

Business Register and Employment Survey

Quality and Methodology

Table of Contents

General Information	Methodology	Quality
<p>Data Source</p> <p>Users</p> <p>Cost and Response Burden</p> <p>Confidentiality, Transparency and Security</p> <p>Disclosure Control</p> <p>Revisions Policy</p>	<p>Sample Frame</p> <p>Survey Cycle</p> <p>Sampling Methodology</p> <p>Data Collection</p> <p>Validation and Quality Assurance</p> <p>Data Sharing</p> <p>Imputation and Grossing</p> <p>Dissemination</p> <p>Definitions</p>	<p>Relevance</p> <p>Accuracy</p> <p>Timeliness/Punctuality</p> <p>Accessibility and Clarity</p> <p>Coherence and Comparability</p>

General Information

<p>Theme: Labour market Frequency: Annual Geographical Area: Northern Ireland Variables: Employee jobs by Gender and Working Pattern, Standard Industrial Classification (2007), Geographical Areas, Public and Private Sector</p> <p>Contact: BRES@finance-ni.gov.uk</p>	<p>The purpose of the BRES survey is two-fold:</p> <ol style="list-style-type: none">1. Provide employee job figures for Northern Ireland, and2. Update the NI element of the UK business register, known as the Inter-Departmental Business Register (IDBR). <p>The BRES collects employee job figures by gender and working pattern from public and private sector businesses in NI. The data is collected at local unit level (individual business sites) which allows for disaggregation of the employee job counts by NI geographies. The business description is collected which allows for disaggregation of the employee job counts by industry.</p> <p>The BRES collects information at a local unit level that is used to update the IDBR. The data collected includes: contact details including email address and business address, business operational status and business activity. The business register information obtained from the NI BRES is processed within the Economic Labour Market and Statistics Branch (ELMSB) within NISRA. This data is used to update the NI element of the IDBR which is used as a sampling frame for business surveys.</p> <p>The BRES questionnaire can be found here. The BRES report and associated tables can be found here.</p> <p>BRES is a compulsory government inquiry under Article 5 of the Statistics of Trade and Employment (Northern Ireland) Order 1988, which creates a legal obligation on businesses to make a return.</p> <p>The UK Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics. National Statistics status means that official statistics meet the highest standards of trustworthiness, quality and public value.</p> <p>The Office for National Statistics (ONS) conduct a Business Register and Employment Survey of businesses in England, Scotland and Wales. The GB BRES questionnaire is similar to the NI BRES</p>
--	--

	questionnaire and GB and NI data are used by the ONS to produce a UK level output. The ONS BRES output is available here . The UK BRES Quality and Methodology Information Report can be found here .
Data Source	<p>The statistics presented in the NI BRES publication are taken from the results of the annual BRES survey issued to eligible businesses operating in NI.</p> <p>The sample frame for the survey is the IDBR. The NI element of the IDBR is maintained by ELMSB.</p>
Users	<p>BRES data is used across central and local government as well as by national and international academic researchers.</p> <p>NI BRES key users include:</p> <ul style="list-style-type: none"> - Department for the Economy (Northern Ireland) - Office for National Statistics (ONS) – inclusion of data in UK level figures which contribute to European data on employee jobs - District Councils in Northern Ireland - Ulster University - Queen’s University of Belfast <p>NISRA seeks to ‘meet users need’ by continually improving the quality of its statistical output. Staff within ELMSB engage with users on a regular basis. NISRA, ELMSB will conduct a labour market user engagement event in September 2021.</p>
Cost and Response Burden	<p>The burden incurred on business by responding to the BRES is reported on an annual basis to NISRA Corporate Services and included in the annual NISRA report: NI Statistical Surveys – Assessment of burden on businesses, households and individuals</p> <p>Reducing the burden on business is a core focus of our methodological considerations for each survey cycle. Methods of reducing burden include:</p> <ul style="list-style-type: none"> - Adopting a survey cycle where the sample size is reduced in alternate years; - Rotating businesses in the sample element; - Increasing data share with the Quarterly Employment Survey (QES); and - Opting businesses in for webform data collection.

