USER INFORMATION GUIDE

BRES 2013: Guide to use of potentially confidential data

Important: there are legal penalties for the improper use of confidential data. This guide tells you how to use the data without breaching the confidentiality rules. If you have any doubts about how to apply the guidance please contact:

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The Business Register and Employment Survey (BRES) is conducted under the Statistics of Trade Act (STA) 1947, as were its predecessors, the Annual Business Inquiry (ABI), the Annual Employment Survey (AES) and Census of Employment (CoE). This Act imposes restrictions on the way that data collected during the survey may be used. The provisions of the STA are importantly further regulated by the Employment and Training Act 1973 (ETA) as amended by the Employment Act 1989, which states that local planning authorities may only use confidential data for purposes that relate to development plans.

The main aim of these restrictions is to protect the identity of individual enterprises, who have made statistical returns, from being disclosed or otherwise deduced.

Disclosive Aggregate

Aggregate data can be potentially disclosive and, therefore, potentially confidential.
In theory, a 'disclosive' cell of data is one which either directly, or by deduction, would make known the identity of an enterprise who made a statistical return. In practice, the ONS operates standard rules which are used to test each data-cell: those cells which pass these 'suppression' tests are deemed non-disclosive; those which fail are disclosive.

The rules are given at:
http://www.ons.gov.uk/ons/guide-method/best-practice/disclosure-control-policy-for-tables/index.html

The BRES outputs published on the National Statistics website have already been subjected to the suppression tests and so the issue of confidentiality does not arise.

However, the following BRES output has not been suppressed and contains potentially disclosive cells:

(i) Employment information extracted by users of the Nomis database.
Access to Nomis is restricted, by the provisions of the ETA 4(3)(f), to holders of a Notice.

As this output has not been subject to suppression users of the output (i) above are personally responsible for ensuring that any information which they publish or pass on to other users not named on their Notice, does not contain disclosive data.

Users who derive customised tables, which include cells marked '!' (exclamation mark) must ensure that the general rules for hard and soft suppression described below are not breached.

1. Hard suppression. Users of Nomis must suppress (i.e. blank out), for publication purposes, any data-cell which is marked with an '!' (exclamation mark). This is referred to as Hard suppression and is designed to prevent any disclosure of data that allows a particular business to be identified and rules of confidentiality to be broken. The primary rule of disclosure as applied to BRES is: *at least 3 enterprise groups in a cell and the total of the cell less the 2 largest local units must be greater than or equal to a pre-determined percentage of the value of the largest local unit*. If a data-sell fails this rule then it is considered disclosive and marked with an '!' (exclamation mark).

2. Soft suppression. Nomis does not apply soft suppression and it is the users responsibility to undertake this. Where 'hard suppression' is applied to a single cell in a row or column, it will follow that the value of the blank cell could easily be derived by simple subtraction from the total employment given in that row or column, or from sub-totals within the table. In such cases, hard suppression must be supplemented by what is called 'soft suppression'. 'Soft suppression' is where another cell in the row or column is blanked out to avoid this deduction by subtraction. Candidates for soft suppression may include cells with zero employment.

Rounding

Users of Nomis in any publication derived from the BRES outputs must also apply the general rule that any employment value in a data-cell must be rounded to the nearest 100. Therefore figures of less than 50 should not appear. Any publication derived from BRES outputs should thus be subject to hard suppression, followed by soft suppression followed by rounding to the nearest hundred.

Percentage figures

The rule of suppression that applies to absolute employee figures also applies to percentage values. This means that both hard and soft suppression should be applied to percentages marked with '!' (exclamation mark).

Workplace Analysis

This only applies to any analysis derived from the ABI, AES or CoE. The rules of suppression that apply to absolute employee figures also apply to the number of data units (workplace analysis). This means that both hard and soft suppression should be applied to data units marked with '!' (exclamation mark). However, the rounding rule does not apply in this instance.

Maps

Any estimates represented in the form of a map (either generated from the bespoke map option on NOMIS or derived from downloaded estimates) are also subject to the rules of primary and secondary suppression. Users must ensure that no flagged estimate is represented on a map and that secondary suppression is undertaken if required. If users are producing their own map from downloaded estimates they must first apply primary and secondary disclosure to the estimates before using them for map generation.

Quality of estimates

Users should note that BRES is a sampled survey estimating the number of employees which gives rise to sampling errors. Non-sampling errors are not easy to quantify and include errors of coverage, measurement, processing and non-response. Model variance increases as the geographies get smaller and this should be taken into account when considering the quality of sub national estimates. More detail on estimates and measures of these errors can be found on the ONS website at: http://www.ons.gov.uk/ons/search/index.html?newquery=BRES

Publishing BRES data

Details of the policy governing the release of new data are available from the press office. Also available is a list of the names of those given pre-publication access to the contents of this release.

National Statistics are produced to high professional standards set out in the Code of Practice for Official Statistics. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from political interference.

As long as the above disclosure rules are followed BRES data may be passed on to third parties or published subject to the standard Crown Copyright conditions. These are set out at:
http://www.ons.gov.uk/ons/site-information/information/creative-commons-license/index.html

Destruction of BRES data

At the end of the access period, you are required to destroy all copies of the **disclosive data**, including temporary copies, CDs, printed copies, personal copies, back-ups, derived datasets and all electronic copies, unless a new Notice has been obtained for this project to extend. Please note this applies to the disclosive data only and not to any suppressed and rounded figures that have been published or are in the public domain.

Uses of the Business Register Employment Survey (BRES)

1. Introduction

The first Business Register Employment Survey (BRES) estimates were published in December 2010. BRES has been assessed by the United Kingdom Statistics Authority (UKSA) for compliance with the Code of Practice for Official Statistics, this being part of the process of gaining official National Statistics (NS) status. A link to the final report can be found here under report number 73.

Permission was given for BRES to carry the NS accreditation, but a number of requirements needed to be met in order to keep this. One of these was to *"Take steps to develop a greater understanding of the use made of the statistics; publish the relevant information and assumptions, and use them to better support the use of the statistics"*

This paper has been written in response to this requirement. The information presented has been collected in the following ways:

1. The first BRES user group was held in July 2011, followed by a second meeting in January 2012. Delegates, selected from central and local government were asked for their feedback.

2. Information was obtained from NOMIS (the online dissemination tool used by BRES) regarding who requests access to BRES data, and their reasons for wanting this access.

3. Internet based research has been carried out looking at what uses are made of the BRES tables published on the National Statistics website.

4. A user feedback survey was included in the 2010 BRES statistical bulletin.

5. Regular consultation with users in Local Government via the Central and Local Government information Partnership (CLiP).

6. Frequent ad hoc meetings with Welsh Government (WG) and Scottish Government (SG).

7. During the development of the BRES a web consultation exercise was undertaken inviting users of annual employment estimates (which at the time were from the Annual Business Inquiry) to provide their views and comments. These comments were used in developing BRES to ensure user needs were met. A paper was published summarising the views of users in response to this open consultation. A copy of both the consultation document and response can be found here.

2. How the data is accessed

Employee and Employment estimates are available to users from two identifiable sources. Firstly, through the National Statistics (NS) website, where the BRES survey has its very own product page. These estimates are free to view and data is presented in many different tables, giving customers an overall picture of data at UK and Local Authority County/District levels.

Secondly, regular users register with the NOMIS website, which gives them access to data at low levels via a "Chancellor's Notice". The Chancellor's Notice grants customers access to the latest estimates as well as previous year's data. A Chancellor's Notice costs £125 and grants access until the next year's data is released. Access to identifiable data is only allowable after giving a valid statistical purpose and the signing of a confidentiality agreement.

3. Uses of BRES data

3.1 ONS website

ONS publishes free to view tables on the NS Website. Each publication contains nine tables at various levels of detail, accompanied by standard error tables.

Below is a count of how many times each web link has been accessed from the web product page on the NS website between publication on 30 September 2011 and 31 January 2012. Results are given for both the published tables as well as the different section of the BRES statistical bulletin.

