

Improvements in the methodology for measuring government output

UK Centre for the
Measurement of
Government Activity
Office for National Statistics

The Final Report of the Atkinson Review made 54 recommendations on how to improve the measurement of public services output and productivity. In response the National Statistician said that those improvements which were essentially incremental changes to existing methodology would be subjected to a rigorous quality assurance process. Those which passed this hurdle would be included in Blue Book 2005 and full details of the methodologies and associated data, would be published well in advance of the Blue Book itself. This article meets this commitment. It covers changes to volume measures, measured by a direct output method, for Health, Education, Personal Social Services, Administration of Social Security and Fire Services.

Summary

The Final Report of the Atkinson Review which was published on 31 January 2005, made 54 recommendations on how to improve the measurement of public services output and productivity. In response the National Statistician said that those improvements, which were essentially incremental changes to existing methodology, would be subjected to a rigorous quality assurance process. Those which passed this hurdle would be included in the Blue Book 2005 and full details of the methodologies and the associated data, would be published well in advance of the Blue Book itself. This article meets this commitment. It covers changes to volume measures (VM), measured by a direct output method, for Health, Education, Personal Social Services, Administration of Social Security and Fire Services.

The changes to VM for individual functions are summarised in the table overleaf, with the combined impact on total General Government Final Consumption Expenditure (GGFCE).

Analysis was carried out on the impact of these changes on the VM for total GGFCE using weights consistent with those used in Blue Book 2004. It shows a small combined impact on total GGFCE, from -0.2 to 0.4 percentage points, on annual growth and the impact on GGFCE cumulative growth 1995–2003 is $+0.5$ percentage points. There is no impact on overall Gross Domestic Product (GDP) annual growth but there is an impact on the cumulative growth of $+0.1$ percentage points from 1995–2003.

In addition to the changes to VM described in this article, Blue Book 2005 includes revisions to current price GGFCE data. These revisions can affect VM growth rates through two mechanisms: first, where they result in changes to weights of different functions; secondly, where there are changes to current prices for functions for which VM are constructed as deflated expenditure.

The revisions to GGFCE growth implied by the work described in the article form a part of the overall revision to GGFCE was shown in the Blue Book 2005 dataset. In addition to the revisions described in the article, there are revisions to current price data, and to the deflators used to estimate growth for some functions, which also affect GGFCE growth.

Effect on annual growth of individual functional volume measures: percentage points¹

	Health	Education	Personal Social Services	Administration of Social Security	Fire Services	Total impact on GGFCE
1996	-0.6	0.8	-	-	-	0.0
1997	0.2	-0.7	-1.3	-	-2.2	-0.2
1998	-0.1	-0.3	1.5	-3.8	-4.7	-0.1
1999	0.0	0.7	-0.2	-0.4	0.4	0.1
2000	0.0	0.2	-0.6	-0.6	-2.0	0.0
2001	0.1	0.2	1.7	-1.9	0.3	0.1
2002	-0.4	0.9	6.2	-0.1	-4.7	0.4
2003	-0.4	0.1	2.6	0.2	5.5	0.2
Revision to growth 1995–2003	-1.4	2.1	11.2	-6.2	-8.6	0.5 ²

1. Please see footnotes to Table 6.

2. Which is equivalent to a revision to Gross Domestic Product of +0.1 percentage points over the period 1995–2003.

Introduction

The Final Report of the Atkinson Review, which was published on 31 January 2005, made 54 recommendations on how to improve the measurement of public services output and productivity (Atkinson, 2005).

In responding to the Report, the National Statistician set out how he intended to deal with potential improvements to the estimates of government output VM stemming from the work which the Review had engendered:

- ‘Where changes are proposed which amount to incremental improvements to existing methodologies, they will be subjected to the ONS’s normal rigorous quality assurance process. Proposals that pass the quality assurance process will be published with full details of the methodologies and the associated data... The National Accounts themselves, however, will be changed only at the time of the publication of the annual Blue Book, in the summer, in accordance with normal procedures...
- Proposed improvements which represent more radical changes to the current methodologies will be treated under a different procedure. In such cases, I would expect the proposals to be published so that they can be subjected to public scrutiny and expert debate. Only after this would proposals, amended as necessary in the light of that debate, be put to normal quality assurance process. If and as appropriate, such changes could then be incorporated into the National Accounts at the time of future Blue Books.’

This article fulfils the commitment in the first bullet, to publish in advance incremental improvements to existing methodologies which were included in Blue Book 2005.

