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Analysis of the correlates of self-reported work related illness in the Labour Force Survey

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Research Report

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Analysis of the correlates of self-reported work related illness in the Labour Force Survey

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Work has long been acknowledged as an important social determinant of health with research being conducted as to how a range of workplace, personal and job characteristics influence occupational health. This report provides an analysis of work related ill-health within the United Kingdom based upon data from the UK Labour Force Survey. Analysis reveals that employment within physically demanding occupations is the key risk factor associated with an individual suffering from a musculoskeletal disorder. Working long hours and employment within managerial, customer service and teaching occupations are associated with an increased risk of suffering from stress, depression and anxiety. Reported levels of ill-health are higher amongst males, older workers and those in the public sector. Despite these findings, downward trends in rates of work related ill-health cannot be explained by changes in the observable characteristics of people and their jobs as recorded by the LFS. The inability to explain observed trends may relate to the absence of career history data within the LFS or the omission of questions about certain characteristics of people's jobs that are known to effect health. Such data is included within the longitudinal Understanding Society survey. It is recommended that the feasibility of including additional questions in this survey should be investigated.

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BACKGROUND

Work has long been acknowledged as an important social determinant of health with research being conducted as to how a range of workplace, personal and job characteristics influence occupational health. Recent research has demonstrated the importance of the economic environment in terms of understanding movements in rates of workplace injury, both in terms of changes in the industrial and occupational composition of employment and the location of the economy within the business cycle. This report builds upon this evidence to provide an analysis of work related ill-health within the United Kingdom based upon data from the UK Labour Force Survey (LFS). The objectives of this research are to gain a better understanding of how personal, workplace and job characteristics impact upon health and in turn, how changes in the labour market contribute to our understanding of observed changes in work related ill-health within the UK and to reflect on the relative strengths and weaknesses of the LFS as a mechanism for collecting data on the incidence of work related ill-health.

OVERALL RATES OF WORK RELATED ILL-HEALTH

During the period 2002 to 2009, the average rate of work related ill-health for those people in employment is estimated to be 3,148 per 100,000 workers, or approximately 3.2%. If we consider all types of illness, the rates for women (3.3%) are slightly higher than those for men (3.1%). However, taking into account the distinction between musculoskeletal disorders and stress, depression and anxiety conditions it is apparent that whilst rates of musculoskeletal disorders are higher among men (1.5%) than women (1.3%), women exhibit higher rates of stress, depression and anxiety (1.3%) than men (0.9%). During the period 2002 to 2009, overall rates of work related ill-health amongst the in-work population have fallen by approximately a fifth. This rate of decline is greater for musculoskeletal conditions (a decrease of 22%) compared to illnesses associated with stress, depression and anxiety (a 14% decrease).

Rates of ill-health vary significantly between occupations. The highest overall rate of work related ill-health is estimated to occur among Health and Social Welfare Associate Professionals (5.8%). The lowest overall rate is estimated for those people employed in Sales Occupations (1.9%). The highest rate of ill-health for stress, depression and anxiety is amongst Teaching and Research Professionals (2.6%) while the lowest rate for such conditions is among those employed in Skilled Construction and Building Trades (0.4%). The highest rate of ill-health related to musculoskeletal disorders is among Skilled Construction and Building Trades (3.1%). The lowest rate of musculoskeletal disorders is observed amongst those employed as Corporate Managers and those in Administrative Occupations (both 0.9%). The industry with the highest rates of ill-health is Health and Social Work while the industry with the highest rates of stress depression and anxiety is Public Administration and Defence. Not surprising, given the physical nature of the work, the industry with the highest rate of musculoskeletal disorders is Agriculture. However, the scale of variations between occupations is wider than that which exists between industries.

FACTORS INFLUENCING AN INDIVIDUAL'S RISK OF WORKPLACE ILL-HEALTH

Utilising data from the LFS for the period 2002 to 2009, statistical analysis has been undertaken to investigate what personal, establishment and job characteristics were associated with an increased risk of an individual having suffered work related ill-health conditions during the previous 12 months.

In terms of personal characteristics we find that:

- males are 16% less likely to suffer from work-related ill-health to females;
- the risk of work-related ill-health increases steeply over the life course, peaking amongst those aged 50 to 59.

In terms of the characteristics of the jobs people hold, we find that:

- respondents who are based in larger workplaces are more likely to report that they suffer from work related ill-health conditions;
- workers in sectors dominated by public sector employment are most likely to report that they suffer from a work related ill-health condition, particularly Public Administration and Defence and the Health and Social Work Sectors;
- those employed in Skill Agricultural Trades (Farmers) and Skill Construction Trades (Builders, Carpenters, and Roofers etc) are most likely to report that they suffer from a work related ill-health condition.

The effect of personal and job related characteristics upon the likelihood that an individual suffers from work related ill-health differs for musculoskeletal disorders and stress, depression and anxiety conditions. Whilst the risk of both types of conditions increase with age, this effect is greater for stress, depression and anxiety conditions. Older workers are also more likely to report suffering from multiple ill-health conditions. Working longer hours is also more highly correlated with suffering from stress, depression or anxiety than for musculoskeletal disorders. The effects of occupation held have very different effects on the risks associated with musculoskeletal disorders compared to stress, depression and anxiety conditions, with physically demanding occupations generally being associated with an increased risk of musculoskeletal disorders but with a reduced risk of suffering from stress, depression or anxiety.

In terms of the administration of the LFS, we find that:

- a spouse or partner acting as a proxy respondent within the LFS is associated with a 26% reduction in the likelihood that an individual is recorded as suffering from work related ill-health. The reduced likelihood with which proxy respondents report the presence of work related ill-health conditions increases to 53% where the proxy respondent is not a spouse or partner.
- respondents to the HSE module who are in their first wave of LFS interviews are most likely to report that they suffer a from a work-related ill-health condition. This reflects the better quality of data collected from face to face interviews compared with interviews in later waves that are conducted over the phone.

Based upon both the differential quality of proxy respondents and responses provided during later waves of the survey, overall rates of under-reporting within the LFS would be expected to be in the order of 20-25%.

Overall, occupation is found to be the most important factor in terms of understanding whether or not an individual suffers from an ill-health condition. This is particularly the case with musculoskeletal disorders. In terms of understanding who suffers from stress, depression or anxiety conditions, occupation and hours worked are found jointly to be the most important risk factors.

EXPLAINING MOVEMENTS IN RATES OF WORK RELATED ILL-HEALTH

If the composition of the workforce changes over time, either in terms of the personal characteristics of those employed or the nature of the work tasks undertaken, we would expect rates of work related ill-health to also vary over time. Of key importance in this respect would be changes in the occupational composition of employment given its relative importance to our understanding the risk of suffering from work related ill-health. However, analysis reveals that year on year changes in rates of work related ill-health cannot be explained by changes in the observable characteristics of people within the LFS *or* changes in the relative risks associated with particular characteristics. It is not possible to account for the 'dip' in the rate of work related ill-health that occurred during 2006 and the subsequent increase observed in 2007. Any systematic influence that may be contributing to observed downward trends in rates of work related ill-health is therefore not being captured by information in the LFS. There was some indicative evidence to suggest that rates of work related ill-health within the Service Sector may be correlated with the overall level of activity in this sector. However, this was not observed for the Manufacturing and Production Sectors.

CONCLUSIONS AND RECOMMENDATIONS

The LFS is a rich data source providing detailed information on individuals' jobs as well as their personal characteristics. Combined with its large sample size, the LFS therefore provides a robust source of data for the construction of rates of work related ill-health for relatively detailed categories of workers and jobs. However, there are also a number of limitations of the LFS.

- Issues surrounding the relative quality of responses provided by different groups of respondents could result in rates of ill-health being under-reported by approximately 20-25%.
- The design of the survey also means that whilst it does collect information about the characteristics of jobs that could be important for understanding who suffers from work related ill-health (such as shift working, unionisation, commuting patterns and location of work), many of these questions are included within different quarters of the survey and cannot easily be combined with responses provided about work related ill-health.
- The LFS does not capture information about the characteristics of jobs that contribute to stress, depression and anxiety conditions such as levels of job demand, control, support, organisational factors and interpersonal stressors.
- As a cross sectional survey, the LFS does not include longitudinal information about the careers of individuals included within the survey. This means that it is not possible to consider how occupations previously held contribute to current levels of work related ill-health.

The main alternative source of data that could be considered by the HSE as providing a source of robust data on the incidence of work related ill-health is the longitudinal *Understanding Society* survey. It is recommended that a feasibility study should be conducted to examine whether questions on work related ill-health could be included in this source.

CHAPTER 1:
INTRODUCTION

1.1 CONTEXT AND OVERVIEW OF THE REPORT

Work has long been acknowledged as an important social determinant of health with research being conducted as to how a range of workplace, personal and job characteristics influence occupational health. Recent focus has been particularly on work related psychological stress and the interaction between the new organisation of work, the psycho-social work environment and employee health. Epidemiological research within the UK, such as the Whitehall civil service studies, has suggested a strong relationship between levels of employee work demands, job control and social support, and inequalities in health status (Marmot et al, 1991; 1997).

The term `new economy' has been used to describe the changes that have taken place within the UK economy over the last three decades. Associated with a shift in the industrial and occupational composition of employment away from traditional `heavy industries', these changes include increased numerical and task flexibility; new shift patterns; the utilisation of atypical employment such as part-time hours, casual labour and temporary contracts; and contracting out (Artacoz et al, 2005). The concept of workplace has also changed, with a greater detachment of work from place, increased levels of home working, working `on the move' and more complex commuting patterns (Felstead et al 2005).

Although some commentators (see Halpern 2005; Costa et al, 2006) suggest that many of these practices are advantageous to the work force, there is a contradictory and growing body of evidence on the negative health impacts of flexible working practices on employees (Benach et al 2002; Benach and Muntaner 2007). More broadly, studies for the UK have demonstrated increasing levels of worker effort, reduced levels of task discretion and declines in the satisfaction expressed by workers with respect to their jobs over this period. As these changes in the labour market look set to continue, work intensity and stress are major problems facing British workers, whilst job insecurity is likely to emerge as a growing problem in coming years (Green and Whitfield, 2009).

This report provides an analysis of work related ill-health within the United Kingdom based upon data from the UK Labour Force Survey (LFS). Previous research has demonstrated the importance of the economic environment in terms of understanding movements in rates of workplace injury, both in terms of changes in the industrial and occupational composition of employment and the location of the economy within the business cycle (Davies and Jones, 2006; Davies, Jones and Nunez, 2009). However, this work did not consider occupational health more broadly in terms of work related ill-health. The objectives of this research are to gain a better understanding of how personal, workplace and job characteristics impact upon health and in turn, how changes in the labour market contribute to our understanding of observed changes in work related ill-health within the UK. The analysis concludes by providing reflections on the relative strengths and weaknesses of the LFS as a mechanism for collecting data on the incidence of work related ill-health.

The report is structured as follows. The remainder of chapter 1 provides an overview of official statistics on work related ill-health produced by the Health and Safety Executive (HSE) as collected from the LFS. Observed trends are placed in the context of key developments in the UK labour market observed over the last 25 years. Chapter 2 provides a summary of data collected by the LFS on the topic of work related ill-health, presenting the results of further descriptive analyses of this data. Chapter 3 presents the results of statistical analysis of the LFS data which seeks to identify and quantify the effects of a variety of personal, workplace and job

related characteristics on the probability of an individual responding to the LFS reporting that they suffer from a work related ill-health condition. Chapter 4 considers whether the results derived from the statistical analysis enable us to understand observed trends in work related ill-health or whether significant year on year differences in the incidence of work related ill-health remain. Chapter 5 concludes by outlining the strengths and limitations of the LFS and identifying possible alternative surveys that could be used by the HSE in the collection of data regarding work related ill-health.

1.2 WORK RELATED ILL-HEALTH AND THE LABOUR FORCE SURVEY

The LFS is a quarterly household survey covering approximately 60,000 households in the United Kingdom. The LFS is a rich data source providing detailed information on individuals' jobs as well as their personal characteristics. The breadth of the information covered in the LFS makes it a useful source from which to gain a better understanding of work impacts upon health. The LFS has a rotating sample design, with individuals appearing in the sample for five successive quarters (referred to as waves).

Since 1993, a set of questions specially commissioned by the HSE and relating to workplace injuries has been included in the LFS. During the winter quarters (Dec-Feb) of the LFS, survey respondents are asked whether they have been injured in a work related accident during the past 12 months, whether this injury was caused by a road traffic accident and how soon after the accident they were able to return to work. Information collected from these questions can be used to compute injury rates from all work related accidents and injury rates from 'reportable' workplace accidents as defined by the HSE (i.e. non-road accidents resulting in over 3 days absence from normal work).

Since 2003/04 the HSE has routinely commissioned questions to be included annually in the LFS that relate to self-reported work related illness (SWI), although the survey module was also included in 2001/02. Respondents to the LFS are asked "Whether in the past 12 months, (they have) suffered any illness, disability or physical or mental problem caused or made worse by job or work done in the past". The question elicits a simple yes/no response, unless the question is answered by a proxy respondent in which case the option 'don't know' is offered. The coverage of this question relates to everyone who is in employment or has ever been employed. These questions are included within the winter (December to February) quarters of 2001/2, 2003/4, 2004/5 and 2006/7 and then subsequently in the first calendar quarter (January to March) each year from 2007 onwards.

A follow up to this question asks about the nature of the illness with eleven categories describing the kind of illness that the respondent has suffered due to their working conditions. This information can be utilised to break down illness prevalence rates by types of illness (e.g. musculoskeletal vs stress). As well as the type of illness there is also information about the 'number of illnesses caused or made worse by work in the last 12 months'. Finally there is a question relating to the occupation that caused the illness. Respondents are asked to state whether their illness was caused or made worse by their main job, second job or some other job. For analysis purposes, this information allows us to exclude those cases where the illness was caused by a previous job (discussed in further detail later). Finally, it is noted that illness is self-reported, rather than being actually confirmed by medical opinion.

Official statistics published by the HSE relating to SWI are generally reported in two ways. Firstly, published data provides information on the *prevalence* of SWI. Estimated prevalence is the number of people who report that they suffered from a work related illness either currently or at any time during the previous 12 months. Information is also available on the *incidence* of SWI, which is the estimated number of *new* cases of work related illness occurring in the 12

month reference period. For ease of exposition, the analysis of this report will focus on understanding the prevalence of work related ill-health.

The following figures are based upon official statistics of SWI derived from the LFS and published by the HSE. All data shown is based on people who have worked in the past 12 months. Figure 1.1 shows that rates of SWI for all types of illness have been steadily declining from 2001/02 to 2005/06. However, 2007 sees a sharp rise, with rates of SWI returning to 2001/02 levels. Following this rates fall again and by 2009 a prevalence rate of work related illness of less than 4% is estimated, the lowest rate over the period of analysis. The same trend is apparent if rates SWI is broken down by illness. Musculoskeletal disorders (MSDs) and conditions related to stress, depression and anxiety (subsequently referred to as SDA) mirror the same general trend, as shown by Figures 1.2 and 1.3. The main difference between the series for MSDs and SDA is that rates of SDA have displayed less of a downward trend than that exhibited by MSDs. This is confirmed by an examination of the relative shares of different types of illness. Figure 1.4 shows that both rates of MSDs and SDA have grown in importance from 2001/02 to 2008/09 at the expense of other types of illnesses.

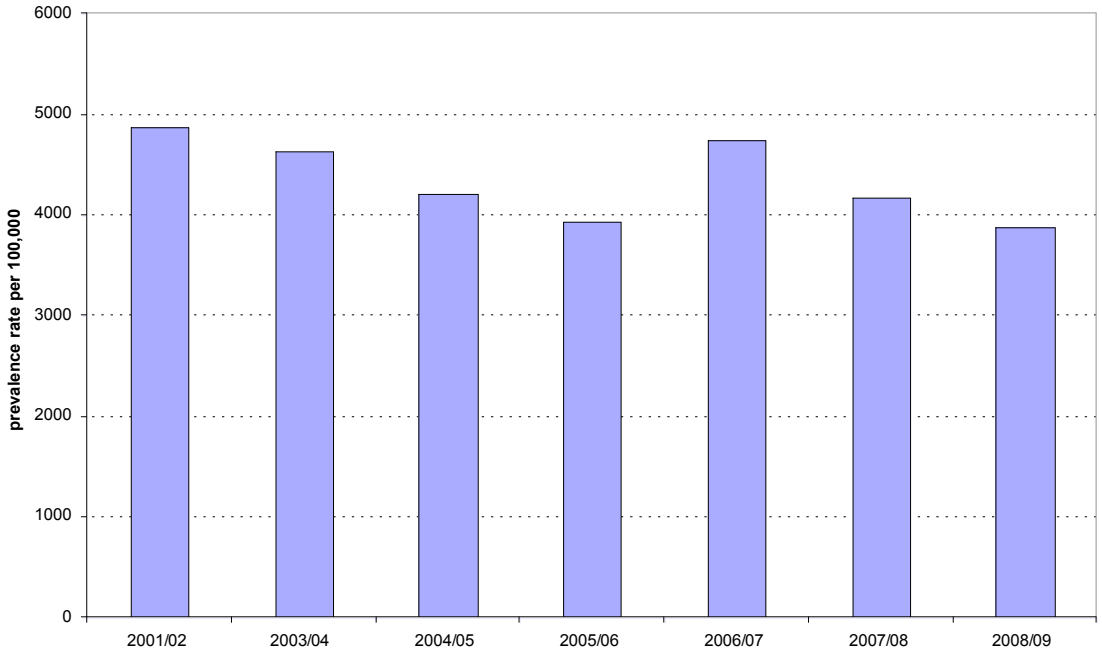

Figure 1.1 Estimated prevalence rates for SWI: all illnesses
(Source: HSE Estimates based on LFS)

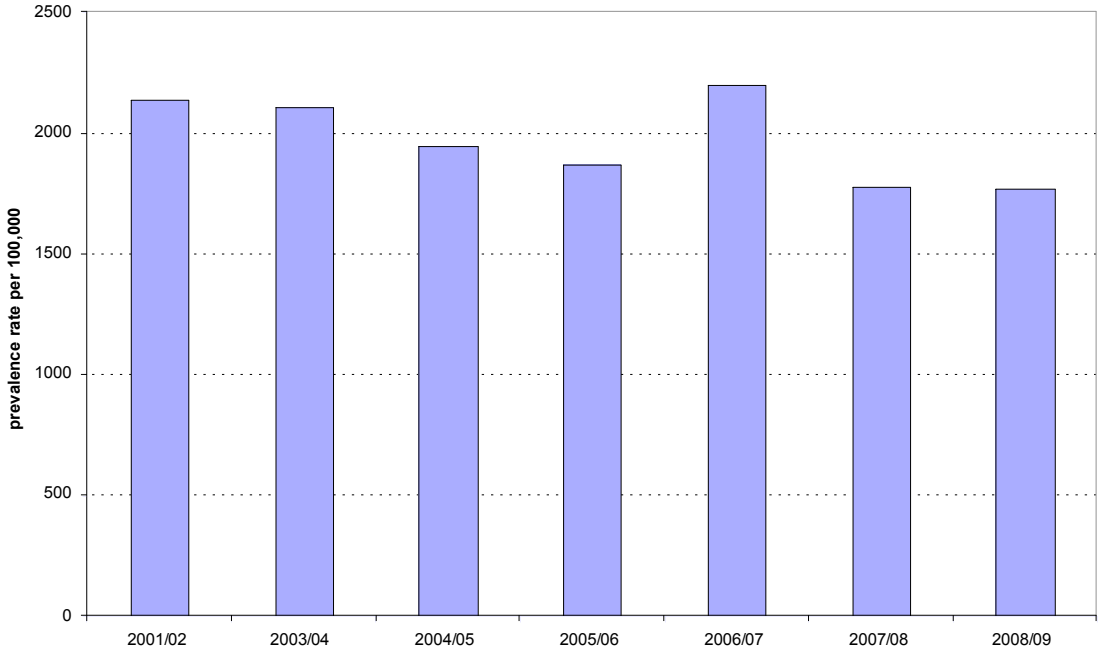

Figure 1.2 Estimated prevalence rates for SWI: musculoskeletal disorders (Source: HSE Estimates based on LFS)

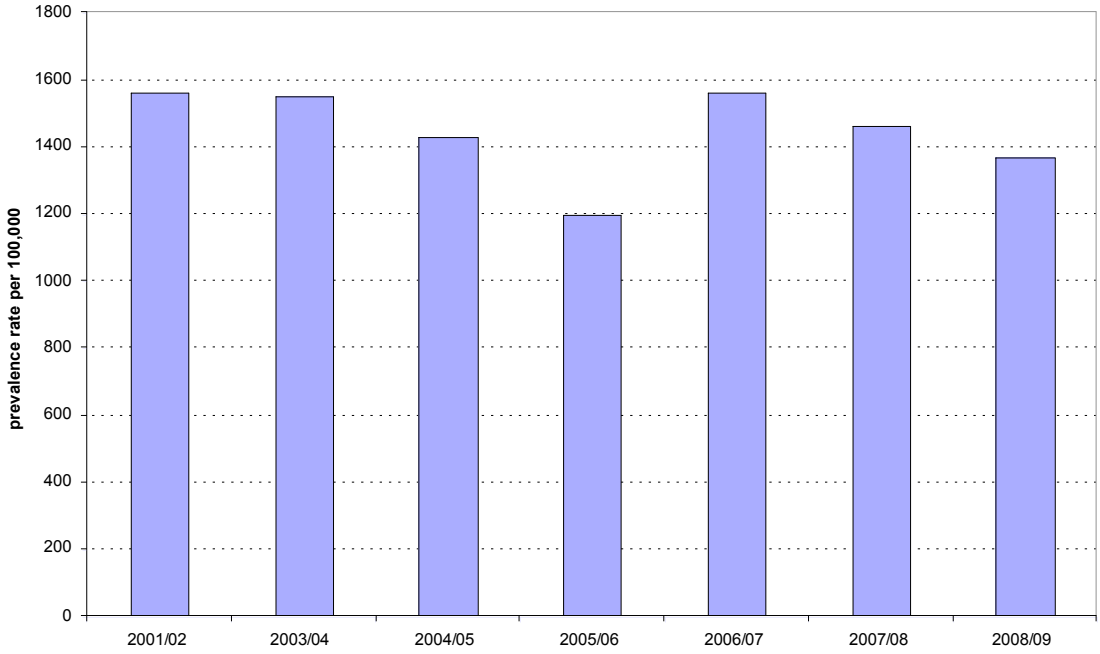

Figure 1.3 Estimated prevalence rates for SWI: stress, depression or anxiety (Source: HSE Estimates based on LFS)

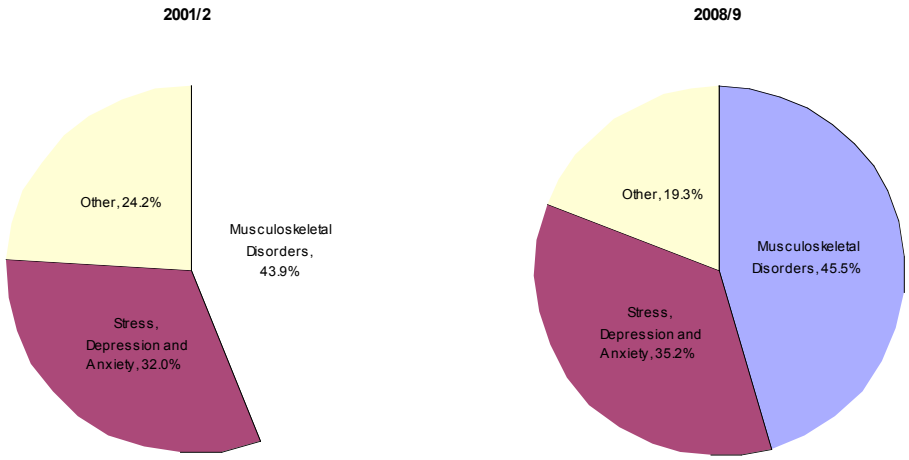

Figure 1.4 Shares of different types of SWI
(Source: HSE Estimates based on LFS)

1.3 CHANGING PATTERNS OF EMPLOYMENT

The downward trends in the incidence of work related ill-health reflect both past and continuing changes in the composition of employment. The past 50 years have seen major changes in the industrial composition of employment across all developed economies. A complex mix of interdependent factors such as technological change, productivity growth, international competition, specialisation and sub-contracting, and economic growth have resulted in very large increases in real incomes and dramatic shifts in patterns of expenditure. These in turn have resulted in the demise of many major areas of employment including agriculture, coal mining and substantial parts of manufacturing. In contrast there have been major increases in employment in other areas, especially those sectors involved in the processing and handling of information, and those providing services to both consumers and businesses.

The key features of changes in the industrial composition of employment over the past 2 decades are presented in Table 1.1. Since 1984 it can be seen that there has been a clear shift in employment away from Primary industries, Utilities and Manufacturing towards the service sectors. Between 1984 and 2007 within the UK, employment in Manufacturing fell from 21% to 10% of the workforce. Although smaller in terms of its employment share, the largest relative reductions in employment have occurred within the Primary and Utilities sector. In contrast, the share of employment within Business and Other Services increased, by 10 percentage points. Within the UK, employment within Non-marketed Services increased by 3 percentage points between 1984 and 2007.

Table 1.1 Changes in the industrial composition of employment in the UK

	1984	*1994*	*2004*	*2007*
Primary sector & utilities	4.8	3.1	2.0	2.0
Manufacturing	20.5	15.8	11.7	10.1
Construction	7.2	6.6	6.9	7.0
Distribution transport etc	28.3	28.7	29.1	28.5
Business & other services	17.3	21.8	25.8	27.3
Non-marketed services	21.9	24.0	24.4	24.9
All Sectors	25,676	26,775	30,100	31,435

Source: IER/Cambridge Econometrics (2008)

Changing patterns of industrial employment have had profound implications for the demand for different types of occupations. The decline of employment in Primary and Manufacturing industries has resulted in a reduction in the need for many skills associated with the production of the output of these industries. A smaller manufacturing sector therefore no longer requires the same number of skilled engineering and other types of specific craft skills as previously. In contrast, the growth in service sector employment has lead to the expansion of jobs in a number of occupations. For example, an increase in the share of employment within Non-marketed services has lead to additional jobs for professional, managerial and clerical workers in public administration; for doctors and nurses in health services; and for teachers in education services. Similarly, growth in employment within private sector marketed services has resulted in many new jobs within leisure and other personal service occupations, sales occupations and professional, clerical and secretarial occupations in business and financial services.

These developments have taken place against a background of technological change that has lead to significant changes in the nature of particular jobs within industries and a restructuring of the way in which work is organised. The wider application of information technology (IT) has been of particular importance. The application of IT has lead to the displacement of many clerical and secretarial jobs previously concerned with information processing using paper technology. The application of IT in manufacturing has also lead to the displacement of many skilled workers whose jobs have been taken over by computer controlled machinery. On the other hand, IT has opened up many new areas in which information services can be provided that were previously not feasible. This has again tended to create jobs of a professional, associate professional and managerial nature.

Table 1.2 provides information as to the occupational composition of employment in the UK since 1984. It can be seen that there has been a clear shift in employment away from more traditional, blue collar manual occupations. Between 1984 and 2007, employment within Skilled Trades Occupations fell from 16% to 11%, whilst employment among Process, Plant and Machine Operatives fell from 12% to 7%. In contrast, employment amongst Managers and Senior Officials increased within the UK from 12% to 15% between 1984 and 2007.

Table 1.2 Changes in the occupational composition of employment in the UK

	1984	*1994*	*2004*	*2007*
Managers and Senior Officials	12.1	13.6	15.3	15.3
Professionals	8.4	10.0	11.8	13.0
Associate Professional and Technical	10.1	12.0	14.3	14.2
Administrative and Secretarial	15.0	14.8	12.6	11.8
Skilled Trades	16.4	13.6	11.4	10.9
Personal Service Occupations	4.1	5.6	7.5	7.9
Sales and Customer Services	6.1	7.0	8.0	7.7
Process, Plant and Machine Operatives	11.8	9.7	7.9	7.3
Elementary Occupations	16.1	13.7	11.3	11.5
Total	25,676	26,775	30,100	31,435

Source: IER/Cambridge Econometrics (2008)

The past few decades have seen dramatic shifts in the pattern of employment by status and by gender. Women now account for almost half of the workforce and there has been a huge shift in favour of part-time as opposed to full-time jobs. Many of these changes can be linked to changes in the industrial composition of employment discussed above. In particular, the decline of employment opportunities within the primary and utilities sector and in the manufacturing sector has resulted in the loss of many full-time jobs traditionally held by men. The growth of jobs in the services sector, by contrast, has created many employment opportunities for women, particularly those wanting to work part-time. These demand side factors have been complemented by supply side factors, such as the increasing participation of women within education and equal opportunities policies, which have reflected the increasing propensity of women to want to take an active role in the formal economy.

Table 1.3 shows how the patterns of employment have varied over the last 2 decades according to both gender and employment status. It can be seen the share of female workers as a proportion of total employment increased from 43% to 47% between 1984 and 2007. Similarly, the share of part-time employment in the UK has increased from 22% to 28%. Whilst part-time employment has been considered to be of primary importance to females, it can be seen that much of the growth in part-time employment has been taken up by men.

Table 1.3 Changes in employment status in the UK

	1984	*1994*	*2004*	*2007*
Percentage Male	57.0	52.5	53.5	52.9
of which				
Full Time	77.6	72.3	69.8	68.9
Part Time	6.7	8.4	12.9	13.1
Self-Employed	15.7	19.3	17.4	18.0
Percentage Female	43.0	47.5	46.5	47.1
of which				
Full Time	50	47	48	48
Part Time	42	45	45	44
Self-Employed	8	8	8	8
All				
Full Time	65.7	60.2	59.5	58.9
Part Time	22.1	25.9	27.6	27.6
Self Employed	12.2	13.9	12.9	13.5
Total	25676	26775	30100	31235

Source: IER/Cambridge Econometrics (2008)

1.4 REVIEW OF DETERMINANTS OF WORK RELATED ILL-HEALTH

As outlined in Section 1.2, musculoskeletal disorders and mental ill-health are the most common work related illnesses (HSE 2009). Although the former are the most frequently reported diagnoses of work related ill-health, mental ill-health is responsible for most sickness absence (56% of total days certified) (Hussey et al 2008). Work can impact upon health both directly and indirectly and in both the short and long term. Direct impacts include physical job conditions such as manual labour (increased risk of injury), heat, noise, dust, chemicals and vibration. The characteristics of jobs that contribute to psycho-social conditions include levels of job demand, control, support, organisational factors (working hours, flexible working) and interpersonal stressors (bullying, discrimination, and harassment). Further indirect impacts of work upon ill-health may emerge through socio-economic status, income and the influence of peers and workplace on health habits (smoking ban).

Perceived stress at work is widespread in the UK (Smith et al 2000). Indeed, the World Health Organisation has identified work stress as a worldwide epidemic (Leka et al 2003), and it is strongly linked to ill-health (Jones et al 1998, Kearns 1986, Peter et al 1999, 1998). Work stress can be defined in several ways. First, it is often viewed as a characteristic of the work environment similar to other environmental hazards, such as noise. In this case it is measured by considering the relationship between exposure and health. Second, it is seen as a physiological response to a threatening or difficult aspect of work, and may be measured directly (e.g. an adverse reaction to work stress can be measured using cortisol). Third, it may be seen in terms of an interactional framework, as in the effort-reward imbalance model (Siegrist 1996), where the imbalance between effort and reward at work interacts to influence health. Finally, transactional theories (Lazarus and Folkman 1984) focus on the cognitive processes and emotional reactions individuals have with their work environment. In this case, perceptions of stress are primarily used, and work stress can be viewed as a *process*, from exposure to negative work characteristics, to perceived stress, and both short and longer term consequences: poorer performance, accidents, injuries; and sickness absence, ill-health, staff turnover, respectively.

There is a large body of work describing the associations between the characteristics of work (such as demand and control) and ill-health (e.g. Stansfeld et al 1998). In particular, this has focused on the powerful influence of "organisational" stressors on perceived work stress (e.g. Peter et al 1999, Stansfeld et al 1999). Low social support at work, particularly coupled with high job demand and low control, and effort-reward imbalance are strongly linked to occupational stress and psychological distress (Stansfeld et al 1999, Kawakami et al 1992, Siegrist 1996, Stansfeld et al 1998). More recently, stressors like discrimination, bullying and harassment have been recognised as important and related to stress and consequent mental and physical ill-health (Cowie et al 2002). These stressors are usually viewed as "interpersonal" – i.e. occurring between individuals and usually directly perceived, though they can, of course, also operate institutionally (Karlsen and Nazroo 2002, MacIntosh 2006) and affect health at this level (Harris et al 2006). Some associations identified in recent work are listed below.

Psychological ill-health has been linked with factors including[1]:

- Demand (long hours, overload, pressure) (Michie and Williams 2003, Stansfeld et al 1998, 1999, Tsutsumi et al 2001, Perrewe 1986, Bourbonnais et al 1996, Marshall et al 1997, Mino et al 1999, Yeung et al 2001, Landbergis 1988, Cropley et al 1999, Evans and Steptoe 2002, Cherry et al 2006, Carder et al 2009)
- Lack of control over work (Michie and Williams 2003, Landbergis 1988)
- Poor social support (Michie and Williams 2003)
- Lack of participation in decision making (Michie and Williams 2003)
- Unclear management and work role (Michie and Williams 2003)
- Poor interpersonal relations (Cherry et al 2006, Carder et al 2009)
- Effort-reward imbalance (Stansfeld et al 1999, van Vegchel et al 2002, Peter et al 1998, Kuper et al 2002, Bakker et al 2000, Siegrist 1996, Cowie et al 2002).

Physical ill-health has been linked with factors including:

- Poor interpersonal relations (Cowie et al 2002)
- Lack of control over work (Bosma et al 1997, Marmot et al 1997)
- Effort-reward imbalance (Siegrist 1996, Bosma et al 1998, Stansfeld et al 1998).

Sickness absence with factors including:

- Work demand (long hours, overload, pressure) (Michie and Williams 2003)
- Lack of control over work (Michie and Williams 2003)
- Poor social support (Michie and Williams 2003)
- Poor management style (Michie and Williams 2003)

Recent work has also linked health inequalities with factors including:

- Work demand (Marmot et al 1991, 1997)
- Changing economy or flexible work practices (Lewchuck et al 2009, Benach et al 2002, Benach and Muntaner 2007).

A recent meta-analytic review concluded that the psycho-social work environment is important for mental health (Stansfeld and Candy 2006). In addition, longitudinal research has shown that

[1] Consistent with the Demand-control (Karasek et al 1998) and Effort-reward imbalance (Siegrist et al 2004) models

work stressors are an important source of preventable psychiatric diagnoses in mid-life (Stansfeld et al 2008). There is consistent evidence that particular (combinations of) negative job characteristics are prospective risk factors for common mental disorders (Stansfeld and Candy 2006). Furthermore, there is also evidence that psychological distress is associated with coronary heart disease (e.g. Ford et al 1998, Sesso et al 1998) and is a predictor of stroke (May et al 2002). Cooper (2009) also concludes that the global recession is likely to lead to even more examples of stress related illnesses and adverse occupational health outcomes. A literature review conducted by the research team suggests that a multi-factorial approach of combined effects best describes what makes a "good" job or workplace. However, certain themes or characteristics associated with job satisfaction and/or well-being and/or quality of work life do emerge:

- good organisational-employee communication (Krueger et al 2002, Blegen 1993, Grawitch et al 2006)
- decision latitude / autonomy / control (Krueger et al 2002, Blegen 1993, Warr 2007, Beasley et al 2005, Nasermoaddeli et al 2003)
- low stress (Blegen 1993, Grawitch et al 2006, Rose 2003)
- hours – particularly distribution and pattern (Barnett 2006, Rose 2003)
- recognition / fairness (Krueger et al 2002, Blegen 1993, Warr 2007) social support (Warr 2007, Beasley et al 2005).

This review concluded that a *process* approach to work and well-being, comprising job characteristics – appraisals – outcomes, and within this, a multi-factorial approach of combined effects, best describes the associations between work and well-being. The extent to which work is "good" (for health) depends not only on workers' exposure levels (i.e. their job characteristics), but also on their appraisals of these. The "good job" measure, therefore, comprised a combination of job characteristics (Manager support, Demand, Control, Role, Peer support, Skills) and appraisals (Management, Work, Stress, Reward, Peers).

CHAPTER 2:
RATES OF WORK RELATED ILL-HEALTH DERIVED FROM THE LABOUR FORCE SURVEY: 2002-2009

2.1 INTRODUCTION

This chapter focuses on prevalence rates of SWI estimated from the LFS between 2002 and 2009. In order to maximise the level of detail that can be achieved with the available data, the analysis will be based upon both annual cross sections of LFS data and average rates of ill-health derived from data covering the full period. Data has been combined from the following LFS quarters: Winter 01/02, Winter 03/04, Winter 04/05 and the first Quarters of 2006, 2007, 2008 and 2009. The analysis concentrates on two groups of people; 1) the working age population and 2) those who were employed at the time of the survey. The work related ill-health question in the LFS described in Chapter 1 was intended to be administered to all individuals who reported that they had worked at some point during their life. However, due to a routing error in the 2008 and 2009 surveys, coverage of the SWI survey module was restricted to people who had worked in the last 12 months rather than those who had ever been employed. Whilst this error does not effect the analysis of work related ill-health among those employed at the time of the survey, it does contribute to a discontinuity in rates of work related ill-health estimated for the population of working age. Whilst the descriptive analysis for the population of working age presented in Section 2.3 does present data for 2008 and 2009 for completeness, data for these years are excluded from estimates of average annual rates of ill-health presented in the final columns of the tables and in the accompanying charts.

