



Eurofound

# Health and well-being at work

*A report based on the  
fifth European Working Conditions Survey*

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## Abbreviations used in the report

<b>EU-OSHA</b>	European Agency for Safety and Health and Work
<b>EWCS</b>	European Working Conditions Survey
<b>ISCO</b>	International Standard Classification of Occupations
<b>LFS</b>	Labour Force Survey (Eurostat)
<b>NACE</b>	Nomenclature générale des activités économiques dans les Communautés européennes (General industrial classification of economic activities within the European Communities)
<b>ILO</b>	International Labour Organization

## Country codes

### EU27

The order of countries follows the EU protocol based on the alphabetical order of the geographical names of countries in the original language.

<b>BE</b>	Belgium	<b>FR</b>	France	<b>AT</b>	Austria
<b>BG</b>	Bulgaria	<b>IT</b>	Italy	<b>PL</b>	Poland
<b>CZ</b>	Czech Republic	<b>CY</b>	Cyprus	<b>PT</b>	Portugal
<b>DK</b>	Denmark	<b>LV</b>	Latvia	<b>RO</b>	Romania
<b>DE</b>	Germany	<b>LT</b>	Lithuania	<b>SI</b>	Slovenia
<b>EE</b>	Estonia	<b>LU</b>	Luxembourg	<b>SK</b>	Slovakia
<b>IE</b>	Ireland	<b>HU</b>	Hungary	<b>FI</b>	Finland
<b>EL</b>	Greece	<b>MT</b>	Malta	<b>SE</b>	Sweden
<b>ES</b>	Spain	<b>NL</b>	Netherlands	<b>UK</b>	United Kingdom

### Other countries

<b>HR</b>	Croatia	<b>MK</b>	former Yugoslav Republic of Macedonia <sup>1</sup>
<b>ME</b>	Montenegro	<b>TR</b>	Turkey

### Potential candidates

<b>AL</b>	Albania	<b>XK</b>	Kosovo <sup>2</sup>
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### Other

<b>NO</b>	Norway
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### Country groups

<b>EC12</b>	12 EU Member States prior to enlargement in 1995
<b>EU15</b>	15 EU Member States prior to enlargement in 2004
<b>EU27</b>	Current 27 EU Member States

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<sup>1</sup> MK corresponds to ISO code 3166. This is a provisional code that does not prejudice in any way the definitive nomenclature for this country, which will be agreed following the conclusion of negotiations currently taking place under the auspices of the United Nations ([http://www.iso.org/iso.country\\_codes/iso\\_3166\\_code\\_lists.htm](http://www.iso.org/iso.country_codes/iso_3166_code_lists.htm)).

<sup>2</sup> This code is used for practical purposes and is not an official ISO code.

# Executive summary

## Introduction

Health and well-being are key dimensions of the policy debate on how to improve the lives of individuals in society. Health and well-being have an intrinsic value and are fundamental to the concept of progress of individuals and the functioning of society because of their direct link with issues such as labour force participation, productivity and sustainability. This report examines the relationship between work, health and well-being, based on findings from Eurofound's fifth European Working Conditions Survey (EWCS).

Work is central to a person's well-being, as it both provides an income and is a means of broader social advancement. Work and well-being are closely related, in that the good or bad quality of working conditions have a direct impact on an individual's quality of life. Work is also central to health, due to specific risk factors in the workplace which may lead to injuries and professional diseases, work-related illnesses or long-term health consequences.

## Policy context

Health and well-being at work are key elements of the overall Europe 2020 strategy for growth, competitiveness and sustainable development. A healthy economy depends on a healthy population. Without this, employers lose out on worker productivity and citizens are deprived of potential longevity and quality of life. This is especially important in view of the current debate on demographic ageing of the European population.

Safeguarding the entitlement of all to work and ensuring that people of different health capacities can engage in paid work was an objective set by EU Member States in both the Lisbon and Europe 2020 strategies. The European Treaties legislation and policy measures recognise the importance of preserving the health and safety of workers, and maintaining their well-being. Directive 89/391/EEC on measures to improve the safety and health of workers states that work should be adapted to individuals and not the other way around.

Both depression and work-related stress are the focus of increasing attention, as they can lead to lower well-being and eventually result in the incapacity to work. In 2004, the EU-level social partners concluded a European Framework Agreement on Work-Related Stress to identify, prevent and manage problems related to work-related stress. In 2008, the European Commission, along with relevant social partners and stakeholders, signed the European Pact for Mental Health and Well-being, highlighting the importance of mental health and well-being for a strong and competitive Europe.

## Key findings

- Poor general health is mentioned by 2.5% of European workers while 47% report more than two health problems, with a strong connection between the physical and mental dimensions.
- In total, 60% of the workers who declare very good or good health are confident in their ability to do the same job at the age of 60, while the proportion is significantly lower among those with poor health.
- Job quality is strongly and positively associated with well-being. Among its many dimensions, intrinsic job quality and job prospects (job security, career progression, contract quality) have the most impact on well-being. As job quality deteriorates, variability in well-being increases substantially: when faced with poor job quality conditions large differences in the capacity to cope emerge.

- Unskilled workers and those in transportation, hotels and manufacturing report very demanding work situations and insufficient control over their work. Individuals facing these ‘high-strain’ working conditions report the lowest well-being. Social support from co-workers is the main factor helping them to cope.
- Among the indicators mostly associated with poor health and well-being are atypical/variable working hours, disruptive interruptions, exposure to restructuring, environmental hazards and job insecurity. On the positive side, support, ‘rewards’ (feelings of pay fairness and of career advancement chances) and skills are important protective factors.
- Workers in transportation and construction are subject to the worst dimensions of the psychosocial work environment. Employment status and gender also have a significant impact.
- Using the mental well-being index (WHO-5) designed by the World Health Organization as a measure of emotional and psychological well-being, 23% of workers in Europe report low levels of well-being and should be assessed for depression, and 6% are likely to suffer from depression, with women reporting lower levels than men.
- Some 40% of workers in Europe report having been absent from work due to sickness. Absence is significantly higher with higher job security/job protection, hinting at possible opportunistic behaviour among workers. It also increases with psychosocial factors linked to lower well-being at work (bullying, discrimination, emotional demands).
- A total of 41% of men and 45% of women reported having worked while ill (‘presenteeism’) at least one day in the previous 12 months. This phenomenon is more frequent among high-grade, over-committed white-collar workers with high autonomy and engagement with their job. The positive association observed with exposure to work intensity, verbal abuse or discrimination, handling chemicals, awkward postures and shift work seems to indicate that presenteeism is also increased by several unfavourable working conditions.

## Policy recommendations

- Policy interventions targeting health, well-being and safety of workers can have a significant impact if the focus is on employment quality, the psychosocial work environment and organisational factors.
- Employment quality is identified as a key element for workers, with a high influence on their well-being. Poor job quality leads to worryingly low levels of well-being for individuals less capable of coping with it. The policy focus should go beyond the average relationship of work and well-being and target a range of individual situations.
- Physical and mental health and work safety have a weak association with traditional dimensions that tend to steer the debate, such as industry, firm size or even job contract. The main split is between manual and non-manual occupations; the main associations are to be found with the psychosocial work environment and organisational determinants. Once these are taken into consideration, even cross-country differences tend to disappear.
- In relation to the psychosocial work environment and organisational factors, the multiplicity of individual situations should also be a policy target: low-skilled manual workers are those likely to benefit most from improvements in job design and a more supportive work environment.
- Low well-being and poor health have a high societal cost in terms of absenteeism and presenteeism. Working conditions have a role over and above their link with health and well-being: good working conditions are indicative not only of better health, but also of less opportunistic behaviours in the case of absenteeism, and a lower incidence of presenteeism.

# Introduction

The health and well-being of individuals are two dimensions around which researchers and policymakers are re-arranging the debate on how to foster the progress of societies. Health and well-being have an intrinsic value, which should be part of the very definition of progress, and also a societal one because of their direct connection with issues such as labour force participation, productivity and sustainability.

The aim of this report is to contribute to this debate, building on Eurofound's European Working Conditions Surveys (EWCS), which have proven to be a valuable source of information on the topic since the early 1990s. Offering a very detailed view of working conditions, the surveys provide the unique opportunity to study the relationship of work with many health dimensions and, in the fifth EWCS, with a measure of emotional and psychological well-being of individuals.

The available literature already shows that work and well-being are closely related, and have significance beyond their role as a means for economic and social advancement.

Work is also central to health. Literature on public health has pointed out the pivotal role work has in relation to health issues. Specific risk factors present in a job may lead to injuries and professional diseases, to work-related illnesses, or to other long-term health consequences. Work also has a role in determining the socioeconomic status of the individual, which in turn has been identified as one of the main determinants of health and health inequalities (Marmot, 2005). Work can also contribute positively to health and well-being.

Although the cross-sectional nature of the survey hinders a true causal investigation, the study maintains the view that the relationship between work on the one side and well-being and health on the other are bi-directional. It is also true that bad health and low well-being at work have economic consequences, for both direct (reduction in the labour supply, costs of work illnesses) and indirect reasons (loss of motivation and capacity, increased expenses from the health and social protection systems). The EWCS makes it possible to examine a highly relevant policy issue on this topic: the association between health, working conditions and absenteeism/presenteeism.

## Concepts and measures of well-being

Indeed, while many aspects of health rely on very precise definitions and accepted indicators, the attempt to measure well-being has been taken up by a more recent surge of initiatives, such as the World Health Organization Quality of Life group (WHO-QOL, 1995); the French Commission on the Measurement of Economic Performance and Social Progress (Stiglitz et al, 2009); the European Commission 'Beyond GDP' initiative (European Commission, 2009). An opinion expressed by the European Economic and Social Committee points out that progress is still at an early stage (European Economic and Social Committee, 2011), but the debate is lively.

This helps to explain why terms such as well-being, happiness, life satisfaction and positive emotions are sometimes used synonymously, though such constructs are theoretically separable and show different patterns. The fifth EWCS offers two views on the theme: a single-item indicator of an individual's overall judgement about the specific domain of work, as measured by job satisfaction; and a multidimensional indicator, the well-being index (WHO-5) proposed by the World Health Organization, originally developed as a measure of emotional and psychological well-being and a screener for depression (WHO, 1990).

### Policy context

Health and well-being at work are key foundation stones of the overall Europe 2020 strategy for growth, competitiveness and sustainable development. A healthy economy depends on a healthy population. Without this, employers lose worker productivity and citizens are deprived of potential longevity and quality of life. This is doubly important as the European population ages in the coming decades.

Preserving the entitlement of all European citizens to work and ensuring that people of varying health capacities can participate in paid work was an objective set by EU Member States in the Lisbon strategy and reiterated in the Europe 2020 strategy. The European Treaties legislation and policy measures recognise the importance of preserving the health and safety of workers, and maintaining their well-being. According to Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers, work should be adapted to suit individuals and not the other way around.

In this regard, better health is one way of addressing the economic challenges of Europe. It may help to support the financial sustainability of the European social model and strengthen social cohesion. Therefore, health promotion is not just the responsibility of the health sector because, as a Health in All Policies (HIAP) approach<sup>3</sup> emphasises, societal objectives are best achieved when all actors include health and well-being as key components of their objectives.

With these objectives, the European Commission promoted a whole range of actions for safety and health at work. In 2007, the Commission defined the Community strategy for the period 2007–2012. This strategy was intended to provide an integrated framework within which Member States can deliver their national policies and stakeholders can promote common initiatives. The primary objective of the Community strategy 2007–2012, among others, was a sustainable and uniform reduction in accidents at work by 25% by 2012. A new health and safety strategy is being drafted at the moment.

The concept of ‘well-being for all’ is fundamental to the definition of social cohesion promoted by the Council of Europe (2008). Social cohesion is defined as ‘the capacity of a society to ensure well-being for all its members, minimising disparities, and [it] accentuates the importance of social actors’ joint responsibility for its attainment’. The concept of ‘well-being for all’ was first introduced by the Council of Europe in its revised Strategy for Social Cohesion as the ultimate goal of a modern society, emphasising the fact that well-being must be shared by all members of society and cannot be attained at an individual level.<sup>4</sup>

Depression and work-related stress are, at the present time, an increasingly important cause of incapacity for work. Acknowledging the importance of this, the European-level social partners concluded a European Framework Agreement on Work-Related Stress in 2004 to raise awareness of the phenomenon among employers, employees and their representatives.