Table	Visits	Ranking*
Table 1 - Broad Industry Group	373	1897
Table 1 CV	201	3188
Table 2 - Industry (5 digit)	212	3050
Table 2 CV	29	10156
Table 3 - Region	190	3353
Table 3 CV	10	16347
Table 4 - Region by Broad Industry Group	134	4356
Table 4 CV	12	15572
Table 5 - Region by Industry (3 digit)	116	4795
Table 5 CV	6	20303
Table 6 - Local Authority Council	249	2680
Table 6 CV	19	12360
Table 7a - Local Authority County by Broad Industry Group	186	3425
Table 7b - Local Authority County by Broad Industry Group	159	3857
Table 8 - Local Authority District	276	2466
Table 8 CV	26	10699
Table 9 - Parliamentary Constituency by Broad industry Group	76	6292
Statistical Bulletin - Headline figures	1339	509
Statistical Bulletin - Summary	86	5837
Statistical Bulletin - Results by region	175	3574
Statistical Bulletin - Sub-regional estimates	163	3774
Statistical Bulletin - Results by industry	164	3756
Statistical Bulletin - Public/private sector estimates	80	6094
Statistical Bulletin - 2011 User feedback survey	38	9029
Statistical Bulletin - Background notes	73	6451

*A measure of the popularity of each page relative to the entire ONS website

It is difficult to gather information about the use that is made of the tables published on the NS website. Internet based research has shown some use, although our findings are limited. Here is an example of a regional perspective on the statistics from Kent County Council.

Other government departments and private organisations also provide links to BRES on their web pages, implying users of these sites may also have an interest in the statistics.

In 2011, a user feedback survey was included alongside the 2010 BRES statistical bulletin. The number of responses to this was very small. Users who responded explained that the information taken from the statistical bulletin and tables on the NS website was mostly used for writing briefs and for research purposes, and that sub-regional estimates were more valued than higher aggregates.

3.2 NOMIS

3.2.1. Who uses the data disseminated via NOMIS?

There are many different types of users who access the data on NOMIS, ranging from local government to academics. The most common users of the data are central government, consultancies and local government. The information below gives a detailed count by business type of data accessed in 2011.

Table 1 – Data downloads by type of user

Description	Areas Selected	Percentage
Central/Local Government and NHS	**11,500**	56
Commercial	**6,400**	31
Not-for-profit Organisation	**1,400**	7
University	**600**	3
Training Body	**500**	2
School / College	**100**	0
Other	**200**	1
Total	**20,600**	100

As table 1 (above) shows, around half of the users who held a Chancellor's Notice in 2011 are in central and local government and NHS, with commercial organisations making up thirty-one percent as the second most common user.

3.2.2 Geographical level of data downloaded from NOMIS

The information made available on NOMIS is at various levels of geographical detail, from country to Super Output Area (SOA). Generally, the lower the level of detail, the higher the number of estimates that are deemed disclosive. Therefore, the lower levels cannot be made public unless disclosive cells are either suppressed, rounded or summed up so that the data cannot be recognised.

When a user makes an application for access to the data they have to specify what geographical areas they wish to view, and must not access data in any other area. If they do so, they are not complying with the terms and conditions of their Data Access Agreement (DAA).

Table 2 shows the top viewed geographical levels in 2011 (includes repeat views from the same user).

Table 2 - Data views by geographical area

Area type	Downloads
local authorities: district / unitary	11,400
counties	11,300
local authorities: county / unitary	9,400
government office regions	6,600
ward level	2,600
super output areas	1,800
Local enterprise partnerships	1,100
Pre-2009 local authorities: district/unitary	700
nuts levels	500
travel to work areas 2001-based	400
Scottish zones	400
constituencies	300

It can be seen from the results of table 2 that the majority of users are most interested in the finer detail from the BRES results.

There are many more geographies available, both current and historic, and during the period considered by this report there were fifty-six (56) levels of geography accessed by users. This does not include any user defined geographies.

3.2.3 Periodicity of data available via NOMIS

As well as users having access to the latest employee estimates, they also have access to historical data that are made available back to 1972. The following data are available on NOMIS under the terms of a Chancellor's Notice:

- Census of Employment (Employee and Workplace analysis)
- Annual Employment Survey (Employee and Workplace analysis)
- Annual Business Inquiry (Employee and Workplace analysis)
- Business Register Employment Survey (Employee analysis)

Looking at the NOMIS system shows us that many users just look at the latest year's data. However, users who are accessing the data for the first time will generally look at historical data for comparison. Users are warned that comparisons between current and historic data should be made with caution due to the changes in survey methodology.

3.2.4 Usage made of the statistics downloaded from NOMIS

Applicants for BRES data via NOMIS must stipulate what they want to use the estimates for. Each Chancellor's Notice has to be checked and signed off by at least two members of staff in ONS, one of whom will be the Survey statistician.

In 2011, 630 data access agreements were approved under the terms of the Chancellor's Notice process.

As we have seen in Table 1, just over half of users are in central and local government and the NHS. The use of the data for local government is generally in the context of the economic and local development framework, with users looking specifically at their local authorities (LAs) and neighbouring LAs for comparison. The data are used to help councils develop their local strategy for the coming financial year, and in some cases one district council will undertake the work for all its borough councils.

Another key user group of the data are consultancies, who are covered under the 'commercial' heading of Table 1. Their main use for the data is for local economic assessment and profiling. This work is undertaken on behalf of their clients who can range from local authority county/districts to private companies looking at employment in a specific area.

3.3 Use within government

3.3.1 Results from the BRES user group

On 21 July 2011 the first BRES user group meeting was held comprising of delegates from central government who were known BRES users. This was followed by a second meeting on 23 January 2012. At the meetings, each delegate was asked to state how they use the BRES data. The responses are provided below:

Department for Business, Innovation and Skills (BIS) - BIS use BRES data directly and indirectly for many different aspects of its work. The delegate used BRES data for sector specific analysis for the UK. BIS also use BRES statistics in various reports that are available from their website.

Scottish Government (SG) - SG monitor progress of Scottish business sectors in terms of employment change, with key sectors being of particular interest**.** SG refers to BRES information (from NOMIS) when advising local authorities and also in addressing Parliamentary Questions (PQs). By matching local unit employment micro-data with survey data, SG is able to find labour costs and also run surveys for Gross Domestic Product (GDP) estimates.

Welsh Government (WG) - WG use it as part of a suite of information in order to carry out ad hoc analyses and statistical bulletins.

Department of Finance and Personnel - Northern Ireland (DfPNI) - DfPNI use the data to answer PQs, and to answer requests from councils, such as for employee estimates.

Hertfordshire County Council mainly use BRES data to produce their statistical bulletins and to invite new business into the area.

Dorset County Council use BRES data to analyse the labour market and the knowledge sectors of the economy, and in identifying sectors of growth and decline. It is also used for other analyses, such as Gross Value Added (GVA) estimates and for strategic planning.

Office for National Statistics (ONS) - Regional Accounts use full time and part time employment estimates by NUTS2 and NUTS3 geography. The BRES data are used in conjunction with average earnings data (acquired from the Annual Survey of Hours and Earnings) to derive regional estimates of compensation of employees (COE), which are used to apportion UK national totals. COE is the major component in the GVA

estimates. The data are then used by Eurostat in the process to allocate European structural funding. The more timely BRES publication date of September is a key part of future plans to accelerate the production of NUTS2/NUTS3 GVA estimates.

3.3.2 Other users from within government

Below are details of uses made by other government bodies gathered through a consultation exercise:

The Department for Work and Pensions and Jobcentre Plus staff are currently using BRES estimates as part of their ongoing Get Britain Working campaign.

HM Treasury is currently using BRES estimates as part of a project to measure the size of employment in retail and wholesale financial services in the UK. This work is being undertaken by the Independent Commission on Banking.

The Cabinet Office is using ONS data for its Giving Green Paper project.

Among other government departments that are currently using the BRES statistics for ongoing projects are Department for Transport and the Audit Commission.

The use of the data by Local Government is covered under section 3.2.4.

The links below provide details of articles and analyses produced by government bodies using statistics from BRES:

Parliament
City of London
North Yorkshire Council
Hertfordshire Council
Hampshire Council
Wakefield Council
North West Regional Development Agency
South West Observatory
Cumbria Intelligence Observatory (CIO)
Warwick University

4. Future plans to engage with users of BRES

4.1 BRES user group

The BRES user group will continue to be held bi-annually, and ONS will be looking to expand the membership of this group to include both government and non-government organisations. The user group will act as a platform for ONS to inform and consult users of developments and planned changes with regards to the BRES statistics, as well as for obtaining feedback on the service that ONS provide.

