



Department
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Employer Skills Survey 2019

Technical report

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IFF Research

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1. Introduction

The Employer Skills Survey 2019 (ESS 2019) gathered labour market intelligence (LMI) on employer skills needs and training activity among employers in England, Northern Ireland and Wales. It is the fifth in the biennial series of Employer Skills Surveys dating back to 2011 collecting LMI from multiple countries of the UK, although unlike the four earlier studies ESS 2019 does not include employers in Scotland.

From 2010-2017, the Employer Skills Survey sat alongside the Employer Perspectives Survey (EPS) to produce insights that complemented each other, with the two surveys run in alternate years (EPS was last conducted UK-wide in 2016). The focus of the Employer Perspectives Survey was primarily outward-looking, covering provision of and engagement with the wider skills system, whereas the Employer Skills Survey had a more inward-looking focus assessing the current skills position and skill needs of employers. For ESS 2019, the two surveys were in effect merged. This involved adding many of the questions used in the EPS series to those of the ESS series. To avoid an excessively long questionnaire the merger of the survey involved more extensive modularisation of the questionnaire than used previously. This is discussed in the questionnaire chapter.

As in previous years, the 2019 Employer Skills Survey had two main elements:

- The core survey: covering such topics as recruitment, skills gaps, training and workforce development, upskilling needs, vocational qualifications, apprenticeships and traineeships.
- 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 2019 survey, a total of 81,013 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	70,217
Northern Ireland	4,023
Wales	6,773

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 the UK Employer Perspectives Surveys, as well as the legacy skills surveys in each nation.

The individual sought at each establishment was the person 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, 2015 and 2017 the survey population for ESS 2019 was establishments with 2+ employment: establishments were eligible if they had two or more people on the payroll at the site, regardless of whether or not these individuals were proprietors or not, and excluding the self-employed, outside contractors and agency staff.

¹ Note that the terms 'establishment', 'employer' and 'business' are used interchangeably throughout the report.

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 current and the 2017, 2015 and 2013 ESS reports, where comparisons 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 2019 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.

ESS 2019 is the first iteration of the survey that does not include employers based in Scotland. To ensure like for like comparisons, in this report all data for earlier ESS are reported excluding Scotland, hence (other than for nation level data) they may differ from figures appearing in the published reports for previous ESS.

Setting quota targets

Overview

Quota targets were set by geography, size and sector using interlocked size and sector targets within Northern Ireland, Wales and each English region with one exception, the West Midlands, where a non-quota approach was adopted. The differences in approach are discussed in more detail below, but the key difference was that in the West Midlands interviews were attempted to be completed with all sample that was loaded, whereas in other regions/nations once a quota target had been reached, remaining sample in that category could be removed and no longer called. This sample was not always removed; if it was proving difficult to meet other size by sector quota targets, then some of the initial size by sector targets were increased. Hence there was some, albeit limited, flexibility within quota targets.

Matching the previous iterations of the survey, ESS 2019 adopted a *disproportionate stratified random sampling strategy* such that the quota targets set intentionally oversampled some groups and undersampled others, rather than setting targets in direct proportion to the business population. In practice this means that some 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. Some of the initial quota targets were 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 drawn) were not made.

For sample outside of the West Midlands, a combination of the process used in EPS 2016 and ESS 2017 was utilised. This involved setting purposive geographic quota targets, followed by size targets within these regions that struck a balance between over-sampling larger employers (relative to the population), whilst not skewing the size profile too far away from smaller establishments. Finally, after setting targets by employer size, targets were set by sector within each size band, in proportion to the establishment population within each size band. This system used the template of the way that quotas were structured for ESS 2017 (i.e. interlocked by size by sector within each nation/English region), but largely followed the EPS 2016 strategy for allocating the size and sector targets.

Population statistics used to stratify the business population were established through the March 2018 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 nation-specific legacy skills surveys.

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

Geographic quotas

The overall allocation by country was 71,000 interviews for England, 6,663 for Wales and 3,953 for Northern Ireland. The allocations were set by agreement between DfE and their partners in the survey: the Department for the Economy Northern Ireland and the Welsh 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 GOR 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) definitions² in proportion to the population that each LEA accounted for in each GOR.

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).

Regional quotas were set in a similar manner within Wales, using the four region groupings of North, Mid, South East and South West. In Northern Ireland, quotas were set at an overall level.

Sizeband quotas

In line with the approach utilised in the EPS 2016 survey, quota targets based on establishment size were set within each region by distributing interviews in each sector into seven sizebands (see Appendix B). Interviews were distributed across sizebands utilising a set of selected ratios that struck a balance between over-sampling larger employers (relative to the unit population) whilst not skewing the size profile too far away from smaller establishments.

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

When setting quotas by employer size (for each sector within each region), the sample-to-target ratios were set at 7:1 for the 250+ sizeband, 4:1 for the 100-249, 7:1 for the 50-99 size band, 6:1 for the 25-49 and 10-24 sizebands, 7:1 for the 5-9 sizeband and 10:1 for the 2-4 sizeband. This ensured that the quotas set for these sizebands were similar to those set in ESS 2017.

The quotas that were set by sizeband, and the proportion of the full interview target this comprised, is shown in Table 2-2 below.

Table 2-2 interview quotas by sizeband

Sizeband (employees)	Quota	Proportion of the overall target
2 to 4	22,360	27%
5 to 9	19,068	23%
10 to 24	18,237	22%
25 to 49	10,780	13%
50 to 99	4,979	6%
100 to 249	4,968	6%
250 or more	1,408	2%

Sector quotas

The approach to setting quotas by sector was also adapted in 2019 to incorporate more efficient sampling methods from EPS 2016. This meant that for 2019, sector quotas were defined after setting interview targets by sizeband. Interview targets within each sizeband were allocated by sector according to the proportion of the employer population within each sizeband, distributed by sector.

In terms of the definition of sector categories, the quota approach in 2019 matched that of ESS 2017, with sector definitions utilising 13 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.

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 $\pm 2\%$ at the combined level. Critically, this also helped to ensure that within each broad sizeband and 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 and sizeband 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 a 7:1 sample to target ratio, with the difference redistributed as evenly as possible across the remaining sectors.

Sample sources

During EPS 2016, potential sample sources were reviewed in order to ensure that the best supplier of sample was being used for the purposes of future EPS and ESS surveys. Market Location was identified as the most effective sample supplier. Consequently, as in 2017, Market Location was used as the principal sample source of ESS 2019, 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 2019 (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 as the primary source of sample would not be desirable since the telematching exercise typically finds a telephone number for less than three in ten of the establishments on the IDBR.

Listed below are the 2-digit and 4-digit SIC codes included in the request for top up sample from the IDBR (* indicates that the SIC grouping was also included in the IDBR order for the 2017 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 around 7:1 against target interviews required. Due to the availability of sample this varied between quota cells from 3:1 (Public Administration in the Northern Ireland) to 11:1 (Financial Services in the North West); the lower ratios reflecting the fact that for some quota cells the entirety of available sample was ordered. The 7:1 average ratio was chosen to balance maintaining high response rates with fieldwork efficiency, with calculations based also upon research into the efficiency of cells in the 2017 iteration of ESS.

A total of 610,000 records were ordered from Market Location for fieldwork. A total of 272,000 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 181,000 of the IDBR records eligible for inclusion. Since the IDBR records received did not include telephone numbers, these were sourced using a combination of automated and manual directory look-ups (47,000 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 40,000 IDBR records.

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.

In total, 583,000 records were loaded for fieldwork, from the 651,000 that were drawn from Market Location and the IDBR.

Questionnaire design

From 2010-2017, the Employer Skills Survey sat alongside the Employer Perspectives Survey (EPS) to produce insights that complemented each other, with the two surveys run in alternate years (EPS was last conducted UK-wide in 2016). The focus of the Employer Perspectives Survey was primarily outward-looking, covering provision of and engagement with the wider skills system, whereas the Employer Skills Survey had a more inward-looking focus assessing the current skills position and skill needs of employers. For ESS 2019, the two surveys were in effect merged, in order to provide greater efficiency and to enhance the potential for cross analysis. This involved adding many of the questions used in the EPS series to those of the ESS series examining current skills position and skill needs of employers.

The surveys were required to be combined in such a way that interview length stayed below 25 minutes: a longer survey would have impacted on response rates and the quality of information provided. To avoid an excessively long questionnaire the merger of the survey involved more extensive modularisation of the questionnaire than used previously.

In addition to merging of the ESS and EPS surveys, some new questions were added to the survey and some questions were redeveloped. These areas of questionnaire development are detailed in turn below. A full list of the changes to questions used in the 2016 Employer Perspectives Survey and the 2017 Employer Skills Survey, along with the reasons for these alterations, can be found in Appendix C.

The full list of questions that were removed from the ESS 2017 and EPS 2016 surveys can be found in Appendix D.

The full ESS 2019 questionnaire has been published alongside this technical report.

The rest of this section outlines the new questions that were added to the survey, as well as any question areas that were significantly redeveloped, along with the reasoning behind such changes.

IT skill-shortages when recruiting (NC13A, NC6Di, NC6DG)

After question SC13a, which asked the employer to identify from a list read out to them the skills they have found difficult to find among potential candidates during recruitment, a new question was added to determine, if basic or advanced / specialist IT skills were lacking, which specific basic or advanced / specialist IT skills were proving difficult to find. This was to provide more granular results about the specific IT skills that businesses are finding to be lacking among applicants.

A new question was also added among the set of questions asked around the age of recruits in the last 12 months. This new question, NC6Di, asked businesses about whether they had recruited anyone aged between 25 and 49 in the previous 12 months, a question that was added to provide full coverage of all age ranges; other questions in this section covered recruits aged 16 to 24 and 50 or over.

In the same section of the survey, a new question was added about how well prepared for work any recruits over the last 12 months that have been aged 50 or over have been. This was in response to a desire for the survey to provide insight into the work readiness of older, recent recruits.

Work experience and inspiration (NC19NW and NC20NW)

In previous EPS surveys, establishments were asked about the work experience that their organisation had provided. One change within this set of questions was that whereas in previous iterations of EPS the question had been asked about each type of placement offered by an employer, in 2019 this section was asked of up to a maximum of three times for each employer. If an organisation offered more than three types of work experience placement over the last 12 months, they would be asked this set of questions about three of these placements types, selected at random.

In addition to this change, for the 2019 ESS survey, two new questions were added to this section. The first asked employers how long these placements typically lasted, while the second asked whether all, some or none of the individuals on these placements were paid by the employer. This was in response to a greater desire to understand the character of work placements offered by employers, both in terms of their duration and whether they were paid.

T Levels (NC28 and NC29)

In anticipation of the introduction in England of the government's new technical education qualifications for 16-19 year olds (T Levels) from September 2020, a new, two question section was introduced for ESS 2019. The section briefly explained T Levels to respondents, describing their basic structure and design, before asking employers how interested their site would be in providing work placements for T Levels students (NC28) and then how easy or difficult it would be for the site to offer these placements (NC29). These questions were asked only of employers in England.

Employment of non-EU nationals (ND1B)

Respondents were asked how many of the staff at their establishment that were not UK citizens were from countries outside of the EU. A similar question, regarding staff at their site that were not UK citizens but were from EU member state countries had been added to the 2017 ESS survey.

IT skills: workforce Composition and upskilling (ND11a and NE3a)

In line with the new question about basic and advanced skill shortages among recruits, similar follow-up questions were asked about basic and advanced IT skill shortages among the current workforce (ND11a) and basic and advanced IT skills that need improving in the next 12 months (NE3a).

Apprenticeships (ND23c, ND23d, ND23e, ND29nw, ND30nw and ND31nw)

The apprenticeship section of the EPS 2016 survey was redesigned for 2019 so that it provided information about the number of apprentices that a site had had over the previous three years, and to provide further insight into retention of those that had completed their apprenticeship (the proportion of apprentices that organisations retained as permanent members of staff and asking why apprentices had not, in some instances, been retained).

New questions were also introduced about awareness and impact of apprenticeship policy changes. The first (ND29nw) asked about awareness of recent apprenticeship policy changes: the list of area covered varied by country of respondent, but included the levy (and specific details of the levy), that training providers receive a premium for recruiting apprentices from deprived areas, and that a minimum of 20% of an apprentice's paid hours must be spent on off-the-job training. Follow-up questions were asked (ND30nw and ND31nw) about whether the employer had made changes to their apprenticeship offer as a result of the policy reforms regarding: the number of apprentices at the site, the number of managers put on apprenticeships, the proportion of apprenticeship starts since May 2017 that were existing employees, and the number of apprenticeship starts in subjects outside of the site's core area of business activity.

These additions to the apprenticeships questions were incorporated to make the survey more reflective of current policy initiatives and key policy concerns.

Traineeships (ND36, ND37, ND38, ND39 and ND40)

In the 2016 EPS survey, questions regarding Traineeships focused on awareness of Traineeships, whether anybody at the site had undertaken a Traineeship and if so questions to place them within the context of earlier questions about work placements. For ESS 2019, the questions about work placements were removed and the two remaining questions from the 2016 EPS survey were only asked of employers in England.

For employers in Wales some new questions about Traineeships were added (the two remaining questions from 2016 EPS survey were only asked of employers in England). The new questions for employers in Wales established awareness of the Traineeship programme in Wales, whether the site had taken on anyone as part of this programme and why they had or had not done so. There was also a question included that asked employers in Wales that had not heard of Traineeships or had not taken on anyone as part of a Traineeship how interested they would be in offering work placement opportunities to young people via the Traineeship programme in Wales. These changes to the Traineeship section for employers in Wales were introduced because the programme in Wales is distinct to the Traineeship programme in England, with the questions for employers in Wales designed to meet the policy objectives of the programme in Wales.

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 the employees at their establishment into nine different occupational categories ranging from Managers, Directors and Senior Officials through to Elementary Occupations. In 2019, as in 2017 and 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, specific examples relevant to each broad sector classification (as provided by the respondent earlier in the interview). 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 live during the interview, the occupational descriptions and example job roles were read out by interviewers.

The example job lists for each occupation were slightly updated from 2017. The full list of prompts used can be viewed at the end of the ESS19 questionnaire which has been separately published on the DfE gov.uk website.

Interview length

The average overall interview length was 23 minutes (compared with 21 minutes in 2017 and 23 minutes in 2015). This varied between different employers depending on their recruitment activities, experience of skill-shortage vacancies, internal skills gaps, and training activities, and whether they were selected for a module or not. (The length of the shortest interview was 9 minutes 40 seconds and the longest was 2 hours 21 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 and module

		Average interview length ³
Size of establishment		
2-4		19 minutes
5-9		21 minutes
10-24		24 minutes
25-49		27 minutes
50-99		29 minutes
100-249		31 minutes
250+		33 minutes
Module		
Module A		23 minutes
Module B		25 minutes
Module C		23 minutes
Module D		25 minutes
Module E (Module E was blank, i.e. those selected for this module received no additional questions)		19 minutes
Overall		23 minutes

Cognitive testing

Given the scale of changes to the survey and the number of new questions that were proposed for addition, cognitive testing of new questions was undertaken. A total of 16 cognitive interviews were conducted between 10th and 18th April 2019. The cognitive interviews comprised a cut-down version of the main questionnaire to concentrate on the new questions, and follow up questions to test comprehension of the questions and the reasons for the responses given. Interviews typically lasted 40-45 minutes.

