Northern Ireland Annual Business Inquiry (NIABI) Quality Report

Introduction

This report covers the Northern Ireland Annual Business Inquiry (NIABI) statistical bulletin and provides information on the quality of the data used to produce the publication and the statistical time series. This will allow users to be informed about the quality of the information upon which they may be drawing conclusions and making decisions.

The report is based on the nine quality dimensions of the European Statistical System http://ec.europa.eu/eurostat/documents/64157/4392716/qaf_2012-en.pdf/8bcff303-68da-43d9-aa7d-325a5bf7fb42

From 1st April 2011, responsibility for the production of official statistics on the economy and labour market became the responsibility of the Department of Finance and Personnel, now the Department of Finance (DoF). Those powers previously exercised by the Department of Enterprise, Trade and Investment (DETI) under the Statistics of Trade and Employment (Northern Ireland) Order 1988 are now exercised by DoF from this date, as a result of the The Departments (Transfer of Functions) (No.2) Order (Northern Ireland) 2011. While DoF exercise the powers of the 1988 Order, in practice the operational responsibility for statistics production will reside with the Northern Ireland Statistics and Research Agency (NISRA), an Agency of DoF.

The statistics continue to be published on the Department for the Economy website.

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Department Responsible: Department of Finance (DoF)
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Web link to main publication: https://www.economy-ni.gov.uk/articles/annual-business-inquiry-abi
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Dimension	Assessment by the Author
Relevance	**The degree to which the statistical product meets user needs in both coverage and content.** The Northern Ireland Annual Business Inquiry (NIABI) provides information on the value of the economic activity that businesses generate and associated expenditure across the main industry sectors in Northern Ireland The NIABI provides a number of high level indicators of economic activity such as the total value of sales and work completed by businesses (Turnover), the value of the purchase of goods, materials and services and total employment costs. The contribution of different industries to the overall value of economic activity can be assessed and because estimates of employment are collected at the same time it is also possible to get a measure of value added and costs per head to allow better comparison between different sized industrial sectors. The central structure and periodicity of the NIABI publication are

	driven by the legal requirement to provide data for the UK Annual Business Survey, UK National Accounts and the European Structural Business Statistics (SBS). Data from the NIABI feed into the UK ABS which is in turn the primary source of data used in the compilation of the Input-Output Annual Supply and Use tables for National Accounts. UK ABS also provides a major contribution to the Blue Book which is produced by National Accounts.
Accuracy	**The proximity between an estimate and the unknown true value.** The NIABI is designed to provide estimates of turnover and approximate Gross Value Added (GVA) for most sectors in the economy. The main exceptions are the public sector, financial services and most of agriculture. The NIABI sample is stratified by industry sector and size of business, with all large businesses being surveyed each year. However, not all businesses respond to the survey. The accuracy of the results is affected by a range of issues. Some of these are related to the fact that the estimates are based on a sample rather than a census of all businesses and that not all businesses respond to the survey. Some relate to the other processes involved in calculating the results. **Coefficient of Variation** The NIABI uses the coefficient of variation to provide precision estimates for the published results. The coefficient of variation is the standard error of a variable divided by the parameter estimate. **Standard Errors** In statistics, sample estimates such as means and medians deviate from the actual population mean and median; and this deviation is the standard error. Standard error is a statistical term that measures the accuracy with which a sample represents a population and is essentially an indicator of the reliability of the estimate. The smaller the standard error, the more representative the sample will be of the overall population. [The technical definition of the estimated standard error for a domain parameter estimate is defined as the square root of the estimated variance of the parameter estimate. If an estimated ratio is undefined then its standard error is also undefined.] **Confidence Intervals** Confidence Intervals can be created using the standard errors provided by the NI Annual Business Inquiry. A confidence interval is a measurement of how good, or how accurate parameters such as means and medians are.

Statistics is concerned with estimating values. In the case of confidence intervals, an interval is given instead of a single parameter estimate, together with a likelihood that the observed value will be in the interval.

Confidence Level
The likelihood that the parameter will be in the interval given is called the confidence level. Very often, this is given as a percentage.

The confidence interval is always given together with the confidence level. People may speak about the "95% confidence interval" and this is when you are 95% sure that the parameter estimate lies within the confidence interval that is presented.

Coverage errors:
The survey is designed to cover around two thirds of the NI economy. Full details of all sectors included for the NIABI can be accessed in the Background Notes section of the report. The sample is drawn from the Inter Departmental Business Register https://www.economy-ni.gov.uk/articles/inter-departmental-business-register-idbr. As the IDBR is a continuously updated register it is possible that misclassified businesses may be included in the sample and that newly established businesses may be missed through not yet being recorded in the IDBR.

