Methods Change in Public Service Productivity Estimates: Total Public Services 2012

1. Introduction

The forthcoming release Public Service Productivity Estimates: Total Public Services 2012 will contain updated output, inputs and productivity estimates for public services on a calendar year basis at a UK level between 1997 and 2012. The release will update previously published estimates for 1997-2010 and provide new data for 2011 and 2012.

The release will use the same methods as in Public Service Productivity Estimates: Total Public Services 2010 with the exception of:

- Methods changes and associated revisions to education estimates which have been documented in a previous methods paper (ONS 2014a); and

- Minor changes to source data and methods in the production of estimates for children’s social care outlined in this paper.

Previously published estimates of growth rates for children’s social care output as a result of these changes are greatest in the estimated years 1997-2000, the largest revision being 3.9 percentage points in 2000. When children’s social care is aggregated with the other service areas, revisions to previously published estimates of total public service output, inputs and productivity growth rates as a result of these changes are no more than 0.1 percentage points in all years.

Further details on the methods changes to children’s social care and the impact on previously published estimates of both children’s social care and total public services are given in this paper.

A section on revisions to estimates of total public services caused by both methods changes and revisions to source data will be included in the forthcoming Public Service Productivity Estimates: Total Public Services 2012 article.
Children’s social care estimation method

Annual productivity growth is estimated by dividing change in output by the change in inputs. Estimates for total public services are produced by combining the growth rates for individual service areas, listed below. Growth rates are combined based on their relative share of total expenditure, known as expenditure weights. This means that the growth rate of service areas with a greater proportion of total expenditure will contribute more to the growth rate of total public services.

- Healthcare
- Education
- Social Security Administration
- Adult Social Care
- Children’s Social Care
- Public Order and Safety (excluding police)
- Police
- Defence
- Other (including general government services, economic affairs, environmental protection, housing and recreation)

Children’s social care output is estimated separately for looked after children and non-looked after children. Output for looked after children is estimated using activity data, while output for non-looked after children is estimated using the ‘inputs=output’ convention, which assumes that the volume of output is equal to the volume of inputs used in producing that output. Output for looked after and non-looked after children are combined using their relative share of total expenditure on children’s social care.

Children’s social care inputs, and output for non-looked after children, are estimated using current price expenditure on labour and procurement each adjusted by a suitable deflator. Total volume of inputs for children’s social care is calculated by combining deflated expenditure for labour and procurement by their relative share of total expenditure.

Growth rates for output and inputs are converted to indices with a base year of 1997, and the productivity index is calculated by dividing the output index by the inputs index. The percentage change in the productivity index between consecutive years provides the annual growth rates for productivity.

Changes to estimation of children’s social care

Alternative deflators

Deflators previously used to estimate the volume of inputs are no longer available beyond 2010, which impacts on the estimation of both inputs and output:

- An alternative deflator is used from 2011 onwards to estimate the volume of inputs for labour.
- Deflators used in estimating output for non-looked after children, which uses the inputs=output convention, have been replaced for the complete series 1997-2012 with the deflators used to estimate inputs.
Reducing estimation and improving consistency

Activity and expenditure data for children’s social care output has to be converted from a financial year basis to a calendar year basis and backcast for 1997 to 2000 when data is not available. This method has been adjusted to reduce the amount of estimation and make the method consistent between looked after and non-looked after children.

More detail on these changes is given in the following sections.

2. Description of methods changes

Updated deflator for estimating children’s social care inputs

Prior to 2011, the labour deflator for children’s social care inputs was calculated using weighted staff numbers derived from numbers of staff working in children’s social care mapped to corresponding Standard Occupational Classification (SOC) codes. Average salary data for each of these SOC codes, obtained from the Annual Survey of Hours and Earnings (ASHE), were multiplied by the weighted staff numbers and summed to produce a pay deflator.

Children’s social care staff numbers were previously obtained from the Personal Social Services Staff of Social Services Departments return (SSDS001) from the NHS Health and Social Care Information Centre (HSCIC 2011). This collection was replaced from September 2011 by administrative data collected through the National Minimum Data Set for Social Care (NMDS-SC) published by the Department for Education (DfE 2012).

The SSDS001 data in 2010 were National Statistics compiled from a complete response rate from all 152 councils in England. In contrast the NMDS-SC received some data from 68 councils in 2012 and had a total workforce count of only 38% of the workforce measured using SSDS001 in 2010. The NMDS-SC data were published as experimental statistics (DfE 2013).