In a public letter (dated 28 January 2005) to Professor David Rhind, Chairman of the Statistics Commission (Cook, 2005), the National Statistician listed nine recommendations from the Final Report which would be taken forward under this approach, with the recognition that some parts of each proposal, particularly applying to quality measures, might not be available for Blue Book 2005. In summary, these recommendations are:

- Recommendation 9.1 on using pupil attendance rather than numbers of pupils in the Education output VM, and updating school cost weights annually
- Recommendation 9.2 on updating and revising the quality adjustment factor for the Education output VM
- Recommendation 9.4 on including an output measure for Initial Teacher Training courses in the total Education output VM
- Recommendation 9.5 on updating the health professional education output indicator by using total student numbers, cost weighted by type of course
- Recommendation 9.6 on including an output indicator for publicly funded nursery places in the total Education output VM
- Recommendation 10.1 on improving the current methods for measuring police, courts and other criminal justice delivery agencies by extending detail of coverage and improving weights
- Recommendation 11.1 on updating the output measure for Adult Social Services with wider and more detailed coverage and updated cost weights
- Recommendation 11.2 on using a cost weighted activity index of Children’s Social Services which uses information about children supported in families, or living independently
- Recommendation 11.3 on updating the output measure for the Administration of Social Security with a wider range of benefits and accurate unit costs and weights.

(The full text for each recommendation can be seen in the Atkinson Review Final Report).

Recommendations 9.1, 9.4, 9.5, 9.6, 11.1, 11.2 and 11.3, having undergone the quality assurance process, are included wholly or in part in *United Kingdom National Accounts: the Blue Book 2005*. Details of the extent of improvements taken on can be seen under the relevant functional sections below.

As noted in the letter of 28 January 2005 proposals applying to any changes to, or new, quality measures were not expected to be available for Blue Book 2005. Recommendation 9.2 has therefore, not been pursued for Blue Book 2005.

In addition, proposals to implement Recommendation 10.1 has not been included in Blue Book 2005, as data were not available in time for the quality assurance process to be carried out.

Other changes to estimates of government output have been made as a result of improvements to data sources and the descriptions and effects of these, for example for Health and for the Fire Services, have also been included in this article.

The first five sections of this article cover changes to VM for each of the five functional areas: Health, Education, Personal Social Services, Administration of Social Security and Fire Services. Existing and new VM for each functional area shown in the graphs have been referenced to 1995=100 for ease of comparison. New VM published in Blue Book 2005 are referenced to 2002.

The final section covers the analysis of the effect of the incremental improvements on the VM for GGFCE.

A related article (Office for National Statistics, 2005a) discusses the revisions to the output measure for Adult Personal Social Services in more detail. This is because of the size of its impact on total GGFCE in 2002 (+0.5 percentage points) and to allow full description of the methodological changes.

Health

Background

Health is the largest component of the GGFCE VM, accounting for 30.5 per cent of total GGFCE in 2001 at the time of Blue Book 2004, equivalent to 5.8 per cent of GDP. A substantial improvement in the Health component of GGFCE VM was made in Blue Book 2004. These estimates were compiled using more comprehensive information and much greater transactional detail than had been available before on the volume and cost of government health services.

The changes

For Blue Book 2005, further improvements were made which resulted in revisions to the post-1995 series. The key changes are as follows:

- Latest data for England from which annual growth in the financial year 2003/04 have been compiled, are more comprehensive than those for 2002/03. The number of treatment categories covered by the measure increases from 1,732 to 1,929. Vaccination and Immunisation, and Rehabilitation are examples of these new treatment categories.
- Financial year data are available for Northern Ireland showing growth from 2002/03 to 2003/04.

- Payment by patients of NHS dental charges and prescription charges are excluded from the measure for all years. (The expenditure weights used to aggregate the growth in the different types of activity previously included both public expenditure and payments by patients of NHS charges but now include, more correctly, public expenditure).
- Estimating growth between financial years 2001/02 and 2002/03 is now based on a Laspeyres index construction, correcting the previous estimates which were based on a Fisher index.
- The linkage between the new series (based on the more detailed datasets) and the old series moves from 1996Q1 to 1996Q2, and takes account of the different seasonal patterns in the two series.

The last three of these five improvements were made for the Health output figures published in ONS's articles on Health output and productivity in October 2004 and later in *Economic Trends* (Lee, 2004), (Pritchard, 2004).

Impact of the changes on the Health volume measure component of General Government Final Consumption Expenditure

The combined effect of the revisions is a small decrease (–1.4 percentage points) in the cumulative growth from 1995 to 2003 in the Health output VM series compared with the method used for Blue Book 2004. The growth from 1995 to 2003 changes from 28.6 per cent to 27.2 per cent. The effect on annual growth ranges from –0.6 percentage points in 1996 to +0.2 percentage points in 1997.

The downward movement in 2002 and 2003 is mainly due to the unit costs used, reflecting both the availability of the 2003/04 financial year data for England as well as the improvement to the type of index used. The annual growth rate from 2002 to 2003 also falls by some 0.4 percentage points, mainly due to the improvement of the unit costs, as well as the impact from the introduction of the annual 2003/04 dataset.

The impact from the improved treatment of payment by patients of NHS dental and prescription charges depends on the contribution of these categories to overall growth in a given year. The largest impacts are on the annual growth rates to 1997 and 1998, as dental services had particularly high growth (9 per cent) in the financial year 1997/98.

Northern Ireland's small weight (under 4 per cent) in the overall index means that inclusion of figures from Northern Ireland does not affect overall growth in Health output to one decimal place.

The improvement in the linkage between existing and new series reduces growth into 1996 by 0.6 percentage points and increases growth into 1997 by 0.2 percentage points.

