Department for Education

Employer skills survey 2017

Technical report

August 2018

Mark Winterbotham, David Vivian, Genna Kik, Jessica Huntley Hewitt, Mark Tweddle, Christabel Downing, Dominic Thomson, Naomi Morrice and Sam Stroud

IFF Research

GSR
GOVERNMENT SOCIAL RESEARCH
Social Science in Government

Contents

List of figures

List of tables

1. Introduction

The Employer Skills Survey 2017 (ESS 2017) marks the fourth occasion that labour market intelligence (LMI) on employer skills needs has been collected on a UK-wide basis. Prior to 2010, each nation in the UK gathered their own LMI. In 2009, data gathered by the four nations were aligned into one UK-wide Employer Skills Survey. In 2016, the Department for Education (DfE) inherited responsibility for the Employer Skills Survey from the UK Commission for Employment and Skills.

The Employer Skills Survey sits alongside the Employer Perspectives Survey to produce insights that complement each other and are run in alternate years. The focus of the Employer Perspectives Survey is primarily outward-looking, covering provision of and engagement with the wider skills system, whereas the Employer Skills Survey is inward-looking and measures the current skills position and skill needs of employers.

As in previous years, the 2017 Employer Skills Survey had two facets:

- The core survey: covering business strategy, recruitment, skills gaps, training and workforce development, upskilling needs, and high performance working;
- The Investment in Training follow-up survey: covering the investment establishments make in training their staff.

This technical report covers each of these in turn.

2. The Core Survey

For the core ESS 2017 survey, a total of 87,430 interviews were undertaken. Table 2.1 provides a breakdown of completed interviews by country.

Table 2.1 Interviews achieved by country

Country	Number of interviews
England	71,527
Northern Ireland	3,973
Scotland	6,017
Wales	5,913

Sampling

Sampling unit

The sampling unit was at an establishment level, rather than at an organisation level. This is in recognition of the influence that local labour markets have on skill issues and the fact that skills issues are felt most acutely at the site level. This mirrored the establishment-based approach adopted in previous UK Employer Skills Surveys and in the legacy skills surveys in each of the four nations.

The individual approached was the person at the particular establishment who had most responsibility for staff issues such as training, recruitment or resourcing. For smaller establishments this was most often the general manager or owner, and for larger establishments this was most often the HR manager[1].

Survey scope / eligibility

In line with the approach adopted in 2013 and 2015, the survey population for ESS 2017 was establishments with 2+ employment (i.e. establishments were eligible if they had two or more people working at them, regardless of whether or not they owned the organisation).

The 2011 survey was the first year of transitioning to a UK-wide Employer Skills Survey and so it had 1+ employment coverage to allow comparisons with the preceding national skills surveys. Note that in the 2017, 2015 and 2013 ESS reports, where comparisons

[1] Note that the terms ‘establishment’, ‘employer’ and ‘business’ are used interchangeably throughout the report.

are made with 2011, this is based on 2011 data that has been re-weighted on a 2+ employment population. This means that results from the 2011 survey that are presented in the 2017 report will not necessarily match those published in the 2011 report. The rationale for the change in survey population and the 2011 re-weighting process is detailed in the ESS 2013 technical report.

Setting quota targets

Overview

ESS 2017, as well as all previous iterations of the survey, adopted a *disproportionate stratified random sampling strategy*. In practice this means that a fixed sample is drawn from the sampling frame, but different sampling fractions are used in each of the key interlocking strata (geography, sector and size) – rather than in direct proportion to the population. This means that smaller sub-groups of employers (such as large establishments) are oversampled to ensure that a sufficiently large number of interviews are achieved to allow for robust sub-group analyses. Fieldwork is managed using quotas across various interlocking strata, and the fixed sample for each quota 'worked hard' (i.e. called 8-10 times) to gain a response to the survey. Some sample targets are adjusted towards the end of fieldwork due to the available sample being exhausted, but sample 'substitutions' (i.e. the introduction of new sample outside of the initial sample draw) are not made.

Population statistics used to size and stratify the business population were established through the 2016 Inter-Departmental Business Register (IDBR), which was the latest available at the time. The IDBR is administered by the Office for National Statistics (ONS), which holds records of all businesses registered for VAT and all businesses operating a pay as you earn (PAYE) income tax scheme. The IDBR is widely regarded as being the most accurate and comprehensive 'official' source of business population data available, and was used for sampling and weighting in all previous editions of the Employer Skills Surveys and in the legacy skills surveys in each of the four nations.

Information on how the geographic, sector and size quotas were set is detailed, in turn, below.

Geographic quotas

The overall allocation by country was 71,620 interviews for England, 5,940 for Scotland, 5,880 for Wales and 3,960 for Northern Ireland. The allocations were set by agreement between DfE and their partners in the survey: the Department for the Economy Northern Ireland, the Welsh Government, and the Scottish Government.

The approach taken for setting geographic quotas within country followed the same method used in the previous iterations of the survey. Within England, half the interviews were divided evenly across the nine Government Office Regions (GOR), and the remaining half in proportion to the number of business units that each region accounted

for. This ensured a minimum number of interviews were achieved in each English region, whilst still apportioning more interviews to the regions with larger business populations. To ensure coverage at a local level, quota targets were also set for each Local Authority (LA) grouped according to the Local Education Authority (LEA) definitions[2] in proportion to the population that each LEA accounted for in each GOR.

Regional quotas were also set within Scotland, Wales and Northern Ireland in line with the business population according to the IDBR. In Scotland this was by unitary authorities grouped according to Regional Outcome Areas (ROA).[3] For Wales this was by the four region groupings of North, Mid, South East and South West. In Northern Ireland the definitions for region were taken from 11 District Councils.[4]

Sector quotas

Quotas by sector used 13 sector categories. These sectors, defined using Standard Industrial Classifications (SIC), were:

- Primary Sector and Utilities (SIC 01-03, 05-09, 35-39)
- Manufacturing (SIC 10-33)
- Construction (SIC 41-43)
- Wholesale and Retail (SIC 45-47)
- Hotels and Restaurants (SIC 55-56)
- Transport and Storage (SIC 49-53)
- Information and Communications (SIC 58-63)
- Financial Services (SIC 64-66)
- Business Services (68-82)
- Public Administration (SIC 84)
- Education (SIC 85)
- Health and Social Work (SIC 86-88)
- Arts and other service activities (SIC 90-96)

Further information on the SIC definitions for these sectors can be found in Appendix A.

[2] Targets were set LA grouped to 151 LEAs (the Cornwall and Isles of Scilly LEAs were combined due to the limited business population in Isles of Scilly).
[3] Quotas were set for some unitary authorities where they are counted in more than one ROA. Thus, in total 18 regional quotas were set for Scotland (10 ROAs and eight local authorities). This represents a change from 2015 when regional quotas in Scotland were set according to eight Regional Selective Assistance (RSA) regions.
[4] This represents a change from 2015 when the six Workforce Development Forum (WDF) regions were used.

Fifteen sector categories were used in 2015. In 2017 the Agriculture, Mining and Quarrying, and Electricity Gas and Water sectors were combined into one category: 'Primary Sector and Utilities'.[5] This change improves the overall efficiency of the sampling and weighting processes by not separately sampling and weighting two very small sectors (Mining & Quarrying and Electricity/Gas/Water Supply).

For setting sector quota targets, half the interviews allocated to Northern Ireland, Scotland and Wales and to each English region were divided equally across the 13 sectors, with the remaining half in proportion to the number of establishments each sector accounted for. This method served to increase the number of interviews achieved in the smaller sectors compared to what their allocation would be through a purely proportional approach and, therefore, enhanced the confidence with which data within smaller sectors could be reported.

Adopting such an approach ensured that, as far as possible, the Maximum Standard Error associated with findings by sector would be no greater than an average of ±2% UK-wide (at the 95% confidence level). Critically, this also helped to ensure that within each broad sector, key cuts of the data (such as the nature of skills gaps relating to individual occupations or the causes and implications of specific types of skill-shortage vacancies), were associated with sufficiently robust base sizes.

In some sectors (such as Public Administration and Financial Services), using this approach produced a regional sector target that was greater than the number of interviews realistically achievable given the population in that sector and region. Where these occurred, targets were revised down to the maximum possible using an 8:1 sample to target ratio, with the difference redistributed as evenly as possible across the remaining sectors.

Sizeband quotas

Quota targets based on establishment size were set for each sector within each region by distributing interviews in each sector into seven sizebands (see Appendix B). Interviews were distributed across sizebands in proportion to the overall employment accounted for by employers of that size. When setting quotas by employer size (for each sector within each region), the sample-to-target ratios were set at 4:1 for the 250+ sizeband, 7:1 for the 100-249 and 50-99 sizebands, and 8:1 for the smaller sizebands. This ensured that the quotas set for these sizebands were similar to those set in ESS15. Larger establishments were oversampled in order to maximise the proportion of the workforce covered by the survey and because interviews in the largest sizebands have historically proven more difficult to complete interviews with. This oversampling of larger

[5] This mirrors a change made in the Employer Perspectives Survey 2016 following an independent review of the sampling and weighting strategy used for that research.

establishments was corrected when weighting the survey results (as detailed later in this technical report).

Sample sources

Market Location was used as the principle sample source of ESS 2017, supplemented with 'top up' sample ordered direct from the ONS Inter-Departmental Business Register (IDBR). The IDBR was not used as the primary sample source for ESS 2017 (nor any of the previous iterations of the survey) as the majority of records in the IDBR do not come with a telephone number. To use the IDBR would require an extensive telematching exercise which would be impractical for a survey the size of ESS.

All previous editions of the ESS series have used Experian's National Business Database (NBD) as the principle sample source. It was not used in 2017 owing to a review of sample providers carried out during the Employer Perspectives Survey (EPS) 2016.

During the design of the EPS 2016, it was noted that, since ESS 2015, the total number of businesses in Experian's database with 2+ employment had decreased, most notably among the largest sizebands (from 19,500 with 100-249 employees to 11,500, and from 9,900 with 250+ employees to 2,100). There had not been a decrease in large establishments according to the IDBR, thus suggesting that – at least for the purposes of the EPS and ESS series − the Experian database had become less representative of the business population.

As a result of these changes to Experian's database it was agreed that EPS 2016 would explore and test the coverage, quality and accuracy of alternative data sources (see the EPS 2016 technical report for full information on the methodology of this test of alternative data sources). This review showed that Market Location's database offered the best coverage of the UK business population with 2+ employment, especially among the largest establishments with 100+ employees. Market Location was therefore chosen as the primary sample source for ESS 2017.

Given the change in sample provider, a review of Market Location's coverage compared to the IDBR was warranted to see for which SIC codes it was necessary to order extra top-up sample from the IDBR. As was the case with Experian's NBD in 2015, this analysis showed that there was particularly low coverage in the Public Administration and Primary Sector and Utilities in Market Location's database. In the latter, it is particularly among the Agriculture component where coverage was low at 35%.

Listed below are the 2-digit and 4-digit SIC codes included in the order of top up sample from the IDBR. (* indicates that the SIC grouping was also included in the IDBR order for the 2015 survey):

- Agriculture (SIC 01 to 03)*

- Mining and Quarrying (SIC 05 to 09)*
- Electricity, Gas and Water (SIC 35 to 39)*
- Construction (SIC 41 to 43)*
- Public Administration and defence (SIC 84)*
- Telecommunications (SIC 61)*
- Information Service Activities (SIC 63)
- Gambling and betting activities (SIC 92)*
- Agents involved in the sale of textiles, clothing, fur, footwear and leather goods (SIC 4616)*
- Wholesale of perfume and cosmetics (SIC 4645)*
- Computer programming activities (SIC 6201)*
- Computer consultancy activities (SIC 6202)*
- Other monetary intermediation SIC (6419)
- Security and commodity contracts brokerage (SIC 6612)
- Activities of insurance agents and brokers (SIC 6622)
- Fund management activities (SIC 6630)
- Management of real estate on a fee or contract basis (SIC 6832)*
- Activities of head offices (SIC 7010)*
- Business and other management consultancy activities (SIC 7022)
- Specialised design activities (SIC 7410)
- Other professional, scientific and technical activities (SIC 7490)
- Private security activities (SIC 8010)*
- Combined facilities support activities (SIC 8110)*
- Residential nursing care activities (SIC 8710) *
- Residential care activities for mental retardation, mental health and substance abuse (SIC 8720) *
- Residential care activities for the elderly and disabled (SIC 8730)
- Social work activities without accommodation for the elderly and disabled (SIC 8810) *
- Child day-care activities (SIC 8891)*.

Sample was ordered from Market Location at an average ratio of approaching 8:1 against target interviews required. Due to the availability of sample this varied between quota

cells from 6:1 (Public Administration in the North East) to 9:1 (Wholesale and Retail in Northern Ireland); the lower ratios reflecting the fact that for some quota cells the entirety of available sample was ordered. The 8:1 average ratio was chosen to balance maintaining high response rates with fieldwork efficiency.

A total of 670,000 records ordered from Market Location were loaded for fieldwork.

A total of 258,034 records were drawn from the IDBR; the entirety of sample available for the SIC codes selected for top-up. These records were checked against the Market Location sample for duplicate records using a combination of company name and postcode. This left 166,587 of the IDBR records eligible for inclusion. Since the majority of the IDBR records received did not include telephone numbers, these were sourced using a combination of automated and manual directory look-ups (45,383 records were successfully telematched). A second round of checks for duplicates against the Market Location sample was carried out, this time factoring telephone numbers into the duplication checks, which left 30,309 IDBR records that were loaded for fieldwork (compared with 52,778 records in 2015).

All sample records were postcode-validated to ensure that geographical regions had been correctly assigned.

Checks were also undertaken in instances where duplicate telephone numbers existed within the sample. In certain sectors, such as retail and finance, it is common for different establishments to appear under the same centralised telephone number. Such establishments were marked up on the sample – with the address of the sampled establishment displayed on-screen – so that interviewers would be aware that the telephone number they were calling was a centralised switchboard and thus they would need to request to be transferred to a particular site.