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<sup>3</sup> See the White Paper presented by the Commission, ‘Together for Health: A Strategic Approach for the EU 2008–2013’, p. 6, available online at [http://ec.europa.eu/health-eu/doc/whitepaper\\_en.pdf](http://ec.europa.eu/health-eu/doc/whitepaper_en.pdf).

<sup>4</sup> A new strategy for Social Cohesion, European Committee for Social Cohesion (CDCS), Revised strategy for Social Cohesion, approved by the Committee of Ministers of the Council of Europe on 31 March 2004, at [http://www.coe.int/t/dg3/socialpolicies/socialcohesiondev/source/RevisedStrategy\\_en.pdf](http://www.coe.int/t/dg3/socialpolicies/socialcohesiondev/source/RevisedStrategy_en.pdf).



In June 2008, the European Commission, alongside relevant social partners and stakeholders, signed the ‘European Pact for Mental Health and Well-being’, which highlights the importance of mental health and well-being for a strong and competitive European Union. The pact recognises that good mental health and well-being are key resources for the European Union to meet the objectives of the Lisbon strategy, promote growth and jobs, achieve social cohesion and make considerable gains towards sustainable development. One of the five main priority areas of the pact is ‘Mental health in workplace settings’, which acknowledges and underpins the important role that companies have in promoting and enabling well-being at work and in creating a more competitive and productive Europe.

## **Report outline**

This report addresses all the aspects mentioned of the relationship between work, health and well-being. It should be read as a complement to the fifth EWCS overview report (Eurofound, 2012a).

Chapter 1 sets the stage with a statistical portrait about health and various measures of well-being across Europe.

Chapter 2 is ancillary to the study of the connections between risk factors, well-being and health that will be delivered in the rest of the report. The aim is to take the risk factors that are already available in the EWCS and add a set of indicators of the psychosocial work environment, which has been identified as one of the most important risk factors in contemporary and future society, and has a relation with health and well-being that is mainly – but not exclusively – revealed in a work-related stress condition.

Chapter 3 is devoted to the relation between work and well-being, mainly based on several quality of work and employment indicators that can be computed from the EWCS questionnaire.

Chapter 4 explores in a multivariate context the relationships between several physical and mental health conditions on the one side, and risk factors on the other, with particular attention to the psychosocial work environment.

Chapter 5 is devoted to the other direction of causality. Poor health status has a direct impact on work in terms of sickness absence. Many factors may however mediate this relationship, lengthening the absence (perhaps due to opportunistic behaviours and/or to a poor fit of the job with individual needs and skills) or shortening it (perhaps due to work environments that better accommodate workers’ needs). At the limit, there is the flip side of work absence, namely presenteeism when employees go to work despite being sick, a behaviour which may entail short- to long-term costs for both employers and employees.



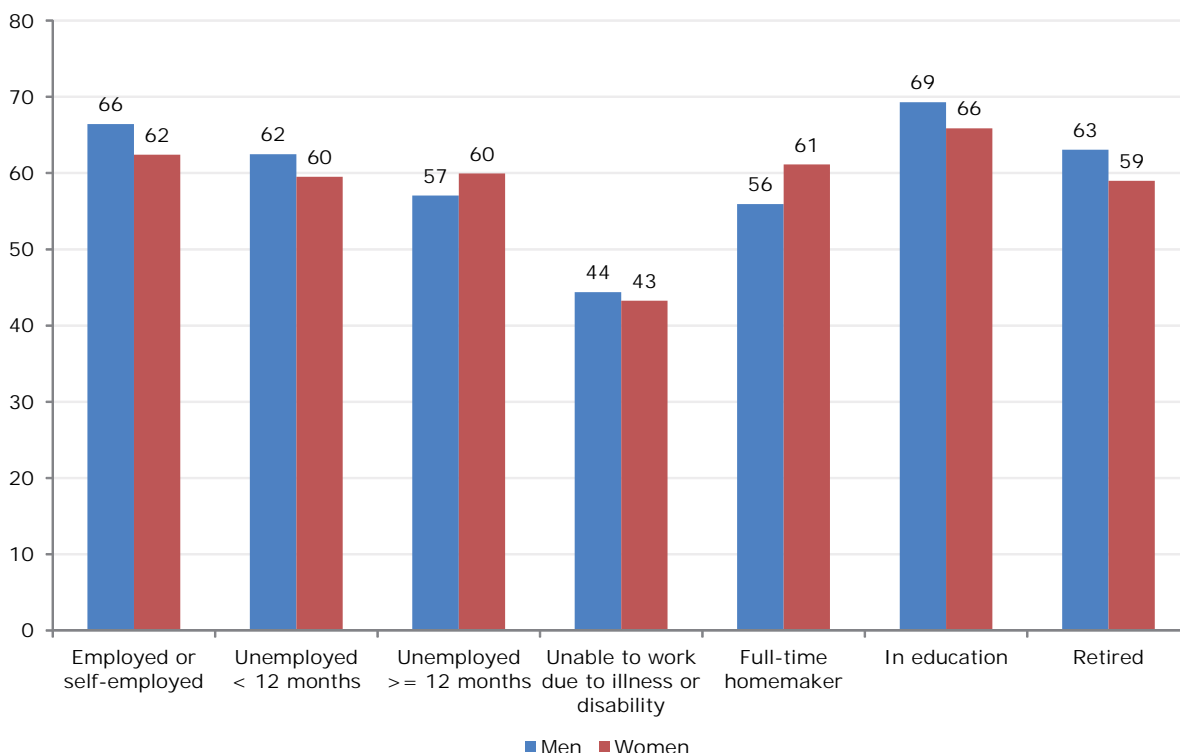
# Health and well-being across Europe 1

## Well-being at work

Cross-national comparisons of well-being have long been hampered by the absence of adequate data (Diener and Biswas-Diener, 2002; Bracke et al, 2008). In the last years the situation for Europe improved, thanks to Eurofound's European Quality of Life Survey (EQLS), the European Social Survey (ESS) and, since its last edition, Eurofound's European Working Conditions Survey (EWCS). All these included questions on several aspects of well-being as well as on many of its determinants in the domains of employment, economic resources, family life, community life, health, housing and the local environment.

Published findings from the EQLS generally show striking disparities across European nations (Eurofound, 2012c): the average level of subjective well-being is higher in the EU15 (and highest in the Nordic countries), intermediate in the new Member States and lower in accession countries. This geography is similar when different indicators are used, such as emotional well-being, life satisfaction and happiness. Since the main focus in this report will be on work, it is useful to derive from the EQLS, as a background, an indication on how workers perform compared to individuals with a different economic status (Figure 1). This shows that employed people have the second highest level of well-being after people in education. Both among men and women, those unable to work due to long-term illness or disability have the lowest level of well-being. Women's well-being is worse than that of men in all groups except the long-term unemployed and full-time homemakers.

Figure 1: *Subjective well-being (WHO-5 mental well-being index), by employment status and gender, EU27, 2012 (%)*



Source: *EQLS 2011*

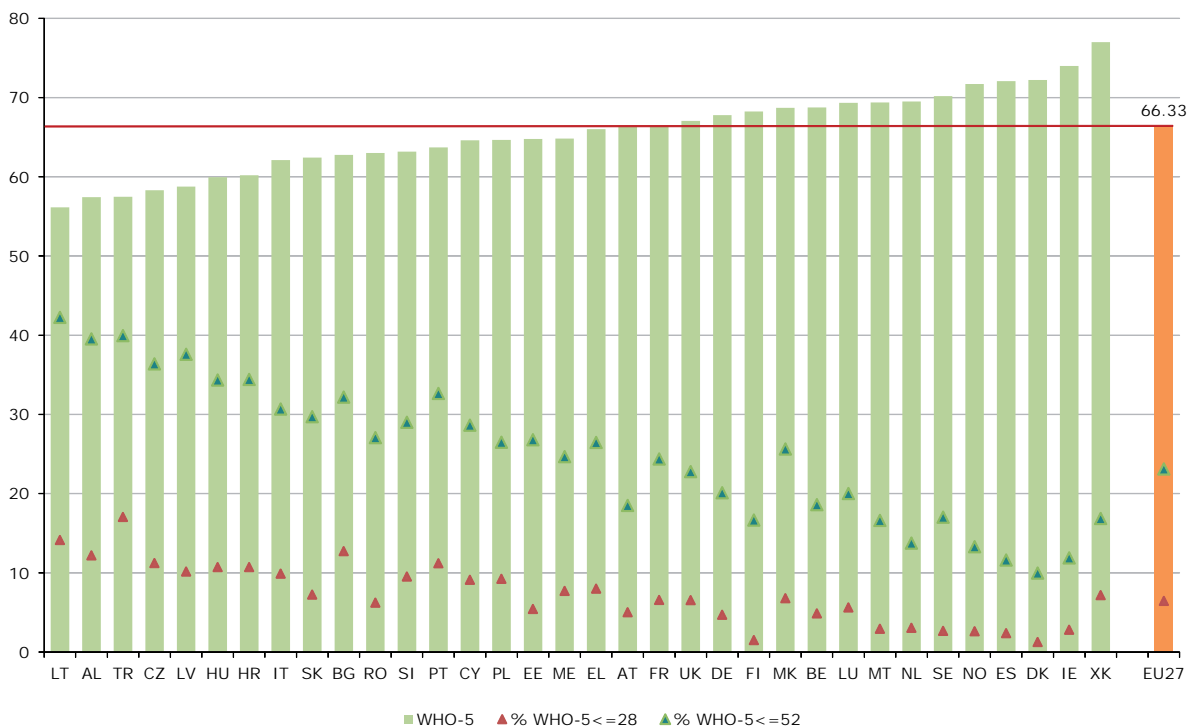
The fifth EWCS, with its focus on a broad range of work-related features not dealt with by the other surveys, gives the opportunity to investigate the interplay between working conditions and individual well-being as measured by a multidimensional indicator, the World Health Organization's WHO-5 index on psychological well-being, and a single question about an individual's overall judgement of their work domain measured by job satisfaction.

**Psychological well-being: WHO-5 index**

The mental well-being index (WHO-5) was originally proposed by the World Health Organization as a measure of emotional and psychological well-being and a screener for depression (WHO, 1990). It is a short questionnaire covering five positively worded items, related to positive mood (good spirits, relaxation), vitality (being active and waking up fresh and rested) and general interests (being interested in things), all experienced over the previous two weeks. The index range is 0–100 and a higher score means better well-being.<sup>5</sup> The main facts about the subpopulation of workers basically confirm those reported for the whole population in previous European surveys (see Figure 2). The outcome by geographic location is still the same: Nordic and continental countries have higher well-being levels, the eastern nations rank in the intermediate positions and non-European nations present the lowest levels. Kosovo, Malta and the former Yugoslav Republic of Macedonia exceptionally stand out from the averages of their reference groups. Above all, Kosovo ranks first, having a level higher than the traditional winners of this unusual competition. If the point made in Veenhoven (2000) is accepted, that political factors and personal freedom are important drivers of happiness, the more likely explanation of this may be connected to the very recent past: the declaration of independence in 2008 after decades of conflict is likely to be the strongest determinant of their very high score.

Figure 2 also shows the prevalence of very low levels of WHO-5-measured mental well-being. The WHO-5 index suggests that a score of 52 or below is indicative of poor well-being and is an indication for testing for depression under other specific scales, such as the ICD-10. A score of 28 or below indicates likely depression and warrants further assessment to confirm it. Many countries paired to a below-average WHO-5 score have a worryingly high share of workers below the suggested thresholds. Kosovo and the former Yugoslav Republic of Macedonia, in spite of a very high average score, have high shares of people below the thresholds, too.