Confidentiality, Transparency and Security	<p>NISRA adheres to the ‘National Statistician’s Guidance: Confidentiality of Official Statistics’ in the collection and dissemination of Labour Market statistics.</p> <p>The data collected are stored on a secure network which is only accessible to staff working on the surveys.</p> <p>All paper questionnaires returned by businesses are stored in secure cabinets and are only accessible to staff working on the surveys.</p> <p>All staff are trained on protocols for protecting and maintaining the confidentiality of the data.</p>
Disclosure Control	<p>Standard disclosure control methodology is applied to the BRES data. This ensures that information attributable to an individual or business is not identifiable in any published outputs.</p> <p>The NI BRES is carried out under the Statistics of Trade and Employment (Northern Ireland) Order 1988. Article 7 (1) of this order requires that:</p> <p style="text-align: center;"><i>No individual estimate or return, and no information relating to an individual undertaking, obtained by a Northern Ireland department under the foregoing provisions of this Order or under the Statistics of Trade Act (Northern Ireland) [1949 c. 7 (N.I.)] 1949 shall, without the previous consent in writing of the person carrying on the undertaking which is the subject of the estimate, return or information, be disclosed by any person...</i></p> <p>Therefore, data to be released from BRES must be subject to disclosure control methods.</p>
Revisions Policy	<p>NI BRES data is not revised.</p>

Methodology

Sample Frame	The BRES sample is drawn from the IDBR.
---------------------	---

	<p>The IDBR is a comprehensive list of businesses registered for VAT and/or PAYE in the UK. It is the main sampling frame for business surveys carried out by UK government departments including the ONS and NISRA.</p> <p>Further details on the IDBR can be found on the NISRA webpage. September</p>																								
Survey Cycle	<p>The Northern Ireland BRES currently operates on a 4-year cycle. A full census of all eligible businesses in Northern Ireland is conducted every four years. A ‘big’ BRES has a sample size of approximately 30,000 businesses and is also conducted every four years. In the intervening years a ‘small’ sample of approximately 12,000 businesses are surveyed. Approximate sample sizes for NI BRES since 2015 is provided in the table below. A full census was due to be conducted in 2019. However, resources were not available to process the large volume of data so a big BRES was conducted.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Referred to as:</th> <th>Sample Size (approx)</th> </tr> </thead> <tbody> <tr> <td>2021</td> <td>Big</td> <td>33,000</td> </tr> <tr> <td>2020</td> <td>Small</td> <td>16,000</td> </tr> <tr> <td>2019</td> <td>Big</td> <td>33,000</td> </tr> <tr> <td>2018</td> <td>Small</td> <td>12,000</td> </tr> <tr> <td>2017</td> <td>Big</td> <td>30,000</td> </tr> <tr> <td>2016</td> <td>Small</td> <td>12,000</td> </tr> <tr> <td>2015</td> <td>Full Census</td> <td>55,000</td> </tr> </tbody> </table>	Year	Referred to as:	Sample Size (approx)	2021	Big	33,000	2020	Small	16,000	2019	Big	33,000	2018	Small	12,000	2017	Big	30,000	2016	Small	12,000	2015	Full Census	55,000
Year	Referred to as:	Sample Size (approx)																							
2021	Big	33,000																							
2020	Small	16,000																							
2019	Big	33,000																							
2018	Small	12,000																							
2017	Big	30,000																							
2016	Small	12,000																							
2015	Full Census	55,000																							
Sampling Methodology	<p>Census BRES (n~55,000) – all eligible businesses in NI are surveyed. An eligible business will be operating above the VAT threshold and/or registered for a PAYE scheme. The business activity will also fall between SIC 2007 codes¹: 01610 and 96090.</p>																								

¹ [Standard Industrial Classification Codes 2007](#)

Small BRES (n~13,000) – the sample for a small BRES consists of a fully enumerated/select all category or ‘census element’ and, another category from which a proportion of businesses are selected known as the ‘sample element’.

The census element includes all businesses with the following characteristics:

- has more than one live local unit;
- operates in the public sector i.e. have a legal status = 4, 5, or 6;
- has 20 or more employees (including working owners); or
- the business operates in NI but is based elsewhere in the UK.

A stratified random sample of the remaining businesses is taken. Neyman sampling is used to select the number of businesses within strata required to provide a specified precision. The Neyman methodology ensures that consideration is given to the variability of the observation within the strata as well as the number of cases in the strata. Therefore, if the variance of employment within the stratum increases then the sample size required for a given precision will also increase.

For a small BRES a two-stage Neyman is applied to District Council area (11) by Section (18) and at 2-digit SIC. The minimum number of businesses required to meet the precision for each stage is selected at random.

