

Information paper

Summary Quality Report for Public Sector Employment

1 Introduction

This report is part of a rolling programme of quality reports being introduced by the Office for National Statistics (ONS). The full programme of work being carried out on [Statistical Quality](#)¹ is available on the National Statistics website. Summary Quality Reports are overview notes which pull together key qualitative information on the various dimensions of quality as well as providing a summary of methods used to compile the output.

This report relates to the Public Sector Employment (PSE) statistics which measure the number of employees in the UK public sector. The series provides estimates of public sector employment by government sector and industry.

In 2005, ONS, in collaboration with other departments and the devolved administrations, implemented major improvements to PSE estimates. Standard definitions for public sector employment across all departmental statistics were agreed and a single definitive set of quarterly PSE estimates introduced. A new Quarterly Public Sector Employment Survey (QPSES) was established. ONS publishes official PSE estimates each quarter, as National Statistics in the form of a Statistical Bulletin, approximately 11 weeks after the period to which they refer.

As well as estimates of total public sector employment and private sector employment, breakdowns are also published by government sector and by broad industry, together with Civil Service employment by government department.

2 Summary of Quality

2.1 Relevance

The degree to which the statistical product meets user needs for both coverage and content.

What it measures	Measures the number of employees in the UK public sector.
Frequency	Public Sector Employment estimates are produced on a quarterly basis.
Sample Size	Approximately 1000 respondents.
Periods Available	Consistent time series are available from the National Statistics website back to 1999 on a seasonally adjusted basis and back to 1991 on a non-seasonally adjusted basis.
Sample Frame	Local Government and Civil Service and public bodies with twenty or more employment.
Sample Design	Census.
Weighting & Estimation	No weighting is undertaken on the survey estimates. Seasonal adjustment is run on the survey estimates.
Imputation	Estimates for non-response are made using standard imputation techniques employed by ONS business surveys.
Outliers	No filtering of outliers.

PSE statistics are derived from a range of sources. The primary source is the QPSES. The QPSES comprises three separate data collections; the home Civil Service, Local Governments in England and Wales and Great Britain public corporations and Non-Departmental Public Bodies (NDPBs). The survey(s) aims to achieve a complete census of the relevant sectors.

So that estimates of total PSE can be made it is necessary for further information to be gathered from external sources. The following information is collected from respondents on a quarterly basis.

Table 1. External Sources for Public Sector Employment Estimates

Employment	Geographic coverage	Source
Central government		
HM Forces	UK	MoD: DASA
National Health Service	England Wales Scotland Northern Ireland	Information Centre for Health and Social Care Welsh Assembly Government Common Services Agency DETINI
Other central government	Great Britain NI	Home Office (National Probation Service and Police Service Strength) DETINI
Local government		
Local authorities	Scotland Northern Ireland	Joint Staffing Watch: Scottish Government DETINI
Police (including civilians)	England and Wales Scotland Northern Ireland	Home Office Joint Staffing Watch: Scottish Government DETINI
Public corporations		
	Northern Ireland	DETINI

The variables collected from each contributor are the number of permanent and temporary/casual employees in full and part-time jobs by gender. Information is required on both a headcount and full-time equivalent basis and data are requested in line with agreed standard definitions (see section 'Key definitions').

Users and Uses

The PSE estimates and data produced for the quarterly publication are used across government and feed into a number of wider publications and outputs. Some government departments use the total figures to facilitate policy making whereas others use specific components of the data collection. The main users are as follows:

Cabinet Office - Civil Service statistics on a headcount and full-time equivalent (FTE) basis are used to monitor changes in Civil Service numbers and form the basis for briefing the Cabinet Secretary. The statistics are used to monitor equality and diversity issues across the Civil Service. Cabinet Office also match data from the public bodies' survey with their NDPBs register to obtain the official number of staff employed to support the Government Skills Agenda.