Table 1

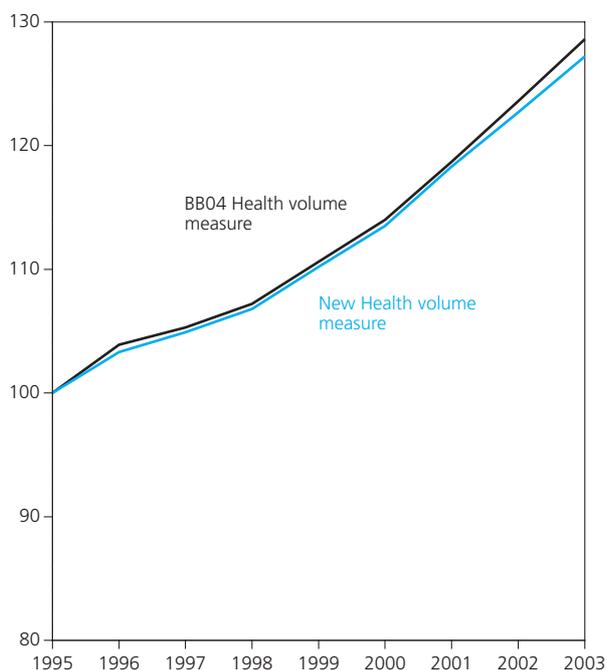
Health output volume measure: revisions and impact on General Government Final Consumption Expenditure

Health	1996	1997	1998	1999	2000	2001	2002	2003	1995–2003
Blue Book 2004 volume measure (per cent)	3.9	1.3	1.8	3.1	3.0	4.2	4.1	4.1	28.6
New volume measure (per cent)	3.3	1.5	1.8	3.2	3.0	4.3	3.7	3.7	27.2
Revision to growth (percentage points)	-0.6	0.2	-0.1	0.0	0.0	0.1	-0.4	-0.4	-1.4
Impact on GGFCE (percentage points)	-0.2	0.1	0.0	0.0	0.0	0.0	-0.1	-0.1	-

Figure 1

Health output volume measure: comparing the existing and new annual paths

Index 1995=100



Education

Background

Education is the second largest single function in GGFCE, accounting for 17.6 per cent, equivalent to 3.4 per cent of GDP in 2001, at the time of Blue Book 2004.

Direct measurement of the Education component of GGFCE was introduced into the National Accounts in 1998, backdated to 1986. The existing measure related to maintained schools in England, Wales, Scotland and Northern Ireland. In Blue Book 2004, the United Kingdom Education VM included maintained nursery schools and nursery classes through to sixth form education at maintained schools (not further education or higher education which were and remain provided by bodies outside the general government sector of the National Accounts). NHS expenditure on non-medical health courses at higher education institutions was also included in 2004, backdated to 1997.

A method of quality adjustment for Education was introduced in 1998, based on changes in exam results. This works out as a quality adjustment of +0.25 per cent per year

and is applied to the attendance of pupils in primary and secondary schools. The change recorded in the GCSE average points score was averaged over four years to calculate an estimate of annual change. No change has been made to this methodology.

The changes

There are a number of changes which both widen the coverage and improve the methodology to the existing VM of Education. These can be summarised as follows:

- Previously, pupil numbers have been used to in the Education VM. This is now changed to pupil attendance, on the basis this is a better measure of pupils being taught in schools.
- The output VM of educational training of health care staff is improved by including all students. Previously it had been based on new entrants only. The coverage by type of course and unit cost weights is also improved.
- An output VM is included for government-procured places within private nurseries, based on number of places filled.
- An output VM is included for Initial Teacher Training, based on the number of students.
- An output VM is included for City Academies and City Technology Colleges. These are schools classified to the central government sector.
- Scotland and Northern Ireland data are included where possible, where previously England was used as a proxy for UK.

Impact of the changes on the Education volume measure component of General Government Final Consumption Expenditure

The combined effect of the revisions is a small increase (+2.1 percentage points) in cumulative growth from 1995 to 2003 compared with the old method. The growth from 1995 to 2003 changes from +7.3 per cent to +9.4 per cent. The effect on annual growth ranges from -0.7 percentage points in 1997 to +0.9 percentage points in 2002.

The small positive changes to GGFCE in most years are due to the change from pupil numbers to pupil attendance and the inclusion of government funding for nursery places at non-state schools since attendance rates have been on a rising trend. The improvement in information on NHS procured health courses has created a small reduction in growth,