Figure 2: Subjective well-being and its critical values (WHO-5 index), by country (%)

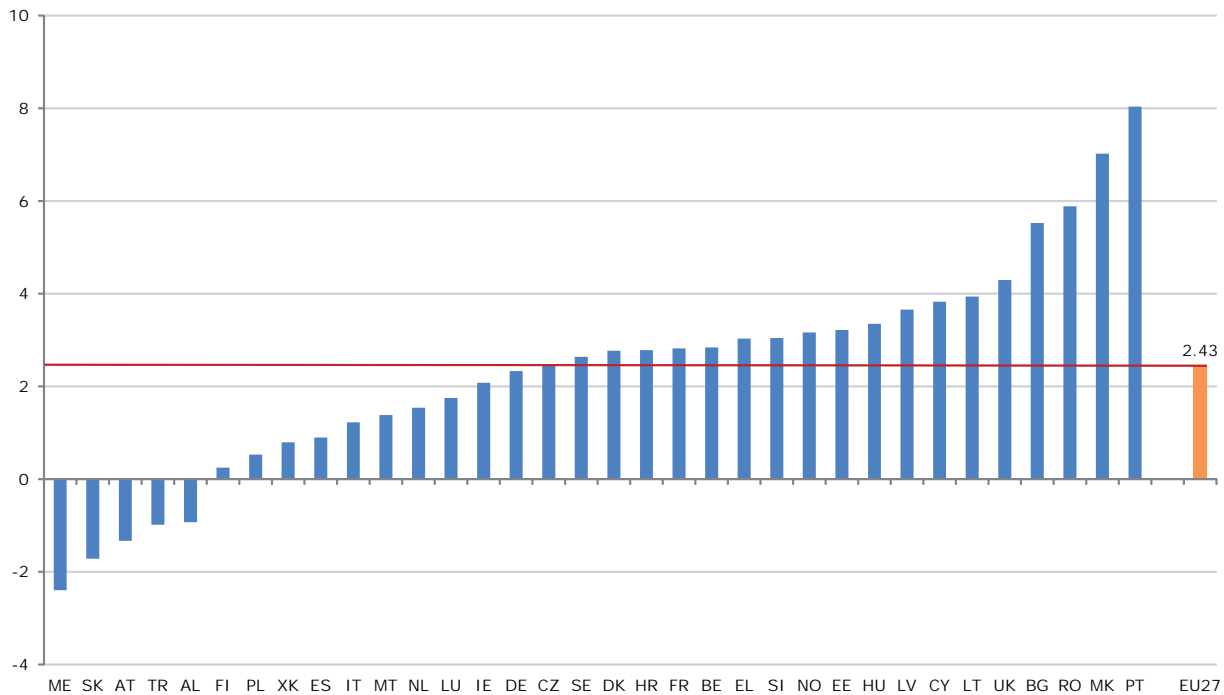


Source: EWCS 2010

<sup>5</sup> Each of the five items is rated on a 6-point Likert scale from 0 (= at no time) to 5 (= all of the time). Adding the five scores and multiplying by 4 creates an index ranging from 0 (worst thinkable well-being) to 100 (best thinkable well-being) ([www.who-5.org](http://www.who-5.org)).

Available literature says that women tend to report higher happiness but worse scores on mental health assessment scales (Alesina et al, 2004; Eurofound data), although a few studies report no gender differences (for instance, Louis and Zhao, 2002). Among workers, the EWCS confirms a gender gap in WHO-5 (2.4 points in the EU27, see Figure 3) and also striking country disparities.

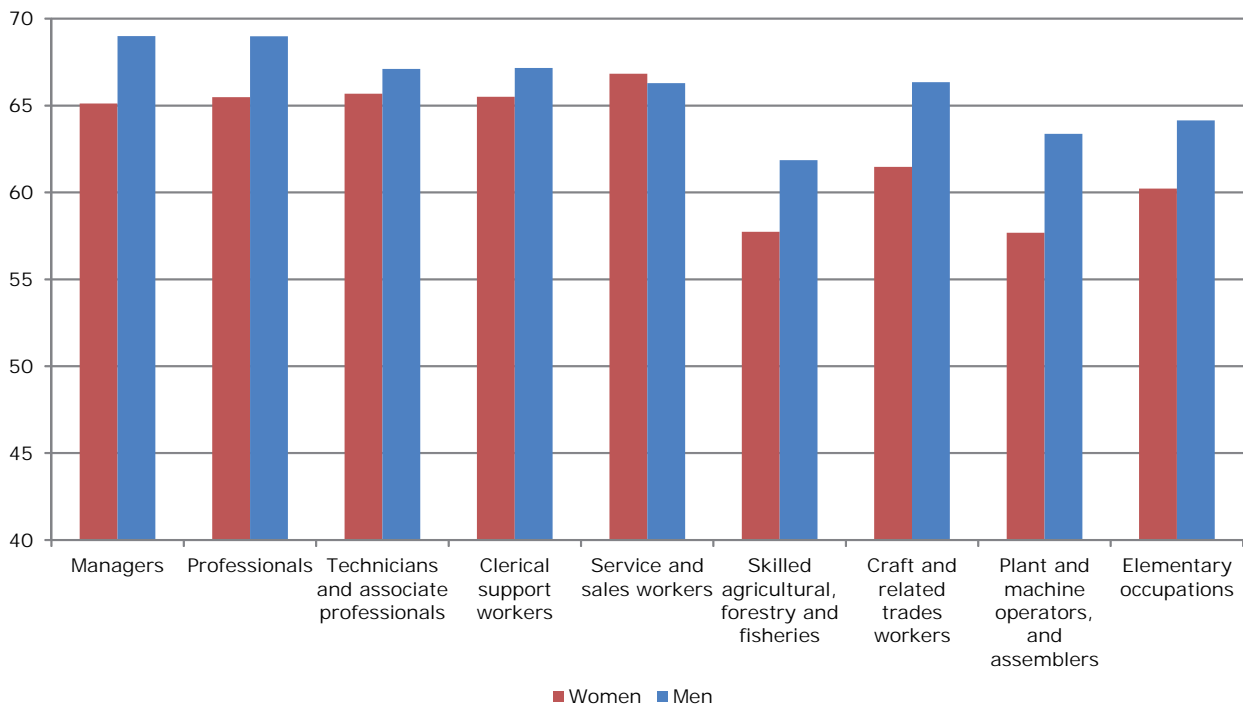
Figure 3: Average gender gap in well-being, by country



Source: EWCS 2010

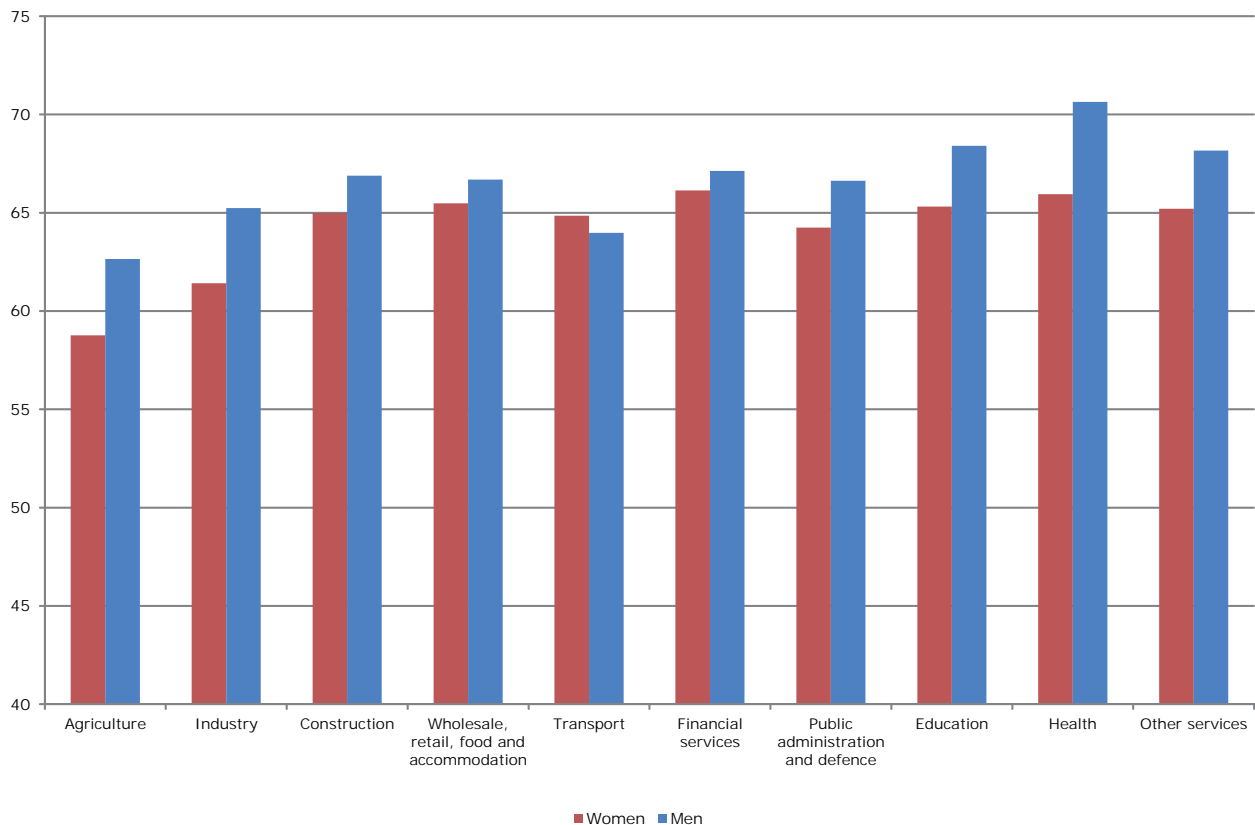
The gap is visible across the different occupations and sectors, with some exceptions (service and sales workers and in the transportation sector) (see Figures 4 and 5).

Figure 4: Average well-being by occupation (ISCO-08-1) and gender (%)



Source: EWCS 2010

Figure 5: Average well-being by sector (NACE Rev.2) and gender (%)



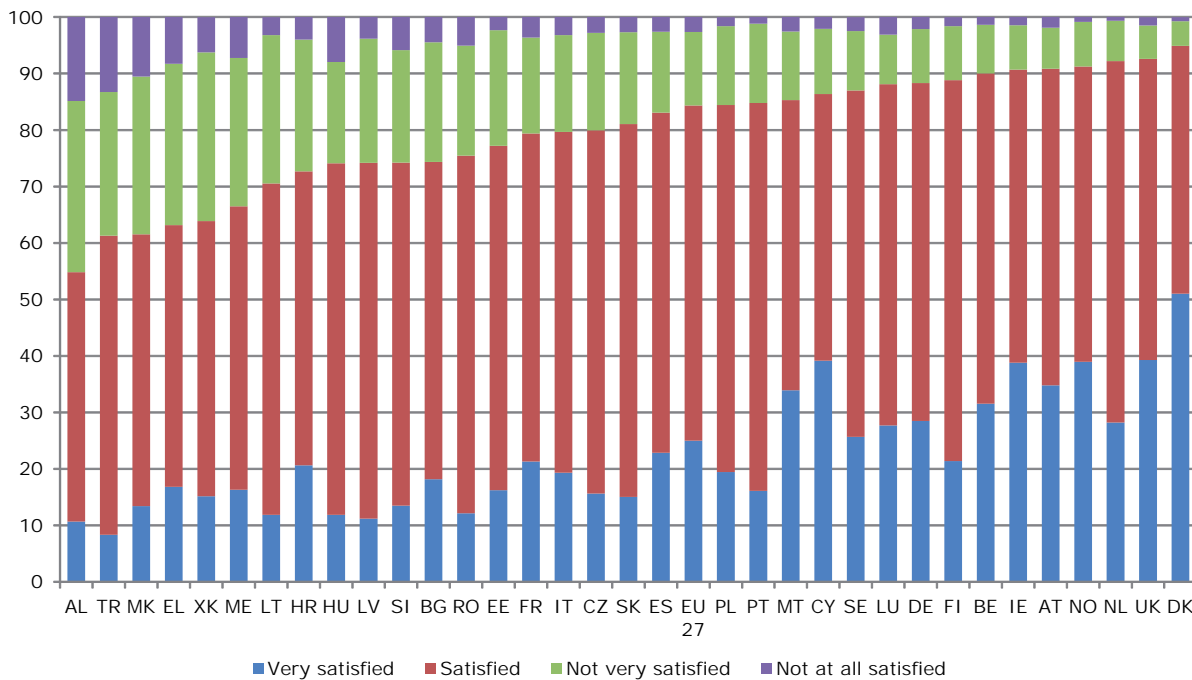
Source: EWCS 2010

### Job satisfaction

Job satisfaction is explored here as a single-item worker’s well-being indicator. It is a relevant item, since it is a predictor of overall well-being and individual behaviours such as resigning from a job, productivity and absenteeism (Clark, 2009).