Questionnaire design

Following a review of the 2011, 2013 and 2015 ESS questionnaires by DfE and their partners the questionnaire for ESS 2017 did not require substantial redevelopment. There was, however, an overall aim to reduce the average interview length from 23 minutes to 21 minutes. Also, new questions and answer codes have been added to ESS 2017 to explore areas of interest relating to the UK's decision to leave the EU. These areas of questionnaire development are detailed in turn below. A full list of the changes between the questionnaires used in the 2015 and 2017 Employer Skills Surveys, along with the reasons for these alterations, can be found in Appendix C. The full ESS 2017 questionnaire has been published alongside this technical report.

Market for Products and Services - A11, A12

Following question A10, where the business primarily sells products/services/serves the population, two new questions were added to determine the proportion of respondents

who serve or sell to the EU. Any respondent who said that they primarily sell to/serve the population 'Internationally' was asked whether this is primarily within the EU or outside the EU (A11). Following this, respondents who do not primarily sell to/serve the population within the EU were asked whether they sell anything/serve the population at all outside the UK but within the EU (A12).

Because A10 is a modular question, these two new follow-up questions were also only asked of respondents assigned to Module 2.

Recruitment of EU nationals – C15b / C16 and D14a / D14b

In previous ESS surveys, establishments with hard-to-fill vacancies were asked what, if anything, they have done to overcome the difficulties of finding candidates to fill these vacancies. For ESS 2017, two follow-up questions were included. Establishments with hard-to-fill vacancies were asked first whether they have recruited, or tried to recruit, workers who are non-UK nationals in order to fill hard-to-fill vacancies (C15b). Those who said that they had were then asked whether these non-UK nationals were EU nationals, non-EU nationals, or both.

Employment of EU nationals – D1b

Respondents were asked how many of the staff at their establishment are from EU member states and are not UK citizens.

Skills descriptors

In ESS 2015 the skills descriptors used to identify the skills that applicants lack (causes of skill-shortage vacancies) and the skills that the current workforce lacks (skills gaps) were revised following a review conducted by the National Institute of Economic and Social Research (NIESR); see the ESS 2015 technical report for more detail of this review (Table 2.2 lists the two sets of skill descriptors).

ESS 2015 was treated as a transitional year with half of employers with skill-shortage vacancies and/or skills gaps asked the 'new' list of skills descriptors and the other half asked the 'old' skills descriptors in order to retain time-series to earlier editions of ESS whilst establishing a baseline with the new skills descriptors. With the baseline established, only the new lists of skills descriptors were used in ESS 2017.

Table 2.2 List of 24 skill descriptors used in ESS 2017

Using information, equipment and materials	Dealing with people
Computer literacy / basic IT skills	Instructing, teaching or training people
Advanced or specialist IT skills	Sales skills
Solving complex problems requiring a solution specific to the situation	Customer handling skills
Reading and understanding instructions, guidelines, manuals or reports	Persuading or influencing others
Writing instructions, guidelines, manuals or reports	Team working
Basic numerical skills and understanding	Managing or motivating other staff
More complex numerical or statistical skills and understanding	Ability to manage own time and prioritise own tasks
Communicating in a foreign language	Setting objectives for others and planning human, financial and other resources
Manual dexterity – for example, to mend, repair, assemble, construct or adjust things	Managing their own feelings, or handling the feelings of others
Adapting to new equipment or materials	Making speeches or presentations

Upskilling

Another key change from the 2015 survey was the inclusion of upskilling questions, in place of those relating to retention. The 2013 survey included questions relating to upskilling, and this module of questions was originally intended to rotate in alternate surveys with the retention questions (which appeared in the 2011 and 2015 survey).

Online occupational prompts

In order to allow assessment of skill needs at an occupational level, a key element of the Employers Skill Survey series is a set of questions that asks employers to assign their employees at their establishment into nine different occupational categories ranging from Managers, Directors and Senior Officials through to Elementary Occupations. In 2017, as for the previous ESS in 2015, a set of occupational prompts, providing detailed examples

of the types of job roles to be included in each occupational grouping, was created and hosted online by IFF Research under the domain name www.skillsurvey.co.uk/jobs. The occupational prompts were tailored to give pertinent examples specific to each broad sector classification. A link to the online prompt card was offered to establishments with 10 or more employees. For employers that opted against accessing the online occupational prompts, the occupational descriptions and example job roles read out 'as necessary' by interviewers were updated to match those used with the online prompts. The full list of prompts used can be viewed at the end of the ESS17 questionnaire which has been separately published on the DfE gov.uk website.

Interview length

The average overall interview length was 21 minutes (a decrease of two minutes from the ESS 2015 interview length). This varied between different employers depending on their recruitment activities, experience of skill-shortage vacancies, internal skills gaps and training activities. (The length of the shortest interview was 10 minutes and the longest was 1 hour 27 minutes.)

As shown in Table 2.3, interviews with larger establishments took longer on average given that they were more likely to have trained their staff and to have experienced skill-shortage vacancies and/or skills gaps given their greater number of employees.

Table 2.3 Average interview length by size of establishment

Size of establishment	Average interview length
2-4	16 minutes
5-9	18 minutes
10-24	21 minutes
25-49	24 minutes
50-99	26 minutes
100-249	29 minutes
250+	35 minutes
Overall	21 minutes

Pilot

A pilot of the questionnaire was conducted between the 31st March and 3rd April 2017, to test the suitability of changes made to the questionnaire, and to ensure the questionnaire flowed well and was of an appropriate length and nature for CATI-based interviewing. A total of 50 interviews were completed among employers covering each UK nation and

across a range of size bands and sectors. The sample was drawn from named contacts who participated in ESS 2015, and who had agreed to be recontacted for future research.

As most of the questionnaire remained unchanged since 2015, key areas of concern for the pilot were the target length of the average interview, which was reduced from 23 minutes to 21 minutes, and the reception of the new question areas on the impact of the UK's decision to leave the EU.

For the purposes of the pilot, interviews were skewed towards larger establishments, as these are more likely to engage in recruitment activity, to experience skills gaps and to undertake training and workforce development activity. This was done to ensure that the full questionnaire could be thoroughly tested. The average length of the pilot interviews was 20 minutes and 59 seconds, therefore no further cuts to the questionnaire were necessary post-pilot.

In line with the approach taken in 2015, the ESS 2017 questionnaire was modularised to reduce interview length whilst maintaining coverage of key question areas. Establishments were randomly allocated to one of two modules, detailed below.

Module 1 – High Performance Working:

- F3: And approximately what proportion of your staff have an annual performance review?
- G1: Does your establishment...
    - Give employees information about the financial position of the establishment
    - IF ESTABLISHMENT HAS 10 OR MORE EMPLOYEES: Create teams of people, who don't usually work together, to work on a specific project
    - IF ESTABLISHMENT HAS 10 OR MORE EMPLOYEES: Have teams of people that solve specific problems or discuss aspects of work performance? These are sometimes known as "problem solving groups" or "continuous improvement groups"
    - Have an equal opportunities policy
    - Have formal procedures in place for employee consultation (such as a staff association, employee forum or trade union consultation)
    - Currently hold any of the ISO 9000 Standards
- G1A: And does your establishment have any of the following pay and incentive schemes for your employees? (Bonuses; individual performance related pay; flexible benefits; and (if in the private sector) share options for employees below senior management.

- G2: Do you have processes in place to allow you to identify “high potential” or talented individuals within your establishment?
- G5: To what extent would you say employees at your establishment…
    - Have variety in their work
    - Have discretion over how they do their work
    - Have access to flexible working.

Module 2 – Markets and Upskilling:

- A10: Are your products or services primarily sold… / Does your establishment primarily serve the population… Locally, regionally, nationally, within the UK, or internationally?
- A11 IF INTERNATIONALLY Would you say this is primarily within the EU, or primarily outside of the EU?
- A12 IF NOT YET INDICATED THAT THEY SELL WITHIN THE EU Can I just check, do you sell any of your products and services / does your establishment serve the population at all outside the UK but within the EU?
- D1B And approximately how many of your current staff, if any, are from EU member states and are not UK citizens?
- E1 Over the next 12 months do you expect that any of your employees will need to acquire new skills or knowledge as a result of the following?
    - The development of new products and services
    - The introduction of new working practices
    - The introduction of new technologies or equipment
    - New legislative or regulatory requirements
    - Increased competitive pressure
    - The UK’s decision to leave the EU
    - Any other reasons (please specify)
- E2 Which single occupation will have the most need to acquire new skills or knowledge?
- E3 Which, if any, of the following skills do you feel will need improving over the next 12 months [AMONG OCCUPATION FROM E2]?
    - Computer literacy / basic IT skills
    - Advanced or specialist IT skills
    - Solving complex problems requiring a solution specific to the situation
    - Reading and understanding instructions, guidelines, manuals or reports

    - Writing instructions, guidelines, manuals or reports
    - Basic numerical skills and understanding
    - More complex numerical or statistical skills and understanding
    - WALES: Written Welsh language skills
    - WALES: Oral Welsh language skills
    - Communicating in a foreign language
    - Manual dexterity – for example, to mend, repair, assemble, construct or adjust things
    - Adapting to new equipment or materials
    - Knowledge of products and services offered by your organisation and organisations like yours
    - Knowledge of how your organisation works
    - Specialist skills or knowledge needed to perform the role
- E4 Which, if any, of the following skills do you feel will need improving over the next 12 months [AMONG OCCUPATION FROM E2]?
    - Instructing, teaching or training people
    - Sales skills
    - Customer handling skills
    - Persuading or influencing others
    - Team working
    - Managing or motivating other staff
    - Ability to manage own time and prioritise own tasks
    - Setting objectives for others and planning human, financial and other resources
    - Managing their own feelings, or handling the feelings of others
    - Making speeches or presentations

The full final questionnaire with interviewer briefing notes has been separately published on the DfE gov.uk website.

The questionnaire was translated into Welsh by a professional translation agency.

Fieldwork

A total of 87,430 interviews were conducted by telephone using computer-assisted telephone interviewing (CATI) systems. Fieldwork was conducted by three research

agencies (IFF Research, BMG Research and Ipsos MORI). As lead contractor, a member of the IFF team was involved in checking the CATI scripts set up by each agency to ensure consistency across all three contractors.

Establishments were not pre-notified that they would be called for the survey, partly due to financial considerations (the cost of writing to over 650,000 establishments being prohibitive) and partly because it was felt that this could lead to a reduction in response rates in the survey owing to head offices potentially opting out for all the establishments in their organisation. An exception was made for certain large banks and betting shops, where head offices were contacted by members of the DfE team prior to the survey commencing in order to obtain telephone numbers at branch level for establishments included in the sample drawn from the Market Location database. This approach was taken as the original telephone numbers supplied in the Market Location sample directed interviewers to call centres from where, based on past experiences of the Employer Skills Surveys and Employer Perspective Surveys, it has proved particularly challenging to reach individual branches.

In previous editions of the survey, such establishments were pre-identified where possible, so that interviewers had advance warning that other establishments within the chain might already have been approached for interview. There was a particular focus on the finance, gambling and retail sectors which are characterised by centralised telephony operations, whereby all or multiple branches are accessed through the same central switchboard (meaning that this switchboard might be contacted on several occasions, often in quick succession).

In line with the approach adopted in 2015, large multisite organisations (i.e. those with over 700 or more sites), along with the large banks and betting shops that were being contacted by DfE, were managed and only contacted by the lead contractor (IFF Research). This enabled contacts for multisite organisations to be split across a number sample batches and released sequentially over the course of fieldwork to ensure that the various sites were not contacted within too short a time window.

Table 2.4 details how the interviewing was split between the three research agencies based on region.

Table 2.4 Interviews achieved by region

Agency	Regions	Number of interviews*
BMG	East Midlands	6,801
	London	10,269
	South East	10,155
IFF Research	North East	5,195
	West Midlands	7,483
	Yorkshire and the Humber	7,258
	Northern Ireland	3,973
	Wales	5,913
Ipsos MORI	East of England	8,111
	North West	8,263
	South West	7,992
	Scotland	6,017

This table shows the number of interviews achieved in each region and the agency assigned to gather responses in each region. Because IFF Research interviewed all the 'large multisite organisations' in all regions, the sum of interview counts across the regions assigned to an agency does not exactly represent the total number of interviews completed by that agency.

To ensure consistency between agencies, one comprehensive set of interviewer briefing notes was created for use by all contractors, and representatives of each contractor and the DfE team attended the initial interviewer briefing at IFF Research (either by phone or in person). Subsequent to this, a member of the IFF team attended the briefings conducted by each agency. Each briefing lasted around 90 minutes and all of the interviewers that were due to work on the survey were required to attend one such briefing prior to them starting work on the survey. Answers to any questions raised were shared with all three interviewing teams. Quality assurance on the interviewing was carried out by IFF at each of the research agencies, and DfE and IFF attended interviewer briefing sessions at all contractors, providing full feedback post-session which was also shared with all contractors.

Interviews were conducted with the most senior person at the site with responsibility for recruitment, human resources and workplace skills. Reassurances were provided to respondents prior to the survey, including confirmation that data would be reported in aggregate form and in a way that would not allow them or their organisation to be identifiable. If after the first contact the respondent or gatekeeper wanted more information about the survey a reassurance email was sent (see Appendix E for a copy of the reassurance email). This reassurance email included a link to the dedicated survey website which was created and hosted by IFF Research (www.skillssurvey.co.uk). This

website provided further background information on the research, links to the 2015 results, and a list of frequently asked questions.

Fieldwork took place from May to October 2017. Weekly progress updates and feedback ensured the quotas progressed evenly between the three agencies running the fieldwork mitigating the possibility of current events unevenly affecting survey results. Interim data runs were also provided from all agencies to IFF as lead contractor twice during fieldwork, which were checked to ensure consistency between agencies.

A total of 241 interviews were completed in Welsh.

