Annual Survey of Hours and Earnings Background Quality Report

Theme: Labour Market

1   Introduction

This report provides users with an evidence-based assessment of the quality of the statistical output from the Northern Ireland Annual Survey of Hours and Earnings (ASHE). It does this by reporting against the nine quality dimensions and principles of the European Statistical System (ESS) quality framework.

In doing so, this meets the obligation to comply with the Code of Practice for Statistics, particularly practice Q3.1 of the Assured Quality principle (Q3), which belongs to the Quality pillar of the Code. This practice states that: "Statistics should be produced to a level of quality that meets users' needs. The strengths and limitations of the statistics and data should be considered in relation to different uses, and clearly explained alongside the statistics."

ASHE is a UK wide survey that provides a wide range of information on hourly, weekly and annual earnings by age, gender, work pattern, industry and occupation including public and private sector pay comparisons. The sample used comprises approximately 1% of all employees in NI who were covered by Pay As You Earn (PAYE) schemes. The survey is carried out by the Office for National Statistics (ONS) in Great Britain and by the Northern Ireland Statistics and Research Agency (NISRA) in Northern Ireland.

Earnings outputs are available from 1997, however there have been a number of changes over the years:

- ASHE replaced the New Earnings Survey (NES) in 2004 and collects information supplementary to that in NES, therefore ASHE results from 2004 onwards cannot be compared directly to data from previous years.
- ASHE results from 2006 onwards are also discontinuous with earlier results, due to a small number of methodological changes having been introduced into the sample design, to improve the quality of the results.
- From 2012, the Standard Occupational Classification 2000 (SOC2000) used for ASHE was replaced with the Standard Occupational Classification 2010 (SOC2010).
- Furthermore, in the 2021 survey, SOC2020 coding was used for the first time. Whilst initial 2021 estimates were published on a SOC2010 basis, revised 2021 estimates were based on SOC2020, as will all estimates going forward.
- Since the SOC forms part of the methodology by which ASHE data are weighted to produce estimates for Northern Ireland, these SOC recodings have each caused further discontinuity in the ASHE time series. The revised estimates for 2011 to 2020 are not directly comparable with earlier results, and likewise, the revised estimates for 2021 onwards are not directly comparable with results prior to 2021.

The NI ASHE bulletin and accompanying tables are published annually on the Labour Market and Social Welfare section of the NISRA website. These statistics were designated as National Statistics in September 2011 following a full assessment against the Code of Practice. Additional information on the NI ASHE can be found at ASHE background information.

Contents

2 Relevance

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

The following analyses are available from ASHE:

- Overview of earnings
- Gender pay gap
- Low and High Pay Analysis

The headline measure of earnings from ASHE is gross median weekly earnings for full-time employees, however, detailed results are published on mean and median hourly, weekly and annual earnings by:

- Work pattern (full-time v part-time)
- Industry
- Occupation
- Age
- Public/Private sector
- Skill level
- NI geographies by place of work and residence

A number of visuals have been created from the ASHE and are available online:

- Scrollytelling through Real Earnings
- Scrollytelling through employee earnings
- Explanation of gender pay gap

The ASHE results are used extensively by government departments, professional organisations, the media and the general public. Users of the data include: the Low Pay Commission, which advises the Government about minimum wage levels; and the Gender Policy Unit within the Department for Communities, which analyses changes in the gender pay gap.

The Department for the Economy (DfE) receives annual ASHE results, monthly Labour Market statistics, and a range of other Business and Economic Output statistics, all advising on the position of the Northern Ireland economy. The ASHE data feed into the DfE Economic Commentary, which provides an overview of the condition of the NI economy. ASHE figures are used by DfE economists to monitor the impact of existing policies and evaluate the likely impact of future policies.

Significant non-Northern Ireland governmental users of ASHE data include employers' associations, universities and academics, academic researchers both at home and abroad, the media and the general public.

A user consultation in summer 2019 sought views on a range of Labour Market Outputs including earnings statistics. Out of 16 respondents, 13 replied that they found the earnings section in the Labour Market Report either useful or essential. When users were asked to what extent they used the ASHE statistics, three quarters said that they used it quite a bit or very extensively.

Users are consulted annually at the Labour Market Statistics User Group meeting, which usually takes place in September. Any requests are then considered in advance of the annual publication.

3 Accuracy and Reliability

Accuracy and reliability refer to the proximity between an estimated result and the (unknown) true value.

There are a number of factors which affect the accuracy of ASHE.