4.2 Central & Local Government Information Partnership (CLIP)

This is a forum where representatives from several local authorities and the ONS meet to discuss the Labour Market. BRES is covered within this forum and is used to share developments to the annual employment figures with local authority users and also to take on board their comments and needs. This forum has been in place for several years and will continue to meet twice a year.

Guide to using public/private estimates from the Business Register and Employment Survey (BRES)

Key points

- The established method of defining the public and private sectors is to base it on the legal status of a business. This is consistent with guidance in the European System of Accounts.

- The public sector is commonly thought of as being limited to the education, health and public administration industries. However, only 59% of education and less than half of health employment is in the public sector according to the 2013 Business Register and Employment Survey (BRES) published estimates. There is also significant public sector employment in the transport and storage and finance and Insurance Broad Industrial Groupings (BIGs).

- There are some very big differences in public and private employment estimates across the regions as a result of using an industry based definition as opposed to the established one based on legal status.

- Between 2010 and 2013 London accounted for around 37% of private sector growth in Great Britain by legal status, rather than the 56% figure obtained by using an industry definition. The reason for this difference is that the industry approach makes an overestimate of the total growth in private sector employment since it does not take into account the public sector employment element outside of education, health and public administration.

Introduction

There has been sustained interest for a number of years in the overall number of public and private sector employees in the UK, and the geographical breakdown of these estimates.

This paper seeks to:

a) explain the robust methodological approach for defining the public and private sector;
b) show how different definitions of what constitutes the “public sector” can lead to very different results when attempting to measure public sector employees;
c) show the strengths that BRES has to offer when comparing public and private sector estimates at a sub-regional level.

In particular, this article looks at issues that are encountered when defining the public sector by industry (Standard Industrial Classification (SIC)) rather than the established method of using the legal status of the business. It explores in detail the different results that are produced by these two approaches, when applied BRES data.

Definitions

What is BRES?

The Business Register and Employment Survey (BRES)[1] gives employee and employment estimates at detailed geographical and industrial levels. High level UK estimates are published on the Office for National Statistics (ONS) website[2], while detailed sub-regional and industry estimates for Great Britain are published on the National On-line Manpower Information Service (Nomis)[3] ® website. BRES is regarded as the definitive source of official government employee statistics by industry. BRES estimates are based on the industry (SIC 2007) of a business's various individual sites (local units), rather than the industry of the overall business (reporting unit). Information on what constitutes various industry groupings can be found on the UK (SIC) 2007[4] page of the ONS website.

What is the public sector?

ONS defines the public and private sector according to where the control of the business lies, rather than by ownership or whether or not the entity is publicly financed. This classification is determined by National Accounts, is in line with the European System of Accounts, and is widely considered to be the definitive definition. This is the definition used in the BRES published estimates.

Comparing different sources of public/private sector figures

There are three main sources of public/private sector employees estimates produced by ONS: BRES, the Labour Force Survey/Annual Population Survey (LFS/APS) and the Public sector Employment (PSE) estimates.

PSE estimates

ONS's preferred measure of national and regional public sector employment data are the Public Sector Employment (PSE) statistics. The PSE statistics are a workplace-based measure compiled from surveys and administrative sources to provide a definitive count of the level and location of public sector employment. They are the best source of high level industry estimates since the survey is a complete census of all public sector organisations. However, the PSE statistics are not compiled sub-regionally. Therefore, for sub-regional analysis, users need to either use BRES or the LFS/APS.

The LFS/APS

The LFS/APS is a residence based survey that asks individuals about their employment situation and includes a question that asks whether they are employed in the public or private sector. The APS provides data down to local authority level. It should be noted that estimates of the number of people working in the public sector from the APS are generally higher than ONS's official estimates from PSE. This over-estimation is because the APS relies on the individual respondent or their proxies classifying themselves. This often leads to individuals employed by private sector organisations, who work within public sector premises, misclassifying themselves as public sector workers when responding to the survey. As a result the APS tends to over-estimate public sector employment and underestimate private sector employment.

BRES

For a workplace analysis at the sub-regional level, the recommended data source is the annual Business Register and Employment Survey (BRES). This provides a measure of the number of public and private sector employees working in an area. BRES is a relatively large survey covering some 80,000 businesses selected from all industries, and as such is regarded as providing an accurate split of public sector compared to private sector employees.

Potential public/private sector discontinuities in BRES

There are a number of potential discontinuities that may impact on any BRES public/private data analysis, as a result of using the ONS definition of the public sector.

- As a result of a change in legislation, in the 2010 and 2011 published BRES estimates all English, Scottish and Welsh further education colleges and sixth form colleges were reclassified from the private sector to the public sector and became public sector entities. This change in status increased public sector education employment in BRES by around 200,000 in 2010 and 2011.
- In 2012 all English further education colleges and sixth form college corporations were then reclassified from the public sector back to private sector again due to changes in the legislation that had been implemented on 1 April 2010. However, this reclassification did not apply to Scottish and Welsh further education colleges and sixth form college corporations which remained in the public sector. English colleges thus switched back to the private sector whilst their Scottish and Welsh counterparts did not.
- Following the economic downturn in 2008/09 a number of banking institutions, such as Northern Rock, Lloyds TSB and The Royal Bank of Scotland were subsequently taken in to public ownership and reclassified from the private to the public sector. Some of these have since been reclassified back to the private sector in subsequent years.
- Organisations such as Network Rail and The Royal Mail have been reclassified, with Network Rail moving from the private to the public sector and Royal Mail from the public to private sector.

As can be seen above, estimates can be subject to discontinuities caused by Standard Industrial Classification changes, public/private designation changes and source data changes, and these need to be taken into consideration when carrying out analysis using BRES. It should be noted that BRES is a point-in-time snapshot of the GB/UK economy and is not designed to be used as a time series, although it is recognised that users do use it in this manner.

What are the problems associated with using industry to define the public and private sector?

The public sector is sometimes perceived to be limited to education, health and public administration. This is not the case; public sector activity does exist outside these three industries and, conversely, private sector employees exist within them.

- Education, health and public administration are not exclusively public sector. In fact, only 59% of education and less than half of health is in the public sector.
- There is significant public sector employment in transport and storage and finance and Insurance and even public sector employment in agriculture. For example, a local authority may be considered to operate largely in SIC2007 84 (public administration and defence). However, it may have local units engaged in the maintenance of local parks and gardens, or the maintenance of local authority vehicles.
- It is also possible to have private sector businesses operating in industries thought of as being engaged in public sector activity. For example some private businesses are engaged in the provision of health care or residential care.

The method of using industry to define what is public sector and what is not is known to produce misleading results. The established method is to use the legal status of the business.

It can be argued that an analysis undertaken on the basis of industry is more consistent than one based on legal status, as such an industry based analysis would not be impacted by such discontinuities described in the section above. It would not however be an accurate reflection of public/private employment, and may actually be affected by its own discontinuities related to a change in industry classification.

An analysis of BRES 2013 public/private sector estimates by Broad Industrial Group (BIG)

Although the public sector is more prevalent in some industries (such as public administration, education and health) than others, it is actually spread over a wide range of different industry groups. Table 1 below shows public sector employees by Broad Industry Group (BIG) (agglomerations of SIC2007 classifications). It shows that they are present in all of the available 18 BIGs. In particular they are well represented in transport and storage and finance and insurance; most noticeably in division 64 (financial service activities; except insurance and pension funding) and 53 (postal and courier activities), which reflects the public sector classification of some banks and Royal Mail respectively (Royal Mail has since been reclassified to the private sector). As can be seen, public sector employment is also present in the retail sector.