Table 2

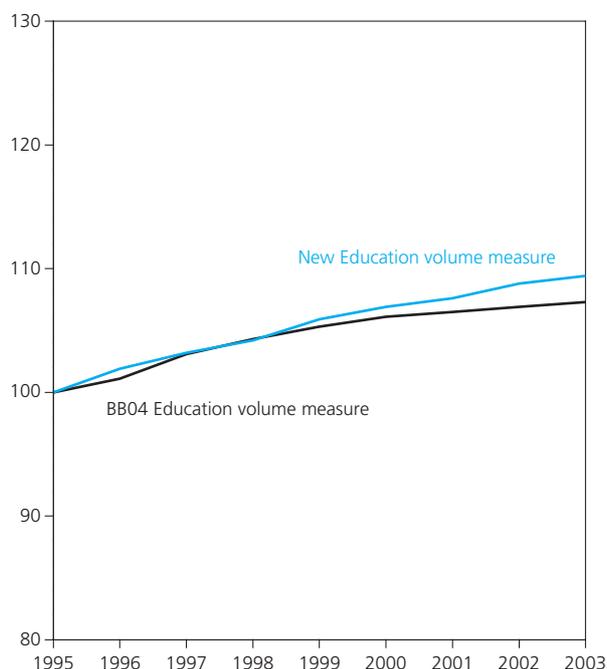
Education output volume measure: revisions and impact on General Government Final Consumption Expenditure

Education	1996	1997	1998	1999	2000	2001	2002	2003	1995–2003
Blue Book 2004 volume measure (per cent)	1.1	1.9	1.2	0.9	0.7	0.4	0.3	0.4	7.3
New volume measure (per cent)	1.9	1.3	0.9	1.6	1.0	0.6	1.2	0.5	9.4
Revision to growth (percentage points)	0.8	-0.7	-0.3	0.7	0.2	0.2	0.9	0.1	2.1
Impact on GGFCE (percentage points)	0.2	-0.1	-0.1	0.1	0.0	0.0	0.2	0.0	-

Figure 2

Education output volume measure: comparing the existing and new annual paths

Index 1995=100



particularly in 1997 and the introduction of a measure for Initial Teacher Training has created small negative changes from 1996 to 2000 and small positive changes after 2000. There is no effect of these revisions on GDP growth to one decimal place.

Personal Social Services**Background**

Personal Social Services accounted for some 7.3 per cent of GGFCE, equivalent to 1.4 per cent of GDP in 2001. Within the total, the shares of total expenditure attributable to children and adults were respectively, approximately 29 per cent and 71 per cent in 2000/01.

The contribution of Personal Social Services to GGFCE is the value of services provided by local government to households, including services purchased by government from non-government sector ('independent') providers. However, spending in the form of cash payments to individuals for care needs purposes, such as the Direct Payments Programme, is

not included in GGFCE but is instead treated as transfers in the National Accounts.

Personal Social Services covers services to adults and to children including families. An important feature of most forms of social care provided to adults is that recipients may be liable to make a financial contribution. In such cases, only the government contribution is classified as GGFCE; the contributions paid by individuals are classified as household final consumption expenditure.

The output VM of Personal Social Services in the Blue Book 2004 measure was calculated as an index of various output activities weighted by unit costs. These were:

- numbers of looked-after children accommodated in various types of residential care
- total hours of home help services provided to adults
- numbers of adults accommodated in residential care.

The sources of data for these activities were the statistical returns received by Department of Health (DH) and Department for Education and Skills (DfES) from local authorities in England on activities and expenditure by financial year. The activities contributing to the index accounted for just under half of all GGFCE on Personal Social Services, and this index was scaled up to represent total GGFCE on Personal Social Services. Activity weights were calculated as shares of government contribution originally according to 1995–96 data, and these were then adjusted in 2000–01 to accommodate changes in the design of the statistical returns. UK data were derived as grossed up data for England.

The changes

The VM for Personal Social Services incorporated in Blue Book 2005 reflects a number of areas of improvement: an important overall change is that the children and adult components of Personal Social Services are calculated separately. Although separate children and adult activities components are readily identifiable in the structure of the existing index, these components become mixed in the scaling up of all non-directly measured activities. Substantive changes to the index are described in turn for Children's and Adult Social Services.

Changes to the Children's component

There are two changes with respect to the Children's component:

- first the output VM relating to the accommodation of looked-after children is based on data for aggregate children-days of accommodation by four categories of residential setting, of which the principal categories are foster care and children homes
- secondly in respect of children's services other than accommodation of looked-after children, the output VM reverts to a calculation based on deflated inputs, in the absence of a satisfactory direct measure methodology.

These new categories for looked-after children match the breakdown of GGFCE on looked-after children provided by local authority returns, thereby replacing an obsolete categorisation employed in the existing index. A VM based on children-days is preferred to one based on children numbers measured on a single date because it captures changes in lengths of stay of residential care.

For children's services other than looked-after children, expenditure is deflated according to an index of pay costs in the local government services sector and local authority procurement. This route has been taken so far because it has not been possible to construct a robust direct measure of these services such as that used for looked-after children, which would, in principle, be preferable.

Changes to the Adults component

A related article (Office for National Statistics, 2005a) discusses the revisions to the output measure for Adult Social Services in more detail.

Changes to the Adult component are of three types:

- the output VM includes a wider scope of output activities
- it has more detailed activity data definitions which are better matched to the expenditure data
- there is a more accurate estimation of the share of government contributions on care services in total GGFCE.