Methods to incorporate the NMDS-SC data into the existing method for calculating the pay deflator resulted in a break in the series of weighted staff numbers at 2011, indicating that the NMDS-SC data is not representative of the whole workforce. Based on this evidence and the low response rate the NMDS-SC data was considered to be of insufficient quality to use in calculating the pay deflator.

The source of children’s social care staff numbers published by the Department for Education changed again in 2013 when it was replaced with a statutory collection of Children’s Social Work Workforce 2012-13 (DfE 2014). As this collection provides staff numbers for social workers alone and doesn’t cover other types if staff it is also unsuitable for calculating a pay deflator under the current method.

Pay deflators used for the other service areas within social protection were considered. The personal social services pay index used as the labour deflator for adult social care specifically states that it does not include children’s social care (PSSRU 2011). The index of labour costs per hour (ILCH) for the public sector was selected as the most appropriate deflator for children’s social
care as it followed the most similar path to the existing children’s social care deflator of those considered.

The existing labour deflator is retained for 1997-2010 and the growth rate of the public sector ILCH is used to continue this deflator in 2011 and 2012.

**Updated deflators for estimating children’s social care output**

Externally provided pay and procurement deflators used to estimate volume expenditure in the previous article are no longer produced beyond 2010. As output for non-looked after children uses the inputs=output convention and is estimated using a similar method to inputs for children’s social care, deflators used in the estimation of children’s social care inputs were considered to be the most appropriate of those available.

The labour deflator for children’s social care inputs is described in the previous section. The procurement deflator for children’s social care inputs is calculated as a combination of producer price indices (PPIs) weighted by the proportion of expenditure from local authority spending returns in England (Subjective Analysis Return).

To ensure that the inputs=output convention is applied consistently through the complete series the inputs deflators have replaced the existing deflators in all years 1997 to 2012.

**Revised method for conversion of children’s social care output source data to calendar years**

Estimates of children’s social care output are required for calendar years back to 1997. However, activity and expenditure data used to estimate children’s social care output are only available on a financial year basis and only go back to 2000-01, with the latest available data being for 2012-13. This data needs to be converted from financial years to calendar years and backcast to estimate values for previous years in order to provide an estimate of output growth for the period 1997-2012.

Data is converted from financial years to calendar years using a splining tool which divides the annual financial year data into quarters which are then re-aggregated into calendar years.

The previous method for expenditure on non-looked after children converted the financial year data into calendar years 2001-2010 and then backcast the calendar year data to produce a series from 1997-2010. This converted series was then deflated to give a volume measure of output (using the inputs=output convention).

To minimise revisions in historical years by limiting the effects of estimation, the method has been amended so that financial year data is first backcast to 1996-97 and then converted to calendar years. To ensure consistency the same method has been applied when converting source data for looked after children.
3. Impact and conclusion

To test the impact of these methods changes, the new methods were applied to the data used to produce the previously published estimates in *Public Service Productivity Estimates: Total Public Services 2010* (ONS 2013, ONS 2014c).

As the changes to the labour deflator for inputs apply from 2011 onwards, there are no changes to previously published estimates of children’s social care inputs for 1998-2010. A small part of the revisions to output estimates are the result of a small error found in the calculation of expenditure weights for looked after children in the previously published article.

Children's social care

The majority of revisions to estimates of children’s social care output due to methods changes described in this paper are for non-looked after children, which makes up around 60% of expenditure on children’s social care. Figure 1 shows the impact of changes to the deflators and method separately and also their combined impact on previously published estimates of children’s social care output growth rates.

The largest revisions between 1998 and 2001 are mainly driven by the revised method for estimation of expenditure data for non-looked after children for 1997-2000, with smaller changes in later years due mostly to the change in deflators.

**Figure 1: Revisions to previously published growth rates of output for children’s social care by cause of revision, 1998-2010**

![Figure 1: Revisions to previously published growth rates of output for children’s social care by cause of revision, 1998-2010](image)
There is a very small downward revision in the annual average growth rate of children’s social care output due solely to these methods changes of 0.1 percentage points between 1997 and 2010 from 4.1% to 4.0%. As the revisions are to output alone, revisions to growth rates for children’s social care productivity are equal to the revisions for output. The annual average growth rate of children’s social care productivity between 1997 and 2010 has similarly fallen by 0.1 percentage points from -0.9% to -1.0%.

**Total public services**

Children’s social care has the second smallest expenditure weight of all service areas at 2.6% in 2012; therefore, changes in children’s social care inputs and output growth have a very small impact on growth for total public services. Revisions to previously published growth rates for total public service output and productivity due to changes in methods are no more than 0.1 percentage points in any year. There is no change in the annual average growth rate of total public service productivity between 1997 and 2010 which remains as previously published at 0.0%.

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References