Response rate

High response rates are central to the success of the Employer Skills Survey. Maximising coverage is especially important in some of the harder to reach sectors and regions that may run the risk of being underrepresented.

Strategies for maximising the response rate were considered for ESS 2017 and a paper on maximising response rates was circulated amongst the fieldwork contractors. These strategies included:

- Detailed and engaging interviewer briefings administered to all interviewers working on ESS 2017. This incorporated: full briefing note handouts, details on SIC and SOC prompts (what to ask and what information to take), a PowerPoint slide pack (including screen shots of challenging sections of the questionnaire), and for particularly difficult sections (for example section D – occupational breakdown) recordings from the pilot were played.
- Sample management: loading sample in proportion to quota targets to ensure that sample was sufficiently 'worked' and that quota progression was as even as possible.
- Avoiding calling employers on public holidays.

The overall response rate for the survey was 43%, calculated as 'achieved interviews' as a proportion of all 'complete contacts'. Table 2.5 provides a detailed breakdown of survey outcomes.

Table 2.5 Sample outcomes and response rate

Outcome	Number of contacts	% of all sample	% of complete contacts
Total sample	**674,669**	**100**	
Ineligible establishments (e.g. just 1 working proprietor at site)	38,952	6	
'Live' / Out of quota[6]	384,279	57	
Unobtainable / invalid numbers	50,339	7	
Total complete contacts	**201,099**	**30**	**100**
Achieved interviews	87,443	13	43
Respondent refusal	108,243	16	54
Quits during interview	5,413	1	3

As is common with employer surveys, it was particularly difficult to achieve interviews in the smaller sized establishments in sectors such as Construction and Agriculture which are typically site/outdoor based rather than office based. To mitigate the effect of this, contractors called these establishments outside of normal business hours (before 9am and after 5pm) to try to gather responses.

As the survey neared the end of the fieldwork period it was necessary to adjust some of the quota targets in order to meet the required total number of interviews, as some quotas proved unachievable with the given sample. Appendix B shows the drawn sample ratios; in instances where this was lower than 8:1 this was because the required volume of sample was simply not available from the sources used. Quotas for which the starting volume of sample was lower proved the hardest to fill. Appendix B also shows the areas where it was not possible to hit the original quota targets in the given fieldwork period.

Appendix F shows how the achieved response rate differed by country, size and sector.

During fieldwork, when it became evident that a target quota within a particular cell had become unachievable (i.e. when the target was more than 100% of the remaining sample), targets were increased in other cells to compensate. The following guidelines were issued to contractors to ensure a consistent approach:

[6] This row includes sample which was 'live' at the end of fiedlwork – i.e. records for which a final outcome (refusal, completed interview etc.) was not reached.

- In the first instance, fieldwork contractors were to increase the target within the same SIC sector in an adjacent size band.
- If adjacent size bands had also become unachievable then any remaining achievable size bands within the SIC sector were used to compensate.
- In some cases it was preferable to make up the shortfall in a cell within the same sizeband from a different SIC sector. This would be the case when there was a desire to maximise the number of interviews in that sizeband irrespective of other characteristics. This was most common in the larger size bands, or where an assessment of progress against overall size targets for a particular region indicated a need to boost interviews in the particular sizeband.
- If compensating within sizeband across SIC sector was deemed preferable, or if all sizebands within a SIC Sector had become unachievable, then targets would be adjusted where possible according to a "neighbouring" SIC sector, as per Table 2.6.

Table 2.6 Sector groupings for quota management

Primary Sector and Utilities	SIC 01 to 03, 05 to 09, 35 to 39
Manufacturing	SIC 10 to 33
Construction	SIC 41 to 43
Wholesale and retail trade	SIC 45 to 47
Hotels and Restaurants	SIC 55 to 56
Transport and Storage	SIC 49 to 53
Information and Communications	SIC 58 to 63
Financial Services	SIC 64 to 66
Real estate, renting and business activities	SIC 68 to 82
Public admin.	SIC 84
Education	SIC 85
Health and Social Work	SIC 86 to 88
Arts and other service activities	SIC 90 to 96

Data edits

It was recognised at the outset that the ESS questionnaire involved the collection of some complex data that respondents would possibly struggle to answer. There was also, despite stringent quality control, the chance that interviewers may enter typing errors, for example accidentally entering extra zeros on the end of numerical variables.

Data checks were built into the CATI script to ensure that questions on numbers of employees equalled the number of people working at the site, and that the number of staff in each job role who were not proficient could not exceed the number of staff they had in each job role. However, some data validation needed to occur after fieldwork had finished to ensure no errors were present in the final data. Guidelines were issued to all

fieldwork contractors on how to edit data to ensure consistency; these guidelines can be seen in Appendix G.

Coding

Open ended responses to the survey were coded by each contractors' coding teams. To ensure consistency the codeframes were developed in unison, with codeframes regularly compared and reviewed. As lead contractor IFF Research took the final decisions as to what codes to use after considering advice and outputs from the IFF, BMG and Ipsos MORI coding teams.

Standard Industrial Classifications (SIC) were coded using 2007 standards (the most up to date at the time of the survey), and Standard Occupational Classifications were coded using 2010 standards (also the most up to date available).

Weighting

Survey data were weighted and grossed up to the total population of establishments and total population of employees, according to the 2016 IDBR – the latest available business population statistics published by ONS at the time that weighting was carried out.

Given that the ESS data were intended to be used in a variety of ways (from UK-wide unit and employment based measures, to similar measures at a regional and local level), a number of different weights were produced:

- Core weights, used to weight the UK-wide dataset and used for the majority of analysis. This weighting set is the default to use.
- Modular weights, to be used when analysing data from the modular questions.
- Local weights for use analysing England data by LEA and LEP.

Weights were created in pairs: a **'unit-based'** weight and an **'employment-based'** weight. The unit-based weight was designed for analyses by the number or proportion of establishments; the employment-based weight was designed for use when analysing by number or proportion of employees (including volume measures of vacancies, skills gaps and numbers trained). Data dictionary files were created listing each variable with notes and guidance on the correct weight to use.

Core weights

The core weights are the default to be used for most sets of analysis.

The following weighting strategy was used for the UK-wide dataset.

- Within each English Region (9 GORs) and devolved administration, grossing weights were applied on a 13 broad SIC sector and seven sizeband grid (i.e. 91 cells within each of the 12 geographical areas). The sizebands used were: 2-4, 5-9, 10-24, 25-49, 50-99, 100-249, 250+.
- The sizebands were employment-based.
- Overlaying these grids, RIM (random iterative method) weights were imposed for LAs grouped according to the LEA definitions within England, District Council area in Northern Ireland grouped into five categories[7], ROA region in Scotland[8] and broad region in Wales. This ensured the survey population of each local geography matched the true population without further correction for size and sector at this level. The RIM weights were calculated by the data processing software which used this method to find a 'best fit' between the data and the local level targets that were set for the software.
- Cell merging was applied in instances where, within a region or devolved administration, no interviews had been conducted in cells where the IDBR indicated that establishments existed, and, conversely, ones where interviews had been carried out in cells with a reported 'zero population' according to the IDBR. Cell merging was also conducted in instances where a low number of interviews had been conducted in relation to the population of that cell, which would result in high relative weights being applied to these establishments (i.e. where the weighting value before grossing up to the population was five or more). In each of these instances, cells were merged either within broad SIC sector (i.e. merging sizebands) or across industries (i.e. merging different sectors within a sizeband).[9]

When applying the weights in ESS 2015, Mining & Quarrying was merged into the Manufacturing sector. Its inclusion in the weighting of the Manufacturing sector would not hinder the ability to draw time-series comparisons to ESS13 when Manufacturing was weighted without the inclusion of Mining & Quarrying since it formed such a small proportion of the sector.[10] As discussed earlier, in ESS 2017 Mining & Quarrying now forms the 'Primary Sector and Utilities' sector. Again, due to its small size, time series for the Manufacturing sector should not be affected by this change.

[7] Belfast, East, South, North and West. These five regions were comprised of the 11 District Council geographies of Northern Ireland: Belfast - comprised of the Belfast district council; East - comprised of the Ards and North Down, Mid and East Antrim, Antrim and Newtownabbey, and Lisburn and Castlereagh district councils; South - comprised of the Armagh City Banbridge and Craigavon, and Newry Mourne and Down district councils; North - comprised of the Causeway Coast and Glens, and Derry City and Strabane district councils; West - comprised of the Mid Ulster, and Fermanagh and Omagh district councils.

[8] The same combination of ROAs and unitary authorites for which regional quotas were set.

[9] A total of 84 cells (out of a possible 1092) were merged as a result of the process outlined above. The cell mergings were consistent across both the unit and employment weights

[10] Of the combined 'Manufacturing and Mining & Quarrying' sector, the Mining & Quarrying component accounted for 1.6% of the establishment population and 2.4% of the employment population.

Modular Weighting Strategy

As discussed previously, some question areas in the survey were only asked to half of the survey respondents, to allow wider coverage of subject matter on the questionnaire. These are known as 'modular questions'. Respondents were randomly allocated to one of two modules:

Module 1: Not asked A10, A11, A12, D1B, Upskilling (Section E)

Module 2: Not asked High Performance Working (F3, Section G)

As they were randomly allocated, the population characteristics of the two groups were very similar, as were the responses to key questions (incidence of vacancies, skill-shortage vacancies, skills gaps etc.). This similarity meant that the weighting applied to the whole dataset would in principle be suitable for the modular data, in that the resulting percentages were "correct" for the population within each modularised nation. However, if any weighted counts of establishments are required, the modular data with the main weight will produce a figure which is approximately half of the total number in the population, since only half of the sample was asked the question.

A further set of weights was therefore produced for the modularised data, grossing up the employers within each modular set to the full population. This was done by simply multiplying their core weight by the factor required to take the weighted figure in each modular up to that of the full population. These weights sit in the main file, and variables to which they apply are clearly marked with the prefix "M_".

'Local level' Weighting Strategy

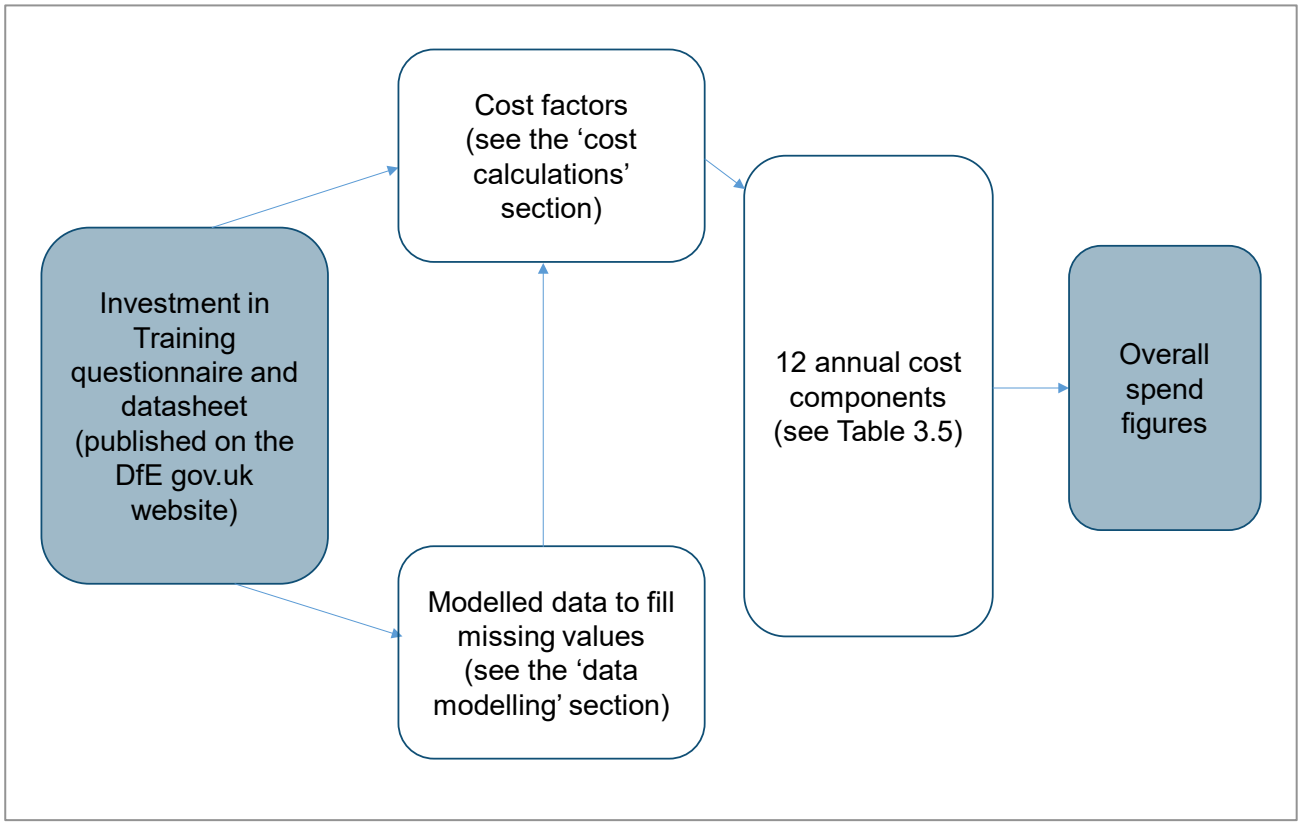
England – LEA/LEP weights

To allow for analysis in England by LEA and increase the accuracy of analysis by LEP, a separate set of weights was produced to take into account the size and sector balance within each LEA. The targets were set on a 13 sector by four sizebands grid (the sizebands being 1-4, 5-24, 25-99 and 100+). Separate unit and employment weights were created. These weights are in a separate SPSS file to the main SPSS file, and this LEA file should be used when carrying out any analysis by LEA or LEP.

