.
 10. Traditionally, in the private sector, productivity data is only concerned with inputs and outputs, because the outputs can be appropriately weighted by the product or service price, which usually is taken to reflect the quality of the products. Critically, there is not an “end price” for public services, and so, if the quality improves, it is not immediately apparent in the data. There is more nuance; and so, to measure productivity, we also need to look at areas such as - to again use healthcare as an example - post-operation survival rates. For the public sector, then, in order to determine the overall productivity, outputs are multiplied by a quality adjustment and divided by the inputs.
 11. However, there are grey areas in determining the definition of output in the public sector. Atkinson pointed out that we need a standardised definition of what a unit of output measure is for the public service – to include for the National Accounts in the absence of a price.⁵ The challenge of the past twenty years has been finding a proxy for price by examining the metrics of quality. In so doing, there is a challenge in assessing the attribution of the public services. One example is an improvement in population health and assessing whether this has been a result of health service support or whether more people have decided to subscribe to a gym membership, and as a result, population health has improved.

⁴ Atkinson, A., 2005, *The Atkinson review: final report. Measurement of government output and productivity for the national accounts*, Palgrave Macmillan. <https://webarchive.nationalarchives.gov.uk/ukgwa/20160105160709/https://www.ons.gov.uk/ons/guide-method/method-quality/specific/public-sector-methodology/articles/atkinson-review-final-report.pdf>

⁵ Ibid

Key takeaways from the Public Services Productivity Review (PSPR)

12. The principles set out in the Atkinson review have been of great value, but more recently, the need to update the principles has become clear. In the past twenty years, the context has changed, the way in which our public services operate is different; there is more data available; and we now have a better understanding of outputs and outcomes. For example, in forestry, we now think about the output of this sector in other ways, such as improving carbon capture and creating more green space for population wellbeing – rather than just timber. The Public Services Productivity Review (PSPR) provided an opportunity to ensure that the metrics reflected these changes, so it has recommended new metrics for measuring public sector productivity. However, the review has also highlighted that more needs to be done to improve several areas of the *United Nations Classification of Functions of Government* (COFOG)⁶ to support more accurate measurement of government expenditure.
13. The PSPR review of the metrics has made data improvements in the following areas:
- Improved the quality, timeliness and granularity of the public sector productivity estimates.
 - Made significant progress in conceptually challenging service areas, including policing, social security, taxation, education and healthcare.
 - Inputted to the United Nations Review of Classifications of Functions of Government (COFOG) with recommendations for taxation, environment, policing and defence.
 - Reflected public sector workers and managers' insight on opportunities for and barriers to increase productivity, including use of AI.
 - Provided a roadmap for incorporation into GDP produced in wider context of System of National Accounts 2025 implementation.⁷
14. The review's long-term aim is to improve the measures of public services within the national accounts. When the UK was within the EU, it could not fully implement the quality adjustments as there were no agreed-upon methodologies, and only output measures could be accounted for. However, the UK can now comply with the UN system for national accounts, which means we can now account for the quality adjustments, allowing for a deeper understanding of productivity within the sectors. The graph below captures some of the outcomes of the review.

⁶ European Union, 2019, *Manual on sources and methods for the compilation of COFOG statistics*. <https://ec.europa.eu/eurostat/documents/3859598/10142242/KS-GQ-19-010-EN-N.pdf/ed64a194-81db-112b-074b-b7a9eb946c32?t=1569418084000>

⁷ Office for National Statistics, 2025, *Public Services Productivity Review*. <https://www.ons.gov.uk/aboutus/whatwedo/programmesandprojects/publicserviceproductivityreview>

Service area	Status <u>prior</u> to The Review			Status <u>after</u> The Review			
	Robust inputs	Activity based outputs	Quality adjusted	Robust inputs	Activity based outputs	Quality adjusted	Incorporated into PSP published estimates
Social security administration***	X	X	X	✓	✓	✓	✓
Tax administration***	X	X	X	✓	✓	Research	✓
Policing and immigration*	X	X	X	✓	Research	Research	X
Defence*	X	X	X	✓	Research	X	X
Education	✓	✓	✓	✓	✓	✓	✓
Healthcare	✓	✓	✓	✓	✓	✓	✓
Public order and safety	✓	✓	✓	✓	✓	✓	✓
Environmental services**	X	X	X	Research	Research	Research	X
Adult social care	✓	✓	✓	✓	✓	✓	✓
Children's social care	✓	✓	✓	✓	✓	✓	✓

Figure 1: Status of inputs and outputs in different sectors prior and after the review (ONS, 2025)

15. As demonstrated in the chart above, more research is needed to determine how quality adjustments can be implemented in specific public service sectors. An example that was discussed by some of the participants was policing, where they argued it is more challenging to find consistent measures of time spent on non-criminal activities such as road traffic incidents, crowd policing, etc., which make up a significant proportion of police time. However, some participants raised some doubts on this topic, noting that while regional variance in conducting services such as policing might suggest there are significant differences, the outcomes are similar, and cross-comparison of the same services in the different regions is easier to achieve than aggregating data across different types of services.

