

The Design and Administration of the 2011 Workplace Employment Relations Survey

August, 2013

1 Introduction and overview

This technical note summarises the design and administration of the 2011 Workplace Employment Relations Survey (WERS). It provides basic information on the sample design, response rates, sample sizes and weighting methodologies. It also provides information about the statistical precision of the survey results and gives details of how to gain access to the data.

A more detailed examination of the design and conduct of the 2011 survey is provided in *The Workplace Employment Relations Study (WERS) 2011/12: Technical Report* (Deepchand *et al*, 2013). The full technical report is available on request from wers@bis.gsi.gov.uk. Although this document necessarily focuses on the 2011 survey, points of departure from the previous survey conducted in 2004 are noted for the benefit of those interested in the panel element and for those who are already familiar with WERS. A summary of the design and conduct of the 2004 WERS can be found in the technical appendix to the 2004 sourcebook (Kersley *et al*, 2006), with full information being provided in the *WERS 2004 Technical Report* (Chaplin *et al*, 2005).

WERS 2011 is the sixth survey in a series of workplace surveys. The survey population for the 2011 survey is all workplaces in Britain that have 5 or more employees and are operating in Sections C-S of the *Standard Industrial Classification (2007)*. This population accounts for 35% of all workplaces and 90% of all employees in Britain. A workplace is defined as comprising 'the activities of a single employer at a single set of premises'. A branch of a high street bank, a factory and the head office of a local council are all considered to be workplaces in their own right.

The 2011 WERS has the following components:

<i>Component:</i>	<i>Acronyms:</i>
• Survey of Managers (comprising the Employee Profile Questionnaire and the Management Questionnaire)	EPQ and MQ
• Survey of Worker Representatives	WRQ
• Survey of Employees	SEQ
• Financial Performance Questionnaire (for workplaces in the trading sectors only)	FPQ

At each participating workplace, the study commences with an interview with the most senior manager with responsibility for employment relations, human resources or personnel. The manager is asked to provide a demographic profile of the workforce prior to the interview and, if the workplace is in the private sector or a trading public sector corporation, they are also asked after the interview to provide financial performance information about the workplace. Permission is also sought from the manager to distribute a self-completion questionnaire to a maximum of 25 employees at the workplace. If a union or non-union employee representative is present, an interview with them is sought. If a workplace had

both union and non-union representatives, an interview with each is sought. The union interview is conducted with the most senior lay representative of the largest recognised union at the workplace, or the largest non-recognised union if none are recognised. The non-union representative interview is conducted with the most senior non-union employee sitting on a joint workplace consultative committee. Where there is no such committee, a “stand-alone” non-union employee representative is interviewed.

Workplace managers and employee representatives are asked to act primarily as informants about their workplace, and so the vast majority of the data collected in those interviews relates to the features of the sampled workplace rather than to the particular characteristics of the individual respondent.

A major feature of the design of previous surveys in the WERS series (including the 2004 survey) was the use of two entirely separate samples. The first was a fresh cross-section sample of workplaces that were surveyed to provide representative results for the population of workplaces in existence at the time of the survey. The second was a panel sample which consisted of all participating workplaces from the previous cross-section (for example, the 1998 cross-section sample in the case of the 2004 study) who remained in existence at the time of the new WERS. That panel sample was used primarily to assess the extent to which individual workplaces changed their behaviour over time. The full set of questionnaires was administered in the fresh sample, whilst panel workplaces only received an abridged version of the management interview. The samples were always analysed separately.

A key design innovation of the 2011 WERS was to integrate the fresh cross-section and the panel samples. In the field, workplaces in the panel sample were eligible for all four components of the 2011 WERS. Users of the survey data therefore have access to management, employee and worker representative data for both waves of the 2004-2011 panel.¹ Moreover, weights have been devised to enable the panel sample to be combined with the fresh sample to form a combined sample that is cross-sectionally representative of all workplaces in 2011. This more than compensates for the smaller size of the fresh sample in 2011, creating a cross-sectionally representative combined sample that is larger than the cross-section sample that was available in 2004. The remainder of this technical appendix will frequently refer to the ‘panel sample’, the ‘refreshment sample’ and the ‘combined sample’, these being the core elements of the design of the 2011 survey.

2 The sampling frame and the sample

There were two overarching aims for the sample design in 2011:

1. to obtain interviews at 900 of those 2,295 workplaces which participated in the WERS 2004 Cross-Section; and
2. to obtain interviews at a further 1,800 workplaces from a new (and independent) refreshment sample, which could then be combined with the 900 panel workplaces to form a cross-sectionally representative combined sample of 2,700 workplaces.

The profile of these samples is important as larger workplaces have traditionally been over-sampled in WERS. Larger workplaces are over-sampled because, although they are relatively uncommon in the population at large, they employ a disproportionate share of all employees (see Figure 1) and so are of specific interest. WERS has thus always sought to achieve a minimum number of interviews among larger workplaces so that they can be

¹ Responses are not necessarily from the same individuals, nor can individual respondents be matched across waves.

separated from smaller workplaces in cross-tabular analysis. Over-sampling large workplaces also enables the survey to minimise the standard errors associated with any employee-based estimates derived from the workplace data (e.g. the % of employees in workplaces with recognised unions) and to minimise the variance in the weights within the Survey of Employees (again with the aim of limiting standard errors). However, any moves to over-represent larger employers have the simultaneous effect of raising the standard errors associated with workplace-level estimates, which have always been the mainstay of WERS analysis (e.g. the % of workplaces with recognised unions). The design aims to achieve a balance between each of these objectives.

It is another common requirement that data items from the survey can be cross-tabulated by industry sector. Some industry sectors (such as SIC(2007) Section D: Electricity, Gas, Steam and Air Conditioning Supply) account for relatively small numbers of workplaces in the population at large (see Figure 2) and these sectors have traditionally been over-sampled, although the degree of over-sampling required here is much less than in the case of workplace size.

In 2011, the application of these principles first involved setting a target for the profile of the combined sample of 2,700 cases. The population was stratified into 153 sampling strata, formed from the cross-tabulation of nine categories of workplace size (5-9 employees; 10-24; 25-49; 50-99; 100-199; 200-499; 500-999; 1000-1999; and 2000+) and 17 industry sectors (Sections C-S of the *Standard Industrial Classification (2007)*). The aim was to select panel and refreshment samples which, when combined at the end of fieldwork, would yield an achieved combined sample that offered at least 250 workplaces in each size band up to and including 200-499 employees; at least 150 workplaces in the size bands 500-999 and above; and a minimum of 85 cases in each industry sector. Any remaining flexibility in allocating sample across the 153 strata was to be used so that the estimated average design effects associated with workplace and employee-based estimates in the full combined sample were smaller (or at least no greater) than those in the achieved sample from the WERS 2004 Cross-Section.² To this end, it was planned that a greater proportion of the combined sample would be located in the smallest size band (5-9 employees) than had been the case in 2004, which would have the effect of reducing the design effects associated with workplace-level estimates. Table 1 shows the targeted outturn for the combined sample.

To achieve the targets shown in Table 1 involved making estimates of non-response and the proportion of ineligible workplaces (deadwood) within the panel sample and refreshment samples. These enabled estimates to be made of how large the issued samples from both the panel sample and refreshment sample should be in order to achieve the desired outturn in each cell of Table 1. The mix between panel and refreshment cases in each cell was ultimately determined by the overall size and structure of the achieved sample from the 2004 WERS Cross-Section Survey, which was to form the first time point in the panel. The size and structure of the refreshment sample was therefore calculated as that necessary to bring the projected outturn from the panel up to the combined targets indicated in Table 1.

Non-response and the proportion of deadwood in the samples could only be estimated prior to fieldwork so reserve samples have traditionally been selected to enable additional cases to be issued in the event that deadwood and non-response turn out to be more extensive than has been anticipated. These reserve samples were used in their entirety in 2011. In the following sections, the discussion focuses on the total size of the issued sample including the reserve.

² The design effect (DEFF) is the ratio of the standard error obtained from the proposed (complex) sample design to the standard error which would be obtained from a simple random sample of the same size.

2.1 The Panel Sample

As noted above, the issued panel sample was the full set of 2,295 achieved cases from the 2004 WERS Cross-Section, minus nine workplaces. A total of 2,286 addresses were therefore issued to the field. Each workplace was traced in order to establish whether it continued to be in existence in 2011 and, if so, to establish how many employees it had in 2011. Workplaces that continued in existence through to 2011 and which employed five or more employees in 2011 were pursued for interview. Further detail on the rules for determining what constituted a 'continuing establishment' for the purposes of the panel survey are provided in Section 4.

The sampling process in 2011 differed to that undertaken in 2004 (for the WERS 1998-2004 panel) in that almost all the available panel sample was issued to the field in 2011. In 2004, only 68% of the productive cases from the WERS 1998 Cross-Section (1,479 workplaces, selected at random from the 2,191 available cases) were issued to the field. The issued sample needed to be larger in 2011 for two reasons: first, the 2004-2011 panel was to cover continuing workplaces with 5 or more employees, rather than 10 or more as in the 1998-2004 panel, and so rates of deadwood were expected to be higher; second, response rates were lower in 2011 than they had been in 2004, which further depressed the yield.

2.2 The Refreshment Sample

The refreshment sample in 2011 was selected as a stratified random sample from the Inter Departmental Business Register (the IDBR) which is maintained by the Office for National Statistics. The IDBR is acknowledged to be the highest-quality sampling frame for workplace surveys in Britain. The sampling unit was the IDBR 'local unit' which, in most instances, corresponds with the WERS definition of a workplace set out in Section 1 above (i.e. 'the activities of a single employer at a single set of premises').