Table 1: Public sector employees by BIG in 2013 (thousands)

Broad Industrial Group	Public sector employees	Percentage of industry group that is public sector
Agriculture; Forestry & Fishing	2,100	7.1
Mining; Quarrying & Utilities	32,000	9.2
Manufacturing	20,900	0.9
Construction	33,000	2.8
Motor Trades	3,000	0.6
Wholesale	4,700	0.4
Retail	2,200	0.1
Transport & Storage (inc Postal)	207,300	17.2
Accommodation & Food Services	15,100	0.8
Information & Communication	21,300	2.0
Finance & Insurance	165,600	16.4
Property	23,100	5.1
Professional; Scientific & Technical	57,700	2.7
Business Administration and Support Services	73,700	3.2
Education	1,514,700	58.7
Health	1,765,400	48.1
Public Admin	1,302,500	99.2
Other	124,600	10.1

The message to be taken from this analysis is that public sector employment is not constrained to education, health and public administration and can be found throughout the GB/UK economy. In fact, approximately 790,000 public sector employees are present in industries outside of education, health and public administration. An example of this could be a retail outlet of a public body such as a museum, Kew Gardens or the BBC.

Comparing Local Authority Districts by legal status and industry methodologies

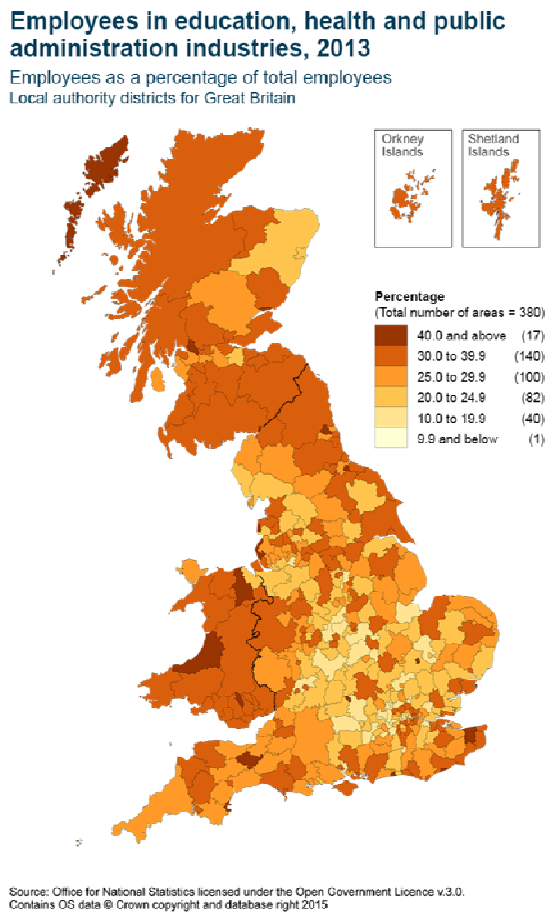
Figure 1 and Table 2 below show the different picture that can be painted when applying these two different measures of public sector employees to the 2013 BRES results. Defining the public sector by legal status as opposed to industry results in lower levels of public sector employees in Great Britain; the legal status definition giving an overall figure of 5.4 million as opposed to a figure of 7.6 million on an industry basis.

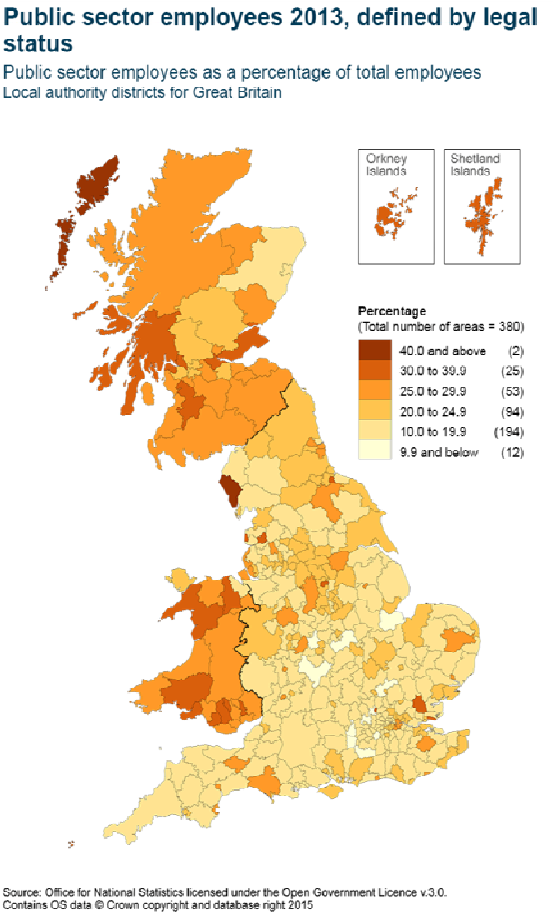
Table 2: A comparison of 2013 public sector employees based on industry and legal status definitions

	Industry definition	Legal status definition	Difference
England	6,442,100	4,434,100	2,008,000
Scotland	708,800	601,400	107,400
Wales	413,000	333,500	79,500
Total	7,563,900	5,368,900	2,195,000

The industry definition overestimates the level of public sector employees by 41% overall, yet only over-estimates Scotland and Wales by 17.7% and 23.8% respectively. This trend can also be seen in Figure 1. This is because England has a higher percentage of private sector employees (53.8%) engaged in health than either Scotland or Wales, which has 39.5% and 45.7% respectively. England also has a higher percentage of private sector employees engaged in education (42.2%) than Scotland (38.2%) and Wales (28.5%).

Figure 1: GB public sector employment by local authority district in 2013





A good example of the difference the two approaches can cause is the Copeland local authority district in the North West of England. Using BRES 2013 estimates, the level of public sector employees here is 23.6% using an industry based analysis. However, using a legal status approach this figure increases to 52.5% as a result of significant public sector employees outside of the public administration, education and health industries.

Issues with looking at changes over time using the industry definition

As well as showing different levels of employees in the public and private sectors, the industry definition can give very different and misleading results when compared over time. Figures 2 and 3 below show the growth in the public (figure 2) and private (figure 3) sectors between 2009 and 2013 using the established legal status definition and the industry definition. Using the legal status definition, we can see a clear decrease in public sector employees across all regions apart from Wales, while using the industry definition we get a completely different story, with nearly all regions showing an increase.
The picture is less stark when looking at the private sector. Nevertheless, the industry definition shows much smaller growth than the established, legal status definition.

