

# Northern Ireland Index of Production Quality Report

## Introduction

This report covers the Northern Ireland Index of Production (IOP) 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/en/web/products-manuals-and-guidelines/-/KS-GQ-15-003>

From 1<sup>st</sup> April 2011, responsibility for the production of official statistics on the economy and labour market has been the responsibility of Department of Finance (DoF). Those powers were previously exercised by the Department for the Economy (DfE) under the Statistics of Trade and Employment (Northern Ireland) Order 1988 have been exercised by DoF from this date, as a result of The Departments (Transfer of Functions) (No.2) Order (Northern Ireland) 2011. While DoF will exercise the powers of the 1988 Order, in practice the operational responsibility for statistics production resides with the Northern Ireland Statistics and Research Agency (NISRA), an Agency of DoF.

These statistics will continue to be published on the DfE website as well as the NISRA website.

**Publication Name:** Northern Ireland Index of Production

**Department Responsible:** Department of Finance

**Release Date:** Quarterly – March, June, September, December

**Web link to main publication:** <https://www.economy-ni.gov.uk/topics/statistics-and-economic-research/index-production>

**Quality report last updated:** May 2016

Dimension	Assessment by the Author
Relevance	<p><b>The degree to which the statistical product meets user needs in both coverage and content.</b></p> <p>The IOP is intended to provide a general measure of quarterly changes in the volume of output of the production industries. This is defined as those businesses in sectors B, C, D and E of the Standard Industrial Classification 2007 (SIC07). As well as the overall index of production there are four separate indices: for Manufacturing, for Electricity, Gas, Steam and Air conditioning, for Water Supply, Sewerage and Waste management and for Mining and Quarrying. There are 10 further indices for manufacturing sub-sectors. The report provides UK figures for comparative purposes where possible. The Northern Ireland Index of Production has existed in Northern Ireland since 1949.</p> <p>Its primary use is as a short-term economic indicator, being used as</p>

	<p>an indicator of industrial activity. Currently there is one source of data. The data are obtained from the Northern Ireland Index of Production (IOP) Survey. As Eurostat advocate the use of turnover data deflated by producer prices, from quarter 2 (Apr-Jun) 2011 the IOP estimates have solely been based on turnover.</p> <p>There are a variety of users of the NI IOP data – local government, the business community, economic commentators, academics and members of the general public with an interest in the state of the NI economy. A summary of uses is available on the website at <a href="https://www.economy-ni.gov.uk/publications/methodology-and-usage-iop">https://www.economy-ni.gov.uk/publications/methodology-and-usage-iop</a></p> <p>Through our regular Economic and Labour Market Statistics Users meetings users have raised the need for a Production Exports Index. As a result we now collect information on the value of exports within the IOP survey. This will be used to produce a quarterly index in due course once a sufficient back series has been established.</p> <p>Within government it is used in policy formation, in response to Assembly questions and in presentations to the Executive Committee for Employment and Learning on the economy which includes economists and business leaders. Companies use it too; for example, identify growth in specific areas of the service sector for recruitment purposes.</p> <p>The IOP is one of the main contributors to the Northern Ireland Composite Economic Index (NICEI). The NICEI is an experimental quarterly measure of the performance of the Northern Ireland (NI) economy based on available official statistics. Existing published quarterly indices (i.e. Index of Services (IOS), Index of Production (IOP), Index of Construction (IOC), and public sector employee jobs data from the Quarterly Employment Survey (QES), plus unpublished agricultural output data from DARD) are weighted using ONS Regional Accounts Gross Value Added (GVA) data to provide a proxy measure of total economic output in the NI economy on a quarterly basis.</p>
<p><b>Accuracy and Reliability</b></p>	<p><b>The proximity between an estimate and the unknown true value.</b></p> <p>The Index of Production is a volume index which essentially measures turnover (deflated to a constant price). The methodology is contained in the background notes of the statistics bulletin. <a href="https://www.economy-ni.gov.uk/topics/statistics-and-economic-research/index-production">https://www.economy-ni.gov.uk/topics/statistics-and-economic-research/index-production</a></p> <p>The accuracy of the Index is affected by a range of issues. Some of these are related to the fact that the data are collected from a sample of businesses and some relate to the other processes involved in calculating the index.</p> <p><b>Coverage errors:</b> The sample is designed to cover all private businesses in the production sector and is drawn from the Inter Departmental Business Register.</p>