A sample of 4,848 local units was selected from the IDBR in July 2010. The sample was drawn from the population of local units with five or more employees, operating in Sections C-S of the *Standard Industrial Classification (2007)* and located within Great Britain. However, local units meeting these criteria were exempt from selection if they could be identified as having formed part of the issued sample for the WERS 2004 Cross-Section Survey, so as to avoid duplication between the 2011 refreshment and panel samples. A total of 2,569 of the 3,998 local units that formed part of the issued sample in WERS 2004 were identified, by matching their IDBR local unit reference numbers to the current IDBR population, and were excluded, leaving a total of 734,078 local units from which to draw the sample.

These 734,078 local units were categorised into the 153 strata and a simple random sample was drawn within each stratum. Sampling fractions varied across the strata in order to meet the specified targets. The sampling fractions were larger among local units with greater numbers of employees and higher than average within small industry sectors, most notably SIC (2007) Sections D and E.

The principle difference when compared with the approach used for the WERS 2004 Cross-Section sample was that the 2011 refreshment sample selected a higher proportion of the available local units in the smallest size band (5-9 employees), in order to meet the objective stated earlier of boosting the size of the achieved sample in this size band when compared with 2004.

2.3 The Combined Sample

The size and profile of the combined sample is shown in Table 2. The table also indicates the effective sampling fraction within each cell of the sampling matrix (i.e. the combined issued sample as a proportion of the total available population indicated on the IDBR in July 2010). These sampling fractions clearly indicate the extent of over-sampling among larger workplaces and within smaller industry sectors.

3 The development of the survey instruments

The development of the survey instruments began with the broad consultation conducted among existing and potential users of WERS between February and March 2010. BIS and Acas led one part of the consultation which sought views from across government and from social partners (including the TUC, CBI and CIPD). The Economic and Social Research Council led a parallel consultation among academic users. One of these consultations was to identify questions that could either be deleted or streamlined within the Management and Worker Representative Questionnaires, so as to bring the average length of those interviews down by around 25% to 90 and 30 minutes respectively. That was achieved. The objective of the other consultation was to identify new priorities for inclusion in the survey. Some of the main proposals that were adopted were: the addition of new questions to the MQ, WRQ and SEQ to cover the impact of the recession; the addition of a question to the EPQ on the nationality of the workforce; and the addition of questions to the SEQ on the receipt of performance-related pay and on religion and sexual orientation. The consultation concluded in April 2010 and a report was published summarising the outcomes (McConaghy et al, 2010).

Draft questionnaires were then developed and all new or substantially revised questions were cognitively tested in May 2010 by the National Centre for Social Research, who had been engaged to undertake fieldwork for the 2011 survey (as they had for all previous WERS surveys). The main aim of cognitive testing was to look at the answer process, exploring how questions were understood and examining the judgment, recall and response processes respondents used in formulating their answers.

- Six face-to-face interviews were conducted with managers to test 11 questions in the EPQ. This work also tested the presentation of key concepts of the study (workplace, employees);
- Fourteen face-to-face interviews were conducted with managers to test 48 questions in the MQ;
- Nineteen employees were interviewed face-to-face, to test 15 questions in the SEQ;
- Nine face-to-face cognitive interviews were conducted to test questions in the WRQ, five with union representatives and four with non-union representatives.

Findings from the cognitive testing contained detailed suggestions for improvements on each of the instruments.

A pilot survey was then carried out to test the full survey instruments and to test fieldwork procedures, including the processes for contacting respondents, making appointments and administering the questionnaires. The pilot was carried out in September 2010. A total of 28 workplaces were surveyed across five areas of Britain: London, Norfolk, Wiltshire, Shropshire and North Yorkshire. The sample was drawn from an agency-supplied list of workplaces of varied sizes and sectors. Again, the findings from the pilot survey included detailed suggestions for changes to the instruments and identified a number of areas where fieldwork processes could be improved.

Finally, a dress rehearsal was carried out in November 2010 with an aim of providing a final test of all instruments and fieldwork procedures. This included tests of the online versions of the EPQ, SEQ and FPQ and the telephone mode of the WRQ. The sample of 228 workplaces was drawn partly from the IDBR records to be used in the main stage survey (in fact, using this source allowed the resulting interviews to be included in the main data) and partly from agency-supplied leads. A total of 45 MQ interviews and 7 WRQ interviews were conducted. Five FPQs and 107 SEQs were returned within the time allowed for the dress rehearsal. Minor revisions were made to the instruments and fieldwork procedures as a result.

4 Fieldwork and response

Fieldwork for the survey was conducted between March 2011 and June 2012. MQ interviews were achieved in steady numbers throughout the fieldwork period. Overall 64% had been conducted before the end of December 2011 (i.e. within the 2011 calendar year) and 73% had been conducted by the end of January 2012 (i.e. within 12 months of the start of fieldwork). The date of the interview is recorded on the MQ dataset. The various stages of fieldwork are described below; a summary of fieldwork outcomes and response rates is also provided.

4.1 The contact phase

The first stage of fieldwork was to contact the sampled workplace in order to seek an appointment to conduct the management interview. The 2011 survey followed the practice adopted at the later stage of the 2004 study so the responsibility for making the first contact with workplaces and making appointments was assigned to a Central Contacting Team (CCT) of dedicated, experienced telephone interviewers. Once appointments had been made, these were then allocated to a team of field interviewers; refusals and cases where workplaces proved to be ineligible were recorded within the CCT. Cases typically took many weeks to resolve. In cases where the CCT was ultimately unable to contact the workplace, the case was released to field interviewers in the expectation that a local field interviewer may have more success in contacting the workplace and pursuing an interview appointment themselves.

As in previous WERS surveys, the sample of workplaces was divided into two types, known technically as “waves”, each containing addresses from the panel and refreshment samples. ‘Wave One’ workplaces were either independent establishments that were not part of a larger organization or establishments for which gaining consent for participation in the survey was considered to be possible, in the view of the research team, without the workplace manager referring the decision to a higher level in the organization. These addresses were issued directly to the CCT.

Establishments that were part of a larger organizations in which experience suggested that there was little prospect of an interviewer obtaining an interview without prior approval from the Head Office, were classified as ‘Wave Two’ workplaces. These were typically workplaces belonging to: central government departments; police, fire and ambulance services; utilities; transport, telecommunications and postal services; and large organisations in financial services and retail. Overall 28 per cent of workplaces in the issued sample were classified to Wave Two. For these cases, an approach was first made to the senior human resources or personnel director at the head office of each organization to outline the purpose and features of the survey. This person was asked to provide contact details for a local manager at each of the workplaces in their organisation that had been selected to take part in WERS. In the event, the Wave Two process – which had met with some challenges in 2004 – faced

considerable obstacles in 2011. Instances where the CCT could not make any contact with a head office respondent were more common than in previous surveys and, in cases where they did manage to make contact, refusal rates were higher. The problems were particularly acute in the finance sector. In many of those cases where no head office contact could be established, workplaces were eventually moved into Wave One so that a direct approach to the workplace could be attempted, although the remaining fieldwork time available for doing so was necessarily limited.

4.2 Data collection

A total of 120 interviewers were briefed to work on WERS 2011; this was lower than the 184 interviewers briefed to work on WERS 2004, as it was thought preferable to have fewer interviewers that each worked on a higher number of cases, since interviewers build up valuable experience through the course of fieldwork. Alongside the briefing, a comprehensive instruction manual and separate glossary of terms was provided (NatCen, 2011a).

Interviewers visited participating workplaces in order to: collect data from the paper EPQ; undertake the management interview; undertake interviews with worker representatives where applicable; and to initiate the distribution of the FPQ and SEQs. The content and administration of these instruments is summarised below; a copy of each questionnaire is available from the GOV.UK website.³

4.2.1 The Employee Profile Questionnaire (EPQ)

The EPQ contains a total of 16 questions which collect key information about the size and structure of the workforce at the workplace. These questions ask about the numbers of staff in specific categories, including occupational groupings, part-time versus full-time work, age groups and pay bands. Some of this information is used to route the management respondent through the MQ (e.g. routing them around questions asked about union membership if they have reported on the EPQ that the workplace has no union members).

The EPQ was provided to the management contact prior to the management interview. WERS 2011 was the first in the series to offer an online option alongside the paper version. Login information was provided on the front of the paper questionnaire and, where an email address was available for the management respondent, a direct link to the online questionnaire was sent. Where an online EPQ was completed, the information was fed into the computerised interview program before interviewers attended the management interview; in all other cases, the information was inputted from the paper form by the interviewer at the start of the management interview.

The EPQ was only partially completed in some cases; however an answer had to be provided at Question 1 (ZALLEMPS) in order for a management interview to proceed. Some Wave 2 organisations completed their workplace EPQs centrally in order to reduce the burden of the survey on local managers.

4.2.2 The Management Questionnaire (MQ)

The Management Questionnaire is the hub of WERS and – along with Question 1 on the Employee Profile Questionnaire – is the one required element for a workplace to count as having participated in the survey. The topics covered in the questionnaire are set out in the

³ See: <https://www.gov.uk/government/publications/the-2011-workplace-employment-relations-study-wers>

table below. In each section, question names begin with the letter indicated in the first column of the table.