Sample for the cognitive interviews was drawn from employers who took part in the 2017 Employer Skills Survey (ESS 2017) and agreed to being re-contacted for future research. The interviews were selected to ensure representation from employers in each country covered by ESS 2019 (7 in England, 6 in Wales, and 3 in Northern Ireland) as well as a range of range of size bands and sectors.

³ All average interview lengths provided refer to the mean and are rounded to the nearest minute.

Within the new questions, the majority tested positively and so were included for user testing in the pilot phase of the research. As a result of the cognitive testing, some specific wording was improved for clarity.

In addition, some more significant changes were also implemented, mostly relating to issues around the length of the survey. The new question ND1b, for example, initially asked if the site employed non-UK EU workers in up to nine different occupation types, and then the number of non-UK workers from EU states and then from non-EU states that they employed in each occupation. In response to concerns about survey length and repetition for the respondent, these questions were reduced to simply ask employers the number of staff at their site were non-UK citizens from EU countries and the number that were non-UK citizens from outside of the EU.

Pilot

A pilot of the questionnaire was conducted between the 8th May and 17th May 2019 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 150 pilot interviews were completed among employers across a range of size bands and sectors. This was a greater number of pilot interviews than had been conducted in previous years, reflecting the scale of changes to the questionnaire and the number of modular questions that needed to be tested. The sample was drawn from Market Location, having been bought specifically for use during pilot interviewing. The interviews achieved during the pilot testing were of a reasonable spread by size, country and module.

One key area of testing during pilot surveying was the interview length. Through pilot testing, the average interview length was 26 minutes and 25 seconds. This required cuts to the questionnaire before the mainstage fieldwork launch to bring it in line with the agreed interview length. These cuts were discussed with the DfE and the steering group, to ensure that the most critical elements of the survey were retained.

In addition to monitoring questionnaire length, the pilot interviews were used to check how well the questions were working. As a result of these checks, several changes were made, including merging previously separate questions about basic and advanced IT skills, to ask about both basic and advanced IT skills in a single question. It was at this stage that it was agreed that the loop of questions on work placements (PC18 to PC19C) would be asked a maximum of three times, in order to reduce survey length for respondents that offered more than three types of placement. A proposed question about the likelihood of sites offering T Levels was also removed to save time during the survey.

Alongside these larger changes, there were smaller changes to specific wording of questions, which are outlined in Appendix C.

After agreeing proposed changes to the survey with the DfE, these changes were implemented ahead of the mainstage launch of the survey.

Modularisation

The ESS 2019 questionnaire was modularised to reduce interview length whilst maintaining coverage of key question areas. Previous iterations of ESS have been similarly modularised, although as a result of the merging of ESS and EPS questionnaires, it was necessary to modularise a greater proportion of the survey in 2019. Individuals in each module were asked certain questions that respondents in other modules were not asked, with the exception of modules B and D, where there was some overlap, and Module E, which involved no extra questioning. Module E involved asking some respondents no extra questions in order to reduce the average length of the interview across all respondents, to ensure that it was less than 25 minutes long.

Establishments were randomly allocated to one of five modules, although only businesses in England were assigned to Module E. The five modules are detailed below:

- Module A – Apprenticeships and Traineeships
- Module B – EPS Training, under-utilisation of skills, upskilling
- Module C – Education leavers, work experience placements and T Levels
- Module D – EPS recruitment, under-utilisation of skills, upskilling and National Occupation Standards
- Module E – no extra questions

The specific questions that each module was composed of are outlined in Appendix C.

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 81,013 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 script programming undertaken 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 and partly because it was felt that this could lead to a reduction in response rates if head offices potentially opted all the establishments in their organisation out of the survey. An exception was made for certain large banks, 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 and 2017, large multisite organisations (defined as those with 700 or more sites), along with the large banks 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	6,759
	London	10,111
	South East	10,070
IFF Research	North East	5,302
	West Midlands	6,521
	Yorkshire and the Humber	7,173
	Northern Ireland	4,023
	Wales	6,773
Ipsos MORI	East of England	8,111
	North West	8,140
	South West	8,030

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 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 F 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 2017 results, and a list of frequently asked questions.

Fieldwork took place from May to December 2019. Weekly progress updates and feedback ensured the quotas progressed as evenly as possible 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 150 interviews were completed in Welsh. This compares with 241 in 2017.

Response rate

High response rates are central to the success of the Employer Skills Survey.

The overall response rate for the survey was 41%, 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	582,844	100%	
Ineligible establishments (e.g. just 1 working proprietor at site)	27,823	5%	
'Live' / Out of quota ⁴	297,948	51%	
Unobtainable / invalid numbers	58,822	10%	
Total complete contacts	198,251	34%	100%
Achieved interviews	81,024	14%	41%
Respondent refusal	112,596	19%	57%
Quits during interview	4,631	1%	2%

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, fieldwork contractors also 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 7:1 this was because the required volume of sample was simply not available from the sources used. Appendix B also shows the areas where it was not possible to hit the original quota targets in the given fieldwork period.

Appendix G 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 number of interviews required to reach the quota target was more than the remaining sample), targets were increased in other cells to compensate. The following guidelines were issued to contractors to ensure a consistent approach:

⁴ 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.

- In the first instance, fieldwork contractors were to increase the target within the same sector in an adjacent size band.
- If adjacent size bands had also become unachievable then any remaining achievable size bands within the 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 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 sector was deemed preferable, or if all sizebands within a sector grouping had become unachievable, then targets were adjusted where possible in a “neighbouring” sector, as per Table 2-6.

Table 2-6 Sector groupings for quota management

Sector	SIC 2007 Definition
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 Administration	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, for example, that questions breaking down the workforce into by occupation 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 H.

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 - after the survey had concluded and much of the data prepared, the 2020 Standard Occupational Classification standards were published).

Weighting

Survey data were weighted and grossed up to the total population of establishments and total population of employees, according to the 2019 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 a combined UK (excluding Scotland) unit and employment based level, to similar measures at a regional and local level), a number of different weights were produced:

- Core weights, used to weight the combined UK excluding Scotland 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 excluding Scotland dataset.

- For each English Region (9 GORs), Northern Ireland and four Welsh regions,⁵ 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 employment sizebands used were: 2-4, 5-9, 10-24, 25-49, 50-99, 100-249, 250+. Due to smaller sample sizes achieved for the Welsh regions, the upper sizebands were collapsed into a 100+ sizeband for weighting purposes.
- Overlaying these grids, RIM (random iterative method) weights were imposed for LAs grouped according to the LEA definitions within England and District Council area in Northern Ireland grouped into five categories.⁶ This ensured the survey population of each local geography matched the employer 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.
- 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 very small number of interviews had been conducted in that cell (typically in the 250+ employment band). 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).⁷

⁵ This comprised of North Wales, Mid Wales, South East Wales and South West Wales.

⁶ 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.

⁷ A total of 98 cells (out of a possible 1,222) were merged as a result of the process outlined above. The cell mergings were consistent across both the unit and employment weights

Modular weighting strategy

As discussed previously, some question areas in the survey were asked to around a fifth 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 five modules:

- Module A – Apprenticeships and Traineeships
- Module B – EPS Training, under-utilisation of skills, upskilling
- Module C – Education leavers, work experience placements and T Levels
- Module D – EPS recruitment, under-utilisation of skills, upskilling and National Occupation Standards
- Module E – no extra questions (Module E was only used in England).

Although the modules were allocated at random, there were still differences in the profile of respondents which were corrected by weighting. The following strategy was used:

- Weighting was applied at national level within each module. For England grossing weights were applied on a 13 broad SIC sector and seven sizeband grid (i.e. 91 cells within each of the 9 geographical regions). The employment sizebands used were the same ones used for the core weighting. Due to smaller sample sizes achieved in Northern Ireland and Wales at modular level, the upper sizebands for both were collapsed into a 100+ sizeband for weighting purposes.
- Cell merging was applied using the same method used for the core weight.
- Some sections of the questionnaire were asked of respondents in both modules B and D. The same methods as above were applied to create a combined ‘Module B and D’ unit and employment weights to be used to analyse data from these sections of the questionnaire.

‘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 2-4, 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. Historically, EPS data (the bulk of the modularised content in ESS 2019) is not analysed at LEA level, therefore analysis of modular questions should not be undertaken at LEA level. Analysis of modular data at LEP level should be undertaken using the original modular weights.

Random Probability Sampling (RPS) trial

Background

ESS from 2011 to 2017 used a quota sampling approach, where the goal is to obtain a target number of achieved interviews with a certain size, sector and geographic profile from the issued sample. There is no set process for the number of times each piece of sample should be called, and once a particular quota target has been reached (for example Manufacturing firms in the East of England with 2-4 employees) then remaining sample of that type is withdrawn (unless, as discussed earlier, other quota cells are likely to fall short of target, and then initial quota targets are adjusted to take account of this).

While this approach has various benefits including flexibility, and cost-effectiveness, there are also some disadvantages to this approach. For instance, it can lead to inefficient use of sample, where sample is abandoned in favour of easier to contact leads, which in turn introduces potential non-response effects.

In contrast, under a random probability sampling (RPS) approach, all sample issued is processed according to an agreed process until all leads are exhausted. There are no quotas or caps on achieved interviews. In theory, it means that units sampled from a given population cells have an equal and known probability of being sampled. There are various advantages and disadvantages to this sampling approach, outlined below:

Advantages of an RPS approach

- Being able to assign a known probability of being sampled to every unit in the sampling frame enhances estimates of statistical confidence.
- It leads to more efficient use of issued sample, with zero wastage and a high conversion rate per cell compared against quota sampling. This maximises the number of achieved interviews among the issued sample and gives better coverage of difficult to reach respondents.
- Given there is a set process for the minimum number of times each record is called it provides a more consistent basis for projects where more than one field agency is involved.
- It ensures equal treatment of all units of sample within a cell, both in terms of probability of selection and the fieldwork processes administered in order to achieve interviews.
- It is considered the most robust method for national statistics and public sector surveys.

Disadvantages of the RPS approach

- Inaccuracies in the assumed response rate will lead to under-shooting or over-shooting the target number of complete interviews. In other words, the number of interviews overall or in individuals cells may exceed the number desired (and hence be wasteful from a cost perspective) or the number of interviews may fall short of the desired number overall or in specific cells. Whereas in quota interviewing additional sample could be added mid-fieldwork, this would be problematic for RPS as it would be unlikely that this later-added sample would have the same chance of being converted to an interview as the original sample, thereby negating one of the advantages of an RPS approach.
- One consistent fieldwork process may not be appropriate for all cells and may require different approaches for particular groups (e.g. to account for differences in the likely contact process between, say, a 2 employee unit and a 250+ employee unit. The latter are likely to need many more calls to convert).
- It is likely to add to the length of the fieldwork period as fieldwork contractors are not able to replace harder to contact issued sample with new leads, and all issued sample needs to be called an agreed minimum number of times.

Given these considerations and the risks associated with switching the full survey to an RPS approach, ESS 2019 trialled an RPS approach in a single region, West Midlands, in order to assess the potential to adopt this method fully for future waves of the survey.

Process

The following contacting rules were established for the RPS trial in West Midlands:

Sizeband	Rule
2-4, 5-9 and 10-24 employees	Minimum of 10 call attempts for all sample records. If at any point during those 10 attempts a 'definite appointment' was registered (i.e. there was a firm interest in taking part), minimum number of tries for that record was increased to 12. If the last call outcome was a 'definite appointment', the number of attempts was increased by 1 (up to a maximum of 15 calls).
25-49 and 50-99 employees	As above, except if a definite appointment was registered in the initial 10 tries, the number of attempts was increased to 14. If the last call outcome was a 'definite appointment', the number of attempts was increased by 1 (up to a maximum of 17 calls).
100-249 employees	Minimum of 12 call attempts, which increased to 15 if a definite appointment was registered. If the last call outcome was a 'definite appointment', the number of attempts was increased by 1 (up to a maximum of 20 calls).
250+ employees	Minimum of 15 call attempts, which increased to 20 if a definite appointment was registered. If the last call outcome was a 'definite appointment', the number of attempts was increased by 1 (until a maximum of 25).

In addition to the minimum number of call attempt rules outlined above, the sample was managed to ensure that each record was called on different days of the week, at different times of the day, and not too frequently within a short space of time. To achieve this where there was a no answer outcome for a particular record, a call back time of +2.5 days was set. There was also a mechanism implemented to keep track of how many times sample had been called in the morning, compared with in the afternoon. Furthermore, interviewers were briefed to set 'soft appointments' at different times in cases where the gatekeeper indicated no fixed time to call back a given contact.

Sample

Table 2-7 and Table 2-8 show the initial sample issued for the RPS trial and the total sample issued for fieldwork. The sample utilised at first was introduced at a level that would allow monitoring of the progress of size by sector cells in order to avoid loading too much sample initially. More sample was then introduced over time in cells that were performing poorly, with the final batch loaded around one month before the end of fieldwork, to ensure that there was enough time to fully work the sample.

Table 2-7 Initial sample for RPS trial (size by sector)

	2-4	5-9	10-24	25-49	50-99	100-249	250+	TOTAL
Primary & Utilities	651	200	100	46	24	37	24	1,082
Manufacturing	398	332	395	318	166	231	144	1,984
Construction	950	369	245	106	56	54	19	1,799
Wholesale and Retail	1,298	1,134	945	470	181	225	108	4,361
Hotels & Restaurants	443	453	436	274	73	64	12	1,755
Transport & Storage	232	129	132	100	65	104	72	834
Info & Comms	312	97	95	55	30	36	22	647
Financial Services	149	164	136	66	24	26	29	594
Business Services	1,631	734	581	276	142	260	123	3,747
Public Admin	25	25	48	60	52	36	51	297
Education	60	61	105	191	177	223	72	889
Health and Social Work	229	290	492	343	169	141	99	1,763
Arts & Other	557	391	232	112	54	72	23	1,441
TOTAL	6,935	4,379	3,942	2,417	1,213	1,509	798	21,193

Table 2-8 Total sample issued (size by sector)

	2-4	5-9	10-24	25-49	50-99	100-249	250+	TOTAL
Primary & Utilities	923	300	163	82	38	47	25	1,578
Manufacturing	536	473	588	539	230	297	154	2,817
Construction	1,565	689	447	220	107	69	21	3,118
Wholesale and Retail	1,819	1,841	1,514	886	254	281	114	6,709
Hotels & Restaurants	559	698	714	527	105	65	17	2,685
Transport & Storage	358	213	230	195	107	121	84	1,308
Info & Comms	426	148	151	95	50	52	27	949
Financial Services	149	190	158	83	30	26	34	670
Business Services	2,414	1,168	951	526	222	278	143	5,702
Public Admin	84	75	94	82	56	37	53	481
Education	69	78	136	288	205	391	75	1,242
Health and Social Work	272	401	690	533	215	250	104	2,465
Arts & Other	593	464	289	138	70	98	24	1,676
TOTAL	9,767	6,738	6,125	4,194	1,689	2,012	875	31,400

Response

Table 2-9 shows the sample outcomes and response rates for the RPS trial, while Table 2-10 shows the same results for sample that was not part of the RPS trial for comparative purposes. The most useful response measure to demonstrate the efficacy of the RPS trial is 'achieved interviews' as a proportion of total sample issued. Overall, a fifth (20%) of all sample issued for the RPS trial was converted to completed interviews, 7 percentage points higher than the corresponding rate for sample not included in the trial (13%). The results demonstrate how the RPS method appears to maximise efficiency leading to a greater response rate. Table 2-11 shows the outcomes for West Midlands sample in ESS 2017; comparisons to 2017 must be treated with caution, but again sample that was worked using the RPS method demonstrated greater efficiency (in 2017 14% converted to completed interviews while in 2019 this figure was 20%).