16. The recent review suggests that with the changes in the quality adjustments there is now a more accurate picture of productivity levels within our public services, as exemplified in the chart below.

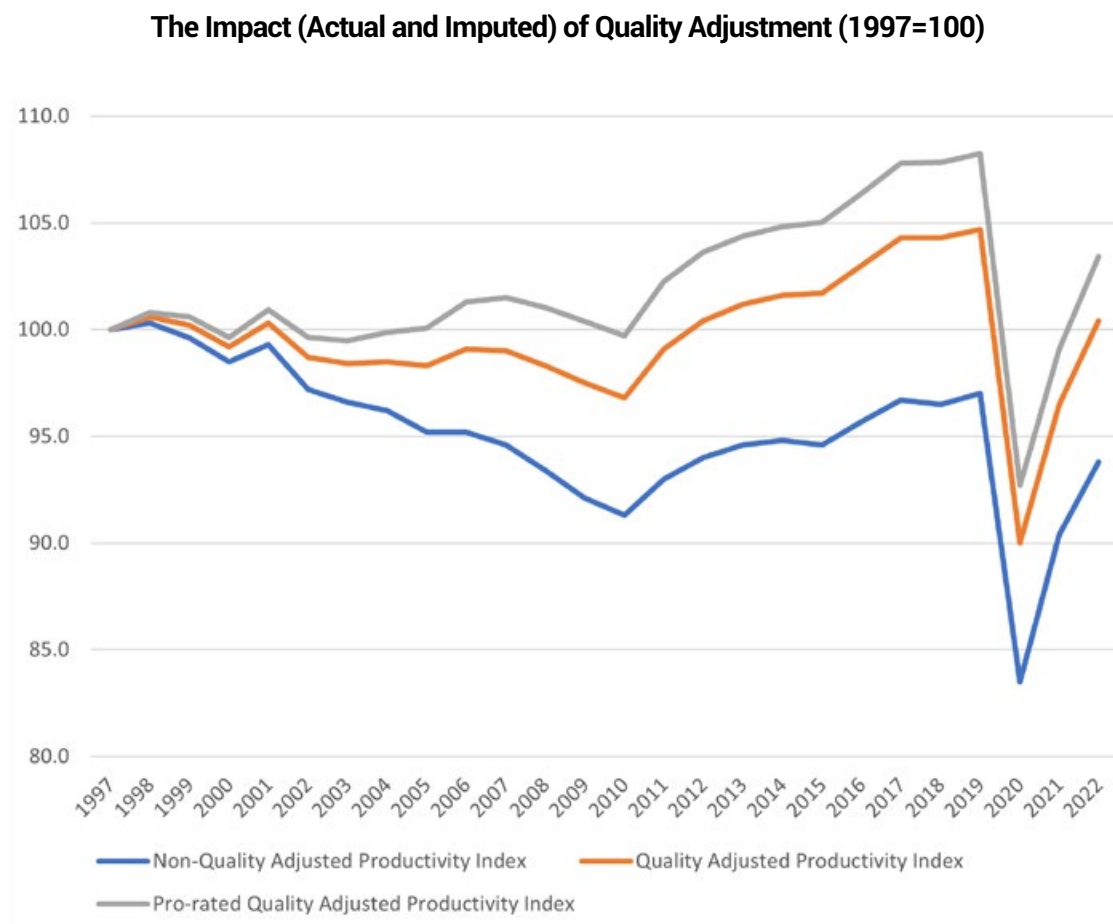


Figure 2: The impact of Quality Adjustment – Total Public Service Productivity (Heys, 2025)⁸

⁸ Heys, R., 2025, *New Measures of Public Service Productivity: Lessons and Results from the United Kingdom*. https://www.productivity.ac.uk/wp-content/uploads/2025/07/IPM_48_Heys_Final.pdf

What does this mean for Scotland's public service productivity metrics?

17. When the review began, it was set to focus solely on England's public sector productivity. A year into the review the scope was widened to include the devolved governments' public service remit. The work on devolved public sector productivity remains incomplete, and the ONS requires further support from Scottish stakeholders to carry out further exploration on Scottish public service measurements.