Z	Employee Profile Questionnaire (EPQ)
A	Workplace and organisation characteristics: This section is used to classify workplaces into different categories, on the basis of industry sector, private/public ownership, whether part of a larger organisation and so on. A small batch of questions asks the manager about their attitudes to issues such as employee consultation.
B	Management of personnel and employment relations: This section looks at the types of management structures and processes that exist within the workplace to manage employment relations issues.
C	Recruitment, training and organisation of work: This section considers how vacancies are filled, while questions on training cover induction and specialist training. Questions are also asked about how work is organised for the largest occupational group.
D	Consultation and communication: This section investigates the methods used to communicate with employees, and which issues are the subject of consultation.
E	Representation at work: This section explores the extent to which employees organise themselves collectively in their dealings with management, for example, through trade unions or staff associations.
F	Payment systems and pay determination: This section looks at a range of issues relating to pay setting, including variable-pay schemes, job evaluation schemes, pay settlements, other entitlements and appraisal schemes.
G	Collective disputes and procedures: This section looks at collective disputes that arise at the workplace.
H	Grievance and disciplinary procedures: This section covers disputes that affect individual employees, usually referred to as grievances.
I	Fair treatment at work: This section includes questions on equality and diversity, flexible working practices and health and safety issues.
J	Workplace flexibility: This section covers a broad range of working arrangements which depart from the standard open-ended, full-time employee contract. These include the use of sub-contractors, agency workers, fixed-term employees, and freelance and home workers.
K	Workplace performance: This section explores the commercial environment in which the workplace operates. It looks at how the workplace monitors its own performance, examining such things as quality of goods or services and whether any targets are set.

L	Workplace change: The last substantive section looks at changes that may have occurred at the workplace over the past two years. It also asks whether the workplace has been affected by the recession.
M	General information: A short section which includes a general question about the climate of employment relations at the workplace, plus a small number of questions which facilitate the administration of the WRQ and FPQ.

4.2.3 The Worker Representative Questionnaire (WRQ)

Up to two worker representatives were eligible for the Worker Representative Questionnaire (WRQ) at each workplace:

- A representative of a trade union. The representative selected would be the most senior representative of the largest recognised union (in terms of members at the workplace), or where there was no recognised union, the most senior representative of the largest non-recognised union.
- A non-union representative. The representative selected would be the most senior non-union representative sitting on the Joint Consultative Committee that covered the widest range of issues or, if there was no JCC, a stand-alone non-union representative.

The number of worker representative interviews that were sought could therefore be two, one or none, depending upon which structures for employee representation were found to be present at the workplace during Sections D and E of the MQ (specifically at questions: ESTEWARD, EOTHUREP, DISSUES, EUJCC and EOTHREPS). The coverage of the WRQ is set out in the table below.

A	Background Information: This section asks for background information about the worker representative being interviewed, including their occupation and the types of issues they deal with as a representative at the workplace.
B	Structure of Representation at Workplace: This section contains questions about representation at the workplace including how the worker representative was appointed and the presence of other representatives.
C	Joint Consultative Committees: This section asks about the issues JCCs discuss and the regularity with which they meet, as well as other informal meetings with management.
D	Negotiation, Consultation, and Information Provision: This section examines the representatives' role in decisions that are made about pay and working conditions.
E	Role of Employee Representative: In this section, respondents are asked how they communicate with the employees they represent and about any training they may have received for their representative role.
F	Collective Disputes and Procedures: Respondents are asked whether any collective disputes over matters such as pay or working conditions, have taken place in the last 12 months.
G	Workplace Change, Grievance and Disciplinary Procedures: This section begins with questions about the involvement of representatives in any changes that have occurred at the workplace over the past two years. It then asks how individual employees go

	about resolving disputes or grievances, and about disciplinary procedures and dismissals.
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WERS 2011 was the first in the series to allow interviewers to carry out WRQ interviews via telephone as well as face-to-face. This mode option was introduced in an attempt to make assignments more efficient, as it was often the case that WRQ contacts could not be interviewed on the same day as the MQ. As far as possible, questions were redesigned to reduce the reliance on showcards, although some showcards were still required and these were provided to worker representative respondents by leaving copies at the workplace after the management interview, posting them or emailing them.

4.2.4 The Financial Performance Questionnaire (FPQ)

The Financial Performance Questionnaire (FPQ) gathered financial detail about the workplace (or about the performance of the whole organisation where workplace-level data was not available). The FPQ was offered as a paper questionnaire or online and was given to the management respondent at the end of the MQ interview, either for them to complete or for them to pass on to someone else who would be able to provide the necessary detail. All workplaces had been eligible for the FPQ in 2004 but, as the data collected from public sector workplaces was rarely used, the 2011 questionnaire was issued only to workplaces in the trading sector (ASTATUS1<=8). Non-respondents received two reminders, both of which included a blank FPQ in case the original had been misplaced.

4.2.5 The Survey of Employees Questionnaire (SEQ)

The Survey of Employees Questionnaire (SEQ) was administered to up to 25 staff at each workplace. The manager was asked at the end of the management interview whether it was permissible to distribute SEQs among employees at the workplace. If they agreed, 25 employees were selected at random by the interviewer from a list of all employees at the workplace, provided by the management respondent. If the workplace had 25 or fewer employees, all were selected to participate. Paper questionnaires were left for distribution to each selected employee. Login details were provided on a label on the front of the personally-addressed paper questionnaire, so that employees could choose to complete the questionnaire online if they wished. Freepost envelopes were provided so that those wishing to complete the paper questionnaire could return it directly to NatCen.

Particular attention was paid to the format and layout of the paper SEQ to make it easy to complete. The questionnaire was made available in the eight most common languages other than English. Translated questionnaires were provided in response to individual requests from workplace managers or in response to telephone calls made by employees to a freephone number.

The SEQ had a three-stage reminder process. Where no responses were received from a workplace after 3 weeks, it was assumed that the questionnaires had not been distributed by the workplace contact, and a reminder pack containing further copies of questionnaires for all selected employees was sent to the contact. Subsequent to this, two reminders were sent to individual employees, including via email if the email address of the selected employee had been provided at the point of sampling.

4.3 Fieldwork outcomes and response rates

This section presents information on the numbers of productive cases for each instrument, along with information on the response rate for each instrument among cases that were found to be eligible.

4.3.1 The EPQ and MQ

From the issued sample of 7,134 workplaces, a total of 2,680 workplaces generated productive EPQs and MQs. This represents an overall yield of 38%, with a further 19% of workplaces proving to be ineligible or otherwise out-of-scope, and 44% being eligible but choosing not to participate in the survey (see Table 3). The overall response rate for the combined sample was therefore 46%.

Productive interviews were obtained from 989 workplaces in the panel sample and from 1,691 workplaces in the refreshment sample. The yield was higher within the panel sample (43%) than within the refreshment sample (35%), primarily because of a higher response rate among panel workplaces (52% compared with 43%). (Workplaces in the panel sample were expected to be more predisposed towards responding by virtue of having already participated in WERS 2004.)

The rules for determining ineligible cases also necessarily differed between the panel and refreshment sample. Workplaces in the refreshment sample were eligible for interview if they: (i) had 5 or more employees when contacted to participate in WERS 2011; and (iii) were also located in SIC(2007) Sections C-S at that time. As noted in Section 2.1, panel interviews had to meet the additional criteria that they had participated in the WERS 2004 cross-section survey and continued to have at least one employee at all times between 2004 and 2011. Any workplaces that did not meet these criteria were ineligible for interview and were recorded as being 'out of scope'. Changes of address, ownership or activity between 2004 and 2011 were all permitted in the panel. Efforts were made to trace establishments that had moved to a new address or to accommodate organisational changes in even the most substantial ways between the two time points.⁴

In the refreshment sample, the most common reason for being out of scope was that the workplace had fewer than 5 employees at the time of interview; in such cases the employment figure on the IDBR was either incorrect at the time of sampling, or out of date by the time of interview. In the panel sample, the most common reason was that the workplace had closed down between 2004 and 2011. Some 176 (7.7%) of the 2,295 workplaces that were interviewed as part of the WERS 2004 Cross-Section had closed down by 2011. The collection of detailed outcomes data for each of the issued panel workplaces makes it possible for analysts to use the data collected in 2004 to search for systematic differences between the HR practices of workplaces which closed down and those which survived.

Response rates for the EPQ/MQ were notably lower in 2011 than they had been in 2004. A direct comparison can be made between fieldwork outcomes in the 2011 refreshment sample and those obtained in the 2004 Cross-Section Survey, since the latter was conducted on a wholly fresh sample drawn from the IDBR (as noted earlier, the panel survey in 2004 was an entirely separate exercise). In 2004, 53% of the initial sample of 4,293 cases yielded productive EPQs and MQs, 16% were out-of-scope and 30% were eligible but unproductive; this gave a response rate of 64%, compared with a response rate of 43% in 2011 as noted above (also see Table 3). A similar comparison for the panel survey is complicated by the fact that the 1998-2004 panel survey was conducted only among workplaces with 10 or more employees, but if one looks at this subset of the 2004-2011 panel the principal difference is a higher response rate in 2004 (77%, compared with 52% in 2011) rather than an increase in the proportion of ineligible workplaces. Section 6 includes a

⁴ Detailed rules were developed in WERS 2004 to determine how the 'continuing workplace' should be defined in the cases of amalgamations or splits. These are reproduced in Section 2 of the full WERS 2011 Technical Report.

discussion of how any observable non-response biases were addressed during the development of the survey weights.