The scope of the measure is widened by the inclusion of an index of assessments of need and referrals, which account for about 14 per cent of Adult Social Services spending in 2002–03. Assessments and referrals are considered to represent GGFCE because they yield information of value to individuals and carers when they make decisions on future care arrangements. The new index also includes measures of numbers of sessions of day care services, the provision of meals, and the provision of equipment and home adaptations measured on a number of recipients basis. These activities account for a further 16 per cent of Adult Social Services expenditure.

The new index incorporates better defined activity measures that are more closely matched to the expenditure data on those categories. The calculation of residential accommodation is built up from new measures that distinguish individuals by four categories of need: adults aged 65+; and of adults aged 18 to 64, adults who are physically disabled; adults with learning disabilities; and adults with mental health needs. For each of these, the index uses accommodation-weeks measured for local authority and independent sector providers. The objective of this more detailed basis of index construction is to accommodate variations in unit cost across different types of care need and different categories of care provider. This allows the output VM to be sensitive to different intensities of care services across these categories. Such variations could arise if different sectors are specialised in the provision of different types of care need. Adoption of a client-weeks basis of measurement allows variations in activity during the year and any changes in average lengths of stay to be captured more accurately than by the Blue Book 2004 method, which is based on counts of residents on a fixed date.

Where possible, each of the components of activity in the new output VM is adjusted by the ratio of government contributions to GGFCE on the activity, in order to exclude the proportion financed by households through financial contributions. This adjustment is designed to enable a more accurate calculation of the total amount of social care expenditure attributable to the government sector. The weights applied to the VM components are determined according to their shares in the government contribution across all adult social care, and are now updated annually.

One consequence of these changes is that they more accurately measure the quantitatively significant impact of a policy change in April 2002, namely the transfer of responsibility for a class of residents receiving care in the independent sector from social security to local authority social services. These are residents who were admitted to care homes before April 1993, known as the 'preserved rights' cases. This change of responsibility means that expenditure classified in previous periods as transfer payments supporting household expenditure, becomes classified from financial year 2002–03 onwards as GGFCE to be included in the output VM.

Impact of the changes on the Personal Social Services volume measure component of General Government Final Consumption Expenditure

The combined effect of the revisions is an increase of some 11.2 percentage points in the cumulative growth from 1995 to 2003 compared with the old method. The growth from 1995 to 2003 changes from 11.7 per cent to 22.9 per cent. The effect on annual growth ranges from –0.6 percentage points in 2000 to +6.2 percentage points in 2002.

Table 3

Personal Social Services output volume measure: revisions and impact on General Government Final Consumption Expenditure

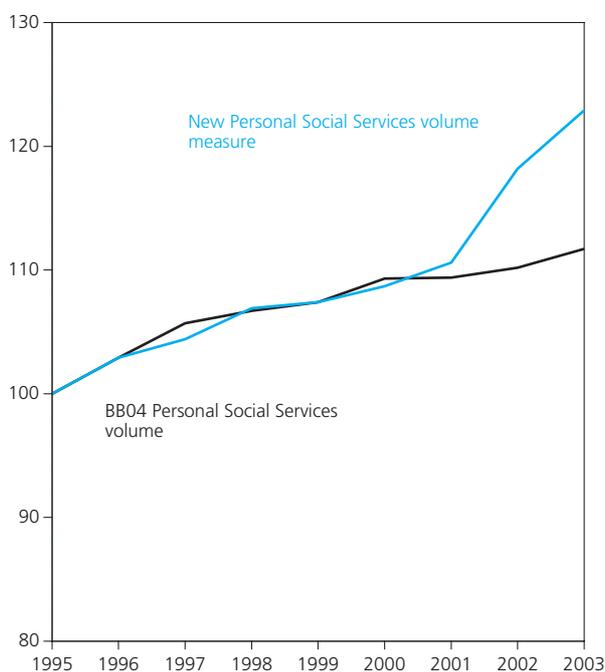
Personal Social Services	1996	1997	1998	1999	2000	2001	2002	2003	1995–2003
Blue Book 2004 volume measure (per cent)	2.9	2.7	0.9	0.7	1.7	0.0	0.7	1.3	11.7
New volume measure (per cent)	-	1.4	2.4	0.5	1.2	1.7	6.9	3.9	22.9
Revision to growth (percentage points)	-	-1.3	1.5	-0.2	-0.6	1.7	6.2	2.6	11.2
Impact on GGFCE (percentage points)	-	-0.1	0.1	0.0	0.0	0.1	0.5	0.2	-

Note: There are hyphens in 1996 because the existing measure continues to be used for annual growth up to and including 1996.

Figure 3

Personal social services output volume measure: comparing the existing and new annual paths

Index, 1995 = 100



The key points to note are as follows:

- Volume growth for Adult Social Services is higher under the proposed measure from 2000 onwards.
- The differences in growth rates, at +6.2 percentage points in 2002 and +2.6 percentage points in 2003 are mainly because of the more accurate measurement of the transfer of responsibility of 'preserved rights' cases in April 2002. The impact of the preserved rights change is estimated to contribute five percentage points to growth in the index in the first financial year (2002/03) which it affects.
- The new category of assessments and referrals makes small negative contributions to growth up to 2000, and small positive contributions from 2001 onwards.
- Residential care contributes more positively to growth in most years, but has a lower weight in the index than in Blue Book 2004.
- The measure of home help contributes positively to growth in all periods except 1998. However, it makes a smaller impact than in Blue Book 2004 VM because it has a lower weight.