The difference between an estimate from a sample and the (unknown) population value is the result of "sampling errors" and "non-sampling errors".

- Sampling errors are due to only using a sample and not the entire population, therefore estimates from samples may not equal the unknown population value. The larger the sample, the smaller the sampling error. CVs are one way of providing information on sampling error.

- Non-sampling errors are due to aspects of surveys other than the sampling. For example, changes in NI earnings over the year and relative to the UK can be influenced by a range of factors including the timing of pay settlements, the extent of overtime and differences in the composition of the workforce.

The ASHE estimates are based on a sample and are therefore subject to an associated level of variability. For example, the headline measure of earnings in 2022, median gross weekly earnings for full-time employees, has a 1.6% coefficient of variation (CV). The CV is the ratio of the standard error of an estimate to the estimate, expressed as a percentage. The smaller the CV, the higher the quality of the estimate. The CVs are published alongside the estimates, and CVs for the key ASHE estimates are shown in Table 1 (in Section 5) of the annual publication.

The response rates for ASHE are exceptionally high, with returns received for an average of around 90% of employees. This minimises the opportunity for non-response bias.

Results are only released where sample numbers are sufficiently large enough to provide reliable estimates and disclosure standards are adhered to. Any data with a CV greater than 20% are suppressed. A cell is also suppressed if the count of employees is less than 3 or the sum of local unit pay for the cell minus the pay of the two largest contributors is less than 10% of the largest contributor.

When the current year's data are being published, revised estimates for the previous year are also released. These results take account of late returns, as well as some corrections to the previous year's original data that were identified during the validation of the results for the current year. The latest revised figures published were for 2021 data, and the headline figure, median gross weekly earnings for full-time employees, was revised by 0.02% (from £575.00 to £574.90).

4 Timeliness and Punctuality

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

The survey gathers information relating to the pay-week (or other pay period if the employee was paid less frequently) which included a specified date in April, e.g. 27th April 2022, the reference date for the 2022 survey. The results are released each year at the end of October. In 2022, the publication and associated tables relating to April 2022 were published on 26th October 2022, a difference of 6 months.

The data are considered provisional estimates when first published. Final estimates are published alongside the bulletin in the following year. These revisions take account of late returns, as well as some corrections to the previous year's original data that were identified during the validation of the results for the current year.

Publication takes place strictly in accordance with published release dates for Labour Market Statistics as pre-announced in the Economic and Labour Market Statistics (ELMS) publication schedule and the GOV.UK statistics release calendar, which are updated regularly in accordance with the release practices laid out in the Code of Practice for Statistics.

To date, all NI ASHE publications have been released in accordance with the pre-announced dates contained within the publication schedule, with the National Statistics release practices being followed at all times. The publication dates are generally scheduled to align with the release of UK wide earnings data by ONS, which usually take place at 9:30am on the morning of publication.

5 Accessibility and Clarity

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

The Employee Earnings in NI publication, which is usually released in October each year, is the main tool for disseminating headline NI earnings statistics. Additional information is published alongside the main publication including a suite of headline tables in Excel and ODS, a press release and additional Excel tables including more detailed breakdowns such as age, industry, occupation, public/private and geography. The ASHE report includes commentary, tables, charts and technical notes which explain the data source, procedures and definitions. The ASHE publication has a three-star open data rating.

The annual publication and a briefing paper are sent directly by email to an agreed mailing list on the morning of publication. Key statistics from the report are released using social media at the same time, reaching a wide range of users including the media and general public. A number of data visuals are published on the ASHE webpage, including Scrollytelling through real earnings and an Explanation of the Gender Pay Gap.

There is a section on the NISRA website which gives additional background information on ASHE, and further information on quality and methodology can be found on the ONS website.

All published information is available free of charge via the NISRA website or in hard copy on request, and is also available on the GOV.UK Statistics Release Calendar. Where available, disaggregated data are available free from websites such as NINIS or NOMIS.

Bespoke analysis and information requests are undertaken where possible on request and there is currently no charge for this service. The requested information can be provided in a range of formats, most commonly Excel, with the accompanying metadata. Responses are issued as soon as possible after the request is received, which is dependent on factors such as the complexity of the request and other priorities, primarily publication dates. All data requests are also published on the NISRA website so they can be accessed by other users.

ONS provide UK ASHE datasets to Government Departments and have made them available to approved researchers via ONS's Secure Research Service (SRS) and the UK Data Service Archive, Essex University. The UK Data Service is funded by the Economic and Social Research Council (ESRC) and provides non-disclosive data for public access. It is a facility that provides secure access to sensitive data to approved researchers for defined projects. The UK Data Archive at Essex University provides free access to the ASHE datasets.