The decline in response rates between 2004 and 2011 continues the decline seen between the 1998 and 2004 surveys. This trend is not unique to WERS and declines have been seen in surveys of many different populations and those using various approaches to data collection. It is not possible to be definitive about the reasons for the decline, but factors which affect many social surveys, such as a reduced sense of obligation to participate in government-sponsored research, greater reluctance to provide potentially sensitive data and research saturation due to market research may all be relevant. There may also be some factors that are more specific to WERS 2011: a number of those contacted to take part indicated that participation in the survey would be impossible or inappropriate in a time of economic uncertainty, particularly where the workplace had experienced redundancies or restructuring.

Where management interviews were successfully achieved, they averaged 87 minutes in length. This compared with an average of 118 minutes in WERS 2004. The duration of the interviews rose with the size of the establishment.

Some management interviews were conducted off-site with managers who did not work at the sampled workplace. This occurred in cases where the only person with a good overview of employment relations issues at the workplace was located in a regional office or head office. In total, 386 (14%) of the 2,680 management interviews were conducted with an off-site manager. The corresponding figure in 2004 was 16%.

4.3.2 The WRQ

Eligible employee representatives were present at 1,339 of the 2,680 workplaces which generated productive EPQ/MQs. Some 1,153 workplaces had eligible union representatives and 415 had eligible non-union representatives (229 workplaces thus had eligible reps of both types).

Among the 1,153 workplaces that had an eligible union representative, 797 workplaces generated a productive interview, giving a response rate of 69% among union representatives. Among the 415 workplaces with an eligible non-union representative, 205 generated a productive interview, giving a response rate of 49% among non-union representatives. Among the 229 workplaces with eligible union and non-union representatives, interviews were obtained with both types of representatives in 82 workplaces (36%).

In 2004 the response rates were 83% for union reps and 77% for non-union reps. As in 2004, the most common single reason for failing to obtain employee representative interviews in 2011 was the refusal by management to agree to interviewers approaching the employee representative. However there were also a substantial number of cases in 2011 where the representative was either never available or could not be contacted, including some cases where managers reported that a representative structure was present but no individual could be identified who had responsibility for taking on that representative role at the workplace.

A total of 337 worker representative interviews were conducted in panel workplaces in 2011 (comprising interviews with 266 union representatives and 71 non-union representatives). In the refreshment sample, a total of 665 worker representative interviews were conducted (comprising interviews with 531 union representatives and 134 non-union representatives).

Employee representative interviews in 2011 averaged 30 minutes in length, compared with an average of 50 minutes in 2004. In total, 26% of WRQ interviews were carried out via telephone.

4.3.3 The FPQ

A total of 1,941 workplaces were eligible for the Financial Performance Questionnaire by virtue of the management respondent having categorised the workplace as belonging to the trading sector (ASTATUS1<=8) in the MQ. The management respondent allowed the interviewer to leave an FPQ in 1,713 (88%) of these workplaces. Useable data was provided for 545 of these workplaces, representing an overall response rate of 28%. The total of 545 includes four cases where a responding workplace provided enterprise-level data in their FPQ and, after fieldwork was complete, this could be transferred across to a non-responding workplace from the same enterprise. Some 200 FPQs were returned by panel workplaces and the remaining 345 by workplaces in the refreshment sample.

To compare response to 2004, it is necessary to look only at those FPQs issued in trading sector workplaces in 2004. This results in a total of 792 productive FPQs from a total of 1,757 eligible workplaces. This represents a response rate of 45 per cent. It is likely that the economic climate contributed to the lower levels of response in 2011, along with the types of factors also cited above in respect of the MQ, including concerns over the release of sensitive data and pressures on managerial time.

4.3.4 The SEQ

Managers gave permission for interviewers to select a sample for the SEQ in 2,170 workplaces (81%). Interviewers then placed a total of 44,371 SEQs in these workplaces and a total of 21,981 questionnaires were returned, giving a response rate of 50% among all sampled employees. However 247 workplaces returned no questionnaires at all, it is possible that the 3,858 questionnaires which interviewers left for distribution at these workplaces did not ever reach the sampled employees. If one assumes that these questionnaires were not distributed, then the response rate among employees who are assumed to have received a questionnaire is 54%.

In 2004 managers gave permission for interviewers to select an SEQ sample at 86% of workplaces. The response rate among all issued questionnaires was 54% and, among those questionnaires that were issued in workplaces where at least one SEQ was returned, the response rate was 61%. Response rates were therefore lower in 2011 than in 2004, but they did not fall as sharply as for the MQ or WRQ.

A total of 8,821 SEQs were returned from panel workplaces and the remaining 13,160 were returned from workplaces in the refreshment sample. In the combined sample, a total of 1,755 workplaces generated three or more SEQ returns, 1,109 workplaces generated SEQ response rates of over 50% and 1,150 workplaces generated SEQs from more than 10% of the total workforce.⁵

4.3.5 Permission to link to other datasets

Among the 2,670 management respondents who completed an MQ in 2011, some 2,477 (93%) gave their consent for authorised researchers to link the data collected from their workplace to that collected in other surveys and datasets (question MLINKDAT). Consent was given for 926 (94%) of the 989 panel workplaces and for 1,551 (92%) of the 1,691 workplaces in the refreshment sample.

⁵ The threshold of 10% is commonly acknowledged as the point at which the finite population correction begins to substantively reduce the standard error associated with any survey estimate.

5 Coding and editing

Coding and editing of the data was carried out by NatCen's data processing team, with continuous involvement of researchers from NatCen as well as the sponsoring organizations.

The first stage of the editing procedure involved NatCen's editing team coding the responses to all open-ended questions. For example, ASIC in the MQ, which asks the respondent to describe the industrial activity of the workplace, ZSOCDESC in the MQ, which asks the respondent to describe the tasks undertaken by employees in the largest occupational group at the workplace, and questions E8-E10 in the SEQ, which ask employees to describe the tasks undertaken in their own job. Industrial activity was coded to SIC(2007) and conversion tables were used also to assign the closest equivalent codes from SIC(2003), SIC(1992) and SIC(1980). Occupation was coded to SOC(2010) and a conversion table was used to assign the closest equivalent codes from SOC(2000).

In this first stage of editing, coders also assigned numeric codes to the responses given at all semi-open questions (i.e. those questions which gave the respondent the opportunity to provide a verbatim answer if a situation arose that was not reflected in one of a set of pre-specified response options). The frames for coding answers to these semi-open questions were typically derived from those used in 2004, with some revisions or additions being made by the WERS research team where necessary. On the survey datasets, all codes assigned to semi-open questions during this post-fieldwork coding process are stored in variables prefixed by the letter 'X' (e.g. XFSOC1 holds the numeric codes assigned from the verbatim responses given to question FSOC1 in the MQ).

The second stage of the editing procedure mainly involved attempts to resolve a series of automated checks which sought to identify internal inconsistencies in the survey data (e.g. an EPQ in which the sum of all full-time and part-time staff cited at Question 2 did not equal the total number of employees recorded at Question 1). The main tasks of the editors in such instances were to check that any information on the paper EPQ had been entered accurately into the interviewer's laptop and to look for any interviewer notes that might explain why some answers may be internally inconsistent. Issues which could not be resolved by NatCen's editing team were referred to Stage 3.

The third stage of the editing involved researchers at NatCen trying to resolve any outstanding queries from Stage 2, and also trying to resolve an additional series of 57 automated checks which sought to identify unusual patterns of data in the EPQ, MQ, WRQ and FPQ. One example was a check which identified large discrepancies between the number of employees recorded for the workplace on the IDBR and the number reported by the management respondent on the EPQ, which might point to a mistake in identifying the correct workplace for interview. Another check examines cases where a management respondent in the private sector had reported at FSOC in the MQ that a group of employees had their pay set by an Independent Pay Review Body, which might point to a misunderstanding on the part of the respondent or a keying error on the part of the interviewer.

Detailed rules were developed for resolving the Stage 3 checks, which sometimes led researchers to edit the interview data in cases where the nature of the error or misunderstanding was clear. In other cases, it was necessary to try to re-contact the respondent in order to clarify some details. The most difficult cases were referred to the WERS research team to attempt a resolution. After the Stage 3 edit a small number of interviews were deleted in instances where it was determined that the interview had been undertaken at the

wrong workplace or with an ineligible respondent.⁶ There still remained a number of cases in which it was not possible to determine with certainty whether a set of responses were valid. These cases are flagged in the dataset through the use of 'overcodes' so that analysts can consider whether those cases should be included within their analyses. Overcodes in the MQ dataset are named XCODE1 to XCODE8, those in the WRQ dataset are named XCODE10 to XCODE13 and those applying to panel workplaces specifically are named PXC001 to PXC012.

A complete list of edit checks is provided in the various editing codebooks (NatCen, 2011b; NatCen, 2011c and NatCen, 2011d). A complete list of overcodes is provided in the full Technical Report (Deepchand *et al*, 2013).

6 Weighting

When drawing a simple random sample, each member of the population has the same probability of selection and so, in the absence of non-response biases, the achieved sample will inevitably resemble the population from which it was drawn. However, as noted in Section 2, the WERS sample design purposefully gives an above-average probability of selection to larger workplaces and those from less populated industries. As a consequence, the profile of the issued sample of workplaces is out of kilter with the population at large, since large workplaces and those from small industries are proportionately over-represented.

Similarly in the employee survey, once an employee's workplace has been selected to participate in WERS, a member of staff in a small workplace has a higher probability of receiving an SEQ than an employee in a large workplace (since questionnaires were distributed to all employees in workplaces with 5-25 employees and to only 25 employees in larger workplaces). So employees from small workplaces are over-represented in the employee sample when compared with the population for the employee survey (i.e. all employees in workplaces participating in WERS).