Table 2-9 RPS (West Midlands) sample outcomes and response rates

Outcome	Number of contacts	% of all sample	% of complete contacts
Total sample	31,400	100%	
Ineligible establishments (e.g. just 1 working proprietor at site)	2,128	7%	
Worked sample (i.e. reaching minimum limits set by RPS rules)	13,728	44%	
Unobtainable / invalid numbers	2,883	9%	
Total complete contacts	12,661	40%	100%
Achieved interviews	6,298	20%	50%
Respondent refusal	6,184	20%	49%
Quits during interview	179	1%	1%

Table 2-10 Outcomes for sample not included in the RPS trial

Outcome	Number of contacts	% of all sample	% of complete contacts
Total sample	551,444	100%	
Ineligible establishments (e.g. just 1 working proprietor at site)	25,695	5%	
Worked sample (still live at the end of fieldwork or withdrawn as out of quota)	284,220	52%	
Unobtainable / invalid numbers	55,939	10%	
Total complete contacts	185,590	33%	100%
Achieved interviews	74,726	14%	40%
Respondent refusal	106,412	19%	57%
Quits during interview	4,452	1%	2%

Table 2-11 Outcomes for West Midlands sample in ESS 2017

Outcome	Number of contacts	% of all sample	% of complete contacts
Total sample	55,243	100%	
Ineligible establishments (e.g. just 1 working proprietor at site)	2,427	4%	
Worked sample (still live at the end of fieldwork or withdrawn as out of quota)	29,813	54%	
Unobtainable / invalid numbers	6,286	11%	
Total complete contacts	16,529	30%	100%
Achieved interviews	7,483	14%	45%
Respondent refusal	8,815	16%	53%
Quits during interview	419	1%	3%

Table 2-12 shows interviews achieved as a proportion of total sample issued for each size by sector cell. Conversion rates were lowest at both ends of the size spectrum; 15% of records in the 2-4 employees sizeband and 16% in the 250+ employees sizeband were converted to interviews, compared with 20% on average. Sample in the 10-24 sizeband were most likely to convert to interviews (24%).

There were also differences in conversion rate by sector. At an overall level, Construction (14%) and Primary Sector & Utilities (15%) were the least likely to yield interviews; and conversion rates were also relatively low in the Hotels & Restaurants and Transport & Storage sectors (17% of records for each sector completed interviews). That being said, conversion rates varied with size; for instance, while Hotels & Restaurants had some of the lowest conversion rates within the 2-4, 5-9 and 10-24 size groups they were in line with, or above the average conversion rate for all other size groups. In contrast, Public Administration had the highest conversion rate of any sector within the 2-4 and 5-9 size groups, but yielded a lower than average proportion of interviews in all other size bands apart from 100-249.

Table 2-12 Interviews achieved and conversion rate from sample issued in RPS trial (size by sector)

	2-4		5-9		10-24		25-49		50-99		100-249		250+		TOTAL	
	Interviews acheived	% of sample issued	Interviews acheived	% of sample issued	Interviews acheived	% of sample issued	Interviews acheived	% of sample issued	Interviews acheived	% of sample issued	Interviews acheived	% of sample issued	Interviews acheived	% of sample issued	Interviews acheived	% of sample issued
Primary & Utilities	102	11	60	20	49	30	17	21	5	13	7	15	1	4	241	15
Manufacturing	97	18	109	23	155	26	123	23	44	19	41	14	27	18	596	21
Construction	151	10	125	18	110	25	34	15	15	14	10	14	3	14	448	14
Wholesale and Retail	338	19	471	26	354	23	173	20	29	11	58	21	23	20	1,446	22
Hotels & Restaurants	42	8	102	15	140	20	134	25	19	18	13	20	5	29	455	17
Transport & Storage	47	13	41	19	46	20	42	22	16	15	19	16	8	10	219	17
Info & Comms	60	14	37	25	31	21	21	22	9	18	7	13	4	15	169	18
Financial Services	25	17	43	23	25	16	19	23	3	10	6	23	2	6	123	18
Business Services	410	17	300	26	237	25	120	23	38	17	32	12	22	15	1,159	20
Public Admin	23	27	25	33	17	18	12	15	8	14	8	22	4	8	97	20
Education	10	14	30	38	69	51	95	33	54	26	99	25	16	21	373	30
Health and Social Work	70	26	115	29	157	23	145	27	53	25	55	22	17	16	612	25
Arts & Other	92	16	121	26	81	28	34	25	10	14	15	15	5	21	358	21
TOTAL	1,467	15	1,579	23	1,471	24	969	23	303	18	370	18	137	16	6,296	20

Call attempts

If an RPS approach were to be rolled out in future waves, it is important to know whether the contacting rules described earlier are the right ones to use or whether they could be improved, for example for cost efficiency. Where for example a minimum of 10 calls was set as the rule for calling establishments with 2-4 staff, if virtually no interviews were achieved on the 10th or later call, then this would rule would be cost ineffective.

Table 2-13 shows the distribution of call attempts among sample which converted to a completed interview in the survey. The data shows that close to three-fifths of interviews were completed in the first 5 call attempts (59%), and 93% of interviews were completed within 10 call attempts. Between 10 and 11 call attempts there was a relatively steep drop off in completion rates (3 percentage points difference), however this is, in part, due to sample in the smaller sizebands usually being withdrawn at this stage in cases where no definite appointments had been recorded. The results show the value in allowing a higher number of call attempts for larger businesses; for instance, only 37% of interviews among establishments with 250+ employees were completed after 5 call attempts and fewer than three-quarters (72%) after 10 call attempts. In fact, 8% of interviews within this size group occurred after the set minimum of 15 call attempts.

Note, some caution is needed in interpretation of the data in Table 2-13 to the extent that not all of the sample, particularly among the smallest establishments, was called up to 15+ times (cf. the contacting rules presented earlier).

There was also variation by sector. Among Education sample, which had the highest sample conversion rate of any sector, achieved interviews were completed over a greater spread of call attempts; only one in ten of these interviews completed in the first call, the lowest of any sector, but this rate was more or less maintained all the way through to ten call attempts (at which point the call rules may have been enforced for some of the sample). In contrast, Primary Sector and Utilities, which had the greatest proportion of its interviews completed after three tries (among those that completed), saw a more substantial drop off, with only 3% of interviews completed on the tenth attempt.

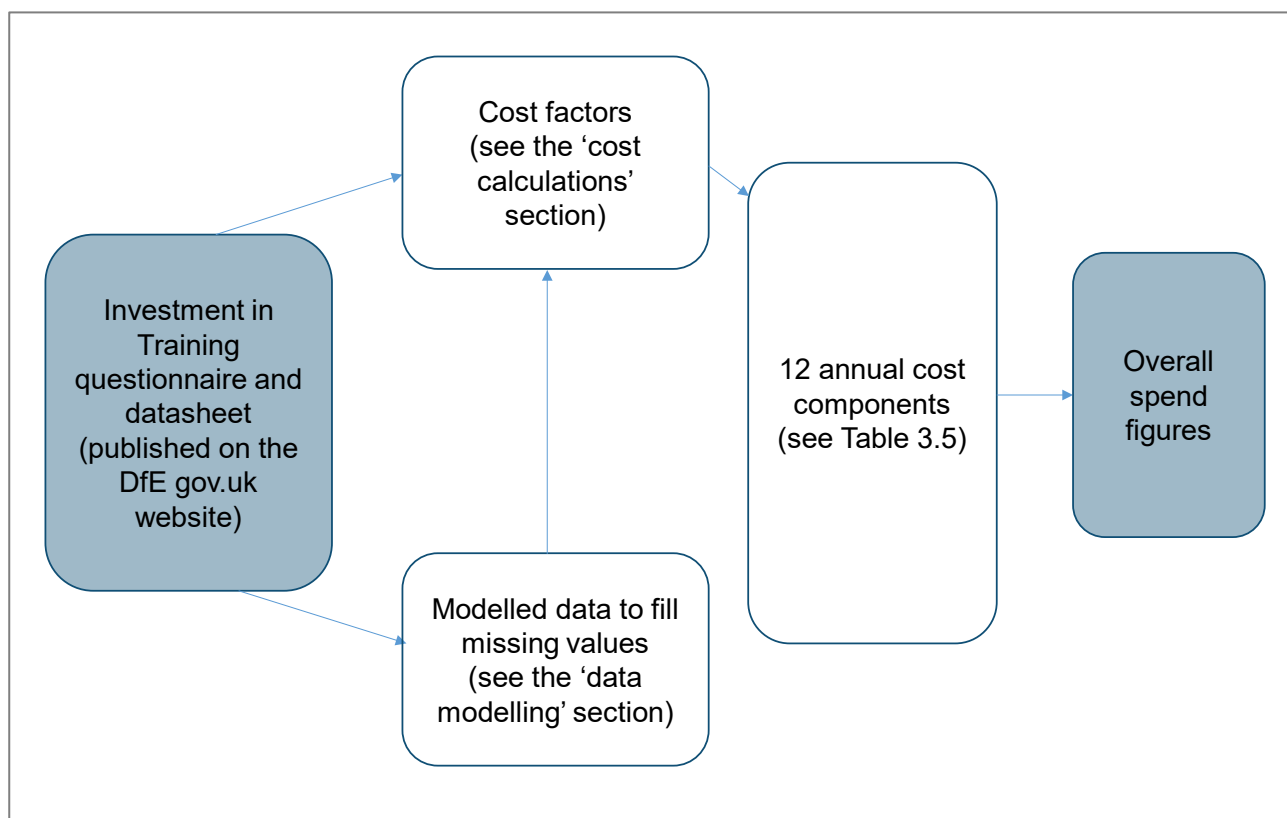
Table 2-13 Call attempts taken to achieve interviews, by size and sector in RPS Region, West Midlands (percentage figures relate to rows)

		Number of call attempts														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15+
TOTAL	%	14	15	12	10	8	8	7	7	7	6	2	2	1	1	<1
Size																
2-4	%	18	16	12	10	8	8	7	6	6	5	2	1	<1	<1	NA
5-9	%	15	17	13	9	8	8	7	6	7	5	2	2	<1	<1	NA
10-24	%	13	14	13	11	9	8	8	7	7	6	2	2	<1	0	NA
25-49	%	11	14	12	9	10	7	7	9	7	7	2	3	2	1	1
50-99	%	10	18	9	8	9	6	10	8	6	7	4	2	2	3	<1
100-249	%	8	9	12	8	6	7	7	7	11	6	6	7	4	2	1
250+	%	8	6	9	7	7	9	7	5	5	8	4	4	8	4	9
Sector																
Primary & Utilities	%	13	17	17	9	6	8	7	7	7	3	2	1	1	0	0
Manufacturing	%	15	16	13	9	10	7	6	6	6	6	2	3	1	1	1
Construction	%	16	15	12	10	8	7	8	8	8	6	1	2	<1	<1	<1
Wholesale and Retail	%	14	14	12	12	8	7	8	7	7	5	3	2	1	<1	<1
Hotels & Restaurants	%	12	15	11	9	8	7	8	9	6	7	3	2	1	1	<1
Transport & Storage	%	11	15	12	12	10	9	6	5	5	6	4	1	1	2	0
Info & Comms	%	15	18	8	11	7	7	9	5	5	7	2	5	0	1	0
Financial Services	%	18	12	17	11	7	7	7	4	7	7	2	1	2	0	0
Business Services	%	15	14	13	9	9	9	8	6	6	6	2	2	<1	<1	<1
Public Admin	%	19	15	11	6	1	8	9	7	7	7	2	4	1	1	0
Education	%	10	13	9	8	8	6	9	9	9	6	4	2	2	2	2
Health and Social Work	%	12	15	11	8	8	9	6	8	8	7	2	3	2	1	<1
Arts & Other	%	12	16	12	8	8	9	5	7	9	6	3	4	1	<1	1

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 2017, 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 2019 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 S13 of the main stage questionnaire). The sample of these employers was collected from core survey fieldwork contractors in five batches during fieldwork.

Quotas

The aim was to achieve 10,000 complete, useable interviews. This required a fieldwork target of around 10,500 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 7,500 interviews among employers in England, 1,000 in Northern Ireland, 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. Due to an attempted census approach being taken in Northern Ireland and Wales, no quotas on size, sector or training type were set.

Data collection method

Employers were sent a datasheet to complete by email, and their responses collected 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 2019 interview, reminding them that they indicated that they were happy to take part in a short follow-up survey, introducing the idea of sending the datasheet, encouraging them if necessary to take part and checking their contact details. If, after 5 attempts, we did not manage to get through to the named respondent, an email and datasheet were emailed through automatically (provided an email address was given in Wave 1).

A few days after sending the datasheet (set at 3 working 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.

Questionnaire

Given the need to closely replicate the Investment in Training studies undertaken in the UK in 2011, 2013, 2015 and 2017 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.

However, in order to better capture usage of the apprenticeship levy in England, and to ensure that apprenticeship training was recorded consistently overall, a number of changes were made to the telephone questionnaire and datasheet:

- Additional screener questions (S8 and S9) were added to the telephone questionnaire to ask all respondents if they had anyone on the payroll at the site undertaking an apprenticeship over the last 12 months and if so how many (including any who had since left).
- For all respondents that had apprentices over the last 12 months (at S8), or who were unsure, an additional instruction was added to the telephone questionnaire and datasheet at Q1, asking them to include both apprentices and other employees in the number of employees that participated in an education or training course over the past 12 months. At Q19 in the telephone questionnaire, the question wording for these respondents was also updated to ask how many employees **including apprentices** receive on-the-job training during a typical month.
- For all respondents that had apprentices, or who did not know, at the site in the last 12 months, an additional instruction was added to the telephone questionnaire at Q2, to be read out by the interviewer if necessary, to clarify that for apprentices, only include time spent on off-the-job training in the average number of days spent on an education or training course in the last 12 months.
- For all respondents in England that had apprentices, or who did not know, (at S8), additional instructions were added to the telephone questionnaire and datasheet at Q4 and Q18 asking them for apprenticeship training responses to include any payments made directly to external providers, and any payments made using Apprenticeship Levy funds through an apprenticeship service account. Also, a new question (QC2) was added at the end of the off-the-job training section of the telephone questionnaire, to check if, when giving the fees paid to external providers, they had included any payments made using Apprenticeship Levy funds. Respondents were able to indicate if they included all payments made from Levy funds, some payments from Levy funds, if they were not able to include payments made from Levy funds, or if the question was not applicable, as they either had not spent any of their Levy funds or did not pay the Levy. This question was not added to the datasheet as it was intended as a check to allow greater understanding of the submitted responses, and to gather information on how easily individual sites were able to report on Levy payments, rather than as part of the main data collection itself.

A further small change 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 and Northern Ireland were cited.

Achieved interviews and response rate calculations

In total, information on training expenditure was collected from 10,660 establishments, though 405 of these were not included in the final dataset because of incompleteness (i.e. a large number of ‘don’t know’ responses); hence analysis is based on data from 10,255 establishments.

Fieldwork was undertaken by IFF Research from 29 July to 13 December 2019.

The overall response rate for the survey was 68% (up from 64% in 2017) 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 is 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	36,284	100%	
‘Live’ / Out of quota ⁸	20,668	57%	
Unobtainable / invalid numbers	240	1%	
Total complete contacts	15,616	43%	100%
Achieved interviews	10,660	29%	68%
Respondent refusal	4,622	13%	30%
Quits during interview	209	1%	1%

Response rates by country are shown in Table 3-2.