- The new category of day care contributes positively to growth in most years.
- Output growth of Children's Social Services is lower in 2000 and 2001 than in the existing measure, but is higher in years 2002 and 2003. This is due mainly to:
 - smaller contributions to growth from foster placements and other residential placements, because smaller weights are attached to these components, and because the children-days measurement basis yields lower growth rates than the children numbers basis
 - the contribution to growth represented by non-looked-after children's services increases markedly from 2001 onwards as GGFCE on these services rises.

Administration of Social Security

Background

Administration of Social Security accounts for approximately 2.6 per cent of total GGFCE, equivalent to 0.5 per cent of total GDP in 2001, at the time of Blue Book 2004.

The VM for Administration of Social Security was estimated using the direct output measurement approach in Blue Book 2004. The existing VM was derived as a function of new claims processed for 14 different benefits, representing less than 50 per cent of the spending on Administration of Social Security.

In the existing VM, information on new claims and on numbers of recipients was obtained from the Department of Work and Pensions (DWP), which is responsible for almost all GGFCE classified to Administration of Social Security. The VM was weighted using estimates of the administration cost of each benefit relating to 2001/2002, with information sourced from Annual Reports of DWP and its predecessors.

The changes

Blue Book 2005 contains an improved output VM from 1997 to 2004. The changes can be summarised as follows:

- For each benefit, this is derived, as far as possible, as a function of both new claims and the load of existing 'live' claims as experience shows that managing the live load generally is more resource intensive than processing new claims.

Table 4

Administration of Social Security output volume measure: revisions and impact on General Government Final Consumption Expenditure

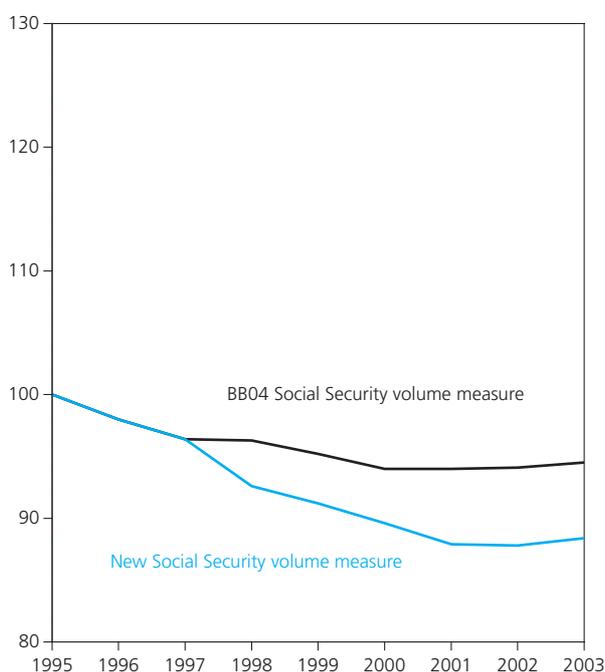
Social Security	1996	1997	1998	1999	2000	2001	2002	2003	1995–2003
Blue Book 2004 volume measure (per cent)	-2.0	-1.7	0.0	-1.2	-1.2	0.0	0.1	0.5	-5.5
New volume measure (per cent)	-	-	-3.9	-1.6	-1.7	-1.9	-0.1	0.6	-11.6
Revision to growth (percentage points)	-	-	-3.8	-0.4	-0.6	-1.9	-0.1	0.2	-6.2
Impact on GGFCE (percentage points)	-	-	-0.1	0.0	0.0	-0.1	0.0	0.0	-

Note: There are hyphens in 1996 and 1997 because the existing measure from the Blue Book 2004 continues to be used for annual growth up to and including 1997.

Figure 4

Administration of Social Security output volume measure: comparing the old and new annual paths

Index 1995=100



- Activity on ten different benefits are treated in this way and either one or other activity measures is available for a further five benefits. These benefits together account for over 90 per cent of the spending on social security administration in the UK.
- The weights for Blue Book 2005 are derived from information taken from the management systems and internal costings of DWP. As reliable weights are only available for the most recent year, these are used throughout on the reasoning that the nature of the processing systems – and therefore the relative unit costs – have not greatly changed over the period. The substantial shortcomings in the weights used in the existing measure were also taken into account in making this decision.

Impact of the changes on the Administration of Social Security volume measure component of General Government Final Consumption Expenditure

The combined effect of the revisions is a decrease of some 6.2 percentage points in the cumulative growth from 1995 to 2003 compared with the old method. The growth from 1995

to 2003 changes from -5.5 per cent to -11.6 per cent. The effect on annual growth ranges from -3.8 percentage points in 1998 to +0.2 percentage points in 2003.