On top of biases introduced purposefully as part of sampling, variable rates of non-response can also cause the achieved sample to depart from the population it is intended to represent. Weights broadly equal to $1/(\text{probability of selection \& response})$ are therefore devised in order to bring the profiles of the achieved samples of workplaces and employees into line with the profiles of the respective populations, thereby removing known biases introduced by the sample selection and response process. Failure to use the weights – either in univariate or multivariate analyses – will typically lead to biased estimates.⁷

In WERS 2011, weights were devised for each of the instruments (the EPQ/MQ, the WRQ, the FPQ and the SEQ). Separate sets of weights were devised for the panel sample and the combined sample. A third set of weights was also devised for the refreshment sample, but these were primarily derived for the purpose of evaluating the combined sample weights and will not typically be called upon during analysis. The weights derived for analysing the 2011 WERS data are summarised below. The derivation of those weights is described in more detail in the rest of this section.

Combined sample weights:

<i>ESTWTNRC</i>	The standard establishment weight to be applied to the cross-section combined sample of Managers.
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⁶ These cases are treated as either out-of-scope or unproductive in Section 4.

⁷ For further details see: <http://www.wers2004.info/FAQ.php#5>

<i>EMPWTNRC</i>	To be applied to the cross-section Survey of Managers when one wants to produce analyses reflecting the proportion of employees to whom a particular workplace characteristic pertains.
<i>SEQWTNRC</i>	Employee weight variable to be applied to the Survey of Employees.
<i>FPQWTNRC</i>	Weight to be applied to the data from the Financial Performance Questionnaire.
<i>WRQWTNRC</i>	Weight to be applied to the data for worker representatives from the Survey of Worker Representatives. This weight was derived from TUWTNRC and NTUWTNRC discussed in section 6.1.5.
<i>PAIRWTNRC</i>	Weight to be applied to the data from the Survey of Worker Representatives when responses from union reps are being compared with responses from non-union reps in the same workplaces.

Panel sample weights:

<i>PQWTNR</i>	Establishment weight to be applied to the Panel Survey.
<i>PQEMPWTNR</i> <i>TUWTNRP</i>	Employee weight to be applied to the Panel Survey Weight to be applied to the data for union representatives when comparing responses from 2004 to those provided in 2011 within panel workplaces that generated union rep interviews at both time points.
<i>SEQWTNRP</i>	Weight to be applied to the data from the Survey of Employees when comparing employees' responses from 2004 with those provided in 2011 within panel workplaces that generated SEQs at both time points.

6.1 The EPQ/MQ weights

The approach used to derive the EPQ/MQ weights necessarily differed between the refreshment sample, the panel sample and the combined sample.

6.1.1 The EPQ/MQ weights for the refreshment sample

The basic EPQ/MQ weight in WERS 2011 is computed as the inverse of the workplace's probability of selection from the sampling frame, adjusted to account for any observable non-response biases and then post-stratified so that the profile of the weighted sample of workplaces matches the profile of the population by workplace size and industry sector.

The first stage in the derivation of the EPQ/MQ weights for the refreshment sample involved the generation of sampling weights that corrected for the use of unequal sampling fractions (as described in Section 2). These sampling weights were calculated as the inverse of the workplace selection probabilities within each of the 153 cells of the sampling matrix. As in previous WERS surveys, there were a small number of occasions when the workplace

identified by the WERS interviewer in the field accounted for only one part of a single IDBR local unit, or was represented on the IDBR by more than one local unit. In these cases (40 in total), the sampling fraction was an inaccurate representation of their true probability of selection, which was computed manually. In addition, many workplaces (45%) were found at interview to be located in a different size or industry category to the one suggested by the IDBR. Since data analysis is conducted using interview-defined size and industry categories, this could lead to the weights being highly variable within individual size and industry categories, which can inflate standard errors and potentially increase the mean square error. In order to reduce this variability, the achieved sample was tabulated by interview-recorded size and industry and any sample-selection weights that were three times smaller/larger than the expected weight for each stratum were trimmed back to that limit.

The second stage involved the derivation of adjustment factors to account for observable non-response biases. Non-response weighting had not been undertaken for the EPQ/MQs in previous WERS surveys, but the declining response rate made it important to include this element in 2011. Non-response behaviour was modelled using a logistic regression model where the predictors were a set of workplace characteristics taken from the IDBR. The variables significantly related to non-response of the establishment to the EPQ/MQ were: industry sector, workplace size, region, legal status, the number of sites operated by the enterprise to which the workplace belongs and whether the workplace was a Wave 1 or Wave 2 workplace.⁸ The model was used to generate predicted probabilities of response, the inverse of which were used to generate non-response adjustments to the sampling weights.

The final stage of the weighting involved the calculation of post-stratification adjustment factors which brought the weighted profile of the achieved sample by industry and employment size (as measured in the WERS interview) into line with the profile of the population (as indicated by the IDBR and shown in Figures 1 and 2). The primary purpose of the post-stratification was to account for the comparatively low yield among local units with 5-9 employees on the IDBR. This low yield is thought to be caused by inaccuracies in IDBR-recorded employment for small units, leading to higher than anticipated out-of-scope rates and a large degree of migration from this size band to other size bands. In the absence of post-stratification, the weighted sample of workplaces from WERS 2011, when tabulated using interview-recorded employment, would have appeared to under-represent workplaces with between five and nine employees, in comparison with population data from the IDBR.

6.1.2 The EPQ/MQ weights for the panel sample

The EPQ/MQ weights for the panel sample needed to account for the sample design used in the WERS 2004 cross-section, plus any observable non-response biases that were apparent when attempting to follow up these workplaces in 2011. The panel cases did not require any additional selection weights as all but nine of the 2,295 cross-section cases from 2004 were issued as panel cases for 2011.

A logistic regression model was fitted to predict response among panel cases found to be in-scope at the time of the 2011 interview. The predictors comprise a range of data items collected during the MQ survey in WERS 2004. Factors that were significantly related to non-response of panel cases to the 2011 survey were: industry sector, workplace size, region, legal status, the nature of the largest occupational group, union presence, Investors in People accreditation, the manager's rating of the quality of employment relations at the workplace (MRELATE) and whether the workplace was a Wave 1 or Wave 2 workplace. The non-response weight was trimmed to remove a small number of extremely large weights.

⁸ The complete non-response model is shown in Section 6 of the full Technical Report, as are all other non-response models mentioned in the remainder of this section.

The final panel EPQ/MQ weights (named PQWTNR) were then derived as the cross-product of these trimmed 2011 non-response weights and the 2004 cross-section EPQ/MQ weights (the latter component already includes a correction for unequal selection probabilities in 2004).

6.1.3 The EPQ/MQ weights for the combined sample

WERS 2011 was designed with the aim of combining the panel and refreshment samples of establishments so that, together, they are representative of the cross-section population of establishments in 2011. This cross-sectional population comprises workplaces that were in-scope for 2004, have continued in existence through to 2011 and are in-scope in 2011 ('continuing workplaces') and workplaces which have joined the population since that time. The panel sample is comprised wholly of continuing workplaces. The refreshment sample contains both continuing workplaces and joiners.

Two possible approaches were considered to computing establishment weights for the combined sample. The first, and probably the most intuitive method, is to calculate the weights for the panel and refreshment samples as discussed above, and then to add the two samples together and scale the 'continuing workplaces' (panel and refreshment) so that they are in correct proportion to the non-continuing. An alternative approach is to treat all workplaces (panel and refreshment) as being drawn at random, and with known probability, from the same underlying population. Weights are then calculated to make the combined sample representative of the cross-sectional population in just one step, with the weight per establishment being the inverse of the probability of selection. This approach was preferred as it gives less variable weights. This is because all 'continuing workplaces' that had N employees on the IDBR in 2004 and N employees on the IDBR in 2011 would be given the same weight in the final combined sample, irrespective of whether they were part of the panel or the refreshment sample.⁹

The probability of selection for each establishment was calculated as:

$$p(\text{selected for 2004 cross-section \& selected for 2011 panel sample}) + p(\text{selected for 2011 refreshment sample})$$

As no overlap has been permitted between the 2004 cross-section and the 2011 refreshment sample, this equates to:

$$p(\text{selected from IDBR in 2004}) * p(\text{selected for 2011 panel}) + (1 - p(\text{selected from IDBR in 2004})) * p(\text{selected from IDBR in 2011})$$

This probability holds for both the panel and refreshment samples. The first term in the probability would, of course, be zero for the 'non-continuing' workplaces in the refreshment sample.

This approach does require one to know (or at least, to closely estimate) the 2004 IDBR employment size and 2004 IDBR industry sector of all workplaces in the WERS 2011 refreshment sample, so as to be able to compute for these workplaces the probability of being selected for the 2004 cross-section and the 2011 panel. These 'historical measures' were derived by matching each workplace in the refreshment sample to an archived copy of the IDBR from 2004. For those workplaces that could not be matched to the 2004 IDBR, we used the retrospective employment data collected at Question 16 in the EPQ (we further assumed that industry sector was unchanged between 2004 and 2011).

⁹ One consequence is that a panel workplace has a different weight when used as part of the combined sample than when one is simply analysing the panel sample on its own.