Figure 2: Growth (2009-2013) in public sector employment using both definitons

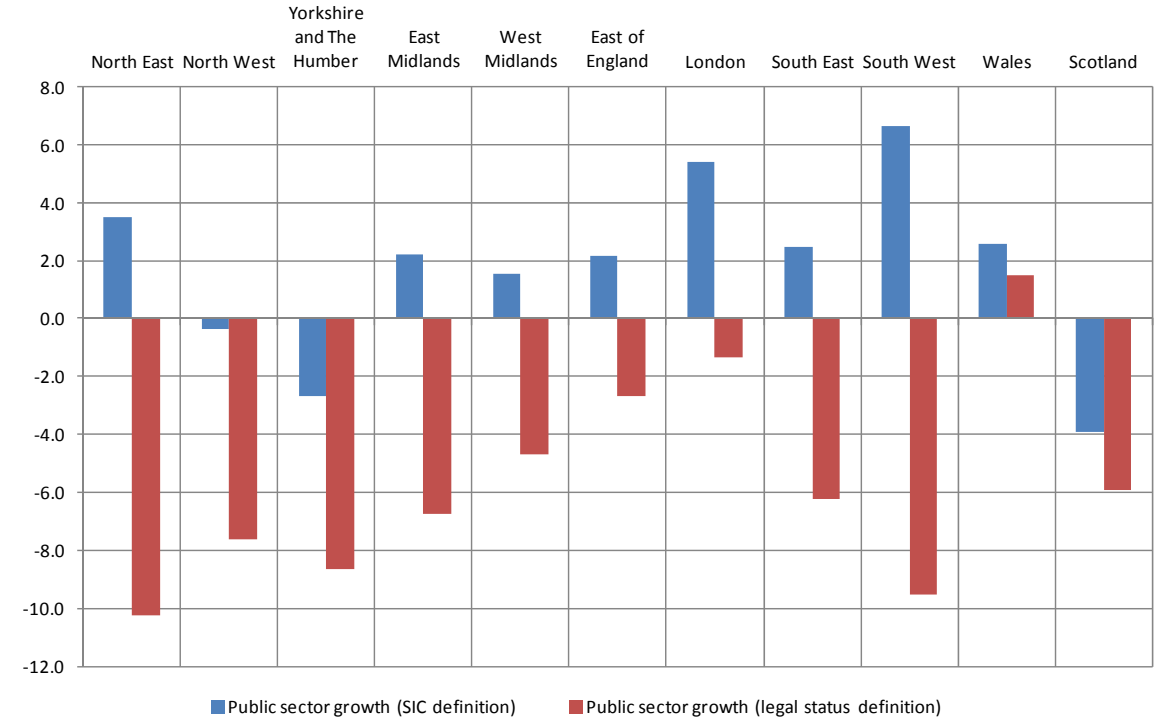
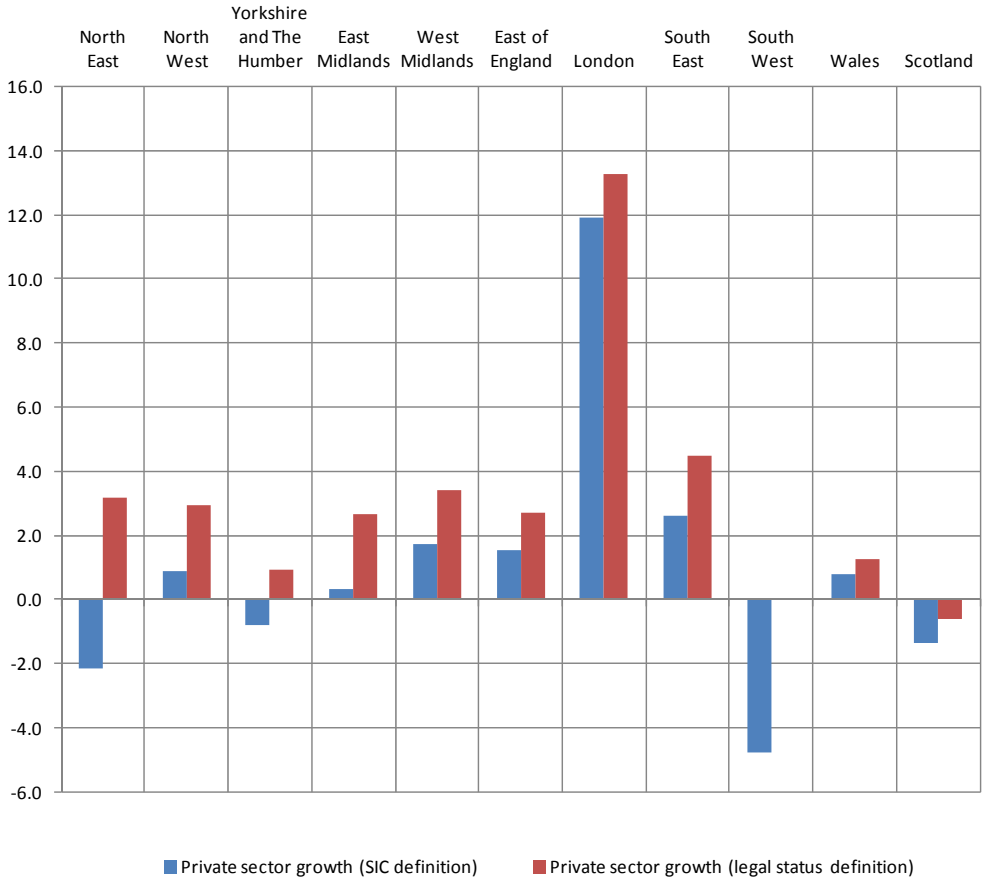


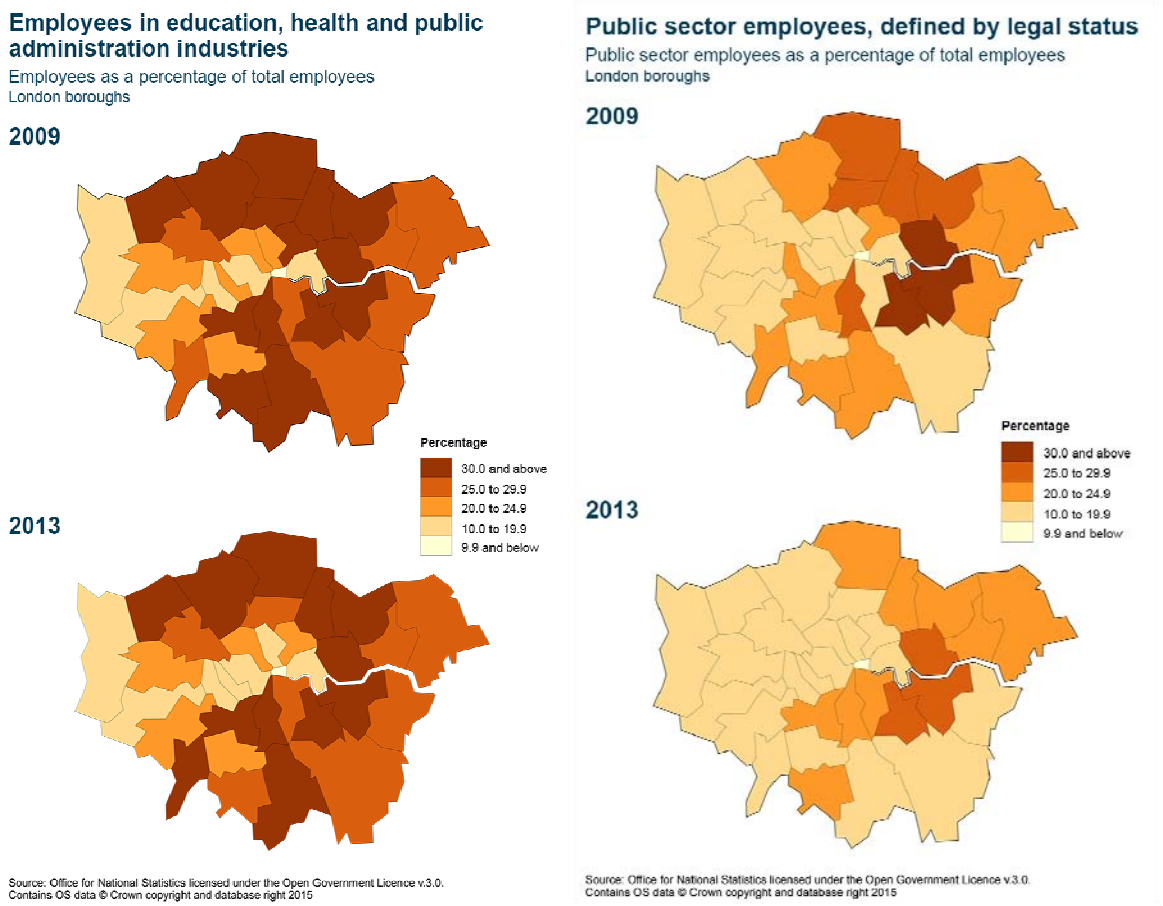
Figure 3: Growth (2009-2013) in private sector employment using both definitons

%



Local authority districts in London

Figure 2: London region public sector employees by local authority district



Comparing the maps in figure 2 shows the potential problems with using the industry based definition, since the percentage of public sector employees within local authority districts in the London region are overestimated**.**

Comparing the public and private sector employees over time using the two definitions for London can also show misleading results. For example, using the industry definition shows that over 90% of growth in the private sector is accounted for by London, whereas the true figure, using the legal status definition is just over 50%.

Summary

This paper shows that public sector employees are not limited to industries that may traditionally be thought of as public sector. In fact, public sector employees are present in every Broad Industry Group (BIG) and in 70 out of a total of 84 2-digit SIC2007 classifications, while private sector employment is present in all 84. An analysis based on industry can overestimate the level of GB public sector employees in Great Britain by over 2 million employees.

Any analysis of public/private sector employees can only effectively be done when based on where the control of the business is i.e. based on legal status. This methodological aspect is important in producing accurate and informed statistics. It is worth noting, however, that any analysis based on legal status can be impacted by discontinuities caused by changes to the legal status of specific businesses, such as the privatisation of Royal Mail, and this should be taken into account when carrying out analysis using BRES.