- The most significant single contributor to the downward trend of the new measure is the Jobseeker's Allowance. Both new claims and claimant load fell significantly over the period 1997 to 2003. Other benefits for economically inactive people, including Income Support, have also either stabilised or grown more slowly than previously. The fall in benefit outputs has been offset by a rise in job entries, the main output from the DWP labour market activity. This output is classified in the economic affairs part of GGFCE where VM are calculated by deflating expenditure.
- The extra work associated with the discontinuation of the Minimum Income Guarantee and the introduction of the Pension Credit contributed to stabilising output in 2002 and 2003.
- A significant factor in the divergence between the new and the existing measures is that the existing measure gave a very high weight (58/100) to Income Support new claims. In the new measure, better quality unit cost information results in a new complete revision to the weights. Income support now has a much lower weight (19/100), and more weight is given to other benefits, in particular Jobseeker's Allowance which has decreased both in terms of the number of new claims processed and (to an even greater extent – and not reflected at all in the existing measure) in terms of the overall load size.
- More generally, the quality and detail of the cost and activity information under the proposed method makes for a substantial improvement in accuracy.

Table 4 shows that there is a small impact on total GGFCE of these changes to the Administration of Social Security measure. There is no effect of the revision on GDP growth to one decimal place.

Fire Services

Background

Fire Services accounted for approximately 1 per cent of total GGFCE, equivalent to 0.2 per cent of GDP in 2001, at the time of Blue Book 2004.

Table 5

Fire Services output volume measure: revisions and impact on General Government Final Consumption Expenditure

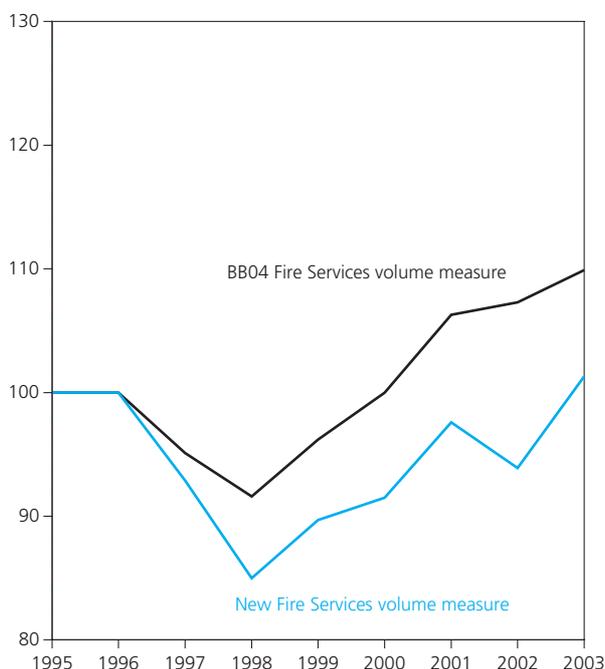
Fire Services	1996	1997	1998	1999	2000	2001	2002	2003	1995–2003
Blue Book 2004 volume measure (per cent)	0.0	-4.9	-3.7	5.1	3.9	6.3	0.9	2.5	9.9
New volume measure (per cent)	-	-7.1	-8.4	5.5	2.0	6.7	-3.8	7.9	1.3
Revision to growth (percentage points)	-	-2.2	-4.7	0.4	-2.0	0.3	-4.7	5.5	-8.6
Impact on GGFCE (percentage points)	-	0.0	-0.1	0.0	0.0	0.0	0.0	0.1	-

Note: There are hyphens in 1996 because the existing measure continues to be used for annual growth up to and including 1996.

Figure 5

Fire Services output volume measure: comparing the existing and new annual paths

Index 1995=100



This component is grouped with police, prisons and administration of justice in the functional category Public Order and Safety. There are no changes for other VM in Public Order and Safety in Blue Book 2005. The VM for Fire Services is estimated using the direct output measurement approach, with the aggregate, total Fire Services, sub-divided into three components: fire response, fire prevention and special services. Fire response is the largest component, accounting for around 50 per cent of expenditure on Fire Services.

In the existing measure, fire response was aggregated from annual data on responses to incidents of primary fires, secondary fires, chimney fires and false alarms. Primary fires are usually fires in buildings or those involving people; secondary fires are frequently outdoor fires or those causing low value damage, or where there is no recorded cost in terms of insurance claims. Components of fire response were weighted together using average staff hours spent on each type of fire for one year, obtained from a training document used by the Fire Brigade. The total weight of each incident type was calculated as the product of the weight for one incident and the number of such incidents in the base year.

The changes

In Blue Book 2005, the new measure for the fire response component of Fire Services incorporates the following changes:

- Use of more detailed data on number of primary fires by location type, in addition to secondary fires, chimney fires and false alarms.
- The fire response detailed component series are weighted using average appliance costs (calculated as the product of average number of hours at each location type and the average number of appliances).
- Actual quarterly data are used to replace the interpolated quarters of the existing measure.
- Improvements have been made to the quality of weights for aggregating fire response, fire prevention and special services, with the use of expenditure data from 2000.