We then followed the steps outlined in the approach to weighting the refreshment sample, but applying those steps to the combined sample. We made adjustments for aggregate/partial units and trimmed extreme selection weights, applying the same rules. The continuing and new workplaces were trimmed separately, since continuing workplaces will have smaller selection weights (as they had a higher chance of selection). The panel element of the sample was then adjusted for non-response bias using a logistic regression model. The refreshment element of the combined sample was adjusted for non-response bias by utilising the response propensities from refreshment-only model discussed in Section 6.1.1 above.¹⁰ The final step was to post-stratify the combined weight to the 2011 population totals given in Figures 1 and 2. The final weight was named ESTWTNRC.

One risk in combining the panel and refreshment samples for analysis is that the samples of continuing workplaces provided by the panel and refreshment sample may not be found to be equally representative of the underlying population of continuing workplaces. In this case, the combined sample will yield different estimates for the cross-sectional population of workplaces in 2011 than if one had obtained those estimates from a completely fresh sample (the traditional approach taken in previous WERS surveys). This would introduce a substantive discontinuity to the WERS time-series. This issue was investigated by comparing the incidence of a selection of employment relations practices and workplace characteristics between the weighted combined sample and the weighted refreshment sample. The results are shown in Table 4. Among the 54 individual estimates, only one exhibited differences that were statistically significant at the five per cent level (the percentage of workplaces where at least 60 per cent of core employees got off-the-job training). We therefore judge that the use of a combined sample in WERS 2011 does not introduce a substantive point of discontinuity into the WERS cross-sectional time series.¹¹

6.1.4 Weights for producing employee-based estimates from the EPQ/MQ samples

The MQ interview records the number of employees who work at the establishment. This information was used to derive a weight for employee-level analysis, allowing one to identify the proportion of all employees who work in workplaces with a specified characteristic (e.g. the proportion of all employees who work in workplaces with a trade union). This weight is derived in both the combined and panel samples as the product of the final establishment weight and the total number of employees in the surveyed workplace. The combined sample employee-based weight is named EMPTWTNRC and the panel sample equivalent is named PQEMPWTNR.

6.1.5 The WRQ weights for the combined sample

The WRQ interviews in the combined sample received a weight based on the EPQ/MQ weight but adjusted for non-response biases arising from: (a) refusal of consent by the workplace manager; or (b) non-participation on the part of the union representative. Weights for the union and non-union representatives were derived separately (named TUWTNRC and NTUWTNRC respectively) but were grouped together in WRQWTNRC on the deposited dataset. Again logistic regression models were used to model non-response, with workplace characteristics from the 2011 EPQ/MQ serving as predictors. The characteristics significantly

¹⁰ This approach was taken because the combined-sample selection weights could not be computed accurately for non-respondents in the refreshment sample. This obstacle meant that it was not possible to weight the refreshment sample non-response model using combined sample selection weights. The response propensities from Section 6.1.1 were therefore used instead as they were known to recover the correct refreshment sample profile and would also reduce non-response bias in the refreshment element of the combined sample.

¹¹ Nonetheless the refreshment sample weights discussed in Section 6.1.1 are available on request from the WERS Research Team, if required.

related to non-response for union representatives in the combined sample were: workplace size; industry sector; whether the MQ respondent was located at the sampled workplace; the largest occupational group at the workplace; region and whether the workplace was a Wave 1 or Wave 2 workplace. The characteristics significantly related to non-response for non-union representatives in the combined sample were: region; industry sector; whether the MQ respondent was located at the sampled workplace; the manager's rating of the extent of trust with non-union representatives (ETRUSB3); and the manager's rating of the quality of employment relations at the workplace (MRELATE).

As noted in Section 4.3.2, a small number of workplaces have both a union and a non-union representative. The WRQ interviews in these workplaces were given an additional weight that takes account of non-response bias arising from the inability to secure both interviews. This weight (PAIRWTNRC) can be used when comparing the behaviour or experiences of union and non-union representatives in the same workplace.

A number of panel workplaces were eligible for union representative interviews in both 2004 and 2011 and a subset of these provided data from union reps at both time points. Again, the WRQ interviews in these panel workplaces were given an additional weight (TUWTNRP) that takes account of non-response bias arising from the inability to secure union rep interviews at both time points.

6.1.6 The FPQ weights for the combined sample

In common with the WRQs, the FPQs received a weight based on the EPQ/MQ weight but adjusted for FPQ non-response biases (FPQWTNRC). Again, a weight was derived only for the combined sample. The variables significantly related to response for the FPQ in the combined sample were: workplace size; industry sector; whether a branch site of a multi-site organisation; legal status; whether the MQ respondent was themselves a finance manager; whether the workplace kept records of its costs; whether the workplace was a Wave 1 or Wave 2 workplace; whether the workplace had returned an FPQ in 2004 (panel workplaces only); and region.

6.1.7 The SEQ weights for the combined sample

The returned SEQs in the combined sample received a weight based on the EPQ/MQ weight but adjusted for:

- (i) the probability that the workplace distributed the SEQs (estimated using a non-response model with predictors based data from the MQ);
- (ii) employee selection probabilities; and
- (iii) post-stratification to the population of all employees (as reported by managers) by gender.

The logistic regression model to predict non-response was carried out on data weighted by the final EPQ/MQ weight. The variables significantly related to distribution of the SEQs were: workplace size; industry sector; whether the MQ respondent was a professional HR manager or general manager; whether the workplace had a strategic plan covering employee issues; whether it was accredited as an Investor in People; the percentage of employees from ethnic minority groups; the nature of the largest occupational group; whether employees spent all or most of their time working at home; the manager's rating of

the quality of employment relations at the workplace (MRELATE); whether the workplace had returned any SEQs in 2004 (panel workplaces only); and region.

The employee selection probabilities were computed as:

$$\min(25, \text{number of employees})/\text{number of employees}$$

The numerator here takes account of the fact that, at workplaces with 25 employees or less, all employees were selected to participate in the SEQ.

The final post-stratification stage of the SEQ weighting sought to ensure that the percentage of male/female employees within the full weighted sample of SEQs matched the gender distribution of all employees reported via the EPQs in the weighted MQ data. The final weight is named SEQWTNRC on the deposited dataset.

A number of panel workplaces provided data from employees in both 2004 and 2011. The SEQ responses from these panel workplaces were given an additional weight (SEQWTNRP) that takes account of non-response bias arising from the inability to secure employee responses at both time points.

7 Sampling errors

The standard errors of survey estimates are affected by the sample design, particularly by the effect of sampling weights, clustering, and stratification. As described in Section 2, the WERS workplace samples are based on a *stratified* design with unequal selection probabilities per establishment (which are dealt with by applying sampling weights). The employee sample is clustered within participating workplaces. These factors (sampling weights, stratification and clustering) have to be taken into account when calculating standard errors (and, as a consequence, p-values and confidence intervals). Ignoring the sample design (i.e. assuming simple random sampling and taking into account only sample size and population variance) gives estimated standard errors that will be almost always too small.

Analysis suggests that ignoring the sample design will typically generate standard errors that are around two-thirds of their true size in the case of the EPQ/MQ data from the combined sample and around half of their true size in the case of the SEQ data from the combined sample.¹² However, this 'design factor' will vary from estimate to estimate. Most statistical packages are now able to accommodate these issues and it is recommended that analysts carry out all their analyses using complex-sample methods to provide unbiased estimates with design-adjusted standard errors.

8 Accessing the data and further information

The survey data from WERS 2011 may be accessed with full documentation from the UK Data Service. The deposited data have been anonymised to protect the identity of individual respondents and participating establishments. Survey variables that would significantly increase the chance of a user being able to identify a participating workplace have also been withheld from this 'general purpose' dataset. These variables comprise the region in which the workplace was located, the detailed industry classification (beyond SIC Section level),

¹² The design factors for a selection of estimates are presented in Section 7 of the full Technical Report.

and all data from the Financial Performance Questionnaire. These data items are available in the secure dataset released through the Secure Data Service (SDS). The SDS version of the WERS 2011 data also includes the IDBR local unit reference number for each workplace, to facilitate matches to other business survey datasets.

Further information about 2011 WERS, including full questionnaires, the complete Technical Report, the First Findings report and key tables are provided on the GOV.UK website at: <https://www.gov.uk/government/publications/the-2011-workplace-employment-relations-study-wers>