HM Treasury - HM Treasury use the statistics to answer parliamentary questions on PSE. The PSE statistics are used as a means of reconciliation between ONS published data on workforce numbers that are collected by the Office for Government Commerce (OGC) to monitor progress and the 2004 Efficiency Review targets on workforce reductions.

Scottish Government - The headline PSE statistics are used to provide context for the Scotland PSE estimates which are published on the same day.

Communities and Local Government - The Local Government Finance team at Communities and Local Government (CLG) require local authority employment to validate pay bill and workforce statistics collected by Local Government Analysis and Research (LGAR).

Local Government Analysis & Research (LGAR) - With the permission of the Local Authorities, LGAR publish the Local Authority employment data for England from the quarterly survey in place of conducting their own annual survey.

Strengths and Limitations

A key strength of the PSE data collection is the QPSES which was established to fill gaps not met by other sources and improve the accuracy and coverage of estimates. When the survey was set up, it was possible to rationalise other data collections, therefore improving consistency across government with regards the publication of official employment statistics. The following collections were rationalised:

Mandate Collection - Cabinet Office previously carried out the Mandate collection which was sent to all Civil Service departments every six months requesting a wide range of detailed statistics e.g. employment, earnings, diversity, region. With the introduction of the quarterly survey this collection became annual and in 2006 was transferred to ONS and rationalised. Previously two collection tools were used. The Mandate collection accounted for approximately 85 per cent of the Civil Service and comprised comprehensive anonymous datasets generally extracted directly from the HR systems of government departments and their agencies. For historical reasons, some departments supplied summary tables instead. These were called 'departmental returns' and covered only a limited subset of data. The survey is now conducted on an annual basis (now known as the [Annual Civil Service Employment Survey](#)²) and still performs an important function in providing a profile of the Civil Service with the quarterly survey providing the timelier workforce numbers. A HM Treasury survey to the Civil Service was also discontinued when QPSES was introduced.

Local Authorities - QPSES replaced a long standing quarterly ONS survey to Local Authorities (LAs), bringing definitions in line with the agreed standards for the public sector. Additionally, the LGAR organisation stopped their annual employment survey of Local Authorities in England and with the written permission of the LAs, QPSES data are now shared with LGAR.

One of the limitations of the survey is that achieving complete coverage of the public sector is extremely difficult. For instance, there is still a degree of development work to be carried out to ensure full coverage for local government. ONS has undertaken initial work to look at the reasons and extent of this under coverage. The key issue relates to Local Education Authority (LEA) maintained schools in England which are opting out of local authority payroll administration. As ONS surveys ask for employees on the payroll, we know that some schools are missing from our surveys and as a result are investigating the best way to address this. At the same time we are conscious of the need to minimise form filling burdens for schools. ONS has been and will be liaising with the Department for Children, Schools and Families (DCSF) and LAs on this issue.

Key Definitions

Public Sector Employment (PSE) follows UK National Accounts concepts and definitions. These are included in the background notes of the quarterly [PSE Statistical Bulletin](#)³:

Discontinuities in the data

The reclassification of institutional units, whilst infrequent, can have a significant effect on public sector employment estimates. The National Accounts provide a framework for describing what is happening in national economies. All institutional units operating within an economy are classified to an institutional sector and all transactions between the sectors of the economy are categorised. Work on the classification of entities to sectors and of economic transactions is a key input in the production of National Accounts and employment figures alike.

Changes to the classification of individual institutional units, known as reclassification, can have a noticeable effect on employment statistics at a sector level. The most significant re-classification to take place recently saw Lloyds Banking Group and Royal Bank of Scotland Group reclassified from the private to the public sector.

On 19 February 2009, ONS announced the classification of Royal Bank of Scotland Group and Lloyds Banking Group as public corporations from 13 October 2008. To facilitate analyses of public sector employment estimates by users a time-series was created to demonstrate the full impact of recent financial corporations' classifications to the public sector (Table 2) (based on Standard Industrial Classification 65 (Financial Intermediation)).