3. Investment in Training survey

A separate Investment in Training study was conducted by IFF Research to provide detailed estimates of employer expenditure on training. The approach replicated that of the Investment in Training Surveys in 2015, 2013 and 2011, which, in turn, had replicated the previous Cost of Training studies conducted in England and Northern Ireland in 2009. The process required to achieve the final training spend figures involved multiple steps, as demonstrated in Figure 3.1. Once the survey data were collected, modelling was conducted to impute missing data (i.e. where respondents were unable to provide an exact figure for a survey question). Modelled data were combined with data from other sources to create 12 'cost components'. Summed, these generated the overall training expenditure figure.

Figure 3.1 Summary of the Investment in Training data process



Sampling

Sample for the Investment in Training survey comprised employers that a) had completed the core ESS 2017 survey, b) had indicated that they had provided training for staff over the last 12 months and c) had indicated that they were happy to be re-contacted in order to provide more specific information about training expenditure

(question I3 of the main stage questionnaire). The sample was collected from core survey fieldwork contractors in four batches during fieldwork.[11]

Quotas

The aim was to achieve 12,500 complete, useable interviews. This required a fieldwork target of around 13,000 as it was expected that some records would ultimately prove to be unsuitable for analysis due to high levels of 'don't know' responses.

Notional targets of 7,400 interviews among employers in England, 1,000 in Northern Ireland, 2,600 in Scotland and 1,500 in Wales were set. However, it was known at the outset that the fieldwork approach would essentially be an attempted census of employers in each of the countries outside of England given that sample was limited to employers from the core survey that trained and agreed to being contacted for the Investment in Training survey. Any shortfall of interviews among the countries outside of England was to be made up for by additional interviews among employers in England.

Within England a target was set using an interlocking grid of size (2-4 employees, 5-9, 10-24, 25-49, 50-99, 100+) by training activity (off-the-job only, on-the-job only and both) within English region, with an additional (non-interlocking) sector target for each nation. Due to an attempted census approach being taken in Northern Ireland, Scotland and Wales, no quotas on size, sector or training type were set.

In addition to this, while no strict quotas were set, the proportion of interviews conducted among those who provided on- and/or off-the-job training was carefully monitored. This was to ensure that enough interviews were conducted among employers offering each combination of training for sufficient representation.

Data collection method

Employers were sent a datasheet to complete by email, before then providing their answers by telephone. All respondents were called before sending them the datasheet. This involved a short conversation thanking them for taking part in the core ESS 2017 interview, reminding them that they indicated being happy to take part in a short follow-up, introducing the idea of sending the datasheet, encouraging them if necessary to take part and checking their contact details. A few days after sending the datasheet (set at 3 days unless the respondent specified a specific date when they wanted to be called back), an interviewer called back to try to conduct the full interview.

[11] In previous years, sample collection occurred at three points, after each 4-5 week period of interviewing. However, it was felt an additional collection from all core survey fieldwork contractors near the middle of fieldwork was needed to ensure enough sample for fieldwork to run smoothly, without sample running low.

If, after 5 attempts, we did not manage to get through to the named respondent, an introduction email and the relevant datasheet were emailed through automatically (provided an email address was given in Wave 1). This was followed up by a call approximately 3 days later.

Questionnaire

Given the need to closely replicate the Investment in Training studies undertaken in the UK in 2011, 2013 and 2015, and previously in England in 2005, 2007 and 2009, and also in Northern Ireland in 2008, the datasheet was largely unchanged compared to that used for these previous surveys.

One of the changes made to the telephone questionnaire and datasheet was an update of the training organisations listed at Q14, where the value of any grants or subsidies received over the past 12 months from training organisations was collected. This was to ensure that the most relevant organisations within England, Wales, Scotland and Northern Ireland were cited.

The only other change made to the telephone questionnaire was the addition of one new question for multisite organisations, Q13C, to check whether the levy payment amount provided at the previous question related to the specific establishment or the organisation as a whole. Q13c was not added to the datasheet due to the more straightforward nature of the information required, and to avoid alteration of the components of the investment in training survey.

Achieved interviews and response rate calculations

In total, information on training expenditure was collected from 13,008 establishments at UK level, though 542 were not included because of incompleteness (i.e. a large number of ‘don’t know’ responses); hence analysis is based on data from 12,466 establishments.

Fieldwork was undertaken by IFF Research from 15 June to 27 October 2017.

The overall response rate for the survey was 64%, calculated as “achieved interviews” as a proportion of all “complete contacts”. Response rates were higher than the core survey as respondents were already engaged in the research and had agreed to a follow up survey. A detailed breakdown of survey outcomes in shown in Table 3.1.

Table 3.1 Sample outcomes and response rate

Outcome	Number of contacts	% of all sample	% of complete contacts
Total sample	38,744	100%	
'Live' / Out of quota[12]	17,391	44%	
Unobtainable / invalid numbers	973	3%	
Total complete contacts	20,380	52%	100%
Achieved interviews	13,008	34%	64%
Respondent refusal	5,269	14%	26%
Quits during interview	2,403	6%	12%

Response rates by country are shown in Table 3.2.

Table 3.2 Response rate by country

Outcome	England	Northern Ireland	Scotland	Wales
Interviews	9,261	913	1,454	1,380
Response rate	64%	64%	65%	62%

Data modelling

In order to calculate overall training expenditure, each record in the dataset needed to have a response to each question (even if it is a zero in relation to types of training the establishments does not supply). As expected, not every respondent was able to supply every piece of information. In order to 'fill in' the missing data, averages were drawn from those respondents who were able to answer each question and applied to those cases with missing data.

Matching the approach taken in the Cost of Training Survey in England in 2009 and for the Employer Skills Surveys in 2011, 2013 and 2015, when a respondent could not provide an exact (integer) answer the survey was set up to prompt respondents to give a range answer ('between £500 and £999' and so forth). Although this range answer still needs transferring into an exact figure within the range, it guides and greatly improves

[12] This row includes sample which was 'live' at the end of fieldwork – i.e. records for which a final outcome (refusal, completed interview etc.) was not reached.

the accuracy and reliability of the modelling process since the modelling for these range responses is based on those respondents who gave an exact answer which fell into that range rather than simply being an average of all responses.

For questions unrelated to salaries, a modelling process was used to calculate mean responses from those giving an exact answer (excluding zero). Where a respondent gave a range answer, they were assigned a corresponding mean for their establishment size for the range response selected. Where they were unable to give either an exact or a range answer, they were assigned the overall mean for the question within their size band.

For salaries, a slightly different approach was taken to modelling ‘don’t know’ answers, again based on that used in the Investment in Training Survey in 2015, 2013 and 2011, and in the previous Cost of Training Surveys in England in 2005, 2007 and 2009, in Northern Ireland in 2008 and in the Learning and Training in Work (LTW) survey in 2000. Initially, as above, range and overall means were calculated. Rather than size of establishment, location of establishment (London or non-London) was seen to be the major determinant of salary levels; so means were split on this basis rather than by the size bands used for other ‘don’t know’ answers. Where a range had been given, the appropriate mean was used as the imputed value.

For those respondents unable to give even a salary range, a method was used to determine whether they pay salaries above or below the average, and to what degree. This took into account the establishment’s location and evidence from other salary questions on the datasheet. Where exact answers had been given for other salary questions, a ratio was calculated between their actual answer and the London/non-London mean (as appropriate) for that question. This gave a ratio that expressed the degree to which that employer over-paid or under-paid employees in the roles discussed, compared with the mean. Where salary answers were missing (and no range information was provided) the assigned value would be calculated as the London or non-London mean multiplied by the ratio of a related question for that establishment. The ratio selected was different for each question and dependent on which questions were judged to be the most closely related. This enabled the estimate to be either up-weighted or down-weighted in keeping with their pay for other roles.

The simulation procedure and the precise order of selection used for salary questions is shown in Table 3.3, along with the proportion modelled using range information and the proportion modelled that did not provide range information.

Table 3.3 Treatment of missing values

Question	Value given to missing data	Base	% modelled within range	% modelled without range
Q1 - *Number of employees that participated in an education or training course, provided either externally or internally over the past 12 months*	Mean within 6 employment size bands (within recorded range where available)	9,218	2	0.3
Q2 - *Number of days on average each participant spent on an education or training course over the past 12 months*	Mean within 6 employment size bands (within recorded range where available)	8,923	5	1
Q3 - *Average basic annual salary of participants on education or training courses over past 12 months*	Mean calculated within London/non-London establishments within recorded ranges where available. Where range information not provided:	8,923	27	5
	1. if Q17 answered (and an exact answer given), calculate proportion above or below the Q17 average for the establishment and up-lift or reduce the appropriate Q3 mean (London or non-London) by this proportion to generate Q3 figure for this establishment	21		*2*
	2. if Q17 not answered with an exact value apply procedure at 1. to Q21	18		*0.2*
	3. if Q21 not answered with an exact value, apply procedure at 1. to Q24	22		*0.2*
	4. if Q24 not answered with an exact value apply procedure at 1. to Q10	3		*
	5. if Q10 not answered with an exact value use appropriate Q3 mean (London or non-London) unadjusted	393		*4*

Q4 - *Cost of fees to external providers of training courses for your employees over the past twelve months*	Mean within 6 employment size bands (within recorded range where available)	8,923	19	8
Q6A - *Total basic annual salaries of any full time or part time training centre staff*	Mean within 6 employment size bands (within recorded range where available)	622	37	29
Q6B - *Other training centre running costs over the last 12 months*	Mean within 6 employment size bands (within recorded range where available)	622	25	18
Q7A - *Amount spent on using any off-site training centres located elsewhere within your organisation over the past twelve months*	Mean within 6 employment size bands (within recorded range where available)	3,111	26	*
Q8 - *Number of people at establishment directly involved in providing, administering or making policy decisions about training, excluding any training centre staff*	Mean within 6 employment size bands (within recorded range where available)	8,923	0.5	0.2
Q9 - *Percentage of time staff involved in providing, administering or making policy decisions about training spend on training matters*	Mean within 6 employment size bands (range information not recorded for this question)	8,073	8	*
Q10 - *Average basic annual salary of staff involved in providing, administering or making policy decisions about training*	Same procedure as Q3 but different order of selection: Q24, Q3, Q17, Q21	8,073	27	9
Q11 - *Cost of equipment and materials used for training employees over the past twelve months, excluding training centre costs*	Mean within 6 employment size bands (within recorded range where available)	8,923	14	5
Q12 - *Travel and subsistence payments and travelling time payments made to participants and trainers who spent time on courses over the past twelve months*	Mean within 6 employment size bands (within recorded range where available)	8,923	17	4
Q13 - *Levy payments*	Mean within 6 employment size bands (within recorded range where available)	8,923	5	8
Q14 - *Grants or subsidies*	Mean within 6 employment size bands (within recorded range where available)	8,923	5	7
Q15 - *Number of employees that participated in other off-the-job training*	Mean within 6 employment size bands (within recorded range where available)	9,219	2	1
Q16 - *Number of days on average each employee participating in other off-the-job training spent away from their usual work position*	Mean within 6 employment size bands (within recorded range where available)	6,511	4	1

Q17 - *Average basic annual salary of employees who have taken part in other off-the-job training*	Same procedure as Q3 but different order of selection: Q3, Q21, Q24, Q10	6,511	25	6
Q18 - *Cost of fees to external providers of providing other off-the-job training*	Mean within 6 employment size bands (within recorded range where available)	6,511	16	11
Q19 - *How many employees do you estimate receive on-the-job and informal training and development during a typical month?*	Mean within 6 employment size bands (within recorded range where available)	10,491	3	1
Q20 - *How many working hours on average each of these employees spends on on-the-job and informal training and development during a typical month?*	Mean within 6 employment size bands (within recorded range where available)	9,703	11	1
Q21 - *Average basic annual salary of employees who receive on-the-job training and development in a typical month?*	Same procedure as Q3 but different order of selection: Q3, Q17, Q24, Q10	9,703	29	8
Q22 - *Number of employees who GIVE on-the-job training during a typical month*	Mean within 6 employment size bands (within recorded range where available)	9,703	2	1
Q23 - *Number of working hours on average each employee spends giving on-the-job training during a typical month*	Mean within 6 employment size bands (within recorded range where available)	9,006	9	1
Q24 - *Average basic annual salary of your employees who give on-the-job training in a typical month*	Same procedure as Q3 but different order of selection: Q10, Q3, Q17, Q21	9,007	27	7
Q25 - *Amount spent on online training or e-learning for staff at this site in the past 12 months*	Mean within 6 employment size bands (within recorded range where available)	6,590	18	13

"Base" = Total number of respondents eligible to respond to each question

"% modelled within range" = percentage of base that had given a range value for the question

"% modelled without range" = percentage of base that had not been able to provide even a range estimate for the question

Cost calculations

To help respondents, some costs were collected in monthly rather than yearly terms; others per trainee rather than across all trainees. Following data modelling however – which ensured all respondents had at least an estimated exact answer for all questions – individual questions were combined to calculate 12 total annual cost components. Factors were also included in these calculations to account for differences between employee salaries (more easily reported by respondents) and total labour costs (including tax and other costs) and the amount of time employees spend at work. The factors used are detailed in Table 3.4.

Table 3.4 Factors included in cost calculations

Factor	Value	Explanation
Labour cost up-weight	17.7%	It was found during the pilot stage of LTW 2000 that employers were far better placed to report the salaries of their employees than the total cost of employing them. Respondents were, therefore, asked for the average basic salaries of those receiving and providing training. An up-weight of 17.7% was then applied to these answers to take account of National Insurance, employer pension contributions, overtime and other additional elements. The source of the 17.7% figure was the ONS Index of Labour Costs per Hour (ILCH). In the UK, direct remuneration (wages and salaries including bonuses) made up 85.0% of labour costs. Hence an uplift of 100/85.2 (i.e. 1.177 or 17.7%) is required to convert direct remuneration to total labour costs. *Source: ONS Index of Labour Costs per Hour (ILCH) – The proportion that the components of labour costs contribute to total labour costs, by sector, UK, Quarter 1 (Jan to Mar) 2009 to Quarter 2 (Apr to Jun) 2017. [Release date 3.11.2017; reference no. 007695].*
Days worked per year	230	Used to calculate the per-working-day salary of an employee in order to calculate the cost, for example, of training an employee for one working day per year on the basis of their annual salary. Working age employees in England (from Labour Force Survey Quarter 4 (Oct to Dec) 2016): Full-time workers worked an average of 5.085 days per week Received an average of 26.6 paid days holiday, plus 8 bank / public holidays This gives: 52 x 5.09 (=264.42) possible working days a year, less 26.6 days annual leave and 8 days bank/public holiday = 230 days worked per year.