9 References

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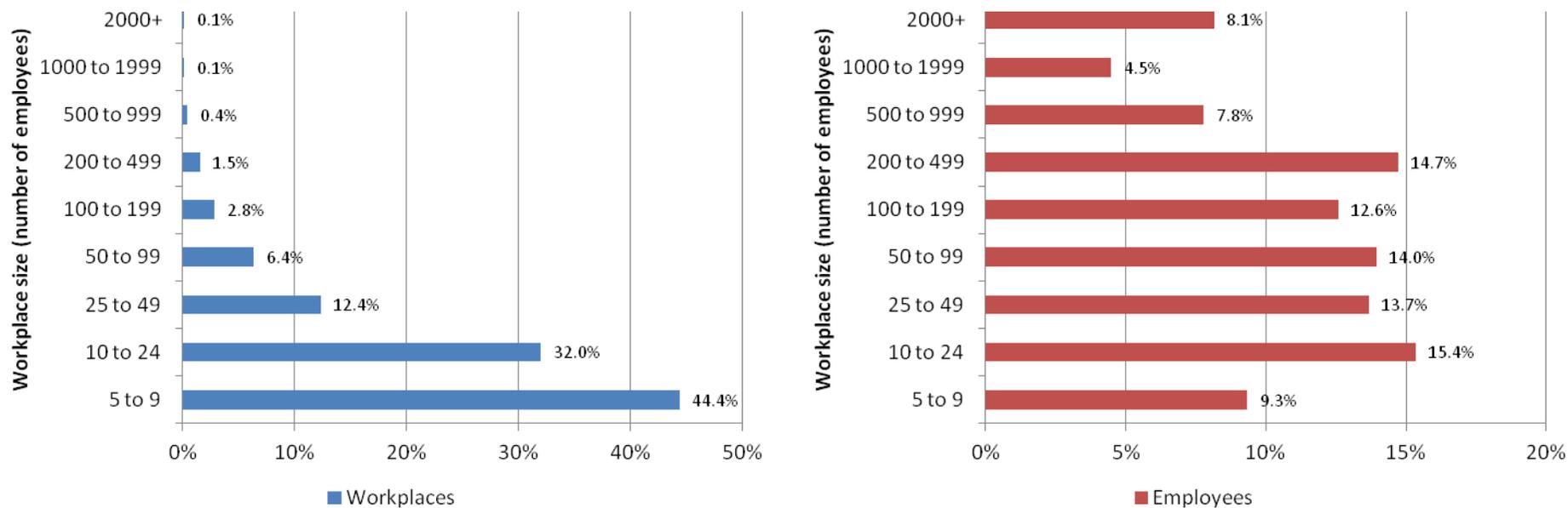
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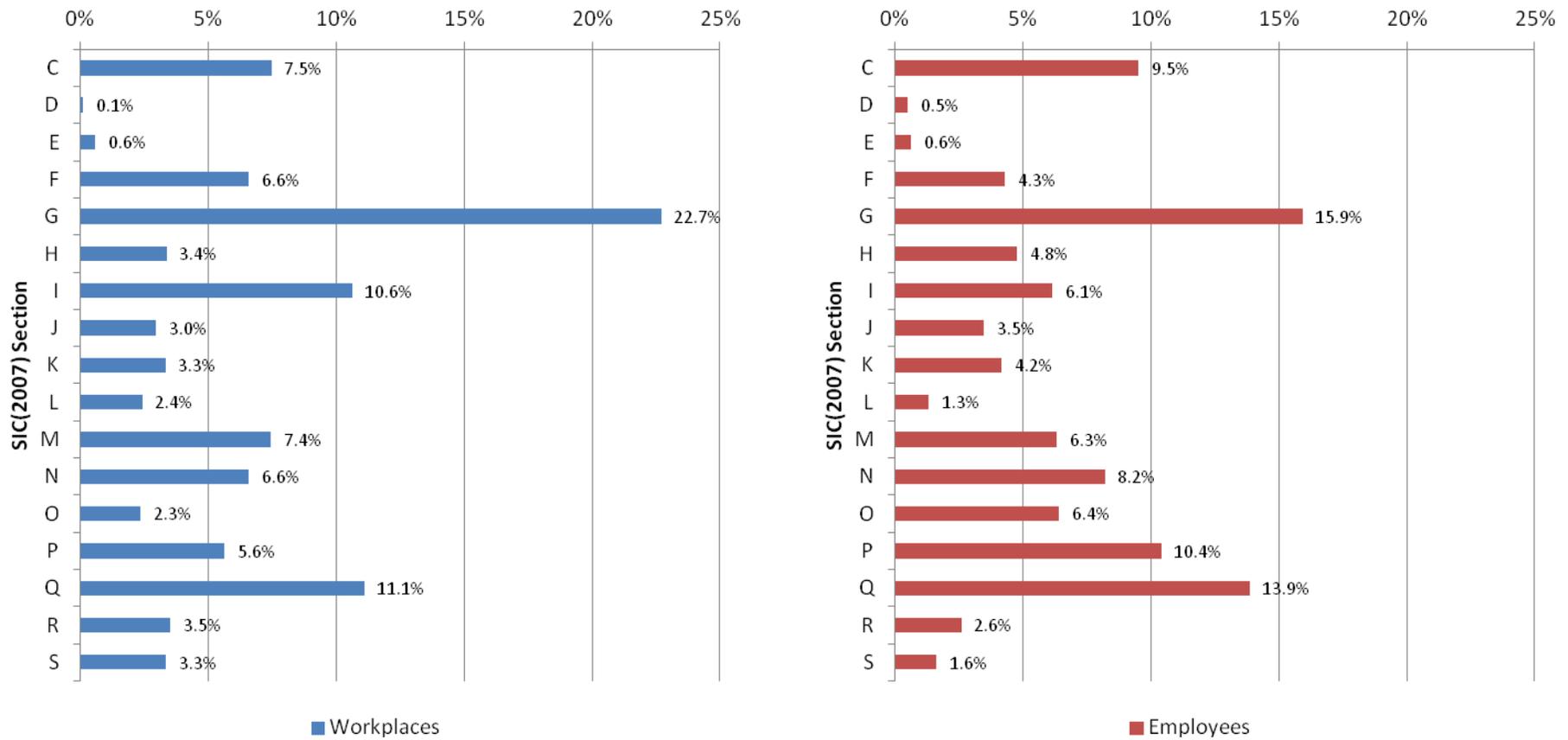
Figure 1: Profile of the population of workplaces and employment in 2010, by workplace size



Source: Inter Departmental Business Register, March 2010

Base: Local units in Britain with 5 or more employees, operating in SIC(2007) Sections C-S

Figure 2: Profile of the population of workplaces and employment in 2010, by industry sector



Source: Inter Departmental Business Register, March 2010
 Base: local units in Britain with 5 or more employees, operating in SIC(2007) Sections C-S

Table 1: Target profile for the combined sample after fieldwork

SIC (2007) Section	Number of employees									Total
	5-9	10-24	25-49	50-99	100-249	250-499	500-999	1000-1999	2000+	
C	20	25	29	32	36	39	25	13	9	229
D	3	5	7	14	22	20	9	3	2	85
E	7	12	16	17	15	15	3	0	0	85
F	25	19	16	15	13	11	5	2	1	108
G	83	74	57	46	40	58	27	9	3	398
H	9	11	13	17	18	20	13	10	6	116
I	36	39	33	21	13	6	3	3	0	155
J	10	9	9	10	11	14	8	7	5	85
K	11	12	9	8	9	14	15	15	12	104
L	26	16	10	11	10	8	3	0	0	85
M	26	24	20	18	18	19	14	12	6	157
N	22	19	18	25	32	33	19	20	12	199
O	4	7	11	16	20	36	28	23	12	157
P	7	15	44	50	55	35	15	11	16	248
Q	28	45	48	44	32	24	14	20	66	320
R	17	12	14	14	13	8	4	2	0	85
S	31	20	10	7	7	6	3	2	0	85
Total	365	365	365	365	365	365	210	150	150	2700

Note: size and industry are as observed on the sampling frame(s), rather than at interview.