The sample is designed to achieve a specified precision for the turnover variable of each of the SIC (2007) sections measured. The table below shows forecasted precision levels for the 2013 survey year:

Sic (2007) section	Definition	Precision ± (%)
A	Agriculture, forestry and fishing	10
B	Mining and quarrying	5
C	Manufacturing	2
D	Electricity, gas, steam and air conditioning supply	10
E	Water supply; sewerage, waste management and remediation activities	10
F	Construction	7.5
G	Wholesale and	5

	retail trade; repair of motor vehicles and motor cycles	
H	Transport and storage	10
I	Accommodation and food service activities	10
J	Information and communication	10
L	Real estate activities	10
M	Professional, scientific and technical activities	10
N	Administrative and support service activities	10
P	Education	10
Q	Human health and social work activities	10
R	Arts, entertainment and recreation	10
S	Other service activities	10

These precision estimates are determined by balancing the importance that users attach to each sector against the implications for respondent burden of increasing sample size. It is important to note that although these variability measures are incorporated into the sample design, the nature of a sample survey is such that the underlying variability in the returned data cannot be perfectly estimated. Therefore the actual variability of returns may differ from those indicated in the above table.

Non-sampling Error

Non-sampling errors can be difficult to quantify accurately but can be caused by coverage, measurement, processing and non-response. Details of the impact of these as well as the methods employed to minimise their effects can be seen below.

Non-response errors:
Non-response errors occur when the response rate falls significantly below 100%. As the characteristics of respondents and non-respondents may differ, biases can be introduced into the results. As the response rate for the 2015 NIABI survey was 72.5%, non-response error is not considered to have a large

effect on the results. However, to reduce the influence of non- and low-response rates, a scoring system was used from survey reference year 2011 to identify those companies whose results have the largest effect on the overall results. These companies have been given priority in terms of non-response chase-up and quality assurance of results. During non-response chase-up the data is also stratified by SIC 2 to target cells with low SIC 2 response rates.

Processing errors:
Processing errors happen when mistakes occur in the implementation of the administrative and statistical methods used to produce the survey. With the introduction in 2012 of a new Integrated Business Survey System (IBSS) all survey forms are now scanned, and electronic versions automatically populated, rather than manually input. This reduces the incidence of data entry error. Errors that occur as a consequence of the form incorrectly scanning will be identified during the validation process and a check can be made to see if this is a data input error or the provision of incorrect data. Processing errors are considered to have a negligible impact on the results.

Measurement errors:
A business may provide incorrect data to the NIABI questions – for example providing the exact amount in £s rather than in £000's. Validation checks are applied to the raw data and individual returns that are significantly out of step with previous values are queried with the data suppliers, and may be amended depending on the result of the check. Where a company has also provided information to another Northern Ireland survey, for example the Business Register Employment Survey or the Index of Production or Services, the information can be compared to this survey. This information is used to understand and explain movements in the data. This has been considered to have a negligible impact on the results.

In addition, with the intention of improving the questionnaire, DoF recently conducted a user and respondent review of the NIABI. Information provided by NIABI respondents will feed into any future questionnaire developments helping to improve the survey's clarity and thereby reduce the likelihood of respondent error.

https://www.economy-ni.gov.uk/publications/recent-methodological-improvements-abi

Calendar year results:
NIABI results are published for calendar years. However, in order to reduce the burden on respondents, businesses have the option to return data for their business year end, covering any 12 month period up to and including the end of the financial year that follows the calendar year. It is possible that, particularly if the economy is undergoing a period of rapid change such as during a recession, the different reporting

	periods could introduce some bias. The ONS recently conducted an analysis of this effect and determined there is no clear evidence to indicate significant problems with the data as a result of the calendar year effect. The recommendation was not to implement any adjustment for bias. http://www.ons.gov.uk/ons/guide-method/method-quality/specific/business-and-energy/annual-business-survey/quality-and-methods/update-on-abs-developments.pdf **Provision of revised data**: Revisions to data occur for a number of reasons: late returned questionnaires, incorrect estimates or revised data. The NIABI revisions policy is published on the NIABI section of the website. https://www.economy-ni.gov.uk/sites/default/files/publications/deti/niabi-revisions-policy.pdf Revisions to recent data are highlighted in the report to bring them to the attention of users.
Timeliness and Punctuality	**Timeliness refers to the time gap between publication and the reference period. Punctuality refers to the gap between planned and actual publication dates.** The Economic and Labour Market Statistics (ELMS) publications schedule is available on the DfE website and provides twelve months advance notice of releases. https://www.economy-ni.gov.uk/publications/elms-publication-schedule The Reporting Unit based NIABI is published in December each year, some eight months after the end of the financial year reporting period. Analysis on a Local Unit (individual site) basis is published the following Summer. In the unlikely event of a change to the pre-announced release schedule, public attention would be drawn to the change and the reasons for the change explained fully at the same time, as set out in the Code of Practice for Official Statistics.
Accessibility and Clarity	**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 metadata, illustrations and accompanying advice.** The NIABI statistical bulletin contains tables and text and conforms to the standards set out in the Code of Practice for Official Statistics. The publication contains a 'Background Notes' section which provides information on the scope of the survey, details of the data collection process, validation process and methodology.