The country breakdown presented in Figure 6 shows a general pattern very similar to that of WHO-5 and confirms the findings of previous waves of the EWCS. The Nordic countries on average show high levels of job satisfaction, with Denmark and the UK recording the highest levels. The difference between the old and new Member States (those that joined the EU after 2004) is remarkable, even if less striking than in 2005. The share of satisfied or very satisfied workers in most EU15 Member States is above the EU27 average, while the share in most of the new Member States is much lower. However, some exceptions can be highlighted such as the EU15 southern countries, which have a lower relative score compared to the average (Italy, Spain, Greece and France). By contrast, three of the new Member States (Cyprus, Malta and Poland) are above the EU average.

Figure 6: Job satisfaction by country (%)

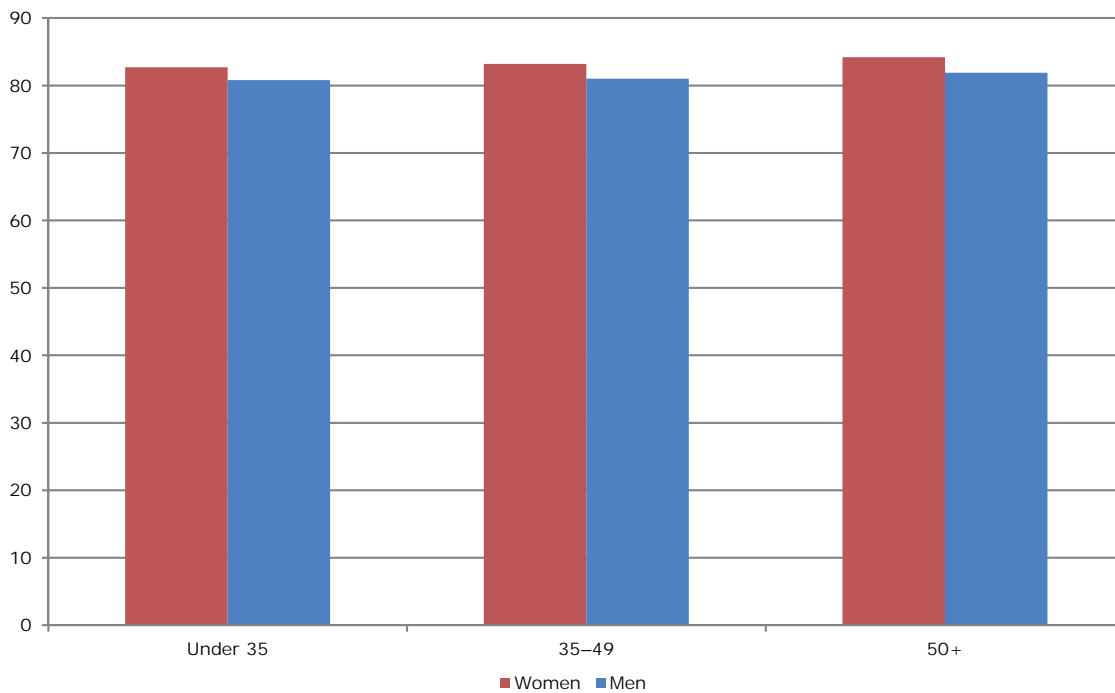


Source: EWCS 2010

Looking at demographics, the percentage of workers reporting themselves as satisfied or very satisfied slightly increases with age: older people seem more satisfied than younger people (Figure 7). Interestingly, the gender gap is reversed when looking at WHO-5, where women are consistently more satisfied than men in all age groups.

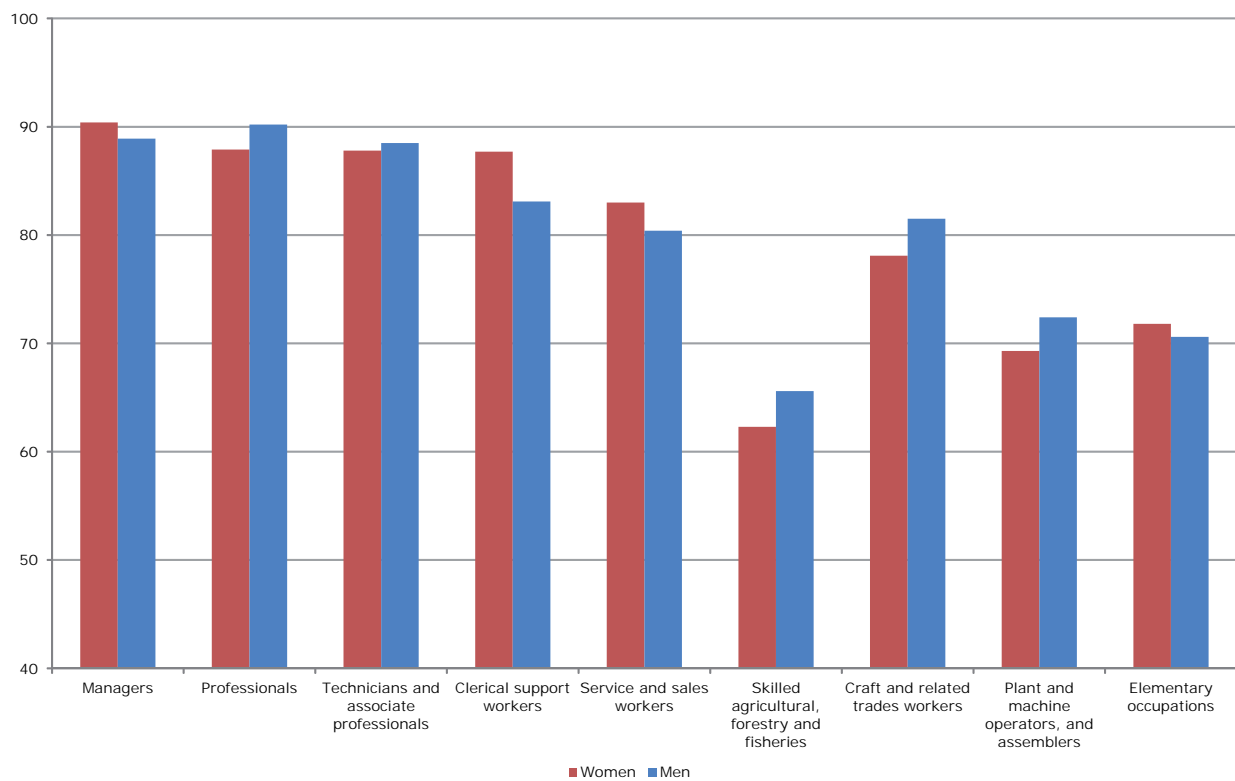
As with the WHO-5, a positive association exists between level of qualification and job satisfaction (Figure 8): professions such as agricultural worker and plant and machine operator suffer from a lower level of satisfaction. Among managers, clerical, service and elementary workers, women are more satisfied than men.

Figure 7: Workers who are satisfied or very satisfied with their working conditions, by age and gender, 2010 (%)



Source: EWCS 2010

Figure 8: Workers who are satisfied or very satisfied with their working conditions, by occupation and gender, 2010 (%)

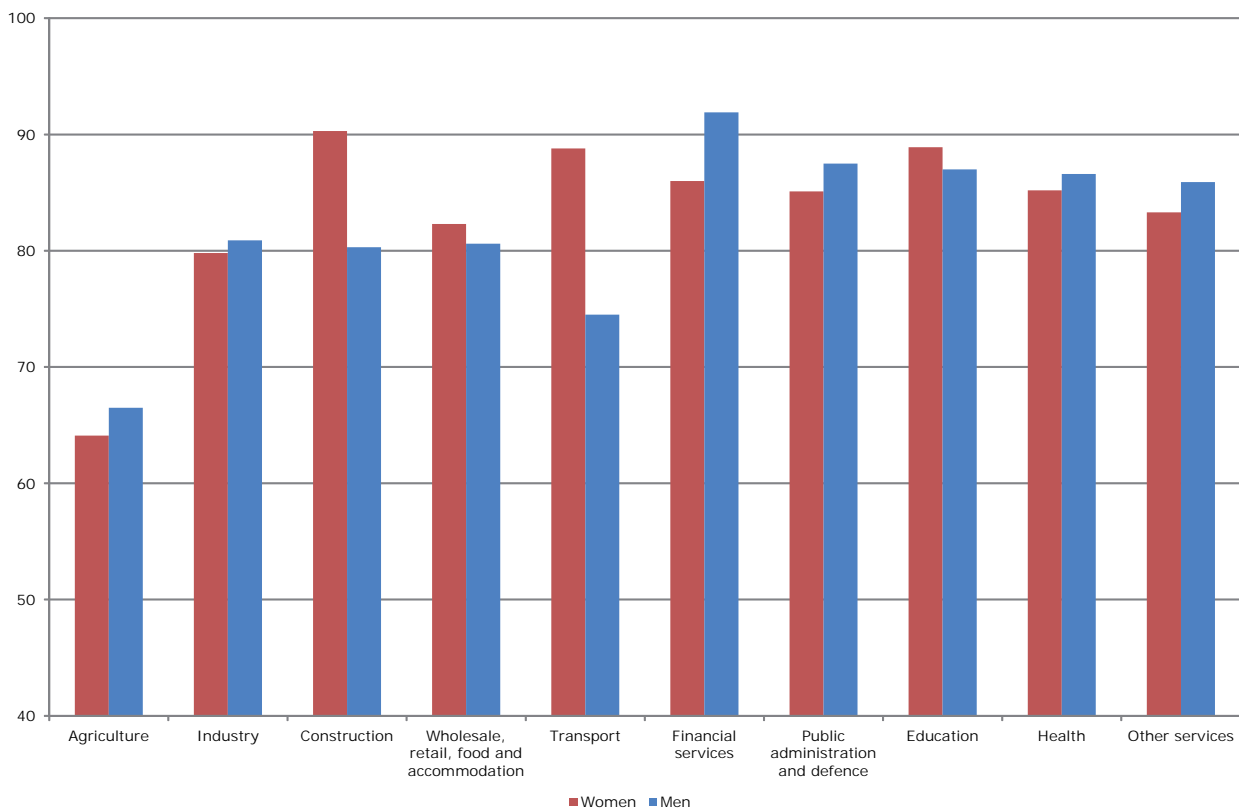


Source: EWCS 2010



Workers employed in education, financial services and the public sectors are those more satisfied with their working conditions (see Figure 9). A large gap in favour of women is found in the transportation and construction sectors. Nonetheless, such a big difference is easily explained, since in these two male-dominated sectors women are mainly employed as clerical support staff and thus are less exposed to both physical and psychosocial risks.