2.2 DEFINING RATES OF WORK RELATED ILL-HEALTH

The introductory chapter highlighted the complexities associated with the analysis of work related ill-health. Of particular importance to the analysis is surrounds the issue of sample selection. That is, those individuals with a work related illness who remain in employment are unlikely to be representative of all those with a work related illness in the wider population of working age. For example, it may be expected that those who withdraw from employment as a result of an ill-health conditions could be suffering with more severe conditions. The rates of work related ill-health presented in this chapter therefore focus on two groups of people. Firstly, the analysis of rates of work related ill-health will consider all people of working age, whether they are employed or not. The analysis here will focus on personal characteristics and survey administrative variables related to the operation of the LFS (such as proxy response and wave identifiers). The sample will then be restricted to those who are in work. For the analysis of the restricted sample, it will be possible to compare rates of ill-health by a selection of both personal and job related characteristics.

A further methodological problem surrounds the issue of the simultaneity of occupational choice. The LFS is a cross sectional survey and it is therefore generally only possible to observe the characteristics of jobs currently held by survey respondents in any significant detail (limited information on previous employment is asked of sub-sets of the survey population such as the unemployed). From the perspective of analysing work related ill-health, this is particularly problematic if individuals suffering from ill-health condition have chosen to work in jobs that do not further aggravate their conditions. Furthermore, the LFS only contains limited information on the characteristics of previous jobs that are identified as having caused a currently observed work related ill-health condition. To overcome this problem, those in work where a health condition was caused by an earlier job or their second job are removed from the in-work sample. We are then left with an in-work sample of healthy people in work or ill

people where any illness is identified by the respondent as being caused or being made worse by their current main job.

Rates of work related ill-health have also been computed separately for MSDs (bone, joint and muscle problems) and SDA conditions. For MSDs, the LFS actually separately records whether individuals suffer from these conditions within a) the arms or neck, b) the hips, legs or feet and c) the back. However, within the 2001/02 LFS (the first year that work related ill-health questions were included), this three-fold distinction was not made. For the purpose of the analysis, these three categories are therefore combined in to a single category for MSDs. To recap, SDA conditions refer to stress, depression or anxiety. This broad distinction between MSDs and SDA conditions is consistent with the presentation of data on work related ill-health by the Health and Safety Executive (for example, see http://www.hse.gov.uk/statistics/lfs/lfs0809.pdf). The LFS also allows respondents to distinguish the following other work related ill-health conditions: breathing or lung problems; skin problems; hearing problems; headache and/or eyestrain; heart disease/attack or other problems of the circulatory system; and infectious diseases. In some cases, such conditions could be attributed as both an MSD and an SDA condition. Due to the complexities in identifying the causes of such conditions, we deliberately abstract from conducting a separate analysis of this 'other' category of ill-health conditions. These conditions will however be included in overall measures of work related ill-health.

2.3 ANALYSIS OF RATES OF WORK RELATED ILL-HEALTH

This section presents rates of work related ill-health from the LFS. Firstly, rates of ill-health are presented for the working age population (expressed as per 100,000 people). This definition covers males aged 16 to 64 and women age16 to 59 – irrespective of whether or not they are working. Secondly, rates are presented for the in-work population (per 100,000 in employment) whose illness was caused or made worse by their current main job. For the first definition (working age population) variations in ill-health rates across seven dimensions are explored: five relate to individual characteristics (gender, age, ethnicity, level of education and social class) and two are survey related variables (whether or not question answered by proxy, wave of LFS question was answered in). For the second in-work sample, it is also possible to consider how rates of work related ill-health vary according to a variety of workplace (occupation, industry and workplace size) and job related (hours worked, job tenure and employment status) characteristics. Due to the richer information available for this group of people, the in-work population will serve as the basis of much of the analysis in this report.

The number of people within the LFS sample for some sub-groups is relatively small. Consequently, changes in rates of work related ill-health recorded for some of the sub-groups over this eight year period (although no data is available for 2003) can appear to be volatile. To enable robust comparisons to be made between groups and for ease of exposition we have included annual averages for the period of the analysis. Issues surrounding the statistical significance of differences between groups will be considered in the multivariate analysis presented in Chapter 3. All tables use weighted data.

Table 2.1 shows rates of occupational ill-health for all types of illness for the working age population. During the period 2002 to 2007 (we deliberately exclude data related to 2008 and 2009 due to discontinuities in the coverage of the sample who were asked the work related ill-health questions), the average rate of work related ill-health derived from the LFS for the working age population is estimated to be 4,275 per 100,000 workers, or approximately 4.3%.

Table 2.1 Rates of work related ill-heath: all illnesses, working age population

(per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2002-07*
All	4846.7	4508.2	4025.5	3834.5	4159.1	2893.8	2619.9	4274.8
Gender								
Male	5423.0	5035.5	4444.3	4263.4	4439.0	2915.9	2626.4	4721.0
Female	4239.3	3952.2	3583.6	3381.2	3856.2	2869.8	2612.7	3802.5
Age								
16-19	761.7	785.4	621.7	603.0	517.4	502.0	435.4	657.8
20-24	2526.3	2042.6	1524.9	1445.8	2089.4	1378.0	1612.5	1925.8
25-29	3564.4	3011.2	2801.9	2544.3	2725.3	2158.6	1959.9	2929.4
30-34	4237.5	3880.7	3298.8	2892.8	3128.4	2506.4	2230.5	3487.6
35-39	4421.7	4135.6	3382.7	3706.9	3938.2	3243.0	2853.7	3917.0
40-44	5336.2	5118.4	4665.2	4392.7	4774.9	3433.0	2906.2	4857.5
45-49	6086.9	5472.3	5293.7	4717.4	5351.7	3993.3	3748.1	5384.4
50-54	6755.4	6733.5	5898.8	5672.5	5875.9	4207.3	4080.9	6187.2
55-59	7294.0	6901.0	6670.7	6025.1	6936.9	3725.1	3272.9	6765.5
60+	9623.8	8682.7	7250.8	7946.3	7604.7	3736.5	2643.7	8221.7
Educational Attainment								
Degree	4888.1	4576.6	4128.3	3473.6	4169.9	3596.5	3036.9	4247.3
HE	6674.4	5193.4	5001.2	4739.4	5506.9	4265.2	3588.6	5423.1
A level	5121.1	4961.2	4242.6	4189.2	4725.4	3174.7	2872.3	4647.9
GCSE	4123.6	3801.7	3287.2	3211.5	3383.7	2717.5	2444.0	3561.5
Other	4780.0	4686.1	4410.7	4229.7	4255.5	2396.9	2463.7	4472.4
None	4608.6	4266.1	3918.0	3964.2	3618.1	1217.3	1294.0	4075.0
Response Type								
Personal	5654.3	5264.9	4782.7	4664.0	4938.2	3494.3	3123.6	5060.8
Proxy	3306.2	3112.2	2705.0	2407.8	2814.3	1824.7	1727.3	2869.1
Wave of LFS								
Wave 1	6468.7	5389.7	5153.1	4846.1	4921.4	3214.2	2840.9	5355.8
Wave 2	4661.6	4470.1	4090.1	3599.1	3915.3	2702.3	2728.2	4147.2
Wave 3	4304.0	3962.8	3591.5	3557.4	4052.2	2912.9	2624.5	3893.6
Wave 4	4196.4	4025.4	3421.0	3391.7	3947.7	2696.1	2361.1	3796.4
Wave 5	4464.8	4595.1	3719.1	3657.6	3878.5	2931.5	2488.1	4063.0
Ethnicity								
White	4993.0	4690.0	4226.2	3991.1	4388.9	3062	2738.6	4457.8
Mixed	4383.3	4349.9	1975.7	3922.6	2310.5	2478.1	3622.4	3388.4
Asian	2417.5	2239.4	1708.0	1962.6	2166.7	1484.0	1513.5	2098.8
Black	3541.9	2683.8	2242.8	2467.5	2392.7	1329.9	1434.1	2665.7
Chinese	4106.1	1785.6	2314.9	1995.9	1691.0	758.2	865.5	2378.7
Other	4095.0	2680.9	2355.3	3147.7	2213.1	1661.3	2082.4	2898.4
Social Class (NSSEC Analytic Classes*)								
Class 1	4186.9	4518.1	3778.1	3490.3	3679.7	3518.4	2878.5	3930.6
Class 2	5847.3	5304.0	4834.4	4275.0	4998.9	4093.6	3603.5	5051.9
Class 3	4438.9	3674.4	3373.4	3545.4	4265.7	3454.0	3141.7	3859.6
Class 4	6089.3	5391.0	4501.6	4538.5	5202.3	3212.3	3651.1	5144.5
Class 5	6400.4	5614.2	4972.9	4964.6	5544.4	3694.3	3395.3	5499.3
Class 6	4733.8	4526.4	4255.4	3553.4	4161.0	3027.9	2828.1	4246.0
Class 7	4747.6	4852.7	4662.7	4550.0	4118.3	2981.5	2601.1	4586.3
Class 8	3033.2	2824.2	2358.0	2662.1	2373.7	215.8	197.1	2650.2

*1 `Higher Managerial and Professional'; 2 'Lower Managerial and Professional'; 3 'Intermediate Occupations'; 4 'Small Employers and Own Account Workers'; 5 'Lower Supervisory and Technical'; 6 'Semi-Routine Occupations'; 7 'Routine Occupations'; 8 'Unemployed'.

Table 2.2 shows rates for the restricted in-work sample. During the period 2002 to 2009, the average rate of work related ill-health for those people in employment is estimated to be 3,148 per 100,000 workers, or approximately 3.2%. It is noted that this figure is lower than that observed among the wider working age population. This will be due to the fact that many people who suffer from a work related ill-health condition will have withdrawn from employment. Those who remain in work are less likely to suffer from such conditions, contributing to lower rates of work related ill-health.

For completeness, Annex 1 presents rates of work related ill-health for those in work but for whom their health condition is not necessarily the result of their current job. During the period 2002 to 2009, the average rate of work related ill-health for those people in employment and where the ill condition was caused is estimated to be 3,827 per 100,000 workers, or approximately 3.8%. It is noted that this figure is slightly higher than the rate estimated for those who are in employment and who are in the job that caused the ill-health condition or in a job which makes that condition worse. This is likely to reflect the occupational choices made by workers in response to their ill-health condition. For example, those suffering from physical conditions may try and find work in physically less demanding occupations. From an analytical perspective, it is therefore important to note that the LFS is not able to provide detailed information on the nature of the work undertaken by these people that lead to their ill-health conditions.

Table 2.2 Rates of work related ill-heath: all illnesses, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
All	3682.8	3352.2	3092.7	2764.2	3432.3	2925.6	2784.3	3147.7
Gender								
Male	3632.7	3415.7	2958.6	2726.4	3205.6	2802.1	2617.0	3051.2
Female	3742.8	3276.5	3251.7	2809.1	3708.8	3076.1	2987.2	3264.6
Age								
16-19	807.7	850.1	766.6	668.6	754.0	613.3	702.1	737.5
20-24	2157.7	1712.3	1362.8	1309.3	2143.4	1179.9	1709.7	1653.6
25-29	2803.9	2454.3	2313.1	2161.5	2523.3	1985.4	1903.7	2306.5
30-34	3440.3	3226.3	2586.0	2284.4	2725.0	2411.0	2225.4	2699.8
35-39	3688.0	3396.2	2827.6	2884.6	3341.5	3142.6	2800.9	3154.5
40-44	4151.6	4016.9	3500.3	3361.4	4153.8	3095.7	2755.7	3576.5
45-49	4875.2	3859.7	4186.2	3214.7	4191.1	3879.4	3620.8	3975.3
50-54	4777.6	4713.7	4545.5	3794.8	4519.9	4042.2	4291.4	4383.6
55-59	4787.8	4438.4	4148.8	3668.8	4746.6	4182.5	3486.4	4208.5
60+	4043.0	3143.4	3770.5	3020.7	3888.5	4026.1	3369.8	3608.8
Qualifications								
Degree	4062.1	3673.2	3534.5	2821.2	3623.6	3308.8	2845.4	3409.8
HE	5203.4	4043.4	3871.6	3759.4	4539.0	3980.2	3251.7	4092.7
A level	3695.1	3493.0	3201.1	2866.2	3656.3	3053.7	2978.0	3277.6
GCSE	3344.3	2996.1	2680.0	2409.1	2817.8	2706.8	2684.3	2805.5
Other	3201.0	3320.9	2878.6	2692.2	3356.5	2413.4	2751.6	2944.9
No Qualifications	3083.4	2508.0	2449.6	2314.0	2740.6	1636.1	1805.6	2362.5
Proxy								
Personal Response	4213.4	3808.9	3577.8	3284.0	3957.7	3513.2	3283.5	3662.6
Proxy Response	2694.2	2520.6	2250.4	1874.6	2517.4	1861.3	1878.3	2228.1
Wave of LFS								
Wave 1	4852.5	3811.8	3549.1	3363.2	3965.7	3342.2	3203.6	3726.9
Wave 2	3510.0	3276.6	3273.6	2737.6	3133.4	2623.5	2826.1	3054.4
Wave 3	3330.0	3006.3	2897.0	2425.9	3444.3	2985.0	2630.4	2959.8
Wave 4	3162.2	2998.4	2527.2	2511.9	3179.6	2711.6	2553.8	2806.4
Wave 5	3502.4	3641.8	3141.8	2741.9	3418.8	2956.6	2667.9	3153.0
Ethnicity								
White	3733.5	3424.1	3204.1	2826.4	3522.1	3008.7	2834.5	3221.9
Mixed	4791.8	2822.7	1485.6	3712.3	2867.5	2727.6	3977.1	3197.8
Asian	2034.2	2109.6	1311.2	1528.7	2251.6	2106.9	2008.4	1907.2
Black	2924.4	2542.1	1754.8	2259.7	2736.2	1780.6	2203.3	2314.4
Chinese	6015.3	1607.4	3402.5	499.3	3171.1	1266.2	954.4	2416.6
Other	3877.0	3208.5	1960.5	3019.4	2158.7	2342.9	2966.1	2790.5

Table 2.2 (cont) Rates of work related ill-heath: all illnesses, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Occupation (SOC 2000 Minor Group)								
Corporate Managers	3615.0	3442.7	2699.6	2498.1	3104.9	2661.8	2543.6	2937.9
Managers/Proprietors in Agriculture & Services	3531.9	3744.4	2647.1	2751.0	3514.3	2024.5	2472.9	2955.1
Science & Technology Professionals	3246.5	3258.9	3458.0	1992.8	2396.3	2358.9	2675.9	2769.6
Health Professionals	4030.2	2947.5	3401.0	3295.5	4262.2	3866.7	1905.5	3386.9
Teaching & Research Professionals	6258.9	4892.2	4694.5	3625.1	5288.1	4289.9	3541.5	4655.8
Business & Public Service Professionals	3951.3	4198.8	2849.4	3508.1	2300.3	3291.8	3010.4	3301.4
Science & Technology Associate Professionals	3619.1	2250.8	3173.8	3121.7	2969.9	3171.7	2335.4	2948.9
Health & Social Welfare Associate Professionals	6402.2	5589.4	6377.9	4723.5	6719.0	5984.0	4874.4	5810.0
Protective Service Occupations	7679.4	5686.5	4215.0	4647.6	3317.2	5649.1	3245.4	4920.0
Culture, Media & Sports Occupations	3460.7	3595.8	2993.0	2777.9	4652.2	3560.9	3346.6	3483.9
Business & Public Service Associate Professionals	3528.8	3398.8	3212.6	2626.7	3368.0	2994.1	2127.2	3036.6
Administrative Occupations	3333.5	2410.2	2454.0	2000.7	2882.9	2595.0	2551.2	2603.9
Secretarial & Related Occupations	2714.3	2238.6	2617.1	2492.0	2394.1	2128.6	2059.3	2377.7
Skilled Agricultural Trades	5654.9	4907.7	3941.5	4509.6	6131.0	3179.2	3814.5	4591.2
Skilled Metal & Electrical Trades	3972.4	4012.2	3183.3	3532.5	4055.5	3600.8	2807.8	3594.9
Skilled Construction & Building Trades	5271.2	4904.7	4049.8	4406.7	4048.0	3701.3	3987.7	4338.5
Textiles, Printing & Other Skilled Trades	3910.6	3120.8	3574.8	3512.7	3954.4	2577.4	2911.7	3366.0
Caring Personal Service Occupations	3871.3	3392.1	3362.5	2492.5	4062.1	2837.1	3599.1	3373.8
Leisure & Other Personal Service Occupations	2874.1	3354.6	2473.9	2586.9	4536.5	3905.9	3065.3	3256.7
Sales Occupations	2296.3	1320.4	2164.6	1693.6	2002.6	1700.3	1767.8	1849.4
Customer Service Occupations	3801.5	3643.5	2358.4	3111.1	3619.7	2942.8	3980.7	3351.1
Process, Plant & Machines Operatives	4083.5	3639.5	3210.7	2602.7	3783.8	2945.6	2807.3	3296.1
Transport & Mobile Machine Drivers & Operatives	3735.3	3435.7	3103.5	2756.3	3321.1	2493.8	2802.7	3092.6
Elementary Trades, Plant & Storage Related Occupations	3116.9	3249.3	3031.9	2302.2	2899.0	2965.6	2601.7	2880.9
Elementary Administration & Service Occupations	1773.5	2383.4	1937.5	1993.0	2339.5	1512.5	1796.1	1962.2

Table 2.2 (cont) Rates of work related ill-heath: all illnesses, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Industry (SIC92 Division)								
Agriculture, forestry	6075.1	4860.1	2328.4	2811.2	4295.3	3255.3	3116.5	3820.3
Fishing	0.0	0.0	3589.5	3365.7	8344.1	0.0	0.0	2185.6
Mining & quarrying	3078.6	5121.9	3162.2	902.5	3903.7	1124.8	1666.0	2708.5
Manufacturing	3591.3	3361.5	3000.3	2605.8	3179.1	2637.5	2717.8	3013.3
Electricity, gas & water	4071.3	2506.0	2372.3	4960.8	5598.7	3313.2	2872.6	3670.7
Construction	4052.9	3886.5	3434.9	3228.9	3258.6	3006.3	2935.6	3400.5
Wholesale, retail, motor	2466.2	2183.1	2117.9	2278.6	2411.4	1788.3	2241.1	2212.4
Hotels & restaurants	1709.6	2473.3	1584.5	1793.7	2007.6	1470.1	1684.3	1817.6
Transport, storage & communication	4069.7	3976.5	2999.1	3058.2	3267.5	3247.2	2984.9	3371.9
Financial services	3886.6	2868.8	3378.6	2655.4	2908.5	2405.9	2353.9	2922.5
Real estate, renting & business activities	2908.4	2721.6	2630.1	1970.8	2937.7	2413.6	2294.8	2553.8
Public admin & defence	5488.6	4107.5	3862.4	3397.5	4259.7	5011.4	3259.4	4198.1
Education	4950.8	3952.5	3765.1	2644.4	4035.0	3261.3	2970.4	3654.2
Health & social work	4524.6	4306.2	4567.4	3709.7	4998.5	4205.7	4100.2	4344.6
Other community, social & personal	3132.8	3341.4	2621.5	3015.1	3815.3	2965.0	2382.5	3039.1
Private households with employed persons	1907.2	2165.7	2142.2	3461.7	2769.3	2595.8	758.6	2257.2
Workplace Size[1]								
1 to 10	*	2637.1	2430.5	2290.5	2932.2	2359.0	2231.5	2480.1
11 to 19	*	3120.2	2912.4	2598.3	3250.8	2118.8	2393.6	2732.4
20 to 24	*	2992.0	2461.8	2411.5	3231.6	3390.1	2739.7	2871.1
25 to 49	*	3437.5	3398.9	2887.9	3262.4	3191.7	3029.1	3201.2
50 to 249	*	3881.9	3365.1	3132.3	3511.0	3117.5	2888.2	3316.0
250 to 499	*	3674.8	3734.3	3175.2	3584.1	3145.6	2901.3	3369.2
500 or more	*	3912.3	3632.7	3132.3	4434.3	3755.2	3327.5	3699.0
Hours Worked								
0 to 15	903.5	997.5	1079.1	999.7	1467.4	841.3	1027.8	1045.2
16 to 29	2510.2	2413.9	2164.0	1930.0	2455.3	2098.1	2370.4	2277.4
30 to 39	3527.7	2829.0	2926.2	2206.1	3333.6	2784.1	2735.9	2906.1
40 to 49	2636.3	2897.3	2218.0	2161.9	2526.6	2175.4	2136.5	2393.1
50 to 59	3835.2	3452.6	2721.8	3165.3	3056.0	2599.8	2874.4	3100.7
60+	4029.6	3973.9	2725.9	2817.9	3278.5	2435.8	2634.4	3128.0
Job Tenure								
Less than 3 months	1452.4	1323.9	1463.1	782.1	1620.2	1588.8	1659.4	1412.8
3 to 6 months	1604.1	1672.6	1550.2	1062.4	1565.5	1200.7	1564.2	1460.0
6 to 12 months	1933.9	1644.2	2089.1	1701.0	2184.8	1608.8	1737.2	1842.7
1 to 2 years	2699.0	2072.0	2325.2	1951.0	2519.2	1653.4	2214.7	2204.9
2 to 5 years	3516.9	3308.2	2864.8	2681.3	3337.4	2727.4	2404.1	2977.2
5 to 10 years	4210.9	3932.7	3430.3	3453.0	3790.1	3466.8	3354.0	3662.5
10 to 20 years	4884.4	4377.4	3869.2	3496.7	4208.2	3773.0	3183.5	3970.3
20 years or more	5716.4	5194.9	4826.7	3855.0	5197.3	4719.9	4118.4	4804.1
Employment Status								
Employee Permanent	3785.1	3446.6	3144.1	2820.8	3483.7	3000.0	2789.6	3210.0
Employee Temporary	1962.6	1612.6	1994.0	1592.0	2281.8	1684.1	1654.9	1826.0
Self Employed	3765.9	3445.7	3202.7	2853.1	3557.4	2883.7	3159.9	3266.9

1 *Information on workplace size was not available for the self-employed during 2001/2. This means that a workforce rate of work related ill-health cannot be calculated for this year.*

The following charts compare rates of work related ill-health for the working age population with those for the in-work population. Figure 2.1 shows that rates are higher for the working age population than the in-work population. This is because many of those with health conditions will drop out of the labour market and will not be counted in the 'in-work population'. Those left in work are relatively healthy and therefore have lower rates of ill-health. The effect of occupational risk factors on ill-health is likely to be a cumulative process over the course of an individuals working life. Exit from employment is therefore relatively concentrated among those who have been exposed to occupational risk factors over a longer period and this is why we see rates reducing for the in-work sample for ages above 50. Another interesting difference between the two samples arises when we compare differences in gender. Figure 2.2 shows that the rate of ill-health for men is higher in the working age sample than in the in-work sample while the reverse is true for women. As we shall see later, men are more likely to suffer from MSDs compared to women who are more likely to suffer from SDA conditions. It is expected that MSDs could be more likely to be associated with withdrawal from the labour market.

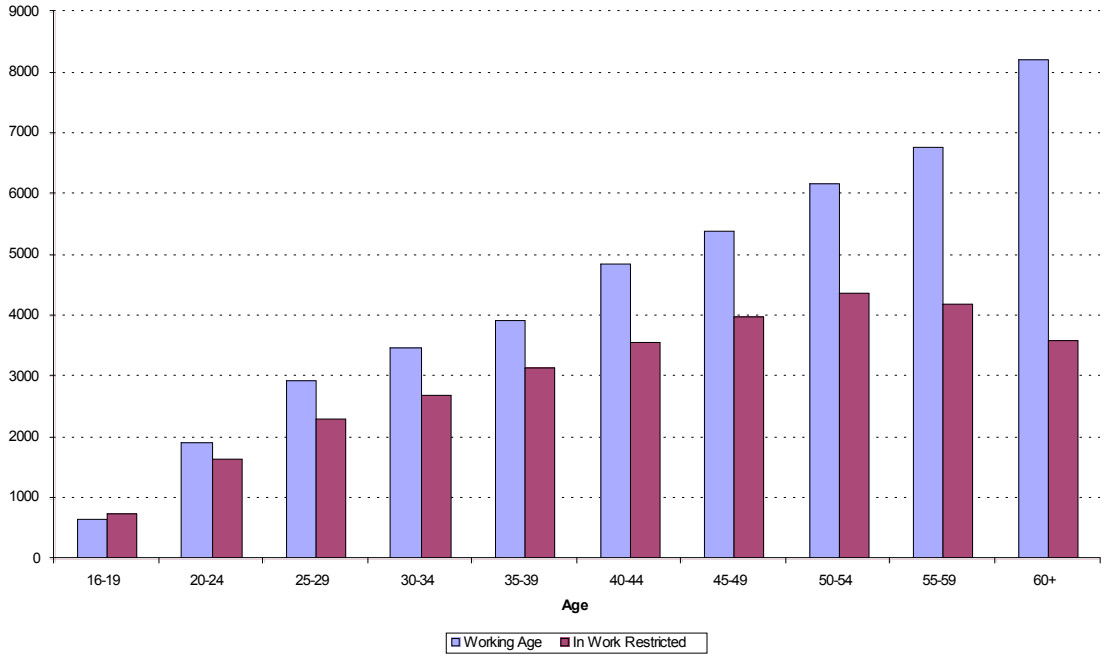

Figure 2.1 Rates of work related ill-health by age: working age and in-work populations compared (per 100,000)

Tables 2.3 and 2.4 present rates of work related ill-health separately for MSDs and SDA. The rates relate to the in-work population where an illness can be attributed to, or is made worse by, the current main job of respondents. Among the in-work population, overall rates of ill-health (Table 2.2), rates of MSDs (Table 2.3) and rates of SDA (Table 2.4) recorded in the LFS show a slight downward trend over the years 2002 to 2006. However, there seems to be a reversal of this trend in 2007 where rates climb sharply before falling again in 2008 and 2009. These trends are summarised in Figure 2.3.

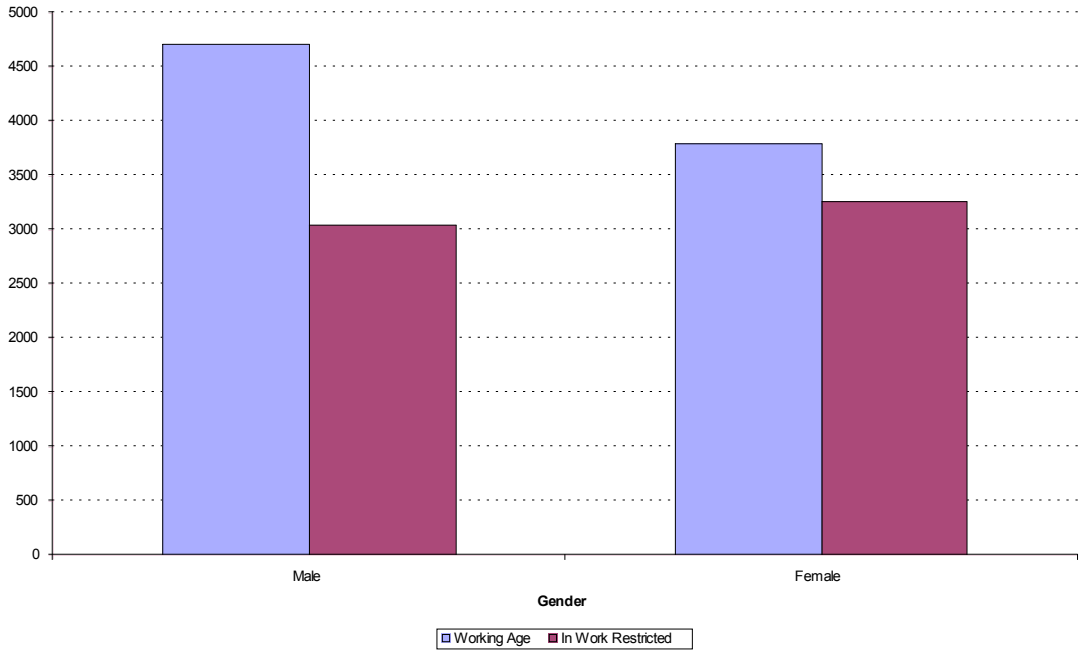

Figure 2.2 Average rates of work related ill-health by gender: 2002-2009 (per 100,000)

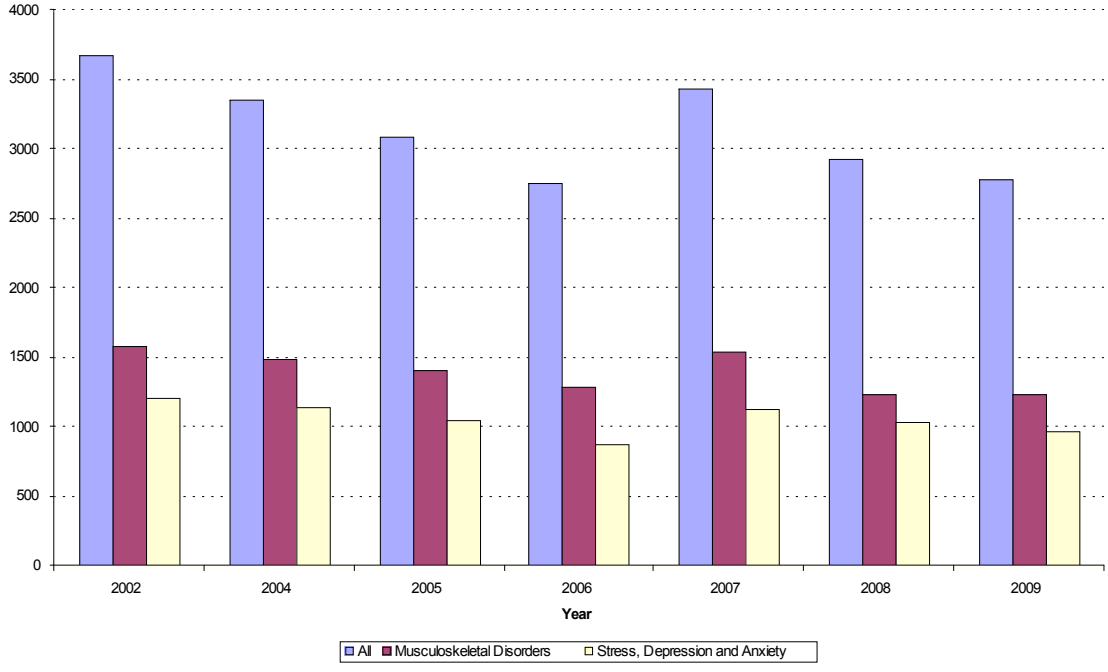

Figure 2.3 Annual rates of work related ill-health by type of illness: 2002-2009 (per 100,000)

Table 2.3: Rates of work related ill-heath: musculoskeletal disorders, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
All	1589.3	1498.2	1417.4	1287.6	1548.9	1239.6	1245.5	1403.8
Gender								
Male	1629.0	1614.9	1480.0	1411.7	1476.0	1303.8	1285.6	1457.3
Female	1541.8	1359.1	1343.1	1140.6	1637.8	1161.2	1196.9	1340.1
Age								
16-19	361.1	273.1	390.7	228.7	302.1	181.3	322.1	294.1
20-24	978.3	654.0	563.8	642.2	854.4	382.7	438.0	644.8
25-29	1034.8	1172.2	1025.8	925.0	974.5	723.9	769.1	946.5
30-34	1482.8	1318.0	979.6	905.8	991.9	931.7	920.8	1075.8
35-39	1578.9	1509.4	1456.1	1352.8	1435.4	1453.0	1426.2	1458.8
40-44	1903.8	1864.2	1585.3	1536.3	2096.1	1315.9	1337.8	1662.8
45-49	2107.0	1770.9	1824.8	1356.4	1833.5	1767.3	1735.7	1770.8
50-54	2021.1	1835.1	2046.8	1913.2	2260.3	1544.0	1780.3	1914.4
55-59	2081.5	2315.4	2014.0	2013.2	2274.2	1945.9	1554.7	2028.4
60+	1934.2	1687.7	2313.2	1521.9	2005.6	1962.6	1843.7	1895.6
Qualifications								
Degree	1178.9	1179.6	1081.7	991.1	1228.7	901.7	1079.1	1091.5
HE	2270.4	1658.8	1424.5	1553.6	1883.3	1782.4	1044.4	1659.6
A level	1680.7	1776.5	1635.4	1455.6	1892.3	1447.7	1300.5	1598.4
GCSE	1466.1	1326.9	1358.9	1096.2	1323.6	1141.2	1283.2	1285.2
Other	1728.0	1857.4	1801.9	1631.4	1655.2	1500.8	1625.3	1685.7
No Qualifications	1647.1	1190.0	1301.0	1251.0	1506.8	911.5	1128.3	1276.5
Don't know	474.8	1625.8	578.7	1876.7	1432.4	266.8	1482.5	1105.4
Proxy								
Personal Response	1734.4	1613.9	1579.3	1485.4	1719.7	1375.8	1427.6	1562.3
Proxy Response	1318.3	1286.6	1136.4	949.1	1251.5	993.0	915.0	1121.4
Wave of LFS								
Wave 1	2212.8	1807.5	1736.5	1613.1	1831.5	1269.2	1485.8	1708.0
Wave 2	1461.5	1434.6	1462.0	1337.5	1412.0	1232.8	1231.3	1367.4
Wave 3	1405.3	1335.2	1416.4	1090.2	1599.2	1309.3	1157.1	1330.4
Wave 4	1313.9	1230.0	1087.9	1068.5	1403.8	1142.8	1149.9	1199.5
Wave 5	1525.4	1662.2	1335.4	1300.9	1479.1	1234.1	1188.1	1389.3
Ethnicity								
White	1606.6	1537.6	1477.7	1336.4	1613.3	1270.5	1280.1	1446.0
Mixed	831.9	1061.9	407.1	1194.2	1022.9	1281.9	1016.8	973.8
Asian	1006.9	904.0	549.5	669.1	858.1	995.2	850.0	833.2
Black	1260.6	924.8	833.4	523.6	890.7	558.7	953.7	849.3
Chinese	4018.3	1607.4	0.0	499.3	455.3	776.7	0.0	1051.0
Other	2157.3	966.2	800.0	1056.8	940.0	1119.9	1241.7	1183.1

Table 2.3 (Cont): Rates of work related ill-heath: musculoskeletal disorders, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Occupation								
Corporate Managers	1019.4	1025.9	861.6	877.7	865.7	775.8	711.3	876.8
Managers & Proprietors in Agriculture & Services	1416.2	1512.7	1036.0	1241.5	1062.0	1087.9	1452.2	1258.4
Science & Technology Professionals	1366.4	1213.7	964.7	797.7	1126.2	869.2	1088.6	1060.9
Health Professionals	1866.1	1065.6	1384.5	1431.7	2356.3	1332.8	400.0	1405.3
Teaching & Research Professionals	1188.1	1414.0	731.8	927.6	1230.5	660.9	719.7	981.8
Business & Public Service Professionals	1041.3	1227.1	844.2	1591.6	828.3	764.8	1027.9	1046.5
Science & Technology Associate Professionals	1182.9	688.4	1519.9	1432.8	1103.8	1846.2	925.1	1242.7
Health & Social Welfare Associate Professionals	3408.7	2555.4	3215.6	2307.6	3163.1	2059.6	1911.5	2660.2
Protective Service Occupations	3324.5	2037.2	1272.7	1531.3	1591.7	2207.5	1391.8	1908.1
Culture, Media & Sports Occupations	1315.4	2150.1	1268.8	1180.5	2411.0	1599.5	2006.0	1704.5
Business & Public Service Associate Professionals	1157.9	1037.2	1107.0	655.3	1173.7	958.6	754.4	977.7
Administrative Occupations	1041.3	671.2	779.8	749.1	1079.7	880.6	990.6	884.6
Secretarial & Related Occupations	1185.8	1076.3	909.2	1144.0	1316.2	722.3	1016.6	1052.9
Skilled Agricultural Trades	3087.0	2944.3	2572.7	3306.9	4182.4	2000.6	3224.4	3045.5
Skilled Metal & Electrical Trades	2075.0	2550.5	1877.9	1992.6	1970.7	2172.5	1398.7	2005.4
Skilled Construction & Building Trades	3653.7	3814.7	2918.3	3236.9	2745.0	2415.3	2735.7	3074.2
Textiles, Printing & Other Skilled Trades	2203.0	1892.8	2283.7	2149.1	2229.7	1390.7	1557.2	1958.0
Caring Personal Service Occupations	1938.5	1530.8	2022.3	885.3	2052.8	1182.6	1257.6	1552.8
Leisure & Other Personal Service Occupations	1356.1	1032.0	1441.4	1342.7	2176.2	2053.6	1756.1	1594.0
Sales Occupations	1260.9	554.4	1117.7	931.2	1054.0	770.6	906.7	942.2
Customer Service Occupations	951.2	1326.7	873.5	765.9	1020.3	1126.9	954.7	1002.7
Process, Plant & Machines Operatives	2502.3	2221.1	2146.0	1749.3	2507.1	1956.5	1853.2	2133.7
Transport & Mobile Machine Drivers & Operatives	2043.3	2093.8	2287.1	1838.4	2280.4	1505.4	1869.6	1988.3
Elementary Trades, Plant & Storage Related Occupations	1711.5	2164.8	1845.7	1469.2	1607.0	1909.2	1629.6	1762.4
Elementary Admin & Service Occupations	974.9	1376.6	1163.5	1067.3	1194.4	971.2	1153.1	1128.7

Table 2.3 (Cont): Rates of work related ill-heath: musculoskeletal disorders, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Industry								
Agriculture, hunting & forestry	3372.8	2957.1	1630.1	1759.5	3053.1	2010.3	2530.6	2473.3
Fishing	0.0	0.0	0.0	3365.7	4100.5	0.0	0.0	1066.6
Mining & quarrying	2083.6	1874.8	2226.3	0.0	1422.9	0.0	313.2	1131.5
Manufacturing	1825.0	1604.4	1672.6	1388.2	1625.0	1482.7	1400.5	1571.2
Electricity, gas & water	2235.4	933.3	1753.7	1635.2	2421.6	1260.0	1287.0	1646.6
Construction	2442.4	2714.0	2171.4	2192.6	1959.2	1848.7	1873.9	2171.8
Wholesale, retail & motor	1117.0	1098.7	1144.2	1192.5	1265.6	925.6	1113.3	1122.4
Hotels & restaurants	697.1	1140.0	715.4	640.0	832.7	786.8	915.9	818.3
Transport, storage & communication	1858.3	1922.9	1720.6	1831.0	1563.3	1522.5	1715.8	1733.5
Financial Services	894.1	756.4	990.5	720.2	1103.3	816.2	454.1	819.2
Real estate, renting & business activities	969.1	1080.8	978.5	844.8	1248.7	806.4	887.8	973.7
Public administration & defence	1875.4	1290.4	1116.2	1339.7	1260.3	1627.5	1105.6	1373.6
Education	1477.8	1315.3	977.4	733.9	1330.1	845.8	897.8	1082.6
Health & social work	2262.8	1971.5	2096.3	1515.8	2164.7	1516.8	1502.6	1861.5
Other community, social & personal	1312.6	1171.4	1391.9	1329.5	2020.5	1434.7	1421.6	1440.3
Private households with employed persons	445.4	1424.7	1573.0	3461.7	2366.5	1278.4	758.6	1615.5
Workplace Size[1]								
1 to 10	*	1116.6	1201.9	1128.5	1430.7	1051.1	1079.5	1168.0
11 to 19	*	1251.7	1104.5	950.6	1481.0	877.0	923.6	1098.1
20 to 24	*	1436.5	1432.7	1043.9	1403.5	1290.1	1230.0	1306.1
25 to 49	*	1527.3	1428.0	1267.3	1332.6	1277.8	1114.0	1324.5
50 to 249	*	1694.8	1501.2	1434.3	1448.8	1240.0	1041.8	1393.5
250 to 499	*	1333.9	1442.3	1475.9	1545.9	1332.2	1454.9	1430.8
500 or more	*	1546.5	1604.3	1272.0	1781.1	1443.1	1246.9	1482.3
Hours Worked								
0 to 15	557.7	646.4	608.1	513.8	938.0	399.1	681.4	620.6
16 to 29	1306.3	1263.3	1161.6	862.8	1226.8	952.0	1371.4	1163.5
30 to 39	1561.5	1159.0	1373.2	1098.5	1480.4	1255.5	1064.8	1284.7
40 to 49	1329.6	1623.6	1095.7	1222.8	1359.7	1169.8	1201.2	1286.1
50 to 59	1512.5	1817.2	1468.9	1499.6	1433.2	1042.6	1257.2	1433.0
60+	1938.2	1743.0	1104.8	1505.3	1332.4	852.5	1410.8	1412.4
Job Tenure								
Less than 3 months	457.6	400.4	373.8	280.8	696.4	573.8	656.1	491.3
3 to 6 months	846.5	857.1	803.9	581.5	840.2	409.0	469.5	686.8
6 to 12 months	767.2	664.0	1041.3	908.5	857.7	800.7	554.1	799.1
1 to 2 years	1188.0	733.1	1271.8	825.8	1031.3	584.4	917.9	936.0
2 to 5 years	1513.1	1410.1	1254.4	1245.5	1463.5	1144.6	1110.1	1305.9
5 to 10 years	1698.3	1912.6	1577.4	1533.8	1732.8	1361.2	1614.7	1633.0
10 to 20 years	2327.8	2015.2	1760.2	1726.7	1931.7	1717.1	1389.2	1838.3
20 years or more	2251.1	2406.9	2099.9	1745.1	2499.3	2091.9	1988.5	2154.7

Table 2.3 (Cont): Rates of work related ill-heath: musculoskeletal disorders, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Employment Status								
Employee Permanent	1550.0	1448.3	1391.2	1231.0	1474.9	1228.4	1138.6	1351.8
Employee Temporary	709.8	538.9	673.4	723.9	905.6	905.6	516.3	710.5
Self Employed	2294.9	2223.2	1902.0	1887.8	2282.8	1610.2	2196.0	2056.7

1. Information on workplace size was not available for the self-employed during 2001/2. This means that a workforce rate of work related ill-health cannot be calculated for this year.