	The NIABI statistical bulletin is available on the DETI website and free to download at 09:30 on the day of publication The ELMS Helpline can be contacted either by phone (028 9052 9475) or by email (statistics@dfpni.gov.uk) Enquiries from the media are directed through the DETI Press Office. NISRA operates a policy whereby publications are available on request in alternative formats such as Braille, large print and minority ethnic languages.
Coherence and Comparability	**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.** The NIABI is available on a comparable basis from 2000 to 2007. With the move from Standard Industrial Classification 2003 (SIC03) to SIC07, 2008 data were produced on a SIC07 basis. Subsequently, for 2009 provisional data we introduced a new system of analysis and therefore revised the 2008 (SIC07) data. This has improved our estimates (and improved quality measures) but it means that data from 2008 onwards are not strictly comparable with pre 2008 data. From NIABI/MSES (now BSES) 2011 a single survey form has been issued, thus ensuring congruence of results for those companies. This provides substantially more robust financial estimates and, for the first time, a comprehensive picture of exports across the economy. The merging of the questionnaires should also provide more consistent measures of common variables and hence improve user confidence in the statistics that are being measured. The UK Annual Business Survey (ABS), formerly the Annual Business Inquiry part 2 (ABI/2), is the Office for National Statistics (ONS) financial information survey covering approximately two thirds of the UK economy. The 2015 Annual Business Survey can be found at http://www.ons.gov.uk/businessindustryandtrade/business/businessservices/bulletins/uknonfinancialbusinesseconomy/2015provisionalresults
Trade-offs between Output Quality Components	**Trade-offs are the extent to which different aspects of quality are balanced against each other.** The main users want the figures to be available as soon as possible after the period to which they refer. Estimates are

	published as soon as validation is finished and quality assurance is completed. As a result, revisions are an inevitable consequence of the trade-off between timeliness and accuracy.
Assessment of User Needs and Perceptions	**The processes for finding out about users and uses, and their views on the statistical products.** ELMS, NISRA has a programme of scheduled Economy and Labour Market Statistics Users meetings. (The last meeting was 25 March 2016). These meetings allow users to give feedback on their needs and perceptions of ELMS surveys and publications. From attendance at the statistics users meetings it is clear that users are primarily government officials, academics and economic analysts. It is likely that members of the general public access our data via the website. The NIABI Quinquennial review was completed in May 2012. Users were surveyed with the intention of identifying any outstanding issues or requirements that are currently unfulfilled. The results of the quinquennial review have been published alongside the NIABI and can be accessed at https://www.economy-ni.gov.uk/publications/recent-methodological-improvements-abi Additionally NISRA runs an annual NISRA–wide customer satisfaction survey which incorporates ELM statistics.
Performance, Cost and Respondent Burden	**The effectiveness, efficiency and economy of the statistical output.** The estimated respondent burden for survey reference year 2015 is £192,817. The Quinquennial review also includes a survey of businesses in the NIABI sample to identify any problems with the data collection element of the survey from the contributors' point of view. The aim is to improve the process to reduce respondent burden. The results of the quinquennial review have been published alongside the NIABI and can be accessed at: https://www.economy-ni.gov.uk/sites/default/files/publications/deti/niabi-quinquennial-review.pdf
Confidentiality, Transparency and Security	**The procedures and policy used to ensure sound confidentiality, security and transparent practices.** The data are held on a network that is accredited to the security level of the data and is accessible only to staff involved in the production process. During the publication process all hard copies of interim results are locked away or shredded. The data are collected under the Statistics of Trade and Employment (Northern Ireland) Order 1988. http://www.statutelaw.gov.uk/legResults.aspx?LegType=All%20

	Legislation&PageNumber=2&Year=1988&NavFrom=2&activeTextDocId=1014071 This requires the Department to ensure the confidentiality of the data. Staff are trained and reminded of the protocols for ensuring the data remain confidential. This covers physical security, IT security and data disclosure issues. A summary of NISRA ELMS' confidentiality policy can be accessed at https://www.economy-ni.gov.uk/publications/statistical-protocols-and-compliance-data-security