<https://www.economy-ni.gov.uk/articles/inter-departmental-business-register-idbr>

The sample was refreshed for quarter 1 (Jan-Mar) 2014 and was drawn on a SIC07 basis. The IOP sample size has been boosted to approximately 1,000 businesses (from around 650), balancing both the need for reliable estimates with the resources available to manage the survey.

Due, in part, to the significant number of companies which fall into the census element, more than 60% of businesses in the new sample were also in the old sample.

**Non-response errors:** Not all businesses respond to the survey. The characteristics of these businesses may be different from those that do respond. However, as the size and industrial classification of the non-responding businesses are known we are able to account for that in the grossing methodology and this has a limited impact on the overall Index. As a statutory survey the response rate is around 90%.

**Sampling error:** An estimate drawn from a sample is subject to sampling error, which is dependent on the sample size and the inherent variability of the population characteristic being measured. The sample size for the IOP is approximately 1,000 businesses and it comprises a census of all businesses in the production sector with 40 or more employees and those employing 0 to 39 employees and having a turnover of £10 million or more. The remaining selected businesses are allocated to industry strata on the basis of a Neyman allocation to maximise the precision of the sampled element of the survey. Neyman allocation is a sample allocation method that may be used with stratified samples. This sample has been designed to give sufficiently accurate results, yet keep the total costs to businesses to a minimum.

**Processing errors:** The data may be entered incorrectly into the system. Again, the validation procedures will highlight these and a check can be made to see if this is data input error or the provision of incorrect data. This has negligible impact on the Index.

**Measurement errors:** A business may provide incorrect data to the turnover question – for example providing the exact amount in £s rather than in £,000s. Validation checks are applied to the raw data from the IOP survey 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 Annual Business Inquiry (ABI) or the Manufacturing Sales and Exports Survey (MSES), the information from the IOP surveys can be compared to these surveys. This information is used to understand and explain movements in the data. This has negligible impact on the Index.

	<p><b>Changes in the seasonal pattern of the data:</b> The IOP data are seasonally adjusted, following the annual seasonal adjustment review which is carried out each December. This aids interpretation by removing annually recurring fluctuations, for example due to holidays or other regular seasonal patterns. All IOP time series are checked on an annual basis using X-13 ARIMA SEATS for evidence of seasonality, and those series where seasonality is detected are adjusted using X-13 ARIMA SEATS in order to obtain a clear picture of the general trend. Unadjusted data are also available.</p> <p>The IOP figures are calculated using the X-13 ARIMA SEATS method of seasonal adjustment. The following is a link to an ONS Guide to seasonal adjustment with X-12 ARIMA (an updated guide for X-13 ARIMA SEATS is currently being finalised by ONS) <a href="http://www.ons.gov.uk/ons/guide-method/method-quality/">http://www.ons.gov.uk/ons/guide-method/method-quality/</a></p> <p>In order to optimise the effectiveness of the X-13 ARIMA SEATS method the length of the IOP series was adjusted in quarter 3 (Jul-Sep) 2015. Seasonally adjusted data is now published from quarter 1 (Jan-Mar) 2005.</p> <p><b>Provision of revised data:</b> Revisions to data occur for a number of reasons: late returned questionnaires, incorrect estimates, revised back data, changes in coverage as a result of changes to the Standard Industrial Classification and revisions to seasonal adjustment factors (which are re-estimated every quarter). The IOP revisions policy is published on the IOP section of the website. <a href="https://www.economy-ni.gov.uk/articles/quality-and-revisions-0">https://www.economy-ni.gov.uk/articles/quality-and-revisions-0</a></p> <p>One dimension of measuring accuracy is reliability, which can be measured using evidence from the analyses of revisions to assess the closeness of early estimates to subsequently estimated values. Historically, the IOP bulletin had contained information on revisions triangles. These triangles presented a summary of the differences between the first estimates of growth published and those published three years later for the same reference period. A statistical test was applied to the average revisions to growth to find out if it was statistically significantly different from zero. From Q2 2011 IOP has been published on a SIC07 basis, the coverage of the Index (and the broad industry groupings) is different between SIC03 and SIC07, therefore, it is not possible to compare the results provided in this bulletin with those published prior to and including Q1 2011. The data for Q1 2011 and earlier have been converted to approximate the SIC07 coverage and are therefore not strictly revisions. As a result no revisions triangles are available. Further information on the construction of SIC07 revisions triangles will be announced in due course.</p>
<p><b>Timeliness and Punctuality</b></p>	<p><b>Timeliness refers to the time gap between publication and the reference period. Punctuality refers to the gap between planned and actual publication dates.</b></p> <p>The Economic and Labour Market Statistics (ELMS) publications schedule is available on the DfE website and provides twelve months</p>