Table 2.4: Rates of work related ill-heath: stress, anxiety and depression, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
All	1216.9	1140.7	1046.6	884.4	1135.1	1044.3	967.8	1062.2
Gender								
Male	1034.0	990.9	810.9	710.4	918.8	836.7	776.0	868.2
Female	1435.9	1319.2	1326.4	1090.5	1398.8	1297.2	1200.4	1295.5
Age								
16-19	173.4	39.5	144.4	121.6	125.2	128.7	93.6	118.1
20-24	530.3	508.6	276.2	217.1	588.0	413.2	683.7	459.6
25-29	965.1	873.0	860.8	918.8	1060.4	621.1	643.4	849.0
30-34	1151.0	1242.4	1062.3	755.0	1027.2	808.3	923.4	995.7
35-39	1300.8	1308.4	963.3	896.8	1237.6	1113.2	883.8	1100.5
40-44	1466.1	1380.0	1188.1	1276.3	1240.1	1079.0	827.2	1208.1
45-49	1589.8	1363.1	1674.9	1097.6	1470.2	1467.7	1202.8	1409.5
50-54	1668.2	1820.3	1534.8	1147.7	1367.5	1834.7	1726.6	1585.7
55-59	1504.0	1137.6	1279.7	1032.8	1471.3	1336.5	1282.7	1292.1
60+	974.6	430.7	338.6	446.7	1036.4	1073.8	862.2	737.6
Qualifications								
Degree	1849.1	1648.0	1689.7	1166.6	1561.5	1455.5	1229.9	1514.3
HE	1036.9	974.0	853.4	792.3	823.5	948.7	932.9	908.8
A level	1036.9	974.0	853.4	792.3	823.5	948.7	932.9	908.8
GCSE	1160.7	1026.7	858.1	850.4	982.6	969.4	871.4	959.9
Other	833.7	820.3	590.4	618.6	1038.0	617.2	696.7	745.0
No Qualifications	621.7	769.5	660.5	647.7	709.8	352.1	373.2	590.6
Don't know	765.7	333.7	238.8	214.2	1351.0	548.4	204.4	522.3
Proxy								
Personal Response	1466.4	1388.3	1295.9	1075.3	1362.6	1360.4	1182.7	1304.5
Proxy Response	751.2	688.9	613.7	557.5	738.8	471.5	577.7	628.5
Wave of LFS								
Wave 1	1456.6	1324.5	1143.7	948.3	1234.3	1219.1	1081.8	1201.2
Wave 2	1252.9	1096.7	1112.8	899.5	1011.7	960.7	1029.2	1051.9
Wave 3	1255.9	1092.4	990.0	803.3	1144.1	984.6	987.9	1036.9
Wave 4	1043.3	1059.9	910.1	897.3	1110.5	945.3	770.3	962.4
Wave 5	1045.5	1112.3	1057.6	869.9	1182.3	1112.6	944.4	1046.4
Ethnicity								
White	1235.6	1157.4	1074.1	894.4	1167.8	1068.9	984.7	1083.3
Mixed	2142.9	989.7	835.4	1648.7	373.9	1445.7	2251.2	1383.9
Asian	542.9	732.3	417.3	306.4	928.0	705.3	781.8	630.6
Black	1140.6	1397.7	621.6	1498.5	1074.5	861.3	527.3	1017.4
Chinese	1378.5	0.0	2662.5	0.0	480.6	489.5	528.9	791.4
Other	729.2	947.9	946.5	862.7	267.4	757.8	688.4	742.8

Table 2.4 (cont): Rates of work related ill-heath: stress, anxiety and depression, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Occupation								
Corporate Managers	1693.7	1786.8	1472.4	1116.0	1409.2	1386.4	1371.7	1462.3
Managers & Proprietors in Agriculture & Services	1357.7	1268.4	1086.9	1204.2	1468.0	650.5	754.1	1112.8
Science & Technology Professionals	895.0	1269.0	1306.0	650.6	1029.3	780.0	1284.5	1030.6
Health Professionals	844.5	1339.8	1450.9	1042.3	1324.7	1619.1	599.9	1174.5
Teaching & Research Professionals	3481.9	2560.8	2750.9	1954.0	2912.0	2376.4	1979.4	2573.6
Business & Public Service Professionals	1954.5	2020.0	1607.8	1231.1	948.2	1760.5	1215.0	1533.9
Science & Technology Associate Professionals	1179.6	825.5	1091.6	620.3	1088.1	759.0	741.9	900.9
Health & Social Welfare Associate Professionals	1894.5	1838.0	1888.6	1450.0	2255.8	2585.3	2178.7	2013.0
Protective Service Occupations	3139.7	1980.2	2092.0	2485.7	1419.3	1919.9	857.3	1984.9
Culture, Media & Sports Occupations	811.5	754.9	1256.7	654.6	1079.9	721.1	546.4	832.1
Business & Public Service Associate Professionals	1653.5	1728.5	1407.0	1264.7	1327.8	1528.7	1031.6	1420.3
Administrative Occupations	1575.4	1046.6	1243.0	805.0	1324.5	1293.3	1059.3	1192.5
Secretarial & Related Occupations	1007.4	837.0	1109.9	1174.0	713.3	996.4	818.7	951.0
Skilled Agricultural Trades	1275.5	843.4	509.1	311.0	770.8	174.9	423.8	615.5
Skilled Metal & Electrical Trades	593.5	437.6	275.1	689.5	681.4	645.6	647.2	567.1
Skilled Construction & Building Trades	429.0	465.4	384.5	292.4	519.7	311.7	455.4	408.3
Textiles, Printing & Other Skilled Trades	779.0	380.8	513.4	352.6	804.0	836.1	799.2	637.9
Caring Personal Service Occupations	1178.1	1227.7	760.5	890.3	1258.9	1050.8	1191.8	1079.7
Leisure & Other Personal Service Occupations	969.2	1077.3	402.5	644.1	1193.2	738.3	804.3	832.7
Sales Occupations	739.3	451.7	536.1	382.4	584.0	535.6	618.7	549.7
Customer Service Occupations	1852.1	1891.9	882.5	1767.1	1934.5	1193.8	1478.0	1571.4
Process, Plant & Machines Operatives	330.7	397.7	403.4	446.1	583.7	362.0	430.8	422.1
Transport & Mobile Machine Drivers & Operatives	838.3	1020.4	552.1	456.4	432.6	452.2	303.3	579.3
Elementary Trades, Plant & Storage Related Occupations	809.2	658.6	525.2	207.7	627.6	410.5	502.8	534.5
Elementary Admin & Service Occupations	259.3	386.5	382.1	600.2	548.4	310.1	390.9	411.1

Table 2.4 (cont): Rates of work related ill-heath: stress, anxiety and depression, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Industry								
Agriculture, hunting & forestry	1551.8	862.1	278.2	154.8	476.5	654.2	292.2	610.0
Fishing	0.0	0.0	3589.5	0.0	0.0	0.0	0.0	512.8
Mining & quarrying	0.0	1864.1	476.3	422.2	1573.9	750.4	733.4	831.4
Manufacturing	837.4	888.3	640.7	577.1	738.4	604.0	761.2	721.0
Electricity, gas & water	1632.2	1288.5	618.6	1772.3	1980.7	1201.7	1585.6	1439.9
Construction	461.9	655.1	429.8	433.5	562.0	446.5	421.8	487.2
Wholesale, retail & motor	766.9	645.3	533.7	614.0	664.4	577.9	677.8	640.0
Hotels & restaurants	558.1	525.7	510.2	735.8	680.1	309.3	469.4	541.2
Transport, storage & communication	1229.2	1221.5	668.5	781.6	1017.9	1073.9	628.2	945.8
Financial services	2052.3	1400.9	1786.4	1387.2	1473.6	1284.7	1154.8	1505.7
Real estate, renting & business activities	1204.1	1124.8	1150.4	722.6	975.4	1086.8	1001.0	1037.9
Public administration & defence	2430.5	2077.2	2055.0	1638.9	2133.8	2381.4	1466.0	2026.1
Education	2236.6	1780.6	1900.8	1301.6	1784.9	1514.1	1364.0	1697.5
Health & social work	1456.7	1573.0	1734.7	1230.3	1844.1	1659.7	1749.6	1606.9
Other community, social & personal	929.9	1083.7	581.8	886.1	899.2	820.8	611.2	830.4
Private households with employed persons	474.0	0.0	0.0	0.0	0.0	303.1	0.0	111.0
Workplace Size[1]								
1 to 10	*	865.9	705.4	739.1	784.3	771.3	782.0	774.7
11 to 19	*	885.8	1114.1	929.9	983.5	682.0	859.8	909.2
20 to 24	*	710.4	702.7	844.6	856.5	1405.8	1137.7	942.9
25 to 49	*	1286.6	1308.1	897.2	1329.2	1299.2	1230.6	1225.2
50 to 249	*	1502.1	1158.5	1159.9	1302.8	1212.6	1128.5	1244.1
250 to 499	*	1481.1	1529.6	1113.8	1569.1	1267.3	982.5	1323.9
500 or more	*	1575.3	1370.6	1057.4	1603.2	1485.4	1322.0	1402.3
Hours Worked								
0 to 15	128.9	131.3	198.2	131.0	204.1	189.5	230.1	173.3
16 to 29	857.8	701.8	679.7	683.0	807.3	701.9	724.7	736.6
30 to 39	1246.9	1091.4	1070.3	770.9	1208.8	1085.0	1029.7	1071.9
40 to 49	739.7	629.1	588.6	485.4	562.5	479.3	515.3	571.4
50 to 59	1447.4	1052.4	793.8	768.4	836.7	762.1	1039.3	957.1
60+	879.3	1575.4	979.2	424.9	1254.9	712.1	669.5	927.9
Job Tenure								
Less than 3 months	688.5	523.4	696.3	309.5	387.5	512.9	479.6	514.0
3 to 6 months	425.5	411.4	480.9	257.4	270.3	509.3	677.2	433.1
6 to 12 months	610.5	504.7	573.9	356.1	714.2	425.5	744.6	561.3
1 to 2 years	730.6	778.3	549.2	558.3	916.7	549.7	677.6	680.1
2 to 5 years	1115.1	1172.2	1024.4	876.1	1201.7	801.1	847.7	1005.5
5 to 10 years	1505.7	1315.3	1267.6	1207.7	1258.6	1407.0	1167.5	1304.2
10 to 20 years	1573.4	1555.4	1306.7	1097.1	1389.9	1478.2	1097.3	1356.9
20 years or more	2052.4	1626.7	1679.2	1311.9	1586.1	1689.4	1397.4	1620.4

Table 2.4 (cont): Rates of work related ill-heath: stress, anxiety and depression, in-work population

(Rates per 100,000)	*2002*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Employment Status								
Employee Permanent	1326.0	1256.8	1124.7	1002.9	1249.1	1145.2	1053.9	1165.5
Employee Temporary	727.5	457.4	879.0	463.9	463.9	656.1	679.5	618.2
Self Employed	666.9	649.9	591.6	262.1	542.2	518.5	518.4	535.7

1. Information on workplace size was not available for the self-employed during 2001/2. This means that a workforce rate of work related ill-health cannot be calculated for this year.

The following figures report the main findings by looking at variations in ill-health for different personal, workplace and job characteristics. For ease of exposition and to provide robust estimates of the incidence of work related ill-health across detailed categories, rates derived from averages of annual rates of work related ill-health are presented. Figure 2.4 presents estimates of rates of ill-health by gender for those in work. If we consider all types of illness the rates for women are higher than those for men. However, taking into account the distinction between MSDs and SDA, it is apparent that rates of MSDs are higher among men while women exhibit higher rates of SDA. Figure 2.5 shows the distribution of rates across the different age groups among the in-work population. It shows that for all illnesses, rates increase up until the 50-54 age group and then decline. For MSDs, rates are an increasing function of age throughout the age distribution, while rates of SDA increase with age up until the 50-54 age group and then subsequently decline

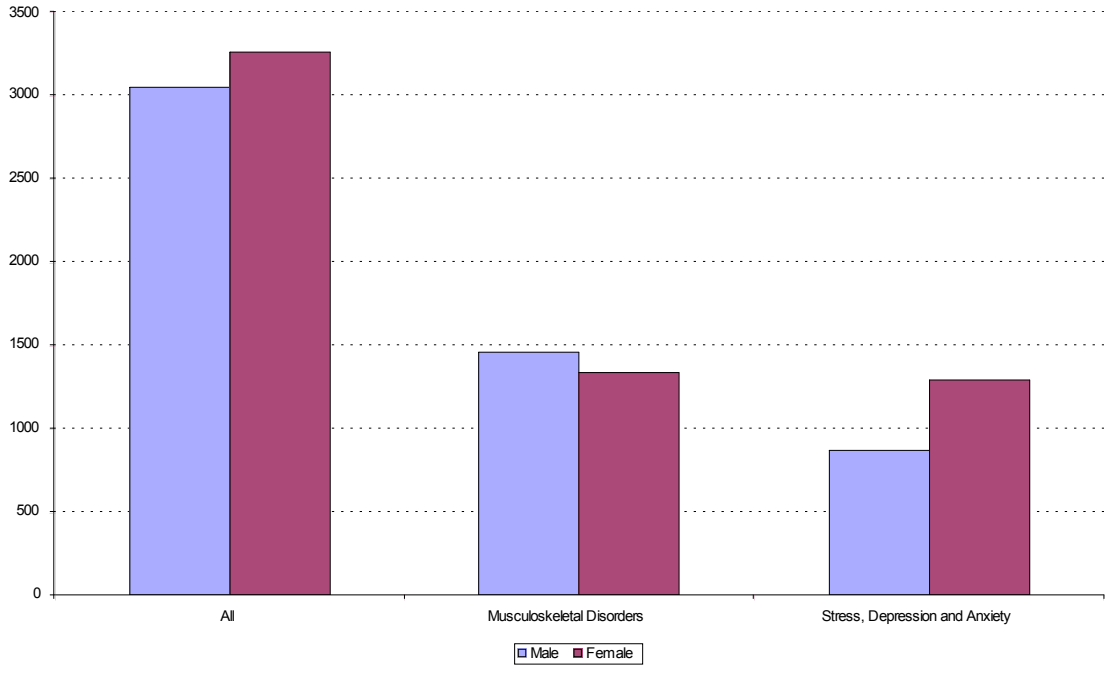

Figure 2.4 Rates of ill-health by gender, all illnesses, MSDs and SDA (per 100,000 in work)

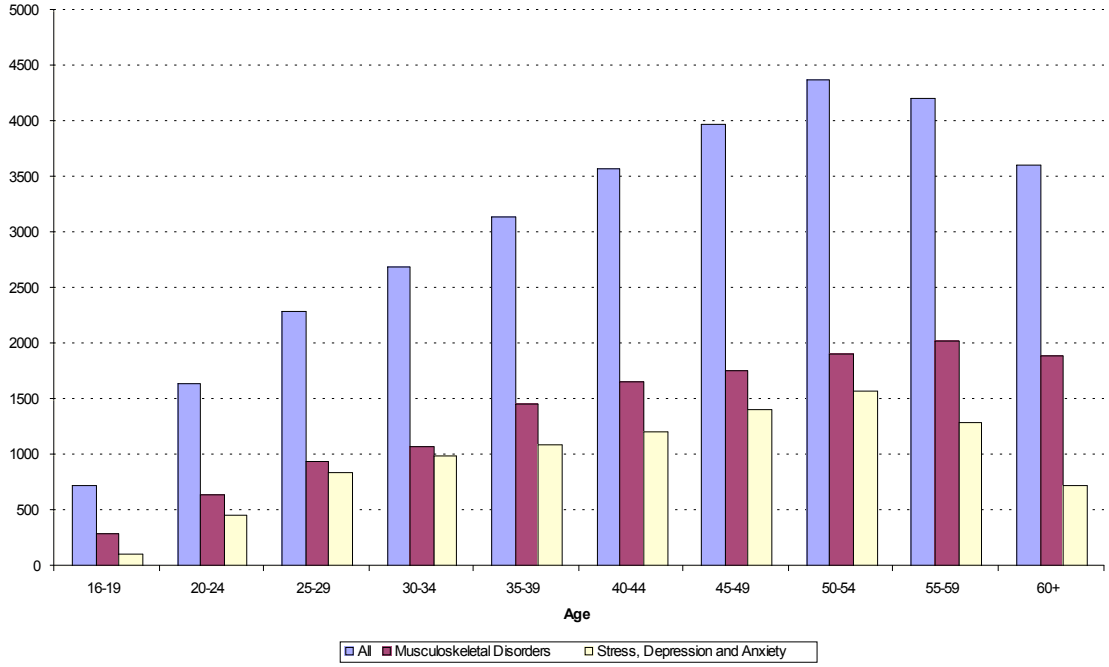

Figure 2.5 Rates of ill-health by age for all illnesses, MSDs and SDA (per 100,000 in work)

Figure 2.6 shows rates of work related ill-health by occupation, distinguishing between different types of ill-health condition. The highest overall rate of work related ill-health is estimated to occur among Health and Social Welfare Associate Professionals. The highest rate of ill-health for SDA is among Teaching and Research Professionals while the lowest rate for SDA is among those in Skilled Construction and Building Trades. The lowest overall rate is estimated for those people employed in Sales Occupations.

Figure 2.7 shows that the industry with the highest rates of ill-health is Health and Social Work while the industry with the highest rate of SDA is Public Administration and Defence. Not surprising, given the physical nature of the work, the industry with the highest rate for physical illnesses is agriculture. However, comparison to Figure 2.6 suggests that the prevalence of ill-health is driven more by occupation than by industry. Although Figure 2.7 shows apparent variation between industries, the scale of variations between occupations appears to be wider. The multivariate analysis in the following chapter will investigate more formally whether the risk of ill-health is driven more by a person's occupation within an industry rather than any structural industry effects per se.

Other interesting features of the descriptive data include the fact that as job tenure increases so do rates of occupational ill-health. However, rates of SDA first fall and then increase with time spent in the job. In terms of employment status, the self-employed display the higher overall rates of work related ill-health compared to those who are employees, although they are least at risk of suffering from stress, depression or anxiety.

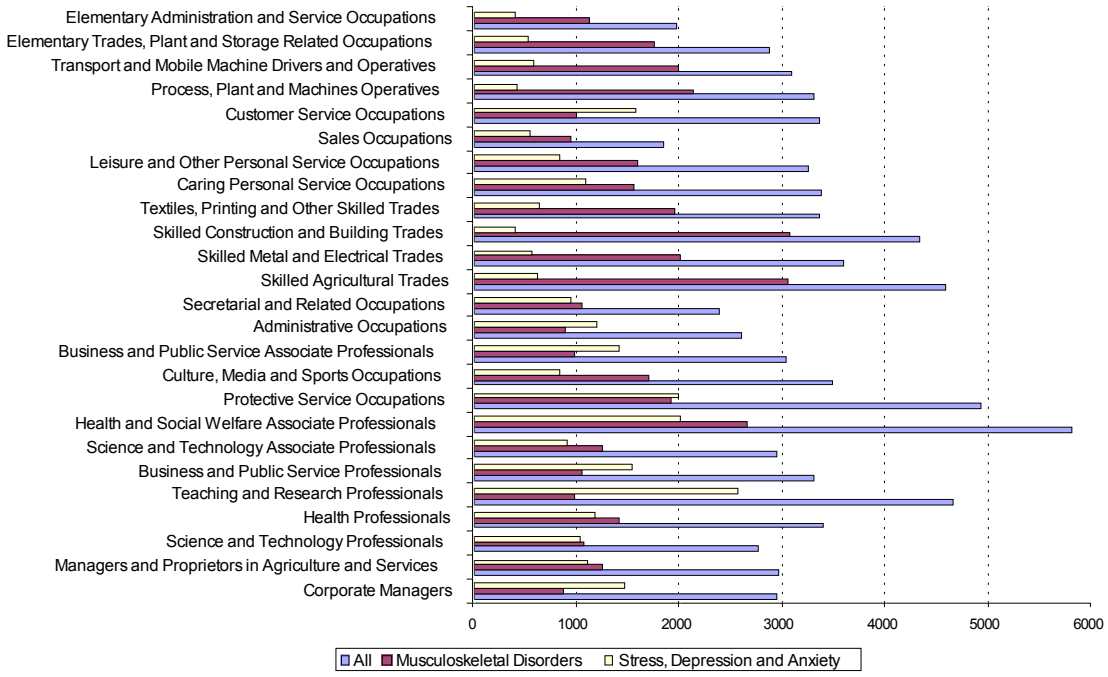

Figure 2.6 Rates of ill-health by occupation for all illnesses, MSDs and SDA (per 100,000 in work)

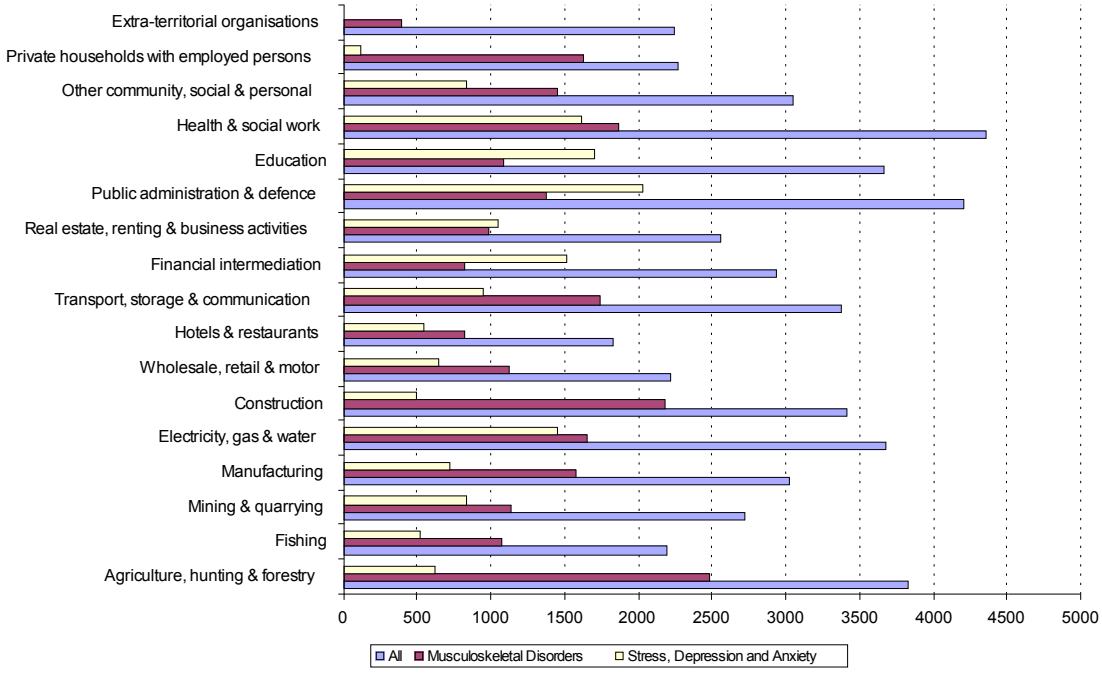

Figure 2.7 Rates of ill-health by industry for all illnesses, MSDs and SDA conditions (per 100,000 in work)

CHAPTER 3:
UNDERSTANDING THE DETERMINANTS OF WORK RELATED ILL-HEALTH

3.1 INTRODUCTION

The preceding chapter illustrated some of the variations that exist when work related ill-health statistics are analysed by various characteristics of the workforce. A problem underlies these variations, in that it is not clear what separate and additional contribution is made to our understanding of these different dimensions upon the risk of experiencing work related ill-health. For example, is the variation by gender simply a consequence of the different occupational structure between men and women, or does gender per se contribute to an increased risk of work related ill-health? Is the difference in rates of ill-health between men and women a consequence of the fact that men tend to predominate in manual occupations which carry a higher risk of suffering a work related heath condition or is there a separate and additional gender effect? More generally, are certain groups of individuals with higher rates of occupational ill-health 'prone' to such conditions or are they more likely to be employed in 'high risk' jobs.

To develop a better understanding of the relationship between the risk of occupational ill-health and the variety of factors that contribute to this risk, we utilise a statistical approach that is able to identify how a range of personal, job and workplace characteristics contribute to the risk of an individual suffering from a work related ill-health condition. We employ multivariate statistical techniques that allow us to simultaneously estimate the separate systematic influence of these factors on the 'risk' of an individual suffering from a work related ill-health condition.

3.2 METHODOLOGICAL ISSUES IN THE ANALYSIS OF WORK RELATED ILL-HEALTH

Analyses of the determinants of work related ill-health using individual level data, including many of the studies summarised in Chapter 1, are generally based upon the specification and estimation of a statistical model which attempts to quantify the effect of different individual, workplace and establishment characteristics on occupational health. Measures of occupational health vary according to the availability of information across different sources of data, but generally take the form of a self reported ordinal scale or the respondent simply reporting whether or not they have suffered from a work related health condition during the survey period (as is the case with the LFS). The specification of these models, the control variables introduced and estimation techniques employed in previous research vary according to the opportunities provided by the data sets being used. It is important to note some of the key issues related to the analysis of work related ill-health within the LFS.

3.2.1 Simultaneity of occupation and health

Occupation can affect health through direct impacts, such as physical work conditions and psycho-social job characteristics. Occupation may also affect health through indirect mechanisms, via income, health insurance, the influence of peers or workplace characteristics. The impact of these factors may be expected to build cumulatively and possibly persist, as is demonstrated by the increasing incidence of work related ill-health by age outlined in Chapter 2. A significant short-coming of data sets that measure occupation at a point in time is that deteriorating health may have prompted occupation to change and previous occupations held may be most relevant for assessing the cumulative impact of occupation on health. Simultaneity

between health and occupation is difficult to address statistically, especially when the measures of each are collected contemporaneously.

Previous studies have circumvented the simultaneity problem by different methods. Gueorguieva et al (2009) measure occupation as the longest occupation individuals have held over their careers. Since the effects of occupational characteristics tend to build cumulatively over the years spent in that occupation, taking the longest occupation maximises the exposure to conditions that could influence health. Fletcher and Sindelar (2009) avoid the simultaneity problem by focussing upon the occupations held by people when they were young (or first occupation). The reasoning behind this is that choices made early on in life affects later health. The LFS is a cross sectional survey and it is therefore generally only possible to observe the characteristics of jobs currently held by survey respondents in any detail. The LFS does not collect information on the work histories of respondents, although length of time employed in current job is recorded and may therefore be used in some way to control for pro-longed exposure to occupational hazards. To overcome this problem, those in work where a health condition was caused by an earlier job or their second job are removed from the in-work sample.

3.2.2 Sample selection

Individuals with a work related illness who remain in employment are unlikely to be representative of all those with a work related illness in the wider population of working age. For example, it may be expected that those who withdraw from formal employment as a result of an ill-health condition could be suffering with more severe conditions. Such a bias could affect the size and scale of estimated relationships. As described in the analysis of rates of ill-health in the previous chapter, the multivariate analysis will also be conducted in 2 stages. Firstly, the analysis of work related ill-health will be conducted on all people of working age, whether they are employed or not. The analysis will then be repeated on the in-work sample only. This will allow effects of personal characteristics estimated on the basis of the population of working age to be compared to the estimated effects of the same characteristics that are derived from the analysis of the in-work population.

3.2.3 Recall bias/proxy response

The questions relating to work related ill-health collect information on the preceding 12 month period. These estimates are likely to underestimate the actual number of incidences of ill-health occurring in a 12 month period due to recall error. Furthermore, around one-third of all workers recorded in the LFS provided information through a proxy respondent. The quality of information provided by proxy respondents is considered to be of a generally acceptable level. However, in some areas it has been shown that proxy respondents under-report the incidence of events and that such under-reporting is evident over fairly short recall periods (Arulampalam et al., 1997). Due to the length of the recall period required in response to the work related ill-health questions and the nature of information required the issue of proxy response will need to be addressed in any statistical modelling work. However, unlike the collection of data on workplace injuries, it is expected that the work related ill-health condition will be more likely to persist or last for a longer duration of time and so will be more memorable to the proxy respondent.

3.2.4 Waves of the LFS

A further issue related to the administration of the LFS which could influence the reporting of work related ill-health conditions relates to the Wave structure of the LFS. Individuals appear within the LFS over five successive quarters – referred to as ‘Waves’. However, face to face

interviews are only conducted with respondents during Wave 1. The quality of responses to the LFS may therefore be expected to be more accurate during the first wave of interviews. Therefore, those respondents who respond to the work related ill-health questions during their first wave of interviews may be expected to give more complete information. In addition it can be said that attrition from the LFS sample is not random. The responses to the work related health question may vary depending on when it is asked, with people of a more settled nature (e.g. older respondents who are less likely to change job or move home) being present for all five waves. The statistical analysis therefore needs to take account of the wave of the LFS from which the data comes from.

3.3 DEFINING RELATIVE RISK

The concept of 'risk' is fundamental to the interpretation of the results presented in this chapter. Before presenting these results, we describe what we mean by risk and how we estimate risk factors within a statistical model. Most people are familiar with the concept of risk as a probability. For example, from Table 2.2, it was shown that among the in-work population, the 'risk' of a person aged 16-19 suffering from work related ill-health was 0.7%, or approximately a 1 in 140 chance. Among those aged 55-59, the risk of suffering from work related ill-health was higher at 4.2%, or approximately a 1 in 25 chance. We therefore observed, based upon a comparison of rates of ill-health, that older workers exhibit a higher relative risk of suffering from occupational ill-health. An alternative way of expressing this increased risk is to say that relative to young workers, those aged 55-59 are 6 times *as* likely (or 5 times *more* likely) as younger workers of reporting that they suffer from work related ill-health.

To detect 'relative' risk factors we examine a large body of data which tells us whether or not an individual suffers from work related ill-health and which contains details about the nature of each individual's job and relevant personal characteristics. All of the results presented in this section show the 'adjusted' relative risks which are derived from multivariate statistical models known as logistic regression. Full details of the model specification are presented in Annex 2, while the full results from the logistic regressions are presented in Annex 3. Multivariate statistical modelling is a technique for determining the separate 'contribution' that each piece of information about an individual's job or their personal characteristics makes to the observed pattern of work related ill-health. These contributions to our understanding of risk factors are referred to as 'adjusted' relative risk. The 'adjusted' risks take account of the separate contributions made simultaneously to the overall risk from a wide range of characteristics describing individuals and their jobs.

3.4 STRUCTURE OF ANALYSIS

The analysis firstly focuses upon understanding the risk of suffering a work related ill-health condition among the in-work population. This analysis is based upon the restricted sample, as described in Chapter 2, where individuals who report that they suffer from an ill-health condition that was not caused or made worse by their current job are excluded from the analysis. This allows us to consider how the characteristics of an individual's current job contribute to the risk of suffering from work related ill-health. The analysis deliberately abstracts from the issue of how occupational choice may be affected by an individual's health status in order to assist with the interpretation of the analytical results in terms of understanding the direction of causality.

However, we also wish to understand which characteristics among the wider working aged population are associated with work related ill-health, whether or not they are currently in employment. The effects of sample selection could mean that we would expect that those who suffer from work related ill-health but who remain in work are not representative of the entire

population of people who suffer from work related ill-health. Most significantly, we might expect that those with the worst conditions may drop out of the labour market, with those remaining in employment suffering from less severe conditions or conditions that do not preclude them from participating in formal employment. The second stage of the analysis therefore compares results of the analysis conducted on the in-work population with results based on the wider working age population. The third stage of the analysis considers how the factors associated with work related ill-health differ between MSDs and SDA. Due to the importance of job characteristics in contributing to an individual's risk of work related ill-heath, the analysis focuses upon the in-work population. The fourth stage of the analysis considers how the nature of the estimated relationships varies when the analysis is conducted separately for men and women and then separately for younger and older workers. Due to the relative concentration of MSDs and SDA among males and females respectively, the analysis of ill-health by gender and age group also distinguishes between MSDs and SDA. The final stage of the analysis utilises Analysis of Variance (ANOVA) techniques to investigate the relative contribution of personal and job related characteristics in understanding who suffers from a work related ill-health condition.

3.5 PRESENTATION OF RESULTS

The 'adjusted' differentials in relative risks, derived from the coefficients in the logistic regressions, are represented as bars in the following charts. These represent the separate risk factors associated with particular characteristics having taken account of all other risk factors in our statistical model. These adjusted risk factors are therefore generally derived from the same statistical model which incorporates controls for a range of personal, job and establishment characteristics. Due to the large amounts of information included within these models (these models contain as many variables as presented in the tables of rates of ill-health shown in Chapter 2), we present the results on separate charts purely for ease of exposition. Some charts present results derived from 2 statistical models side by side (e.g. males compared to females) so that the estimated pattern of relationships between different population sub-groups can be compared. The full results of the statistical models are presented in Annex 3.

Results from the statistical models are presented for groups of characteristics (e.g. gender, age, occupation, industry). For each group, one category has to act as a reference category against which the effect of being in another category upon the risk of suffering a work related ill-health condition is evaluated. So for example, in the case of gender we compare the risk of a male suffering a work related ill-health condition compared to the female reference category. It is noted that the choice of reference category is arbitrary and does not affect the overall results of the statistical analysis. To assist in the interpretation of the analysis, the selected reference category generally relates to that group of individuals that exhibit relatively high or low rates of work related ill-health, subject to this category being robust in terms of the sample size that underpins it.

Where 'adjusted' differentials were found to be statistically insignificant, the bars on the chart are left clear. In other words, a bar which is clear denotes that there is no significant difference between the category it represents and the 'reference' category within the logistic regression. However, as noted above, the choice of reference category is arbitrary and therefore, whilst a particular result may be statistically insignificant compared to the reference category, it may be significantly different from other categories within the group. It is the overall 'shape' of a relationship that is of most relevance to readers.