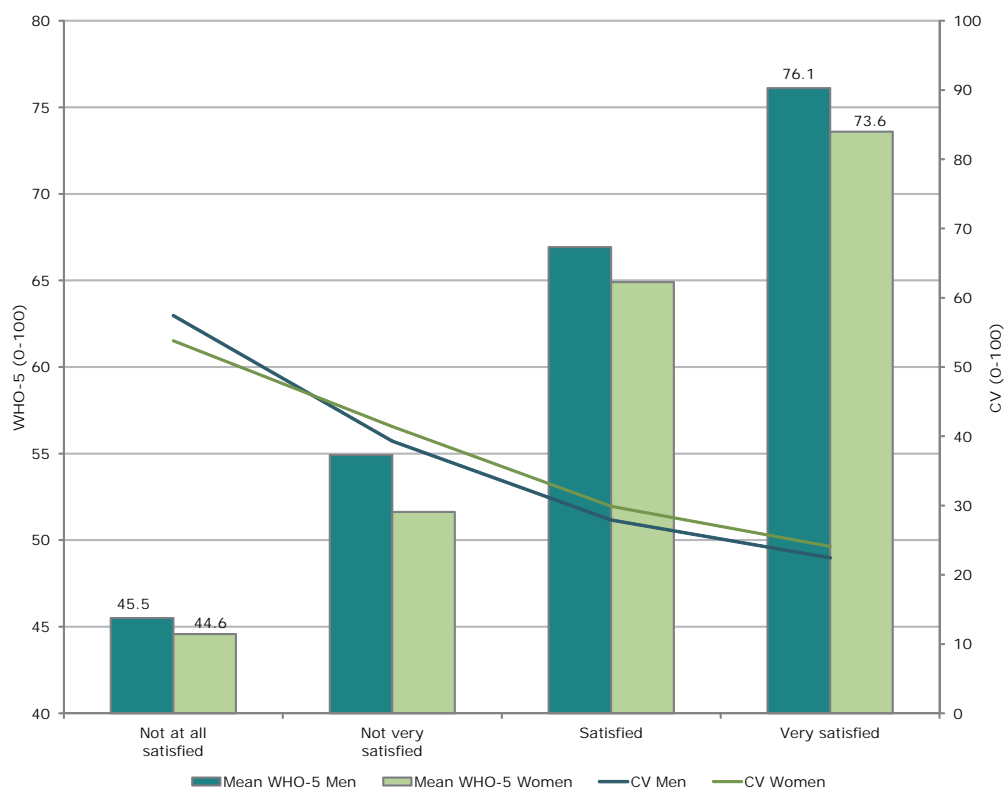
Figure 9: Workers who are satisfied or very satisfied with their working conditions, by sector and gender, 2010 (%)



Source: EWCS 2010

The relationship between job satisfaction and overall well-being has already been investigated in a number of studies, which proposed different and competing theoretical approaches. The EWCS 2010 results seem coherent with the so-called spill-over theory (Spector, 1997), which suggests that feelings in specific dimensions of life affect feelings in other domains as well. Therefore, having a high level of job satisfaction is a strong predictor of overall well-being as measured by the WHO-5 (Figure 10). The differences in WHO-5 scores between unsatisfied and satisfied workers is striking: the gap is about 30 points for both genders. In the most synthetic way, this shows how strongly correlated the two measures are and how important work is for the well-being of individuals. In Figure 10, the variability of well-being at different levels of job satisfaction is also reported.

Figure 10: Average level and variability of well-being by job satisfaction level and gender



Note: CV is the WHO-5 variability as measured by the coefficient of variation.  
 Source: EWCS 2010

### General health conditions and main job features

To arrive at a first impression of European workers’ general health, the study relies on two questions. One prompts a self-assessment of general health conditions (Q68), and in particular the analysis looks at the distribution of those reporting ‘bad’ and ‘very bad’ health.

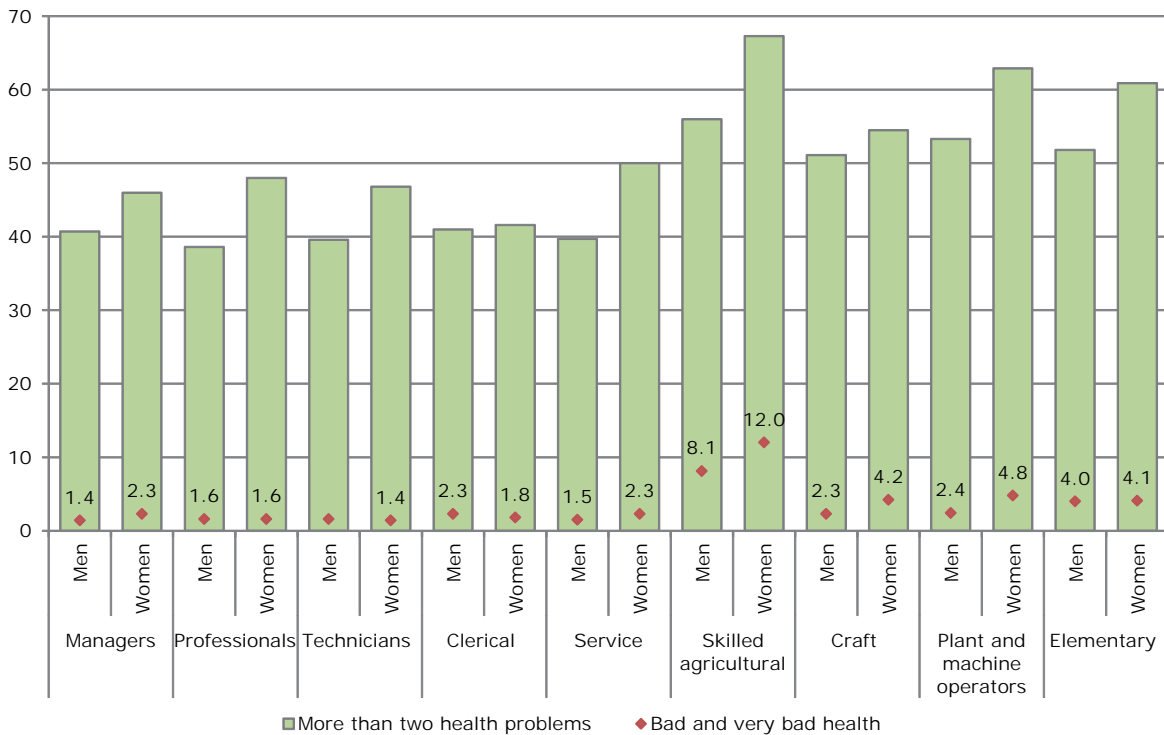
A subsequent question (Q69) asks respondents to mention which specific health problems the person has experienced in the previous year, listing 13 possibilities (including ‘injury’) plus a residual ‘other’. Here the focus is on the distribution of individuals mentioning more than two health problems. The threshold is justified because among the possibilities there are health complaints known to be very common: for instance, 46% of workers report ‘backache’, and 43% report ‘muscular pains in upper limbs’. Hence a threshold of just one mentioned problem would have made it difficult to distinguish between serious conditions and milder ones.

The distribution across occupations of the two health measures is displayed in Figure 11. Bad general health is mentioned by 2.5% of European workers, while 47% mention more than two health problems. In this second case women are more likely to do so than men (50% compared to 45%). Clearly the two dimensions signal different perceived health conditions, a milder and more common one in the case of more than two health problems, a more severe and uncommon one in the case of those reporting ‘bad’ and ‘very bad’ health.

The focus on job characteristics such as occupation and type of employment can shed light on the possible correlation between health and working conditions. As expected, manual workers are more affected by health problems (Figure 11); skilled agricultural workers stand out as the worst affected in this regard, closely followed by those in elementary

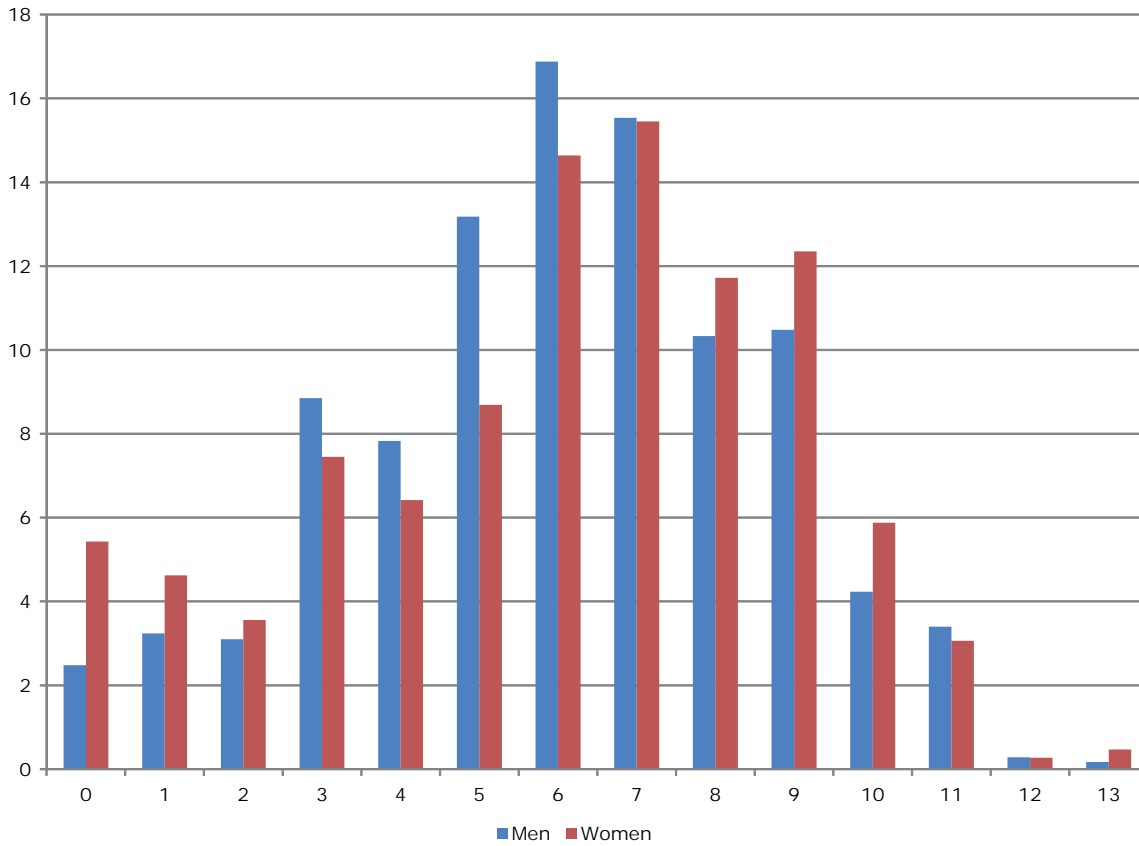
occupations. Women are more likely to report more than two health problems compared to men in all occupations, with the exception of clerical jobs. However, bad health is reported more evenly across genders. There might be a psychological dimension here, where the perception of several illnesses is not coupled with the perception of bad health. However, Figure 12 shows a polarisation in the perception of women: those reporting bad health are either reporting very few health problems or a huge number of them, compared to men.

Figure 11: Prevalence of individuals with bad health status among all workers, by occupation and gender (%)



Source: EWCS 2010

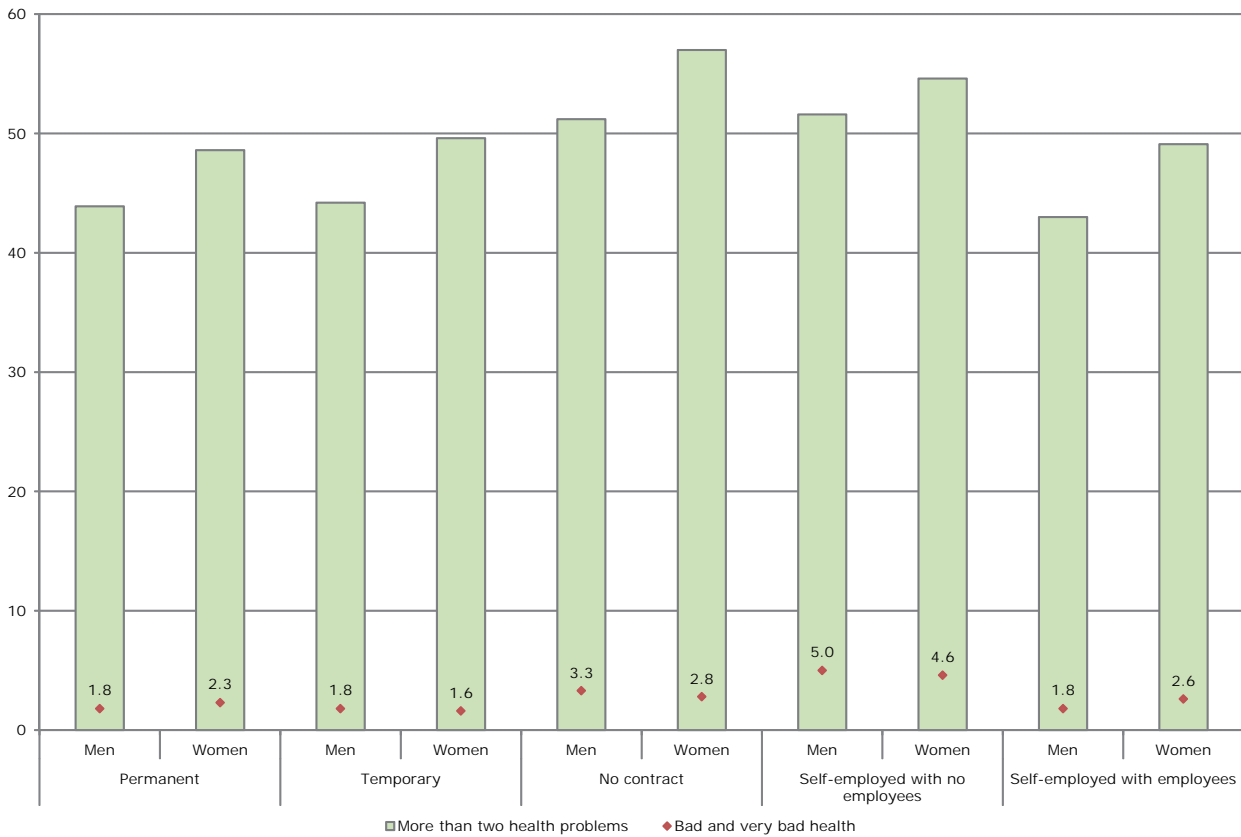
Figure 12: Distribution of workers reporting 'bad' and 'very bad' health, by number of mentioned health problems and gender (%)



Source: EWCS 2010

The type of contract a worker has is a relevant dimension in the shaping of general health conditions. As Figure 13 shows, there is a clear divide between those working within a firm, and those working without a contract or as self-employed without employees. 'Several health problems' and 'bad health' are more common in the second group of workers. The gender gap in the mention of several health problems is present and quite constant in all types of employment. By contrast, bad health is mentioned more frequently by men working without a contract or as self-employed without employees.