	<p>advance notice of releases. <a href="https://www.economy-ni.gov.uk/publications/elms-publication-schedule">https://www.economy-ni.gov.uk/publications/elms-publication-schedule</a></p> <p>The quarterly IOP is published in March, June, September and December and the publication dates are fixed to coincide with the release of the Labour Market Statistics. Every effort is made to meet the publication deadline and the IOP has always been published to the scheduled timetable since it was introduced. 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.</p> <p>The quarterly IOP is usually published 2.5 months after the end of the reference period. It is published as a Statistical Bulletin on the DfE website.</p>
<p><b>Accessibility and Clarity</b></p>	<p><b>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.</b></p> <p>IOP statistical bulletins contain tables, graphs and text and conform 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.</p> <p>The IOP statistical bulletin is available on the DfE website and free to download at 09:30 on the day of publication</p> <p>The ELMS Helpline can be contacted either by phone (028 9052 9311) or by email (<a href="mailto:statistics@finance-ni.gov.uk">statistics@finance-ni.gov.uk</a>)</p> <p>Enquiries from the media are directed through the DfE Press Office.</p> <p>NISRA operates a policy whereby publications are available on request in alternative formats such as Braille, large print and minority ethnic languages.</p> <p>A timetable of future changes to the IOP is available from the IOP website at <a href="https://www.economy-ni.gov.uk/articles/quality-and-revisions-0">https://www.economy-ni.gov.uk/articles/quality-and-revisions-0</a></p>
<p><b>Coherence and Comparability</b></p>	<p><b>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.</b></p> <p>The NI IOP and NI IOS both measure like phenomena – the output of businesses in Northern Ireland, and might be expected to behave in a similar fashion. However, since they measure different sectors of the NI economy the indices will not necessarily follow the same trend.</p>