When looking at change over time the industry based approach is less likely to be impacted by changes in legal status and so can avoid such discontinuities as that caused by the reclassification of further education colleges and sixth form colleges from the private sector to the public sector. However, changes of legal status are far less common than changes in the industry of businesses which in turn can impact on any analysis by industry. Any analysis over time on either basis is liable to be impacted by either change in legal status or industry of businesses depending on which approach is employed. Changes in legal status classification, however, despite having a potentially larger impact, are better documented.

References

	Title of Reference	Website location
1	Business Register Employment Survey (BRES)	http://www.ons.gov.uk/ons/guide-method/method-quality/specific/labour-market/business-register-and-employment-survey--bres-/index.html
2	Office for National Statistics (ONS) website	http://www.statistics.gov.uk/default.asp
3	NOMIS	http://www.NOMISweb.co.uk
4	UK (SIC) 2007	http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html

Business Register and Employment Survey (BRES) revisions policy

Following the initial publication of the data for year t in September of year t+1, the data will be revised and re-released in September of year t+2 (that is at the same time as the release of the provisional data for year t+1). The revisions will arise from a complete rerun of survey results, including re-weighting and taking on any new returned data. The complete revised dataset will be re-released as the final dataset. Proposed revisions outside of this regime will be logged by the results team and considered for release if appropriate.

Revisions might also arise under other circumstances, for example, following a change in methodology or the introduction of a new Standard Industrial Classification (SIC). If so, these revised datasets will be re-released in a planned and coordinated way. Significant revisions will be explained to both internal and external users at the time of release, subject to the usual rules on confidentiality

Discontinuity analysis of the move from the Annual Business Inquiry to the Business Register Employment Survey

1. Executive Summary

The Business Register and Employment Survey (BRES) is a new Office for National Statistics (ONS) survey, the aim of which is to maintain the Inter-Departmental Business Register (IDBR) and provide the basis for annual estimates of employment.

As the new basis for producing annual employment estimates, its introduction results in a discontinuity when comparing the estimates produced by BRES to those of its predecessor, the Annual Business Inquiry part 1 (ABI/1) in a common year, 2008. This will also impact on the Workforce Jobs (WFJ) estimates for employees as these figures are benchmarked against the ABI for certain sectors of the economy.

The overall discontinuity was estimated at 317,000 employees in an upward direction. That is, BRES yields an estimate of employment in 2008 that is 317,000 higher than obtained from ABI/1 for the same year. The discontinuity for WFJ benchmarking is estimated to be 315,000. This differs to the overall discontinuity because WFJ is not benchmarked to ABI for all industries.

The BRES 2009 estimates also include a change to the farm agriculture estimates which are collected by the Department for Environment, Food and Rural Affairs (DEFRA). The figures now only include commercial holdings as opposed to 'all' holdings previously. This accounts for a change of 6,500 employees in a downward direction. This change is not included within the analysis of the move from ABI/1 to BRES.

Analysis of the discontinuity is only undertaken for Great Britain as Northern Ireland figures were not included as part of the ABI/1 estimates.

Scaling factors can be calculated by using the estimated BRES and ABI/1 2008 estimates to produce a time series on a consistent basis. Further work will be conducted by the ONS to provide additional guidance for users during 2011.

2. Background

The Business Register and Employment Survey (BRES) went live in August 2009 and has replaced and integrated two ONS business surveys:

- Annual Business Inquiry part 1 (ABI/1) - collected employees data at the business (Reporting Unit) level to produce annual employment estimates;
- Business Register Survey (BRS) - collected information on the structure of an enterprise at the reporting unit level and employees data at the site (local unit) level to maintain the sampling frame for business surveys, which is known as the Inter-Departmental Business Register (IDBR).

BRES is a UK sample survey of approximately 80,000 businesses (covering approximately 500,000 local units), and collects information at the business (reporting unit) and site (local unit) level. BRES is a dual purpose survey. It is responsible for providing the ONS's annual national and regional employment estimates, and also maintaining the IDBR. In both cases BRES has aimed to deliver a number of benefits. The main benefits are highlighted below:

Improved employment estimates (national & regional)

ABI/1 collected employment information at the Reporting Unit level and produced national estimates each year. Regional employment estimates were obtained by using an apportionment method (apportioning the RU national estimates to local units).

In contrast, BRES collects information at the local unit level and calculates national and regional estimates directly from this level. This will improve the quality of employment estimates at the regional level.

Improved IDBR

By integrating two different surveys, and removing the duplication, ONS has been able to increase the number of questionnaires that will update the register on an annual basis without increasing the overall number of questionnaires that are sent to businesses. BRES also has a new, improved sample design. Therefore, a higher level of maintenance of the IDBR will be achieved.

Improved ABI/2 regional estimates

As a result of modelling the turnover collected by BRES, an improvement to the ABI/2 apportionment model that is currently used to produce regional financial information will be possible. This model currently makes use of two auxiliary variables; Standard Industrial Classification (SIC) and employment. The introduction of BRES will allow a financial auxiliary variable to be used, which will improve the ABI/2 estimates and subsequently Regional Accounts.

3. Potential for a discontinuity

As BRES produces annual employment estimates that replace ABI/1, differences between the surveys and their processes will cause a discontinuity in the time series of annual employment estimates. There are several areas where improvements have been introduced, but which lead to a discontinuity:

Questionnaire design

The BRES uses a new, improved questionnaire with better associated notes. This new questionnaire was produced after feasibility work, pre-field testing and the evaluation of pilots and field tests. The 'questionnaire effect' in the discontinuity is mainly driven by smaller businesses since many of the large businesses were already returning a BRES questionnaire in 2008.

Sample design

In constructing the new BRES sample design a range of options were investigated, looking at the design for certain variables, for example total employees, while considering their effectiveness at updating the IDBR. It was found that the new design, which involves stratification by SIC division and using various criteria for employment size bands provides the most appropriate design for calculating total employees while maintaining the best coverage properties

Take-on validation and quality assurance

There are some changes to how validation and quality assurance of survey responses happens within the BRES system. Some of these changes are due to additional checks being possible as BRES collects both local unit and reporting unit level data.

Estimation methodology

The BRES is used to estimate employment at the overall level as well as for regional and industrial breakdowns. Given the sample size, it is not possible to produce accurate employment estimates by detailed regional and industrial breakdowns using standard business survey estimation techniques. To solve this, BRES uses a specific methodology that involves calibrating to IDBR employment totals at both regional and industrial level separately. This increases the effective sample size and the resulting estimates are more accurate.

Outlier treatment, which reduces the potential impact of extreme responses on the overall estimates, has also been improved within BRES, replacing a method called 'post-stratification' with 'Winsorisation', which was found to produce better results

4. Data sources available to measure the discontinuity

In 2008, the BRES sample design was used to select the BRS sample; however, only 1 in 7 businesses received a BRES questionnaire (approximately 10,000). The BRS questionnaire differs in an important way with regard to the question about working owners for “limited companies”, which constituted about two thirds of small and medium sized businesses in the 2008 sample. Because of these differences, these businesses were excluded from the analysis to measure the discontinuity. However, this left the remaining BRES sample too small to be useful for measuring any discontinuity effect and as a result the analysis used only data from the 2008 ABI/1 survey (excluding farms, which are not covered by BRES).

5. Measuring the discontinuity of introducing BRES

In estimating the size of the discontinuity ABI/1 2008 data from large businesses were used without amendment, because ABI/1 used mostly BRS/BRES data in 2008. In addition, ABI/1 data from small and medium businesses were processed using the new estimation method, including treating outliers using Winsorisation. The approach meant that the effect of the questionnaire change was not accounted for in the estimation of the discontinuity.

A separate analysis was carried out to assess the questionnaire effect but the analysis was limited to large businesses. Since 2006 ABI1 used BRS questionnaires where the samples of the two surveys overlap, which meant that for most large businesses BRS questionnaires were used. Hence, a comparison of the returns from BRS and BRES from the split BRS/BRES 2008 returns would indicate what the impact of the introduction of the BRES questionnaire would be on the contribution of large businesses to the estimate. Note that the impact of the working owners question is negligible for large businesses and hence it should not affect the results of the analysis.