Hours worked a day	7.77	Used to convert number of working hours of training to working days. Derived from the basic usual hours of full-time workers (mean of 39.50 per week) divided by a mean of 5.085 days worked a week by full-time workers = 7.77. Source: Labour Force Survey Quarter 4 (Oct to Dec) 2016.
Working months in a year	11	Used to convert monthly training figures given in the on-the-job section of the datasheet into annual figures.

The formulae used to convert raw data to the comparable annual cost components are listed in Table 3.5. All calculations were performed using modelled data.

Table 3.5 Formulae for the annual cost components

	Annual cost component	Formula
A	Trainee labour costs (Q1–3)	Q1 * Q2 * 117.7% * Q3 / 230
B	Fees to external providers (Q4)	Q4
C	On-site training centre (Q6a/b)	(117.7% * Q6a) + Q6b
D	Off-site training centre (in the same company) (Q7a)	Q7
E	Training management (Q8–Q10)	Q8 * Q9/100 * 117.7% * Q10
F	Non-training centre equipment and materials (Q11)	Q11
G	Travel and subsistence (Q12)	Q12
H	Levies minus grants (Q13–Q14)	Q13-Q14
	Sub-total (course related)	**A + B + C + D + E + F + G + H**
I	Labour costs (Q15–Q17)	Q15 * Q16 * 117.4% * Q17 / 230
J	Fees to external providers (Q18)	Q18
	Sub-total (other off-the-job training)	**I + J**
	OFF-THE-JOB TOTAL	**A + B + C + D + E + F+ G + H + I + J**
K	Trainee's labour costs (Q19–Q21)	Q19 * Q20 * 117.7% * Q21 * 11 / (230 * 7.77)
L	Trainers' labour costs (Q22–Q24)	Q22 * Q23 * 117.7% * Q24 * 11 / (230* 7.77)
	ON-THE-JOB TOTAL	**K + L**
	TOTAL TRAINING SPEND	**A + B + C + D + E + F+ G + H + I + J +K + L**

Note: Where derived employment-based training spend figures are shown in this report (expenditure per trainee, or per capita, for example) and there is a choice between taking the measure given in the main ESS 2017 data and that in the data for the training expenditure survey, the data from the main survey are used. This is because base sizes are larger in the main survey and a separate employment weight is available to ensure a closer match to the actual workforce profile.

Changes to supplementary statistics

Investment in Training 2017 features a small number of revisions to the way in which supplementary statistics for cost calculations are sourced. This is to improve the accuracy of the investment in training estimates. These revisions have also been applied retrospectively to past data (covering ESS 2011 to 2015) to enable time series comparisons. This section summarises these changes.

See Appendix I for more detail on the datasets, variables and syntax used to source the figures shown below.

Labour cost up-weight

There has been no fundamental change in methodology for this element, but instead a change in the source. Previous ESS used Eurostat data on labour costs, which are ultimately derived from ONS figures. This time, an ad-hoc statistical release[13] by ONS that details the Index of Labour Costs per Hour for the UK was used.

The figures cover the whole economy (SIC 2007: 0 - 96) and do not include vocational training costs.

- ESS 2011, average of 4 quarters ending 2011 Q2

  = 1 / (0.25*(85.3% + 85.3% + 85.0% + 85.0%)) = **1.174**
- ESS 2013, average of 4 quarters ending 2013 Q2

  = 1 / (0.25*(85.1% + 85.1% + 85.0% + 85.1%)) = **1.175**
- ESS 2015, average of 4 quarters ending 2015 Q2

  = 1 / (0.25*(85.1% + 85.1% + 84.8% + 85.0%)) = **1.176**
- ESS 2017 - average of 4 quarters ending 2017 Q2

  = 1 / (0.5*(85.1% + 85.1% + 84.9% + 84.7%)) = **1.177**

[13] Source: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/adhocs/007695indexoflabourcostsperhourilchtheproportionthatthecomponentsoflabourcostscontributetototallabourcostsbysectorukq1jantomar2009toq2aprtojune2017

Labour Force Survey (LFS) variables

As in previous years, the Labour Force Survey remains the source of the remaining supplementary statistics. To better reflect the remit of ESS, however, LFS analysis has been restricted to only respondents who are either employees, or who are self-employed and employ at least 1 other person. This means that sole-traders and unpaid, informal family workers are excluded from the calculations, in line with the coverage of the ESS.

Days worked per year

For certain aspects of the Investment in Training survey, employers are asked for the average annual full-time equivalent salaries, thereby requiring employers to convert any part-time salaries to full-time equivalents. For instance, for a 0.5 FTE part-time worker, an employer should report double the worker's salary.

The daily FTE salary figure is multiplied by the average actual training days per year – i.e. these are not scaled up to make them 'full-time equivalent' training days per year.

Previously the 'average days worked per year' figure derived from the LFS was based on all workers (including all self-employed and part-time workers). As such, the formula for wage costs was:

(Average FTE salary / average days worked annually) * training days

The revision to the methodology is to use LFS figures from just full time workers in the following way:

(Average FTE salary / average full-time days worked annually) * training days

A separate issue is that public holiday entitlements vary across the constituent countries of the UK – ranging from 8 to 10. In previous investment in training calculations England's figure of 8 days is used for the whole UK: we have continued to use this figure.

Table 3.6 presents the figures for workings days per year from 2011-2017, with the above methodology applied.

Table 3.6 Revised calculation - Days worked per year 2011-2017

Survey	LFS survey	Usual days worked per week – full time	Average paid days holiday (excl. public holidays)	Working days per year: (Days worked per week * 52) – holidays – 8 public holidays
2011 UK ESS	Q4 2010	5.112	26.4	231
2013 UK ESS	Q4 2012	5.132	26.4	232
2015 UK ESS	Q4 2014	5.101	26.4	231
2017 UK ESS	Q4 2016	5.085	26.6	230

Hours worked per day

The new method of using figures for full-time workers only was also applied in the calculations for hours worked per day. As a result, hours worked are higher than previously.

Additionally, the figures use the ‘usual basic hours of workers’, as opposed to the previously used ‘actual working hours’ in LFS reference week (see Table 3.7). ‘Actual hours’ are lower due to illness, holiday and training – the latter of which would introduce some cyclicality into these calculations.

Table 3.7 Revised calculation – Hours worked per day 2011-2017

Survey	LFS survey	Usual basic hours (excl. overtime)	Hours per day
2011 UK ESS	Q4 2010	39.42	7.71
2013 UK ESS	Q4 2012	39.58	7.71
2015 UK ESS	Q4 2014	39.50	7.74
2017 UK ESS	Q4 2016	39.50	7.77

Working months in a year

As in previous years, we have assigned 11 working months in a year to the workings. The reason for not using 12 months is that employers are asked to answer for 'typical' months, meaning they are unlikely to adjust for summer holidays and the Christmas periods.

Weighting

In order to weight the Investment in Training study, population figures were calculated using the core ESS 2017 survey data (which had in turn been weighted using the IDBR figures used for the main survey analysis). Data were weighted on the basis of interlocking grids on seven size bands (2-4, 5-9, 10-24, 25-49, 50-99, 100-249, 250+) by 14 SIC sectors, and by the type of training they carried out (on-the-job only, off-the-job only, or both).

A regional RIM weight was then applied using targets based on the proportion training in the English GOR regions, Northern Ireland, Scotland and Wales. An additional step was also undertaken in 2017: an adjustment was applied to each weight to ensure that the profile of size band within country was correct. This was in order to ensure establishment size was accurately represented at a country as well as a UK level, increasing the accuracy of the spend figure within countries.

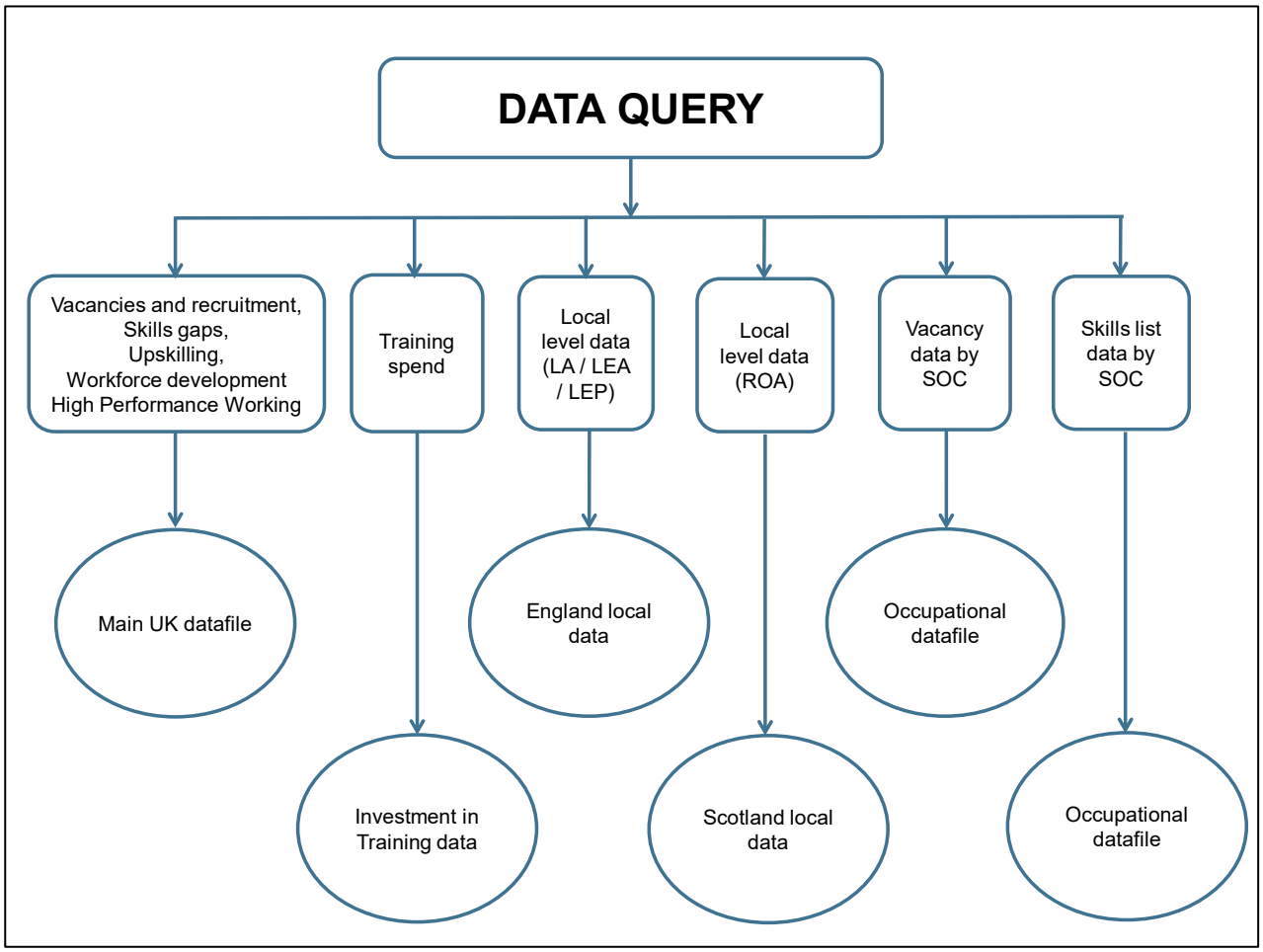
Only establishment-based weights were created for the Investment in Training survey, as all data in the survey are establishment orientated.

4. Using the survey for analysis

The Employer Skills Survey 2017 is designed to be flexible enough to allow analysis of data for a large number of different purposes, and split by a large number of different subgroups of data. The survey serves multiple audiences and purposes, and as such a wide range of core outputs are available to inform and assist analysis.

- The main UK report (published on the DfE gov.uk website) provides an overview of the survey findings, focusing on country comparisons and where relevant/interesting other variables, primarily size and sector. The report has an appendix showing supplementary data for those who want to look into the issues discussed in more depth, without running their own analyses.
- The accompanying UK Excel Tables show the survey data question by question, plus some summary tables, crossed by a number of key analysis and survey variables. These are also available on the DfE gov.uk website.
- Accompanying slide packs by nation have also been made available to complement the report.
- There are five SPSS datafiles that supplement this analysis, each looking at a different population or subject matter. One of the challenges in providing accurate data for a number of different populations and analyses groupings is that each different purpose will have its own population and its own optimum weighting strategy. As a result, there are multiple data files associated with the analysis of the survey. Figure 4.1 provides a flow chart to identify which dataset to use for any given analysis query.

Figure 4.1 Selecting a datafile



As with previous Employer Skills Surveys the data will be stored in the ONS Virtual Microdata Laboratory and with the UK Data Service.

Each data file has its own weight or set of weights, as follows:

1. Main UK datafile – UK-wide – Establishment, Employment, Modular and unit-based skills list weights
2. Investment in Training dataset – UK-wide, trainers only – Establishment weight
3. England local data (LEA and LEP) – England only – Establishment and Employment weights
4. Scotland local data (ROA) – Scotland only – Establishment and Employment weights
5. Occupational file – UK-wide – vacancy, hard-to-fill vacancy and skill-shortage vacancy employment weights.

Table 4.1 gives details of each of these weights and when each one has been and should be used. The establishment weights gross to the full establishment population and are to be used when running establishment based figures (e.g. X% of establishments

have vacancies). Employment weights gross to the full employment population and are to be used when running volumetric employment based figures (e.g. total number of vacancies, or skill-shortage vacancies and proportion of all vacancies etc.)