The key challenges in measuring Scotland's public sector

18. The work in the devolved nations has, so far, included the creation of a productivity guide and a mapping of the policy and data landscape with devolved metrics. However, this has brought about new challenges.
19. One key challenge has resulted from the differences in policy landscapes, which make it difficult to use the same metrics produced for England. For example, the Scottish legal sector has a different way of administering its system than England and therefore, we are unable to apply the English measure.⁹ At the same time, there is still a need to pull together the data to create an overall UK-level productivity measurement. The ONS still requires support in developing productivity metrics applicable to Scotland to gain a more accurate measure of public service productivity across the UK.
20. It is important to note that some data is already collected by the Scottish Government, such as labour productivity, GDP and the government expenditure and revenue statistics, which can help to develop improved estimates of Scotland's productivity. Additionally, Scottish Government also publishes information on public bodies, including corporate functions and staffing, to further understand the state of the public sector. However, there is still a lack of data across many parts of public service delivery in Scotland and there is scope for improvement.
21. To fully understand public productivity in Scotland and produce data comparable with the UK and internationally, devolved governments' operations should, to some extent, use the specific metrics used by the ONS to measure their public services.

⁹ This is also the case in certain service areas in Wales.

This will help inform policy decisions, particularly the drive to reform the public sector and understand what areas of Scottish public service require improvement. Having accurate and timely data is also crucial for the Government in delivering on its current objectives set out in the Programme for Government – e.g. growing the economy, eradicating child poverty, tackling the climate emergency and more directly creating high-quality and sustainable public services.

What is the value of measuring the public sector, and how can it guide leaders in improving service delivery and reducing costs?

22. Measuring public sector productivity is certainly not an exact science now (nor likely ever to be). Nevertheless, there is value in making some attempt at understanding the productivity of the sector at a macro level. Even if the data is imperfect or incomplete, more - and more appropriate - information is better than none.
23. The drive to review the metrics drew on concerns that, with an ageing population, public service spending can become unsustainable. Therefore, other options need to be sought. One perceived desirable outcome was to increase public sector productivity to future-proof our services and maintain the current share of GDP spent on services.¹⁰
24. Whilst it is challenging to produce an accurate measurement of overall productivity for the public sector, particularly when there are such differences within and between sectors, some participants argued that there is still value in aiming to improve estimates of the rate of productivity growth. The current metrics may not be able to determine an entirely accurate picture, but if there have been significant productivity slowdowns, it will indicate that a change is needed, which should prompt policy change. The aim is to establish the direction of travel and identify signals of decline or improvement.
25. In order to gather an understanding of where change needs to happen, utilisation of the service-specific data is likely to be desirable. Whilst there are limits on the data available to drive change, the data that is used should be able to detect greater fluctuations within each service. All services should collect data such as the cost of their inputs, the quantum of outputs they deliver, and how these impact citizens so that managers and the government can determine how best to improve performance.

¹⁰ Scottish Government, 2024, *Economic Overview of the Public Sector in Scotland*. <https://www.gov.scot/binaries/content/documents/govscot/publications/factsheet/2024/05/economic-overview-public-sector-scotland/documents/economic-overview-public-sector-scotland/economic-overview-public-sector-scotland/govscot%3Adocument/economic-overview-public-sector-scotland.pdf>

26. However, as is clear from the above, several participants noted concerns about the overall value of measuring public services, the limited access to the correct data for making policy decisions, and the conceptual difficulty of comparing the outcomes of different services with arbitrary weightings to determine overall public sector productivity, particularly when using quality-adjusted productivity.
27. Whilst it is important for services to understand their inputs, outputs, and outcomes, there was scepticism on whether productivity measurements will provide a meaningful understanding. For example, roundtable participants were sceptical as to whether measuring public services by using quality-adjusted productivity was a suitable approach. They questioned the concept of applying productivity measures to public services when they are ordinarily used to measure the private sector, which, as noted above, has a “price” rather than an “outcome.”
28. One attendee argued that if governments set targets to improve public sector productivity by 2% per year, they might risk actively damaging public services, forcing them to set unrealistic targets that will be difficult to achieve in a labour-intensive sector delivering personal services that – the attendee suggested – intrinsically tend to have slow productivity growth.
29. Moreover, it was argued that public sector efficiency measures in different areas (e.g. health) must also take into account the approach taken and whether the measures/outcomes are intended to yield results over the long term or short term, these measures are reactive, or they are related to prevention and better return on investment.

How well do the measures used to capture public service productivity align with how people within the public sector understand their organisation's productivity?

30. When considering the question of what is meant by “quality” in terms of outcomes, it was suggested that not only do Scotland's policy landscape differences present a challenge, but so also does what is valued in Scotland's public services. One example cited was education. The question arose then of what quality adjustment metrics are used to assess the outcomes. Should this just be attainment results within the National 5s, or is value also placed on the breadth of qualifications, including those from vocational routes, many of which are deemed essential for Scottish schools. In short, the definition of quality may be different in Scotland to other nations, in the UK and beyond. Measuring outputs such as National 5s or GCSEs only gives a partial understanding of the efficiency or the quality of provision. In that sense, widening the measure of attainment to other qualifications and achievements, as well as including metrics related to the “distance travelled” of individual learners, would offer a better measure to create a fuller picture of productivity in this sector.