Figure 13: Type of employment of workers with bad self-reported health, by employment type and gender (%)

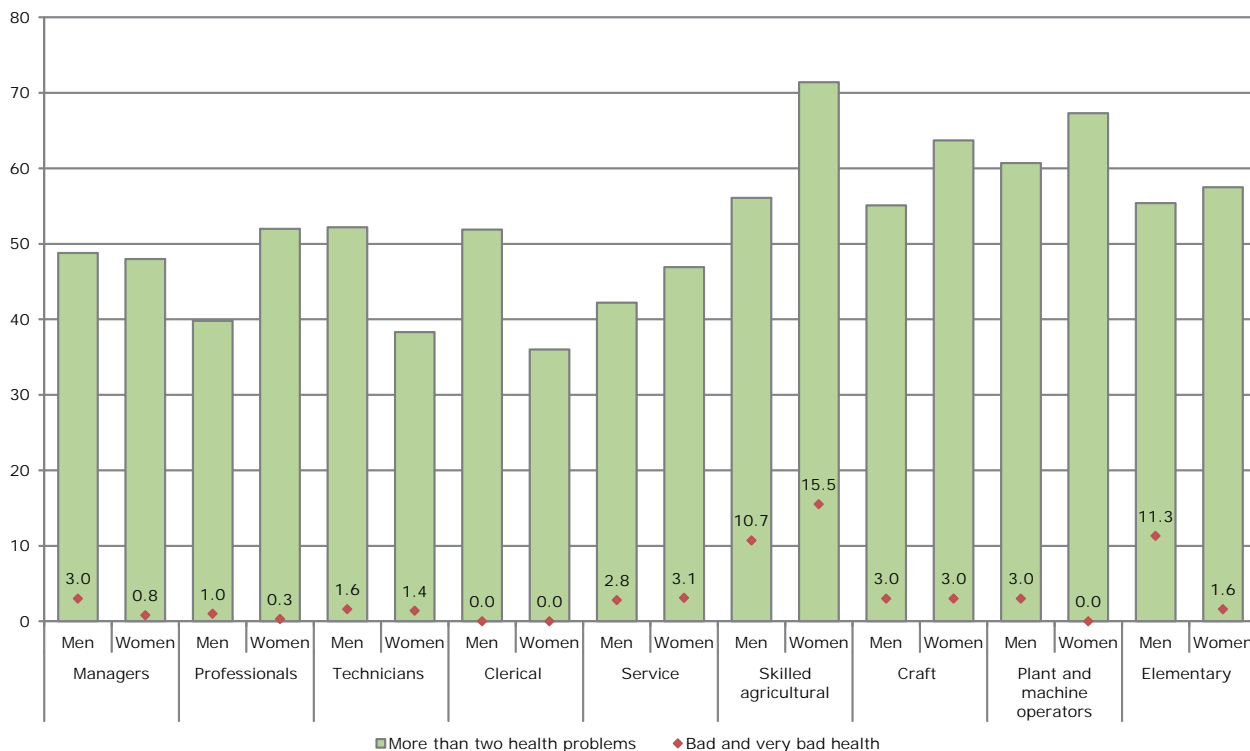


Source: EWCS 2010

Self-employed workers without employees (about 13% of European workers) present several characteristics. The category is male dominated (65% of the total), mostly made up of agricultural and craft workers (16% and 13% respectively). Women are more spread across occupations, but the higher prevalence is in services and agriculture (8% and 7%).

In almost all occupations, values of bad health indicators are higher among self-employed workers (Figure 14) than among the whole population of workers (Figure 11), pointing to working conditions where safety regulations are better monitored and enforced, for those working inside firms with other employees.

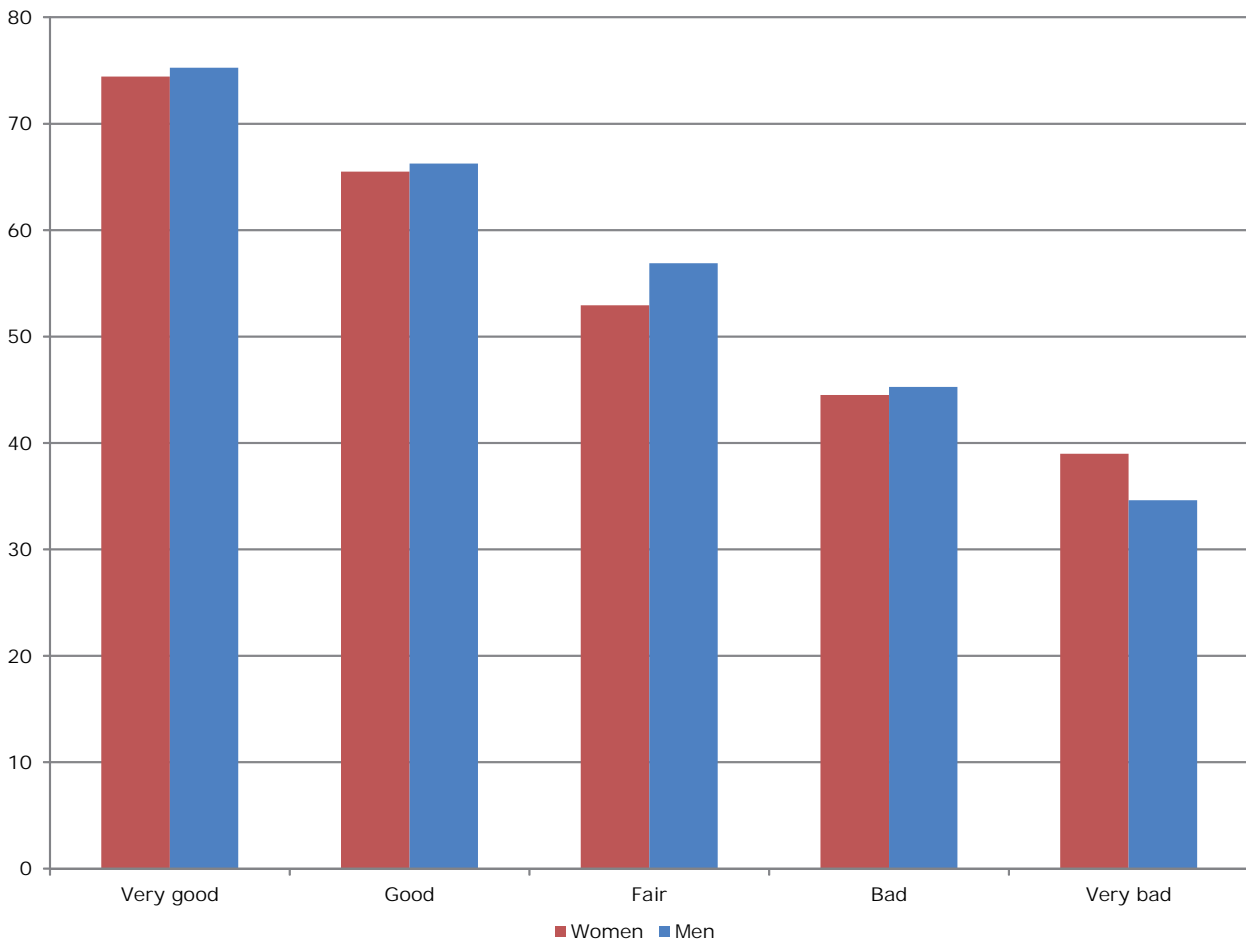
Figure 14: Prevalence of individuals with bad health status among the self-employed without employees, by occupation and gender (%)



Source: EWCS 2010

Health itself is a strong determinant of overall well-being, maybe one of the most important. As shown in Figure 15, the psychological well-being of individuals is strongly correlated with how they evaluate their own health status. The 40-percentage point difference between those who are in very good and very bad health is sizeable. Those who consider their health either bad or very bad show worryingly low levels of psychological well-being, far below the threshold of 52 suggested by the WHO-5 as indicative of very poor well-being and depression.

Figure 15: Average well-being by health status (%)



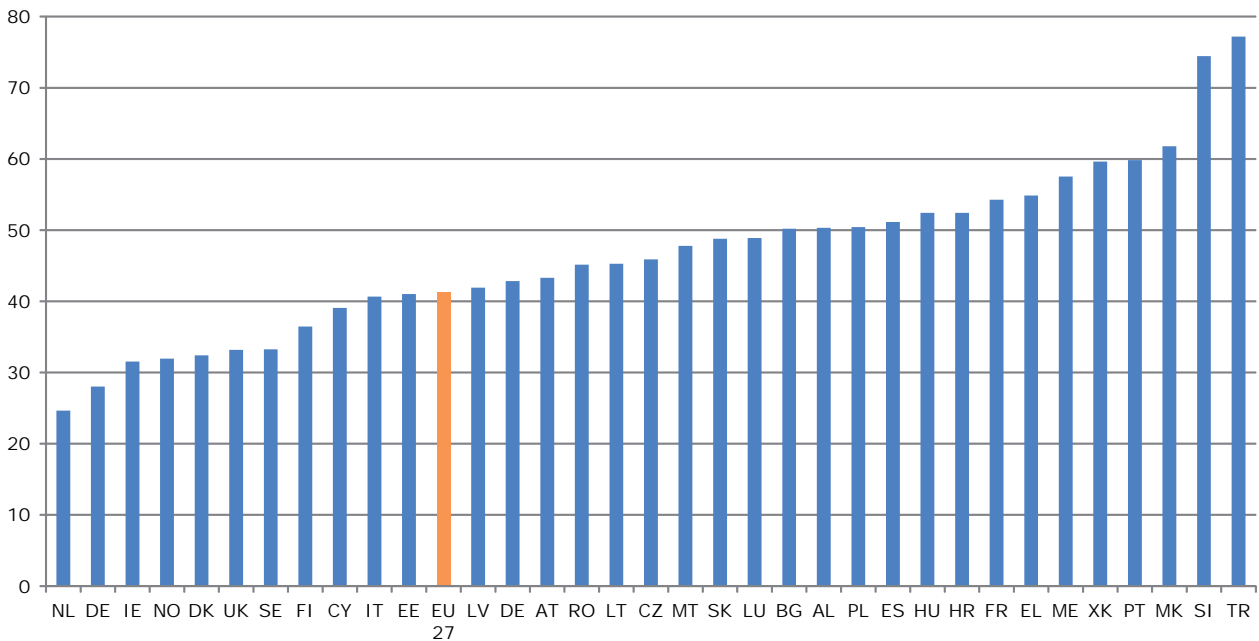
Source: EWCS 2010

### Work sustainability

The support for active ageing, including appropriate working conditions for elders and non-elders, adequate incentives to work and discouragement of early retirement, is at the centre of most European employment policy. The question about respondents' ability to do the same job at the age of 60 (Q75) is an immediate source of information, which gives a valuable insight on the theme.

Differences in responses across Europe are remarkable (Figure 16). Those who report themselves not able or not willing to do the same job at the age of 60 go from a very low figure of 20% in the Netherlands to 70% and 80% in Slovenia and Turkey respectively.