Table 4.1 Application of weights during analysis

Weight name	Coverage	Establishment / employment	Notes	Reporting thresholds
Core survey				
Core dataset:				
UNITWEIGHT	UK	Establishment	Used for establishment based measures.	Under 30 not reported; 30-49 “indicative”
EMPWEIGHT	UK	Employment	Used for employment based measures.	Under 30 not reported; 30-49 “indicative”
MODWEIGHT	UK	Establishment	Should only be used for establishment based measures on modular questions (prefixed “M_” in datafile).	Under 30 not reported; 30-49 “indicative”
MODEMPWT	UK	Employment	Should only be used for employment bases measures on modular questions (prefixed “M_” in datafile).	Under 30 not reported; 30-49 “indicative”
England local data:				
LEAUNIT	England	Establishment	For use when analysing LEA and LEP data.	Under 50 not reported
LEAEMP	England	Employment	For use when analysing LEA and LEP data.	Under 50 not reported
Occupational data:				
EMPVOLWEIGHT	UK	Employment	For use when *summing* vacancies, hard-to-fill vacancies and skill-shortage vacancies	Under 30 not reported; 30-49 “indicative”
VACVOLWEIGHT	UK	Employment	For use when *running frequencies* of vacancy-related measures	Under 30 not reported; 30-49 “indicative”

HTFVOL WEIGHT	UK	Employment	For use when *running frequencies* of hard-to-fill vacancy-related measures	Under 30 not reported; 30-49 “indicative”
SSVVOL WEIGHT	UK	Employment	For use when *running frequencies* of skill-shortage vacancy-related measures	Under 30 not reported; 30-49 “indicative”
Investment in Training Survey				
WEIGHT	Investment in Training data	Establishment	Applies to all 2017 analysis of Investment in Training data. For use when analysing 2017 training spend.	Under 30 not reported; 30-49 “indicative”

The table above gives indicative thresholds for reporting data produced using each weight. However, those seeking to conduct more stringent statistical testing are referred to Appendix H of this report, which shows the standard confidence intervals for different subgroup sample sizes.

Modelled data

The National Employer Skills Survey 2009 in England contained seven employer engagement indicators for analysis. These can be replicated using variables in the Employer Skills Survey 2011, 2013, 2015 and 2017 surveys as follows:

Table 4.2 Employer engagement indicators 2009-2017

NESS09 indicator	Description	ESS 2011, 2013 and 2015 variable name	2017 variable name
empeng1	Percentage of establishments with a business plan	H3	F1A
empeng2	Percentage of establishments with a training plan	F1A	F1B
empeng3	Percentage of establishments with a training budget	F1B	F1C
empeng4	TOTAL days training	F11_MODELLED	F11_MODELLED
empeng5	TOTAL number of employees trained	F8I_MODELLED	F8I_MODELLED

empeng6	Percentage of establishments that formally assess whether individual employees have gaps in their skills	n/a	n/a
empeng7	Percentage of establishments formally assess the performance of employees who have received training and development	F15	F15

Training days and number of employees trained variables were calculated using modelled data. Where a “don’t know” answer was given at F8 or F11 the modelled variable assigned the establishment with the mean score for their size and sector. This ensured that the proportion of staff and total number of days training was not under-counted.

Further information on analysing specific datasets and data variables can be found in the data dictionaries that accompany each SPSS data file.

Appendix A: Industry coding

Each establishment was allocated to one of 13 sectors, based on their Standard Industrial Classification (SIC). SIC 2007 was used to classify establishments using the following method. Using the four-digit Standard Industrial Classification (SIC) supplied for each record from the Market Location database, a description of business activity was read out to each respondent. If they agreed that this description matched the main activity undertaken at the establishment, then the SIC on Market Location's database was assumed to be correct. If, however, the respondent felt the description did not correspond to their main business activity at the site (around a fifth of cases), a verbatim response was collected to find out what they do. At the analysis stage this was coded to a four-digit SIC which was then used as the basis for allocation into sector.

The table below shows the 13 sectors and their corresponding SIC 2007 definitions.[14]

Sector	SIC 2007
Primary Sector and Utilities	A - Agriculture, forestry and fishing (01-03) Including farming, hunting and other related service activities, forestry and logging, fishing and aquaculture B - Mining and quarrying (05-09) Including mining of coal, metals, sand/stone/clay, and extraction of crude petroleum and natural gas D - Electricity, gas, steam and air conditioning supply (35) E - Water supply, sewerage, waste management and remediation activities (36-39) Including electric power generation, transmission and distribution, manufacture of gas and distribution of gaseous fuels, steam and air conditioning supply, water collection, treatment and supply, sewerage and waste collection
Manufacturing	C - Manufacturing (10-33) Including manufacture of food and beverage, textiles, chemicals and chemical products, basic pharmaceutical products, other mineral products, manufacture of metals and metal products, machinery, computer and electronic products and equipment, motor vehicles and other transport equipment, furniture, and repair and installation of machinery and equipment
Construction	F - Construction (41-43) Including the construction of buildings, civil engineering (constructing roads, railways and other utility projects), demolition, and specialised activities such as electrical installation, roofing and scaffold erection
Wholesale and Retail	G - Wholesale and retail trade; repair of motor vehicles and motor cycles (45-47) Including sale, maintenance and repair of motor vehicles, parts and accessories, non-vehicle wholesale (for example agriculture, food, household goods), and the retail trade of all products whether in stores, stalls, markets, mail order or online

[14] UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007)
https://www.gov.uk/government/publications/standard-industrial-classification-of-economic-activities-sic

Hotels and Restaurants	I - Accommodation and food service activities (55-56) Including hotels, campsites, youth hostels, holiday centres, villages and other short stay accommodation, restaurants and takeaways, event catering and licensed clubs, pubs and bars
Transport and Storage	H - Transport and storage (49-53) Including land, water and air transport (passenger and freight), warehousing and support activities for transportation, postal and courier activities,
Information and Communications	J - Information and communication (58-63) Including publishing (books, journals, newspapers etc. and software/computer games), television, film and music production, broadcasting, telecommunications, computer programming and consultancy, information service activities (e.g. data processing and hosting)
Financial Services	K - Financial and insurance activities (64-66) Including banks and building societies, activities of holding companies, trusts, funds and similar financial entities, credit granting, pensions, insurance and reinsurance
Business services	L - Real estate activities (68) M - Professional, scientific and technical activities (69-75) N - Administrative and support service activities (77-82) Including the buying, selling and renting of real estate, legal activities, accounting, bookkeeping and auditing, management consultancy, architectural and engineering activities, scientific research and development, advertising and market research, specialist design, photographic activities, translation and interpretation, veterinary activities, renting and leasing of tangible goods (motors, household, machinery), employment agencies, travel agencies and tour operations, security and investigation activities, office administration and business support
Public Administration	O - Public administration and defence; compulsory social security (84) Including administration of the State and economic and social policy of the community, provision of services to the community such as defence activities, foreign affairs, justice and judicial activities, fire service and compulsory social security activities
Education	P - Education (85) Including pre-primary, primary, secondary and higher education, other education (such as sports, driving schools, cultural education), educational support activities
Health and Social Work	Q - Human health and social work activities (86-88) Including Hospitals, medical and dental practices, residential care, social work activities
Arts, entertainment, recreation and other service activities	R - Arts, entertainment and recreation (90-93) S - Other service activities (94-96) Including performing arts, libraries and museums, gambling and betting, sports facilities, amusement and recreation activities, activities of membership organisations (religious, political, trade union, professional), personal services (hairdressing, beauty, textile cleaning, well-being activities, funeral activities)
NOT COVERED IN SURVEY	T - Activities of households as employers; undifferentiated goods and services producing activities of households for own use (97-98) U - Activities of extraterritorial organisations and bodies (99) Including households as employers of domestic personnel, private households producing goods for own use

Appendix B: Quota targets, drawn sample and achieved interviews

The tables below show for each region the ratio of sample drawn for each key quota group, and the achievement of interviews against the original target. Note that “sample drawn” figures are based on the sample information about size and sector, whereas the “interviews achieved” figures are based on the size and sector information confirmed by the respondent.

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
East of England					
2-4	1433	13810	9.6	1242	87%
5-9	1829	14511	7.9	1776	97%
10-24	2441	19162	7.9	2104	86%
25-49	1064	8355	7.9	918	86%
50-99	573	3985	7.0	448	78%
100-249	301	2102	7.0	236	78%
250+	221	905	4.1	77	35%
Primary Sector and Utilities	549	5196	9.5	398	72%
Manufacturing	559	4236	7.6	655	117%
Construction	773	6845	8.9	522	68%
Wholesale and Retail	1072	8687	8.1	1178	110%
Hotels and Restaurants	645	5216	8.1	627	97%
Transport and Storage	449	3510	7.8	309	69%
Information and Communications	518	3621	7.0	251	48%
Financial Services	292	2476	8.5	144	49%
Business services	1260	9892	7.9	1001	79%
Public Administration	103	636	6.2	87	84%
Education	449	3408	7.6	446	99%
Health and Social Work	593	4226	7.1	626	106%
Arts and other service activities	600	4881	8.1	557	93%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
East Midlands					
2-4	1350	11766	8.7	1437	106%
5-9	1805	13981	7.7	1937	107%
10-24	1963	15599	7.9	2534	129%
25-49	803	6353	7.9	1188	148%
50-99	406	2814	6.9	567	140%
100-249	229	1594	7.0	337	147%
250+	173	692	4.0	111	64%
Primary Sector and Utilities	531	4514	8.5	417	79%
Manufacturing	554	4162	7.5	661	119%
Construction	631	5066	8.0	679	108%
Wholesale and Retail	999	8104	8.1	1340	134%
Hotels and Restaurants	584	4708	8.1	782	134%
Transport and Storage	370	2892	7.8	419	113%
Information and Communications	336	2030	6.0	390	116%
Financial Services	172	1565	9.1	260	151%
Business services	1000	7802	7.8	1345	135%
Public Administration	80	478	6.0	102	128%
Education	403	3184	7.9	514	128%
Health and Social Work	554	4024	7.3	624	113%
Arts and other service activities	515	4270	8.3	578	112%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
London					
2-4	1324	12436	9.4	1495	113%
5-9	1909	16409	8.6	2130	112%
10-24	3661	29461	8.0	3514	96%
25-49	1389	11473	8.3	1650	119%
50-99	887	6159	6.9	868	98%
100-249	527	3715	7.0	442	84%
250+	438	1756	4.0	170	39%
Primary Sector and Utilities	190	1179	6.2	114	60%
Manufacturing	578	4584	7.9	555	96%
Construction	808	7277	9.0	707	88%
Wholesale and Retail	1316	11533	8.8	1637	124%
Hotels and Restaurants	907	7501	8.3	1095	121%
Transport and Storage	540	4302	8.0	357	66%
Information and Communications	844	5584	6.6	638	76%
Financial Services	523	4731	9.0	377	72%
Business services	2079	16112	7.7	2150	103%
Public Administration	178	1034	5.8	86	48%
Education	566	4291	7.6	705	125%
Health and Social Work	770	6253	8.1	894	116%
Arts and other service activities	836	7028	8.4	954	114%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
North East					
2-4	1925	15481	8.0	1575	82%
5-9	1343	10319	7.7	1383	103%
10-24	1135	8332	7.3	1292	114%
25-49	407	3383	8.3	480	118%
50-99	222	1512	6.8	300	135%
100-249	119	847	7.1	115	97%
250+	90	333	3.7	50	56%
Primary Sector and Utilities	230	1752	7.6	195	85%
Manufacturing	281	2218	7.9	327	116%
Construction	498	3224	6.5	339	68%
Wholesale and Retail	996	8207	8.2	1079	108%
Hotels and Restaurants	656	5302	8.1	576	88%
Transport and Storage	181	1426	7.9	174	96%
Information and Communications	130	768	5.9	113	87%
Financial Services	88	834	9.5	88	100%
Business services	695	5518	7.9	761	109%
Public Administration	52	312	6.0	58	112%
Education	277	2194	7.9	332	120%
Health and Social Work	596	3662	6.1	647	109%
Arts and other service activities	561	4790	8.5	506	90%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
North West					
2-4	1401	13461	9.6	1492	106%
5-9	1654	13352	8.1	1763	107%
10-24	2468	19570	7.9	2462	100%
25-49	1267	10339	8.2	1406	111%
50-99	661	4578	6.9	669	101%
100-249	353	2462	7.0	360	102%
250+	275	1099	4.0	111	40%
Primary Sector and Utilities	545	5491	10.1	490	90%
Manufacturing	583	4359	7.5	652	112%
Construction	692	5962	8.6	632	91%
Wholesale and Retail	1183	9556	8.1	1327	112%
Hotels and Restaurants	715	5773	8.1	810	113%
Transport and Storage	447	3488	7.8	419	94%
Information and Communications	464	3189	6.9	391	84%
Financial Services	317	2985	9.4	281	89%
Business services	1232	9542	7.7	1210	98%
Public Administration	126	785	6.2	113	90%
Education	468	3447	7.4	575	123%
Health and Social Work	668	4972	7.4	752	113%
Arts and other service activities	639	5312	8.3	611	96%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
South East					
2-4	1607	15961	9.9	1609	100%
5-9	1936	15753	8.1	2044	106%
10-24	3219	25266	7.8	3254	101%
25-49	1485	12094	8.1	1740	117%
50-99	846	5862	6.9	883	104%
100-249	472	3336	7.1	489	104%
250+	334	1367	4.1	136	41%
Primary Sector and Utilities	589	5025	8.5	425	72%
Manufacturing	650	4939	7.6	753	116%
Construction	920	8977	9.8	788	86%
Wholesale and Retail	1299	10477	8.1	1586	122%
Hotels and Restaurants	820	6625	8.1	944	115%
Transport and Storage	521	4120	7.9	425	82%
Information and Communications	731	5400	7.4	622	85%
Financial Services	440	3728	8.5	329	75%
Business services	1682	13244	7.9	1854	110%
Public Administration	151	918	6.1	153	101%
Education	564	4430	7.9	571	101%
Health and Social Work	755	5507	7.3	851	113%
Arts and other service activities	777	6249	8.0	854	110%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
South West					
2-4	1689	16930	10.0	1793	106%
5-9	1831	14722	8.0	1989	109%
10-24	2264	18147	8.0	2257	100%
25-49	1012	8117	8.0	1065	105%
50-99	522	3558	6.8	511	98%
100-249	272	1914	7.0	283	104%
250+	193	781	4.0	94	49%
Primary Sector and Utilities	732	7656	10.5	699	95%
Manufacturing	536	4090	7.6	624	116%
Construction	729	6654	9.1	652	89%
Wholesale and Retail	1039	8555	8.2	1262	121%
Hotels and Restaurants	706	6074	8.6	763	108%
Transport and Storage	412	3255	7.9	408	99%
Information and Communications	473	3220	6.8	346	73%
Financial Services	269	2436	9.1	256	95%
Business services	1146	9040	7.9	1173	102%
Public Administration	104	631	6.1	94	90%
Education	437	3428	7.8	489	112%
Health and Social Work	610	4367	7.2	651	107%
Arts and other service activities	590	4763	8.1	575	97%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
West Midlands					
2-4	1399	12746	9.1	1406	101%
5-9	1589	12840	8.1	1690	106%
10-24	2178	17320	8.0	2316	106%
25-49	1001	7946	7.9	1108	111%
50-99	553	3743	6.8	600	108%
100-249	307	2014	6.6	278	91%
250+	218	868	4.0	85	39%
Primary Sector and Utilities	539	5209	9.7	545	101%
Manufacturing	590	4617	7.8	669	113%
Construction	630	5408	8.6	633	100%
Wholesale and Retail	1088	8784	8.1	1238	114%
Hotels and Restaurants	605	4881	8.1	648	107%
Transport and Storage	412	3202	7.8	371	90%
Information and Communications	427	2600	6.1	381	89%
Financial Services	250	2182	8.7	259	104%
Business services	1068	8148	7.6	1075	101%
Public Administration	90	556	6.2	79	88%
Education	419	3183	7.6	448	107%
Health and Social Work	580	4147	7.2	620	107%
Arts and other service activities	547	4560	8.3	517	95%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
Yorkshire and the Humber					
2-4	1390	12557	9.0	1322	95%
5-9	1670	13524	8.1	1739	104%
10-24	2076	16250	7.8	2263	109%
25-49	934	7455	8.0	1016	109%
50-99	524	3557	6.8	615	117%
100-249	266	1870	7.0	217	82%
250+	196	784	4.0	86	44%
Primary Sector and Utilities	536	5085	9.5	478	89%
Manufacturing	554	4384	7.9	602	109%
Construction	639	5300	8.3	670	105%
Wholesale and Retail	1063	8649	8.1	1194	112%
Hotels and Restaurants	651	5224	8.0	672	103%
Transport and Storage	411	3214	7.8	435	106%
Information and Communications	359	2161	6.0	304	85%
Financial Services	202	1844	9.1	201	100%
Business services	1016	7875	7.8	1013	100%
Public Administration	92	563	6.1	87	95%
Education	412	3112	7.6	436	106%
Health and Social Work	577	4068	7.1	650	113%
Arts and other service activities	544	4518	8.3	516	95%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
Northern Ireland					
2-4	1272	12047	9.5	1097	86%
5-9	1094	8683	7.9	1142	104%
10-24	945	6798	7.2	1040	110%
25-49	299	2394	8.0	368	123%
50-99	162	1096	6.8	220	136%
100-249	88	577	6.6	88	100%
250+	59	246	4.2	18	31%
Primary Sector and Utilities	297	1899	6.4	188	63%
Manufacturing	224	1758	7.8	252	113%
Construction	347	2952	8.5	319	92%
Wholesale and Retail	716	6554	9.2	782	109%
Hotels and Restaurants	379	3349	8.8	384	101%
Transport and Storage	157	1255	8.0	155	99%
Information and Communications	111	672	6.1	117	105%
Financial Services	101	865	8.6	122	121%
Business services	499	4466	8.9	499	100%
Public Administration	51	287	5.6	54	106%
Education	251	1986	7.9	255	102%
Health and Social Work	400	2321	5.8	461	115%
Arts and other service activities	386	3477	9.0	385	100%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
Scotland					
2-4	984	9755	9.9	995	101%
5-9	1123	10142	9.0	1294	115%
10-24	1785	14468	8.1	1844	103%
25-49	935	7542	8.1	1026	110%
50-99	487	3397	7.0	482	99%
100-249	278	1949	7.0	284	102%
250+	200	854	4.3	92	46%
Primary Sector and Utilities	501	4178	8.3	445	89%
Manufacturing	374	3084	8.2	409	109%
Construction	493	5130	10.4	424	86%
Wholesale and Retail	752	6571	8.7	933	124%
Hotels and Restaurants	531	4300	8.1	580	109%
Transport and Storage	315	2617	8.3	329	104%
Information and Communications	317	1995	6.3	255	80%
Financial Services	262	2363	9.0	207	79%
Business services	830	6828	8.2	838	101%
Public Administration	151	981	6.5	158	105%
Education	329	2654	8.1	379	115%
Health and Social Work	460	3515	7.6	573	125%
Arts and other service activities	477	3891	8.2	487	102%