Big BRES (n ~ 33,000) – the sample for a big BRES consists of a fully enumerated/select all category or ‘census element’ and, another category from which a proportion of businesses are selected known as the ‘sample element’.

Those businesses with the following characteristics are included in the census element:

- has more than one live local unit;
- operates in the public sector i.e. have a legal status = 4, 5, or 6;
- has more than 5 employees; or
- the business operates in NI but is based elsewhere in the UK.

For a big BRES Neyman sampling is applied to strata within District Council area (11) by Section (18) and the minimum number of businesses needed to give a required precision are randomly selected from the population.

Neyman Sampling

The Neyman sampling methodology calculates the minimum number of units required to be surveyed in order to yield an estimate (ϵ) of a parameter within a given number of units of the population mean. At the 95% confidence level:

$$\epsilon = 1.96 \times \sqrt{\text{Var}(\text{estimator of population mean})}$$

or

$$\text{Variance (of estimated population mean)} = \frac{\epsilon^2}{1.96^2}$$

Under the Neyman allocation the minimum sample size n required to provide the estimate is given by:

$$n = \frac{(\sum_{i=1}^L N_i \sigma_i)^2}{N^2 D + \sum_{i=1}^L N_i \sigma_i^2}$$

where

$$D = \frac{\epsilon^2}{1.96^2}$$

The accuracy can be calculated as:

$$\text{sqr}t \left\{ \frac{(N_i \sigma_i)^2}{n} - N_i \sigma_i^2 \right\} \times \frac{2}{\sum \text{empe}}$$

L = number of strata

n = the number of businesses selected within the stratum

	<p>N_i = the number of businesses within each stratum</p> <p>σ_i = the standard deviation of employment within the stratum</p> <p>σ_i^2 = the variance of the employment within the stratum</p> <p>N = total number of businesses (census and sample element) in the stratum</p>
Data Collection	<p>Businesses receive the BRES questionnaire either in paper form via the postal service or as a webform sent via email.</p> <p>The data is collected as at the first Monday in September every year. The Quarterly Employment Survey (QES) for quarter 3 is also collected as at the first Monday in September every year.</p>
Validation and Quality Assurance	<p>The BRES data is checked via a series of coded validation gates. There are four main categories of failure: business structure, change of business details, errors on form and change of employment. The data is validated by checking previous survey returns or returns to other business surveys, checking existing data on the IDBR and, where necessary, contacting the business.</p> <p>Statisticians also check the data for consistency, growth in employee jobs, changes in SIC codes and postcode changes.</p> <p>Outliers are identified in the data by firstly calculating unit level growth as the difference between returned and selected employee job data. The unit level growth is then considered within industry, geographical and industry by geographical strata to identify outliers. Where an outlier is identified the response is checked by contacting the business.</p> <p>The rigorous checking procedures are required to improve the accuracy of the statistical output but also to ensure a robust business register is maintained as a sampling frame for BRES and other business surveys going forward.</p>
Data Sharing	<p>The BRES and the QES collect employee jobs data within ELMSB. The QES collects employee jobs data at reporting unit level. Where the QES and BRES sample overlap for businesses with one local unit the business is not sent a BRES form and the data is shared between the QES and BRES.</p> <p>Once the BRES survey cycle is complete further data is taken from the QES for businesses with more than one local unit that have not provided data to BRES.</p>

<p>Imputation and Grossing</p>	<p>Census Element</p> <p>The BRES census element non-response is imputed. The imputation method calculates the median change in employee jobs within a given stratum and applies this change to the selected employee job figure for those businesses that failed to reply to the survey.</p> <p>Sample Element</p> <p>The sample element data are weighted to obtain an estimate of the population from which the sample element was drawn. Weights are applied to account for the sample selection and to compensate for non-response. Data are also calibrated to known population values.</p> <p>A total weight is applied to each unit response.</p> <p>The census element data and the sample element data are then added to produce employee job figures for NI.</p>
<p>Dissemination</p>	<p>BRES data are published on the NISRA website in excel and ODS format. BRES data are also available on the NINIS (Northern Ireland Neighbourhood Information service) website.</p> <p>NI BRES publications are pre-announced on gov.uk, in accordance with the Code of Practice for Statistics.</p> <p>Users are notified, by e-mail, when the most recent BRES data has been published.</p>
<p>Definitions</p>	<p>An <u>employee</u> is anyone aged 16 years or over that the business directly pays from its payroll(s), in return for carrying out a full-time or part-time job or being on a training scheme in Northern Ireland.</p> <p>Persons working 30 hours or less per week are regarded as being in <u>part-time</u> employment.</p> <p><u>BRES includes:</u></p> <ul style="list-style-type: none"> - All workers paid directly from the business’s payroll(s), who are based in NI; - Those temporarily absent but still being paid, e.g. maternity leave; and - Seconded/Agency staff paid directly by you.