Table 2 SIC 65; United Kingdom (Thousands); Not seasonally adjusted

Period	Headcount	Full-time equivalent
2008 Q1 ¹²	9,300	8,700
2008 Q2	9,400	8,800
2008 Q3 ³	10,700	10,100
2008 Q4 ⁴⁵	238,800	217,800
2009 Q1	241,500	219,500
2009 Q2	235,500	214,900
2009 Q3	230,800	209,600

1 Bank of England classified as a public financial corporation on 7 February 2008 from its inception (1946).

2 Northern Rock classified as a public financial corporation from 9 October 2007.

3 Bradford and Bingley plc classified as a public financial corporation from 26 September 2008.

4 Lloyds Banking Group classified as a public financial corporation from 13 October 2008.

5 Royal Bank of Scotland Group classified as a public financial corporation from 13 October 2008.

It is vitally important that users of public sector employment estimates are aware of reclassifications as and when they occur. As mentioned, although reclassifications of institutional units are infrequent they can have a significant effect on employment estimates on a quarterly basis. Users should check to ensure that, when comparing quarterly figures, the figures they are comparing are directly comparable and have not been influenced by a large-scale reclassification. The Public Sector Employment Statistical Bulletin provides information about reclassifications and strives to keep users updated with all current movements and how they have been incorporated within the published estimates.

2.2 Accuracy

The closeness between an estimated result and the (unknown) true value.

PSE estimates are based on a complete census of Local Government and Civil Service and cover all public bodies with twenty or more employees. The usual sampling and estimation techniques employed by ONS business surveys are therefore not applicable (for instance it is not applicable for sampling errors or confidence intervals to be produced).

The published estimates are seen as being the most accurate representation of PSE within the UK.

To improve the accuracy of estimates ONS has the following performance measures in place with regards response: 85 per cent (number of respondents) and 90 per cent (of total employment).

In addition, each survey has a list of critical respondents (usually those with the largest employment) where special efforts are made to achieve 100 per cent response and clearance of test failures.

Non-sampling Error

Non-sampling error, or bias, is the variation in sample data from the true values for the population which occurs by chance. This type of error is expected to average to zero over a number of repeats of the survey.

Response rates give an indication of the likely presence of bias; these are monitored closely on a quarterly basis by the survey team. Furthermore, each survey has a list of critical respondents (usually those with the largest employment) where special efforts are made to achieve 100 per cent response and clearance of test failures.

Under-coverage

Two sources of known under-coverage impact on the overall Public Sector Employment estimates.

First, as drawn attention to earlier a key issue with the Local Authority collection relates to Local Education Authority (LEA) maintained schools in England which are opting out of local authority payroll administration. The consequence of this movement is that they are not picked up as part of the data collection. As a guide, initial analysis of the QPSES indicates that around 30 Local Authorities and around 300 schools are currently affected, mainly foundation schools. As more schools take on foundation status and potentially devolve their payrolls from the Local Authority this under coverage could grow and if not addressed could compromise the quality of the estimates for the local government sector from the QPSES. ONS has been and will continue to liaise with the Department for Children, Schools and Families (DCSF) and LAs on this issue.

Second, Public Sector Employment has known under-coverage as part of its survey of public bodies (public bodies with less than twenty employment are not surveyed), however this level of under-coverage, due to being so small, does not affect the overall survey estimates.

In the event of a large error being detected with the data, the overview report and data sets will be revised in line with the [National Statistics Protocol on Revisions](#)⁴ (pending the availability of a revised policy based on the new [Code of Practice for Official Statistics](#)⁵).

2.3 Timeliness and Punctuality

Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the time lag between the actual and planned dates of publication.

PSE has consistently met the target publication deadlines. In the unlikely event of a change to the release schedule, an announcement will be made at least two weeks in advance, as set out in the [Code of Practice for Official Statistics](#)⁵. For more details on the Public Sector Employment Survey releases, the [UK National Statistics Publication Hub](#)⁶ is available online and provides twelve months advanced notice of release dates.