Large businesses are stratified into 3 strata: (a) a stratum for complex businesses, which are businesses whose local units are spread between at least two divisions or two GORs; (b) a stratum for businesses with more than 100 full time equivalent employment (FTE) but not complex; (c) a stratum for special arrangement businesses, which are very large businesses that report electronically. The last stratum was not included in the analysis as, for practical reasons, the BRS/BRES sample split was not done at random in this stratum. All three strata are completely enumerated.

Under the ratio model, the contribution to the estimate from each stratum of large businesses is equal to the total register employee count multiplied by the ratio of the sum of returns over the sum of register employees. Table 1 shows that the ratios obtained separately from BRS and BRES data are very similar (overall, the ratios are 0.979 and 0.977 for BRES and BRS, respectively). We can use these ratios to estimate the difference between the estimates based on a full BRS sample and a full BRES sample. Given that the total number of employees in large businesses according to the IDBR at the time of selection was about 18 million, using returns solely from the BRES questionnaires would result in an estimate of employees in large businesses that was about 18m*(0.979-0.977), or 45,000.

However, because only 1 in 7 businesses received a BRES questionnaire, the sampling error of the difference between the estimates is quite large and would form an important part of the difference between the estimates, making any questionnaire effect on the contribution from large businesses rather small. If the same results hold between ABI1 and BRES questionnaires for small and medium businesses, where the ABI1 questionnaire was used for most businesses in the ABI1 sample, then our estimate of the discontinuity, which ignores the questionnaire effect, would be quite accurate.

Table 1 - Analysis of questionnaire effect.

Sampling cell	Survey	Number of reporting units	Total register employees (thousands)	Total returned employees (thousands)	Ratio (total returned employees/ total register employees)
Complex	BRES	2,304	833	806	0.968
Complex	BRS	13,675	5,827	5,636	0.967
100+ FTEs but not complex	BRES	1,089	453	453	1.000
100+ FTEs but not complex	BRS	6,518	2,625	2,621	0.998
Overall	BRES	3,393	1,286	1,259	0.979
Overall	BRS	20,193	8,452	8,257	0.977

Because the same data were used in the discontinuity analysis, excluding questionnaire effects, as were used to produce the 2008 estimates, the discontinuity that is measured is real; that is, it was not due to sampling error. Also, the main source of the discontinuity is the change in outlier methodology. Running ABI1 data through Winsorisation, while keeping the estimation (weighting) on the previous basis, leads to a very similar estimate to that obtained when the new methodology is used in full.

The overall discontinuity in the estimate of total employees due to the new estimation methodology is estimated to be 317,000 in an upward direction.

6. Main analysis

This section reviews the results of comparing the 2008 ABI/1 estimates with the 2008 BRES estimates. Analyses were undertaken at various levels with the summary of the results presented in the remainder of the article. Analyses were undertaken at whole economy level and at 2 digit Standard Industrial Classification (SIC) levels. Regional results were produced and analysed at Government Office Region (GOR), County and Local Authority District level. The analysis excludes farm agriculture figures.

6.1 Results by industry

There are certain sectors of the economy that were affected to a greater degree than others. Table 1 identifies the impact of the changes at the broad industrial grouping level

Table 2 – Impact of the discontinuity at a Broad Industrial Grouping level (thousands)

Broad Industrial Grouping	Section Name	ABI Total Employees	BRES Total Employees	Discontinuity	Percentage Difference
A	Agriculture; Forestry & Fishing	42	42	1	1.8
B	Mining; Quarrying & Utilities	288	296	8	2.8
C	Manufacturing	2,531	2,534	3	0.1
D	Construction	1,352	1,364	12	0.9
E	Motor Trades	478	477	-1	-0.2
F	Wholesale	1,115	1,122	7	0.7
G	Retail	2,801	2,813	12	0.4

H	Transport & Storage (inc Postal)	1,251	1,252	1	0.1
I	Accommodation & Food Services	1,801	1,832	31	1.7
J	Information & Communication	997	1,010	12	1.2
K	Finance & Insurance	1,071	1,112	40	3.8
L	Property	366	383	17	4.6
M	Professional; Scientific & Technical	1,821	1,830	9	0.5
N	Business Administration and Support Services	2,189	2,273	84	3.8
O	Education	2,503	2,512	9	0.3
P	Health	3,243	3,281	38	1.2
Q	Public Admin	1,441	1,441	0	0.0
R	Other	1,204	1,237	33	2.8
Total		**26,494**	**26,810**	**317**	**1.2**

The largest increase is seen in the Business Administration and Support Services with an absolute difference of 84,000. Within this broad industry group the “Employment activities” sector saw the largest increase. The largest increase in percentage terms can be found in the Property industrial grouping, with an increase of 4.6 per cent. For all of these industries, analysis shows that small businesses are driving the large positive discontinuities.

All industrial grouping are showing a positive discontinuity except for motor trades, which is showing a small negative discontinuity of 0.2 per cent.

6.2 Regional Results

The following tables analyse the impact of the discontinuity at region level.

Table 3 – Impact of the discontinuity at Government Office Region Level (thousands)

GOR	GOR Name	ABI Total Employees	BRES Total Employees	Discontinuity	Percentage Difference
A	North East	1,028	1,054	26	2.6
B	North West	2,992	2,997	5	0.2
D	Yorkshire and The Humber	2,219	2,233	14	0.6
E	East Midlands	1,875	1,899	24	1.3
F	West Midlands	2,337	2,368	32	1.4
G	East of England	2,368	2,409	41	1.7
H	London	4,168	4,252	84	2.0
J	South East	3,728	3,738	10	0.3
K	South West	2,216	2,242	26	1.2
W	Wales	1,169	1,181	12	1.1
X	Scotland	2,395	2,437	42	1.8
	Total	**26,494**	**26,810**	**317**	**1.2**

The table above shows the discontinuity by Government Office Region. In absolute terms London is showing the largest discontinuity of 84,000.

In percentage terms the North East shows the largest discontinuity with a difference of 2.6 per cent. The difference is driven mainly by the retail and health sectors. All Government Office Regions show a positive discontinuity.

7. Impact on Workforce Jobs

Workforce jobs (WFJ) estimates are usually benchmarked to ABI/1 results and will be benchmarked to BRES in future years. The changes introduced by BRES will have an impact on those estimates. However, the size of the overall discontinuity differs because WFJ estimates are not benchmarked against the public sector component.

The total discontinuity for WFJ following the introduction the introduction of BRES has been estimated to be 315,000 employees.

8. Handling the discontinuity - information for users

To help inform users, 2008 estimates on the new basis have been produced. These are available on the BRES homepage of the National Statistics website and through Nomis. Users can compare the 2008 BRES and ABI/1 estimates to identify the discontinuity for the region and/or industry of interest. Using these estimates a scaling factor can then be produced by taking the BRES 2008 estimate and dividing this by the appropriate 2008 ABI/1 estimate. This factor can then be applied to the ABI/1 back series to provide estimates on a continuous basis.

As an example, the 2008 ABI/1 employee estimate for the North East of England is 1,027,000 and for the 2008 BRES the estimate is 1,054,000 so the scaling factor would be 1.03. The ABI/1 back series for the North East can then be multiplied by the scaling factor of 1.03 which will ‘scale’ the existing ABI/1 series onto a consistent level to the current BRES estimates.

Working owners discontinuity in the Business Register and Employment Survey (BRES)

Introduction

Changes in the treatment of working owners in the 2011 Business Register and Employment Survey (BRES) have led to a discontinuity between the 2010 and 2011 BRES results. This article gives background information on the changes that were made to the questionnaire, a high level analysis of the discontinuity, and details of what the Office for National Statistics (ONS) has done to estimate the size of the discontinuity for users, giving continuity between 2010 and 2011 results.

Background

What are working owners?

Working owners include sole traders, sole proprietors and partners. Cognitive testing carried out by ONS has shown that directors of limited companies often consider themselves to be in this category. However, it is clear from HMRC guidance that these should be classified as employees of the company.

What changes have been made to the 2011 BRES questionnaire?

In order to ensure that all limited companies (excluding limited liability partnerships) return the correct information for the 2011 survey, changes were made to the BRES questionnaire to route directors of limited companies around the working owners question, directly to the employees question. The questionnaire then makes it clear that directors of limited companies should be included in this category. The result of this change is that some of these directors who would have previously been classified as working owners will now be classified as employees. This has increased the BRES estimate of employees and caused a discontinuity in the 2011 results.