The presentation of results focuses upon statistical models based upon pooled data sets created by merging occupational health data recorded in the LFS between 2002 and 2009. This merging of data creates a pooled working age sample of 324 thousand individuals (merging data

from 2002 to 2007 only due to routing errors in the LFS) and a pooled in-work sample of 345 thousand individuals (merging data from 2002 to 2009). Due to the statistical power generated by the large samples, a majority of relationships are estimated to be statistically significant. Insignificant results emerge where (a) relative risks are not estimated to differ greatly from the reference category or (b) where the number of individuals in a particular group is relatively small, despite the merging of data (e.g. particular ethnic minorities). A small difference in relative risk may be estimated to be statistically significant if the number of people within that group is large. However, a larger difference in relative risk may not be statistically significant if the number of people in that group is relatively small.

3.6 WORK RELATED ILL-HEALTH AMONG THE IN-WORK POPULATION

The main results from the multivariate analysis are presented in Figures 3.1 to 3.5. In terms of the influence of personal characteristics (Figure 3.1) we estimate that:

- Males are approximately 16% less likely to suffer from work related ill-health to females (ref).
- Those aged 16-19 are least likely to report that they suffer from work related ill-health. The risk of work related ill-health increases steeply over the life course, peaking among those aged 50-59;
- People of Asian and Black descent are 25 to 28 per cent respectively less likely than Whites (ref) to report suffering from work related ill-health. We must be careful in interpreting this result as it not clear whether these ethnicity effects are genuine or whether those from ethnic minority backgrounds are less likely to report suffering from occupational ill-health within the LFS.

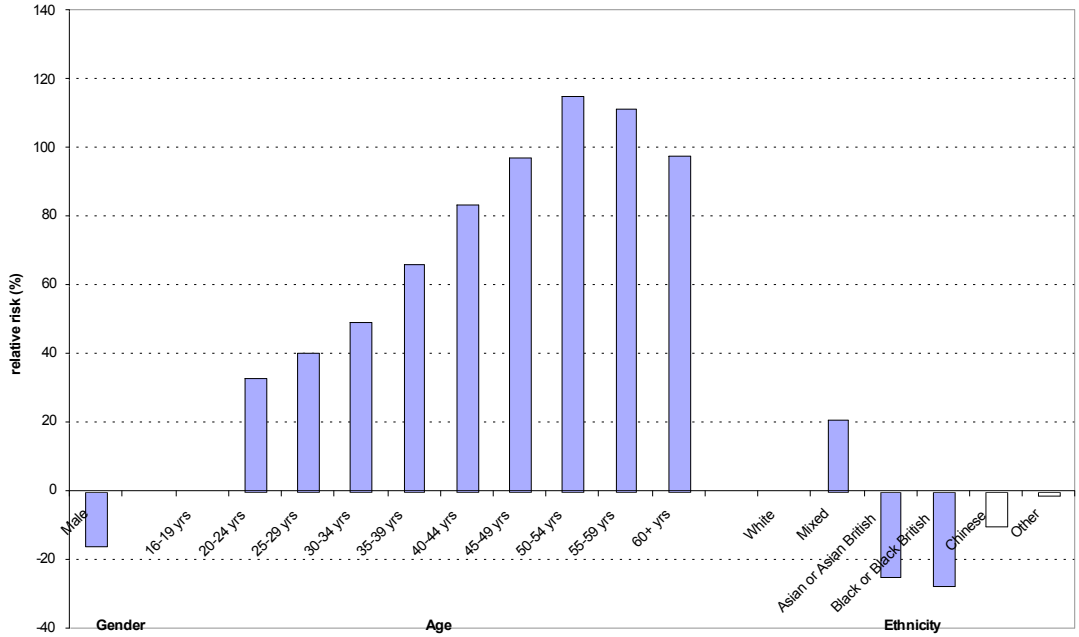

Figure 3.1 In-work Population – Personal Characteristics

In terms of workplace location and respondent characteristics (Figure 3.2) we estimate that:

- Those in the North of England are least likely to report that they suffer from a work related ill-health condition. After controlling for other personal and workplace characteristics, no clear interpretation can be given to the differentials that exist among the in-work population between regions.
- A spouse or partner acting as a proxy respondent within the LFS is associated with a 26% reduction in the likelihood that an individual is recorded as suffering from work related ill-health. This recall bias increases to 53% where the proxy respondent is not a spouse or partner;
- Respondents to the HSE module who are in their first wave of LFS interviews are most likely to report that they suffer from a work related ill-health condition.

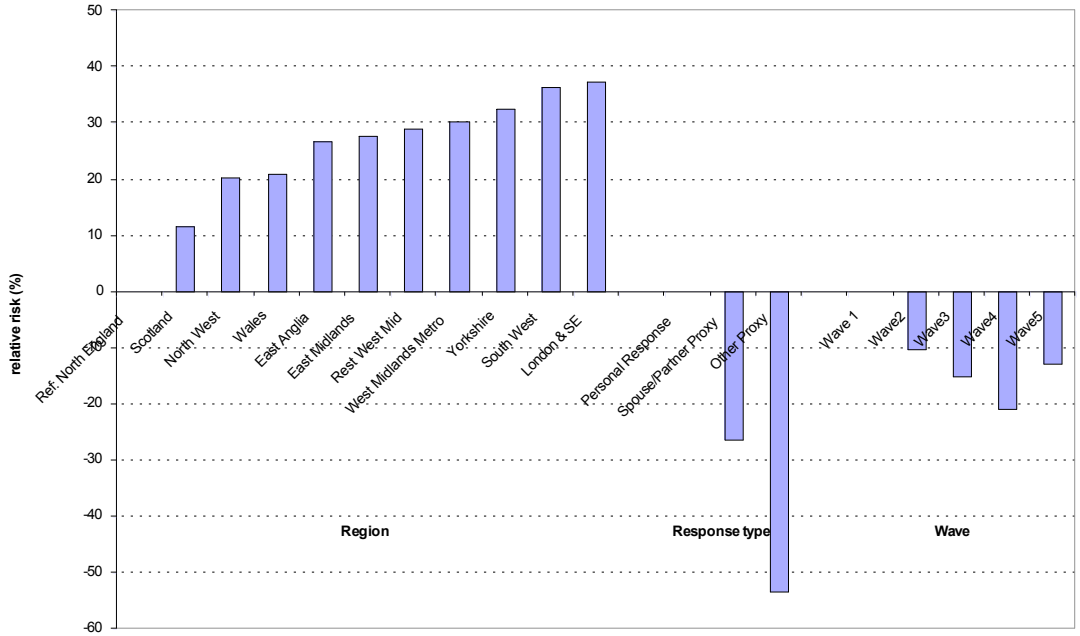

Figure 3.2 In-work population – region and respondent type

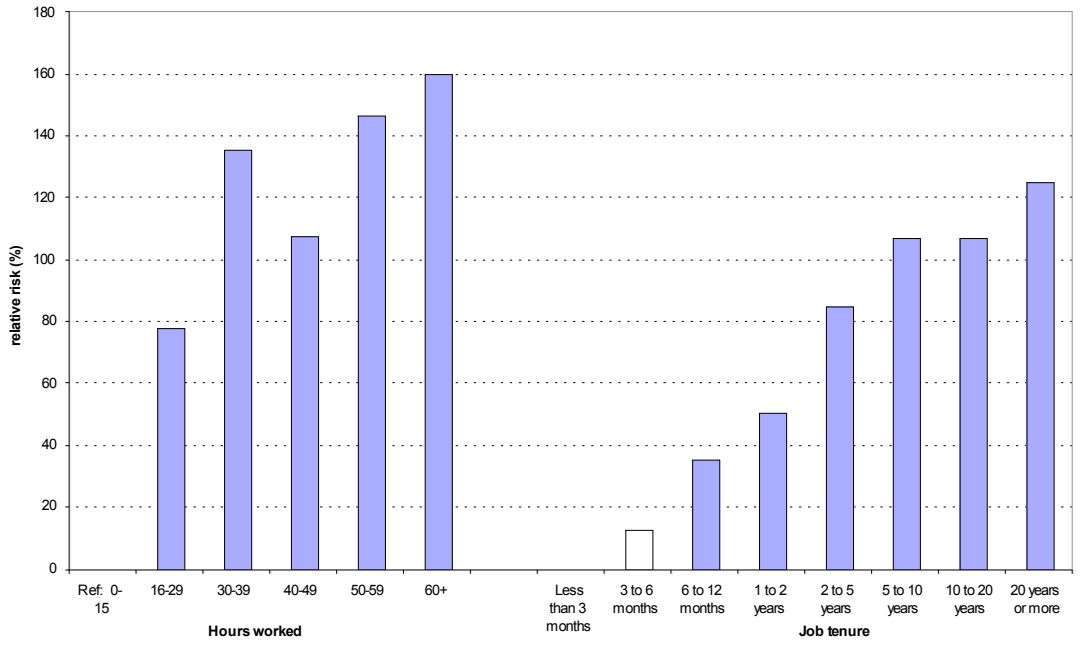

Figure 3.3 In-work population – hours worked and tenure

Figure 3.4 considers the influence of size of workplace and employment status on the risk of work related ill-health. Within the LFS, information on the size of workplace was not collected from the self-employed during 2002 in a manner that was consistent with the information collected from employees. It is therefore not possible to simultaneously control for employment status and workplace size within a model based upon the full pooled data set. Given that a majority of self-employed people will work in small workplaces, the estimated effect of being self-employed on work related ill-health may be sensitive to the inclusion or omission of information regarding workplace size within the statistical model. This issue is investigated in Figure 3.4. Based upon data for 2004 to 2008, it can be seen that respondents to the LFS who are based in larger workplaces are more likely to report that they suffer from work related ill-health conditions. This may reflect a variety of issues, such as the preferences of those with ill-health conditions to work in such establishments, greater awareness of ill-health conditions within workplaces that are better resourced in terms of occupational health or otherwise unobservable characteristics of large workplaces that are associated with increased levels of risk (e.g. heavy industry). After controlling for workplace size, it is estimated that the self-employed are more likely to report suffering from work related ill-health conditions. However, analysis of the full pooled data set which excludes controls for size of workplace reveals that self employment is not associated with a differential risk of work related ill-health. The omission of information on workplace size results in the increased risks associated with self-employment being offset by the reduced risks associated with smaller workplaces.

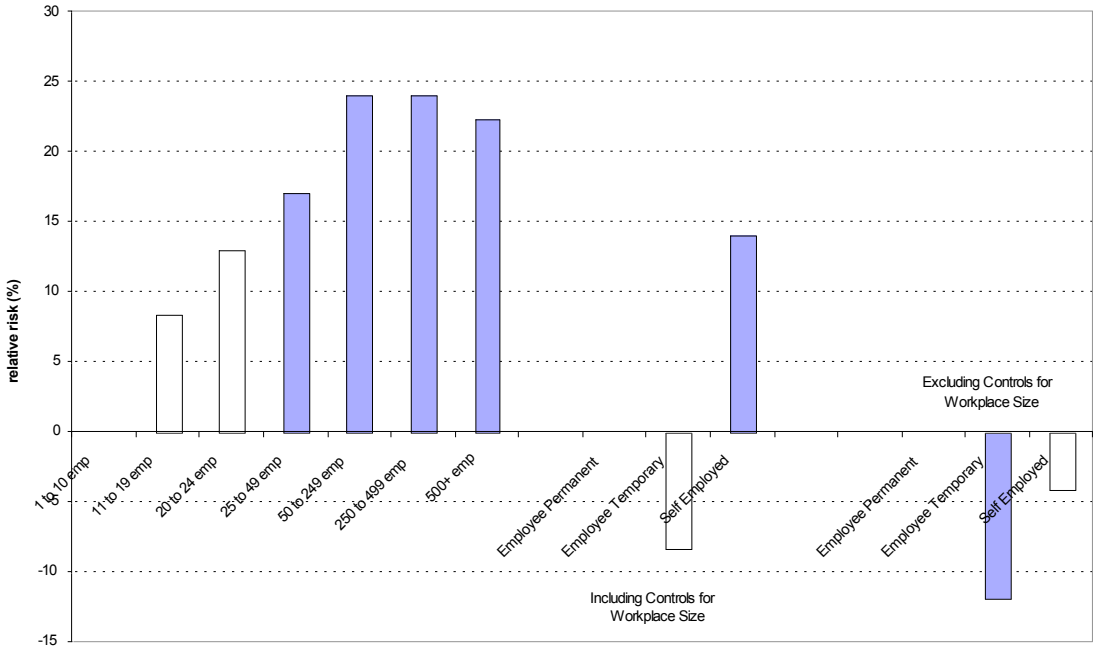

Figure 3.4 In-work population: workplace size and employment status

Within both specifications, being employed on a temporary contract is associated with reduced risks of ill-health. This relationship would seem to contradict other literature that considers this topic. However, it must be noted that this analysis is based upon a statistical model applied to the entire in-work population and may therefore not adequately control for workplace characteristics such that the subtle effects of temporary employment on work related ill-health can be studied. For example, temporary contracts may be correlated with a variety of jobs taken up by relatively young, transient groups of people (e.g. those in full-time education) who are less likely to suffer from work related ill-health conditions.

In terms of industry (Figure 3.5), we estimate that workers in sectors dominated by public sector employment are most likely to report that they suffer from a work related ill-health condition, particularly Public administration and defence and the Health and social work sectors. It should be remembered that the sample is restricted to those individuals who report that their ill-health condition is the result of their current employment and so it is not the case that these results are being driven by people with poor health seeking employment within the public sector. It also acknowledged that this effect may be in part a reporting effect associated with increased levels awareness and recognition of occupational ill-health within the sector.

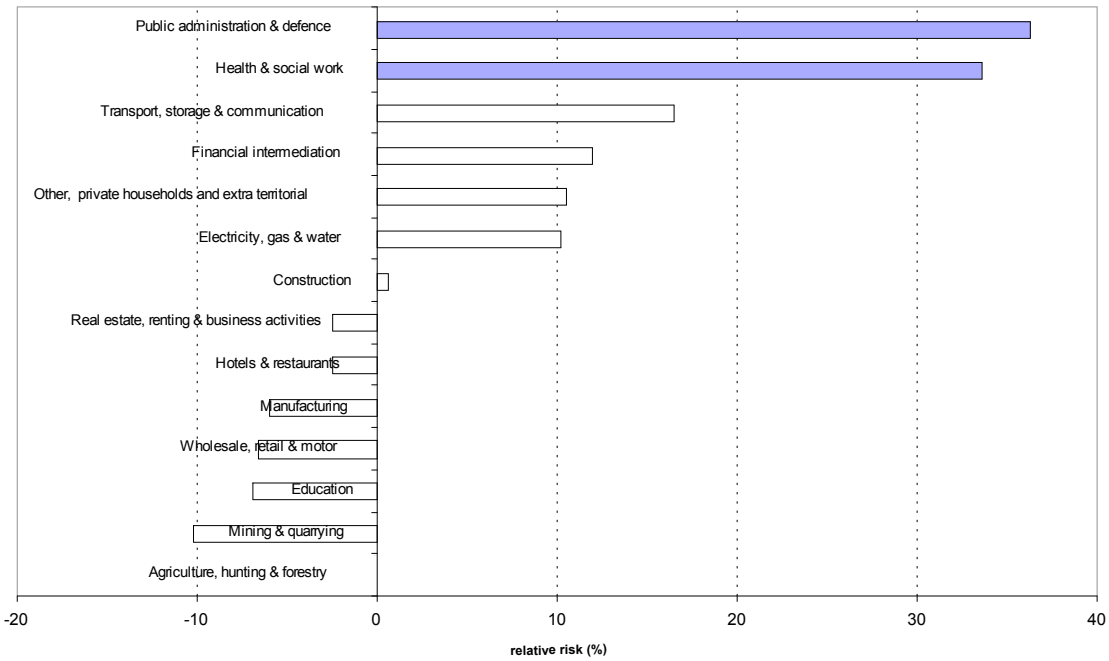

Figure 3.5 In-work population – industry

The main finding from Figure 3.5 is that industry of employment is relatively un-important in terms of its contribution to our understanding of who is at risk of suffering from work related ill-health. The absolute size of estimated differentials is small, with the differentials exhibiting relatively low levels of statistical significance. This is in stark contrast to the effect of occupation outlined in Figure 3.6. Those employed in Skill Agricultural Trades (Farmers) and Skill Construction Trades (Builders, Carpenters, and Roofers etc) are approximately 130% more likely than Corporate Managers (reference category) to report that they suffer from a work related ill-health condition. It is therefore observed that it is the nature of work tasks undertaken as opposed to sector of employment that are more important in terms of understanding who is at greatest risk of suffering a work related ill-health condition.

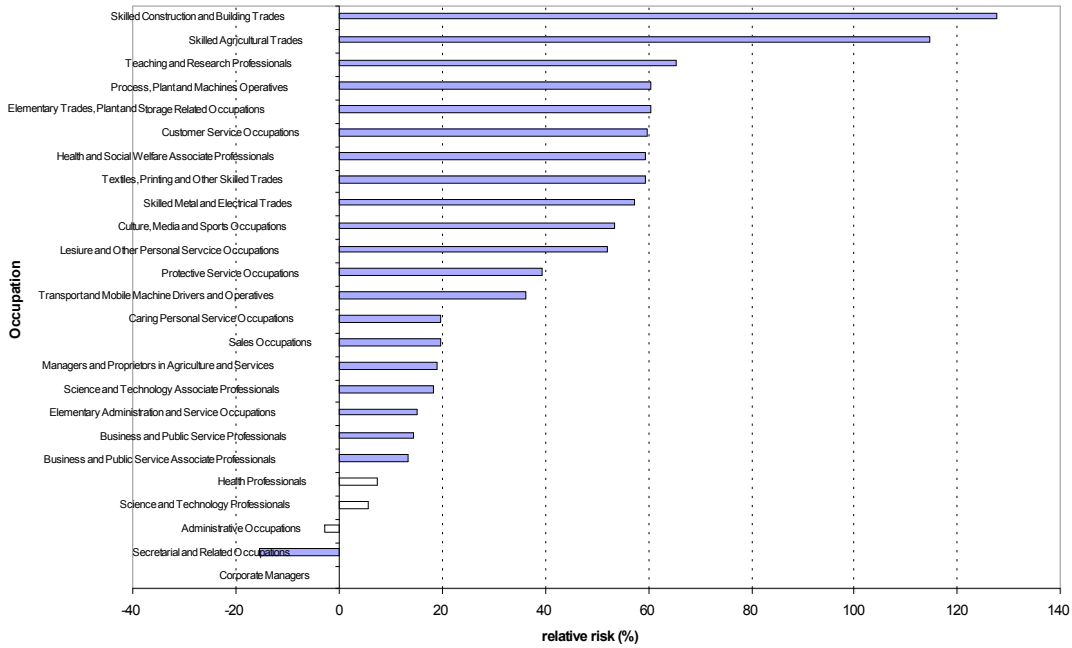

Figure 3.6 In-work population – occupation

3.7 COMPARING THE IN-WORK POPULATION WITH THE POPULATION OF WORKING AGE

In focussing upon the in-work population, there is concern that this sub-set of the working population is not representative of the entire population of working age. If those who suffer from severe occupational ill-health are more likely to withdraw from formal employment, those left in employment are not representative of all those with work related health conditions. By only focusing upon those who are in work, the estimated relationship between work related ill-health and particular characteristics may not accurately reflect the true underlying relationships that exist. To consider this issue, the statistical analysis was repeated for the entire population of working age. As noted, this analysis is based upon pooled LFS data covering the period 2002-2007. Given that not all of the working age population are in employment, it was not possible to include all the available information related to job characteristics that it was possible to include in the analysis of the in-work population. The analysis of the working age population is therefore based upon a more parsimonious specification of the logistic regression which simply includes information on personal characteristics.

Full details of this model are included in Annex 3. In comparing the results for the in-work population with those for the population of working age, the most significant differences were observed in terms of the estimated effects of age upon work related ill-health as demonstrated in Figure 3.7. As noted above, among the in-work population, those aged 50-59 are approximately 110% more likely to report that they suffer from a work related health condition. However, among the population of working age, this group are approximately 365% more likely to report that they suffer from work related ill-health. This difference reflects the withdrawal from paid employment of those who suffer most from work related ill-health. Similarly, whilst among the in-work population males are 16% less likely to suffer from a work related ill-health condition after controlling for other factors, within the entire population of working age they are 24% more likely than women to suffer from a work related ill-health condition. It is therefore noted

that men are more likely to withdraw from paid employment as a result of suffering from a work related ill-health condition.

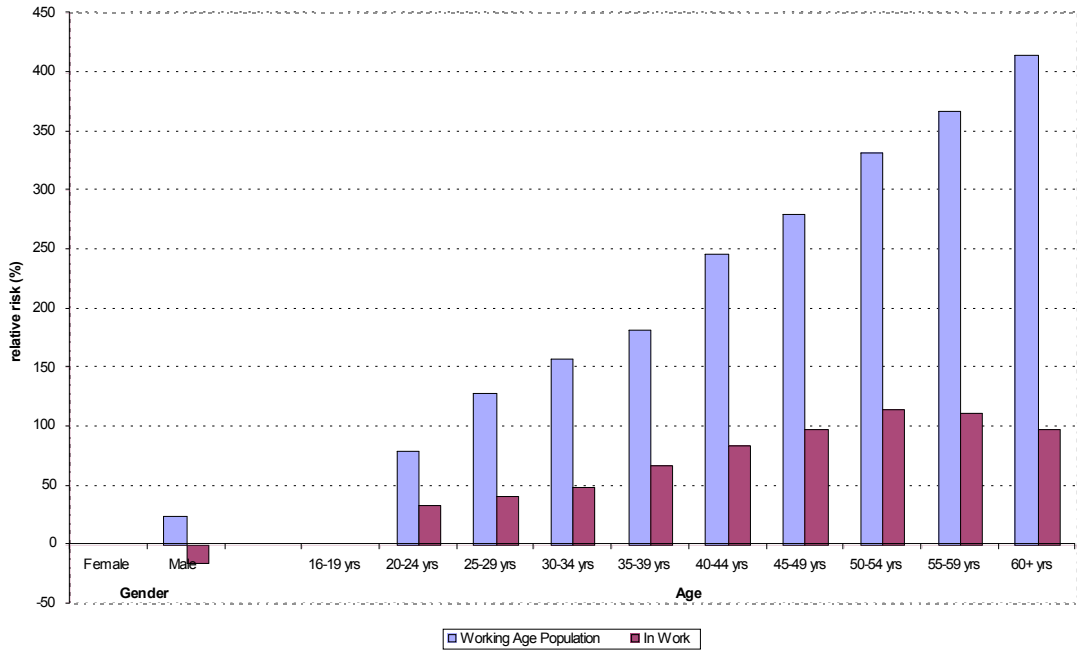

Figure 3.7 Personal characteristics: in-work population and population of working age compared

3.8 CONTRASTING THE PREDICTORS OF MUSCULOSKELETAL DISORDERS AND STRESS, ANXIETY AND DEPRESSION

The previous analyses considered the risks associated with work related ill-health, irrespective of the type of condition. However, the effect of personal and job related characteristics upon the risk of work related ill-heath may vary for different types of condition. As such, the results of the analysis presented above may 'average out' or even potentially 'disguise' the actual contribution of different personal and workplace characteristics that are associated with an individual reporting that they suffer with a work related ill-health condition.

In this section, the statistical analysis therefore distinguishes between those who report that they suffer from MSDs and SDA. The main results from the multivariate analysis are presented in Figures 3.8 to 3.11. These figures present results derived from 2 separate statistical models which are presented in Annex 3. Each of these analyses is again based upon pooled data covering the period 2002-2009. In terms of the influence of personal characteristics (Figure 3.8) we estimate that:

- Males are approximately 18% less likely to suffer from an MSD compared to females (ref). This differential increases to 20% for SDA;
- Those aged 16-19 are least likely to report that they suffer from both MSDs and SDA conditions. However, the risk of reporting SDA increases more steeply with age compared to MSDs. This could reflect those with SDA conditions being more likely to remain in formal employment. It is also noticeable that risks of SDA decline later in life. This parabolic trajectory reflects patterns in earnings that are also commonly observed over the life-course, with declining earnings approaching retirement being associated with lower levels of responsibility at the workplace.

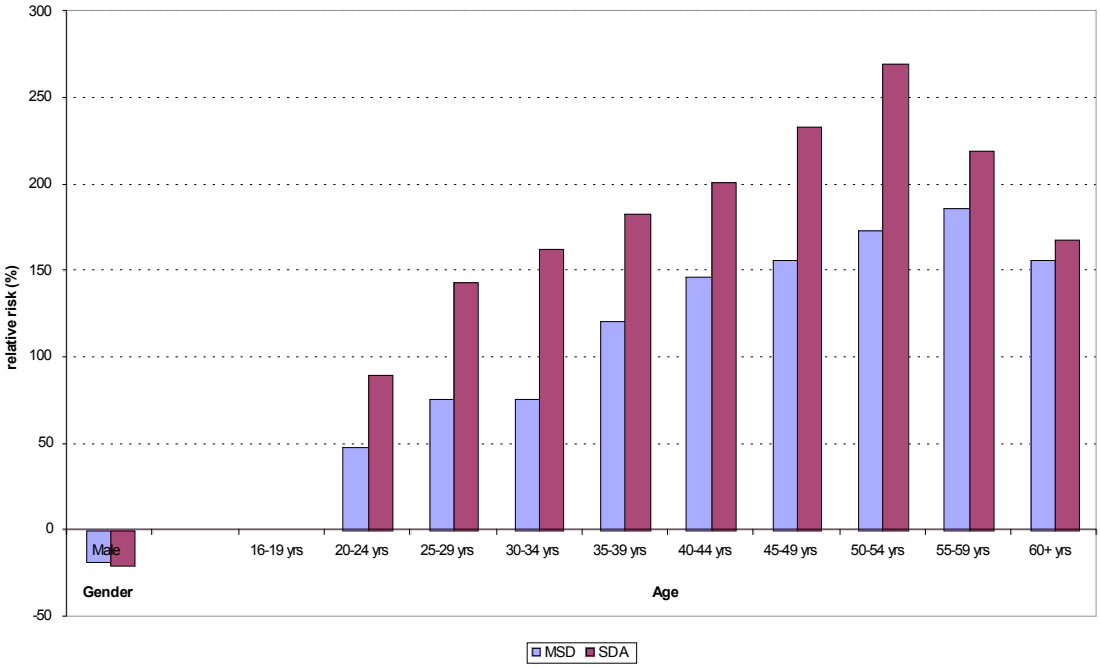

Figure 3.8 MSDs and SDA: personal characteristics

In terms of workplace location (Figure 3.9), after controlling for other personal and workplace characteristics, no clear interpretation can be given to the differentials that exist between regions. Those in Scotland are least likely to report that they suffer from an MSD (although generally comparable with the North of England). The relative risks associated with suffering from an MSD are also relatively low in Wales and the North West. The relatively low risks of suffering from MSDs in regions previously dominated by heavy industry would seem counterintuitive. However, it is noted that these regions also suffer from relatively high levels of unemployment and, in particular, economic inactivity. As observed among older workers, the withdrawal from the labour force by those people with ill-health conditions results in those persons remaining in work being relatively healthy. Due to a better range of good quality employment opportunities in other regions, those with work related ill-health conditions are more likely to remain in employment. Those in the North of England are also least likely to report that they suffered from SDA. In stark contrast to their relatively low reporting of MSDs, individuals in Scotland and the North West are 35% more likely to report that they suffered from SDA compared to those in the North of England.

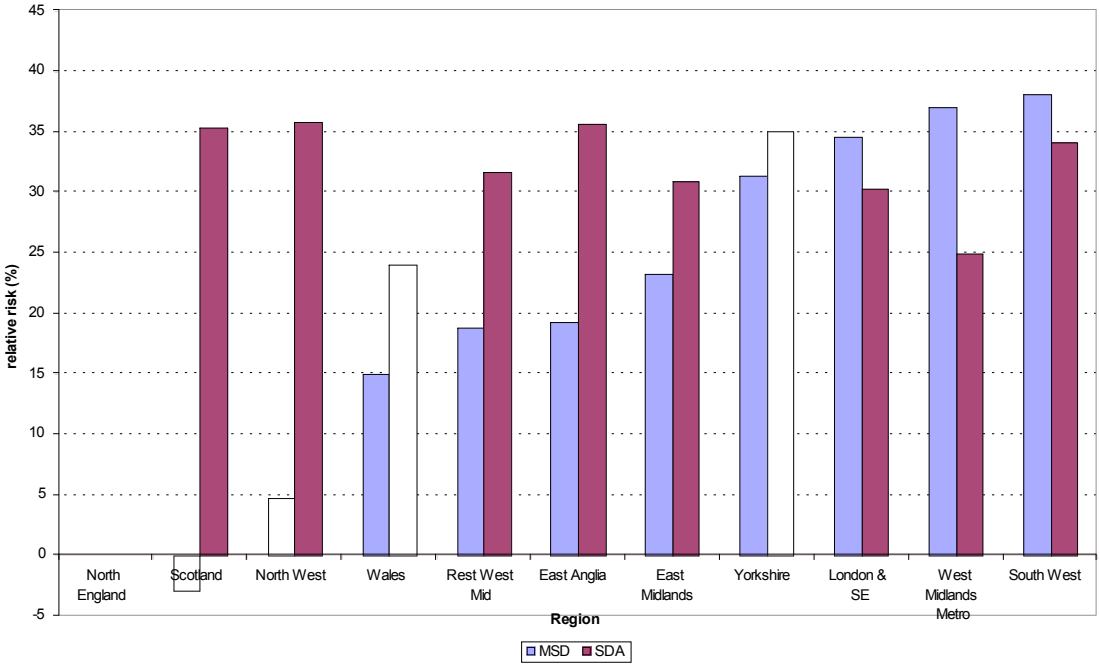

Figure 3.9 MSDs and SDA: regional characteristics

In terms of job characteristics (Figure 3.10), we estimate that:

- Those working longer hours are more likely to report that they suffer from MSDs and SDA. However, working long hours is particularly associated with SDA. It is estimated that those working 60 hours per week or longer are approximately 450% more likely to report that they suffer from work related SDA;
- Those who have been employed in their current job for a longer period are more likely to report that they suffer from both MSDs and SDA. The slope of these profiles is similar, although the relative risks associated with tenure and MSDs are generally higher. This result could be related to the relative high levels of stress and anxiety that are faced by employees who are new to an organisation, evidence for which may be supported by the reduced levels of SDA (although not statistically significant) that are associated with employment tenure of 3 to 6 months.
- The self-employed are 22% more likely than permanent employees to report that they suffer a work related MSD, and 49% less likely to report that they suffer from SDA. In terms of SDA conditions, the self-employed would be expected to have more control over their conditions of employment such as the pace of work, the nature of work tasks and the length of their working week. This control might be expected to contribute to lower levels of stress and anxiety. In terms of MSDs, the success of their business will be dependent upon them remaining in work which may in some cases, be to the detriment of health. It may also be the case that those who have an ill-health condition may prefer self-employment as a means of having more flexibility to manage their conditions. As noted above, the model does not simultaneously control for establishment size and so these effects will partly reflect the small workplaces where the self-employed are based.

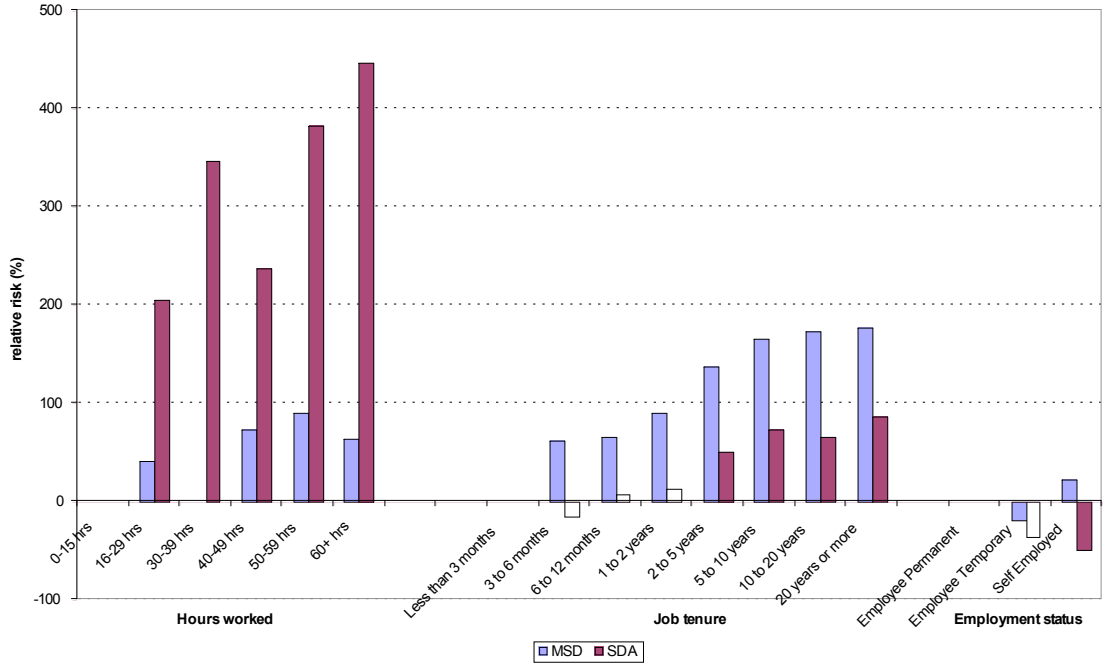

Figure 3.10 MSDs and SDA: job characteristics

We again find that industry of employment is relatively un-important in terms of its contribution to our understanding of who is at risk of suffering from work related MSDs. In terms of the risks of SDA, Public Administration and the Health and Social Work sectors were again estimated to be associated with a significantly higher risk of ill-health, with the size of this differential being larger than that estimated for the combined rate in Figure 3.4. In the analysis of SDA, the Financial Services sector was also associated with a higher risk of ill-health. Finally, Figure 3.10 demonstrates the importance of occupation in understanding who is at risk of suffering from work related MSDs. Those employed in Skilled Construction Trades (Builders, Carpenters, Roofers etc) are approximately 320% more likely than Corporate Managers (reference category) to report that they suffer from a work related MSD. Similarly, those employed in Skill Agricultural Trades (Farmers) are 295% more likely. These differentials are higher than the differentials estimated for work related ill-health conditions that did not distinguish between MSDs and SDA (see Figure 3.6). This is due to the relatively low likelihood of individuals employed in manual occupations with relatively low levels of responsibility reporting that they suffer from stress, depression or anxiety (e.g. Process, Plant and Machine Operatives are approximately 60% less likely than Corporate Managers to report that they suffer from SDA). Professionals working as Teaching and Research Professionals and those employed in Customer Care Occupations (e.g. call centre operatives) are most likely to report that they suffer from a work related SDA condition.

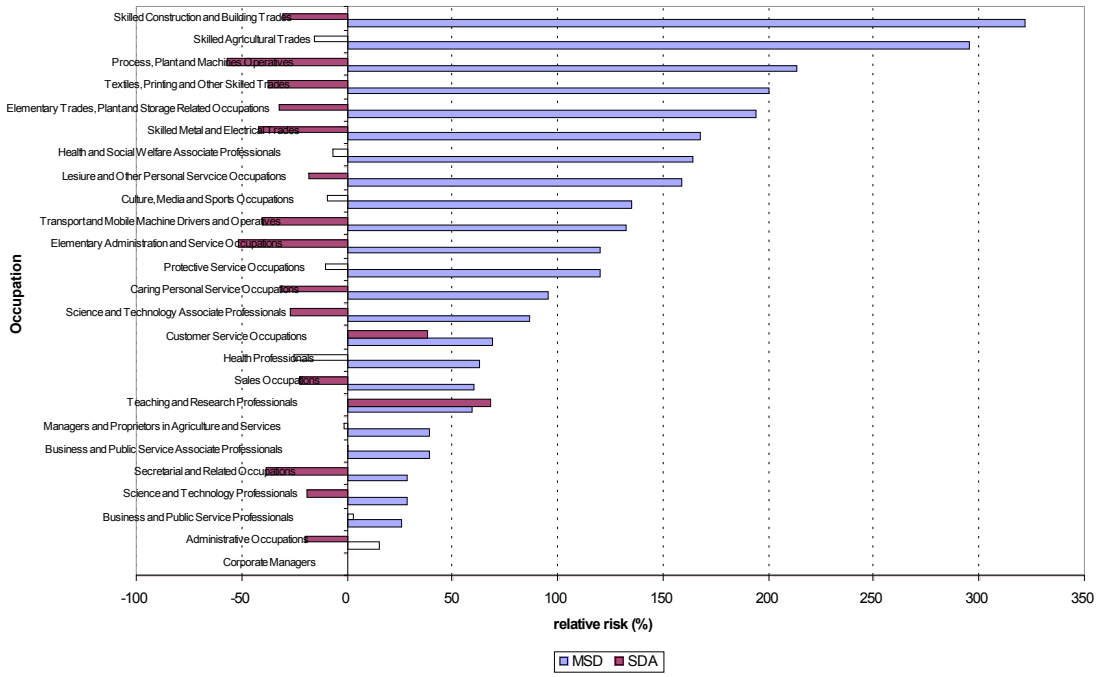

Figure 3.11 MSDs and SDA conditions: occupations

3.9 CONTRASTING THE PREDICTORS OF WORK RELATED ILL-HEALTH BETWEEN MEN AND WOMEN

The previous analyses have considered the risks associated with work related ill-health for the whole population. However, the effect of personal and job related characteristics upon the risk of work related ill-heath may vary for different groups of people. In this section, the results of statistical analysis conducted separately by a) gender and then b) age group are presented. Results are presented for those who are in work. These analyses are again based upon pooled data covering the periods 2002-2009.

In terms of the influence of personal characteristics on MSDs (Figure 3.12), among the working age population we estimate that: the relationship between age and the probability of an individual reporting that they suffer from a work related ill-health condition is strong for both males and females. For example, males and females aged 50-59 are approximately 200% more likely than those aged 16-19 to report that they suffer from an MSD condition. However, it is noticeable that this age gradient rises more quickly for males among younger age groups than it does for women. Males age 40-44 are approximately 200% more likely than those aged 16-19 to suffer from an MSD. This is approximately twice the size of the relative differential observed among women of this age. Whilst the relative risks of suffering from an MSD remain relatively stable beyond the age of 40 for males, these relative risks continue to increase for women during their late forties and early fifties. The effects of proxy response upon reporting also appear to be greater for women than for men. Proxy respondents appear 35% less likely to recall that a woman suffers from an MSD compared to women who responded to the LFS directly. This differential is not estimated to be statistically significant for proxy respondents responding on behalf of men.