31. Furthermore, there is a distinction to be made between the “private outcomes” and the broader “societal outcomes.” In terms of the private outcomes, and in the case of education these are most often the national qualifications, the outputs may look different between Scotland and England (e.g., Nat 5s vs GCSE), but the outcomes will not as although the qualifications are different, they should both lead to the same return on investment on education. Analysing the number of resources invested in children's education and the number of children who leave school with qualifications will provide some idea of the productivity within the sector. As one participant noted, wellbeing measures, currently calculated at UK level only, might have a different weighting in Scotland, reflecting differences in societal values placed on education.

The importance of micro-level data

Should we be comparing public sector productivity data across the different local authorities?

32. Attendees noted that on the micro-level, there are benefits in having access to comparative productivity data on services as well as between local authorities, underlining the need to account for geographical differences. It was argued that, if we had knowledge of the regions with relatively high or low levels of productivity, this would allow policymakers, and indeed public service leaders, to take action within their area if needed. The local authorities leading on productivity and productivity gains could share best practices with local authorities experiencing lower productivity, to support them on the road to improvement. The RSE and Audit Scotland have recently called for promoting examples of good practice to drive improvement in the public sector.¹¹

Is productivity between sectors (i.e, public, private and third sector) compared?

33. Services from the private and third sectors are also procured by the public sector and ultimately do reflect in public services productivity data via services purchased. However, less is known about whether the private and/or third sector outperform, in productivity terms, the public sector in the delivery of such services also (including outcomes as noted above). Having an understanding of this is crucial for Scotland, with current policy developments such as the National Care Service set to change procurement policy.¹² It is not only important to understand how many services are outsourced, but it is also crucial that we have an understanding on who best delivers these services.

¹¹ RSE, 2024, *Public service reform in Scotland: how do we turn rhetoric into reality?* <https://rse.org.uk/programme/advice-paper/public-service-reform-in-scotland-how-do-we-turn-rhetoric-into-reality/>

¹² SPICe, 2024, *The National Care Service Bill – the next chapter(s)*. [https://spice-spotlight.scot/2024/07/02/the-national-care-service-bill-the-next-chapters/#:~:text=On%20procurement%2C%20the%20Memorandum%20\(paras,once%20for%20Scotland'%20national%20basis.](https://spice-spotlight.scot/2024/07/02/the-national-care-service-bill-the-next-chapters/#:~:text=On%20procurement%2C%20the%20Memorandum%20(paras,once%20for%20Scotland'%20national%20basis.)

34. The RSE has also explored the importance of the third sector in supporting public services. We noted that greater use of the third sector in the delivery of social care facilities such as hospices, community mental health and wellbeing initiatives, could potentially bring considerable savings to the public purse. However, participants also noted the difficulty in measuring the contributions.¹³

In conclusion

- Scotland's Public Service Leaders, all spheres of Government and wider should continue to work with the ONS to improve the metrics to more accurately measure Scotland's Public Sector Productivity, noting this will also improve UK measures.
- When reviewing the metrics for Scotland, there should be consideration of what Scotland values in terms of outcomes from its public services.
- Understanding micro-level productivity is crucial for policymakers and public services leaders to identify where improvements can be made.
- We should recognise that aiming for universally comparable productivity metrics across all public service sectors may be over-ambitious, and instead adopt a phased approach that focuses first on sector-specific progress and regional differences.
- Priority should be given to developing robust measures within individual sectors, enabling meaningful tracking over time and across regions before extending to wider cross-sector comparisons.
- More comparative research should be done to understand the differences in public service productivity between the regions and between the public, private, and third sectors that deliver public services.
- The Covid-19 pandemic has impacted the collection of data, and alternative sources of data should be identified to address these gaps, including capturing details for the "return to normal" in different sectors (e.g. education).
- We should be cautious in setting productivity ratio targets within and across public services. Measures should be used to guide improvements rather than setting unrealistic targets.
- In setting priorities for further work in this complex world, priority should be given to work that can be seen as likely to yield tangible benefits for the quantity and quality of public services delivered in Scotland, this includes acknowledging that approaches used to measure productivity in the private sector do not necessarily transfer easily or logically to the complex work of public services.

¹³ RSE, 2023, *The economic contribution of the third sector in Scotland*. <https://rse.org.uk/programme/advice-paper/the-economic-contribution-of-the-third-sector-in-scotland/>



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