Table 3-2 Response rate by country

Outcome	England	Northern Ireland	Wales
Interviews	8,406	848	1,406
Response rate	68%	72%	67%

⁸ 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.

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 requested. In order to 'fill in' the missing data, averages were applied for those questions based on those respondents who were able to answer that question.

Matching the approach taken in the Cost of Training Survey in England in 2009 and for the Employer Skills Surveys in 2011, 2013, 2015 and 2017 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 improves 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 2011 - 2017, and in the previous Cost of Training Surveys in England (2005, 2007 and 2009) and Northern Ireland (2008). 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 as used for the modelling of 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)	7,148	1	1
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)	6,916	4	1
Q3 - Average basic annual salary of participants on education or training courses over past 12 months	<p>Mean calculated within London/non-London establishments within recorded ranges where available. Where range information not provided:</p> <ol style="list-style-type: none"> 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 2. if Q17 not answered with an exact value apply procedure at 1. to Q21 3. if Q21 not answered with an exact value, apply procedure at 1. to Q24 4. if Q24 not answered with an exact value apply procedure at 1. to Q10 5. if Q10 not answered with an exact value use appropriate Q3 mean (London or non-London) unadjusted 	6,916	24	7

Q4 - <i>Cost of fees to external providers of training courses for your employees over the past twelve months</i>	Mean within 6 employment size bands (within recorded range where available)	6,916	15	10
Q6A - <i>Total basic annual salaries of any full time or part time training centre staff</i>	Mean within 6 employment size bands (within recorded range where available)	357	31	37
Q6B - <i>Other training centre running costs over the last 12 months</i>	Mean within 6 employment size bands (within recorded range where available)	357	15	25
Q7A - <i>Amount spent on using any off-site training centres located elsewhere within your organisation over the past twelve months</i>	Mean within 6 employment size bands (within recorded range where available)	2,126	18	0
Q8 - <i>Number of people at establishment directly involved in providing, administering or making policy decisions about training, excluding any training centre staff</i>	Mean within 6 employment size bands (within recorded range where available)	6,916	0	0
Q9 - <i>Percentage of time staff involved in providing, administering or making policy decisions about training spend on training matters</i>	Mean within 6 employment size bands (range information not recorded for this question)	6,235	N/A	7
Q10 - <i>Average basic annual salary of staff involved in providing, administering or making policy decisions about training</i>	Same procedure as Q3 but different order of selection: Q24, Q3, Q17, Q21	6,235	22	12
Q11 - <i>Cost of equipment and materials used for training employees over the past twelve months, excluding training centre costs</i>	Mean within 6 employment size bands (within recorded range where available)	6,916	8	6
Q12 - <i>Travel and subsistence payments and travelling time payments made to participants and trainers who spent time on courses over the past twelve months</i>	Mean within 6 employment size bands (within recorded range where available)	6,916	12	6
Q13 - <i>Levy payments</i>	Mean within 6 employment size bands (within recorded range where available)	6,916	3	9
Q14 - <i>Grants or subsidies</i>	Mean within 6 employment size bands (within recorded range where available)	6,916	3	8
Q15 - <i>Number of employees that participated in other off-the-job training</i>	Mean within 6 employment size bands (within recorded range where available)	7,148	1	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)	5,109	2	2
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	5,109	21	9
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)	5,109	10	12
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)	8,615	2	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)	7,846	9	2
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	7,846	26	9
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)	7,845	1	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)	7,240	7	2
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	7,240	23	10
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)	5,947	15	14

“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, and 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. Some required adjustments to be made to the collected survey data to ensure they presented true costs of training. For example the survey collected salary costs of individuals providing training and those trained, but for simplicity did not collect total labour costs such as National Insurance and pension contributions. The adjustments, and the specific adjustment factors used, are detailed in Table 3-4.

Table 3-4 Factors included in cost calculations

Factor	Value	Explanation
Labour cost up-weight	18.94 % (17.7 % in 2017)	<p>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 18.94% was then applied to these answers to take account of National Insurance, employer pension contributions, overtime and other additional elements.</p> <p>The source of the 18.94% figure was the ONS Index of Labour Costs per Hour (ILCH). In the UK, direct remuneration (wages and salaries including bonuses) made up 84.075% of labour costs. Hence an uplift of 100/84.075 (i.e. 1.1894 or 18.94%) is required to convert direct remuneration to total labour costs.</p> <p><i>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 3 (Jul to Sep) 2018 to Quarter 2 (Apr to Jun) 2019. [Release date 13/09/2019].</i></p>
Days worked per year	227.6136 (230 in 2017)	<p>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.</p> <p>Working age employees in England (from Labour Force Survey Quarter 4 (Oct to Dec) 2018):</p> <p>Full-time workers worked an average of 5.0446 days per week</p> <p>Received an average of 26.7056 paid days holiday, plus 8 bank / public holidays</p>

		This gives: $52 \times 5.0446 (=262.3192)$ possible working days a year, less 26.7056 days annual leave and 8 days bank/public holiday = 227.6136 days worked per year.
Hours worked a day	7.7984 (7.77 in 2017)	Used to convert number of working hours of training to working days. Derived from the basic usual hours of full-time workers (mean of 39.34 per week) divided by a mean of 5.0446 days worked a week by full-time workers = 7.7984. Source: Labour Force Survey Quarter 4 (Oct to Dec) 2018.
Working months in a year	11 (11 in 2017)	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)	$Q1 * Q2 * 118.94\% * Q3 / 227.6136$
B	Fees to external providers (Q4)	Q4
C	On-site training centre (Q6a/b)	$(118.94\% * Q6a) + Q6b$
D	Off-site training centre (in the same company) (Q7a)	Q7
E	Training management (Q8–Q10)	$Q8 * (Q9/100) * 118.94\% * Q10$
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)	$Q15 * Q16 * 118.94\% * Q17 / 227.6136$
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)	$Q19 * Q20 * 118.94\% * Q21 * 11 / (227.6136 * 7.7984)$
L	Trainers' labour costs (Q22–Q24)	$Q22 * Q23 * 118.94\% * Q24 * 11 / (227.6136 * 7.7984)$
	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 2019 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.

Weighting

In order to weight the Investment in Training study, population figures were calculated using the core ESS 2019 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 employment size bands (2-4, 5-9, 10-24, 25-49, 50-99, 100-249, 250+) by 13 grouped industry 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, and Wales. In addition 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 combined England/Northern Ireland/Wales level, increasing the accuracy of the spend figure within countries.

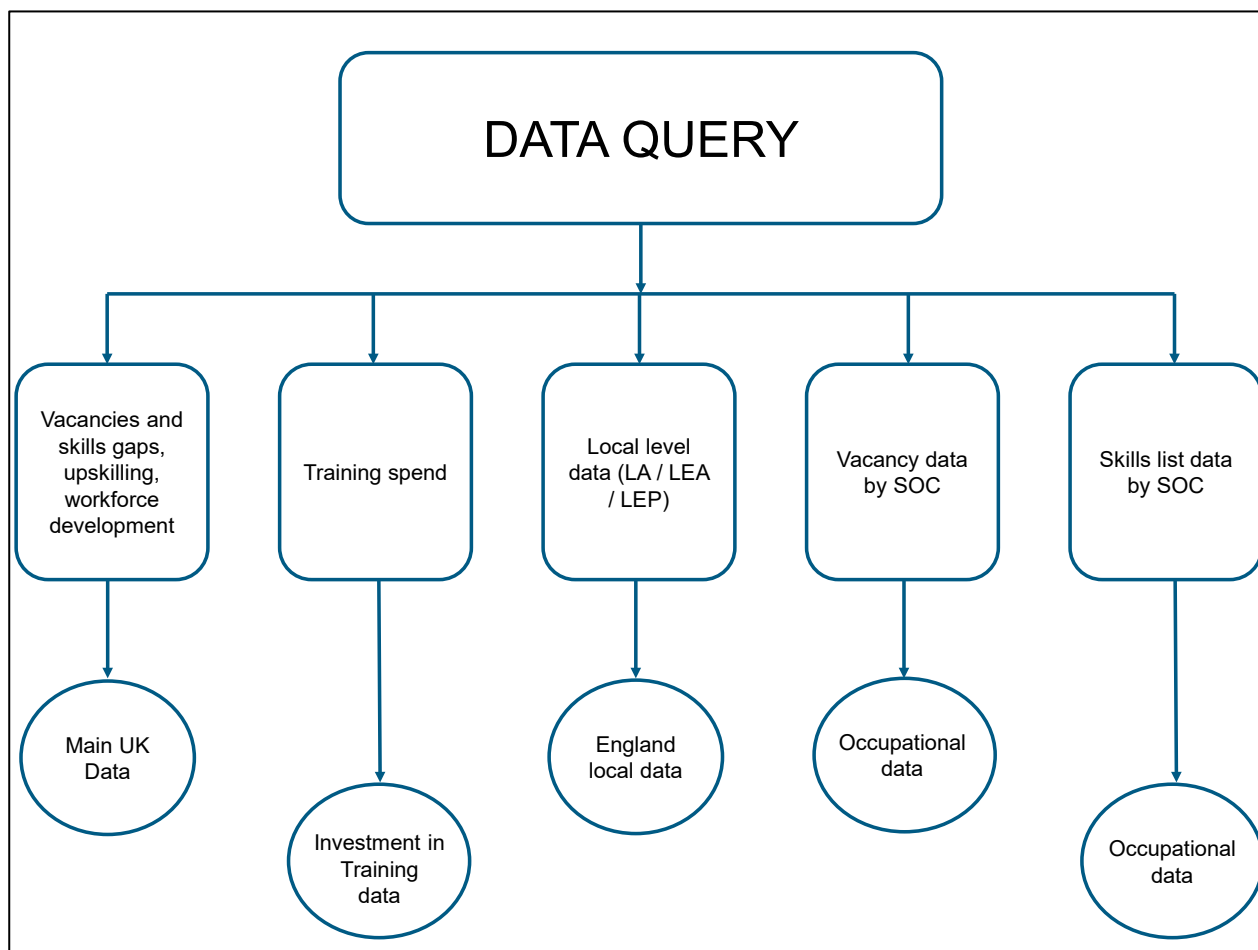
Only establishment-based weights were created for the Investment in Training survey, as all data in the survey are establishment orientated.

4. Using the survey for analysis

The Employer Skills Survey 2019 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 core 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 as well as change over time. 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.
- Four thematic reports, covering different key themes explored in the research. These reports are the Apprenticeships report, the Training report, the Skills Needs report and the Developing the Skills Pipeline report.
- Separate Welsh reports, that include an overall Welsh national report and regional reports covering South East Wales, North Wales, Mid Wales, South West Wales and a Mid and South West Wales report.
- 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 reports, alongside slide packs at a regional level in Wales.
- There are four 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 combined England, Northern Ireland and Wales datafile – Establishment, Employment, Modular and unit-based skills list weights
2. Investment in Training dataset – England, Northern Ireland and Wales, trainers only – Establishment weight
3. England local data (LEA and LEP) – England only – Establishment and Employment weights
4. Wales datafile and Welsh local and national datafiles – Establishment, Employment, Modular and unit-based skills list 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"
MODBDUNIT WEIGHT	UK	Establishment	Should only be used for establishment based measures on modular questions that were with the combined module B and D sections of the questionnaire (prefixed "MBD_" in datafile).	Under 30 not reported; 30-49 "indicative"

MODBDEMP WEIGHT	UK	Employment	Should only be used for employment bases measures on modular questions that were with the combined module B and D sections of the questionnaire (prefixed "MBD_" 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
Welsh national and regional data:				
UNITWEIGHT	Wales	Establishment	Used for establishment based measures.	Under 30 not reported; 30-49 "indicative"
EMPWEIGHT	Wales	Employment	Used for employment based measures.	Under 30 not reported; 30-49 "indicative"
MODWEIGHT	Wales	Establishment	Should only be used for establishment based measures on modular questions (prefixed "M_" in datafile).	Under 30 not reported; 30-49 "indicative"
MODEMPWT	Wales	Employment	Should only be used for employment bases measures on modular questions (prefixed "M_" in datafile).	Under 30 not reported; 30-49 "indicative"
MODBDUNIT WEIGHT	UK	Establishment	Should only be used for establishment based measures on modular questions that were with the combined module B and D sections of the questionnaire (prefixed "MBD_" in datafile).	Under 30 not reported; 30-49 "indicative"
MODBDEMP WEIGHT	UK	Employment	Should only be used for employment bases measures on modular	Under 30 not reported; 30-49 "indicative"

			questions that were with the combined module B and D sections of the questionnaire (prefixed "MBD_" in datafile).	
Occupational data:				
EMPVOLWEI GHT	UK	Employment	For use when <i>summing</i> vacancies, hard-to-fill vacancies and skill-shortage vacancies	Under 30 not reported; 30-49 "indicative"
VACVOLWEI GHT	UK	Employment	For use when <i>running frequencies</i> of vacancy-related measures	Under 30 not reported; 30-49 "indicative"
HTFVOLWEI GHT	UK	Employment	For use when <i>running frequencies</i> of hard-to-fill vacancy-related measures	Under 30 not reported; 30-49 "indicative"
SSVOLWEI GHT	UK	Employment	For use when <i>running frequencies</i> 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"

Table 4-1 above gives indicative thresholds for reporting data produced using each weight. However, those seeking to conduct more stringent statistical testing are referred to Appendix I of this report, which shows the standard confidence intervals for different subgroup sample sizes.

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 or the IDBR 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 or the IDBR'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 (21% of cases), a verbatim response was collected of their main activity. At the analysis stage this was coded to a four-digit SIC which was then used as the basis for their classification into one of the 13 sectors.

Table A-1 below shows the 13 sectors and their corresponding SIC 2007 definitions.⁹

Table A-1 SIC 2007 definitions of industry sectors

Sector	SIC 2007
Primary Sector and Utilities	<p>A - Agriculture, forestry and fishing (01-03) Including farming, hunting and other related service activities, forestry and logging, fishing and aquaculture</p> <p>B - Mining and quarrying (05-09) Including mining of coal, metals, sand/stone/clay, and extraction of crude petroleum and natural gas</p> <p>D - Electricity, gas, steam and air conditioning supply (35)</p> <p>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</p>
Manufacturing	<p>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</p>
Construction	<p>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</p>

⁹ UK Standard Industrial Classification of Economic Activities 2007 (SIC 2007)
<https://www.gov.uk/government/publications/standard-industrial-classification-of-economic-activities-sic>

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
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)

<i>NOT COVERED IN SURVEY</i>	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
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Appendix B: Quota targets, sample used and achieved interviews

The tables below show for each region / country the ratio of sample utilised in fieldwork for each key quota group, and the achievement of interviews against the original target. Note that “sample used” figures are based on the sample information about size and sector, whereas the “interviews achieved” figures are based on the size and sector of the establishment as indicated by the respondent.