In terms of the influence of personal characteristics on SDA (Figure 3.13), among the in-work population we estimate that: the relationship between age and the probability of an individual reporting that they suffer from a work related ill-health condition is stronger for males than for

females. Males aged 50-54 are most likely to report that they suffer from a work related SDA condition, although this risk declines thereafter as males approach retirement age.

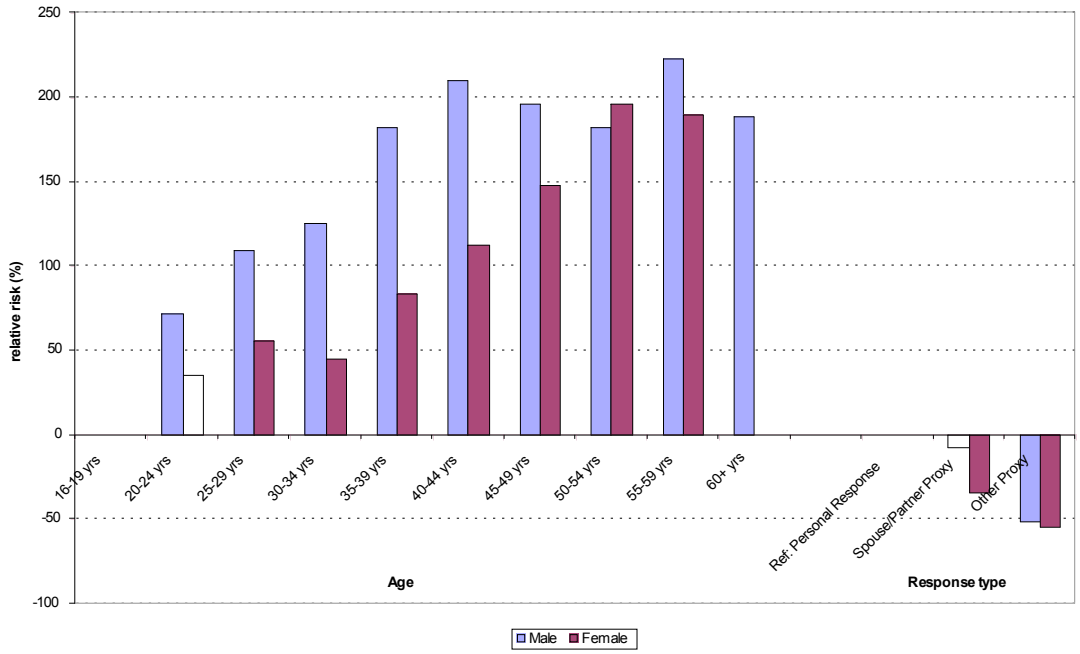

Figure 3.12 In-work Population with MSDs by Gender: Age and Response Characteristics

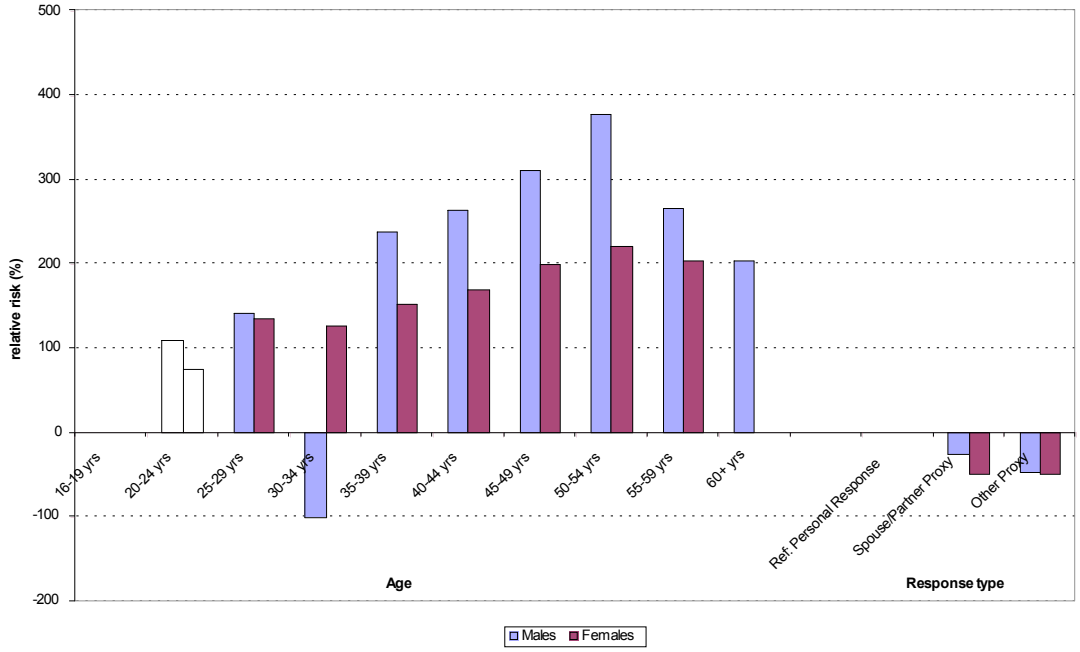

Figure 3.13 In-work population with work related SDA by gender: age and response characteristics

In terms of job characteristics (Figure 3.14 and Figure 3.15), for both males and females increases in hours worked and employment tenure are both associated with a higher probability

of an individual reporting that they suffer from work related ill-health. The effect of the length of the working week is particularly evident for SDA. Men who work in excess of 60 hours per week are 560% more likely to report that they suffer from work related ill-health. This is compared to an increased risk among women of 450%. Throughout the distribution of working hours, males who work longer hours appear to exhibit a higher relative risk of suffering from a work related SDA condition compared to women. However, it is noted that this may reflect the relatively unusual characteristics of men who work very short hours compared to women for whom part-time work is relatively common.

In terms of job tenure, the situation is reversed and increased job tenure is estimated to be associated with an increased risk of suffering from an MSD but not SDA. The size and shape of this relationship is estimated to be relatively similar for men and women. Employment status is not found to be a significant predictor of work related ill-health when considering males and females separately.

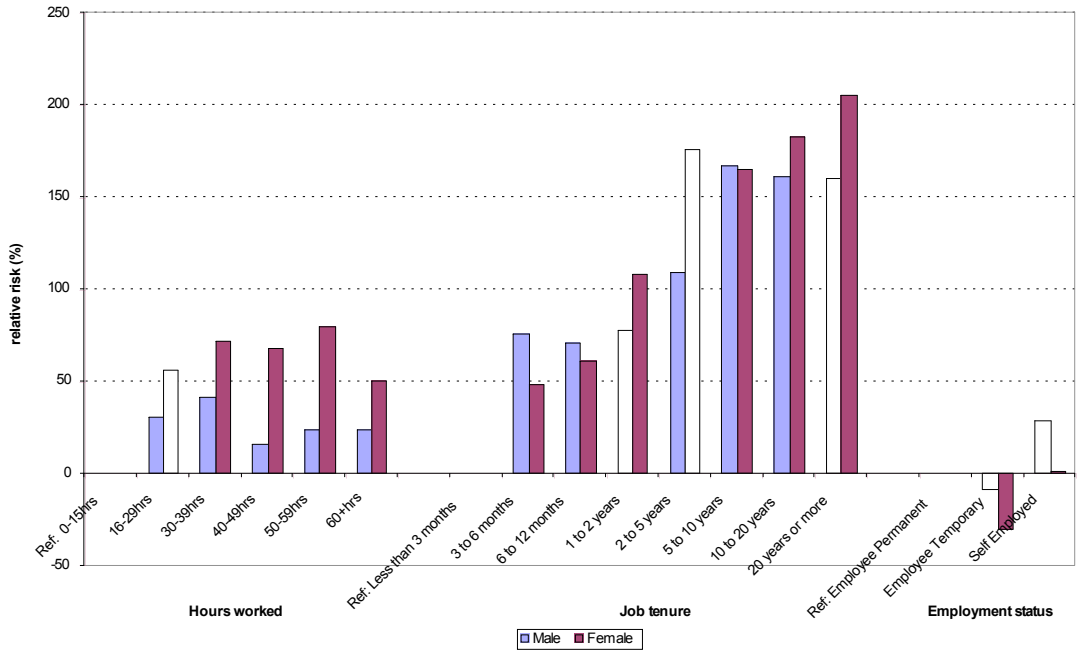

Figure 3.14 In-work population with MSDs by gender: job characteristics

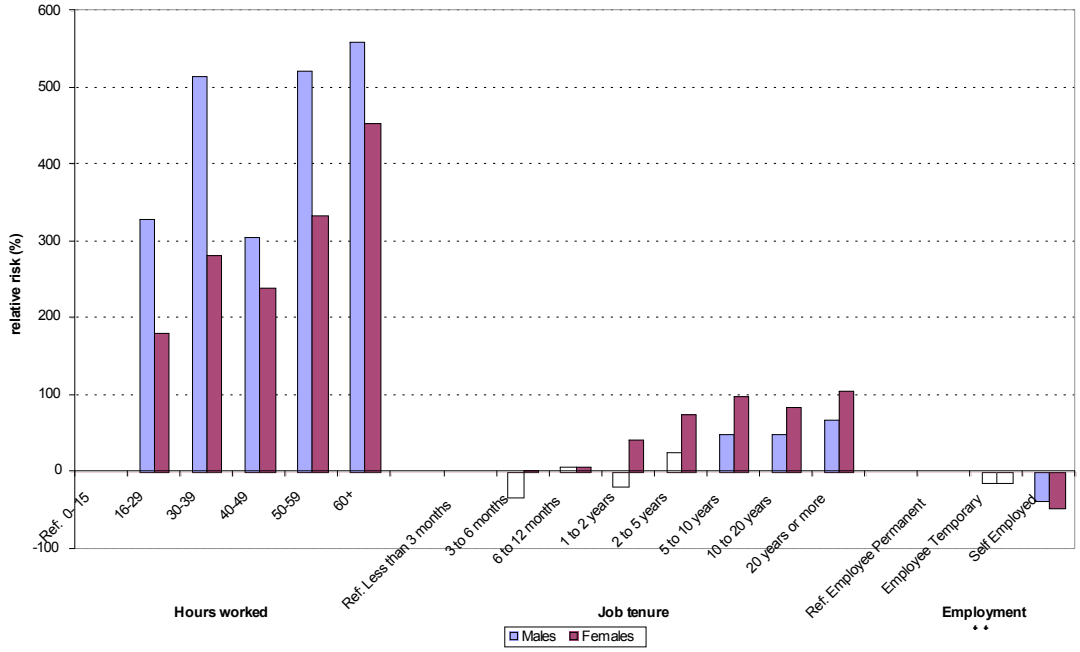

Figure 3.15 In-work population with SDA by gender: job characteristics

Finally, we consider the effect of occupation on work related ill-health separately for men and women. Figure 3.16 considers the relative risk of work related MSDs by occupation. It can be seen that, even within particular occupational groups, the relative risks of MSDs differ between men and women. For both groups, risks of work related MSDs are lowest in Administrative, Clerical and Secretarial Occupations. Among men, the greatest risk of suffering from an MSD is among the Construction Trades. Whilst manual occupations are associated with increased risks of MSDs by both men and women, it is noted that among men, Health and Social Welfare Associate Professionals are estimated to have the second highest incidence of MSDs. This group comprises of occupations such as nurses, paramedics, therapists and social welfare workers (community workers, welfare officers). In contrast, the riskiest professions for women to work in are characterised by high levels of physical effort and include Skilled Agricultural Trades (farmers) and Skilled Metal and Electrical Trades (metal forming, welding and Machining Trades, (motor mechanics, electricians and telecommunications engineers). High relative risks are also estimated for women within Transport and Mobile Machine Operators and Drivers (HGV, van, bus and taxi drivers; rail and air transport operatives).

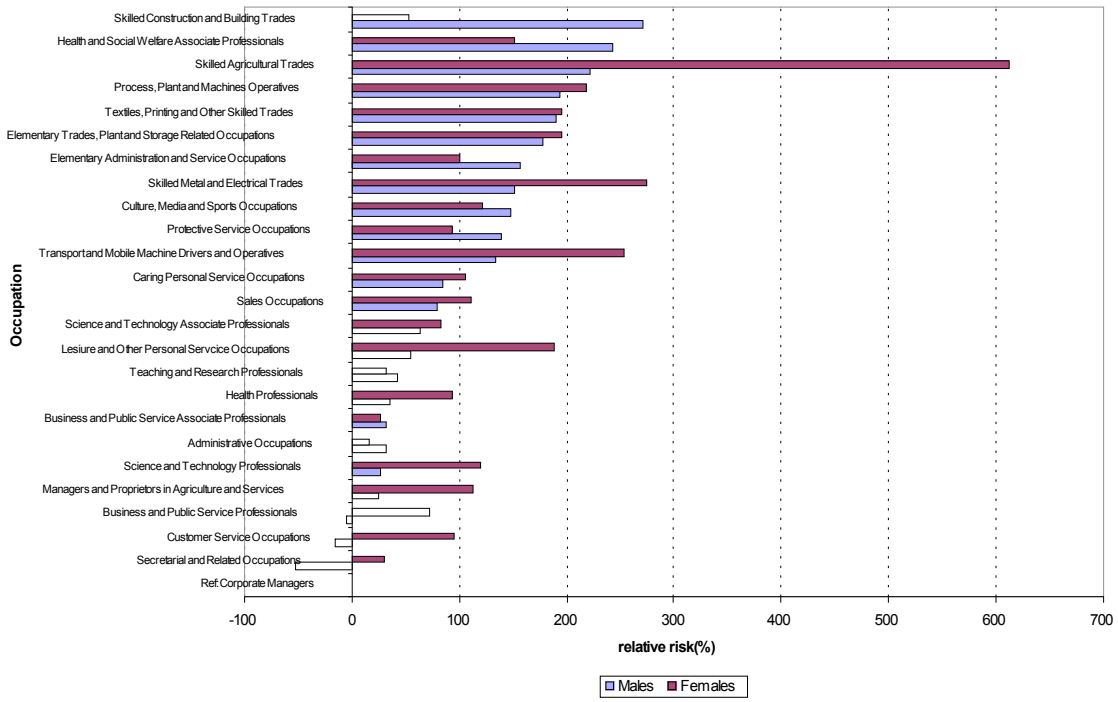

Figure 3.16 In-work population with MSDs by gender: occupation

A limitation of this presentation of the results derived from the logistic regressions is that we are only able to compare the effect of a particular category of explanatory variable with a reference category. This leads to two problems. Firstly, with the exception of the reference category, the statistical significance of differences between categories within a regression cannot be evaluated. For example, for men employment within Skilled Construction and Building Trades is associated with a significantly higher risk of suffering from work related ill-health compared to men employed as Corporate Managers. However, it is not possible to evaluate whether the risk of suffering from work related ill-health is significantly different to that estimated for men employed in Skilled Agricultural Trades. Secondly, it is not possible to make comparisons between regressions. For example, the employment of women within Skilled Agricultural Trades is associated with a significantly higher risk of suffering from work related ill-health compared to women employed as Corporate Managers. However, from the presentation of results in Figure 3.16, it is not possible to determine whether women employed within Skilled Agricultural Trades have a significantly different risk of suffering from work related ill-health compared to men employed within the same occupations.

Given the importance of occupation to an individual's risk of suffering from a work related ill-health condition, to assist in understanding how changes in work related ill-health varies between occupations we present estimates of 'adjusted rates' of work related ill-health by occupation. These adjusted rates are derived from our statistical models and represent estimated rates of work related ill-health after having adjusted for the effects of all other variables included within the statistical model. The effects of other influences are evaluated for an individual with 'average risk' across all other dimensions. The differences in these 'adjusted' rates are therefore attributable to occupational differences in relative risk. Furthermore, we also present estimates of comparison intervals derived from quasi variances (see Firth 2000) so that

the statistical significance of differences in the rates of work related ill-health between all occupational groups and between men and women can be evaluated[2].

The presentation of adjusted rates in Figure 3.17 demonstrates that in a majority of occupations, differences in rates of work related ill-health between men and women are not significantly different. However, the analysis does confirm that women within Skilled Agricultural Trades exhibit a significantly higher risk of suffering from an MSD. Likewise, men employed in occupations classified as Health and Social Welfare Associate Professionals exhibit significantly higher risks of suffering from an MSD compared to women employed in these occupations.

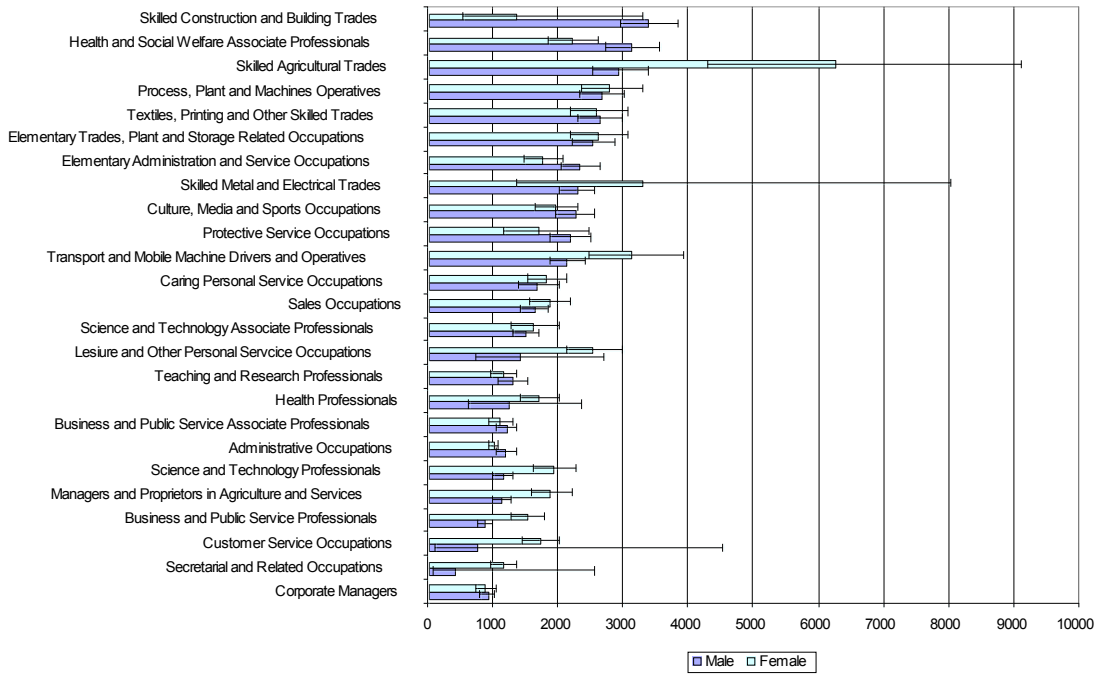

Figure 3.17 In-work population with MSDs by gender: adjusted occupational rates (per 100,000 in work)

In terms of SDA (Figure 3.18), both men and women employed as Teaching and Research Professionals exhibit the highest relative risks of suffering from work related ill-health conditions. It is generally observed that occupations that are associated with a relatively low risk of SDA for women are also associated with a relatively low risk of SDA for men. These occupations are generally concentrated among elementary occupations and within process and plant operative occupations. However, there are several occupations that are estimated to be associated with a relatively high risk for men but are of a relatively low risk for women. Within Caring Personal Service Occupations, men are estimated to have a 15% increased risk of suffering from work related SDA compared to Corporate Managers. This is compared to a reduced risk of 37% among females. Within Leisure Personal Service Occupations, men are estimated to have a 33% increased risk of suffering from work related SDA compared to Corporate Managers. This is compared to a reduced risk of 52% among females. Within Secretarial Occupations, men are estimated to have a 38% increased risk of suffering from work related SDA compared to Corporate Managers. This is compared to a reduced risk of 42% among females. Finally, within Health and Social Welfare Associate Professionals, men are

[2] This is done to assist comparisons between two categories from a logistic regression, where neither of which act as the reference category.

estimated to have a 43% increased risk of suffering from work related SDA compared to Corporate Managers. This is compared to a reduced risk of 18% among females.

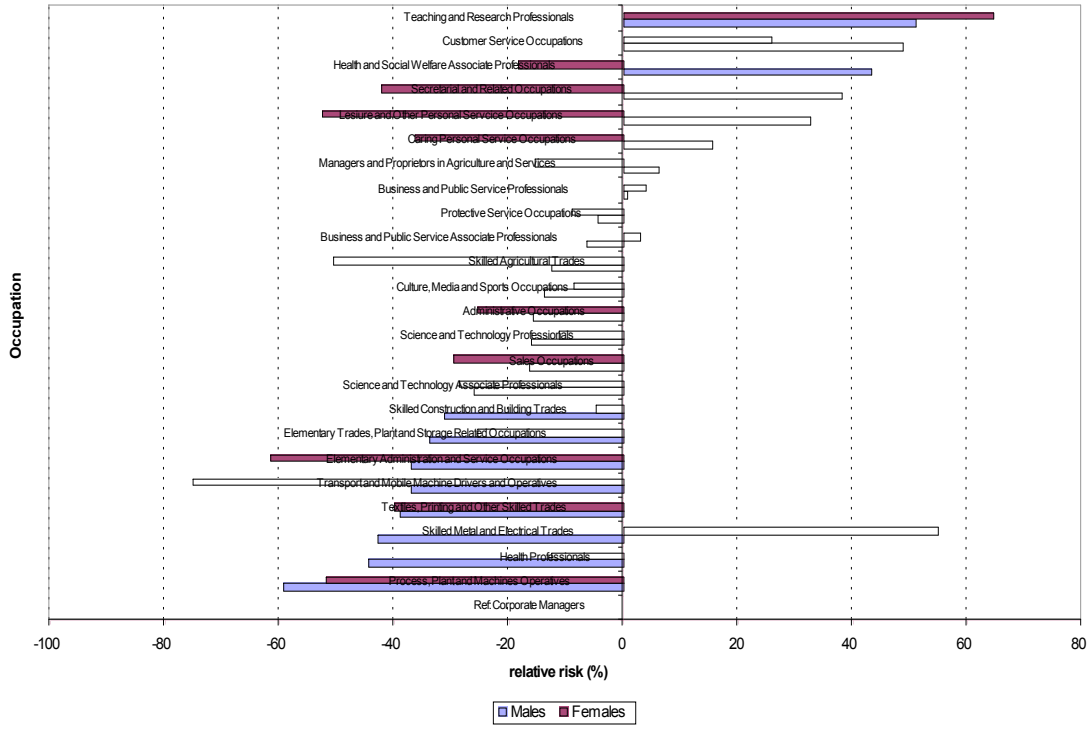

Figure 3.18 In-work population with SDA by gender: occupation

To confirm whether occupational differences between men and women in terms of SDA conditions are statistically significant, Figure 3.19 again presents estimates of adjusted rates. The importance of this approach is highlighted by the significantly higher probability of women employed as Corporate Managers suffering from SDA compared to men. The relatively high risks associated with this reference category for females therefore resulted in many other occupations being estimated to have a lower relative risk, whilst men within these same occupations would have been estimated to have a higher relative risk compared to men employed as Corporate Managers. Across a variety of occupations, women are estimated to suffer from increased levels of SDA after having controlled for other personal and job related characteristics.

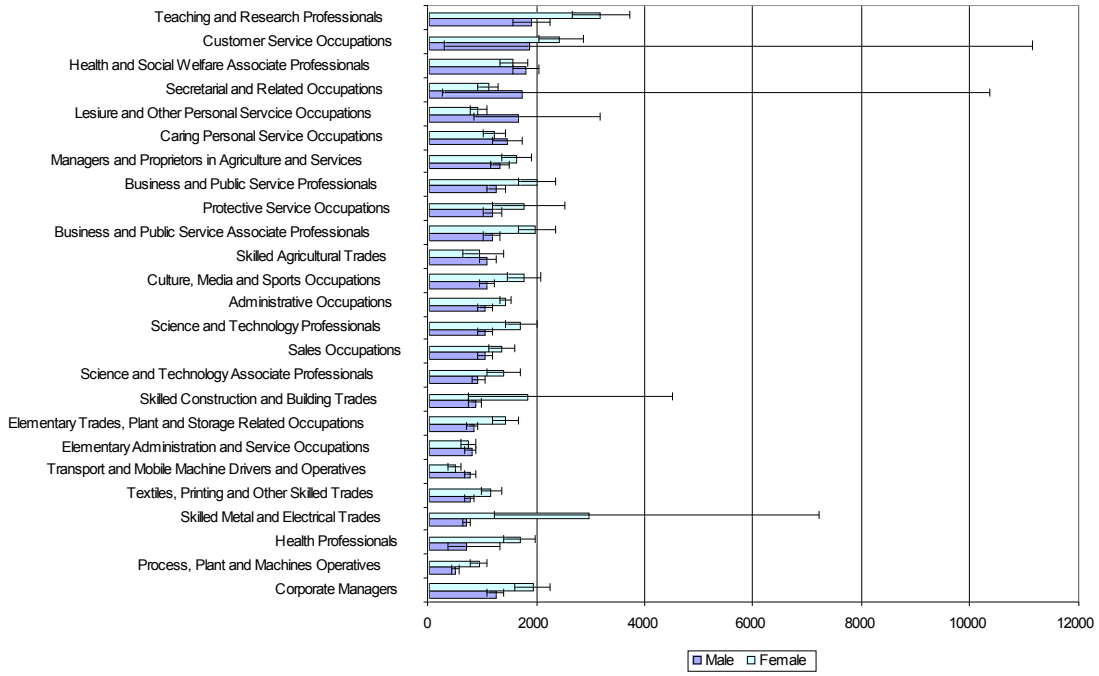

Figure 3.19 In-work population with SDA by gender: adjusted occupational rates (per 100,000 in work)

3.10 CONTRASTING THE PREDICTORS OF WORK RELATED ILL-HEALTH BETWEEN YOUNG AND OLDER WORKERS

Previous analysis has already demonstrated that older people are more likely to suffer from a work related illness. This is particularly evident among the working age population where the gradient of the relationship between age and work related ill-health is steeper than that which is observed among the in-work population. This is related to the withdrawal from paid employment of older workers suffering from work related ill-health.

In this section, our interest focuses upon the in-work population and how, in particular, age interacts with job related characteristics in influencing the relative risk with which an individual reports that they suffer from work related ill-health. To consider how the risks associated with suffering from work related ill-heath vary according to age, the analysis of the in-work population was repeated separately for young and old workers (young workers being defined as those aged less than 40 years old), with separate models being estimated for risk factors associated with MSDs and SDA. Analysis revealed that the effect of many of the characteristics previously discussed in the report did not differ between young and older workers. For example, hours worked was found to be associated with an increased risk of work related ill-health for both young and older workers and that the nature of this relationship was similar for both groups. That is, we did not find that older workers were disproportionately affected by working long hours compared to younger workers for both MSDs and SDA.

However, differences did emerge when the risk of work related ill-health was analysed by occupation. The results derived from the occupational variables included within the statistical models are presented in Figure 3.20 and Figure 3.21 for the analysis of MSDs; and in Figure 3.22 and Figure 3.23 for the analysis of SDA. As with the analysis by gender presented in the previous section, the pairs of charts relate to the presentation of relative risks as estimated

directly from the regression analysis followed by estimates of 'adjusted' rates of work related ill-health. In terms of MSDs (Figure 3.20, Figure 3.21), it is estimated that across a range of high risk occupations, those over the age of 40 are at an increased risk of suffering from a work related ill-health condition. This is most clearly demonstrated across a range of skilled trades such as Skilled Agriculture Trades; Skilled Construction Trades; Textiles and Printing Trades; and Skilled Metal and Electrical Trades. Beyond skilled trades, older workers working in Transport and Mobile Machine Drivers and Operatives and in Leisure and Personal Service Occupations were also estimated to exhibit relatively high risks of suffering from work related MSDs.

In terms of work related SDA (Figure 3.22, Figure 3.23), it is again noted that among some occupations that are associated with relatively high risks of ill-health, the risks of suffering from an ill-health condition appear to be greater for older workers compared to younger workers. This is most clearly demonstrated in the case of Teaching and Research Professionals, where the relative risk of suffering from an ill-health condition doubles for older workers. Relatively high risks of SDA are also observed within Customer Service Occupations. However, compared to MSDs, there is generally greater comparability in the scale of occupational differentials when considering younger and older workers.

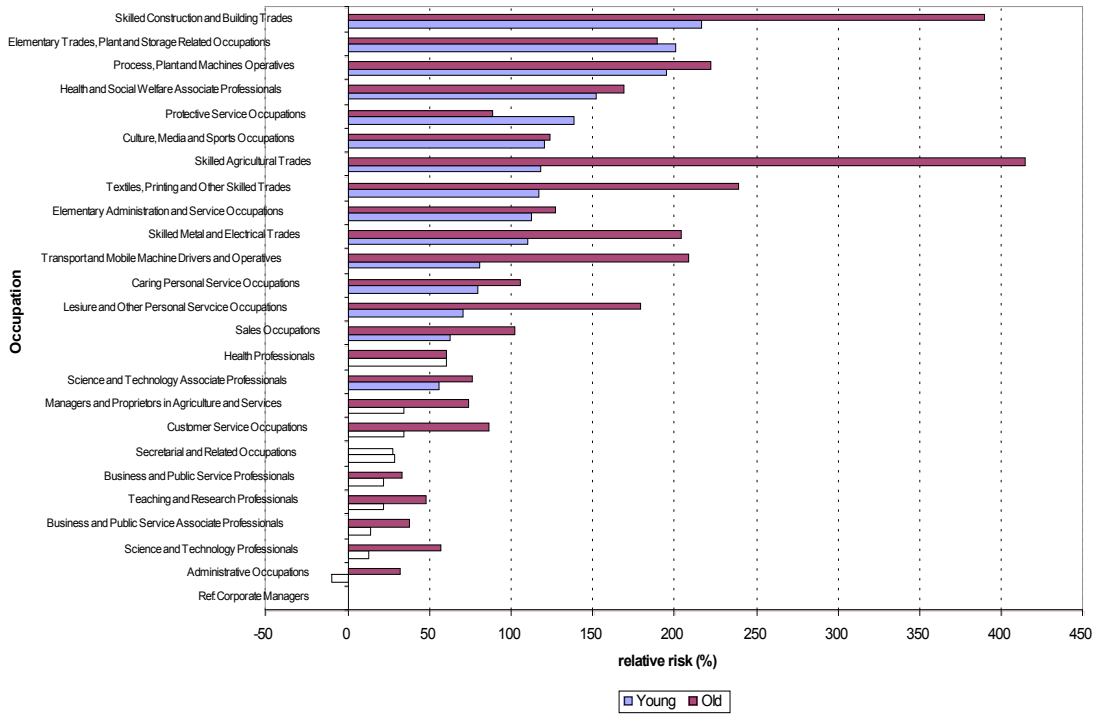

Figure 3.20 In-work population with MSDs by age group: occupation

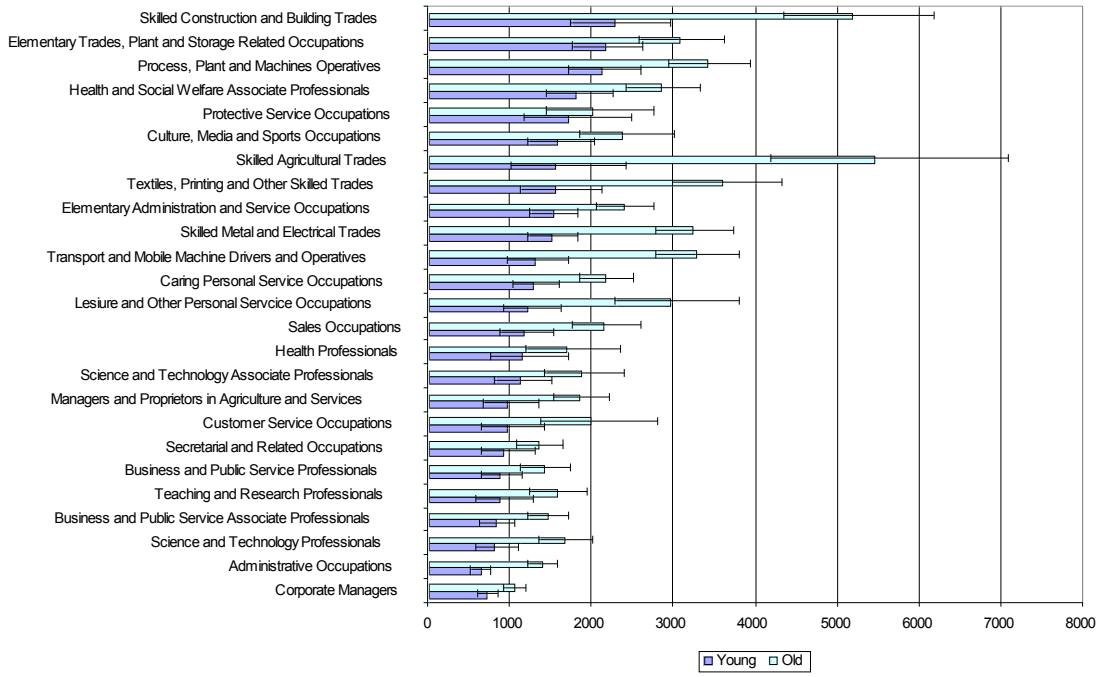

Figure 3.21 In-work population with MSDs by age group: adjusted occupational rates (per 100 thousand in work)

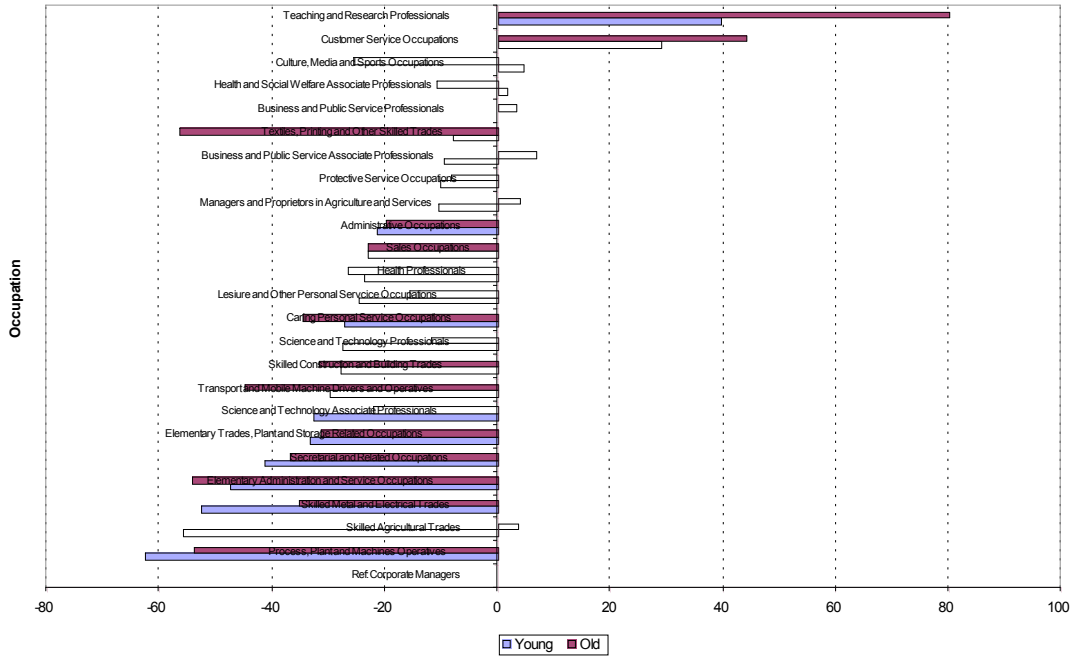

Figure 3.22 In-work population with SDA by age group: Occupation

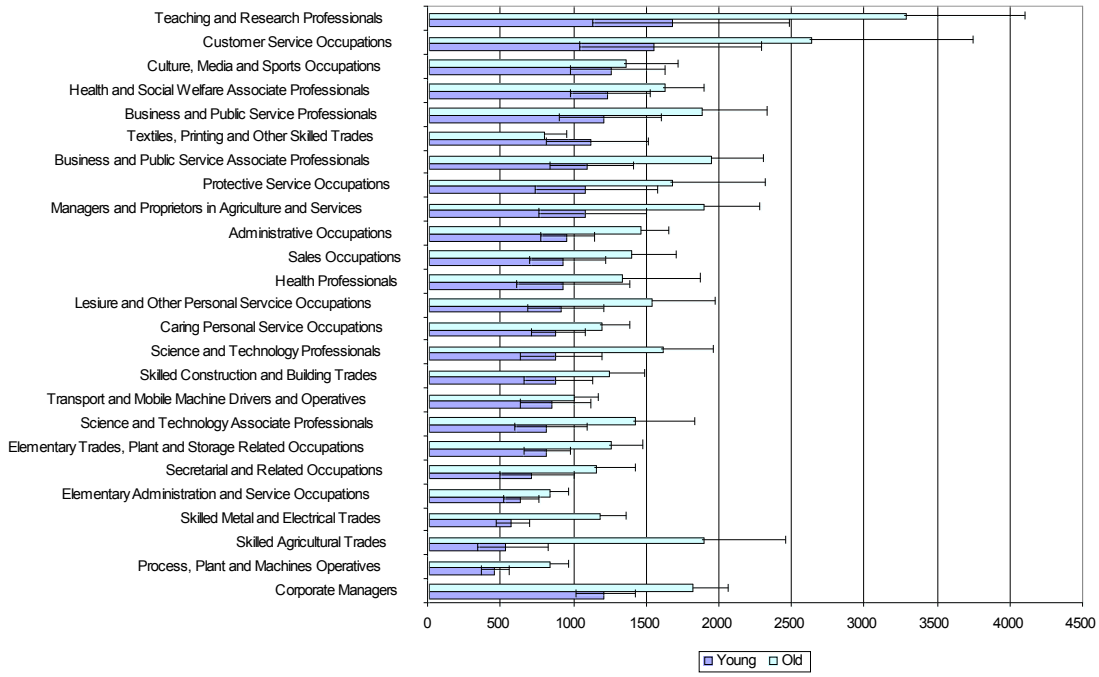

Figure 3.23 In-work population with SDA by age group: adjusted occupational rates (per 100 thousand in work)

3.11 MULTIPLE WORK RELATED ILL-HEALTH CONDITIONS

The LFS survey also asks respondents to recall the number of illnesses that have been caused or made worse by work done in the last 12 months. The question applies to all those who reported that they have suffered from a work related ill-health condition. Analysis of this variable indicates that, of those respondents who reported that they suffered from work related ill-health between 2002 and 2009, 85% reported that they only suffered from a single illness or ill-health condition.