The time lag between publication and the reference period is 11-12 weeks.

Each quarter, any revisions to the previous quarter's data are published. All quarterly figures are reviewed annually (Q3), re-referenced and revised if necessary.

2.4 Accessibility and Clarity

Accessibility is the ease with which users are able to access the data, also reflecting the format(s) in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the metadata, illustrations and accompanying advice.

The key [PSE Statistical Bulletin](#)³ is published on the National Statistics website and the public/private employment split is published in the [Labour Market Statistics Statistical Bulletin](#)⁷.

The Statistical Bulletin is available in a paper format directly from the press office and [time series data](#)⁸ are available to download free of charge from the National Statistics website.

Further information and analysis can be obtained from the Public Sector Employment Results (PSER) team by phoning 01633 456756.

2.5 Comparability

The degree to which data can be compared over time and domain.

Consistent time-series are available from the National Statistics website back to 1999 on a seasonally adjusted basis and back to 1991 on a non-seasonally adjusted basis. Due to the nature of the data collection and the movement from an annual to quarterly collection it was only possible to take the method of seasonal adjustment back to the start of the quarterly series in 1999. For earlier estimates (which are on a different basis) users should consult [Labour Market Trends](#)⁹ (Vol. 112, no 7) article "Jobs in the Public Sector mid-2003"

2.6 Coherence

The degree to which data that are derived from different sources or methods, but which refer to the same phenomenon, are similar.

Cabinet Office

The Cabinet Office publishes an annual Public Bodies Directory but this does not provide the coverage or timeliness of the PSE quarterly survey. However, the directory has been used to compile historical time series and is used to validate the population for the quarterly survey.

Education

The estimates of PSE in education (SIC division 80) differ from the school workforce estimates published by the Department for Children, Schools and Families (DCSF) mainly as a result of differences in coverage and data sources. DCSF estimates focus on the number of FTE teachers and support staff in the maintained school sector for England only. By comparison, ONS estimates are derived by allocating local authority employees to education using the Inter-Departmental Business Register (IDBR) and the QPSES in England and Wales. Estimates include all employees reported by LAs as working in primary, secondary and adult education establishments including some groups who are not covered by the DCSF statistics, such as adult education staff and certain categories of support staff. Employment in education in Scotland and Northern Ireland are also included to give a wider UK coverage.

In order to make a fairer comparison between DCSF and ONS estimates, ONS FTE estimates for England only should be compared against DCSF estimates. The table below provides published DCSF figures for January each year compared to ONS estimates for Q4 (December) each year (not seasonally adjusted). It shows that the difference on this basis between ONS and DCSF estimates for Quarter 4 2007/January 2008 was 40,000 full-time equivalents.

The different coverage of ONS and DCSF education statistics serves the needs of different users. Those who require information on the workforce in England who are directly involved in pupils' teaching and learning should use DCSF published statistics. Users should also refer to DCSF published statistics to gauge trends in education employment. Those who seek data on UK public sector employment in education, in its widest sense, should use ONS data.

National Health Service

ONS estimates for the NHS also differ from the headline figure produced by the Information Centre for Health and Social Care (IC). Again, this reflects the wider UK coverage (IC figures are for England only) plus the exclusion by ONS of general practitioners (GPs). ONS, in accordance with National Accounts practice, classifies GPs as part of the private sector. ONS also include 'hospital practitioners and clinical assistants' who work in hospitals on a salaried pay scale but generally work as GPs leading the IC to exclude them from their totals to avoid double counting. When these factors are allowed for, ONS and NHS data can be shown to be identical (see table below).