Table B-1 Quota targets, sample used and interviews achieved by size and sector, overall

Total	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	22,360	219,312	10:1	20,183	90%
5-9	19,068	127,755	7:1	20,012	105%
10-24	18,237	112,406	6:1	20,599	113%
25-49	10,780	60,113	6:1	10,795	100%
50-99	4,979	32,963	7:1	5,377	108%
100-249	4,968	21,061	4:1	3,122	63%
250+	1,408	9,234	7:1	925	66%
Sector					
Primary Sector and Utilities	3,613	37,342	10:1	2,952	82%
Manufacturing	5,340	33,943	6:1	6,234	117%
Construction	5,839	59,953	10:1	5,249	90%
Wholesale and Retail	16,654	109,645	7:1	17,503	105%
Hotels and Restaurants	8,314	55,324	7:1	7,594	91%
Transport and Storage	2,769	18,575	7:1	2,330	84%
Information and Communications	2,923	22,066	8:1	2,511	86%
Financial Services	1,831	15,057	8:1	1,577	86%
Business services	15,294	113,424	7:1	15,490	101%
Public Administration	1,339	5,377	4:1	840	63%
Education	4,496	24,111	5:1	5,012	111%
Health and Social Work	7,852	47,171	6:1	8,092	103%
Arts and other service activities	5,536	40,856	7:1	5,629	102%

Table B-2 Quota targets, sample used and interviews achieved by size and sector, East of England

East of England	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	2,179	24,178	11:1	1,957	90%
5-9	1,855	13,910	7:1	2,034	110%
10-24	1,775	12,294	7:1	2,146	121%
25-49	1,050	6,629	6:1	1,111	106%
50-99	483	3,512	7:1	525	109%
100-249	482	2,107	4:1	266	55%
250+	136	905	7:1	72	53%
Sector					
Primary Sector and Utilities	340	4,938	15:1	327	96%
Manufacturing	522	3,894	7:1	678	130%
Construction	661	7,639	12:1	585	89%
Wholesale and Retail	1,623	11,617	7:1	1,744	107%
Hotels and Restaurants	729	4,988	7:1	614	84%
Transport and Storage	305	2,240	7:1	285	93%
Information and Communications	304	2,505	8:1	252	83%
Financial Services	161	1,562	10:1	163	101%
Business services	1,544	12,073	8:1	1,606	104%
Public Administration	117	532	5:1	76	65%
Education	437	2,399	5:1	515	118%
Health and Social Work	698	4,870	7:1	764	109%
Arts and other service activities	519	4,278	8:1	502	97%

Table B-3 Quota targets, sample used and interviews achieved by size and sector, East Midlands

East Midlands	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	1,862	20,894	11:1	1,652	89%
5-9	1,590	11,722	7:1	1,647	104%
10-24	1,522	10,223	7:1	1,817	119%
25-49	896	5,170	6:1	899	100%
50-99	413	2,791	7:1	469	114%
100-249	414	1,582	4:1	216	52%
250+	116	680	6:1	59	51%
Sector					
Primary Sector and Utilities	336	4,710	14:1	286	85%
Manufacturing	612	4,243	7:1	742	121%
Construction	497	5,581	11:1	420	85%
Wholesale and Retail	1,425	10,132	7:1	1,497	105%
Hotels and Restaurants	612	4,206	7:1	482	79%
Transport and Storage	262	1,829	7:1	197	75%
Information and Communications	174	1,421	8:1	183	105%
Financial Services	116	1,087	9:1	103	89%
Business services	1,222	9,504	8:1	1,244	102%
Public Administration	110	427	4:1	59	54%
Education	372	2,103	6:1	442	119%
Health and Social Work	652	4,343	7:1	691	106%
Arts and other service activities	423	3,476	8:1	413	98%

Table B-4 Quota targets, sample used and interviews achieved by size and sector, London

London	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	2,812	28,481	10:1	2,623	93%
5-9	2,395	17,367	7:1	2,490	104%
10-24	2,291	15,614	7:1	2,477	108%
25-49	1,353	8,589	6:1	1,243	92%
50-99	624	5,293	8:1	695	111%
100-249	626	3,686	6:1	437	70%
250+	176	1,716	10:1	146	83%
Sector					
Primary Sector and Utilities	71	303	4:1	24	34%
Manufacturing	292	2,320	8:1	334	114%
Construction	574	6,373	11:1	545	95%
Wholesale and Retail	1,813	13,151	7:1	1,875	103%
Hotels and Restaurants	1,160	8,073	7:1	1,097	95%
Transport and Storage	298	2,238	8:1	229	77%
Information and Communications	719	5,551	8:1	585	81%
Financial Services	388	3,995	10:1	348	90%
Business services	2,816	23,593	8:1	2,907	103%
Public Administration	119	473	4:1	58	49%
Education	475	3,062	6:1	534	112%
Health and Social Work	787	5,145	7:1	728	93%
Arts and other service activities	765	6,469	8:1	847	111%

Table B-5 Quota targets, sample used and interviews achieved by size and sector, North East

North East	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	1,447	13,347	9:1	1,380	95%
5-9	1,236	8,765	7:1	1,357	110%
10-24	1,183	6,479	5:1	1,357	115%
25-49	697	2,746	4:1	628	90%
50-99	321	1,573	5:1	362	113%
100-249	322	791	2:1	167	52%
250+	91	339	4:1	51	56%
Sector					
Primary Sector and Utilities	210	2,116	10:1	228	109%
Manufacturing	370	2,124	6:1	397	107%
Construction	384	3,192	8:1	348	91%
Wholesale and Retail	1,101	7,306	7:1	1,183	107%
Hotels and Restaurants	590	3,989	7:1	581	98%
Transport and Storage	179	1,170	7:1	153	85%
Information and Communications	109	764	7:1	97	89%
Financial Services	103	621	6:1	79	77%
Business services	883	5,296	6:1	859	97%
Public Administration	93	259	3:1	50	54%
Education	287	1,417	5:1	310	108%
Health and Social Work	591	2,959	5:1	589	100%
Arts and other service activities	397	2,827	7:1	428	108%

Table B-6 Quota targets, sample used and interviews achieved by size and sector, North West

North West	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	2,246	24,797	11:1	1,855	83%
5-9	1,915	14,257	7:1	1,997	104%
10-24	1,832	12,661	7:1	2,127	116%
25-49	1,082	7,346	7:1	1,208	112%
50-99	498	4,324	9:1	577	116%
100-249	498	2,481	5:1	285	57%
250+	139	1,093	8:1	91	65%
Sector					
Primary Sector and Utilities	300	5,248	17:1	299	100%
Manufacturing	566	4,302	8:1	661	117%
Construction	565	6,442	11:1	472	84%
Wholesale and Retail	1,763	13,053	7:1	1,787	101%
Hotels and Restaurants	839	5,879	7:1	695	83%
Transport and Storage	279	2,069	7:1	245	88%
Information and Communications	229	1,936	8:1	201	88%
Financial Services	183	1,735	9:1	158	86%
Business services	1,524	12,279	8:1	1,538	101%
Public Administration	132	655	5:1	69	52%
Education	448	2,578	6:1	543	121%
Health and Social Work	821	5,998	7:1	910	111%
Arts and other service activities	561	4,785	9:1	562	100%

Table B-7 Quota targets, sample used and interviews achieved by size and sector, South East

South East	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	2,746	26,197	10:1	2,524	92%
5-9	2,342	14,206	6:1	2,380	102%
10-24	2,240	13,313	6:1	2,488	111%
25-49	1,323	8,065	6:1	1,384	105%
50-99	611	4,588	8:1	657	108%
100-249	608	3,284	5:1	506	83%
250+	171	1,423	8:1	131	77%
Sector					
Primary Sector and Utilities	298	2,749	9:1	277	93%
Manufacturing	536	3,544	7:1	638	119%
Construction	763	8,365	11:1	741	97%
Wholesale and Retail	1,981	12,004	6:1	2,024	102%
Hotels and Restaurants	984	6,563	7:1	951	97%
Transport and Storage	311	2,100	7:1	309	99%
Information and Communications	533	4,272	8:1	448	84%
Financial Services	219	1,565	7:1	190	87%
Business services	2,099	15,581	7:1	2,056	98%
Public Administration	132	782	6:1	113	86%
Education	555	3,307	6:1	610	110%
Health and Social Work	929	5,706	6:1	995	107%
Arts and other service activities	701	4,538	6:1	718	102%

Table B-8 Quota targets, sample used and interviews achieved by size and sector, South West

South West	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	2,159	22,358	10:1	1,953	90%
5-9	1,840	13,541	7:1	2,029	110%
10-24	1,760	12,191	7:1	2,070	118%
25-49	1,041	6,430	6:1	1,150	110%
50-99	480	3,262	7:1	520	108%
100-249	479	1,892	4:1	242	51%
250+	134	723	5:1	66	49%
Sector					
Primary Sector and Utilities	520	5,182	10:1	413	79%
Manufacturing	489	3,381	7:1	566	116%
Construction	602	6,697	11:1	514	85%
Wholesale and Retail	1,569	11,102	7:1	1,787	114%
Hotels and Restaurants	895	6,125	7:1	833	93%
Transport and Storage	237	1,639	7:1	179	76%
Information and Communications	256	2,025	8:1	221	86%
Financial Services	156	1,419	9:1	124	79%
Business services	1,361	10,720	8:1	1,502	110%
Public Administration	124	549	4:1	89	72%
Education	402	2,183	5:1	441	110%
Health and Social Work	786	5,292	7:1	831	106%
Arts and other service activities	496	4,083	8:1	530	107%

Table B-9 Targets, sample used and interviews achieved by size and sector, West Midlands

West Midlands ¹⁰	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	2,011	10,129	5:1	1,511	75%
5-9	1,715	6,908	4:1	1,586	92%
10-24	1,638	6,323	4:1	1,668	102%
25-49	970	4,249	4:1	891	92%
50-99	447	1,706	4:1	420	94%
100-249	447	2,026	5:1	323	72%
250+	124	897	7:1	122	98%
Sector					
Primary Sector and Utilities	329	1,579	5:1	233	71%
Manufacturing	661	2,817	4:1	686	104%
Construction	488	3,118	6:1	437	90%
Wholesale and Retail	1,617	7,236	4:1	1,564	97%
Hotels and Restaurants	657	2,976	5:1	536	82%
Transport and Storage	274	1,309	5:1	215	78%
Information and Communications	213	949	4:1	166	78%
Financial Services	149	687	5:1	121	81%
Business services	1,279	5,702	4:1	1,136	89%
Public Administration	110	481	4:1	96	87%
Education	391	1,242	3:1	372	95%
Health and Social Work	704	2,466	4:1	620	88%
Arts and other service activities	480	1,676	3:1	339	71%

¹⁰ As mentioned elsewhere in the report, the approach to fieldwork in the West Midlands was different and did not use strict quotas as it was undertaken using random probability sampling. This table, therefore, simply shows the targeted spread of interviews, rather than the quotas utilised during fieldwork.

Table B-10 Quota targets, sample used and interviews achieved by size and sector, Yorkshire and the Humber

Yorkshire and the Humber	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	1,956	21,029	11:1	1,831	94%
5-9	1,670	10,285	6:1	1,722	103%
10-24	1,595	9,242	6:1	1,710	107%
25-49	944	5,460	6:1	996	106%
50-99	436	3,266	7:1	485	111%
100-249	434	1,882	4:1	339	78%
250+	122	810	7:1	90	74%
Sector					
Primary Sector and Utilities	324	4,759	15:1	307	95%
Manufacturing	590	3,502	6:1	689	117%
Construction	517	5,364	10:1	469	91%
Wholesale and Retail	1,546	10,603	7:1	1,670	108%
Hotels and Restaurants	734	5,147	7:1	697	95%
Transport and Storage	260	1,710	7:1	235	90%
Information and Communications	178	1,204	7:1	152	85%
Financial Services	146	1,013	7:1	101	69%
Business services	1,200	8,580	7:1	1,192	99%
Public Administration	120	528	4:1	73	61%
Education	377	2,062	5:1	423	112%
Health and Social Work	697	4,200	6:1	700	100%
Arts and other service activities	468	3,302	7:1	465	99%

Table B-11 Quota targets, sample used and interviews achieved by size and sector, Northern Ireland

Northern Ireland	Overall target	Sample used	Ratio	Interviews achieved	% of overall target
Size					
2-4	1,091	10,350	9:1	984	90%
5-9	932	6,628	7:1	1,039	111%
10-24	890	6,103	7:1	1,063	119%
25-49	528	2,189	4:1	485	92%
50-99	245	1,130	5:1	285	116%
100-249	244	551	2:1	124	51%
250+	70	248	4:1	43	61%
Sector					
Primary Sector and Utilities	368	1,940	5:1	194	53%
Manufacturing	264	1,574	6:1	377	143%
Construction	297	2,800	9:1	317	107%
Wholesale and Retail	867	5,886	7:1	930	107%
Hotels and Restaurants	335	2,366	7:1	311	93%
Transport and Storage	132	948	7:1	112	85%
Information and Communications	73	551	8:1	65	89%
Financial Services	85	713	8:1	81	95%
Business services	437	3,719	9:1	462	106%
Public Administration	113	243	2:1	48	42%
Education	330	1,810	5:1	359	109%
Health and Social Work	428	2,384	6:1	439	103%
Arts and other service activities	271	2,265	8:1	328	121%

Table B-12 Quota targets, sample used and interviews achieved by size and sector, Wales

Wales	Overall target	Sample drawn	Ratio	Interviews achieved	% of overall target
Size					
2-4	1,851	17,552	9:1	1,913	103%
5-9	1,578	10,166	6:1	1,731	110%
10-24	1,511	7,963	5:1	1,676	111%
25-49	896	3,240	4:1	800	89%
50-99	421	1,518	4:1	382	91%
100-249	414	779	2:1	217	52%
250+	129	400	3:1	54	42%
Sector					
Primary Sector and Utilities	517	3,818	7:1	364	70%
Manufacturing	438	2,242	5:1	466	106%
Construction	491	4,382	9:1	401	82%
Wholesale and Retail	1,349	7,555	6:1	1,442	107%
Hotels and Restaurants	779	5,012	6:1	797	102%
Transport and Storage	232	1,323	6:1	171	74%
Information and Communications	135	888	7:1	141	104%
Financial Services	125	660	5:1	109	87%
Business services	929	6,377	7:1	988	106%
Public Administration	169	448	3:1	109	64%
Education	422	1,948	5:1	463	110%
Health and Social Work	759	3,808	5:1	825	109%
Arts and other service activities	455	3,157	7:1	497	109%

Appendix C: Questions utilised in ESS 2019, details of modularisation and changes made to questions

Table C-1 Questions utilised in ESS 2019, the survey that they originated from, the module that they were within and the topic they regard

Question Number	Original survey	Module	Question area	Question text
S1	ESS	All	Screener & Firmographics	Good morning / afternoon. Can I just check, is this [COMPANY NAME FROM SAMPLE]?
S2	ESS	All	Screener & Firmographics	<i>[Interviewer introduction]</i> ... Could I speak to the person at this site who would have the best overview of the skills that your establishment needs its workers to have?
S3	ESS	All	Screener & Firmographics	IF S2 not 1: <i>[Interviewer introduction]</i> The survey aims to help Government and other organisations to assist employers like you, by better understanding your needs in terms of skills, training and employment. Your co-operation will ensure that the views expressed are representative of all employers in your industry. IF NECESSARY: If you would like, we will also email you a summary report of our findings as a thank you for taking part once the research has been completed The interview will take on average [IF SIZE=1-4: 20 minutes] [IF SIZE=5-7: 20 to 25 minutes] depending on the answers given. Would it be convenient to conduct the interview now?
S3a	ESS	All	Screener & Firmographics	Before we begin, I just need to read out a quick statement regarding GDPR legislation. I want to reassure you that all information collected will be treated in the strictest confidence, and that you have the right to have a copy of your data, change your data or withdraw from the research at any point. In order to guarantee this, and as part of our quality control procedures, all interviews are recorded automatically. Is that OK?
S4	ESS	All	Screener & Firmographics	Would you prefer the interview to be carried out in Welsh or English?
SA3	ESS	All	Screener & Firmographics	First, can I just check, is this establishment..?
SA5	ESS	All	Screener & Firmographics	Approximately how many people work in your organisation across the UK as a whole - By that I mean both full-time and part-time

				employees on your payroll, as well as any working proprietors or owners, but excluding the self-employed, outside contractor or agency staff.
SA1	ESS	All	Screeener & Firmographics	How many people work at this specific site, including yourself, all others on your payroll and any working proprietors or owners, but excluding the self-employed and outside contractor or agency staff.
SA1X	ESS	All	Screeener & Firmographics	Can I just check, are you including yourself in that answer?
SA4NEW	ESS	All	Screeener & Firmographics	Is this site the Head Office of the organisation?
SA4A	ESS	All	Screeener & Firmographics	Are the headquarters of your organisation based in the UK or outside of the UK?
SA6	ESS	All	Screeener & Firmographics	I have [READ OUT SIC DESCRIPTION ON SAMPLE] as a general classification for your establishment. Does this sound about right?
SA7	ESS	All	Screeener & Firmographics	How would you describe the main business activity of this establishment?
SA8	ESS	All	Screeener & Firmographics	Would you classify your organisation as one ...?
SA10	ESS	All	Screeener & Firmographics	IF PRIVATE SECTOR (SA8=1): Are your products or services primarily sold...? IF PUBLIC/THIRD SECTOR (SA8=2-5): Does your establishment primarily serve the population...?
SA11	ESS	All	Screeener & Firmographics	Is this primarily within the EU, or primarily outside of the EU?
SA12	ESS	All	Screeener & Firmographics	Can I check, [IF PRIVATE SECTOR (SA8=1): do you sell any of your products and services] [IF PUBLIC/THIRD SECTOR (SA8=2-5): does your establishment serve the population at all] outside the UK but within the EU?
SC1A	ESS	All	Recruitment & Skill Shortage Vacancies	Has this site recruited anyone in the last 12 months? IF NECESSARY: whether or not they are still working for you
SC6	ESS	All	Recruitment & Skill Shortage Vacancies	How many vacancies, if any, do you currently have at this establishment?