Table 2: Profile of combined issued sample with effective sampling fractions

SIC(2007) on IDBR 2010	Number of employees at the local unit on IDBR 2010									Total
	5-9	10-24	25-49	50-99	100-199	200-499	500-999	1000-1999	2000+	
C	74 <i>1 in 272.1</i>	70 <i>1 in 247.3</i>	77 <i>1 in 102.5</i>	86 <i>1 in 52.9</i>	81 <i>1 in 29.8</i>	85 <i>1 in 15.8</i>	48 <i>1 in 7</i>	24 <i>1 in 2.6</i>	20 <i>1 in 1.7</i>	565 <i>1 in 95.7</i>
D	10 <i>1 in 15.4</i>	15 <i>1 in 13.3</i>	20 <i>1 in 7.4</i>	32 <i>1 in 4.4</i>	52 <i>1 in 1.9</i>	46 <i>1 in 1.3</i>	22 <i>1 in 1.6</i>	4 <i>1 in 3.3</i>	5 <i>1 in 1.6</i>	206 <i>1 in 4.2</i>
E	23 <i>1 in 66.7</i>	36 <i>1 in 38.8</i>	38 <i>1 in 17.8</i>	40 <i>1 in 10.4</i>	32 <i>1 in 5.3</i>	35 <i>1 in 2.5</i>	3 <i>1 in 5.7</i>	0	0	207 <i>1 in 20.8</i>
F	96 <i>1 in 268</i>	58 <i>1 in 236.9</i>	45 <i>1 in 95.4</i>	43 <i>1 in 51.1</i>	23 <i>1 in 37.9</i>	25 <i>1 in 14.1</i>	16 <i>1 in 3.6</i>	4 <i>1 in 1.8</i>	3 <i>1 in 1.3</i>	313 <i>1 in 151</i>
G	303 <i>1 in 282.4</i>	222 <i>1 in 246.8</i>	152 <i>1 in 103.8</i>	105 <i>1 in 62.6</i>	103 <i>1 in 26</i>	137 <i>1 in 14.6</i>	62 <i>1 in 6.1</i>	18 <i>1 in 2.2</i>	5 <i>1 in 2.2</i>	1107 <i>1 in 151.6</i>
H	35 <i>1 in 251.9</i>	38 <i>1 in 203.5</i>	38 <i>1 in 94</i>	43 <i>1 in 56.7</i>	36 <i>1 in 32.6</i>	44 <i>1 in 15.4</i>	31 <i>1 in 5.7</i>	19 <i>1 in 2.5</i>	16 <i>1 in 1.1</i>	300 <i>1 in 82.2</i>
I	127 <i>1 in 289.2</i>	126 <i>1 in 218.7</i>	90 <i>1 in 103</i>	45 <i>1 in 67.8</i>	33 <i>1 in 25.6</i>	17 <i>1 in 13.4</i>	7 <i>1 in 5.7</i>	5 <i>1 in 2.6</i>	0	450 <i>1 in 172.7</i>
J	38 <i>1 in 250.1</i>	31 <i>1 in 210.4</i>	25 <i>1 in 103.6</i>	26 <i>1 in 54.6</i>	17 <i>1 in 40.3</i>	32 <i>1 in 14.4</i>	17 <i>1 in 7.1</i>	13 <i>1 in 2.9</i>	11 <i>1 in 1.8</i>	210 <i>1 in 101.7</i>
K	37 <i>1 in 301.1</i>	38 <i>1 in 215</i>	17 <i>1 in 141.5</i>	24 <i>1 in 47.4</i>	19 <i>1 in 32.3</i>	25 <i>1 in 19.6</i>	37 <i>1 in 5.8</i>	29 <i>1 in 2.3</i>	30 <i>1 in 1.2</i>	256 <i>1 in 94.8</i>
L	99 <i>1 in 110.6</i>	53 <i>1 in 94.4</i>	25 <i>1 in 45.7</i>	27 <i>1 in 22.7</i>	22 <i>1 in 12.4</i>	25 <i>1 in 4.2</i>	7 <i>1 in 2.9</i>	0	0	258 <i>1 in 70.2</i>
M	105 <i>1 in 259</i>	73 <i>1 in 243.7</i>	52 <i>1 in 106.8</i>	34 <i>1 in 76.8</i>	42 <i>1 in 29.7</i>	36 <i>1 in 18</i>	25 <i>1 in 7.6</i>	25 <i>1 in 2.3</i>	15 <i>1 in 1.3</i>	407 <i>1 in 135.9</i>
N	52 <i>1 in 425</i>	42 <i>1 in 318.5</i>	55 <i>1 in 91.8</i>	55 <i>1 in 66.8</i>	85 <i>1 in 24.7</i>	83 <i>1 in 13.9</i>	54 <i>1 in 4.9</i>	46 <i>1 in 2</i>	28 <i>1 in 1.4</i>	500 <i>1 in 95.7</i>
O	18 <i>1 in 214.2</i>	25 <i>1 in 211.7</i>	31 <i>1 in 97</i>	45 <i>1 in 52.9</i>	45 <i>1 in 29.2</i>	94 <i>1 in 13.6</i>	59 <i>1 in 6.8</i>	60 <i>1 in 1.9</i>	26 <i>1 in 1.6</i>	403 <i>1 in 43.9</i>
P	27 <i>1 in 259.9</i>	37 <i>1 in 273.3</i>	111 <i>1 in 110.6</i>	117 <i>1 in 63.7</i>	131 <i>1 in 28.2</i>	82 <i>1 in 15.1</i>	35 <i>1 in 5.9</i>	23 <i>1 in 2.4</i>	38 <i>1 in 1.5</i>	601 <i>1 in 70.1</i>
Q	107 <i>1 in 255.8</i>	97 <i>1 in 324.7</i>	124 <i>1 in 110</i>	99 <i>1 in 67.1</i>	69 <i>1 in 31</i>	60 <i>1 in 14</i>	32 <i>1 in 5.8</i>	37 <i>1 in 2.7</i>	148 <i>1 in 1.5</i>	773 <i>1 in 106.9</i>
R	65 <i>1 in 207.6</i>	34 <i>1 in 189.6</i>	42 <i>1 in 69</i>	44 <i>1 in 34.4</i>	29 <i>1 in 21.2</i>	22 <i>1 in 9.3</i>	15 <i>1 in 2.4</i>	6 <i>1 in 2</i>	0	257 <i>1 in 98.1</i>
S	118 <i>1 in 131.1</i>	60 <i>1 in 123.4</i>	27 <i>1 in 58.1</i>	20 <i>1 in 28</i>	17 <i>1 in 15.4</i>	11 <i>1 in 11</i>	8 <i>1 in 2.6</i>	5 <i>1 in 1</i>	0	266 <i>1 in 95.6</i>
TOTAL	1334 <i>1 in 244.9</i>	1055 <i>1 in 222.1</i>	969 <i>1 in 94.7</i>	885 <i>1 in 53.5</i>	836 <i>1 in 25.4</i>	859 <i>1 in 13.1</i>	478 <i>1 in 5.6</i>	318 <i>1 in 2.3</i>	345 <i>1 in 1.5</i>	7079 <i>1 in 104.1</i>

NOTE: Includes panel and refreshment samples. In order to combine these samples for the purposes of the table, we allocate panel cases to strata based on their estimated IDBR size and SIC in 2010. In many cases, this was estimated by tracing the workplace on the IDBR in 2010. Some 55 panel workplaces are excluded from this table because their estimated IDBR size in 2010 was 1-4 employees (in fact 6 of these 55 workplaces responded to WERS 2011, indicating the IDBR measure was incorrect and the case actually in scope; the remaining cases were non-contacts or ineligible).

Table 3: Fieldwork outcomes in 2011 for EPQ and MQ

	Combined sample		Panel sample		Refreshment sample	
	n	%	n	%	n	%
Initial sample	7,143	100.0%	2295 ¹	100.0%	4848	100.0%
Ineligible / out of scope	1,351	18.9%	404	17.6%	947	19.5%
Unproductive	3,112	43.6%	902	39.3%	2210	45.6%
EPQ and MQ achieved	2,680	37.5%	989	43.1%	1691	34.9%
Response rate		46.3%		52.3%		43.3%

¹ Includes the 9 workplaces not issued to field.

Table 4: Difference between weighted estimates in the combined sample and weighted estimates in the refreshment sample

	Weighted estimate - combined sample	Weighted estimate - refreshment sample	Difference	P-value
HR practices (binary variables):				
Any IiP accreditation	28.2%	28.5%	0.36%	0.72
At least 60% of core employees get off-the-job training	48.4%	50.6%	2.15%	0.03
At least 60% of core employees in teams	57.8%	58.3%	0.49%	0.63
Any joint consultative committee	7.8%	8.1%	0.31%	0.49
Any recognised trade union	21.7%	21.6%	0.03%	0.97
Any grievance procedure	88.5%	88.9%	0.42%	0.46
Any recent ET claim	4.1%	3.9%	0.24%	0.41
Any equal opportunities policy	77.5%	78.6%	1.10%	0.16
Climate of employment relations is good / very good	95.6%	95.2%	0.36%	0.37
Financial performance above average	45.7%	46.6%	0.89%	0.38
No union members at the workplace	77.8%	78.1%	0.32%	0.74
Flexi-time for some employees	34.2%	35.2%	0.93%	0.33
At least 50% of employees are women	52.4%	52.7%	0.33%	0.75
HR practices (continuous variables):				
Mean union density among workforce	9.7	9.0	0.01	0.13
Mean % female	53.2	53.8	0.01	0.38
Mean number of employees at the workplace	31.8	32.0	0.00	0.82
Workplace characteristics (binary variables):				
Single independent establishment	43.7%	42.3%	1.42%	0.15
Private sector establishment	89.0%	90.1%	1.05%	0.08
Accepted placement of SEQs	88.6%	88.4%	0.20%	0.79
MQ completed by HR manager	21.8%	23.5%	1.69%	0.07
Workplace size:				
5-9	44.4%	44.4%	0.00%	1.00
10-24	31.8%	31.8%	0.00%	1.00
25-49	12.5%	12.5%	0.00%	1.00
50-99	6.4%	6.4%	0.00%	1.00
100-199	2.9%	2.9%	0.00%	1.00
200-499	1.5%	1.5%	0.00%	1.00
500-999	0.4%	0.4%	0.00%	1.00
1000-199	0.1%	0.1%	0.00%	1.00
2000+	0.1%	0.1%	0.00%	1.00
Largest occupational group:				
Professional	10.4%	11.2%	0.81%	0.12
Associate professional	10.8%	10.0%	0.77%	0.12
Administrative	12.0%	12.2%	0.17%	0.12
Skilled	10.8%	11.1%	0.38%	0.12
Caring	12.1%	12.1%	0.04%	0.12

Sales	23.0%	23.9%	0.89%	0.12
Process operatives	7.3%	5.8%	1.46%	0.12
Elementary occupations	13.7%	13.7%	0.07%	0.12
SIC(2007) industry sector:				
C	8.9%	9.2%	-0.27%	0.61
D	0.1%	0.1%	0.00%	0.61
E	0.4%	0.4%	0.05%	0.61
F	4.8%	5.1%	-0.32%	0.61
G	24.4%	24.1%	0.34%	0.61
H	3.6%	3.1%	0.53%	0.61
I	8.9%	9.2%	-0.34%	0.61
J	3.7%	3.5%	0.20%	0.61
K	1.5%	2.0%	-0.49%	0.61
L	3.3%	3.0%	0.36%	0.61
M	7.8%	7.5%	0.32%	0.61
N	6.4%	6.8%	-0.40%	0.61
O	2.4%	2.3%	0.14%	0.61
P	6.7%	7.2%	-0.46%	0.61
Q	11.3%	11.1%	0.13%	0.61
R	3.0%	2.6%	0.39%	0.61
S	2.9%	3.1%	-0.20%	0.61

Note: Estimates from the combined sample are produced using the weight described in Section 6.1.3 (*ESTWTNRC*). Estimates from the refreshment sample are produced using the weight described in Section 6.1.1 (*ESTWTNR*). The refreshment sample weight is available on request from the WERS Research Team.