The number of ill-health conditions reported by a respondent could be considered to act as a proxy for the severity of work related ill-health. It is therefore of interest to examine the effect of different characteristics on the likelihood that an individual will report that they are suffering from multiple work related ill-health conditions. Figure 3.24 therefore compares selected coefficients from a multivariate analysis that considers the likelihood that individuals report that they have suffered from any work related ill-health conditions with those from an analysis with coefficients from another model that considers the likelihood that individuals report that they have suffered from more than one work related ill-health condition. For the second analysis, individuals who report that they have suffered one ill-health condition are excluded from the sample. This is so that coefficients from the 2 sets of regression models can be compared directly; i.e. in each case the relative risk of suffering a) any or b) multiple work related ill-health conditions are being evaluated relative to those respondents in the LFS who have not suffered from an ill-health condition.

The analysis reveals that multiple work related ill-health conditions are more likely to be reported by males. Whilst males in general are 18% more likely to report the occurrence of a work related ill-health condition, they are 37% more likely to report the occurrence of multiple health conditions. Multiple ill-health conditions are most likely to be reported by older workers. Whilst those aged 60+ are 437% more likely to report that they have suffered from an ill-health condition compared to those aged 16-19, the relative risk of this group reporting that they have suffered from multiple illnesses increases to 653%; approximately a 50% increase in the size of the relative risk. Finally, in terms of social class, the long term unemployed are 200% more likely than higher managers and professionals to report that they have suffered from multiple work related health conditions.

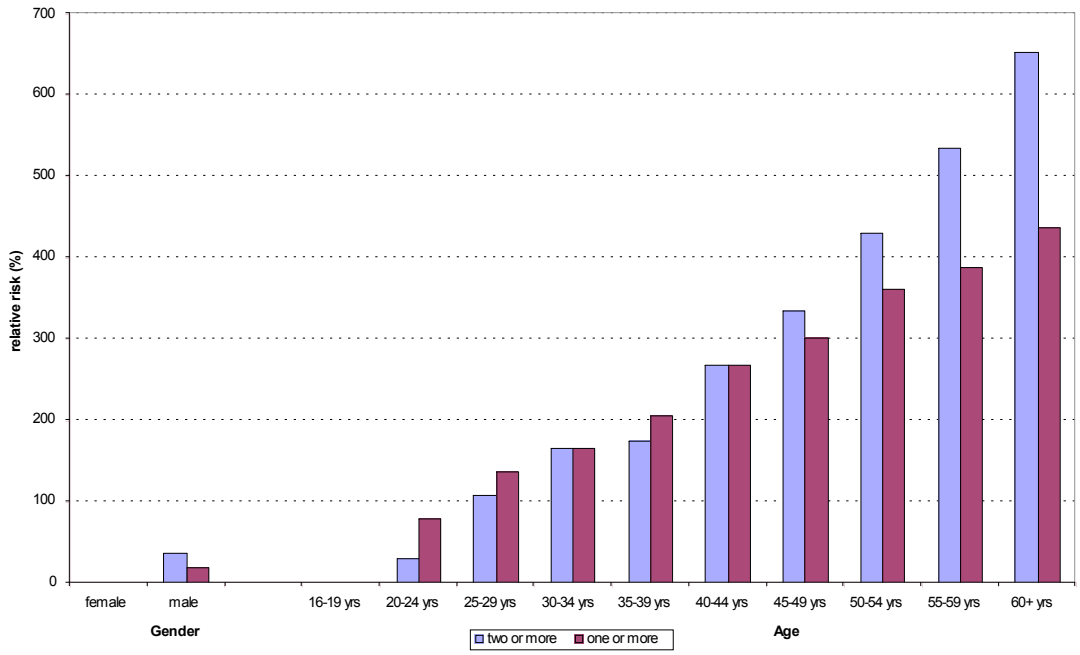

Figure 3.24 Likelihood of suffering a multiple work related ill-health conditions within the LFS among the working age population

3.12 THE RELATIVE CONTRIBUTION OF PERSONAL AND JOB RELATED CHARACTERISTICS TO THE RISK OF WORK RELATED ILL-HEALTH

The ability of a model to predict whether an individual will suffer from a work related ill-health condition is referred to as the ***explanatory power*** of the model. Each piece of information included within the statistical model will contribute to a greater or lesser degree to the overall explanatory power of the model. To consider how various personal, establishment and job related characteristics contribute to our understanding of an individual's overall risk of occupational ill-health, we present the results of a procedure called an ANOVA test (Analysis of Variance). This procedure identifies those factors which are most important in contributing to the overall explanatory power of the statistical model. Regression analysis has revealed that the relative contribution of certain characteristics appear to differ depending upon whether the analysis is focusing upon MSDs or SDA. The ANOVA analysis is therefore conducted for all work related health conditions and then separately for MSDs and SDA conditions. The analysis is based upon the in-work population so that the relative contribution of personal and job related characteristics can be assessed.

The results of the ANOVA analysis for all work related health conditions are presented in Figure 3.25. We observe that the most important dimension that contributes to the overall explanatory power of the model is occupation. It is estimated that information about occupation contributes to almost 22% of the overall explanatory power of the model. In terms of our overall understanding of whether an individual is likely to suffer from work related ill-health, occupation is clearly demonstrated to be the most important factor. The number of hours worked and job tenure are the second and third most important factors in determining whether an individual has suffered from work related ill-health. A variety of personal characteristics such as age, gender, ethnicity and region contribute very little to our overall understanding of

who is most likely to report a work related health problem compared to the dominant influence of occupation.

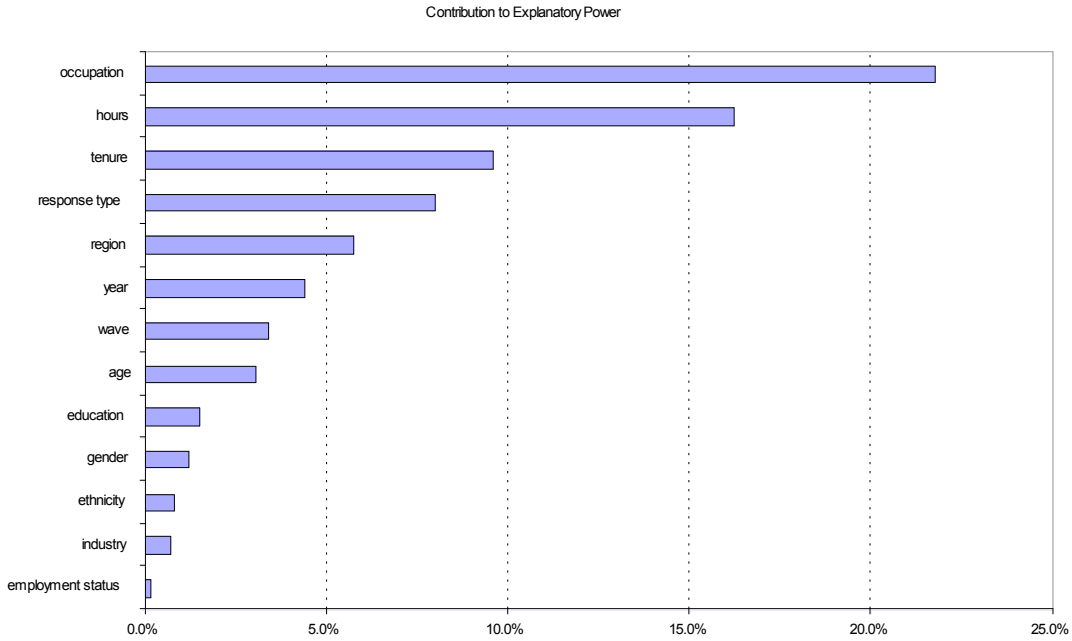

Figure 3.25 Contributions to explanatory power, all illnesses

It should be noted at the outset that these results should be treated as indicative. For example, it is observed that the individual contributions of these dimensions to the overall explanatory power do not sum to 100%. This is because the ANOVA procedure identifies the separate and independent influence of these personal, job and establishment characteristics to the overall explanatory power of the model and does not account for the presence of interaction effects between these separate dimensions. Furthermore, the results of the analysis depend upon the level of detail used to control for each set of characteristics. For example, utilising a more detailed set of variables to control for occupation could increase the proportion of the variance that can be accounted for by the inclusion of occupational information. However, these caveats should not detract from the main finding that occupation is the most important influence that contributes to an individual's risk of suffering a workplace injury.

If we consider the further distinction between MSDs and SDA a similar picture emerges. Figure 3.26 demonstrates that for MSDs, the explanatory power of occupation is even greater at over 65%. Once again, the three most important sets of characteristics each relate to the nature of the job as opposed to the personal characteristics of individuals. However, the occupation held plays a dominant role in terms of understanding who suffers from work related ill-health. Also of note is the relatively small contribution of industry measures to the explanatory power of the regression. Despite the large variations in rates of work related ill-health by industrial sector as described in Chapter 2, after controlling for other influences, sector of employment does not play a large role in terms of understanding who suffers from work related ill-health.

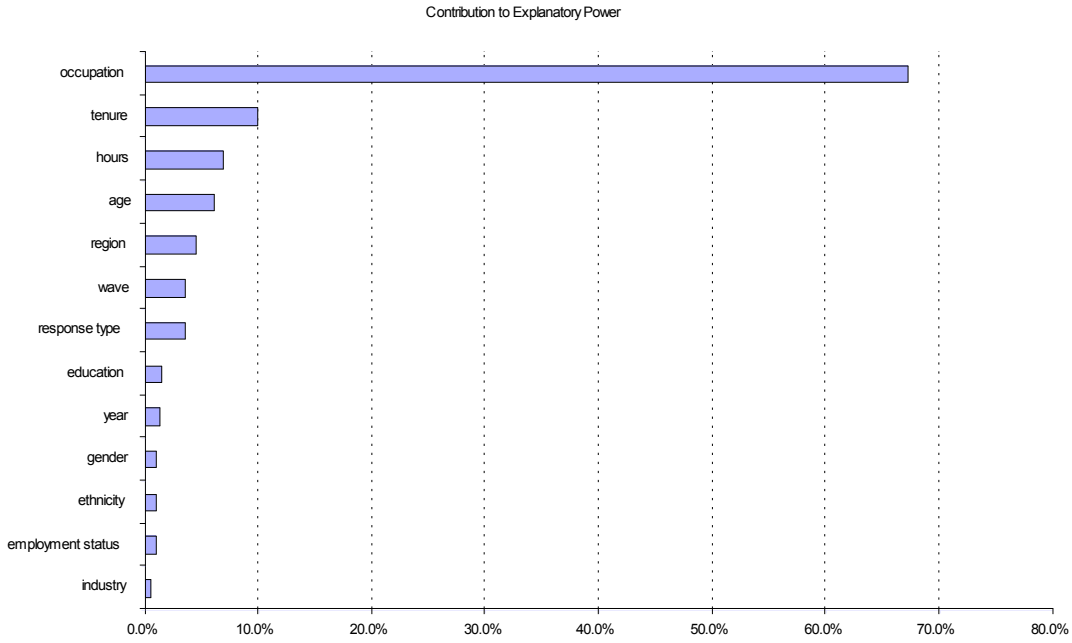

Figure 3.26 Contribution to explanatory power, MSDs

Finally, Figure 3.27 considers the relative contribution of personal and job related characteristics to understanding who reports that they suffer from work related SDA. It can be seen that the number of hours worked is now the greatest contributor to the overall predictive power of the model with 14%. However, occupation still also contributes to 14% of the explanatory power, which is much less than that estimated for MSDs. Whilst personal characteristics are again demonstrated to be relatively un-important in terms of their contribution to predictive power, the importance of correcting for recall bias among proxy respondents is clearly demonstrated.

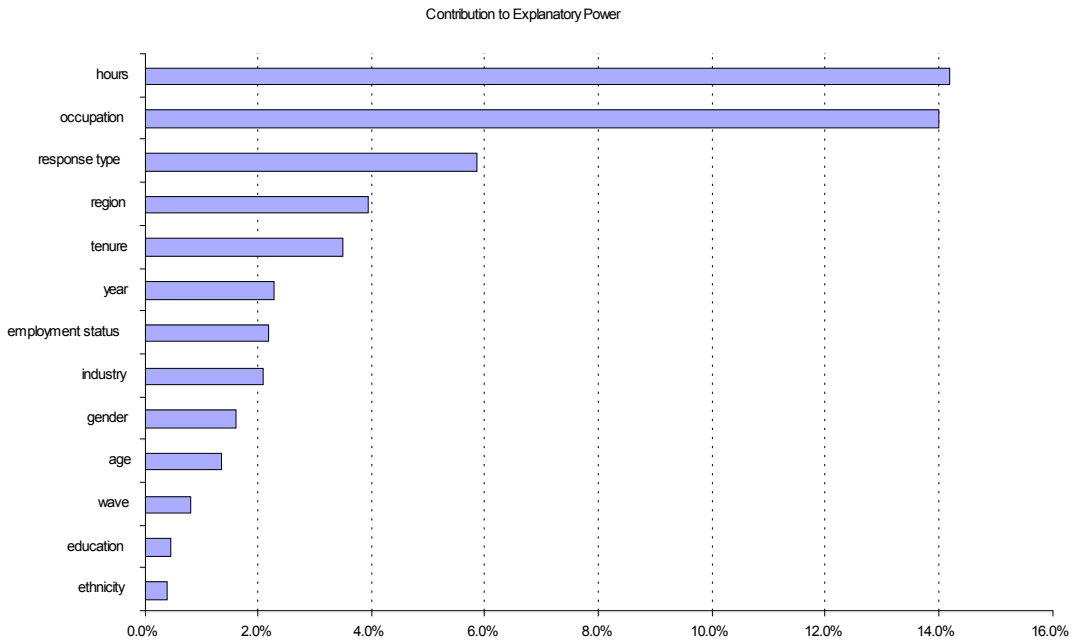

Figure 3.27 Contribution to explanatory power, SDA

CHAPTER 4:
UNDERSTANDING TRENDS IN THE RISK OF SUFFERING FROM WORK RELATED ILL-HEALTH

4.1 INTRODUCTION

The analysis of Chapter 3 has demonstrated the variety of personal, workplace and job related characteristics that influence the risk of an individual suffering from a work related ill-health condition. In the case of MSDs, the analysis has pointed to the importance of occupation as a risk factor. For SDA, both hours worked and occupation appears to be of relative importance. In Chapter 1, we described how changes in the industrial composition of employment within the UK have resulted in shifts in the occupational composition of employment away from manual occupations. Given the importance of occupation in the analysis of work related ill-health, these changes in the labour market may help us to understand what factors are underpinning year on year changes in observed rates of SWI within the LFS since 2001/2. This Chapter pulls together results from the multivariate analyses that focus specifically on identifying how the risk of work related ill-health has changed over time.

4.2 ANNUAL CHANGES IN RELATIVE RISK OF WORK RELATED ILL-HEALTH

Tables 4.1 and 4.2 summarise the variables included within statistical models that provide estimates of the separate and additional effect of time on the risk of an individual suffering from a work related ill-health condition. The effect of year of data collection estimated from fourteen different logistic regressions that were conducted for the purpose of the statistical analysis presented in Chapter 3 are presented. Due to the availability of consistent data, analysis for the working age population only covers the period 2002 to 2007. The coefficients on these year variables represent the separate and additional effect of the time period in which the ill-health data was collected upon the risk that an individual in the LFS reports that they suffer from a work related ill-health condition. As described earlier, the models from which these coefficients are derived also include information on a variety of personal, job and workplace characteristics. Changes in levels of work related ill-health that could be attributed to changes in the observable characteristics of individuals within the LFS sample will therefore be captured by the inclusion of these other variables. The effects associated with the time period of data collection are therefore the combined effects of *all other time varying influences upon the risk of an individual reporting that they suffer from work related ill-heath that are not captured by the detailed information included within our statistical models.* These effects could include changes in they way the LFS is conducted, general changes in the attitudes of people to recognise that they suffer from a work related ill-health condition or changes in their willingness to report such conditions during the LFS interview. Alternatively, these effects could be the result of changes in risk factors or in the characteristics of individuals that are otherwise not captured within the LFS data. The end of this chapter considers the potential importance of levels of work intensity within the wider economy.

Most of the coefficients are negative indicating that a response from a particular year is associated with a lower risk of suffering from a work related ill-health condition than was the case in the reference year (2002). It is the magnitude of these effects that hold particular interest. Table 4.1 shows that, for the in-work population and the working age population, the yearly coefficient reaches a low in 2006. This is consistent with our previous finding that ill-health rates decline year on year up to 2006. The magnitude of the in-work population coefficient (-23.6) however is larger than for the working age population (-19.2). This means that, compared to 2002, rates for the in-work population will have fallen faster than for the working age population. If we break down the analysis by type of illness we see the same trend.

Coefficients fall to a low point in 2006. For both the working age and the in-work population the coefficients for 2006 are around twice the size for SDA than they are for MSDs, indicating that the relative risks of suffering from SDA have fallen twice as much as they have for MSDs. For 2007 we see that for all groups the coefficient has reduced in size which tells us that although rates may be lower in 2007 than they were in 2002 (as suggested by the negative sign on the coefficient) they are higher than they were in 2006. Among the in-work population, we observe that the risk of suffering from work related ill-heath conditions is once again significantly lower in 2008 and 2009 compared to 2002. For MSDs, the relative risk in 2008 and 2009 is similar to the levels estimated in 2006. However, for SDA the relative risks in 2008 and 2009 are higher than the relatively low levels of risk estimated in 2006.

Considering analyses that are conducted separately by gender and age the same pattern emerges; a decline up until 2006, a rise in 2007 and further decline thereafter (see Table 4.2). Although women are more likely to suffer from SDA conditions then men, we see the relative risks of SDA conditions for men (-30.5) falling faster than for women (-26.3). For MSDs, risks for women (-23.7) fall more steeply between 2002 and 2006 than the differences observed for men (-8.0). In terms of age groups, the relative increase in the risk of work related ill-health is particularly evident among older workers in terms of MSDs and younger workers for SDA conditions.

Table 4.1 Changes in the risk of suffering a work related ill-health condition relative to 2002

	Working age population			***In Work population***		
	MSDs	***SDA***	***All***	***MSDs***	***SDA***	***All***
2002	ref	ref	ref	ref	ref	ref
2004	-2.5	-1.0	**-5.2**	-1.8	-7.0	**-6.8**
2005	**-10.3**	**-10.6**	**-15.2**	-5.8	**-14.6**	**-13.3**
2006	**-12.1**	**-24.9**	**-19.2**	**-15.1**	**-28.1**	**-23.6**
2007	-4.2	-7.5	**-10.2**	4.5	-6.3	-2.9
2008	~	~	~	**-16.1**	**-14.6**	**-17.8**
2009	~	~	~	**-14.2**	**-19.4**	**-20.5**

(Statistically significant relationships highlighted in bold)

Table 4.2 Changes in the risk of suffering a work related ill-health condition relative to 2002: by age and gender

	In-work MSD		***In-work SDA***		***In-work MSD***		***In-work SDA***	
	Male	***Female***	***Male***	***Female***	***Young***	***Old***	***Young***	***Old***
2002	ref	ref	ref	Ref	ref	ref	ref	ref
2004	4.3	-9.3	-5.4	-8.5	-2.6	-0.9	-1.3	-10.0
2005	-3.5	-9.0	**-20.7**	-9.8	-10.4	-2.7	**-16.7**	-13.0
2006	-8.0	**-23.7**	**-30.5**	**-26.3**	**-16.3**	**-14.1**	**-28.0**	**-27.8**
2007	-0.5	9.2	-7.3	-6.1	-5.0	9.8	4.1	-11.5
2008	-11.0	**-23.2**	**-16.1**	-13.8	**-19.9**	**-14.0**	**-21.8**	-10.4
2009	-11.0	**-18.9**	**-18.7**	**-20.2**	**-15.7**	**-13.1**	**-16.8**	**-20.3**

(Statistically significant relationships highlighted in bold)

4.3 UNDERSTANDING YEAR ON YEAR CHANGES IN THE RISK OF WORK RELATED ILL-HEALTH

Having seen what is happening to trends in ill-health rates it would be interesting to know what is driving these changes over time. A problem with the year dummy variables presented in Tables 4.1 and 4.2 is that these variables assume (or constrain) the effect of the year of data collection on the risk of reporting a work related ill-health condition to be uniform for all individuals within the LFS, irrespective of their personal, job or workplace characteristics. In reality, the observed trends in the risk of suffering a work related ill-health condition may actually be different for different groups of respondents in the LFS. The changing risks of suffering from a work related ill-health condition may therefore not be adequately captured by the inclusion of a simple step dummy variable that takes the same value for all individuals in the LFS sample during a given year. Likewise, the changing risks associated with a given personal, job or workplace characteristics may not be adequately captured by an 'average' coefficient that is constrained to take the same value over the entire period covered by the LFS data.

To examine this issue, the multivariate analysis for the in-work population was repeated with the inclusion of 2-period interaction terms. The 2 period interaction variables divide the LFS sample in to two parts; 2002-2006 and 2007-2009. The in-work model was re-estimated with the inclusion of a 2 period dummy variable (0=2002/6, 1=2007/9) *plus* the inclusion of interaction terms based on all control variables within the original model being multiplied by the 2 period dummy variable. Whereas the all period model constrains estimates to be an average relationship of a particular variable on the risk of suffering from a work related ill-health condition, the introduction of interaction terms allows the flexibility for the nature of any relationship to differ in its scale (and potentially direction) when comparing the early and later part of the sample. The analysis was repeated separately for all conditions, MSDs and SDA. Analysis revealed that very few interaction terms were found to be statistically significant which therefore indicates that there is little evidence to suggest that risk factors associated with particular observable characteristics are changing over time. The factors underpinning changes in levels of work related ill-health cannot be attributed to changes in risk factors associated with particular personal, job or workplace characteristics.

To explore these issues further, an Oaxaca decomposition on changes in rates of work related ill-health was undertaken. The Oaxaca decomposition allows the difference in rates of ill-health between two time periods to be decomposed into differences associated with observable characteristics and differences associated with how these characteristics contribute to estimated outcomes. Ronald Oaxaca and Alan Blinder developed this statistical tool in the 1970s to investigate wage differences between two groups: men and women. The question was asked, what would the male wage rate look like if men received the same wage returns on their characteristics as did women? The results gave a decomposition of the difference in wages into an element associated with differences in characteristics and an element associated with differences in returns (which was assumed could be attributed to 'discrimination'). If it was found that it was the wage returns to particular characteristics, that was driving the differences rather than actual differences in the characteristics of men and women, then this could be said to be evidence of wage discrimination: women were getting lower wages due to the fact that their *returns* on these characteristics were lower as opposed to possessing fewer characteristics associated with higher earnings.

This model has been widely applied since then. In the present application, we are interested in what is driving year on year differences in ill-health rates by comparing one year with another. The difference in rates between two years can thus be decomposed into elements associated with characteristics (the endowment effect) and changes in relative risk. If it is estimated that the risks associated with personal, job and establishment characteristics remain unchanged from

one year to the next, then changes in rates of work related ill-health will be due to changes in the characteristics of the population at risk (e.g. changes in the occupational composition of employment). If the characteristics of the population at risk show little variation over time, then any changes in rates of work related ill-health must be attributable to changes in general levels of risk. It should however be noted that this decomposition can only be made with respect to the characteristics that are observed in the LFS. If there are changes in the characteristics of workplaces or the nature of jobs that are not captured by information collected by the LFS, then the effects of such changes on work related ill-health will become attributed to changes in levels of risk.

Figure 4.1 shows that very little of year on year changes in ill-health rates can be attributed to there being a significant difference in characteristics of people in the LFS sample year on year. The white shaded bars show that these effects are not statistically significant. While the significant bars in 2007/08 and 2002/09 show some effect but the magnitude of that effect is relatively small. In terms of the characteristics that are estimated to underpin this small increase, closer examination of the Oaxaca analysis suggests that upward pressure on rates is being underpinned largely by changes in the age and tenure profile of those in the LFS, with each contributing to approximately half of the expected increase in work related ill-health. What seems to be driving year on year changes, as well as differences in the rates of work related ill-health between the beginning and end of the sample are changes in the levels of risk associated with having a work related ill-health condition. That is, it is differences in *how* the characteristics affect the chances of becoming ill rather than differences in the characteristics themselves.

Given the absence of statistically significant interaction terms derived from the multi-variate analysis described above, it may seem counterintuitive to suggest that changes in relative risk are underpinning changes in rates of work related ill-health over time. However, it is noted that the Oaxaca decomposition utilises the estimated size of the coefficients estimated during successive time periods to decompose overall changes in rates. Due to the level of detail included within our statistical model and the limited sample sizes available from the LFS, changes in the size of individual coefficients are unlikely to be statistically significant from one year to the next. However, when taken collectively, changes in the size of estimated coefficients can contribute to changes in predicted rates of work related ill-health that account for a majority of the small year on year variation in work related ill-health derived by the LFS. The Oaxaca decomposition also includes the effects of year on year differences in the size of the constant term included within the regression model. If risks of ill-health are found to be uniformly higher in one year, this will be reflected in changes in the size of the coefficient on the constant term.

Figure 4.1 Oaxaca decomposition of year on year differences in rates of ill-health.

Undertaking the Oaxaca decomposition separately for MSDs and SDA conditions, it is observed that for SDA it is possible to explain some of the difference by reference to the characteristics of those in the LFS. Due to smaller sample sizes and difficulties in applying our very detailed model of MSDs and SDA on a single year of data, Figure 4.2 presents a decomposition of the differences between an 'early' (2002-05) and 'late' (2007-09) time period. Although most of the differences in rates between these two time periods arise due to changes in risk, there is a significant endowment effect for SDA conditions. For both types of illness, but particularly in the case of SDA, it is observed that changes in the characteristics of those in employment within the LFS would be expected to contribute to increased levels of work related ill-health over the period of analysis. However, these compositional effects are being offset by changes in the risk of work related ill-health – resulting in an overall reduction in the rates of work related ill-health.

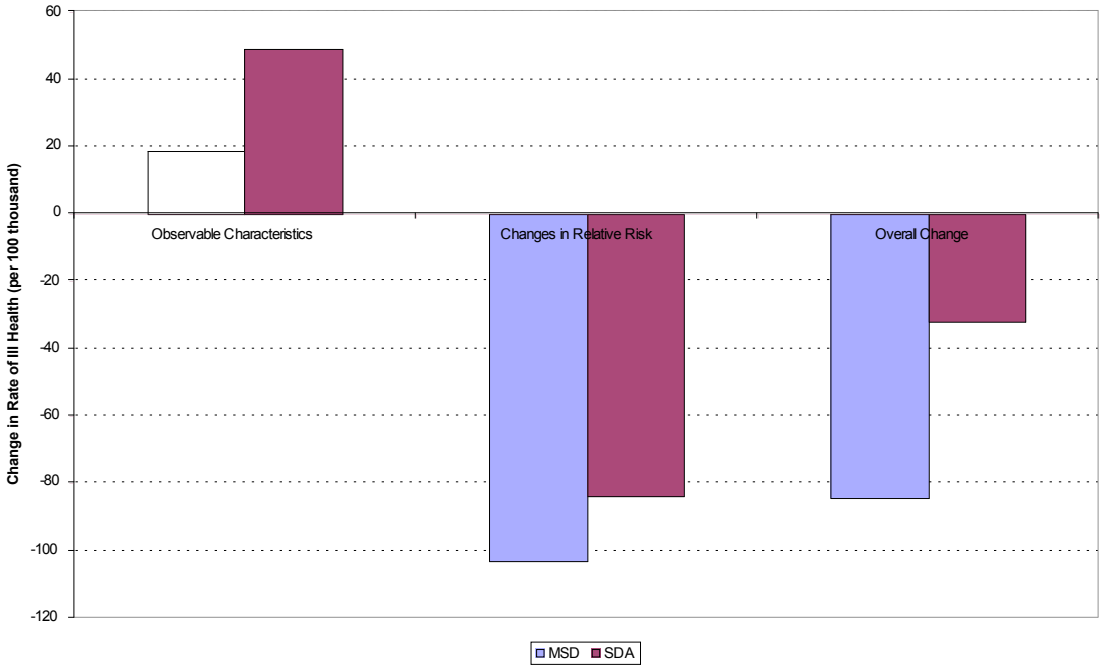

Figure 4.2 Oaxaca decomposition broken down by type of illness 2002/5 – 2007/9

4.4 QUANTIFYING CHANGES IN THE ADJUSTED RATE OF WORK RELATED ILL-HEALTH

To assist in understanding how changes in work related ill-health varies year on year, this section presents estimates of annual adjusted rates of work related ill-health. These adjusted rates are derived from our statistical models and represent estimated rates of work related ill-health after having adjusted for the effects of all other variables included within the statistical model. The effects of other influences are evaluated for an individual with 'average risk' across all other dimensions. The year on year changes in these 'adjusted' rates are therefore entirely attributable to the effects of annual changes in relative risk and exclude the effects of other factors such as changes in the characteristics of individuals, jobs or workplaces that can be measured in the LFS. Furthermore, estimates of comparison intervals derived from quasi variances (see Firth 2000) are also presented so that the statistical significance of differences between annual changes in the rates of work related ill-health can be evaluated[3].

Due to the availability of a longer time series of data and the ability to control for both personal and workplace characteristics, this stage of the analysis presents results derived from models based upon the in-work population. The results are shown in Figures 4.3 to 4.6. In addition to distinguishing between MSDs and SDA, further analyses have been undertaken for the service sector (Figure 4.4), the manufacturing sector (Figure 4.5) and the production sector (Figure 4.6). The manufacturing sector is a sub-set of the production sector. Details of the derivation of these sectors are presented in Annex 4.

[3] This is done to assist comparisons between two categories from a logistic regression, where neither of which act as the reference category.

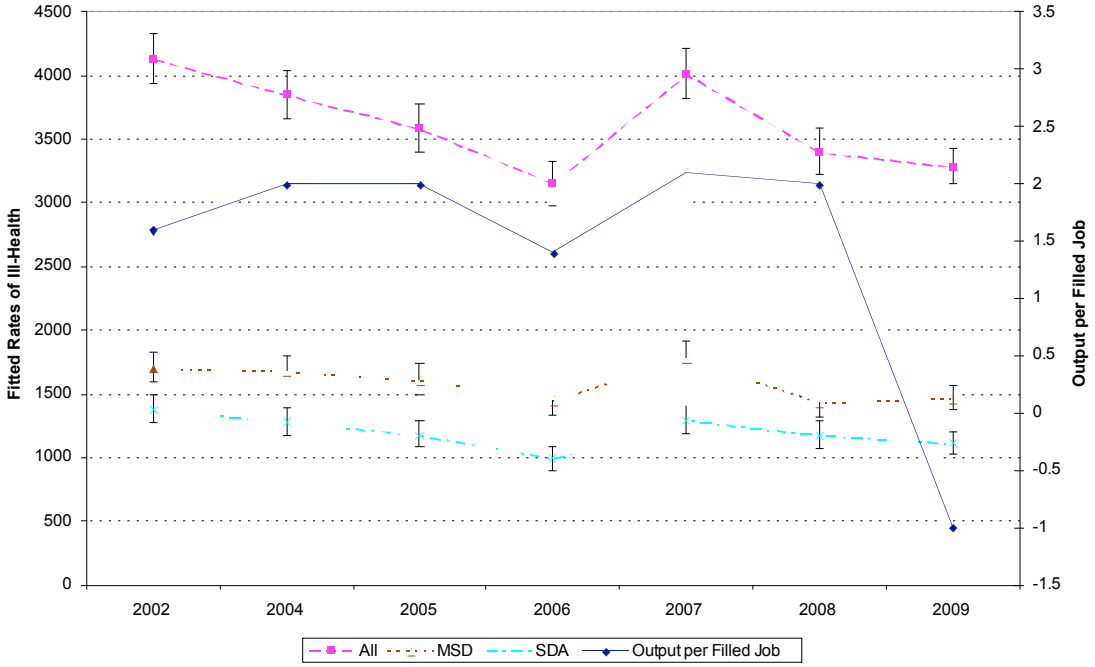

Figure 4.3 Fitted rates versus annual growth in output per filled job (lagged). All sectors

The estimation of adjusted rates represents an alternative and more intuitive way of presenting information derived from the dummy variables shown in Tables 4.1 and 4.2. However, ultimately the conclusions derived from the analysis remain unchanged. After controlling for other characteristics, significant year on year variation in rates of work related ill-health remain. This is clearly demonstrated by the 'dip' in rates of work related ill-health observed during 2006. The otherwise unexplained 'dip' in the rate of work related ill-health is most apparent within the service sector (Figure 4.4) and the production sector (Figure 4.6), where rates of work related ill-health recover to levels comparable to those observed in 2002.

Figure 4.4 Fitted rates versus annual growth in output per filled job (lagged). Services

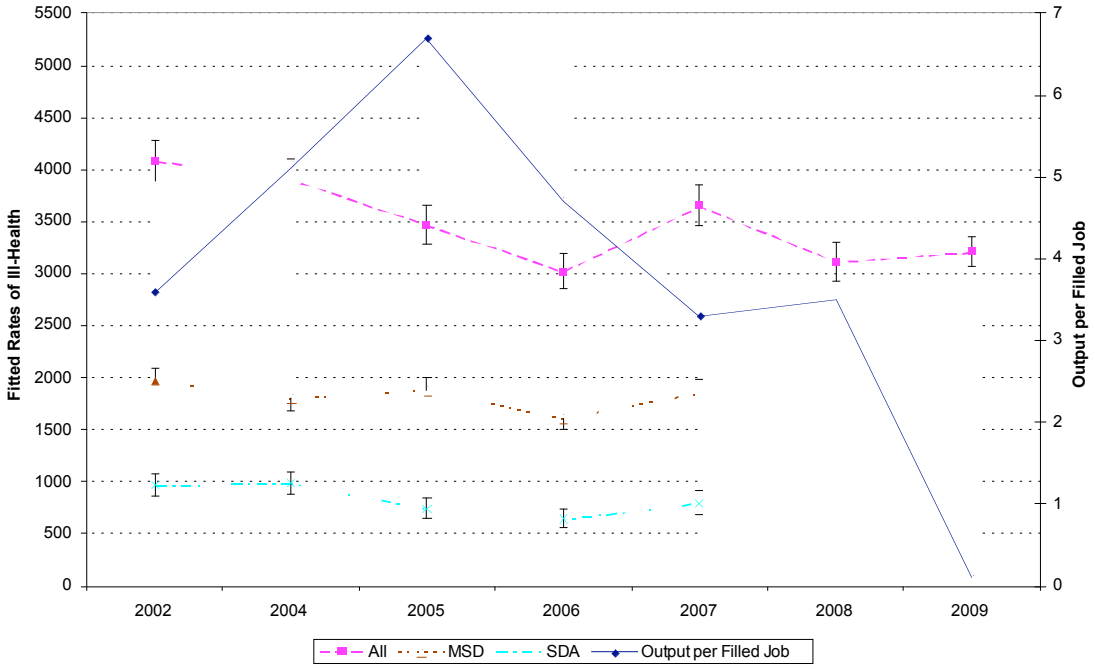

Figure 4.5 Fitted rates versus annual growth in output per filled job (lagged). Manufaturing

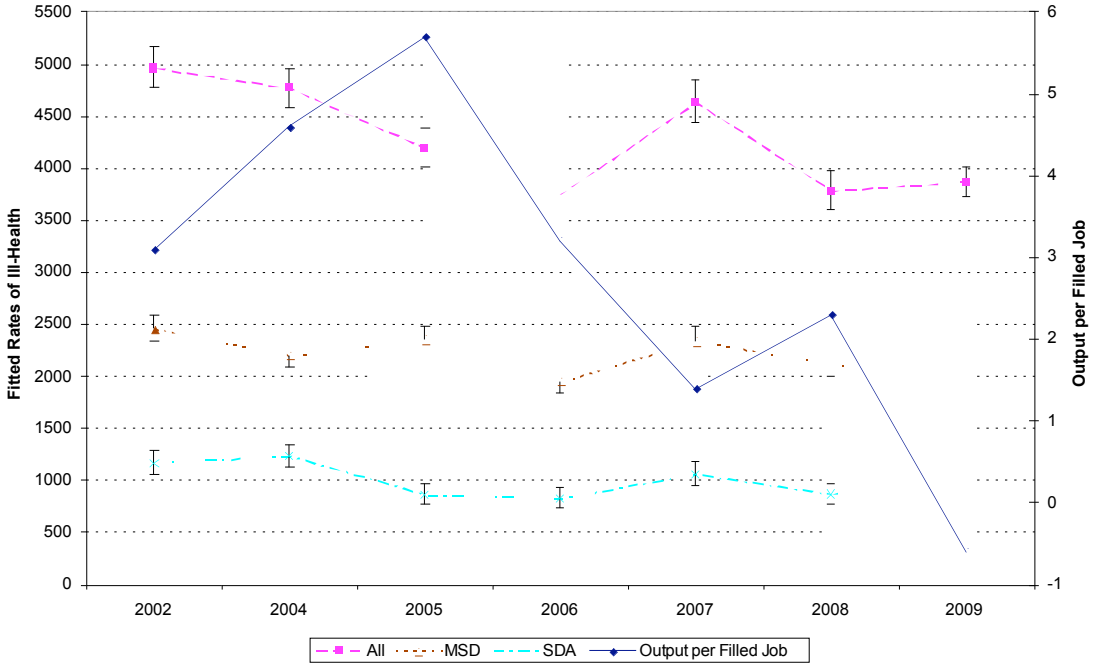

Figure 4.6 Fitted rates versus annual growth in output per filled job (lagged). Production

4.5 EFFECTS OF THE BUSINESS CYCLE ON WORK RELATED ILL-HEALTH

Previous analyses conducted on rates of workplace accidents demonstrated that the incidence of workplace accidents can be shown to be correlated with the level of activity within the wider economy (Davies, Jones, Nunez 2009). These effects are due largely to changes in the economic environment impacting upon the labour market. In periods of increased demand, firms initially meet increased levels of demand through the more intensive use of their existing labour and capital equipment. This may mean the existing workforce working harder per hour worked or working longer (e.g. increased reliance on overtime). Eventually, firms recruit new workers to cope with these increased demands. However, the presence of more inexperienced workers who are at greater risk of suffering a workplace accident will also place upward pressure on injury rates.