SC6chk	ESS	All	Recruitment & Skill Shortage Vacancies	I've recorded that as <insert number from SC6> is that correct?
SC7	ESS	All	Recruitment & Skill Shortage Vacancies	In which specific occupation(s) do you currently have a vacancy(ies) at this establishment?
SC8	ESS	All	Recruitment & Skill Shortage Vacancies	How many vacancies do you have for...?
SC9	ESS	All	Recruitment & Skill Shortage Vacancies	Are any of these vacancies proving difficult to fill?
SC10	ESS	All	Recruitment & Skill Shortage Vacancies	How many of your vacancies for [OCCUPATIONS AT SC7] are proving hard-to-fill?
SC11A	ESS	All	Recruitment & Skill Shortage Vacancies	What are the main causes of having a hard to fill vacancy for X?
SC11B	ESS	All	Recruitment & Skill Shortage Vacancies	Can I just check, are you finding this vacancy(any of these vacancies) for [EACH OCCUPATION MENTIONED] hard to fill because... ?
SC12	ESS	All	Recruitment & Skill Shortage Vacancies	You said that you have had problems with the quality of the candidates for [OCCUPATION]. Would you say that they have been lacking... ?
SC13A	ESS	All	Recruitment & Skill Shortage Vacancies	I'm now going to ask you about skills you have had difficulty finding among candidates. Have you found any of the following skills difficult to obtain from applicants for <TEXT SUBSTITUTION: OCCUPATION WITH SKILLS SHORTAGE VACANCY>? IF NECESSARY: If you do not require candidates for this role to have this skill, then please do not include it in your answer.
NC13A	New question	All	Recruitment & Skill Shortage Vacancies	You mentioned that you have found computer literacy / basic IT skills difficult to obtain from applicants for <OCCUPATION WITH SSV>. What specific basic IT skills have been lacking?

SC13NW	ESS	All	Recruitment & Skill Shortage Vacancies	Turning now to skills relating to dealing with other people. Have you found any of the following skills difficult to obtain from applicants for?
SC14	ESS	All	Recruitment & Skill Shortage Vacancies	Thinking now about all occupations in which you have hard-to-fill vacancies, are hard-to-fill vacancies causing this site to...
SC15	ESS	All	Recruitment & Skill Shortage Vacancies	What, if anything, is this establishment doing to overcome the difficulties that you are having finding candidates to fill these hard-to-fill vacancies?
SC15b	ESS	All	Recruitment & Skill Shortage Vacancies	Have you recruited, or tried to recruit, workers who are non-UK nationals in order to fill these hard-to-fill vacancies?
SC16	ESS	All	Recruitment & Skill Shortage Vacancies	When you have recruited, or tried to recruit, workers who are non-UK nationals, were these EU nationals, non-EU nationals, or both?
PC1	EPS	Module D	EPS recruitment	Has your establishment had any vacancies for either full-time or part-time staff in the past 12 months, regardless of whether you managed to fill them or not?
PC4a	EPS	Module D	EPS recruitment	Over the last 12 months has your establishment done any of the following to fill vacancies...
PC5	EPS	Module D	EPS recruitment	I'd now like you to think about the factors your establishment looks for in candidates when looking to recruit new employees. For each factor that I read out, please say if it is critical, if it is a significant factor, if you place a small amount of value on it, or if it has no value for your establishment?
PC6B	EPS	Module D	EPS recruitment	Has anyone you've recruited in the last 12 months been between the ages of 16 and 18?
PC6C	EPS	Module D	EPS recruitment	Has anyone recruited been between the ages of 19 and 24?
PC6D	EPS	Module D	EPS recruitment	Can I just check if you have recruited anyone under 25 years of age in the last 12 months?
NC6Di	New question	Module D	EPS recruitment	And has anyone you've recruited in the last 12 months been between the ages of 25 and 49?
PC6E	EPS	Module D	EPS recruitment	And has anyone you've recruited in the last 12 months been aged over 50?
NC6G	New question	Module D	EPS recruitment	How well prepared for work have the recruits aged 50 or over been?

PC10nw	EPS	Module D	EPS recruitment	Thinking of the last young person aged under 25 that your site recruited, did you use any of the following to fill the role...?
PC10A	EPS	Module C	Education leavers	Thinking of the last 2-3 years, has this site taken on anyone to their first job on leaving school, college or university?
PC10B / PC10E	EPS	Module C	Education leavers	Have any of these been...
PC10C / PC10F	EPS	Module C	Education leavers	Thinking of those recruited in the last 2-3 years, how well prepared for work have the...
PC10D / PC10G	EPS	Module C	Education leavers	In what ways have they been poorly prepared?
PC17	EPS	Module C	Work Experience & Inspiration	Now thinking about activities related to work experience, thinking about people of all ages, in the last 12 months has this site had anyone in for
PC18	EPS	Module C	Work Experience & Inspiration	How many people have you had on [INSERT ITERATION TEXT] in the last 12 months?
NC19NW	New question	Module C	Work Experience & Inspiration	Typically, how long did these placements last?
NC20NW	New question	Module C	Work Experience & Inspiration	Were all, some or none of the individuals you had in on this type of placement paid whilst working for you?
PC19C	EPS	Module C	Work Experience & Inspiration	In the last 12 months has your establishment taken on anyone who has been on this kind of placement with you into a permanent or long-term paid role?
PC20	EPS	Module C	Work Experience & Inspiration	What are the main reasons you offer work experience placements or internships at this site?
PC23	EPS	Module C	Work Experience & Inspiration	I'd now like to ask about other ways that employers might engage with schools, colleges or universities. This may involve things such as hosting site visits for students, talking to students about careers, or conducting activities such as mock interviews to improve the employability of students. During the past 12 months has your establishment engaged with schools, colleges or universities to provide such activities to students?

PC27	EPS	Module C	Work Experience & Inspiration	You mentioned that your site has not had any work placements or internships in the last 12 months, or engaged with educational institutions to provide other forms of work-related experience to their students. What would you say are the main reasons for not doing so?
NC28	New question	Module C	T-levels	The Government is introducing new technical education qualifications for 16-19-year olds, called T Levels. As part of these it will be compulsory for students to complete an industry placement lasting at least 45 days in an industry directly relevant to their course... [question continues]
NC29	New question	Module C	T-levels	Thinking about your site's capacity for offering placements to T-levels students, how easy or difficult would it be for you to offer these types of placements?
SD1b	ESS	All	Workforce composition and skills gaps	Approximately how many of your [NUMBER FROM SA1 / RANGE FROM SA1DUM] current staff, if any, are from EU member states and are not UK citizens?
SD1bran	ESS	All	Workforce composition and skills gaps	Can you tell me approximately what proportion of your [NUMBER FROM SA1 / RANGE FROM SA1DUM] employees, if any, are from EU member states and are not UK citizens?
ND1B	New question	All	Workforce composition and skills gaps	And approximately how many of your current staff, if any, are not UK citizens and are from countries outside of the EU?
ND1BRAN	New question	All	Workforce composition and skills gaps	Can you tell me approximately what proportion of your current staff, if any, are not UK citizens and are from countries outside of the EU?
SD5A	ESS	All	Workforce composition and skills gaps	Next we would like to categorise the [SA1] staff you have at this site into a number of different job roles. To help you quickly categorise your staff, we have an online prompt card – if you are at a computer we recommend accessing this page now at www.skillssurvey.co.uk/jobs . If not then it's not a problem, I can just continue asking the questions as I have been doing so far.
SD5B	ESS	All	Workforce composition and skills gaps	Can I just check which sector you have chosen?
SD5C	ESS	All	Workforce composition	Looking at the examples on the screen, please tell me how many of the [SA1] staff you have at this site fit into each job role.

			n and skills gaps	
SD5C_CH K	ESS	All	Workforce composition and skills gaps	The figures you have given me sum to [SD5C SUM] out of [SA1] staff. Can I just re-check the number of staff in each category?
SD5D	ESS	All	Workforce composition and skills gaps	Next we would like to categorise the [SA1] staff you have at this site into different job roles. To help us give you relevant examples, please can you tell me which of the following broad sectors best fits your establishment:
SD5	ESS	All	Workforce composition and skills gaps	We will go through each category one at a time and categorise your staff into the different job roles. Staff should be classified according to their PRIMARY role that takes up the greatest proportion of their time, and each member of staff should only be allocated to one job role. Firstly, how many of your staff are employed as managers, directors or senior officials?
SD5chka	ESS	All	Workforce composition and skills gaps	Can I check, I've recorded that there are no managers employed at this site, is that correct?
SD6	ESS	All	Workforce composition and skills gaps	And how many – if any – are employed in administrative or secretarial occupations?
SD7	ESS	All	Workforce composition and skills gaps	You've told me that a total of XX of your XX staff are employed as managers or in administrative roles. I'd now like you to tell me what roles the remaining XX staff fill. I'm going to read you seven different occupational roles, and I'd like you to tell me if any of your remaining XX staff are employed in each. If staff carry out more than one role, please only include them in their main function. First, do you employ any staff at this establishment as ...[OCCUPATION]?
SD8	ESS	All	Workforce composition and skills gaps	How many of your staff at this establishment are employed as..?
SD9	ESS	All	Workforce composition	How many of your xx existing staff working in [OCCUPATION] would you regard as fully proficient at their job?

			n and skills gaps	
SD10	ESS	All	Workforce composition and skills gaps	I want to ask about two of the categories where you say not all staff are proficient. What are the main causes of staff in <OCCUPATION> not being fully proficient in their jobs...?
SD11A	ESS	All	Workforce composition and skills gaps	I'm now going to ask you about the skills you feel need improving. Thinking about your <OCCUPATION> who are not fully proficient, which, if any, of the following skills do you feel need improving? IF NECESSARY: If you do not require staff in this role to have this skill, then please do not include it in your answer.
ND11a	New question	All	Workforce composition and skills gaps	You mentioned that some of your <OCCUPATION> lack full proficiency in terms of computer literacy / basic IT skills. What specific basic IT skills are they lacking full proficiency in?
SD11NW	ESS	All	Workforce composition and skills gaps	Next, I'm going to ask about skills related to dealing with other people. Thinking about your <OCCUPATION> who are not fully proficient which, if any, of the following skills do you feel need improving... ?
SD12	ESS	All	Workforce composition and skills gaps	Does the fact that some of your staff are not fully proficient have an impact on how your establishment performs?
SD13	ESS	All	Workforce composition and skills gaps	Is the fact that some of your staff are not fully proficient causing this establishment to...?
SD13A	ESS	All	Workforce composition and skills gaps	Has your site taken any steps to improve the proficiency or skills of these staff?
SD14	ESS	All	Workforce composition and skills gaps	Which if any of the following steps is this establishment taking to overcome the fact that some of its staff are not fully proficient in their job?
SD14a	ESS	All	Workforce composition and skills gaps	Have you recruited, or tried to recruit, workers who are non-UK nationals in order to overcome the fact that some staff are not fully proficient in their job?

SD14b	ESS	All	Workforce composition and skills gaps	In terms of recruiting workers who are non-UK nationals, are these EU nationals, non-EU nationals, or both?
SD15	ESS	Modules B and D	Underutilisation	You said that you have [SA1] staff at this site. Of these, how many would you say have QUALIFICATIONS that are more advanced than required for their current job role?
SD15A	ESS	Modules B and D	Underutilisation	And how many of these [SD15] staff ALSO have SKILLS that are more advanced than required for their current job role?
SE1	ESS	Modules B and D	Upskilling	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?
SE2	ESS	Modules B and D	Upskilling	Which single occupation will be most affected by this need to acquire new skills or knowledge?
SE3	ESS	Modules B and D	Upskilling	I'm now going to ask you about the skills you feel will need improving among your [OCCUPATION FROM SE2]. Which, if any, of the following skills do you feel will need improving over the next 12 months?
NE3A	New question	Modules B and D	Upskilling	You mentioned that [basic and/or advanced] IT skills will need improving among your <OCCUPATION FROM SE2>. What specific IT skills will need improving over the 12 months?
SE4	ESS	Modules B and D	Upskilling	Turning now to skills relating to dealing with other people. Which, if any, of the following skills do you feel will need improving among your [OCCUPATION FROM SE2] over the next 12 months?
SF4	ESS	All	Workforce development	Over the past 12 months have you funded or arranged any off-the-job training or development for employees at this site. By off-the-job training we mean training away from the individual's immediate work position, whether on your premises or elsewhere?
SF4a	ESS	All	Workforce development	And have you funded or arranged any on-the-job or informal training and development over the last 12 months. By this I mean activities that would be recognised as training by the staff, and not the sort of learning by experience which could take place all the time.
SF5	ESS	All	Workforce development	You mentioned that you have not funded or arranged training for any of this establishment's employees over the past 12 months. What are the reasons for this? PROBE: What other reasons have there been?