Labour Force Survey (LFS)

The figures published in the [PSE Statistical Bulletin](#)³ are the best estimates of PSE and are in line with National Accounting principles. They are based on administrative records and surveys of public sector organisations. In contrast, while the LFS provides the UK's primary measure of the number of people in employment as a whole, it does not provide a fully reliable measure of the total number of employees in the public sector. This is because the LFS is a household survey, based on responses and self-classification from individuals. It is widely acknowledged that when interviewed for the LFS, individuals incorrectly classify themselves as working in the public sector. For example, employees of bodies such as universities frequently incorrectly classify themselves as being in the public sector. Universities are, in fact, part of the private sector according to National Accounts definitions. Similarly, employees of private sector companies providing contracted out services to the public sector can also incorrectly classify themselves as public sector employees. The LFS thus overestimates public sector employment (the LFS estimate is around 1 million higher) and the difference tends to change over time.

The classification problem of the LFS relating to PSE also applies to the LFS classification of the industries in which respondents work. A new data processing procedure is being considered for development, which, subject to feasibility, would enable the Inter-Departmental Business Register (IDBR) to be used to improve the quality of LFS information about the workplaces of LFS respondents. This could potentially allow LFS analyses of public/private sector employment, and more generally of employment by industry, to be provided using National Accounts definitions.

3 Summary of Methods Used to Compile the Output

Overview

PSE statistics are derived from a range of sources. The primary source is the QPSES. The QPSES comprises three separate data collections; the home Civil Service, Local Governments in England and Wales and Great Britain Public Corporations and Non-Departmental Public Bodies. The survey aims to achieve a complete census of the relevant sectors.

Due to the nature of the QPSES it is necessary for further information to be gathered from external sources so that total estimates can be derived for public sector employment totals.

Quarterly Public Sector Employment Survey

The QPSES collects data from the home Civil Service, Local Government in England and Wales, Great Britain public corporations and NDPBs (plus a small number of additional public sector bodies classified to Central Government e.g. National Audit Office, Houses of Parliament staff and Academies).

Questionnaires are sent out every quarter requesting employment information. The reference date for the Local Authorities survey is the first Friday after the second Thursday of the last month of the calendar quarter. The reference date for the Civil Service and Public Bodies surveys is the last day of the calendar quarter. It was agreed by the cross-departmental Public Sector Employment steering group that the last day of the calendar quarter should be the default reference date, however for well established existing surveys (such as the Local Authorities survey) the reference dates should not be changed. This decision was made to maintain consistency with other ONS business surveys.

Respondents have approximately four weeks to complete the survey. Returned questionnaires go through a series of automated validation tests to check for completeness and consistency and to identify any significant movements compared with the previous period reported (and the same period the previous year). The automated checks are followed up with respondents where errors are detected or further explanation is required. The target is to clear 95 per cent of test failures prior to processing results.

ONS targets for response for each of the three surveys ahead of compiling results are 85 per cent (number of respondents) and 90 per cent (of total employment). In addition, each survey has a list of critical respondents (usually those with the largest employment) for which special efforts are made to achieve 100 per cent response and clearance of test failures. Estimates for non-response are made using standard imputation techniques employed by ONS business surveys.

The estimates of employment from these three surveys are compiled by simply summing the returns for the survey together with the estimates for non-responders. The survey estimates are then combined with data returned by external sources (see below), seasonally adjusted and published as a Statistical Bulletin. The Statistical Bulletin publishes quarterly estimates of the level of employment at a point in time from 1999 Q1 onwards and annual estimates of the level of employment from 1991 onwards. The annual figure that is published for each series is equal to the Q2 figure of that particular year.

Estimates of public sector employment are produced by sector classification (Central Government, Local Government and Public Corporations) and industry (education, public administration, construction, health and social care).

External Sources

The following respondents supply estimates of employment on a quarterly basis:

DASA

HM Forces statistics are produced by the Defence Analytical Services Agency (DASA). Estimates represent UK full strength Armed Forces including Full Time Reserve personnel, mobilised reservists, the Ghurkhas and the Home Service battalions of the Royal Irish Regiment.