	Overall Target	Sample drawn	Ratio	Interviews achieved	% of Overall Target
Wales					
2-4	1825	16202	8.9	1669	91%
5-9	1522	12251	8.0	1565	103%
10-24	1459	10827	7.4	1604	110%
25-49	491	4067	8.3	561	114%
50-99	233	1624	7.0	293	126%
100-249	127	892	7.0	173	136%
250+	103	417	4.0	48	47%
Primary Sector and Utilities	630	4473	7.1	511	81%
Manufacturing	385	3033	7.9	419	109%
Construction	544	4741	8.7	481	88%
Wholesale and Retail	844	7198	8.5	958	114%
Hotels and Restaurants	584	5061	8.7	597	102%
Transport and Storage	263	2123	8.1	274	104%
Information and Communications	181	1082	6.0	168	93%
Financial Services	129	1257	9.7	154	119%
Business services	775	6265	8.1	794	102%
Public Administration	83	501	6.0	91	110%
Education	356	2926	8.2	375	105%
Health and Social Work	516	3574	6.9	603	117%
Arts and other service activities	470	4046	8.6	488	104%

Appendix C: Questionnaire changes for ESS 2017

Question Number	Question area	Change made	Reason for change
S3	Survey introduction	Establishments with <50 employees (according to sample) told that the interview will take on average '20 minutes'. Those with >50 employees told '20-25 minutes	To more accurately reflect the estimated interview length and potentially improve response rates among smaller establishments.
A11	New question - Primary geographic market	Those who say they primarily sell /serve the public 'Internationally' were asked whether this is primarily within the EU or outside of the EU.	To understand in more detail the primary geographic market of establishments who primarily sell/serve the public 'Internationally'. This being of interest following the UK's decision to leave the EU.
A12	New question - Geographic market	Those who say they do not primarily sell / serve the public 'Internationally', or that they primarily sell / serve the public outside the EU were asked whether they sell any products / services / serve the public at all outside the UK but within the EU.	Same reason as A11.
Section B	Retention / Retention difficulties	Removed for ESS 2017.	Rotated out of ESS 2017 with a section on Upskilling rotated in as its replacement. Upskilling questions were last asked in ESS 2013.
C13	Skills lacking among establishments with skill shortage vacancies	Old skills list deleted and all respondents now asked the new skills list.	Following a review of the skill descriptors used in the 2011 and 2013 Employer Skills Surveys, a list of 24 'new' skills descriptors was devised to be used in ESS 2015. It was agreed to treat ESS 2015 as a transitional year for the implementation of this expanded list of skill descriptors. In 2015, employers with skill shortage vacancies were randomly assigned to be asked either the 'old' or 'new' list of skill descriptors. For 2017 all employers were presented with the 'new' skills lists.
C15b	New question - Recruitment of non-UK nationals	All employers with hard-to-fill vacancies who did not spontaneously mention at C15 that they had recruited workers who	To better understand the incidence of employers using non-UK nationals to help fill hard-to-fill vacancies. This being of interest

		are non-UK nationals as a way of overcoming hard-to-fill vacancies were asked explicitly whether or not they had recruited workers who are non-UK nationals as a way of overcoming hard-to-fill vacancies.	following the UK's decision to leave the EU.
C16	New question - Recruitment of non-UK nationals	Employers who said they had recruited workers who are non-UK nationals as a way of overcoming hard-to-fill vacancies were asked whether these workers were EU nationals, non-EU nationals, or both.	Same reason as C15b.
D1b	New question - Number of staff from EU member states	All employers in Module 2 were asked what proportion of their current staff are from EU member states but are not UK-citizens.	To provide more information on the composition of the UK workforce and to be used as a crossbreak in analysis.
D11	Skills lacking among employers with skills gaps	Old skills list deleted and all respondents now asked the new skills list.	Same reason as C13
D14a	New question - Recruitment of non-UK nationals	All employers with skills gaps who did not spontaneously mention at D14 that they had recruited workers who are non-UK nationals as a way of overcoming skills gaps were asked explicitly whether or not they had recruited workers who are non-UK nationals as a way of overcoming skills gaps.	To better understand the incidence of employers using non-UK nationals to help overcome skills gaps. This being of interest following the UK's decision to leave the EU.
D14b	New question - Recruitment of non-UK nationals	Employers who said they had recruited workers who are non-UK nationals as a way of overcoming skills gaps were asked whether these workers were EU nationals, non-EU nationals, or both.	Same reason as D14a.
D16	Occupation of underutilised staff	Question deleted.	Removed to reduce interview length
D17	Reasons for underutilisation of staff	Question deleted.	Same reason as D16.
Section E	Upskilling	Section reinstated for ESS 2017.	Section reinstated for ESS 2017 having been rotated out in 2015. (Note that the 'new' skills lists were used for the questions concerning

			the skills that most need improvement.)
F1	Business plan	The question on whether employers have a business plan was previously question H3 but was merged into the list of questions at F1	Section H was deleted but this question was retained as it forms part of the High Performance Working measures. F1 was deemed the most appropriate position for it.
F2	Written job description	Question deleted.	Removed to help reduce interview length as it was not reported on in 2015.
F7c – F7f	E-learning questions	Question deleted.	Removed to reduce interview length
F7	Other development of employees	Routing change so that it is asked of those who do not train rather than asked of all	Removed to reduce interview length
G1A	Employees incentive schemes	The ‘add if necessary’ text was changed to clarify that pension benefits should include only those which go beyond the statutory minimum	To reflect the near universal roll out of pensions auto-enrolment.
Section H	Business Strategy and Structure (PMS measures)	Section removed.	This section was rotated out to reduce interview length with the intention that it gets reinstated in future editions of ESS.
I2A	New question	Permission for follow-up research to be based on answers to ESS 2017	To gain consent and allow for tailored follow-up research.

Appendix D: Occupational coding

The occupational data collected in the survey were collected both pre-coded and verbatim. The former included the occupational breakdown of employment (question D5 to D8) where respondents were asked how many of their workforce fell into each of the nine major (one-digit) Standard Occupation Classification (SOC) 2010 categories (Managers, Directors and Senior Officials through to Elementary Occupations). However, on vacancy measures (for example the occupations in which vacancies exist – question C2) this information was collected verbatim. This was then coded at the analysis stage, where possible to a four-digit level SOC, if not three, two- or one-digit level.

Examples of what might fall into each occupational band are as follows:

Occupational group	Primary sectors (Agriculture, manufacturing, construction etc)	Service sectors (retail, business, finance, transport etc)	Public sector (Public Admin, Health, Education etc)
Managers, Directors and Senior Officials	Site managers, Department Heads, Shift Managers (not supervisors)	Directors, Managers / Branch/site managers, shift managers (not supervisors	Police inspectors and above, department heads, Head teachers, Senior Officials
Professionals	Professional engineers, software and IT professionals, accountants, chemists, scientific researchers	Solicitors, lawyers, accountants, IT professionals, economists, architects, actuaries	Doctors, nurses, midwives, teachers, social workers, librarians
Associate Professionals	Science and engineering technicians, lab technicians, IT technicians, accounting technicians	Insurance underwriters, finance/investment analysts and advisers, writers/journalists, buyers, estate agents	Junior police/fire/prison officers, therapists, paramedics, community workers, H&S officers, housing officers
Administrative staff	Secretaries, receptionists, PAs, telephonists, bookkeepers	Secretaries, receptionists, PAs, communication operators, market research interviewers, clerks	Secretaries, receptionists, PAs, local government officers and assistants, office assistants, library and database assistants
Skilled Trades	Farmers, electricians, machine setters / tool makers, carpenters, plasterers	Motor mechanics, chefs, printers, TV engineers, butchers	Chefs, cooks

Caring, Leisure and Other Service Occupations	Care assistants, nursery nurses	Travel agents, travel assistants, hairdressers, housekeepers	Care assistants, home carers, nursery nurses, ambulance staff, pest control, dental nurses, caretakers
Sales and customer service occupations	Customer facing roles: sales staff and call centre agents	Sales assistants and retail cashiers, telesales, call centre agents	Customer care operations
Process, plant and machine operatives	Routine operatives, drivers, machine operators, sorters and assemblers	HGV, van, fork-lift, bus and taxi drivers	Drivers, vehicle inspectors
Elementary occupations	Labourers, packers, goods handling and storage staff	Bar staff, shelf fillers, catering assistants, waiters/waitresses, cleaners	Labourers, cleaners, road sweepers, traffic wardens, security guards

Appendix E: Reassurance email

SURVEY REFERENCE: [KEY NUMBER]

Employer Skills Survey 2017

Thank you for considering participating in this important research.

The Employer Skills Survey 2017 is being conducted on behalf of the Department for Education (DFE) and its partners, the Welsh Government, the Scottish Government and the Department for the Economy in Northern Ireland. The project is being conducted by IFF Research, an independent market research organisation.