The COVID-19 pandemic resulted in staff being placed on furlough. BRES 2020 was a survey of employee jobs as at 7th September 2020. A furlough scheme was in place at that time. Furloughed staff were to be included in the employee jobs count for businesses on the NI BRES survey.

BRES excludes:

- All employees based outside NI;
- Those temporarily absent but still being paid, e.g. maternity leave;
- Agency workers paid directly from the agency payroll (n/a to recruitment agencies);
- Seconded/Agency staff paid directly by you;
- Voluntary workers;
- Former employees only receiving a pension;
- Self-employed workers;
- Working owners who are not paid via PAYE. Employment is obtained by adding the number of working owners to the number of employees. Working owners receive a share of the profits from the business but are not paid via PAYE. Working owners include sole traders, sole proprietors and partners;
- Agriculture (but includes animal husbandry service activities and hunting, trapping and game propagation);
- HM armed forces;
- Private domestic servants;
- Homeworkers; and
- Jobskills trainees without a contract of employment (non-employed status).

Statistical Business Units: A business may operate from one or more locations. For the purposes of this report the main business site or headquarters is referred to as a Reporting Unit. Individual sites (for example a factory or a shop) are called a Local Units. BRES data is collected at local unit level.

Quality

The National Statistician has provided [guidelines on measuring the quality of statistical output](#). The guidelines require a consideration of a number of dimensions in relation to quality: Relevance, Accuracy, Timeliness, Punctuality, Coherence and Comparability.

<p>Relevance</p> <p>The degree to which the statistical outputs meet users' needs.</p>	<p>BRES is regarded as the definitive source of official government employee statistics by industry and geographical area in NI. Employee job figures are provided by gender and working pattern for both the public and private sectors. This data is used widely across government to support policy decisions.</p> <p>The BRES collects data at local unit level. The local unit postcode is collected. This allows BRES employee jobs data to be disaggregated to District Council Area level and, when the sample is sufficiently large, to smaller NI geographies. The BRES data by geographical area is of particular value to local councils and within the Department for Communities (NI) in their work on town centre investment and growth.</p> <p>The BRES collects the industry code to 5-digit level for each local unit. The BRES data is available to 5-digit SIC (2007) when the sample size is sufficiently large.</p> <p>BRES is the only employment survey produced by NISRA that produces employee jobs data at low industry and geography levels.</p> <p>BRES is a point in time survey and is not designed to be used as a time series, although it is recognised that users do use the BRES data for this purpose. Changes to SIC codes and geographical boundaries result in discontinuities in the series.</p>
<p>Accuracy</p> <p>The degree of closeness between an estimate and the true value.</p>	<p>A census of all eligible businesses within NI is conducted every 4 years. A census provides exact values of employee jobs for all industrial and geographical breakdowns. A full census of all public sector businesses and those with more than one local unit is conducted every year. Therefore, the public sector employee job counts presented from BRES are exact values.</p> <p>In non-census BRES years a sample survey of private sector businesses with one local unit is conducted as well as a census of all private sector businesses and those businesses with more than one local unit. This reduces the number of survey forms issued and hence reduces cost in running the survey and the burden on business.</p> <p>The BRES sample survey provides estimates of employee job figures. The degree of closeness between the estimated employee job figures obtained from a sample and the true value is known as the accuracy.</p>

The accuracy of an estimate obtained from BRES is presented in the output in the form of a confidence interval. A confidence interval is a range of values within which we are 95% confident that the true value sits. For example, the total number of jobs in Antrim and Newtownabbey in September 2017 was estimated by BRES as 59,747 ±271. This means that if we conducted 100 surveys with the same sample size 95 of those surveys would produce a result in that range.

The more data we collect from businesses the closer the estimate will be to the true value. A ‘small’ BRES is conducted every other year which has a sample size of approximately 13,000 businesses. This sample is sufficiently large to provide employee job estimates within acceptable confidence intervals at District Council area level and for the 4 Headline Industries (Construction, Manufacturing, Other and Services).