Is there a discontinuity in the employment figures?

Simply counting directors of limited companies as employees rather than working owners should not have any effect on employment estimates, as employment is the sum of employees plus working owners. However, measuring this discontinuity has been further complicated by the discovery of instances of double counting in the results. This double counting is a consequence of some directors of limited companies being included by those completing the questionnaire in both the employees' and the working owners' category. The ONS therefore conducted a separate survey which enabled an estimate to be made of the extent to which double counting took place. This enabled ONS to make an estimate of the size of the discontinuity between 2010 and 2011 and produce an adjusted version of 2010 results which attempts to remove the discontinuity.

Handling the discontinuity – Information for users

This document along with the 2011 BRES statistical bulletin gives users information on the discontinuity for high level estimates (region and broad industry group). To allow users to measure the full discontinuity caused by changes to the way that working owners are categorised in the BRES results, ONS will be releasing a full set of 2010 revised BRES estimates that have been adjusted for the working owners discontinuity before the end of the 2012 calendar year.

Analysis

The discontinuity in the 2011 BRES results brought about by the changes to the 2011 data can not be reversed. In other words, it is impossible to tell how many limited companies would have recorded their directors as working owners had the changes to the questionnaire not been made. Therefore the discontinuity analysis has been carried out on the 2010 data by moving directors of limited companies into the employees' category, while making an adjustment for the known double counting. Since information on whether a working owner is full or part time is not asked in the BRES questionnaire, they have been assigned to one of these categories based on the findings of a small pilot study carried out internally by ONS.

Caveat: All analysis shown below is at a Great Britain level only, as Northern Ireland collect and process their own data independently. The analysis also excludes farms data as this is supplied by the Department for Environment, Food and Rural Affairs (DEFRA) and so is unaffected by this issue.

Discontinuity by country

Thousands

Employees 2010	Employees 2010	Employment 2010	Employees 2010 (with adjustment)	Employment 2010 (with adjustment)	Employees change		Employment change	
					Count	%	Count	%
England	22,499	23,796	22,955	23,671	456	2.0	- 125	-0.5
Wales	1,136	1,198	1,151	1,193	15	1.3	- 5	-0.4
Scotland	2,277	2,374	2,302	2,364	25	1.2	- 10	-0.3
Great Britain	25,912	27,368	26,408	27,227	496	1.9	- 140	-0.5

The table above shows that the total discontinuity in the employee estimates caused by the changes to the 2011 BRES questionnaire stands at just under a half a million increase. However, for employment there has been a decrease of 140,000 caused by adjusting the data to remove the estimated double counting.

Discontinuity by industry

Thousands

Employees 2010	Employees 2010	Employment 2010	Employees 2010 (with adjustment)	Employment 2010 (with adjustment)	Employees change		Employment change	
					Count	%	Count	%
Agriculture; Forestry & Fishing	28	42	31	41	3	9.1	- 1	-1.8
Mining; Quarrying & Utilities	332	337	335	337	3	0.8	-	-0.1
Manufacturing	2,289	2,363	2,317	2,352	28	1.2	- 11	-0.5
Construction	1,149	1,355	1,230	1,331	80	7.1	- 23	-1.7
Motor Trades	459	509	468	504	9	2.0	- 4	-0.9
Wholesale	1,076	1,142	1,107	1,135	31	2.9	- 8	-0.7
Retail	2,699	2,869	2,733	2,857	33	1.2	- 12	-0.4
Transport & Storage (inc Postal)	1,195	1,243	1,205	1,240	10	0.9	- 3	-0.2
Accommodation & Food Services	1,731	1,833	1,752	1,823	21	1.2	- 10	-0.5
Information & Communication	976	1,058	1,026	1,046	50	5.2	- 13	-1.2
Finance & Insurance	1,000	1,030	1,016	1,025	16	1.8	- 5	-0.3
Property	360	446	397	441	37	10.4	- 5	-1.0
Professional; Scientific & Technical	1,808	2,054	1,901	2,030	93	5.2	- 24	-1.1
Business Administration and Support Services	2,094	2,175	2,131	2,165	37	1.8	- 11	-0.5
Education	2,515	2,537	2,526	2,535	10	0.4	- 2	-0.1
Health	3,488	3,567	3,497	3,564	9	0.3	- 3	-0.1
Public Admin	1,510	1,510	1,510	1,510	-	0.0	-	0.0
Other	1,204	1,298	1,229	1,291	25	2.0	- 7	-0.5
All Industries	25,912	27,368	26,408	27,227	496	1.9	- 140	-0.5

The broad industry group with the largest discontinuity in the number of employees is professional, scientific and technical (93 thousand increase) followed by construction (80 thousand increase). Property has the largest percentage increase with 10.4 per cent. The largest change in employment is in construction and professional, scientific and technical.

Discontinuity by region

Thousands

Employees 2010	Employees 2010	Employment 2010	Employees 2010 (with adjustment)	Employment 2010 (with adjustment)	Employees change		Employment change	
					Count	%	Count	%
North East	997	1,036	1,008	1,034	11	1.1	- 2	-0.2
North West	2,918	3,066	2,969	3,050	51	1.8	- 16	-0.5
Yorkshire and The Humber	2,157	2,264	2,190	2,256	34	1.6	- 9	-0.4
East Midlands	1,853	1,961	1,891	1,951	38	2.1	- 10	-0.5
West Midlands	2,255	2,372	2,293	2,358	39	1.7	- 14	-0.6
East of England	2,322	2,471	2,378	2,455	55	2.4	- 16	-0.7
London	4,103	4,346	4,206	4,323	103	2.6	- 23	-0.5
South East	3,674	3,910	3,756	3,886	82	2.2	- 24	-0.6
South West	2,220	2,370	2,263	2,359	43	2.0	- 12	-0.5
Wales	1,136	1,198	1,151	1,193	15	1.3	- 5	-0.4
Scotland	2,277	2,374	2,302	2,364	25	1.2	- 10	-0.3
Great Britain	25,912	27,368	26,408	27,227	496	1.9	- 140	-0.5

The discontinuity as a percentage of total employees is fairly even across the different regions with London having the largest increase both in terms of number of employees and percentage increase in employees. The least affected is the North East.

Affect on estimates by full/part time

Thousands

Employees 2010	Part-time employees 2010	Full-time employees 2010	Part-time employees 2010 (with adjustment)	Full-time employees 2010 (with adjustment)	Part-time employees change		Full-time employees change	
					Count	%	Count	%
Agriculture; Forestry & Fishing	6	22	7	23	1	12.8	2	8.0
Mining; Quarrying & Utilities	22	310	23	311	1	4.4	2	0.6
Manufacturing	193	2,096	202	2,116	9	4.6	19	0.9
Construction	115	1,034	136	1,094	21	19.0	59	5.7
Motor Trades	62	397	65	403	3	5.2	6	1.5
Wholesale	139	936	148	959	9	6.1	23	2.4
Retail	1,541	1,158	1,552	1,181	11	0.7	23	2.0
Transport & Storage (inc Postal)	183	1,012	186	1,019	4	2.1	7	0.7
Accommodation & Food Services	968	764	973	779	5	0.5	16	2.0
Information & Communication	132	844	150	877	18	13.8	32	3.8
Finance & Insurance	150	850	157	859	7	4.8	9	1.3
Property	94	266	104	294	9	10.1	28	10.5
Professional; Scientific & Technical	342	1,466	366	1,535	24	7.0	69	4.8
Business Administration and Support Services	722	1,372	732	1,399	10	1.4	26	1.9
Education	1,240	1,275	1,244	1,281	4	0.4	6	0.5
Health	1,530	1,958	1,532	1,965	3	0.2	7	0.3
Public Admin	376	1,134	376	1,134	-	0.0	-	0.0
Other	554	650	562	666	8	1.5	16	2.5
All Industries	8,368	17,545	8,515	17,894	147	1.8	349	2.0

The table above shows that the majority of directors of limited companies (excluding limited liability partnerships) are assigned to the full-time category. However part-time employees generally have a larger percentage increase due to the smaller number of part-time workers in most industries.