The aim of this project is to help the Government and other institutions meet the skills, employment and business support needs of organisations like yours. Your co-operation will ensure that the views expressed are representative of all employers in your sector.

Your organisation has been selected at random from Market Location's Business Database (which combines 118 and Thomson data) and we hope very much that you are able to take part. Participation will involve a telephone interview with an IFF interviewer lasting around 20 minutes at a time that is convenient for you.

More information about the survey (including FAQs) can be found at http://www.skillssurvey.co.uk

For results from the previous 2015 survey please see the Gov.UK website: https://www.gov.uk/government/publications/ukces-employer-skills-survey-2015-uk-report

If you have any queries concerning the format or content of the interview, please contact us at SkillsSurvey2017@iffresearch.com, or call our freephone helpline on [WALES: 0800 804 8033] [NOT WALES: 0800 054 2376].

Your replies will be treated in the strictest confidence under the Code of Conduct of the Market Research Society. Responses will not be linked to individual companies or respondents without their prior consent

Thank you for your assistance.

Yours sincerely,

Mark Tweddle
Research Manager
IFF Research

Appendix F: Response Rates by subgroup

	Interviews achieved	Response Rate
UK	87,430	43%
England	71,527	43%
Northern Ireland	3,973	49%
Scotland	6,017	54%
Wales	5,913	47%
2-4	17,132	36%
5-9	20,452	45%
10-24	26,484	47%
25-49	12,526	50%
50-99	6,456	46%
100-249	3,302	39%
250+	1,078	33%
Primary Sector and Utilities	4,905	34%
Manufacturing	6,578	41%
Construction	6,846	38%
Wholesale and retail	14,514	41%
Hotels and restaurants	8,478	49%
Transport and storage	4,075	37%
Information and communications	3,976	38%
Financial services	2,678	33%
Business activities	13,713	44%
Public administration	1,162	44%
Education	5,525	70%
Health and Social Work	7,952	55%
Arts and Other Services	7,028	48%

Appendix G: Edit specification

Edit Number	Objective of edit	Condition	Force/Action
EDIT 1	Check that all SICs given at A7 are valid SIC07 codes	If A6 = 2	Any records where A6=2 will need to have the SIC at A7 validated. Recode where possible, recontact if necessary.
EDIT 2	Define final Sector from SIC given at A7	If A6 = 2	Force FINSECTOR from A7 according to the 'Sector definitions' worksheet
EDIT 3	If sample SIC was correct, define final sector from this	If A6=1	If A6 is 'yes', force FINSECTOR to match Sector
EDIT 4	To ensure that all SOC codes are valid at C7 (4 DIGITS)	If SOC at C7 is not in full SOC file provided	Recode where possible, recontact if necessary. Coding to 1 or 2 digit SOC is acceptable if there is not sufficient information, although this should only be the case for a small minority of records (i.e. less than 1%).
EDIT 5	To check that public sector ('local or central government financed body') definition given at A8 is consistent with SIC code	If A8 is '3' or '4' and first two digits of SIC are not '84', '85' or ''86'	Each record to be judged on an individual basis by company name and activity.
EDIT 6	To check legitimacy of high numbers of employment	If A1 is greater than 1500	Each record to be judged on an individual basis. Call-backs may be necessary if number of employees seems excessively high for business activity.
EDIT 7	To check legitimacy of high numbers of vacancies in relation to size of establishment	If C6 is more than 5 times greater than A1 if A1 < 5 OR if C6 is more than 3 times greater than A1 if A1 IS BETWEEN 5 AND 49 OR if C6 is more than 1.5 times greater than A1 if A1 ≥ 50	Call-backs usually necessary to confirm high numbers of vacancies.
EDIT 8	To investigate establishments where all employees have been allocated to one occupational group	If **only one** of D5, D6, D8_1-7 / D5C_1-9 is greater than 0 and A1 is more than 10	Each record to be judged on an individual basis. Call-backs may be necessary.
EDIT 9	To check high values of individual occupational groups	If D5 / D5C_1 (managers) is greater than 50 OR If D8_7 / D5C_9 (professionals) is greater than 100 OR	Each record to be judged on an individual basis. Call-backs may be necessary.

		If D8_6 / D5C_8 (associate prof/technical) is greater than 100 OR If D6 / D5C_2 (admin/clerical) is greater than 100 OR If D8_5 / D5C_7 (skilled trades) is greater than 100 OR If D8_4 / D5C_6 (caring/leisure) is greater than 100 OR If D8_3 / D5C_5 (sales/customer service) is greater than 100 OR If D8_2 / D5C_4 (machine operatives) is greater than 100 OR If D8_1 / D5C_3 (elementary) is greater than 100	
EDIT 10	To check that a respondent has identified a reasonable amount of employees as having a degree level qualification	If D1 is greater than A1 minus Elementary and Process, plant and machine operative staff	Each record to be judged on an individual basis. Call-backs may be necessary.
EDIT 11	To check high values of underemployed (both qualifications and skills) staff	If D15a is greater than half of the sum of D9 (number of proficient employees) and A1>5	Each record to be judged on an individual basis. Call-backs may be necessary.
EDIT 12	To ensure all postcodes given by respondents are valid	If POSTCODE is '2'	Check that postcode is valid and given in full. Invalid postcodes will need to be investigated as each record must have a full valid postcode in the final data file. LEA then needs to be forced to match valid postcode. REGION then needs to be forced to match final LEA.
EDIT 16	To sense check establishments with a high proportion of EU, non-UK staff	If A1 > 10 and (D1b = A1) [i.e. all staff are EU, non-UK citizens] Or if A1 > 10 and D1bran=6 ("all of them")	Each record to be judged on an individual basis. Consider whether it seems plausible that no staff would be UK citizens. Call-backs may be necessary.

Appendix H: Sampling error and statistical confidence

Sampling errors for the survey results overall and for key sub-groups are presented in the table below. Figures have been based on a survey result of 50% (the 'worst' case in terms of statistical reliability), and have used a 95% confidence level. Where the table indicates that a survey result based on all respondents has a sampling error of ±0.32%, this should be interpreted as follows: 'for a question asked of all respondents where the survey result is 50%, we are 95% confident that the true figure lies within the range 49.64% to 50.36%'.

As a note, the calculation of sampling error has taken into account the finite population correction factor to account for cases where we are measuring a significant portion of the population universe (i.e. even if two sample sizes are the same, the sampling error will be lower if in one case a far higher proportion of the population was covered).

These confidence intervals are based on the assumptions of probability random sampling and a normal distribution of responses.

Sampling error (at the confidence 95% level) associated with findings of 50%

	Population	Number of interviews	(Maximum) Sampling Error
England	1,602,193	71,527	± 0.36
Northern Ireland	55,979	3,973	± 1.50
Scotland	150,502	6,017	± 1.24
Wales	86,466	5,913	± 1.23
2-4	1,016,683	17,132	± 0.74
5-9	398,577	20,452	± 0.67
10-24	284,053	26,484	± 0.57
25-49	104,006	12,526	± 0.82
50-99	51,918	6,456	± 1.14
100-249	27,780	3,302	± 1.60
250+	12,123	1,078	± 2.85
Primary Sector and Utilities	111,121	4,905	± 1.37
Manufacturing	100,578	6,578	± 1.17
Construction	173,493	6,846	± 1.16
Wholesale and retail	376,835	14,514	± 0.80
Hotels and restaurants	175,013	8,478	± 1.04

Transport and storage	56,848	4,075	± 1.48
Information and communications	84,613	3,976	± 1.52
Financial services	39,692	2,678	± 1.83
Business activities	420,452	13,713	± 0.82
Public administration	18,056	1,162	± 2.78
Education	58,632	5,525	± 1.25
Health and Social Work	134,603	7,952	± 1.07
Arts and Other Services	145,204	7,028	± 1.14

Appendix I: Labour Force Survey (LFS) datasets, variables and syntax

LFS user guides consulted throughout: user guides; details of LFS variables; LFS standard derived variables.
https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/methodologies/labourforcesurveyuserguidance#2017-update

Datasets used:

The datasets used were the Quarterly Labour Force Surveys: 2010 Q4, 2012 Q4, 2014 Q4, 2016 Q4. The 2010 dataset uses weight ‘pwt14’ and the later datasets use weight ‘pwt17’. The fourth quarter datasets are used as these are the only ones that contain all the necessary variables.

Raw variables used:

- **INECAC05** = Economic activity (international definition) – a derived variable.
- **SOLO/ SOLOR** = "Were you working on your own or did you have employees?". This is asked to those who said they were self-employed.
- **FTPTWK** = full time or part time worker. Once only those who are employees or self-employed are selected, this gives the same figures as the other Full/part time variables available in the datasets (‘FTPT’ and ‘FTPTW’).
- **DAYSPZ** = "On how many different days per week do you usually work?" This is only asked for those respondents on certain waves of the survey (e.g. just those who have been contacted for the first time). Analysis (not shown) indicated no statistically significant differences between respondents on different waves in terms of other key variables (e.g. hours worked per week). This question is not asked to those who only work on-call working, or work a 9 day fortnight, or a four and a half day week.
- **HOLS** = The number of days of paid holiday the respondent is entitled to, excluding public and bank holidays. The value 97 refers to those who have 97 or more. Values over 97 should be classed as “don't know/refusal”. This is only asked of employees (as is HOLSB), and in the absence of any other pertinent information, we assume self-employed workers take the same amount of holiday.
- **HOLSB** = For those that do not know their holiday entitlement without public holidays, this question asks for the figure including public holidays. Values higher than 97 should be treated as missing. This variable isn’t included in 2012 or 2010 datasets used for the 2013 and 2011 ESS figures. Tests on later LFS datasets show that the effect of only using those who answered HOLS is negligible (less than 0.1% difference).

Syntax used with commentary

Selection of just those who are classed as employees or self-employed with staff.

```
select if (inecac05=1) or (inecac05=2 and solor=2).
```

Filtering of just those who are fulltime workers in their main job.

```
compute fulltime=$SYSMIS.

if ftptwk=1 fulltime=1.

if ftptwk>1 fulltime=0.

freq fulltime.

filter by fulltime.
```

Days worked per week - This requires cleaning and manipulation of the key variables.

'`Dayspz`' is only asked of all respondents in their first wave, and only some of those in later waves. Lines below show no notable differences in hours worked per week between those who are asked '`fled10`' and those who are not. It therefore seems sensible to conclude that there are unlikely to be systematic differences in the number of days worked.

```
freq fled10.

compute askedq=2.

if (fled10>0) askedq=1.

freq askedq.

t-test groups=askedq /variables=bushr.
```

Dayspz is also not asked of those who only do on-call working. Usual working hours for full-time on-call workers are a bit higher than other full-time workers. But there is only a weak relationship (when looking solely at full time workers) between days and hours worked. Given the hours worked, we would expect the average number of working days per week for on-call workers to be between 5 and 6 days. As such, we impute on-call workers who are not asked *Dayspz* (because they do not have another flexible working arrangement) as the average value of those on-call workers who are asked '*dayspz* – which is 5.17 for Q4 2016[15].

[15] 5.11 for Q4 2014, 5.31 for Q4 2012, 5.34 for Q4 2010

Creates an amended days worked per week variable.

```
compute days=dayspz.

freq days.

variable level days (scale).

variable labels days 'Number of days usually worked per week'.
```

Shows the average number of days worked for on-call workers who are asked the question.

```
weight by pwt17.

temporary.

select if flexw10=1.

means dayspz.

weight off.
```

Imputes average days worked for on-call workers who are not asked the question.

First need to make a value of '-9' for `dayspz` a valid value (by default it is treated as a missing value). This is needed to recode it.

```
missing values dayspz (-8).

if (flexw10=1 and dayspz=-9) days=5.17.
```

Compute values for those who work 4.5 day weeks or 9 day fortnights (and are therefore not asked `Dayspz`).

```
flexw5 and flexw6 = 9 day fortnight or 4.5 day week.

if (flexw5=1 or flexw6=1) days=4.5.
```

Final figure for days worked per week.

```
weight by pwt17.

means days.
```

Holiday entitlement per year - *hols* and *holsb*[16]. User guidance says that values above 97 are invalid. Need to compute a single holiday entitlement variable. The survey asks a separate question (*holsb*) if the respondent doesn't know holiday entitlement excl. public holidays.

Removes Don't know/refused values for *hols* - i.e. those above 97 or below 0 as LFS guidance states.

```
compute new_holsa=$SYSMIS.

if (hols>=0 and hols<98) new_holsa=hols.
```

Removes 'Don't know/refused' values for *holsb* i.e. those above 97 or below 0 as the LFS guidance document states. Then subtracts 8 public holidays from the resulting number. (8 public holidays in Eng and Wales, and although 9 in scot, 10 in NI, for simplicity we just assume it is 8 days throughout the UK.)

```
compute new_holsb=$SYSMIS.

if (holsb>=8 and holsb<98) new_holsb=holsb - 8.

if (holsb<8) new_holsb=0.
```

Combines the two cleaned and comparable variables.

```
compute new_hols=$SYSMIS.

if new_holsa<98 new_hols=new_holsa.

if new_holsb<98 new_hols=new_holsb.
```

Final figure for number of holidays (excl public holidays) per year.

```
weight by pwt17.

means new_hols.
```

Average hours worked per week. *BUSHR* should equal the total usual hours excluding overtime for all people.

```
means bushr.
```

[16] 'Holsb' is not featured in the datasets prior to 2014. Testing on 2014 and 2016 data, the inclusion of Holsb makes less than 0.1% difference to the overall average holiday entitlement. For this reason, analysis of 2010 and 2012 data simply uses the 'holsa' variable.

Department for Education

Reference: DFE-RR693

ISBN: 978-1-78105-929-6

The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education.

The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education.

Any enquiries regarding this publication should be sent to us at:

employer.surveys@education.gov.uk or www.education.gov.uk/contactus

This document is available for download at www.gov.uk/government/publications