Impact of the changes on the Fire Services volume measure component of General Government Final Consumption Expenditure

The downwards revision to growth in 1997 and 1998 has been caused predominantly by giving an increased weight (from 6 per cent to 16 per cent) to the contraction in the VM for secondary fires (-17.4 per cent -22.5 per cent respectively); the contraction is seen in both existing and new VM.

The contraction in 2002 in the new measure can be attributed to reductions in the numbers of building and secondary fires between 2001 and 2002 and the effect of the strike which occurred in 2002 quarter four (ten days). The smaller effect of the strike which occurred in 2003 quarter one (five days) has been offset by the large numbers of secondary fires in 2003 which has pushed up the VM. No data are included for incidents responded to during the strike days, as a reduced service was provided by the Ministry of Defence (MoD) at this time, and the output therefore has been shifted to MoD to avoid double-counting. VM outputs for the MoD, including the fire service provided for this period, are calculated by deflating total expenditure so have not been effected by the recommendations of the Atkinson Review.

The combined effect of the revisions is a fall of some 8.6 percentage points in the cumulative growth from 1995 to 2003 compared with the existing method. The growth between 1995 and 2003 changes from 9.9 per cent to 1.3 per cent. The effect on annual growth ranges from -4.7 percentage points in both 1998 and 2002 to +5.5 percentage points in 2003.

Table 5 shows that there is minimal impact on total GGFCE of the changes made to the Fire Services VM. There is no effect of the revision on GDP growth to one decimal place.

Likely overall effect on General Government Final Consumption Expenditure: Contributions analysis

The table below sets out the analysis which has been carried out to quantify the overall likely impact of all the changes made to the various measures for Health, Education, Social Protection and Public Order and Safety (Fire Services) GGFCE. There is no effect (to one decimal place) on GDP.

Overall, the changes do not have a major impact on the growth of total GGFCE. The most significant change expected is a 0.4 percentage point increase in the growth of GGFCE in 2002 (due mainly to changes in the Personal Social Services measure). Changes in the other years are expected to be either minimal or have no effect on GGFCE growth.

Table 6 shows the likely combined impact on GGFCE of the changes to VM described in this article as a result of improvements to output or activity indicators resulting from the programme of work following the Atkinson Review. This table should not however, be taken to be an estimate of the total revisions to total GGFCE for Blue Book 2005. There are other revisions due to new information particularly for current price GGFCE. These revisions can affect volume growth rates through two mechanisms:

- first where they result in changes to weights of different functions. The reallocation of current price GGFCE

(see above) can have an impact on the VM for total GGFCE if the proportional expenditure across functions (for example, Health, Education and Social Protection) change. The impact of any such reallocations are not shown in this article. This analysis is confined to the impact of the improved output indicators at functional level and not changes to the expenditure weights used to calculate total GGFCE.

- secondly where there are changes to current price GGFCE for functions for which VM are constructed by deflating expenditure. The reallocation of current price GGFCE can have an effect on the total GGFCE VM if the shift is being made between a category where a direct output measure is used (for example, Health, Education) and a category for which VM are derived by deflation (mainly collective services, for example, military defence). If the shift is a category for which output VM is measured directly to a deflated category, then the VM will be revised upwards, and vice versa.

Work on the current price estimates for Blue Book and the full extent of the revisions was published on 30 June 2005.

Table 6

Overall likely effect¹ of the revisions to public services output measures on General Government Final Consumption Expenditure

Effect on annual growth: Percentage points

	Health	Education	Personal Social Services	Administration of Social Security	Fire Services	Total impact on GGFCE ⁴
1996	-0.2	0.2	-	-	0.0	0.0
1997	0.1	-0.1	-0.1	-	0.0	-0.2
1998	0.0	-0.1	0.1	-0.1	-0.1	-0.1
1999	0.0	0.1	0.0	0.0	0.0	0.1
2000	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.1	-0.1	0.0	0.1
2002	-0.1	0.2	0.5	0.0	0.0	0.4
2003 ²	-0.1	0.0	0.2	0.0	0.1	0.2
Proportion of GGFCE in 2001 ³						
(per cent)	30.5	17.6	7.3	2.6	1.0	-

1. The contributions analysis shown here was carried out using weights for services consistent with current prices published in United Kingdom National Accounts: The Blue Book 2004. Revisions to current prices for these services included in United Kingdom National Accounts: The Blue Book 2005 may have a small effect on the impact of these revisions.

2. In Blue Book 2004, 2003 annual growth figures were calculated using weights from 2001. The analysis of the impact of changes to VM on 2003 annual growth shown here is carried out on this basis. The total impact on GGFCE of these changes will therefore differ in Blue Book 2005 because 2003 annual growth will be calculated using weights from 2002 instead of 2001.

3. The weights shown in the table are illustrative for the proportion of GGFCE in expenditure terms in 2001, it should be noted that weights applied each year will change according to the proportion which each 'function' makes up of total GGFCE for that relevant year. The separate 'functions' shown in the table do not sum to 100 as not all categories of GGFCE (for example, defence) are covered in the analysis.

4. Which is equivalent to a cumulative revision to GGFCE of +0.5 percentage points from 1995–2003 or +0.1 percentage points to GDP from 1995–2003.

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