Figure 16: Prevalence of workers unable or unwilling to do the same job at age 60, by country (%)



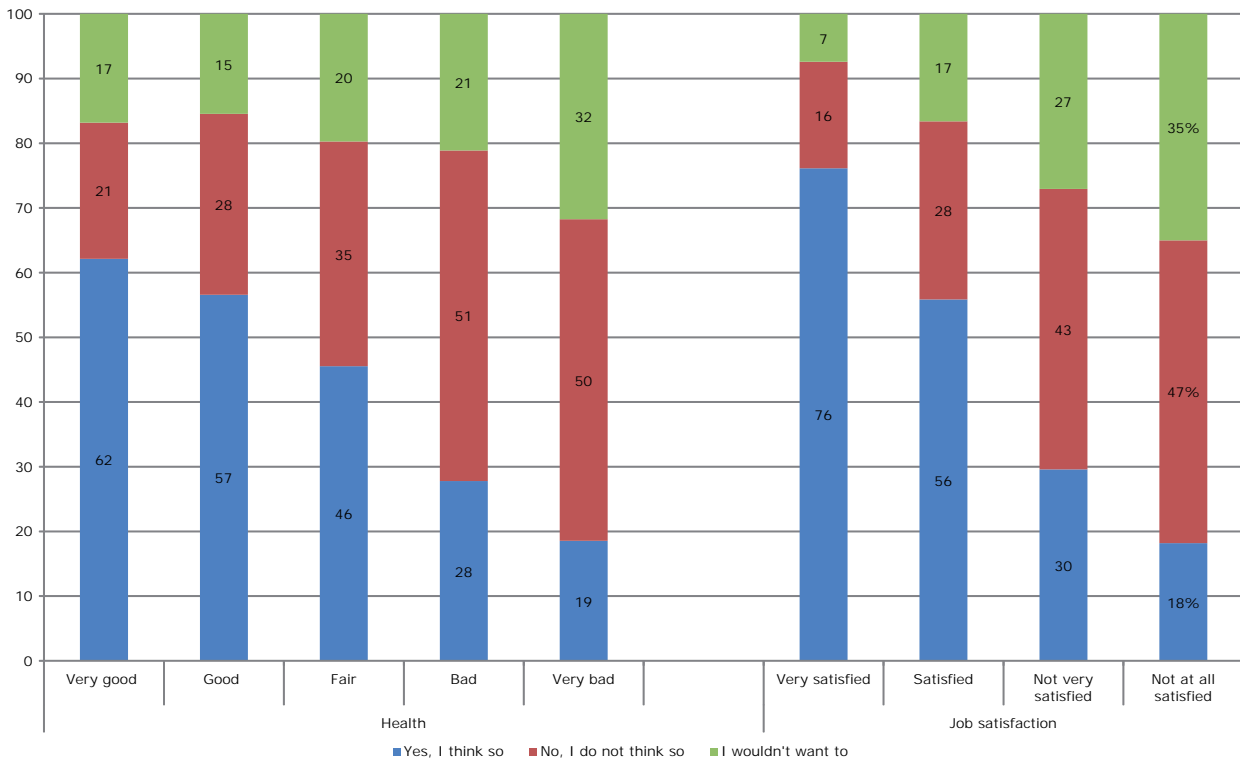
Source: EWCS 2010

Work sustainability is quite similar among genders, but higher among older workers than younger ones. This is quite a standard result, due a healthy worker effect and to the fact that how workers imagine they are likely to be at the age of 60 becomes clearer as they approach that age. Self-employed workers report sustainable work less frequently than employed workers.

Figure 17 shows the strong correlation between work sustainability and health and well-being. Among workers who declare very good or good health, 60% are confident in their ability to do the same job at the age of 60, while the proportion is significantly lower among those in bad or very bad health.



Figure 17: Distribution of perceived ability to do same job at age 60, by health status and job satisfaction level (%)



Source: EWCS 2010



# Psychosocial work environment 2

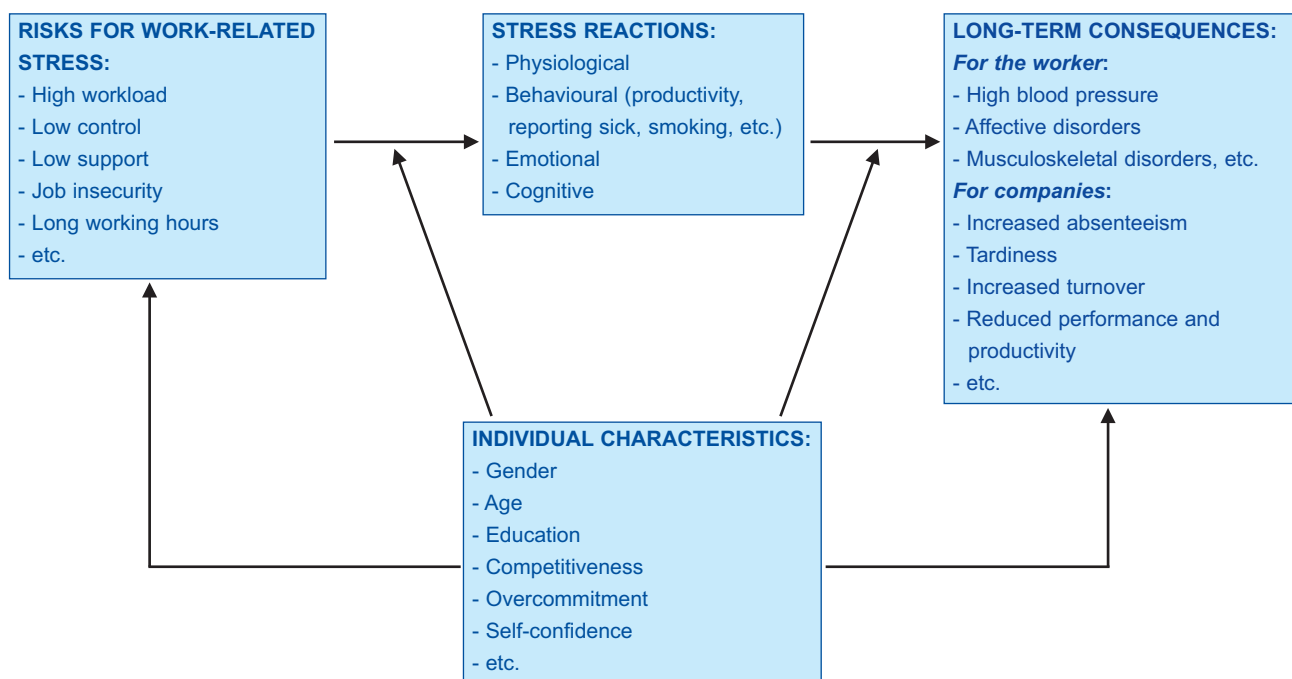
This chapter is devoted to the so-called psychosocial work environment, a risk factor for the health and well-being of workers that the European Agency for Safety and Health at Work (EU-OSHA) has identified as one of the most important in contemporary and future society, suggesting that it deserves ‘top priority’ among other work issues (EU-OSHA, 2000a). After introducing the topic, it is possible to build a set of indicators for assessing the topic using the many questions present in the EWCS, with the double aim of providing original empirical evidence on this important risk factor, and to be able to refer back to it throughout the rest of the report in the investigation of the determinants of health and well-being.

## Work-related stress and the psychosocial work environment

Work-related stress is a pattern of reactions occurring when workers experience prolonged exposure to work demands that are not matched to their knowledge, skills or abilities, and which challenge their ability to cope (EU-OSHA, 2000b; Eurofound, 2005). The public health relevance of the issue is well established: research has proven that stress at work is associated with a number of physical and psychological negative effects at individual level such as cardiovascular diseases, musculoskeletal diseases, immunological problems and mental health problems (anxiety and depression disorders) (EU-OSHA, 2009).

Several models have been created to illustrate these links. One is presented below in Figure 18, which summarises the stress process identifying the causes of stress, short-term stress reactions, long-term consequences of stress and individual characteristics, as well as their interaction. The model highlights also the importance of individual characteristics that determine how workers perceive their working environment and what is expected of them. Generally, it is accepted that most individuals are well adapted to cope with short-term exposure to pressure, which can be considered as positive, but have greater difficulty in coping with prolonged exposure to intensive pressure (ETUC et al, 2004).

Figure 18: *Model of causes and consequences of work-related stress*



Source: Eurofound, 2005; EU-OSHA 2009 (Adapted from Kompier and Marcelissen, 1990)

Regarding risks factors, several classifications have been offered, the majority of which include organisational factors such as job intensity and workload, job control and social support, as suggested by the Karasek ‘Demand-Control’ model (Karasek, 1979). This model states that the greatest risks to physical and mental health are faced by workers who have to cope with high psychological workload, demands or pressures, combined with low control or decision latitude in meeting those demands (Karasek, 1979) and lack of social support (Karasek and Theorell, 1990). By looking simultaneously at demands and control, it is possible to classify jobs into four categories:

- *active jobs* (high demands and high control);
- *high-strain jobs* (high demands and low control);
- *low-strain jobs* (low demands and high control);
- *passive jobs* (low demands and low control).

The psychosocial work environment is a more general construct which, in addition to job demand and control, entails a wide set of items related to work organisation and job content, type of production and tasks, interpersonal relations and so on, covering a large range of potential stressors. A large proportion of employees in Europe report being exposed to many of these psychosocial stressors at work, and the consequences are believed to be very significant for workers, workplaces and society (Kristensen et al, 2005).

One of the most comprehensive instruments for the assessment of the psychosocial work environment is the Copenhagen Psychosocial Questionnaire (COPSOQ), which is used by a rapidly increasing number of researchers and work environment professionals (Rugulies et al, 2010). The questionnaire is theory-based, but not attached to one specific theory. In its longest version there are more than 144 items exploring 20 workplace psychosocial dimensions based on the most influential theories on work-related stress. These include theories centred on the individual perception of the work environment, the organisational climate and the interpersonal relationships at work, such as the Michigan organisational stress model (Caplan et al, 1975); or the ‘effort–reward imbalance’ model (Siegrist, 1996); theories more focused on the assessment of objective job characteristics, rather than perceived stressors, such as the demand-control model (Karasek, 1979); or the action-theory model (Frese and Zapf, 1994) – following the idea that ‘there should not be any significant “white spots” in the picture painted’ (Kristensen et al, 2005). In general, COPSOQ scales on the psychosocial work environment have demonstrated good internal consistency (Kristensen et al, 2005), high validity (Bjorner and Pejtersen, 2010) and high test-retest reliability (Thorsen and Bjorner, 2010).

## The indices

The richness of the EWCS allowed the researchers to reproduce as closely as possible the scales included in the COPSOQ questionnaire, with a few exceptions. For example, for the sake of comparability with previous results, the demand and control dimensions of the Karasek model have been modelled using as the reference the Job Content Questionnaire (JCQ).<sup>6</sup>

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<sup>6</sup> See <http://www.jcqcenter.org>. The best-known scales (decision latitude, psychological demands and social support) are used to measure the high-demand/low-control/low-support model of job strain development. There are several versions of it, but the recommended one is the standard 49 questions of the JCQ.

Based on the scales developed in the COPSOQ II long version (Pejtersen et al, 2010), 28 questions present in the EWCS questionnaire were used to reproduce 12 indices organised in four domains: demands; work organisation and work content; interpersonal relations and leadership; work-individual interface.<sup>7</sup> Selected items were first normalised so that they have a 0–1 range, then grouped in a summative index with equal weights for the items, and normalised to 0–100. A brief description of them follows here (further details are in Table 1).

### **Demands at work**

Four different scales of demand were constructed based on six questions, with three questions assessing exposure to psychological demand, as defined by the demand-control model, and one item each for cognitive demands, emotional demands and demands for hiding emotions.

Psychological demand corresponds to Karasek's definition of 'high workload and conflicting demands' and has been constructed using three items assessing work intensity and one item on role ambiguity, given the absence in the EWCS of specific information on conflicting demands.

Cognitive and emotional demands were assessed in the COPSOQ by four and three questions, respectively (Table 2). For cognitive demands, unfortunately, none of the questions in the EWCS resembled those used in the COPSOQ, so the analysis had to rely for its construction on a single item asking whether their own job involved performing complex tasks. This question captured only in part the wider dimension of cognitive demand, involving 'attention, perception, memory, decision-making and/or volitional motor action' (Maki and McIlory, 2007).