SF6	ESS	All	Workforce development	Which of the following types of off the job training have you funded or arranged for employees at this establishment over the past year?
SF7a	ESS	All	Workforce development	And how much of the training that you have funded or arranged has been for health & safety or induction training?
SF7b	ESS	All	Workforce development	Have you arranged or funded any training for staff in the last 12 months which has involved....
SF7	ESS	All	Workforce development	And has your establishment done any of the following to aid the development of your employees in the last 12 months?
SF8	ESS	All	Workforce development	Thinking about both on- and off-the-job training, over the last 12 months how many staff employed at this establishment have you funded or arranged training and development for, including any who have since left?
SF8chk	ESS	All	Workforce development	You said you have xx employees but you have trained xx staff in the past 12 months. Is this correct?
SF8chk2	ESS	All	Workforce development	Were these all your current staff?
SF9	ESS	All	Workforce development	Over the last 12 months which occupations have you arranged or funded training for, whether on or off the job?
SF10	ESS	Module B	Workforce development	You said you had funded or arranged training for xx staff in the last 12 months including any who have since left. How many of these were..?
SF10chk	ESS	Module B	Workforce development	You said that in the last 12 months that you trained <SF8> staff, but the sum of the occupations that you have trained total <SF10SUM>. Do you wish to amend the overall figure or the number within each occupation?
SF11	ESS	All	Workforce development	Over the last 12 months who many days training and development whether on or off the job have you arranged for each member of staff receiving training?
SF11chk	ESS	All	Workforce development	Can I just check that, on average, EACH MEMBER OF STAFF receiving training and development has received [INSERT ANSWER FROM SF11 IF GAVE ASBOLUTE FIGURE OR "more than 20" IF CODE 12 ON DON'T KNOW RANGE] days training over the last 12 months?

PD6b	EPS	Module B	Workforce development	Has your site [IF MULTISITE or organisation] provided any EXTERNAL training for employees in the past 12 months? By external training we mean any training that has been delivered by people who are not immediate employees of your organisation.
PD8	EPS	Module B	Workforce development	Which of the following external sources of training has your site used in the past 12 months...?
PD12	EPS	Module B	Workforce development	Why hasn't your site used the teaching or training services of external training providers in the last 12 months? [(SF4=2 AND SF4A=2) OR (SF4DUM=3): Why has your site not decided to deliver any training using the teaching or training services of external training providers in the last 12 months?]
SF12	ESS	All	Workforce development	Thinking now about qualifications, how many of the <SF8 integer / band> people that you have funded or arranged training for [<i>Text substitution if both on and off the job: whether on- or off-the-job,</i>] over the past 12 months are or were being trained towards a nationally recognised qualification?
SF13	ESS	All	Workforce development	[IF SF12=1: Is or was this member of, IF SF12>1: Are or were any of these] staff being trained towards any of the following types of qualification in the last 12 months ...
PD13	EPS	Module B	Workforce development	Has your site arranged or funded training designed to lead to a recognised VOCATIONAL qualification, to aid the development of your employees in the last 12 months?
PD14	EPS	Module B	Workforce development	For which of the following reasons has your establishment NOT arranged training for your employees that was designed to lead towards the achievement of a vocational qualification?
PD16	EPS	Module B	Workforce development	To what extent would you agree or disagree that employees achieving vocational qualifications leads to...
PD17	EPS	Module B	Workforce development	And to what extent would you agree or disagree that vocational qualifications...?
SF15A	ESS	All	Workforce development	If you could have done, would you have provided MORE training for your staff than you were able to over the last 12 months?
SF15B	ESS	All	Workforce development	What barriers, if any, have there been preventing your organisation providing more training over the last 12 months for staff at this location? PROBE: what other barriers have you faced?
PD1	EPS	Module B	Info/advice on training	In the past 12 months, as far as you know, has anyone at this establishment sought or received

				information, advice or more practical help on skills or training-related issues from people external to your organisation?
PD1a	EPS	Module B	Info/advice on training	And has your establishment experienced any skills or training-related issues in the last 12 months where you might have needed information, help or advice?
PD2	EPS	Module B	Info/advice on training	Has anyone at this site received advice or help on skills and training related issues in the last 12 months from any of the following?
PD36	EPS	Module B	Info/advice on training	In the past 12 months has your site worked with another employer to develop skills or expertise in your workforce by, for example, accessing, sharing or providing training?
PD22	EPS	Module A	Apprenticeships & Traineeships	I'd now like to ask some questions about Apprenticeships. By Apprenticeships I mean those which follow a formal framework and lead to a nationally recognised qualification. Do you currently have any staff undertaking Apprenticeships at this site?
PD22a	EPS	Module A	Apprenticeships & Traineeships	How many current Apprentices do you have at this site?
PD22b	EPS	Module A	Apprenticeships & Traineeships	Is it approximately...?
PD23	EPS	Module A	Apprenticeships & Traineeships	Do you currently offer Apprenticeships at this site?
PD23i	EPS	Module A	Apprenticeships & Traineeships	Has your site previously offered Apprenticeships in the last 3 years?
ND23c	New question	Module A	Apprenticeships & Traineeships	How many apprentices in total have you had at this site over the past 3 years?
ND23CRAN	New question	Module A	Apprenticeships & Traineeships	Is it approximately...?
ND23D	New question	Module A	Apprenticeships &	What proportion of those apprentices you've had in the last two to three years have been retained as a permanent member of staff, or in a long-term paid

			Traineeships	role, after they completed their apprenticeship? Would you say it has been...
ND23e	New question	Module A	Apprenticeships & Traineeships	What were the reasons for not retaining <ND23d=4: any> <ND23d=2/3: some> of the apprentices that you've had at your site over the last 2-3 years?
PD23a	EPS	Module A	Apprenticeships & Traineeships	Do you currently offer Apprenticeships at this site to...?
PD25i	EPS	Module A	Apprenticeships & Traineeships	Do any of your apprentices receive training delivered by a training provider either on their or your premises?
PD25ii	EPS	Module A	Apprenticeships & Traineeships	And do you as the employer provide formal training sessions as part of the Apprenticeship?
PD25iii	EPS	Module A	Apprenticeships & Traineeships	What type of training provider delivers the training for your apprentices. Is it...?
PD26	EPS	Module A	Apprenticeships & Traineeships	Typically how long are the Apprenticeships you offer intended to last for from start to finish?
PD27i	EPS	Module A	Apprenticeships & Traineeships	How long has your site been offering formal Apprenticeships?
PD27a	EPS	Module A	Apprenticeships & Traineeships	When your site first decided to offer Apprenticeships, were you approached by an external organisation or individual, or was this something you actively decided to do?
PD27b	EPS	Module A	Apprenticeships & Traineeships	Who or what type of organisation approached you regarding your establishment offering Apprenticeships?
PD27c	EPS	Module A	Apprenticeships & Traineeships	And why did you start offering Apprenticeships?
PD27d	EPS	Module A	Apprenticeships & Traineeships	Since your site first started offering formal Apprenticeships, has the number of apprentices that you have at this site increased, decreased or remained about the same?

PD28	EPS	Module A	Apprenticeships & Traineeships	Which of the following would you say best describes your knowledge of Apprenticeships?
PD33	EPS	Module A	Apprenticeships & Traineeships	Why does your establishment not currently offer Apprenticeships?
ND29NW	New question	Module A	Apprenticeships & Traineeships	Are you aware of the following recent apprenticeship policy changes?
ND30NW	New question	Module A	Apprenticeships & Traineeships	As a result of these recent reforms to apprenticeships, has there been a change to any of the following at this site?
ND31NW	New question	Module A	Apprenticeships & Traineeships	And as a result of those same apprenticeship reforms, have the following increased, decreased or stopped altogether at this site?
PD34	EPS	Module A	Apprenticeships & Traineeships	Does your organisation plan to offer Apprenticeships in the future?
PD27e	EPS	Module A	Apprenticeships & Traineeships	And over the next 2 years, do you expect the number of apprentices you have at this site to increase, stay about the same, or decrease?
PD27f	EPS	Module A	Apprenticeships & Traineeships	Why do you expect the number of apprentices at this site to increase over the next 2 years
PD27g	EPS	Module A	Apprenticeships & Traineeships	Why do you not expect the number of apprentices at this site to increase over the next 2 years?
PD27h	EPS	Module A	Apprenticeships & Traineeships	Why do you expect the number of apprentices at this site to decrease over the next 2 years?
PD34ii	EPS	Module A	Apprenticeships & Traineeships	What are the main reasons why your organisation is intending to start offering Apprenticeships in the future?
PD34a	EPS	Module A	Apprenticeships &	Is there any particular reason you do not plan to offer Apprenticeships in the future?

			Traineeships	
PD35c	EPS	Module A	Apprenticeships & Traineeships	When recruiting someone to an Apprenticeship, has your establishment used work experience placements to determine whether the individual is suitable for an Apprenticeship prior to actually recruiting them as an apprentice?
PD35a	EPS	Module A	Apprenticeships & Traineeships	Which of the following best describes your awareness of Traineeships?
PD35b	EPS	Module A	Apprenticeships & Traineeships	In the last 12 months have you had anyone undertake a Traineeship at this site?
ND36	New question	Module A	Apprenticeships & Traineeships	I'd now like to ask you about Traineeships in Wales. The Traineeships programme in Wales is a programme for young people aged 16 to 18 which aims to give young people the skills they need to get a job or progress to further learning at a higher level – such as an apprenticeship or further education. Prior to this interview, had you heard of the Traineeships programme in Wales?
ND37	New question	Module A	Apprenticeships & Traineeships	Have you taken on anyone at this site to do a Traineeship as part of the Traineeships programme in Wales?
ND38	New question	Module A	Apprenticeships & Traineeships	What are the main reasons you decided to take someone on to do a Traineeship?
ND39	New question	Module A	Apprenticeships & Traineeships	What are the main reasons why you have not taken on anyone at this site to do a Traineeship?
ND40	New question	Module A	Apprenticeships & Traineeships	How interested, if at all, would your establishment be in offering work placement opportunities to young people via the Traineeship programme in Wales. Would you be...?
SD20	EPS	Module D	National Occupational Standards	Which of these best describes your awareness of the National Occupational Standards for your industry or sector?

SD21	EPS	Module D	National Occupational Standards	Does your establishment use the National Occupational Standards covering your sector in any of the following ways?
SI1	ESS	All	Recontact	Thank you very much for taking the time to speak to us today. Occasionally it is necessary to call people back to clarify their answers; may we please call you back if required?
SI3	ESS	All	Recontact	The Department for Education [WALES: and the Welsh Government NI: and the Department for the Economy in Northern Ireland] will be conducting some follow up research in the next few weeks about training expenditure. This will involve sending some questions by email then collecting answers through a short telephone call. Would this be possible?
SI3A	ESS	All	Recontact	Would you like us to email you a summary report of the findings of this survey, once the results are published in Summer 2018?
SI2	ESS	All	Recontact	If the Department for Education and their partners in this survey wish to carry out follow-up research within the next 2 years on related issues, would it be ok for them or their appointed contractors to contact you?
SI2A	ESS	All	Recontact	Would it be OK if the selection for this follow-up research is based on your responses to this survey?
SI3B, I3C, I3D, I3E, I4, I6	ESS	All	Recontact	Confirming/collecting contact information
SI7	ESS	All	Recontact	Finally, it is sometimes possible to link the data we have collected with other government surveys or datasets to enable further statistical analysis. Would you be happy for this to be done?

Table C-2 Questionnaire changes for ESS 2019

Question Number	Original survey	Question text	Original question text (if changes made)
SA1	ESS	How many people work at this specific site, including yourself, all others on your payroll and any working proprietors or owners, but excluding the self-employed and outside contractor or agency staff.	How many people work at this establishment? Please include both full-time and part-time employees on your payroll and any working proprietors or owners, but exclude the self-employed and outside contractor or agency staff.

SD11A	ESS	<p>I'm now going to ask you about the skills you feel need improving.</p> <p>Thinking about your <OCCUPATION> who are not fully proficient, which, if any, of the following skills do you feel need improving?</p> <p>IF NECESSARY: If you do not require staff in this role to have this skill, then please do not include it in your answer.</p>	<p>I'm now going to ask you about the skills you feel need improving starting with skills relating to using information, equipment and materials. Thinking about your <OCCUPATION> who are not fully proficient which, if any, of the following skills do you feel need improving?</p>
SD15	ESS	<p>You said that you have [SA1] staff at this site. Of these, how many would you say have QUALIFICATIONS that are more advanced than required for their current job role?</p>	<p>You said that you have XX staff who are FULLY proficient at their job. Of these, how many would you say have BOTH qualifications QUALIFICATIONS AND skills that are more advanced than required for their current job role?</p>
SD15A	ESS	<p>And how many of these [SD15] staff ALSO have SKILLS that are more advanced than required for their current job role?</p>	<p>And how many of the xx staff who have qualifications more advanced than required for their current job role would you say ALSO have SKILLS that are more advanced than required for their current job role?</p>
SF8	ESS	<p>Thinking about both on- and off-the-job training, over the last 12 months how many staff employed at this establishment have you funded or arranged training and development for, including any who have since left?</p>	<p>Over the last 12 months how many staff employed at this site have you arranged or funded training and development for, including any who have since left?</p>
SI2	ESS	<p>If the Department for Education and their partners in this survey wish to carry out follow-up research within the next 2 years on related issues, would it be ok for them or their appointed contractors to contact you?</p>	<p>If the government and its agencies wish to undertake further work on related issues in the future would it be ok for them or their appointed contractors to contact you on these issues?</p>

Appendix D: Questions from ESS 2017 and EPS 2016 surveys removed for ESS 2019

Table D-1 Questions from the ESS 2017 and EPS 2016 surveys that were not included in the ESS 2019 survey

Question Number	Original survey	Question area	Question text
C13B	ESS	Recruitment & Skill Shortage Vacancies	Which one of the skills you have had difficulty finding for (OCCUPATION) would be the most valuable for your establishment?
D11B	ESS	Workforce composition and skills gaps	Which skill do you feel is most in need of improvement among your <OCCUPATION> who are not fully proficient?
D1	ESS	Demand for Skills / Skills gaps	Thinking now about your XX current staff, roughly how many of them are qualified to [EN/NI/WL: Level 4 / SC: SCQF Level 7] or above - by Level [EN/NI/WL 4 / SC: 7] I mean a degree level qualification or higher, or [EN/NI/WL: an HND, HNC or Foundation degree / SC: HNCs, Advanced Highers or SVQ level 3]?
D1ran	ESS	Demand for Skills / Skills gaps	Can you give an estimate from the following bands? <i>(Fewer than 20%, etc.)</i>
D5cchka	ESS	Demand for Skills / Skills gaps	Can I just check, I've recorded that there are no managers employed at this site – is this correct?
D11b	ESS	Demand for Skills / Skills gaps	And which one of these skills which are lacking has the biggest impact on your establishment?
F1	ESS	Workforce Development	Does your establishment have any of the following...? <i>(A business plan that specifies the objectives for the coming year, etc.)</i>
F3	ESS	Workforce Development	And approximately what proportion of your staff have an annual performance review?
F16	ESS	Workforce Development	Is your establishment currently accredited with the Investors in People Standard?
G1	ESS	Skills utilisation / High performance working	Does your establishment? <i>(Create teams of people who don't usually work together, to work on a specific projects, etc.)</i>
G1A	ESS	Skills utilisation / High performance working	And does your establishment have any of the following pay and incentive schemes for your employees?