It is not clear that the business cycle will affect rates of work related ill-health in the same way as accidents. The presence of an MSD is more likely to reflect the cumulative effects of exposure to risk over longer periods rather than be the result of short terms changes in the intensity of work. There is however evidence to suggest that employment conditions such as the pace of work, control over work tasks and the length of the working week can influence the risk of SDA. Whilst the statistical model controls for the length of the working week, the analysis of the LFS is based on cross sectional data and therefore has limitations in terms of understanding the effects of changes in working conditions upon the risk of work related ill-health. Whilst it is therefore possible to infer that, after controlling for other influences, an individual working 60 hours per week is more likely to suffer from work related ill-health than an individual working 30 hours, we cannot demonstrate the effects on work related ill-health of the same individual increasing their hours worked from 30 to 60. A further limitation of the LFS is that it is not able to control for how 'hard' people are working in their jobs.

Also plotted on Figures 4.3 to 4.6 is the annual growth in output per filled job from ONS[4]. It can be seen that reductions in work related ill-health reported in 2006 for all sectors coincide with a dip in productivity during the previous year. Despite continuing low levels of unemployment and the 'tight' labour market conditions that existed during this period, both productivity data from ONS and other data sources point to a dip in capacity utilisation in 2005 (e.g. Bank of England http://www.bankofengland.co.uk/publications/inflationreport/ir07feb3.ppt). Variations in work related ill-health rates may therefore be linked to levels of worker effort within the economy. More detailed analysis by sector revealed that the dip in growth in output per filled job observed during 2005 was driven by reduced levels of output in the service sector (Figure 4.4). Reduced rates of work related ill-health during 2006 within the service sector appear to be correlated with output in that sector. However, productivity growth within the manufacturing and production sectors of the economy fell during 2006 rather than 2005. Productivity in these sectors of the economy recovered slightly in 2007 and 2008 before falling sharply as the UK entered in to recession. Therefore, while these sectors display similar patterns in productivity growth, these movements do not align with observed variations in work related ill-health. It is noted that the production sector, of which manufacturing is a part, is relatively small compared to the remainder of the economy (approximately 12% in 2009 based on share of employment). Further analysis confirmed that, by introducing measures of sector level productivity into the multivariate analysis, rates of work related ill-health for the whole economy and within the services sector were found to be significantly and positively related to corresponding measures of productivity. However, these results were not confirmed by the analysis of the production and manufacturing sectors. The correlation between rates of work related ill-health and productivity in the service sector could therefore be coincidence rather than reflecting a causal relationship.

[4]http://www.statistics.gov.uk/hub/economy/prices-output-and-productivity/productivity-measures

CHAPTER 5:
CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The LFS is the largest quarterly household survey in the United Kingdom, covering approximately 60,000 households and is un-rivalled in comparison to other household surveys in terms of its relative sample size. The LFS provides a rich data source providing detailed information on individuals' jobs as well as their personal characteristics. The breadth of the information covered in the LFS makes it a useful source from which to gain a better understanding of work impacts upon health. Multivariate analysis that distinguished between different periods did not reveal that relative risks for different types of workers or different types of job were changing over time. The LFS therefore provides robust source of data for the construction of rates of work related ill-health for relatively detailed categories of workers and jobs. However, there are a number of issues surrounding the use of the LFS as a source of data regarding work related ill-health. These are detailed below.

5.2 STRUCTURE OF THE LFS

Analysis revealed that individuals who responded to the work related ill-health module of the LFS during their first wave of participation in the survey were approximately 10-20% more likely to report that they had suffered from an ill-health condition. It is expected that this differential is related to the better quality of information collected from the face to face interviews collected in Wave 1 of the LFS compared to the telephone surveys conducted in later waves. Whilst there are no obvious reasons to suspect that the nature of this under-reporting should vary for different types of respondents, it remains the case that the difference in quality of responses provided by wave results in an underestimate of the incidence of work related ill-health in the order of 15%.

More significantly, analysis has demonstrated that proxy respondents (those individuals who respond on behalf of another member of the household) are less likely to report that the intended respondent suffers from an ill-health condition. Where the proxy respondent is the partner of the target respondent, such respondents are 25% less likely to report that their partners suffer from an ill-health condition. This differential increases further among unrelated proxy respondents. It is noted that the LFS asks about illnesses that have occurred during the last 12 months and, as such, the respondent (or intended respondent) does not necessarily have to be suffering from the condition at the time of the survey. This introduces the issue of recall bias, where proxy respondents in particular may be less likely to recall an illness suffered by their spouse or other person in the household during the previous 12 months.

The effects of proxy response upon reporting also appear to be greater for women than for men. In the case of MSDs, proxy respondents appear 35% less likely to recall that a woman has suffered from an MSD compared to women who respond to the LFS directly. This differential is not estimated to be statistically significant for proxy respondents responding on behalf of men. Proxy responses will therefore lead to an underestimate of rates of work related ill-health. It is likely that women are more likely to respond on behalf of men than vice versa (e.g. single earner households where the male works) which may in particular contribute to an under-estimate of rates of ill-health for males, although this may be offset by lower rates of reporting by males who are responding on behalf of females. Further cognitive interviewing would be required to understand the effects of recall bias and proxy response on rates of work related ill-health.

5.3 CONTENTS OF THE LFS

Whilst the LFS is un-rivalled in terms of the detailed information it collects about individuals, their jobs and their workplaces, it must also be noted that the LFS does not include information on many of the important determinants of work related ill-health that were identified in the literature review presented in Chapter 1. The analysis of the LFS revealed that occupation was particularly important in terms of understanding which workers were likely to suffer from an MSD. Occupation is therefore able to provide a proxy measure for many of the direct impacts of physical job conditions (such as manual labour, heat, noise, dust, chemicals and vibration) upon work related ill-health. However, a limitation of the LFS is that whilst it does collect information of characteristics such as shift working, unionisation, commuting patterns and location of work (identifying home workers and those who work from home), this information is collected within different quarters of the survey compared to the questions on work related ill-health. For example, in respect of shift working, the LFS asks respondents about whether they work nights/evenings and whether their working hours conform to the convention of what is a typical working week. Whilst these factors may be an important contribution to employee health, their effects cannot be directly identified from the LFS data due to this item being collected in a different quarter of the survey.

The LFS is also less well placed to capture the characteristics of jobs that contribute to SDA such as levels of job demand, control, support, organisational factors (working hours, flexible working) and interpersonal stressors (bullying, discrimination, harassment). The analysis of the LFS was able to include limited information regarding the atypical patterns of employment that have emerged in recent decades (e.g. temporary contracts). However, given the broad nature of the analysis which covered all areas of the labour market, it was not possible to isolate those particular sectors or occupations where these patterns of employment may be expected to have a separate and additional effect upon work related ill-health.

In terms of employment relations, the only data included in the LFS is the measure of social class provided by the National Statistics Socio-Economic Classification (NSSEC). NSSEC aims to differentiate positions within labour markets defined by their typical employment relations; that is by social relationships as expressed though labour market relationships and employment contracts. Individuals are allocated to broad class positions that are derived on the basis of their status in employment, occupation, supervisory/managerial status and size of workplace. Therefore, whilst the LFS contains information on the social class of respondents, only limited data directly related to employment relations is collected. Indeed, the NSSEC was itself derived with the inclusion during the Winter Quarter of 1996/7 of a set of specially commissioned questions related to employment relations (see appendix 6 of http://www.statistics.gov.uk/nsbase/downloads/theme_compendia/ESRC_Review.pdf).

A further limitation of the LFS is that, as a cross sectional survey, it does not include longitudinal information about the careers of individuals included within the survey. Within the present analysis, this issue was addressed by limiting the analysis of the in-work population who suffered from work related ill-health to those individuals who reported that their condition was caused or made worse by their main and current job. However, this meant that it was not possible to consider how the occupations previously held by those currently not in work contributed to levels of work related ill-health reported among this group. Furthermore, it was also not possible to examine how occupations previously held contributed to the ill-health of those who were in employment, but not in the same job as that which caused this ill-health condition. This may be an important limitation in the context of those people who make occupational choices that allow them to cope with a pre-existing ill-health condition.

5.4 OCCUPATIONAL CLASSIFICATION

Statistical analysis pointed towards the relative importance of occupation as an important determinant of work related ill-health, particularly for MSDs. Although not a problem that is unique to the LFS, it should be noted that occupational classifications become out of date and require periodic revision. For example, this might be where the work tasks associated with a particular job title change, resulting in that job no longer being correctly positioned within the occupational hierarchy. Alternatively, new job titles may emerge for existing occupations without any changes occurring to the nature of work tasks undertaken. For example, the inflation of job titles through increased use of the word 'manager' may result in occupations being incorrectly assigned to management positions (e.g. 'train conductor' being replaced by 'train manager'). At the time of writing, a new version of the Standard Occupational Classification (SOC 2010), the national standard for categorising occupational information, has been completed (see: http://www.ons.gov.uk/about-statistics/classifications/current/soc2010/index.html), although the new classification has yet to be implemented within the LFS. Whilst the revisions in SOC 2010 will not be as disruptive as the revisions incorporated in the previous revision to SOC (the move from SOC90 to SOC2000 which included a movement from a 3 digit to 4 digit classification structure and significant re-positioning of occupations within that structure), attention will need to be given by HSE to how changes in the occupational classification contribute to differences in relative risks between different occupational groups in the years ahead. Without careful examination, changes in the positioning of particular occupations within the classification may give the impression that relative risks associated with particular occupational groups were changing.

5.5 TIMELINESS, FREQUENCY AND UNDERSTANDING TRENDS: ALTERNATIVE DATA SOURCES

There are a number of alternative sources of data that can address some of the limitations associated with the LFS. In terms of measuring the impact of employment relations upon work related ill-health, the National Employee Skills Surveys provide detailed information in employment relations, location of work, job insecurity, team working and a variety of questions asking how work affects the well-being of respondents. Similarly, the Workplace Employment Relations Survey includes questions on both employment relations and work related health. In terms of alternative longitudinal sources of data, the Economic and Social Research Council (ESRC) funded *Understanding Society* builds upon the British Household Panel Survey (BHPS) to provide the largest household panel study in the world. Whilst the BHPS did not contain questions on work related ill-health, *Understanding Society* provides a potential source of information on these issues given the detailed employment histories provided by respondents to the BHPS over a period of almost 20 years. Short descriptions of these surveys are presented in Annex 5.

The benefits of collecting data on work related ill-health from the LFS is that the HSE is provided with up to date and frequent information regarding movements in rates of work related ill-health. Due to its relatively large sample size, the LFS also provides the opportunity for rates of work related ill-health to be analysed across a variety of characteristics. However, a key finding of the analysis of Chapter 4 is that, despite controlling for a range of personal, workplace and job related characteristics, the analysis is unable to account for observed trends in work related ill-health. After controlling for all other observable characteristics that are available within the LFS, movements in adjusted rates of work related ill-health closely resemble observed changes in actual rates of work related ill-health. This is most clearly evident for 2007 data, where the statistical analysis is unable to account for the significant increase in rates during that year.

Abstracting from the increase in rates of work related ill-health that were observed in 2007, the factors underpinning the general downward trends in work related ill-health do not appear to be captured within the LFS. The absence of longitudinal data within the LFS may be important in terms of our ability to understand trends in rates of work related ill-health. The analysis of the in-work population was restricted to those people who report that their condition has been caused or made worse by their current job in an attempt to deliberately abstract from those people who have taken up an occupation that allows them to manage their condition. However, it remains the case that the occupations held earlier during the careers of those people suffering from an ill-health condition could be the underlying cause of these conditions (see Fletcher and Sindelar, 2009). The inability to take these earlier jobs in to account will limit our ability to understand long term trends. It is also acknowledged that these downward trends could represent the lagged effect of past changes in the regulatory regime.

There is a requirement to collect data on work related ill-health that both a) accurately monitors changes in its incidence and b) helps to understand which factors contribute to work related ill-health. Whilst the LFS may be the best source of data for providing robust statistics on ill-health (although recent errors in questionnaire routing in the LFS may also call this in to question), it may not be the best source of data to use to understand these trends in incidence rates. The inability to account for year on year changes in rates of work related ill-health within the LFS possibly calls into question the benefits that are to be gained from including the HSE module on work related ill-health within the LFS on an annual basis. This is particularly the case with SDA where the LFS is not well placed to understand who is most likely to suffer from such conditions. The increasing importance of SDA conditions and continuing changes in the organisation of work will place further emphasis on the need to understand the nature of employment relations within the workplace (see Green and Whitfield, 2009).

The main alternative source of data that could be considered by the HSE as providing a source of robust data on the incidence of work related ill-health is the longitudinal *Understanding Society* survey. The survey contains a number of questions related to patterns of employment (e.g. hours, shift working, location of workplace, commuting patterns) as well as data on standard items such as hours worked, occupation, industry and employment status. With 40,000 households being surveyed over a course of 2 years, the sample sizes are not too dissimilar to the number of households included within the LFS. Building upon an established sample provided by the BHPS, detailed information on the careers of a subset of respondents over a period of almost 2 decades would be available from the outset. The collection of bio-medical data would also be of particular interest in the analysis of occupational ill-health. It is therefore recommended that a feasibility study should be conducted to examine in further detail whether questions on work related ill-health could be included in *Understanding Society.*

Annex 1:

Prevalence rates for SWI per 100,000 of those employed, weighted.

	2002	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
All	4507.7	4148.5	3786.6	3454.4	4114.2	3559.3	3217.7	3826.9
Gender								
Male	4518.7	4209.1	3723.7	3523.9	3956.1	3421.6	3057.0	3772.9
Female	4494.5	4076.2	3861.4	3371.9	4307.4	3727.0	3412.6	3893.0
Age								
16-19	1110.4	1291.3	936.3	857.7	964.2	904.5	789.4	979.1
20-24	2995.3	2330.5	1746.7	1694.6	2613.2	1610.7	2009.4	2142.9
25-29	3638.2	3098.0	2848.8	2756.4	2993.2	2479.7	2286.7	2871.6
30-34	4199.9	3968.4	3235.1	2854.0	3270.7	2874.3	2525.1	3275.4
35-39	4481.9	4053.6	3400.0	3578.6	3907.4	3805.9	3185.9	3773.3
40-44	4941.9	4949.1	4463.5	4146.4	4961.4	3810.3	3236.6	4358.4
45-49	5669.8	4827.1	4969.7	3973.8	5017.1	4588.3	4234.1	4754.3
50-54	5720.0	5712.6	5174.1	4642.0	5278.6	4834.6	4851.1	5173.3
55-59	5723.3	5266.0	5213.3	4640.7	5781.7	4821.2	3972.9	5059.9
60+	5775.9	4385.6	5012.0	4015.4	5131.7	5416.0	3930.2	4809.5
Qualifications								
Degree	4700.2	4346.2	4112.7	3290.2	4213.8	3855.1	3313.0	3975.9
HE	6156.3	4828.1	4917.6	4394.4	5200.3	4712.3	3793.4	4857.5
A level	4642.4	4417.1	3949.7	3593.5	4544.3	3802.4	3444.2	4056.2
GCSE	4139.6	3840.7	3233.9	3223.2	3429.5	3392.1	3023.3	3468.9
Other	4084.3	4113.1	3740.3	3649.3	4052.9	3026.9	3167.5	3690.6
No Qualifications	3786.1	3163.7	3006.0	2862.2	3303.4	1964.4	2183.7	2895.7
Don't know	2944.2	2946.1	1724.2	2307.1	3007.3	1117.2	2150.9	2313.9
Proxy								
Personal Response	5168.1	4745.8	4416.7	4095.3	4727.0	4266.9	3794.9	4459.3
Proxy Response	3272.2	3056.1	2687.7	2353.5	3044.4	2273.1	2167.5	2693.5
Wave of LFS								
Wave 1	6180.9	5006.6	4764.1	4334.6	4885.6	4030.8	3645.1	4692.5
Wave 2	4323.8	4140.4	3805.0	3314.1	3739.6	3336.5	3298.4	3708.3
Wave 3	4016.0	3599.1	3382.5	3074.4	4114.3	3540.4	3138.3	3552.1
Wave 4	3771.4	3616.1	3155.9	3060.2	3828.9	3305.7	2868.8	3372.4
Wave 5	4141.7	4302.8	3714.8	3428.2	3958.5	3559.5	3082.5	3741.1
Ethnicity								
White	4569.1	4249.6	3920.9	3525.2	4249.8	3677.1	3291.6	3926.2
Mixed	5107.9	4578.7	1719.8	4771.6	3478.9	3798.7	5005.8	4065.9
Asian	2661.3	2418.1	1637.1	2154.6	2413.7	2326.0	2222.6	2261.9
Black	3644.4	2734.5	2310.0	2696.3	3022.5	1852.0	2203.3	2637.6
Chinese	6015.3	1607.4	3402.5	1102.5	3171.1	1266.2	954.4	2502.8
Other	5050.9	3604.4	2559.2	3492.8	2158.7	2783.1	3122.4	3253.1

Cont: Prevalence rates for SWI per 100,000 of those employed, weighted.

	2002	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Social Class								
Higher Managerial & Professional	3962.1	4229.7	3679.6	3288.7	3483.8	3615.7	2993.0	3607.5
Lower Managerial & Professional	5461.6	4905.4	4458.2	3954.7	4756.9	4181.2	3677.0	4485.0
Intermediate Occupations	4230.8	3366.9	3222.8	3177.3	4053.6	3669.0	3182.5	3557.6
Small Employers & Own Account Workers	5141.0	4554.5	4044.6	3800.7	4744.8	3387.2	3707.5	4197.2
Lower Supervisory & Technical	5341.2	4603.9	4192.8	4104.3	5017.0	3954.5	3611.9	4403.7
Semi-Routine Occupations	4086.3	3694.6	3623.7	2966.3	3854.5	3302.1	3073.7	3514.5
Routine Occupations	3415.6	3855.0	3526.5	3445.8	3420.2	3000.6	2650.3	3330.6
Never Worked, Unemployed & NEC	1604.6	1343.7	960.7	829.1	1284.7	763.9	866.1	1093.2
Occupation								
Corporate Managers	4209.8	4171.9	3366.6	3062.0	3656.2	3083.1	2937.3	3498.1
Managers & Proprietors in Agriculture & Services	4290.6	4503.4	3430.6	3741.2	4637.1	2919.1	3171.3	3813.3
Science & Technology Professionals	3913.3	3619.2	3749.0	2420.9	2950.2	2738.1	3234.0	3232.1
Health Professionals	4030.2	3317.3	3673.7	3424.9	4415.6	4179.2	2054.6	3585.1
Teaching & Research Professionals	6709.5	5662.4	5327.0	4054.0	5588.0	4836.8	3974.1	5164.5
Business & Public Service Professionals	4759.9	4870.4	3179.5	3779.2	3002.0	3809.2	3155.6	3793.7
Science & Technology Associate Professionals	4521.6	2977.5	3800.8	3921.8	3701.5	4126.9	2843.4	3699.1
Health & Social Welfare Associate Professionals	7305.2	6593.6	7218.1	5202.4	7262.8	6590.3	5277.6	6492.9
Protective Service Occupations	7973.1	6097.5	4352.2	4908.1	3849.2	6068.1	3392.1	5234.4
Culture, Media & Sports Occupations	4683.8	4268.6	3548.7	3905.6	4926.0	4228.5	3593.2	4164.9
Business & Public Service Associate Professionals	4540.6	4359.0	3957.5	3302.4	4071.0	3904.7	2659.1	3827.8
Admin Occupations	4335.3	3235.5	3179.9	2862.5	3770.5	3476.6	3009.6	3410.0
Secretarial & Related Occupations	3386.9	3547.9	3155.0	3300.8	3119.6	2800.0	3142.6	3207.5

Skilled Agricultural Trades	7191.2	5724.4	5587.4	5442.6	7068.6	3712.3	4124.1	5550.1

Cont: Prevalence rates for SWI per 100,000 of those employed, weighted.

	2002	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Skilled Metal & Electrical Trades	4629.8	4859.9	3743.0	4013.0	4579.0	4379.5	2938.9	4163.3
Skilled Construction & Building Trades	5765.2	5429.1	4439.0	5047.0	4674.7	3999.3	4132.1	4783.8
Textiles, Printing & Other Skilled Trades	4660.0	3832.1	3574.8	4323.4	4659.0	2935.0	3225.4	3887.1
Caring Personal Service Occupations	4681.7	3967.8	4216.2	3170.4	4663.1	3583.2	4108.8	4055.9
Leisure & Other Personal Service Occupations	3666.5	3821.0	3256.6	3071.3	5163.9	4433.2	3191.2	3800.5
Sales Occupations	3301.7	2353.8	3009.7	2384.2	2793.6	2420.6	2409.9	2667.6
Customer Service Occupations	5120.1	4199.2	2860.4	3790.5	4391.5	3953.8	4459.5	4110.7
Process, Plant & Machines Operatives	4962.0	4375.1	4093.4	3302.4	4697.9	3616.5	3401.8	4064.1
Transport & Mobile Machine Drivers & Operatives	4771.1	4598.9	4495.8	4140.0	4463.6	2949.0	3213.2	4090.2
Elementary Trades, Plant & Storage Related Occupations	4239.7	4430.9	3929.7	3365.7	3894.5	3743.8	3189.5	3827.7
Elementary Administration & Service Occupations	2687.6	3176.7	2675.1	2766.8	2944.0	2142.8	2213.4	2658.0
Industry								
Agriculture, hunting & forestry	7358.4	5772.0	3353.6	3439.6	4740.7	3578.4	3362.8	4515.1
Fishing	0.0	0.0	3589.5	3365.7	8344.1	0.0	0.0	2185.6
Mining & quarrying	3078.6	5121.9	3649.5	902.5	3903.7	1506.5	1940.2	2871.8
Manufacturing	4528.4	4059.6	3772.0	3360.0	3835.2	3095.1	3196.9	3692.5
Electricity, gas & water	4578.4	2999.0	2742.8	6167.3	6304.7	4054.7	3161.8	4287.0
Construction	4746.6	4546.0	4065.9	3841.5	3922.6	3402.1	3162.8	3955.4
Wholesale, retail & motor	3374.6	3149.6	2764.1	3019.1	3187.9	2532.5	2581.3	2944.2
Hotels & restaurants	2437.5	2966.8	2061.3	2453.3	2564.4	2111.1	2087.7	2383.2
Transport, storage & communication	4985.9	4742.4	3903.0	3889.7	4010.3	3906.5	3412.0	4121.4
Financial services	4753.9	3512.8	4056.6	3080.7	3466.2	2986.8	2718.5	3510.8
Real estate, renting & business activities	3542.7	3633.2	3184.1	2729.3	3483.3	3103.5	2900.4	3225.2
Public administration & defence	6135.1	4995.8	4545.9	4006.8	5065.4	5484.9	3636.4	4838.6
Education	5737.2	4687.3	4621.7	3104.9	4587.0	3915.9	3380.3	4290.6

Health & social work	5322.4	5227.8	5277.9	4561.6	2692.3	5047.1	4708.1	4691.0
Other community, social & personal	4179.1	4138.1	3127.3	3595.0	4641.0	3792.5	2817.5	3755.8
Private households with employed persons	4018.2	2165.7	4739.1	4351.6	4528.4	2996.5	758.6	3365.5

Cont: Prevalence rates for SWI per 100,000 of those employed, weighted.

	2002	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*Average*
Extra-territorial organisations	0.0	12908.5	0.0	0.0	0.0	0.0	2753.2	2237.4
Workplace Size								
1 to 10	*	3666.5	3147.6	2995.0	3623.6	3003.5	2712.9	2735.6
11 to 19	*	3835.1	3636.3	3413.2	3881.7	2713.1	3002.4	2926.0
20 to 24	*	3912.6	3071.5	2928.4	4028.0	4003.2	2912.0	2979.4
25 to 49	*	4151.8	4029.1	3559.9	3972.7	3746.2	3436.1	3270.8
50 to 249	*	4573.2	4031.9	3758.3	4141.4	3585.5	3271.4	3337.4
250 to 499	*	4278.2	4308.1	3728.0	4482.8	4027.4	3370.5	3456.4
500 or more	*	4616.2	4409.0	3808.6	4940.9	4392.0	3750.3	3702.4
Hours Worked								
0 to 16	2010.6	2046.3	1915.7	1729.4	2200.6	1788.9	1608.0	1899.9
16 to 29	3273.9	3308.8	2872.5	2565.7	3190.7	2686.8	2695.4	2942.0
30 to 39	4404.6	3732.6	3526.9	2797.8	4091.6	3589.3	3104.9	3606.8
40 to 49	3319.9	3620.7	2697.0	2686.6	3134.8	2671.7	2449.2	
50 to 59	4144.9	3784.9	3324.4	3951.0	3383.2	2955.6	3102.9	3521.0
60+	4557.7	4800.3	3581.1	3609.2	4067.4	2849.4	3149.3	3802.0
Job Tenure								
Less than 3 months	4465.8	4649.3	3685.3	3468.9	4981.2	4089.9	3814.0	4164.9
3 to 6 months	3532.5	3621.5	3210.0	2425.0	3094.9	2815.3	2657.1	3050.9
6 to 12 months	3166.6	2818.4	2996.0	2941.7	3339.0	2519.9	2516.7	2899.8
1 to 2 years	3463.5	2896.9	3052.2	2505.7	3017.2	2200.6	2664.4	2828.7
2 to 5 years	4103.5	3900.1	3396.6	3309.6	3832.3	3303.7	2738.0	3512.0
5 to 10 years	4808.8	4437.4	4055.0	3915.6	4214.7	3885.0	3627.8	4134.9
10 to 20 years	5358.4	4865.7	4265.0	3905.2	4675.8	4116.2	3459.0	4377.9
20 years or more	6182.6	5479.6	5184.9	4302.5	5578.5	5044.1	4347.3	5159.9
Employment Status								
Employee Permanent	4543.7	4192.3	3816.7	3469.8	4104.9	3587.4	3201.2	3845.1
Employee Temporary	3397.1	3210.5	2920.1	2756.8	3767.1	3072.3	2614.2	3105.4
Self Employed	4770.7	4257.3	3946.9	3637.1	4322.9	3553.6	3544.0	4004.7

ANNEX 2:
MODELLING APPROACH

Cross sectional analysis is undertaken where information on workplace injuries is available for a cross section of agents at a given point in time. Davies and Jones (2005) utilised individual level data from the UK LFS which enquires whether or not a respondent has had any accident at work, or in the course of their work, in the preceding year which resulted in injury. This information enables an assessment of the extent to which various characteristics of individuals and their jobs contribute towards the relative risk of workplace injury.

The benefit of analyses based upon cross sectional data is that information relating directly to individuals or establishments are retained within the modelling exercise. The second advantage of analyses based upon micro-level data is that they are generally based upon a larger number of data points. The approach here has been to examine individual level data from the LFS which tells us whether or not an individual has is suffering from a work related ill-health condition *and* contains details about the nature of each individual's job and relevant personal characteristics. By merging data from 2002 to 2008, our analysis of those in employment is based upon the individual responses of approximately quarter of a million individuals.

We utilise a multivariate statistical technique known as logistic regression to determine the separate 'contribution' that each piece of information about an individual's job or their personal characteristics makes to the observed pattern of work related ill-health. Logistic regression is a statistical method designed to facilitate multivariate analysis of a binary dependent variable, in this case corresponding to whether or not a survey respondent reports that they suffer from a work related ill-health condition. The technique of logistic regression measures the separate contribution to the variation of this variable associated with measured workplace and personal characteristics.

The general specification of the logistic regression is expressed in a reduced form as follows:
$\text{Logit}\ (Pi\ /1 - Pi) = \beta pPERSpi + \beta_j JOB_{ji} + \beta_e ESTAB_{ei} + \mu$

Pi = 0/1 according to whether individual i reports suffering from a work related ill-health condition;

PERSij = a range of p personal characteristics relating to individual i;
JOBij = a range of j job characteristics relating to individual i;
PERSij = a range of e establishment characteristics relating to individual i.

The results from this analysis are expressed in terms of the impact of a variable on the relative odds of reporting having had a work related ill-health condition, enabling us to consider how personal, job and workplace characteristics contribute to the risk of work related ill-health.

ANNEX 3:
DETAILED REGRESSION RESULTS

Regression 1: Working age population who are eligible to answer the health question

illwork	*Odds Ratio*	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Sex	1.240218	0.022461	11.89	0	1.196968	1.28503
Age						
Ref: 16-19						
20-24	1.787959	0.149262	6.96	0	1.51809	2.105801
25-29	2.27901	0.187557	10.01	0	1.93952	2.677922
30-34	2.581248	0.209463	11.69	0	2.201691	3.026238
35-39	2.815245	0.226436	12.87	0	2.404653	3.295946
40-44	3.464942	0.2768	15.56	0	2.962764	4.052237
45-49	3.792932	0.303455	16.66	0	3.242457	4.43686
50-54	4.320978	0.344947	18.33	0	3.695133	5.052823
55-59	4.663723	0.371461	19.33	0	3.989656	5.451677
60+	5.142497	0.424817	19.82	0	4.373782	6.046318
Region						
Ref: North England						
Yorkshire	1.194525	0.044809	4.74	0	1.109852	1.285657
East Midlands	1.118829	0.044904	2.8	0.005	1.034191	1.210393
East Anglia	1.060501	0.052325	1.19	0.234	0.962748	1.168179
London & SE	1.040489	0.032971	1.25	0.21	0.977834	1.107159
South West	1.162608	0.044129	3.97	0	1.079255	1.252398
West Midlands Metro	1.129176	0.055848	2.46	0.014	1.024854	1.244118
Rest West Mid	1.107176	0.042913	2.63	0.009	1.026183	1.194561
North West	1.046207	0.045159	1.05	0.295	0.961337	1.138569
Wales	1.191916	0.052468	3.99	0	1.093392	1.299317
Scotland	0.9404639	0.036791	-1.57	0.117	0.87105	1.01541
Proxy						
Ref: Personal Response						
Spouse/Partner Proxy	0.6905517	0.014172	-18.04	0	0.663326	0.718894
Other Proxy	0.5475407	0.025378	-13	0	0.499994	0.59961
Wave						
Ref: Wave 1						
Wave2	0.8304555	0.019631	-7.86	0	0.792858	0.869836
Wave3	0.7580787	0.018554	-11.32	0	0.722572	0.79533
Wave4	0.7307804	0.018348	-12.49	0	0.69569	0.767641
Wave5	0.7709165	0.019142	-10.48	0	0.734297	0.809362

Cont: Working age population who are eligible to answer the health question

illwork	*Odds Ratio*	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Ethnicity						
Ref: White						
Mixed	1.094627	0.125805	0.79	0.431	0.873852	1.371179
Asian or Asian British	0.6889181	0.039858	-6.44	0	0.615065	0.771639
Black or Black British	0.7647933	0.056069	-3.66	0	0.662431	0.882973
Chinese	0.8005578	0.133055	-1.34	0.181	0.57799	1.10883
Other	0.9017592	0.083236	-1.12	0.263	0.752526	1.080587
Qualifications						
Ref: Degree or Equivalent						
HE	1.119897	0.035823	3.54	0	1.051841	1.192357
A level	1.062602	0.029262	2.2	0.027	1.00677	1.12153
GCSE	0.9023349	0.026453	-3.51	0	0.85195	0.9557
Other	1.003971	0.032679	0.12	0.903	0.941922	1.070106
No Qualifications	0.8646815	0.029128	-4.32	0	0.809436	0.923698
Don't Know/ Missing	0.708236	0.096602	-2.53	0.011	0.542095	0.925295
Social Class						
Ref: Higher Managerial and Professional						
Lower Managerial and Professional	1.389513	0.042877	10.66	0	1.307966	1.476144
Intermediate Occupations	1.226307	0.048522	5.16	0	1.134799	1.325194
Small Employers and Own Account Workers	1.30453	0.050925	6.81	0	1.208442	1.408259
Lower Supervisory and Technical	1.545726	0.058029	11.6	0	1.436076	1.663748
Semi-Routine Occupations	1.34509	0.050533	7.89	0	1.249607	1.44787
Routine Occupations	1.425358	0.056192	8.99	0	1.319371	1.539858
Never Worked, Unemployed and NEC	1.463293	0.05655	9.85	0	1.356551	1.578434
Year						
Ref:2002						
2004	0.9477266	0.022712	-2.24	0.025	0.904241	0.993304
2005	0.8	0.021058	-6.62	0	0.808137	0.890713
2006	0.8	0.020525	-8.39	0	0.768841	0.84933
2007	0.9	0.022367	-4.34	0	0.854717	0.94243

Regression 2: In-work population who's ill-health is ascribed to their current job

illwork	*Odds Ratio*	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Sex	0.842714	0.020661	-6.98	0	0.803177	0.884197
Age						
Ref: 16-19						
20-24	1.331156	0.132845	2.87	0.004	1.094667	1.618736
25-29	1.404503	0.139061	3.43	0.001	1.156763	1.7053
30-34	1.492497	0.147067	4.06	0	1.230376	1.81046
35-39	1.664316	0.162835	5.21	0	1.373901	2.01612
40-44	1.837641	0.179317	6.24	0	1.517751	2.224952
45-49	1.974605	0.193285	6.95	0	1.629896	2.392215
50-54	2.150534	0.211188	7.8	0	1.774011	2.606972
55-59	2.113935	0.209371	7.56	0	1.740949	2.566831
60+	1.979382	0.212733	6.35	0	1.60342	2.443499
Region						
Ref: North England						
Yorkshire	1.326163	0.061641	6.07	0	1.210688	1.452652
East Midlands	1.277009	0.06249	5	0	1.160222	1.405552
East Anglia	1.267398	0.073665	4.08	0	1.130938	1.420323
London & SE	1.373669	0.053934	8.09	0	1.271926	1.48355
South West	1.364219	0.063105	6.71	0	1.245976	1.493683
West Midlands Metro	1.304221	0.078867	4.39	0	1.158454	1.468331
Rest West Mid	1.291838	0.061046	5.42	0	1.177563	1.417201
North West	1.20283	0.063462	3.5	0	1.084662	1.333871
Wales	1.209876	0.067928	3.39	0.001	1.083804	1.350613
Scotland	1.11523	0.052998	2.29	0.022	1.016047	1.224095
Proxy Ref: Personal Response						
Spouse/Partner Proxy	0.737975	0.01716	-13.07	0	0.705098	0.772385
Other Proxy	0.466926	0.026528	-13.41	0	0.417723	0.521925
Wave						
Ref: Wave 1						
Wave2	0.89791	0.0249	-3.88	0	0.850409	0.948064
Wave3	0.849129	0.024177	-5.74	0	0.803042	0.897861
Wave4	0.790574	0.023316	-7.97	0	0.746172	0.837619
Wave5	0.872395	0.025127	-4.74	0	0.824512	0.923059
Ethnicity						
Ref: White						
Mixed	1.209296	0.151566	1.52	0.129	0.945907	1.546026
Asian or Asian British	0.753494	0.04991	-4.27	0	0.661756	0.857948
Black or Black British	0.725248	0.061219	-3.81	0	0.614662	0.85573
Chinese	0.895933	0.164919	-0.6	0.551	0.624583	1.28517
Other	0.989255	0.100933	-0.11	0.916	0.809955	1.208247

Cont: In-work population who's ill-health is ascribed to their current job

illwork	*Odds Ratio*	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Qualifications						
Ref: Degree or Equivalent						
HE	1.033535	0.036072	0.95	0.345	0.965199	1.10671
A level	1.017948	0.032941	0.55	0.583	0.955391	1.084601
GCSE	0.950806	0.032411	-1.48	0.139	0.889358	1.016499
Other	0.93852	0.037237	-1.6	0.11	0.868303	1.014414
No Qualifications	0.733051	0.034695	-6.56	0	0.668108	0.804306
Don't Know/ Missing	0.778236	0.120593	-1.62	0.106	0.574396	1.054414
Hours Worked						
Ref: 0- 15						
16-29	1.780129	0.128329	8	0	1.545569	2.050286
30-39	2.354974	0.159856	12.62	0	2.06161	2.690084
40-49	2.074806	0.147731	10.25	0	1.804554	2.38553
50-59	2.468956	0.203354	10.97	0	2.100898	2.901496
60+	2.600165	0.211326	11.76	0	2.217278	3.049169
Missing/Don't Know	3.197583	0.212129	17.52	0	2.807714	3.641588
Occupation						
Ref: Corporate Managers						
Managers and Proprietors in Agriculture and Services	1.188811	0.077622	2.65	0.008	1.046007	1.351111
Science and Technology Professionals	1.055532	0.063625	0.9	0.37	0.937914	1.187899
Health Professionals	1.071838	0.102932	0.72	0.47	0.887945	1.293815
Teaching and Research Professionals	1.653422	0.101862	8.16	0	1.46536	1.865621
Business and Public Service Professionals	1.142133	0.068224	2.22	0.026	1.015948	1.283991
Science and Technology Associate Professionals	1.182959	0.090639	2.19	0.028	1.018005	1.374641
Health and Social Welfare Associate Professionals	1.593958	0.086354	8.61	0	1.433384	1.772521
Protective Service Occupations	1.393281	0.11322	4.08	0	1.188143	1.633837
Culture, Media and Sports Occupations	1.533984	0.112185	5.85	0	1.329139	1.770401
Business and Public Service Associate Professionals	1.133507	0.057257	2.48	0.013	1.026662	1.251472
Admin Occupations	0.972428	0.045256	-0.6	0.548	0.887653	1.065299
Secretarial and Related Occupations	0.845179	0.059953	-2.37	0.018	0.735476	0.971244