Department of Enterprise, Trade and Investment Northern Ireland (DETINI)

For Northern Ireland, the Northern Ireland Quarterly Employment Survey (QES) provides a consistent public sector series of employee jobs back to June 1977. The QES collects information from all public sector units in Northern Ireland therefore obtaining full coverage and this is the source used in ONS PSE statistics for Northern Ireland.

Information Centre for Health and Social Care (IC)

NHS workforce statistics for England and Scotland are currently published annually for the year ending 30 September. The statistics are available approximately six to seven months after the end of the reference period. In the absence of up-to-date figures the IC and Scottish Government supply workforce estimates for the NHS on a quarterly basis.

Home Office

Police (including civilians) workforce estimates for England and Wales are published every six months by the Home Office. As such so that information can be updated on a quarterly basis, Home Office supply estimates that relate to this timeframe.

Scottish Government

The quarterly Joint Staffing Watch Survey provides the figures for Scotland.

Seasonal Adjustment

Seasonal Adjustment was introduced for the first time during Quarter 3 2006. This brought about a significant improvement to the PSE estimates as it brought quarterly comparisons into line with other ONS outputs.

In general it was found that where the head count version of a series was seasonal, so too was the full-time equivalent version.

With regards the model chosen for the seasonal adjustment of each series, the ARIMA models were selected using one of the two automatic model selection procedures in the X-12-ARIMA software package. The standard method of selection is to choose the first model from a list of models that passes the following criteria; the absolute average percentage forecast error of the extrapolated values within the last three years is less than 15 per cent, the p-value associated with the model's Ljung-Box Q-statistic is greater than 5 per cent. The list of models increases in the number of parameters, therefore by choosing the first one to pass these criteria it ensures that the most parsimonious model is chosen, for most series the (011)(011) model is used.

The seasonal adjustment of public sector employment was last reviewed by ONS methodology division in October 2009.

Statistical Disclosure Control

Statistical disclosure control methodology is applied to Public Sector Employment data. This ensures that information attributable to an individual or individual organisation is not identifiable in any published outputs. The [Code of Practice for Official Statistics](#)⁵, and specifically the Principle on Confidentiality set out practices for how we protect data from being disclosed. The Principle

includes the statement that ONS outputs should “ensure that official statistics do not reveal the identity of an individual or organisation, or any private information relating to them, taking into account other relevant sources of information”. More information can be found in [National Statistician’s Guidance: Confidentiality of Official Statistics](#)¹¹ and also on the [Statistical Disclosure Control Methodology](#)¹⁰ page of the ONS website.

4 References

	Title of Reference	Website Location
1	Statistical Quality	http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=13578&Pos=&ColRank=1&Rank=272
2	Annual Civil Service Employment Survey (ACSES)	http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=2899&Pos=&ColRank=1&Rank=422
3	Public Sector Employment Statistical Bulletin	http://www.statistics.gov.uk/STATBASE/Product.asp?vlnk=13615
4	National Statistics Protocol on Revisions	http://www.statistics.gov.uk/about_ns/cop/downloads/revisions.pdf
5	Code of Practice for Official Statistics	http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html
6	UK Statistics Publication Hub	http://www.statistics.gov.uk/hub
7	Labour Market Statistics Statistical Bulletin	http://www.statistics.gov.uk/pdfdir/lmsuk1008.pdf
8	Time series data – Public Sector Employment	http://www.statistics.gov.uk/statbase/tsdtables1.asp?vlnk=pse
9	Labour Market Trends article	http://www.statistics.gov.uk/CCI/article.asp?ID=903
10	Statistical Disclosure Control Methodology	http://www.statistics.gov.uk/about/data/methodology/general_methodology/sdc.asp
11	National Statistician’s Guidance: Confidentiality of Official Statistics	http://www.statisticsauthority.gov.uk/national-statistician/guidance/confidentiality-of-official-statistics.pdf

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