			<i>(Bonuses that are based on the overall performance of the organisation or establishment, etc.)</i>
G2	ESS	Skills utilisation / High performance working	Do you have processes in place to allow you to identify “high potential” or talented individuals within your establishment?
G5	ESS	Skills utilisation / High performance working	To what extent would you say employees at your establishment...? <i>(Have variety in their work, etc.)</i>
A2	EPS	Firmographics (i)	Is this site the Head Office of the organisation?
C2	EPS	Recruitment	Have you heard of any of the following services or initiatives?
C3	EPS	Recruitment	And has your establishment made use of [IF MORE THAN ONE CODE SELECTED AT C2: any of] the following to recruit staff over the past 12 months?
C4b	EPS	Recruitment	What types of paid-for recruitment services has your establishment used to fill vacancies over the past 12 months?
C6a	EPS	Recruitment	You said you have had vacancies in the last 12 months – can I just check, have you actually recruited anyone in the last 12 months?
C8	EPS	Recruitment	Firstly, what position or role were they recruited to?
C10nwi	EPS	Recruitment	What types of paid-for recruitment services did your establishment use to fill this role?
C10nwii	EPS	Recruitment	Which government schemes or services did you use to fill this role? <i>(Graduate Talent Pool, etc.)</i>
C23a	EPS	Recruitment of Education Leavers	What are the main reasons why your establishment has engaged in these types of activities?
D4	EPS	People Deveopment	Which of the following schemes and initiatives have you heard of...? <i>(Union Learning Fund, etc.)</i>
D5	EPS	People Deveopment	Has your establishment used or been involved with [INITIATIVE FROM D4] in the past 12 months?
D6a	EPS	People Deveopment	Has your establishment [IF MULTISITE or organisation] provided any INTERNAL training for employees [IF MULTISITE at this site] in the past 12 months? By internal training we mean training that was run by other employees of your organisation rather than external training providers or other organisations.
D6b	EPS	People Deveopment	And has your establishment [IF MULTISITE or organisation] provided any EXTERNAL training for employees in the past 12 months? By external training we mean any training that

			has been delivered by people who are not immediate employees of your organisation
D8	EPS	People Deveopment	Which of the following external sources of training has your site used in the past 12 months...?
D9a	EPS	People Deveopment	Why do you choose to use [INSERT ANSWERS 3-7 FROM D8] to deliver [IF D8=1 or 2: some of] your training?
D9b	EPS	People Deveopment	Why do you choose to use [INSERT ANSWERS 1 AND/OR 2 FROM D8] to deliver [IF D8=3-7: some of] your training?
D11a	EPS	People Deveopment	And why do you not use commercial organisations or non-profit making organisations to deliver your training?
D11b	EPS	People Deveopment	And why do you not use [Further Education Colleges] [Universities and Higher Education institutions] to deliver your training?
D12	EPS	People Deveopment	Why hasn't your establishment used the teaching or training services of external training providers in the last 12 months?
D13	EPS	Training to VQs	Moving back to thinking about all the training you arrange or fund for staff, has your establishment arranged or funded training designed to lead to a recognised VOCATIONAL qualification, to aid the development of your employees in the last 12 months?
D14	EPS	Training to VQs	For which of the following reasons has your establishment NOT arranged training for your employees that was designed to lead towards the achievement of a vocational qualification?
D15	EPS	Training to VQs	Now thinking about the level of qualifications that your establishment has arranged for staff to undertake over the past 12 months, have you arranged or funded training leading to qualifications at...?
D16	EPS	Training to VQs	To what extent would you agree or disagree that employees achieving vocational qualifications leads to...?
D17	EPS	Training to VQs	And to what extent would you agree or disagree that vocational qualifications...?
D23B	EPS	Apprenticeships	Do you currently offer Apprenticeships at this site to existing employees, do you recruit people specifically as Apprentices, or do you do both...?
D29	EPS	Apprenticeships	In terms of specific government-recognised schemes have you heard of...?
D31	EPS	Apprenticeships	Have you heard of any of the following relating to Apprenticeships?
D32	EPS	Apprenticeships	And have you used [ITERATIONS 1, 2, 3, 8, 10 (ApprenticeshipsNI) or had contact with] [ITERATION TEXT] at this site in the last 12 months?
D34i	EPS	Apprenticeships	In what timescale is your organisation planning to offer Apprenticeships, is it ...?

D35bi	EPS	Apprenticeships	Did you include these Traineeships when I earlier asked about the types of work experience placements you have at this site?
D35d	EPS	Apprenticeships	When recruiting someone to Apprenticeship, has your establishment used Traineeships to determine whether the individual is suitable for an Apprenticeship prior to actually recruiting them as an apprentice?
D39	EPS	Employer involvement in content and design	Considering the [INSERT ITERATION TEXT: Apprenticeships / External Training / Vocational Qualifications] your establishment has offered over the past 12 months, would you say that your establishment has...
D40	EPS	Employer involvement in content and design	Would you have liked to have been involved in designing the content of the [ITERATION TEXT: Apprenticeships / Vocational Qualifications / External Training]?
D41	EPS	Employer involvement in content and design	What prevented you from being involved in designing the content of the [ITERATION TEXT: Apprenticeships / Vocational Qualifications / External Training]?
E1	EPS	IIP Accreditation	Is your organisation currently accredited with Investors in People (IiP)?
F4	EPS	Employer Attitudes and Firmographics	I'll read out a number of statements and would like you to tell me to what extent you agree or disagree on a scale of 1 to 5, where 1 means strongly disagree and 5 means strongly agree.
A6	EPS	Employer Attitudes and Firmographics	How long has your establishment been operating?
A6a	EPS	Employer Attitudes and Firmographics	Which of the following statements best applies to your outlook for the business over the next 12 months: You expect the business...?
A9	EPS	Employer Attitudes and Firmographics	Over the past 12 months, has the number of people employed at this establishment...?

Appendix E: 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 SD5c to SD8) 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 existed at the time of the interview – question SC7) this information was collected verbatim and then coded at the analysis stage, where possible to a four-digit level SOC. Table E-1 below gives examples of the types of occupations included within occupational bandings.

Table E-1 Examples of occupations that were included within each occupational group

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	Motor mechanics, chefs, printers, TV engineers, butchers	Chefs, cooks

	makers, carpenters, plasterers		
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 F: Reassurance email

SURVEY REFERENCE: [KEY NUMBER]

Employer Skills Survey 2019

Thank you for considering participating in this important research.

The Employer Skills Survey 2019 is being conducted on behalf of the Department for Education (DfE) and its partners, the Welsh 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 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 2017 survey please see the Gov.UK website:

<https://www.gov.uk/government/publications/employer-skills-survey-2017-uk-report>

If you have any queries concerning the format or content of the interview, please contact us at SkillsSurvey2019@iffresearch.com, or call our freephone helpline on 0808 164 4731.

Your replies will be treated in the strictest confidence under the Code of Conduct of the Market Research Society, and in accordance with the Data Protection Act (2018) and the General Data Protection Regulations (GDPR).

Thank you for your assistance.

Yours sincerely,

Sam Selner
Senior Research Manager
IFF Research

Appendix G: Response Rates by subgroup for the core survey

Table G-1 Interviews achieved and response rate broken down by country, size and sector¹¹

	Interviews achieved	Response Rate
Total	81,013	41%
Country		
England	70,217	41%
Northern Ireland	4,023	58%
Wales	6,773	43%
Size		
2-4	20,183	34%
5-24	40,611	43%
25-49	10,795	47%
50-99	5,377	47%
100-249	3,122	42%
250+	925	32%
Sector		
Primary Sector and Utilities	2,952	30%
Manufacturing	6,234	37%
Construction	5,249	31%
Wholesale and retail	17,503	41%
Hotels and restaurants	7,594	47%
Transport and storage	2,330	35%
Information and communications	2,511	35%
Financial services	1,577	28%
Business activities	15,490	39%
Public administration	840	44%
Education	5,012	68%
Health and Social Work	8,092	55%
Arts and Other Services	5,629	46%

¹¹ Response rate is calculated as 'achieved interviews' as a proportion of all 'complete contacts', as explained in the Response Rate section of the main body of the technical report.

Appendix H: Edit specification

Table H-1 Specification of edits applied to the data

Edit Number	Objective of edit	Condition	Force/Action
EDIT 1	Check that all SICs given at SA7 are valid SIC07 codes	If SA6 = 2	Any records where SA6=2 will need to have the SIC at SA7 validated. Recode where possible, recontact if necessary.
EDIT 2	To ensure that all SOC codes are valid at SC7 (4 DIGITS)	If SOC at SC7 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%). For any records that are entirely uncodable, use four zeros "0000."
EDIT 3	To check that public sector ('local or central government financed body') definition given at SA8 is consistent with SIC code	If SA8 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 4	To check legitimacy of high numbers of employment	If SA1 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 5	To check legitimacy of high numbers of vacancies in relation to size of establishment	If SC6 is more than 5 times greater than SA1 if SA1 < 5 OR if SC6 is more than 3 times greater than SA1 if SA1 IS BETWEEN 5 AND 49 OR if SC6 is more than 1.5 times greater than SA1 if SA1 ≥ 50	Call-backs usually necessary to confirm high numbers of vacancies.
EDIT 6	To investigate establishments where all employees have been allocated to one occupational group	If only one of SD5, SD6, SD8_1-7 / SD5C_1-9 is greater than 0 and SA1 is more than 10	Each record to be judged on an individual basis. Call-backs may be necessary.
EDIT 7	To check high values of individual occupational groups	If SD5 / SD5C_1 (managers) is greater than 50 OR If SD8_7 / SD5C_9 (professionals) is greater than 100 OR If SD8_6 / SD5C_8 (associate prof/technical) is greater than 100 OR If SD6 / SD5C_2 (admin/clerical)	Each record to be judged on an individual basis. Call-backs may be necessary .

		<p>is greater than 100 OR If SD8_5 / SD5C_7 (skilled trades) is greater than 100 OR If SD8_4 / SD5C_6 (caring/leisure) is greater than 100 OR If SD8_3 / SD5C_5 (sales/customer service) is greater than 100 OR If SD8_2 / SD5C_4 (machine operatives) is greater than 100 OR If SD8_1 / SD5C_3 (elementary) is greater than 100</p>	
EDIT 8	To check high values of underemployed (both qualifications and skills) staff	If SD15a is greater than half of the sum of SD9 (number of proficient employees) and SA1>5	Each record to be judged on an individual basis. Call-backs may be necessary .
EDIT 9	To ensure all postcodes given by respondents are valid	If SI4=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.
EDIT 10	To sense check establishments with a high proportion of EU, non-UK staff	<p>If SA1 > 10 and (SD1b = A1) [i.e. all staff are EU, non-UK citizens] Or if SA1 > 10 and SD1bran=6 ("all of them")</p>	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 .
EDIT 11	To sense check establishments with a high proportion of non-EU staff	<p>If SA1 > 10 and (SND1b = A1) [i.e. all non-EU, non-UK citizens] Or if SA1 > 10 and ND1bran=6 ("all of them")</p>	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 .
EDIT 12	To check that proportion of current staff that are EU, non-UK citizens doesn't conflict with proportion who are non-UK, non-EU citizens, where range questions answered for both	<p>If SD1BRAN=5 and ND1BRAN=3/4/5/6 If SD1BRAN=4 and ND1BRAN=5/6 If SD1BRAN=3 and ND1BRAN=5/6 If SD1BRAN=2 and ND1BRAN=6</p>	One for discussion further down the line in terms of action to take, but need to monitor the scale of the issue initially
EDIT 13	To check legitimacy of high numbers of work experience placements in relation to size of establishment	<p>If PC18_1-11 is (combined) more than 5 times greater than SA1 if SA1<5 OR If PC18_1-11 is (combined) more than 2 times greater than SA1 if SA1 IS BETWEEN 5 AND 49 OR If PC18_1-11 is (combined) greater than SA1 if SA1 ≥ 50</p>	Each record to be judged on an individual basis. Consider appropriate action if discrepancies are inexplicable. Call-backs may be necessary .

EDIT 14	To check high numbers on particular work experience placements	If any PC18_1-11 value greater than 100	Each record to be judged on an individual basis. Call-backs may be necessary .
EDIT 15	To check legitimacy of high numbers of apprentices in relation to size of establishment	If PD22a is more than 5 times greater than SA1 if SA1<5 OR If PD22a is more than 2 times greater than SA1 if SA1 IS BETWEEN 5 AND 49 OR If PD22a is greater than SA1 if SA1 ≥ 50	As above
EDIT 16	To check high numbers of apprentices	If PD22a is greater than 100	As above
EDIT 17	Check legitimate use of the "Head Office" code	If establishment is a single site (SA3=1) and has used one of the various 'Head Office Decision' codes at PC27, PD12, PD27c, PD34a, ND39, PD33, PD34ii, SF15B, PD27G	Remove use of the Head Office code if establishment is a single site. Force to DK if Head Office code only one selected
EDIT 18	Check for unnecessary use of 'Don't Know' code once coding is added in	If Coding use the DK code, this can mean that a DK code is combined with other codes at MultiCode questions. Something to check across all multicode questions that require coding.	Force DK to zero for specific records if DK is combined with other codes.
EDIT 19	Check for instances where number of apprentices is too high compared to total number of employed (PD22a/PD22a_BAND E D >= A1).	If PD22a>=A1 or Lowest number of PD22a_BANDED range is >= A1	Review record-by-record. Edits likely to fall on PD22a/PD22b rather than edits to SA1 (assumption that some have answered this question as whole organisation).
EDIT 20	Check for instances where ND23E response suggests all apprentices are still with them (invalid response) (new code: 'The apprentice is still here (suggested may be blurring current and previous apprentices and timescales)	IF ND23E= 'The apprentice is still here (suggested may be blurring current and previous apprentices and timescales)	If invalid code multicode with other legitimate codes, suggest we blank selection of the invalid code. If invalid code selected as a single code, and verbatim/recording suggests all apprentices still work for them, suggest forcing to ND23D=1 and sysmissing at ND23e
EDIT 21	Check for instances where at 'Training IS provided by external providers' code is used and whether a valid response	IF PD12='Training IS provided by external providers'	No action if SF4DUM3 as could be a valid response (i.e. on the job training provided by external provider) IF PD6B=2 OR (SF4=2 AND SF4A=2), flag these records as potentially needing edits. Listen to recording/consider verbatim to see reasons for inconsistencies

Appendix I: Sampling error and statistical confidence

Sampling errors for the survey results overall and for key sub-groups are presented in Table I-1 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 $\pm 0.36\%$, 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%'. Significance testing on employer measures use the unweighted respondent base, while employment measures, and density measures such as the proportion of the workforce with skills gaps and skills-shortage vacancy density, have been calculated on the basis of the unweighted employment (or vacancy) base.

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.

Table I-1 Sampling error (at the confidence 95% level) associated with findings of 50%

	Population	Number of interviews	(Maximum) Sampling Error
Total	1,830,072	81,013	± 0.34
Country			
England	1,683,072	70,217	± 0.36
Northern Ireland	58,663	4,023	± 1.49
Wales	89,067	6,773	± 1.14
Size			
2-4	997,502	20,183	± 0.68
5-9	380,637	20,012	± 0.67
10-24	267,316	20,599	± 0.66
25-49	97,831	10,795	± 0.89
50-99	49,607	5,377	± 1.26
100-249	26,506	3,122	± 1.65
250+	11,403	925	± 3.09
Sector			
Primary Sector and Utilities	98,746	2,952	± 1.78
Manufacturing	93,819	6,234	± 1.20
Construction	178,687	5,249	± 1.33

Wholesale and retail	348,103	17,503	± 0.72
Hotels and restaurants	171,520	7,594	± 1.10
Transport and storage	62,382	2,330	± 1.99
Information and communications	90,636	2,511	± 1.93
Financial services	36,526	1,577	± 2.41
Business activities	426,293	15,490	± 0.77
Public administration	14,942	840	± 3.29
Education	55,180	5,012	± 1.32
Health and Social Work	119,550	8,092	± 1.05
Arts and Other Services	134,418	5,629	± 1.28

Appendix J: 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 and 2018 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 2016¹².

¹² 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*¹³. 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.
```

¹³ '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.



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