Cont: In-work population who's ill-health is ascribed to their current job

illwork	*Odds Ratio*	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Skilled Agricultural Trades	2.142426	0.221933	7.36	0	1.74876	2.624711
Skilled Metal and Electrical Trades	1.571427	0.083481	8.51	0	1.416037	1.743869
Skilled Construction and Building Trades	2.272502	0.141512	13.18	0	2.011402	2.567496
Textiles, Printing and Other Skilled Trades	1.59382	0.118795	6.25	0	1.377193	1.84452
Caring Personal Service Occupations	1.196089	0.066225	3.23	0.001	1.073084	1.333193
Leisure and Other Personal Service Occupations	1.517538	0.120332	5.26	0	1.299106	1.772698
Sales Occupations	1.195286	0.074768	2.85	0.004	1.057371	1.35119
Customer Service Occupations	1.596951	0.135413	5.52	0	1.352428	1.885683
Process, Plant and Machines Operatives	1.604427	0.094035	8.07	0	1.430313	1.799736
Transport and Mobile Machine Drivers and Operatives	1.361029	0.083618	5.02	0	1.206625	1.535192
Elementary Trades, Plant and Storage Related Occupations	1.603907	0.101681	7.45	0	1.4165	1.816109
Elementary Administration and Service Occupations	1.149574	0.06358	2.52	0.012	1.031477	1.281192
Industry Ref: Agriculture, hunting & forestry & Fishing						
Mining & quarrying	0.897742	0.162727	-0.6	0.552	0.629304	1.280685
Manufacturing	0.940159	0.093286	-0.62	0.534	0.774002	1.141985
Electricity, gas & water	1.102211	0.154735	0.69	0.488	0.837083	1.451314
Construction	1.005704	0.104386	0.05	0.956	0.82058	1.232592
Wholesale, retail & motor	0.933784	0.093368	-0.69	0.493	0.767601	1.135944
Hotels & restaurants	0.975331	0.110855	-0.22	0.826	0.780558	1.218706
Transport, storage & communication	1.164235	0.118242	1.5	0.134	0.954094	1.42066
Financial Services	1.119126	0.119751	1.05	0.293	0.907395	1.380261
Real estate, renting & business activities	0.975439	0.097606	-0.25	0.804	0.801725	1.186791
Public administration & defence	1.362146	0.138297	3.04	0.002	1.116354	1.662054
Education	0.930311	0.097792	-0.69	0.492	0.757099	1.143152
Health & social work	1.335843	0.134866	2.87	0.004	1.096021	1.628141
Other, private households and extra territorial	1.105319	0.110422	1	0.316	0.908766	1.344383

Cont: In-work population who's ill-health is ascribed to their current job

illwork	*Odds Ratio*	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Job Tenure Ref: Less than 3 months						
3 to 6 months	1.126814	0.10492	1.28	0.2	0.938848	1.352413
6 to 12 months	1.353862	0.115261	3.56	0	1.145797	1.599709
1 to 2 years	1.505173	0.121529	5.06	0	1.284871	1.763247
2 to 5 years	1.852267	0.142792	8	0	1.592517	2.154384
5 to 10 years	2.070058	0.160774	9.37	0	1.777759	2.410417
10 to 20 years	2.071206	0.160873	9.37	0	1.778727	2.411777
20 years or more	2.251167	0.178508	10.23	0	1.92713	2.62969
Missing/Don't Know	1.149036	0.269059	0.59	0.553	0.726132	1.818242
Employment Status Ref: Employee Permanent						
Employee Temporary	0.881693	0.051344	-2.16	0.031	0.786591	0.988294
Self Employed	0.958634	0.033222	-1.22	0.223	0.895682	1.02601
Year						
Ref:2002						
2004	0.932316	0.030018	-2.18	0.03	0.875301	0.993045
2005	0.867197	0.028659	-4.31	0	0.812807	0.925227
2006	0.763511	0.026337	-7.82	0	0.713597	0.816917
2007	0.971238	0.03176	-0.89	0.372	0.910943	1.035524
2008	0.822375	0.028096	-5.72	0	0.769111	0.879329
2009	0.795471	0.028007	-6.5	0	0.74243	0.852303

Regression 3: MSDs, working population

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Sex	1.332749	0.034564	11.08	0	1.266697	1.402245
Age						
Ref: 16-19						
20-24	2.10336	0.284248	5.5	0	1.613922	2.741226
25-29	3.219112	0.423832	8.88	0	2.486944	4.166834
30-34	3.688949	0.478645	10.06	0	2.860608	4.75715
35-39	4.173696	0.536325	11.12	0	3.244445	5.369096
40-44	5.363701	0.684194	13.17	0	4.177201	6.887218
45-49	5.784848	0.738815	13.74	0	4.503812	7.430254
50-54	6.681895	0.85123	14.91	0	5.205496	8.577035
55-59	7.431427	0.94392	15.79	0	5.793684	9.532121
60+	7.578736	0.987859	15.54	0	5.870106	9.784702
Region						
Ref: North England						
Yorkshire	1.13277	0.058266	2.42	0.015	1.024139	1.252925
East Midlands	1.071915	0.059066	1.26	0.208	0.96218	1.194164
East Anglia	0.986109	0.068237	-0.2	0.84	0.86104	1.129345
London & SE	0.971882	0.042425	-0.65	0.514	0.892189	1.058694
South West	1.147928	0.059602	2.66	0.008	1.036857	1.270897
West Midlands Metro	1.13953	0.076463	1.95	0.052	0.999102	1.299696
Rest West Mid	1.029834	0.055262	0.55	0.584	0.927024	1.144047
North West	0.909802	0.0557	-1.54	0.123	0.806927	1.025792
Wales	1.146229	0.068989	2.27	0.023	1.018684	1.289743
Scotland	0.839874	0.046132	-3.18	0.001	0.754153	0.935337
Proxy						
Ref: Personal Response						
Spouse/Partner Proxy	0.740744	0.020967	-10.6	0	0.700769	0.782999
Other Proxy	0.559429	0.037824	-8.59	0	0.489997	0.638699
Wave						
Ref: Wave 1						
Wave2	0.81924	0.027255	-5.99	0	0.767525	0.874439
Wave3	0.752298	0.025919	-8.26	0	0.703175	0.804852
Wave4	0.712898	0.025344	-9.52	0	0.664917	0.764342
Wave5	0.758505	0.026606	-7.88	0	0.708112	0.812486

Cont: MSDs, working population

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Ethnicity						
Ref: White						
Mixed	0.836225	0.160421	-0.93	0.351	0.574155	1.217917
Asian or Asian British	0.668009	0.055392	-4.87	0	0.567806	0.785896
Black or Black British	0.693378	0.076264	-3.33	0.001	0.558918	0.860187
Chinese	0.723709	0.183257	-1.28	0.202	0.440579	1.188787
Other	0.87825	0.117058	-0.97	0.33	0.67634	1.140435
Qualifications						
Ref: Degree or Equivalent						
HE	1.398465	0.071303	6.58	0	1.265469	1.545437
A level	1.433225	0.062513	8.25	0	1.315794	1.561137
GCSE	1.162166	0.053867	3.24	0.001	1.061242	1.272688
Other	1.421894	0.069495	7.2	0	1.292008	1.564839
No Qualifications	1.227257	0.060892	4.13	0	1.11353	1.352598
Don't Know/ Missing	0.874685	0.168254	-0.7	0.486	0.59995	1.27523
Social Class						
Ref: Higher Managerial and Professional						
Lower Managerial and Professional	1.436147	0.074032	7.02	0	1.298136	1.588829
Intermediate Occupations	1.440407	0.090716	5.79	0	1.273143	1.629646
Small Employers and Own Account Workers	2.168148	0.124598	13.47	0	1.937192	2.42664
Lower Supervisory and Technical	2.211207	0.12641	13.88	0	1.976824	2.473381
Semi-Routine Occupations	1.925451	0.111044	11.36	0	1.719659	2.155871
Routine Occupations	2.226742	0.130598	13.65	0	1.984938	2.498002
Never Worked, Unemployed and NEC	2.347572	0.136267	14.7	0	2.095126	2.630437
Year						
Ref:2002						
2004	0.974781	0.033329	-0.75	0.455	0.911599	1.042342
2005	0.896563	0.031597	-3.1	0.002	0.836725	0.96068
2006	0.878982	0.031483	-3.6	0	0.819392	0.942906
2007	0.958348	0.033842	-1.2	0.228	0.894262	1.027026

Regression 4: SDA condition, working population

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Sex	0.923777	0.02944	-2.49	0.013	0.86784	0.98332
Age						
Ref: 16-19						
20-24	1.599764	0.255876	2.94	0.003	1.169256	2.188781
25-29	2.191192	0.342184	5.02	0	1.613444	2.97582
30-34	2.446337	0.379345	5.77	0	1.805192	3.315195
35-39	2.641317	0.407367	6.3	0	1.952273	3.573554
40-44	3.108612	0.477653	7.38	0	2.300253	4.201048
45-49	3.38624	0.521186	7.92	0	2.504418	4.578558
50-54	3.474167	0.535634	8.08	0	2.568122	4.699869
55-59	3.092486	0.479257	7.28	0	2.282407	4.19008
60+	2.239017	0.3803	4.75	0	1.605017	3.123453
Region						
Ref: North England						
Yorkshire	1.292431	0.092587	3.58	0	1.123127	1.487256
East Midlands	1.306554	0.098051	3.56	0	1.127844	1.513582
East Anglia	1.235104	0.111432	2.34	0.019	1.034922	1.474007
London & SE	1.166103	0.070503	2.54	0.011	1.035792	1.312808
South West	1.267247	0.090906	3.3	0.001	1.101033	1.458553
West Midlands Metro	1.169667	0.110664	1.66	0.098	0.971693	1.407976
Rest West Mid	1.248177	0.091104	3.04	0.002	1.0818	1.440142
North West	1.25475	0.099655	2.86	0.004	1.073874	1.466093
Wales	1.29385	0.108314	3.08	0.002	1.098061	1.524549
Scotland	1.178288	0.084945	2.28	0.023	1.023027	1.357112
Proxy						
Ref: Personal Response						
Spouse/Partner Proxy	0.641336	0.024861	-11.46	0	0.594414	0.69196
Other Proxy	0.610847	0.051052	-5.9	0	0.518552	0.71957
Wave						
Ref: Wave 1						
Wave2	0.888976	0.037862	-2.76	0.006	0.817781	0.966369
Wave3	0.822197	0.036162	-4.45	0	0.754289	0.896218
Wave4	0.777996	0.035301	-5.53	0	0.711795	0.850354
Wave5	0.802044	0.036104	-4.9	0	0.734314	0.876022
Ethnicity						
Ref: White						
Mixed	1.072327	0.20953	0.36	0.721	0.731146	1.572715
Asian or Asian British	0.644111	0.070486	-4.02	0	0.519771	0.798195
Black or Black British	0.902256	0.107781	-0.86	0.389	0.713917	1.14028
Chinese	0.782891	0.228312	-0.84	0.401	0.442047	1.386546
Other	0.769342	0.136016	-1.48	0.138	0.54404	1.087948

Cont: SDA condition, working population

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Qualifications						
Ref: Degree or Equivalent						
HE	0.964278	0.0484	-0.72	0.469	0.873933	1.063962
A level	0.795163	0.036645	-4.97	0	0.726488	0.87033
GCSE	0.820542	0.038409	-4.23	0	0.748611	0.899384
Other	0.755374	0.043976	-4.82	0	0.673918	0.846676
No Qualifications	0.590959	0.039261	-7.92	0	0.518808	0.673144
Don't Know/ Missing	0.841284	0.188416	-0.77	0.44	0.542383	1.304907
Social Class						
Ref: Higher Managerial and Professional						
Lower Managerial and Professional	1.229512	0.056697	4.48	0	1.123262	1.345812
Intermediate Occupations	0.974481	0.059734	-0.42	0.673	0.864165	1.098881
Small Employers and Own Account Workers	0.4968	0.03996	-8.7	0	0.424341	0.581632
Lower Supervisory and Technical	0.82103	0.054988	-2.94	0.003	0.720029	0.936199
Semi-Routine Occupations	0.789545	0.050102	-3.72	0	0.697208	0.894111
Routine Occupations	0.620247	0.047136	-6.29	0	0.534413	0.719867
Never Worked, Unemployed and NEC	0.513781	0.039735	-8.61	0	0.441517	0.597872
Year						
ref:2002						
2004	0.989542	0.042385	-0.25	0.806	0.909861	1.076202
2005	0.893623	0.039571	-2.54	0.011	0.819336	0.974645
2006	0.751351	0.035268	-6.09	0	0.685312	0.823754
2007	0.924678	0.041261	-1.75	0.079	0.847243	1.00919

Regression 5: MSDs, in-work population where question is answered by people in current job (Restricted)

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Sex	0.814002	0.031049	-5.4	0	0.755367	0.877188
Age						
Ref: 16-19						
20-24	1.483844	0.232489	2.52	0.012	1.091495	2.017227
25-29	1.75585	0.270942	3.65	0	1.297597	2.375938
30-34	1.759527	0.270488	3.68	0	1.301796	2.378203
35-39	2.210171	0.335803	5.22	0	1.640961	2.976826
40-44	2.466574	0.373833	5.96	0	1.832678	3.319724
45-49	2.563388	0.389999	6.19	0	1.902439	3.453964
50-54	2.731775	0.416911	6.58	0	2.025529	3.68427
55-59	2.865935	0.439527	6.87	0	2.121895	3.870872
60+	2.559777	0.418638	5.75	0	1.857774	3.52705
Region						
Ref: North England						
Yorkshire	1.314277	0.087835	4.09	0	1.152922	1.498215
East Midlands	1.232853	0.087136	2.96	0.003	1.07337	1.416032
East Anglia	1.193166	0.101315	2.08	0.038	1.010236	1.409219
London & SE	1.346314	0.076494	5.23	0	1.204436	1.504905
South West	1.380516	0.091517	4.86	0	1.21231	1.57206
West Midlands Metro	1.36946	0.117855	3.65	0	1.156899	1.621075
Rest West Mid	1.187376	0.082157	2.48	0.013	1.036793	1.359829
North West	1.047697	0.082982	0.59	0.556	0.897051	1.223642
Wales	1.149584	0.094109	1.7	0.089	0.979171	1.349655
Scotland	0.970556	0.068874	-0.42	0.674	0.844534	1.115384
Proxy						
Ref: Personal Response						
Spouse/Partner Proxy	0.834795	0.027576	-5.47	0	0.782459	0.89063
Other Proxy	0.480792	0.040707	-8.65	0	0.407276	0.567579
Wave						
Ref: Wave 1						
Wave2	0.889747	0.036174	-2.87	0.004	0.821599	0.963548
Wave3	0.846968	0.035362	-3.98	0	0.78042	0.91919
Wave4	0.74492	0.03277	-6.69	0	0.683384	0.811997
Wave5	0.856201	0.036334	-3.66	0	0.787868	0.930461
Ethnicity						
Ref: White						
Mixed	0.869447	0.192252	-0.63	0.527	0.56367	1.341098
Asian or Asian British	0.72442	0.07133	-3.27	0.001	0.597279	0.878626
Black or Black British	0.579334	0.080553	-3.93	0	0.441138	0.760822
Chinese	0.8975	0.252588	-0.38	0.701	0.516984	1.558089

Cont: MSDs, in-work population where question is answered by people in current job (Restricted)

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Other	0.934328	0.144127	-0.44	0.66	0.69055	1.264166
Qualifications						
Ref: Degree or Equivalent						
HE	1.114716	0.062714	1.93	0.054	0.998334	1.244666
A level	1.105849	0.057015	1.95	0.051	0.999563	1.223437
GCSE	1.027349	0.055375	0.5	0.617	0.924353	1.141821
Other	1.122087	0.066195	1.95	0.051	0.999566	1.259625
No Qualifications	0.756312	0.05222	-4.05	0	0.660586	0.865911
Don't Know/ Missing	1.014049	0.200866	0.07	0.944	0.687782	1.49509
Hours Worked						
Ref: 0- 15						
16-29	1.552207	0.147098	4.64	0	1.289092	1.869026
30-39	1.824869	0.163492	6.71	0	1.530987	2.175163
40-49	1.631695	0.153169	5.22	0	1.357486	1.961292
50-59	1.733573	0.194459	4.9	0	1.391428	2.159849
60+	1.671987	0.185963	4.62	0	1.344497	2.079246
Missing/Don't Know	2.372938	0.20712	9.9	0	1.999815	2.815677
Occupation						
Ref: Corporate Managers						
Managers and Proprietors in Agriculture and Services	1.590424	0.161984	4.56	0	1.302623	1.941812
Science and Technology Professionals	1.389409	0.137771	3.32	0.001	1.144002	1.687461
Health Professionals	1.596352	0.239499	3.12	0.002	1.189663	2.142069
Teaching and Research Professionals	1.384494	0.15353	2.93	0.003	1.114037	1.720611
Business and Public Service Professionals	1.280081	0.135121	2.34	0.019	1.040848	1.5743
Science and Technology Associate Professionals	1.684024	0.203435	4.31	0	1.328987	2.133908
Health and Social Welfare Associate Professionals	2.634445	0.226795	11.25	0	2.225413	3.118657
Protective Service Occupations	2.20031	0.291203	5.96	0	1.697581	2.85192
Culture, Media and Sports Occupations	2.322853	0.252089	7.77	0	1.877779	2.873418
Business and Public Service Associate Professionals	1.279478	0.113422	2.78	0.005	1.075416	1.522261
Administrative Occupations	1.151896	0.092082	1.77	0.077	0.984846	1.347281

Cont: MSDs, in-work population where question is answered by people in current job (Restricted)

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Secretarial and Related Occupations	1.253053	0.137168	2.06	0.039	1.011093	1.552916
Skilled Agricultural Trades	3.94611	0.541501	10	0	3.015532	5.163859
Skilled Metal and Electrical Trades	2.673763	0.210887	12.47	0	2.290795	3.120755
Skilled Construction and Building Trades	4.210608	0.368243	16.44	0	3.547335	4.997899
Textiles, Printing and Other Skilled Trades	2.939745	0.302403	10.48	0	2.402975	3.596419
Caring Personal Service Occupations	1.948069	0.170819	7.6	0	1.640459	2.313359
Leisure and Other Personal Service Occupations	2.348647	0.273604	7.33	0	1.869208	2.951059
Sales Occupations	1.860109	0.172885	6.68	0	1.550332	2.231783
Customer Service Occupations	1.621582	0.243429	3.22	0.001	1.208253	2.176305
Process, Plant and Machines Operatives	3.129623	0.258928	13.79	0	2.661144	3.680575
Transport and Mobile Machine Drivers and Operatives	2.585633	0.22453	10.94	0	2.180975	3.065372
Elementary Trades, Plant and Storage Related Occupations	2.997924	0.266436	12.35	0	2.51867	3.56837
Elementary Administration and Service Occupations	2.195158	0.178684	9.66	0	1.871452	2.574856
Industry						
Ref: Agriculture, hunting & forestry & Fishing						
Mining & quarrying	0.763302	0.2055	-1	0.316	0.450331	1.293781
Manufacturing	0.947881	0.123723	-0.41	0.682	0.733923	1.224214
Electricity, gas & water	1.143271	0.221135	0.69	0.489	0.782541	1.670288
Construction	1.037144	0.141198	0.27	0.789	0.794247	1.354325
Wholesale, retail & motor	0.947621	0.124721	-0.41	0.683	0.732156	1.226495
Hotels & restaurants	0.780429	0.120755	-1.6	0.109	0.576273	1.056911
Transport, storage & communication	1.124401	0.150626	0.88	0.381	0.864756	1.462005
Financial Services	0.843876	0.129387	-1.11	0.268	0.624839	1.139694
Real estate, renting & business activities	0.834873	0.111716	-1.35	0.177	0.642273	1.085228
Public administration & defence	1.017954	0.140974	0.13	0.898	0.775975	1.335392
Education	0.746574	0.106528	-2.05	0.041	0.564436	0.987485
Health & social work	1.105782	0.14921	0.75	0.456	0.848812	1.440547
Other, private households and extra territorial	1.025026	0.134174	0.19	0.85	0.793075	1.324816

Cont: MSDs, in-work population where question is answered by people in current job (Restricted)

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Job Tenure						
Ref: Less than 3 months						
3 to 6 months	1.624477	0.241303	3.27	0.001	1.214156	2.173464
6 to 12 months	1.659222	0.232203	3.62	0	1.261193	2.182869
1 to 2 years	1.907096	0.254885	4.83	0	1.467604	2.4782
2 to 5 years	2.379727	0.305811	6.75	0	1.849873	3.061346
5 to 10 years	2.656691	0.343178	7.56	0	2.062468	3.422118
10 to 20 years	2.72655	0.351741	7.78	0	2.117403	3.51094
20 years or more	2.766341	0.363021	7.75	0	2.138969	3.577726
Missing/Don't Know	1.288122	0.442801	0.74	0.461	0.656675	2.526757
Employment Status						
Ref: Employee Permanent						
Employee Temporary	0.802207	0.077798	-2.27	0.023	0.663342	0.970144
Self Employed	1.220461	0.056771	4.28	0	1.114113	1.33696
Year						
Ref:2002						
2004	0.982483	0.047107	-0.37	0.712	0.894362	1.079288
2005	0.941973	0.046068	-1.22	0.222	0.855873	1.036734
2006	0.849407	0.043084	-3.22	0.001	0.769025	0.938191
2007	1.04478	0.050698	0.9	0.367	0.949993	1.149025
2008	0.838525	0.043195	-3.42	0.001	0.757997	0.927607
2009	0.857786	0.044898	-2.93	0.003	0.774151	0.950457

Regression 6: SDA condition, in-work population where question is answered by people in current job.

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Sex	0.798789	0.031521	-5.69	0	0.739337	0.863021
Age						
Ref: 16-19						
20-24	1.895199	0.442502	2.74	0.006	1.199254	2.995009
25-29	2.431613	0.558478	3.87	0	1.550229	3.814109
30-34	2.629031	0.603177	4.21	0	1.676892	4.121795
35-39	2.83076	0.647845	4.55	0	1.807581	4.433106
40-44	3.014573	0.689199	4.83	0	1.925849	4.718778
45-49	3.338992	0.764139	5.27	0	2.132137	5.228964
50-54	3.7008	0.848326	5.71	0	2.361438	5.799821
55-59	3.197177	0.738491	5.03	0	2.033079	5.027814
60+	2.681642	0.668782	3.96	0	1.644816	4.372041
Region						
Ref: North England						
Yorkshire	1.349842	0.108635	3.73	0	1.152866	1.580474
East Midlands	1.30859	0.111085	3.17	0.002	1.108017	1.545472
East Anglia	1.356603	0.134566	3.07	0.002	1.116913	1.647731
London & SE	1.303364	0.088859	3.89	0	1.140338	1.489696
South West	1.341444	0.108027	3.65	0	1.145578	1.570798
West Midlands Metro	1.248947	0.131636	2.11	0.035	1.01585	1.535529
Rest West Mid	1.315838	0.107422	3.36	0.001	1.121276	1.54416
North West	1.35814	0.119508	3.48	0.001	1.142994	1.613783
Wales	1.240072	0.119906	2.23	0.026	1.025986	1.498829
Scotland	1.352932	0.106881	3.83	0	1.158861	1.579503
Proxy						
Ref: Personal Response						
Spouse/Partner Proxy	0.644465	0.026995	-10.49	0	0.593669	0.699608
Other Proxy	0.512794	0.05267	-6.5	0	0.41929	0.627149
Wave						
Ref: Wave 1						
Wave2	0.944895	0.044591	-1.2	0.23	0.861419	1.03646
Wave3	0.909489	0.043803	-1.97	0.049	0.827564	0.999524
Wave4	0.83783	0.04195	-3.53	0	0.759516	0.92422
Wave5	0.877227	0.043408	-2.65	0.008	0.796145	0.966567
Ethnicity						
Ref: White						
Mixed	1.526549	0.284735	2.27	0.023	1.059114	2.200283
Asian or Asian British	0.764332	0.087777	-2.34	0.019	0.61028	0.957272
Black or Black British	0.959232	0.121104	-0.33	0.742	0.748959	1.228539
Chinese	0.819159	0.262117	-0.62	0.533	0.43752	1.533694
Other	0.847712	0.160302	-0.87	0.382	0.585177	1.228032

Cont: SDA condition, in-work population where question is answered by people in current job.

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Qualifications Ref: Degree or Equivalent						
HE	1.000096	0.054321	0	0.999	0.8991	1.112438
A level	0.986823	0.05145	-0.25	0.799	0.890964	1.092994
GCSE	0.981962	0.053375	-0.33	0.738	0.882729	1.092349
Other	0.897948	0.062267	-1.55	0.121	0.783837	1.028672
No Qualifications	0.799025	0.069209	-2.59	0.01	0.674267	0.946867
Don't Know/ Missing	0.865969	0.237896	-0.52	0.6	0.505432	1.483685
Hours Worked						
Ref: 0- 15						
16-29	3.059023	0.508972	6.72	0	2.207783	4.238469
30-39	4.463434	0.715178	9.34	0	3.260474	6.11023
40-49	3.374735	0.564199	7.28	0	2.431829	4.683238
50-59	4.826842	0.873443	8.7	0	3.385584	6.88165
60+	5.473065	0.984212	9.45	0	3.84734	7.785754
Missing/Don't Know	5.650525	0.895456	10.93	0	4.141868	7.708704
Occupation Ref: Corporate Managers						
Managers and Proprietors in Agriculture and Services	0.983044	0.103172	-0.16	0.871	0.800272	1.207559
Science and Technology Professionals	0.807919	0.076313	-2.26	0.024	0.671376	0.972231
Health Professionals	0.747129	0.117648	-1.85	0.064	0.54873	1.017259
Teaching and Research Professionals	1.681579	0.153954	5.68	0	1.405358	2.012091
Business and Public Service Professionals	1.025012	0.087934	0.29	0.773	0.866376	1.212695
Science and Technology Associate Professionals	0.724549	0.095017	-2.46	0.014	0.560327	0.936902
Health and Social Welfare Associate Professionals	0.931933	0.078504	-0.84	0.403	0.790099	1.099229
Protective Service Occupations	0.897119	0.110192	-0.88	0.377	0.705178	1.141305
Culture, Media and Sports Occupations	0.907023	0.124617	-0.71	0.478	0.6929	1.187314
Business and Public Service Associate Professionals	1.00425	0.072646	0.06	0.953	0.8715	1.157221
Admin Occupations	0.793109	0.053748	-3.42	0.001	0.694461	0.905771
Secretarial and Related Occupations	0.611311	0.066956	-4.49	0	0.493209	0.757693

Cont: SDA condition, in-work population where question is answered by people in current job

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Skilled Agricultural Trades	0.838677	0.19965	-0.74	0.46	0.525973	1.337293
Skilled Metal and Electrical Trades	0.575664	0.065905	-4.82	0	0.45996	0.720474
Skilled Construction and Building Trades	0.68887	0.105023	-2.44	0.014	0.510934	0.928772
Textiles, Printing and Other Skilled Trades	0.616997	0.099355	-3	0.003	0.450001	0.845965
Caring Personal Service Occupations	0.681406	0.060446	-4.32	0	0.572661	0.810801
Leisure and Other Personal Service Occupations	0.813901	0.121583	-1.38	0.168	0.607319	1.090753
Sales Occupations	0.773264	0.083346	-2.39	0.017	0.62601	0.955156
Customer Service Occupations	1.378551	0.167983	2.63	0.008	1.085675	1.750435
Process, Plant and Machines Operatives	0.426866	0.060897	-5.97	0	0.322744	0.564578
Transport and Mobile Machine Drivers and Operatives	0.590848	0.073628	-4.22	0	0.462811	0.754306
Elementary Trades, Plant and Storage Related Occupations	0.674819	0.088771	-2.99	0.003	0.521451	0.873295
Elementary Administration and Service Occupations	0.481207	0.05095	-6.91	0	0.391028	0.592184
Industry Ref: Agriculture, hunting & forestry & Fishing						
Mining & quarrying	1.002133	0.347133	0.01	0.995	0.508246	1.975953
Manufacturing	0.952311	0.200808	-0.23	0.817	0.629928	1.439682
Electricity, gas & water	1.492017	0.389951	1.53	0.126	0.893934	2.490247
Construction	0.8912	0.199381	-0.51	0.607	0.574834	1.381681
Wholesale, retail & motor	0.99795	0.210969	-0.01	0.992	0.659421	1.51027
Hotels & restaurants	1.238951	0.288512	0.92	0.358	0.78494	1.955563
Transport, storage & communication	1.314304	0.281004	1.28	0.201	0.864381	1.998417
Financial services	1.531161	0.328971	1.98	0.047	1.004939	2.332932
Real estate, renting & business activities	1.321406	0.276701	1.33	0.183	0.876589	1.991944
Public administration & defence	1.926595	0.404605	3.12	0.002	1.276525	2.907714
Education	1.12655	0.243882	0.55	0.582	0.737018	1.72196
Health & social work	1.70426	0.358854	2.53	0.011	1.127988	2.574942
Other, private households and extra territorial	1.152631	0.246682	0.66	0.507	0.757738	1.753319

Cont: SDA condition, in-work population where question is answered by people in current job

	Odds Ratio	*Std. Err.*	*z*	*P>|z|*	*95% Confidence Int.*	
Job Tenure						
Ref: Less than 3 months						
3 to 6 months	0.853403	0.1353	-1	0.317	0.625465	1.164406
6 to 12 months	1.067552	0.151942	0.46	0.646	0.80768	1.411037
1 to 2 years	1.127474	0.150839	0.9	0.37	0.867419	1.465495
2 to 5 years	1.497802	0.188634	3.21	0.001	1.170184	1.917146
5 to 10 years	1.737206	0.219945	4.36	0	1.355446	2.226489
10 to 20 years	1.653521	0.209832	3.96	0	1.289414	2.120446
20 years or more	1.872895	0.242934	4.84	0	1.45246	2.415032
Missing/Don't Know	1.165632	0.468005	0.38	0.703	0.530642	2.560483
Employment Status Ref: Employee Permanent						
Employee Temporary	0.867915	0.0829	-1.48	0.138	0.719737	1.0466
Self Employed	0.574313	0.042809	-7.44	0	0.496251	0.664655
Year						
Ref:2002						
2004	0.929894	0.050796	-1.33	0.183	0.835479	1.034978
2005	0.854135	0.047991	-2.81	0.005	0.765069	0.95357
2006	0.719089	0.042763	-5.55	0	0.639976	0.807982
2007	0.936657	0.052163	-1.18	0.24	0.839802	1.044682
2008	0.853858	0.048796	-2.76	0.006	0.763382	0.955058
2009	0.805885	0.047684	-3.65	0	0.717642	0.904979

ANNEX 4:
MEASURES OF SECTOR LEVEL PRODUCTIVITY

	Services	*Manufacturing*	*Production*	*Whole Economy*
SIC2003				
Sections	G-P	D	CDE	All
Description	Wholesale, retail & motor Hotels & restaurants Transport, storage & communication Financial intermediation Real estate, renting & business activities Public administration & defence Education Health & social work Other, private households and extra territorial	Manufacturing	Mining & quarrying Manufacturing Electricity, gas & water	

Annual Growth in Output per Filled Job

	Services	*Manufacturing*	*Production*	*Whole Economy*
2002	1.8	3.6	3.1	1.6
2004	1.8	5.1	4.6	2.0
2005	2.0	6.7	5.7	2.0
2006	1.6	4.7	3.2	1.4
2007	2.8	3.3	1.4	2.1
2008	2.4	3.5	2.3	2.0
2009	-0.9	0.1	-0.6	-1.0

ANNEX 5:
EXAMPLES OF ALTERNATIVE DATA SOURCES

NATIONAL EMPLOYEES SKILL SURVEY

The ***Skills Survey*** is a series of **survey**s which aim to investigate the employed workforce in Great Britain (and United Kingdom from **2006**). The first ***Skills Survey*** was conducted in 1997 and represented a new approach to assessing the extent to which those at work in Britain had skills matching the requirements of their jobs. The 2001 survey was aimed at assessing how much had changed between the two surveys. The third survey in 2006 enhanced this time series data further but had the overarching aim of providing a resource for analysing skill and job requirements in the British economy in the middle part of the current decade. Sample sizes have varied, with 2,467 individuals being surveyed in 1997, 4,470 being surveyed in 2001 and 7,787 being surveyed in 2006. The larger sample size in 2006 reflects the increased coverage of the survey to include NI and additional boosts to the sample being funded within Wales, Scotland and the East Midlands.

In terms of understanding the nature of employment relations at the workplace, the survey asks questions similar to those used in the derivation of socio-economic classifications, such as discretion over working hours, work tasks and how these tasks are completed, methods of payment and supervision. In terms of levels of effort expended, the survey asks respondents whether their job requires them to work very hard, at high speed, under tension and to tight deadlines. In terms of the impact of their work upon their health, respondents are asked whether their job makes them feel calm, tense, contented, relaxed, uneasy, worried, enthusiastic, cheerful, depressed, gloomy, miserable, and optimistic. In considering how their work affects them outside of the workplace, respondents are asked whether they come home from work feeling exhausted and used up; whether they find it difficult to unwind and whether they keep worrying about job problems after they leave work. Respondents are also asked, '*Do you think your health and safety is at risk because of your work?'*

In contrast to the LFS, the ***Skills Survey*** contains relatively limited information on personal and job characteristics. Two exceptions to this is the richer information collected from the ***Skills Survey*** that are related to the location of the workplace and job insecurity. These questions capture information on both the main and occasional work locations of individuals, as well as identifying those who worked in a variety of places (using the home or office as a base) and those who worked on the move. In terms of job insecurity, respondents are asked, '*Do you think there is any chance at all of you losing your job and becoming unemployed in the next twelve months? And if so, how would you rate the likelihood of this happening?*'

WORKPLACE EMPLOYMENT RELATIONS SURVEY

The first of the Workplace Employment Relationship Surveys (WERS) was conducted in 1980, followed by further surveys in 1984, 1990 and 1998. The latest in the series of WERS was conducted in 2004 with the aim of providing a nationally representative account of the state of employment relations and working life at British workplaces. Examples of topics covered in this survey are management of personnel and employment relations, recruitment and training, payment systems and workplace performance. The 2004 survey consisted of five main component parts: Self-completion questionnaire for the main management respondent about the composition of the workforce; Face-to-face interview with a main management respondent; Face-to face interview with union and non-union employee representatives, where present; Self-completion questionnaire distributed to a random selection of up to 25 employees; Self-

completion questionnaire for the financial manager about the financial performance of the establishment

Both the 1998 and 2004 surveys collected data from individual employees (28,237 in 1998, 22,451 in 2004. In each case, the sample was drawn from workplaces who participated in the management-level survey of workplaces with five or more employees (in 1998 the survey focused on those with ten or more employees). Similar to the skills survey, at the level of employee, respondents are asked whether their work makes them feel tense, calm, relaxed, worried, uneasy or content. Employees are also asked whether they worry a lot about their work outside of work hours. In terms of employment relations, employees are asked how much control they have over their tasks, pace of work, how they do their work, the order in which they do their work and their hours of work.

THE BRITISH HOUSEHOLD PANEL SURVEY/UNDERSTANDING SOCIETY

The British Household Panel Survey (BHPS) began in 1991 and is a multi-purpose study whose unique value resides in a number of factors: it follows the same representative sample of individuals - the panel - over a period of years; it is household-based, interviewing every adult member of sampled households; and it contains sufficient cases for meaningful analysis of certain groups such as the elderly or lone parent families. From 2009, the sample of the BHPS has been incorporated in to the new UK Household and Longitudinal Study (UKHLS) referred to as Understanding Society. The UKHLS is a major new household panel study commissioned by the Economic and Social Research Council (ESRC). With a total target sample size of 40,000 households/100,000 individuals, *Understanding Society* is the largest study of its type in the world. *Understanding Society* will therefore enable detailed analysis of how the pathways that influence peoples longer term occupational trajectories contribute in turn to their health and well-being. The study is also capturing biomedical data on 20,000 participants, enabling an examination of the extent to which people's environment influences their health relative to their genetic make-up.

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Analysis of the correlates of self-reported work related illness in the Labour Force Survey

Work has long been acknowledged as an important social determinant of health with research being conducted as to how a range of workplace, personal and job characteristics influence occupational health. This report provides an analysis of work related ill-health within the United Kingdom based upon data from the UK Labour Force Survey. Analysis reveals that employment within physically demanding occupations is the key risk factor associated with an individual suffering from a musculoskeletal disorder. Working long hours and employment within managerial, customer service and teaching occupations are associated with an increased risk of suffering from stress, depression and anxiety. Reported levels of ill-health are higher amongst males, older workers and those in the public sector. Despite these findings, downward trends in rates of work related ill-health cannot be explained by changes in the observable characteristics of people and their jobs as recorded by the LFS. The inability to explain observed trends may relate to the absence of career history data within the LFS or the omission of questions about certain characteristics of people's jobs that are known to effect health. Such data is included within the longitudinal Understanding Society survey. It is recommended that the feasibility of including additional questions in this survey should be investigated.

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