6 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 Annual Survey of Hours and Earnings (ASHE) is the main source of earnings data in the UK. The Labour Force Survey (LFS) also collects earnings data directly from individual participants who have already stated that they are employed (like ASHE these data relate only to employees). However, as some individuals may estimate earnings, there is not the same level of accuracy. There is also a high non-response/refusal rate through the LFS, so coverage is not as comprehensive as ASHE (approx. 90% response rate). For these reasons, the recommended source for earnings data in NI is the ASHE. Although ASHE does not collect the same range of characteristics and background data as LFS, it has more detail around earnings, for instance bonuses, overtime and pensions.

Experimental monthly estimates of paid employees and their earnings from HM Revenue and Customs' (HMRC) Pay As You Earn (PAYE) Real Time Information (RTI) data are jointly released by HMRC and the Office for National Statistics (ONS). Headline ASHE statistics focus on gross weekly earnings for full-time employee jobs on adult rates of pay whose pay in the reference period was unaffected by absence. However, the RTI statistics do not differentiate based on full-time or part-time job status, and include those whose work was affected by absence. The most comparable ASHE statistics to RTI are median gross weekly earnings for all employees (full-time and part-time combined). Further information on the comparison of ASHE and RTI can be found on the NISRA and ONS websites. A comparison of ASHE and PAYE data based on April 2022 data in both sources shows that PAYE is typically lower, though both show the same trend. A likely reason for this is that ASHE excludes workers whose pay is affected by absence and those not on adult rates of pay, while PAYE includes these. Further details have been published by HMRC and ONS.

ASHE is a UK wide survey, and although the NI and GB fieldwork are carried out separately, the survey questions are harmonised, and the NI data are sent to ONS for processing as part of a UK dataset. The NI results are therefore comparable with other UK regional data. Furthermore, geographical breakdowns of the data allow for comparisons across different regions of Northern Ireland.

Earnings data for Northern Ireland are available online from 1997 onwards, however, a number of methodological changes have taken place since the survey was introduced. Two sets of results are available for 2004 and 2006 based on the original and updated methodologies to aid comparison over time. The impact of the changes increases as the size of the group being considered decreases. Therefore, conclusions can be drawn when considering broad time trends over the last two decades, but caution should be taken when comparing across occupations and industries. More information on methodology changes is detailed in the table below.

Methodology changes to the ASHE Survey

Year	Change	Impact
2004	ASHE replaced the New Earnings Survey	Coverage improved
2007	Sample design improvements	Estimates before 2006 will not be directly comparable with later estimates. More info on impact of this change can be found here.
2009	Change in industry classification from SIC 2003 to SIC 2007	Industries not directly comparable. More info on impact here.
2012	Change in occupation coding from SOC 2000 to SOC 2010	Occupations are used to weight ASHE results. Estimates before 2011 will not be directly comparable with later estimates. More info on impact of this change can be found here (from page 62).
2013	Change in sample frame from PAYE to RTI PAYE	Small impact on coverage
2022	Change in occupation coding from SOC 2010 to SOC 2020	Occupations are used to weight ASHE results. Estimates before 2021 not directly comparable with later estimates. More info on impact to the NI earnings estimates can be found here.

7 Trade-offs between Output Quality Components

Trade-offs are the extent to which different aspects of quality are balanced against each other.

There are two main trade-offs experienced in relation to the publication of data from the NI Annual Survey of Hours and Earnings results. Firstly, timeliness against accuracy and/or detail; and secondly, accuracy against user needs.

Timeliness vs Accuracy
Timeliness is an important aspect of most data provision. NISRA aims to publish the full set of ASHE results as quickly as possible each year, to meet the needs of users, but at the same time, produce high quality data. The survey is live for the optimum amount of time to ensure that a response rate is achieved which will give high quality data. The publication date is then set based on the time required for processing and rigorous checking.

Accuracy vs User Needs
Detailed breakdowns of the ASHE data are published each year, such as earnings by age, working pattern, industry, occupation etc; however, due to the small sample sizes of particular employee groups, some data cannot be provided and are therefore redacted from the tables.

The quality of an estimate is measured by its coefficient of variation (CV), which is the ratio of the standard error of an estimate to the estimate. The ASHE tables provide CVs around results, so users are aware of the quality of the data they are using. Quality thresholds are applied to published outputs to ensure robustness of estimates.