A ‘big’ BRES is conducted every 4 years. The sample size for a big BRES is approximately 33,000 businesses. This sample size is sufficiently large to provide estimates within acceptable confidence intervals at ward level and 5-digit SIC level.

A summary of the level to which BRES data is disaggregated by year and sample size is given below.

Survey	Approx sample size	Geography				Industry		
		NI	District Council Area	Parliamentary Constituency Area	Ward	Headline Industry Sector	Industry Section (A-S)	Standard Industry Classification
BRES 2021	33,500	✓	✓	✓	✓	✓	✓	✓
BRES 2020	16,000	✓	✓	x	x	✓	x	x
BRES 2019	33,500	✓	✓	✓	✓	✓	✓	✓
BRES 2018	12,000	✓	✓	x	x	✓	x	x
BRES 2017	30,000	✓	✓	✓	✓	✓	✓	✓
BRES 2016	12,000	✓	✓	x	x	✓	x	x

	BRES 2015	55,000	✓	✓	✓	✓	✓	✓	✓
	BRES 2014	12,000	✓	✓	x	x	✓	x	x
	CoE 2013	30,000	✓	✓	✓	✓	✓	✓	✓
	BRES 2012	12,000	✓	✓	x	x	✓	x	x
	CoE 2011	55,000	✓	✓	✓	✓	✓	✓	✓
	BRES 2010	8,000	✓	✓	x	x	✓	x	x
	CoE 2009	30,000	✓	✓	✓	✓	✓	✓	✓
<p>Timeliness/Punctuality</p> <p>Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.</p>	<p>NISRA aim to publish NI BRES data within 12 months of the survey date.</p> <p>This time lag is required to produce estimates of a high enough quality to meet user needs, taking into account:</p> <ul style="list-style-type: none"> - the amount of time it takes respondents to complete and return the BRES form (as BRES asks for detailed local unit information); - the relatively large number of forms to be processed (12,000, 30,000 or 55,000 forms); - the validation and quality checking of the data prior to publication; and - the BRES data is also used to update the NI element of the IDBR. This is a time consuming process that requires detailed validation. <p>In 2016, the time lag between the survey date and publication date exceeded this 12 month window. The delay was due to staff changes within the branch.</p> <p>In 2018, the time lag was reduced to 10 months with publication occurring in the June 2019.</p> <p>Every effort is made to validate, process and analysis the data in a more timely manner given the available resources.</p>								

	<p>The BRES publication date is pre-announced, as required by the Code of Practice for Statistics. BRES has always published on the pre-announced date.</p>
<p>Accessibility and Clarity</p> <p>Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the data release details, illustrations and accompanying advice.</p>	<p>The BRES report is available from the NISRA website in PDF. The charts and tables within the report are available in EXCEL or CSV/ODS format. The tables that accompany the BRES report are available in EXCEL or CSV/ODS. In the Tim Berners-Lee scale of online output the NI BRES is 3 stars.</p> <p>BRES data are also available on NINIS (Northern Ireland Neighbourhood Information Service). BRES data can be viewed in tabular format and exported in CSV, EXCEL or PDF. The data are also presented interactively on charts and maps on the NINIS website.</p> <p>This quality and methodology report provides detail on the quality of the BRES data. The BRES report and tables are also accompanied by substantive explanatory notes and detailed metadata. The BRES publication includes an infographic aimed at supporting user understanding of the key points in a concise clear manner. The BRES publication date is pre-announced on gov.uk and on the ELMSB publication schedule here.</p>
<p>Coherence and Comparability</p> <p>Coherence is the degree to which data that are derived from different sources or methods, but refer to the same topic, are similar. Comparability is the degree to which data can be compared over time and domain for example, geographic level.</p>	<p>Alternative measures of employment are available for NI. Other measures include the Quarterly Employment Survey (QES) and the Labour Force Survey (LFS). The QES provides short-term employee job estimates in order to identify job trends from quarter to quarter and year to year. The QES collects employee data split by gender and working pattern and 2-digit SIC. Disaggregation by District Council Area is not available. The QES sample size is such that the estimates of total employee jobs should be accurate within +/- 1% of the BRES total. Employee job figures produced from BRES and QES quarter 3 are comparable.</p> <p>The LFS is a household sample survey carried out by interviewing individuals about their personal circumstances and work. The LFS counts the number of persons with jobs whereas QES and BRES count the number of employee jobs. LFS includes self-employed and unpaid family workers unlike QES and BRES.</p> <p>NI BRES data is included in the ONS employee job figures for the UK.</p>