	<p>The data are obtained from the Northern Ireland Index of Production (IOP) Survey. There is no comparable source but when the ABI and MSES data are available checks can be undertaken to ensure consistency between the four quarterly returns and the data returns from these annual surveys.</p> <p>Every effort is made to ensure that the series is comparable over time, and a comparable time series is available back to Q1 2005.</p> <p>Where possible, changes to the methodology are applied to the whole series to ensure this comparability is maintained.</p> <p>The Northern Ireland methodology is essentially comparable with the ONS UK, Welsh and Scottish methodologies. The other UK data used are deflated turnover from monthly and/or quarterly surveys, with some industries measured by deflated production, direct volume measures or employment numbers. Component indices are aggregated by annual chain linking for the ONS UK, Welsh and Scottish methodologies and Northern Ireland is moving to annual chain linking from the October 2011 publication. Index of Production figures for the UK, Wales and Scotland, respectively, can be accessed through the following links</p> <p><a href="http://www.ons.gov.uk/ons/rel/iop/index-of-production/index.html">http://www.ons.gov.uk/ons/rel/iop/index-of-production/index.html</a>  <a href="http://gov.wales/statistics-and-research/index-production-construction/?lang=en">http://gov.wales/statistics-and-research/index-production-construction/?lang=en</a>  <a href="http://www.gov.scot/Topics/Statistics/Browse/Economy/GDP">http://www.gov.scot/Topics/Statistics/Browse/Economy/GDP</a></p>
<p><b>Trade-offs between Output Quality Components</b></p>	<p><b>Trade-offs are the extent to which different aspects of quality are balanced against each other.</b></p> <p>As the IOP is a short-term indicator, the main users want the figures to be available as soon as possible after the period to which they refer. The main limiting factor is the availability of quarterly turnover data from businesses. 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.</p>
<p><b>Assessment of User Needs and Perceptions</b></p>	<p><b>The processes for finding out about users and uses, and their views on the statistical products.</b></p> <p>ELMS, NISRA has a programme of regular, scheduled Economy and Labour Market Statistics Users meeting, which are scheduled primarily to discuss proposed methodology changes. The date of the next meeting is to be confirmed. <a href="https://www.economy-ni.gov.uk/articles/statistical-protocols-and-compliance#toc-7">https://www.economy-ni.gov.uk/articles/statistical-protocols-and-compliance#toc-7</a></p> <p>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.</p>

	<p>The User Group allow users to give feedback on their needs and perceptions of the IOP. As the number of users leaving comments on the IOP website is small we have not published an analysis of the comments.</p> <p>Additionally NISRA runs an annual NISRA-wide customer satisfaction survey which incorporates ELM statistics.</p>
<p><b>Performance, Cost and Respondent Burden</b></p>	<p><b>The effectiveness, efficiency and economy of the statistical output.</b></p> <p>The process of producing the IOP is carried out in-house and costs approximately £76,000 per year to run. This is mostly staff costs but also includes the printing and postage of the survey forms. The estimated respondent burden for 2015 was £20,353.</p> <p>Full details on respondent burden for all formerly ELSMB surveys can be found at <a href="https://www.economy-ni.gov.uk/articles/statistical-protocols-and-compliance#toc-7">https://www.economy-ni.gov.uk/articles/statistical-protocols-and-compliance#toc-7</a></p> <p>The UK Code of Practice for Official Statistics requires all producers of National and Official statistics to report annually the estimated costs of responding to statistical surveys and to develop ways of reducing costs to individual organisations or people.</p> <p>From 1 April 2011, the responsibility for the collection of data and production of official statistics on the labour market and economy transferred from DfE to NISRA, an agency of the Department of Finance (DoF). The latest NISRA report on compliance costs for the Northern Ireland Departments is available at</p> <p><a href="http://www.nisra.gov.uk/publications/SurveyControl201314Final.pdf">http://www.nisra.gov.uk/publications/SurveyControl201314Final.pdf</a></p>
<p><b>Confidentiality Transparency and Security</b></p>	<p><b>The procedures and policy used to ensure sound confidentiality, security and transparent practices.</b></p> <p>The data are collected under the Statistics of Trade and Employment (Northern Ireland) Order 1988.</p> <p><a href="http://www.statutelaw.gov.uk/legResults.aspx?LegType=All%20Legislation&amp;PageNumber=2&amp;Year=1988&amp;NavFrom=2&amp;activeTextDocId=1014071">http://www.statutelaw.gov.uk/legResults.aspx?LegType=All%20Legislation&amp;PageNumber=2&amp;Year=1988&amp;NavFrom=2&amp;activeTextDocId=1014071</a></p> <p>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.</p> <p>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.</p>