Furthermore, user requests for more detailed breakdowns of the data are balanced with the need to maintain confidentiality of responses. A cell is suppressed if the count of employees is less than 3 or the sum of local unit pay for the cell minus the pay of the two largest contributors is less than 10% of the largest contributor.

8 Assessment of User Needs and Perceptions

The processes for finding out about users and uses, and their views on statistical products.

A Labour Market Statistics User Group is held annually with the most recent taking place in September 2022. A wide range of users were in attendance. Presentations from this event and all previous events are available to view on the Labour Market Statistics User Engagement part of the website.

A short newsletter was published in June 2021. This follows feedback from attendees at a previous Labour Market Statistics User Group. Users said they would like more regular updates on developments in Labour Market Statistics. This newsletter has been developed to provide an overview of things users may have missed since the last user group and plans for the next six months. It is planned to publish the newsletter on a regular basis.

In the run up to the 2019 user group, a consultation on Labour Market Statistics Outputs was launched – the general public were invited to participate with the consultation publicised on the NISRA and DoF websites as well as via Twitter and the addition of a link in staff signatures on emails. The link to the consultation was also emailed along with the invitation to attend the user group meeting to out mailing lists. Results were presented and discussed at the event and a summary published on the website.

ELMS regularly attend Earnings User Groups where key users and producers discuss and agree aspects of the survey and any developments.

Key users of the data include: the Low Pay Commission, which advises the Government about minimum wage levels; the Gender Policy Unit within the Department for Communities, which analyses changes in the gender pay gap; and the Analytical Services Branch of the Department for the Economy (DfE), which produces the DfE Economic Commentary, providing an overview of the condition of the NI economy.

ASHE usually attracts widespread media coverage, particularly on the annual publication day, when a number of broadcasters publish articles on the earnings results and the main findings from the report. A summary of the usage of the Northern Ireland Annual Survey of Hours and Earnings can be found on the NISRA website.

A user feedback form is included on the ASHE background information page on the NISRA website, inviting users to comment on the ASHE information that is presented, request that additional information be provided, or submit any further observations regarding NI ASHE publications.

9 Performance, Cost and Respondent Burden

The effectiveness, efficiency and economy of the statistical output.

The Annual Burden to Business, Households and Individuals of Completing Statistical Surveys is published on the NISRA website. The latest assessment of cost burden to businesses report was published on 22nd June 2022. The report includes information on the burden to businesses in relation to time taken to participate in the survey and gives the latest estimate of cost burden from the Annual Survey of Hours and Earnings. For the period 2020/21, the cost burden from ASHE was £49,736.

10 Confidentiality, Transparency and Security

The procedures and policy used to ensure sound confidentiality, security and transparent practices.

All data are handled, stored and accessed in a manner which complies with Government and Departmental standards regarding security and confidentiality, and fully meets the requirements of the Data Protection Act. Access to these data is controlled by a system of strict business need access control.

A summary of NISRA ELMS' confidentiality policy can be accessed here.

Data collection is carried out by NISRA, and the sample of employees for the survey is obtained from HM Revenue and Customs (HMRC). Survey responses are collected by post, webform or email and collated by an external provider who uploads the data to a secure system. Access restrictions on the data are in place, and only necessary ELMS staff have access to the data.

The NI ASHE data are then sent to ONS for processing before being returned to ELMS. ELMS have a number of Early Access Agreements and business cases in place with ONS for named staff to get access to the raw data for processing and table production purposes. These agreements are revised to reflect any changes in staffing, and any data supplied are transferred using a managed file transfer software (MoveIT), which uses secure file transfer protocols, whereby only approved personnel are given accounts to access the data.

All data are held on a network that is accredited to the security level of the data and are accessible only to staff involved in the production process. During the publication process, all hard copies of interim results are locked away or shredded.

Disclosure rules are applied to any outputs to ensure anonymity of employees and businesses. A cell is suppressed if the count of employees is less than 3 or the sum of local unit pay for the cell minus the pay of the two largest contributors is less than 10% of the largest contributor. Also, quality thresholds are applied to published outputs to ensure robustness of estimates. More detail on the measures taken to ensure data confidentiality is available in the ELMS confidentiality statement.

Microdata are available through the UK Data Service or applications can made through the Secure Research Service within ONS (access is subject to NISRA approval).

To ensure transparency of data release, any revisions to our publications are handled in accordance with ELMS' revisions policy, which is published on the NISRA website.

The ASHE statistics also comply with the UK Statistics Authority's pillars and principles of the Code of Practice for Statistics in relation to release protocols.