Both emotional demands and demand for hiding emotions were measured by means of a single question, which was in both cases very similar to one of the questions included in the corresponding COPSOQ scales. For emotional demands, the high item correlations with the total scale (0.65–0.80) would indicate that the item employed is probably a good proxy of the total scale, whereas this may not be true for demand for hiding emotions, for which the item correlation with the total scale was much lower (0.31–0.45) (Kristensen et al, 2005). However, the item used to measure demand for hiding emotions ('your job requires that you hide your feelings') appears central in the assessment of this dimension, compared to the other two in the COPSOQ scale (see Table 1).

The constructs of 'emotional demands' and 'demand for hiding emotions' are based on work by Hochschild (1983), who defined emotional labour as the requirement for workers employed in jobs implying relationships with clients, customers, pupils or patients to display certain emotional expressions as part of the tasks. Therefore, the concept of emotional labour refers to the quality of interactions between employees and clients. Later research has better characterised this psychosocial dimension, recognising four different dimensions: frequency of appropriate emotional display, attentiveness to required display rules, variety of emotions to be displayed and emotional dissonance (Morris and Feldman, 1996). In particular, emotional dissonance, defined as the conflict between genuinely felt emotions and emotions required to be displayed in organisations (Middleton, 1989), is believed to be the main factor responsible for the adverse health events reported in many studies.

High levels of cognitive demand have been found prospectively associated with an increased risk of sickness absence (Rugulies et al, 2010) and of non-fatal occupational injury (Nakata et al, 2006); furthermore, in a Danish survey on hospital workers, an inverse association was observed between exposure to high cognitive demands and mental health score (Aust et al, 2007).

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<sup>7</sup> Indeed, in spite of efforts in this study, a limited number of questions could be used compared to the COPSOQ, which means the indicators cannot be interpreted as a full implementation of COPSOQ scales.

High emotional demand has also been found to be associated with low job satisfaction (Rutter and Fielding, 1988; Martinez-Inigo et al, 2007) and with different health outcomes, including sickness absence (Clausen et al, 2012; Rugulies et al, 2010), exhaustion (Bakker et al, 2004; Morris and Feldman, 1997), burnout (Zapf et al, 1999), depression (Muntaner et al, 2006), fatigue and psychological distress (Bültmann et al, 2002).

### Work organisation and job contents

This dimension corresponds to the Karasek's 'job control' concept and the two scales created try to approximate the control subscales of the JCQ. The first scale measures skills discretion and development. It is assessed by four items measuring whether the employee's main job entailed 'solving unforeseen problems on your own', 'learning new things' or 'monotonous and repetitive tasks'. The second scale (decision authority) entails the possibility to 'influence the order of tasks, method and speed of work', 'take a break when you wish', 'influence decisions, work target definition', etc.

### Interpersonal relations and leadership

Here indicators are included for support from colleagues and supervisors, social climate and job rewards.

Social support from co-workers is measured through one question in the EWCS ('your co-workers help and support you'). This item is expected to represent the core aspect of this dimension and is similar to the most salient of the three used in the COPSOQ.

Social support from supervisors is investigated here through four items: one item investigating this dimension in a direct way, as well as three statements on the quality of leadership. In the COPSOQ the latter is assessed as a separate psychosocial factor.

Research on social support at work was fostered on the one hand from early observations of an increase in total mortality, especially from cardiovascular diseases, among less socially integrated people (Berkman and Syme, 1979; Kaplan et al, 1988; House et al, 1988), and on the other hand from studies that found higher risks of different health outcomes associated with inadequate workplace social support and to social isolation (Haynes and Feinleib, 1980; Rose et al, 1979; Medaile et al, 1973). Following these reports and other results suggesting that workplace social support has a moderating effect on the impact of stressful working conditions (LaRocco et al, 1980; Karasek et al, 1982), Johnson and Hall (1988) demonstrated, in a sample of the Swedish general population, that the risk of cardiovascular diseases associated with exposure to high strain, as defined in the Karasek model, was strongly enhanced by low social support. Although the type of social support at work considered by Johnson and Hall (1988) was limited to co-workers' support, in most subsequent studies the support of supervisors and of co-workers has been investigated separately (LaRocco et al, 1980).

Reviews of studies published in the last two decades on the health effects of social support have mostly found that workers who lack social support are at significantly increased risk of coronary heart disease (Eller et al, 2009), common mental disorders (Stansfeld and Candy, 2006), depression (Bonde, 2008; Netterstrøm et al, 2008) and neck pain (Da Costa and Vieira, 2010). The buffering role of social support on the effect of job strain has also been confirmed by these reviews, at least in part.

Another concept akin to supervisor support, that is quality of leadership, has been found to have a protective effect on sickness absence and retirement for disability (Kuoppala et al, 2008).

The quality of the social community at work is a construct partially overlapping with that of social support from co-workers as it covers the opportunity for pleasant and meaningful contacts, for feeling part of a greater social system, and for getting and giving strategic information about one's own performance and informal power position in the workplace

(Schabracq, 2003). This dimension was assessed in the EWCS by two items addressing the social climate at work, plus an item on engagement of the employee in the organisation.

The psychosocial dimension of reward belongs to the effort–reward model, which stems from the social exchange theory (Cosmides and Tooby, 1992) and proposes as a stress determinant the imbalance between high job demands, in terms of workload and commitment, and low rewards, the latter distributed through three remuneration systems: money, esteem and career development (including job security). According to the model, the prolonged experience of a lack of reciprocity, in terms of high expenses and low gains, would produce negative health effects (Siegrist, 1996). This model also postulates that ‘overcommitment’, a term referring to a personal characteristic implying excessive work engagement and the need for approval from others, would enhance susceptibility of workers with these characteristics to the effect of the imbalance.

The reward dimension in the COPSOQ is assessed through three questions focusing on ‘social justice’ or ‘esteem’, whereas, as mentioned above, in the effort–reward model (Siegrist et al, 2004), rewards are distributed by three transmitter systems: money, esteem and career opportunities. This psychosocial dimension was assessed using the Siegrist model as a reference, but since questions on esteem are not available in the EWCS, the reward dimension is based only on money and career opportunities.

An effort–reward score was built dividing the overall score of psychological job demand, defined according to the Karasek model, by the score of the reward dimension.

### **Work–individual interface dimension**

The last two scales permit the investigation of how well organisation of work fits with individual needs and commitments. This dimension is explored through an indicator of work–life balance and job security.

The dimension of work–family conflict refers to a condition in which work and family domains interfere so much with each other that one exerts a negative effect on the other (Greenhaus and Beutell, 1985). According to the US National Institute for Occupational Safety and Health, work–family conflict is one of the 10 most important stress factors at work (Kelloway et al, 1999). The two prevalent theories on which the work–family conflict dimension is based are the spillover or generalisation hypothesis, which postulates the carry-over of alienation from work into alienation from non-work (Kabanoff and O’Brien, 1980), and the role strain hypothesis, which assumes that managing multiple roles is difficult and inevitably creates ‘strain’. According to researchers belonging to the latter school, work–family conflict is ‘a form of inter role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect’ (Greenhaus and Beutell, 1985).

Several studies have found work–family conflict associated with different health outcomes, including poor self-rated general health (Frone et al, 1996; Hammer et al, 2004; Hämmig et al, 2009), burnout (Netemeyer et al, 1996; Kinnunen and Mauno, 1998), psychological distress or low psychological well-being (O’Driscoll et al, 1992; Parasuraman et al, 1996).

In the COPSOQ, work–family conflict is measured through a set of four questions assessing either directly the presence of such a conflict (‘do you often feel a conflict between your work and your private life ...?’) or its negative effects in terms of energy and time subtracted from non-work activities. In the EWCS questionnaire, work–family conflict is assessed through one direct question about the possibility of easily reconciling work and family life, and three more indirect questions that explore this dimension mainly through the presence of working time constraints.

Job security was assessed through a single question asking workers whether it was possible that they might lose their job in the next six months. The narrow time limit indicated in this statement is expected to have increased the specificity of the assessment of job security, as supported by the fact that less than 20% of workers reported agreement or strong agreement that it was possible they might lose their job. Nonetheless, the information collected through responses to this question differs from that available in the COPSOQ, which also investigates workers' perception of the threat of job loss and their future employability.

The diffusion of flexible employment in most developed countries in recent decades has determined an overall decrease of job security in working populations, in particular in Europe (Sverke et al, 2000). Job insecurity is based on individual perceptions, which may be different even among people in the same employment situation, and is related to the threat of involuntary job loss (Greenhalgh and Rosenblatt, 1984). Therefore, subsequent employability of the workers may be an effect modifier of job insecurity, because the threat is expected to be greater for those characterised by lower possibilities of re-employment. Workers with a low socioeconomic status are also expected to be more susceptible to the effect of job insecurity, given that they generally have a lower amount of savings and assets to compensate job loss, as well as lower skills and education, which in turn would reduce their future employability (Gallie et al, 1998; Artazcoz et al, 2005). Research on the health effects of job insecurity has grown fast after it was demonstrated, within the Whitehall II study, that workers threatened with privatisation of their department were at higher risk of developing minor psychiatric morbidity (Ferrie et al, 1995). Since then, job insecurity has been confirmed as being consistently associated with poor mental health (Rugulies et al, 2006; Swaen et al, 2004; D'Souza et al, 2003), as well as with poor self-rated physical health (Ferrie et al, 1998; Cheng et al, 2005), ischaemic heart disease (Lee et al, 2004) and lower sickness absence (Kivimäki et al, 2007).

Table 1: Scheme for the implementation of the psychosocial work environment indices

Scale	Reference questions used	Questions used (EWCS)
<b>Domain: Demands at work</b>		
<b>Psychological job demands</b>	JCQ - abbreviated list of the recommended Format (49 q.): <ul style="list-style-type: none"> <li>• 'work fast'</li> <li>• 'work hard'</li> <li>• 'no excessive work'</li> <li>• 'enough time'</li> <li>• 'conflicting demands'</li> </ul>	<ul style="list-style-type: none"> <li>• Q45A and Q45B - high speed and tight deadline</li> <li>• Q51G - have enough time</li> <li>• Q51K - know what is expected of you at work</li> </ul>
<b>Cognitive demands</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Do you have to keep your eye on lots of things while you work?</li> <li>• Does your work require that you remember a lot of things?</li> <li>• Does your work demand that you are good at coming up with new ideas?</li> <li>• Does your work require you to make difficult decisions?</li> </ul>	<ul style="list-style-type: none"> <li>• Q49E - Complex tasks</li> </ul>
<b>Emotional demands</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Does your work put you in emotionally disturbing situations?</li> <li>• Do you have to relate to other people's personal problems as part of your work?</li> <li>• Is your work emotionally demanding?</li> <li>• Do you get emotionally involved in your work?</li> </ul>	<ul style="list-style-type: none"> <li>• Q51M – You get emotionally involved in your work</li> </ul>
<b>Demands for hiding emotions</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Are you required to treat everyone equally, even if you do not feel like it?</li> <li>• Does your work require that you hide your feelings?</li> <li>• Are you required to be kind and open towards everyone – regardless of how they behave towards you?</li> </ul>	<ul style="list-style-type: none"> <li>• Q51P - Your job requires that you hide your feelings</li> </ul>



Scale	Reference questions used	Questions used (EWCS)
<b>Domain: Work organisation and job contents</b>		
<b>Skill discretion and development</b>	JCQ - abbreviated list of the recommended Format (49 q.): <ul style="list-style-type: none"> <li>• ‘learn new things’</li> <li>• ‘repetitive work’</li> <li>• ‘requires creative’</li> <li>• ‘high skill level’</li> <li>• ‘variety’</li> <li>• ‘develop own abilities’</li> </ul>	<ul style="list-style-type: none"> <li>• Q49C - solving unforeseen problems</li> <li>• Q49D - monotonous tasks</li> <li>• Q49F - learning new things</li> <li>• Q44(AorB) - short repetitive tasks of less than 1/10 minutes</li> </ul>
<b>Decision authority</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Do you have a large degree of influence concerning your work?</li> <li>• Do you have a say in choosing who you work with?</li> <li>• Can you influence the amount of work assigned to you?</li> <li>• Do you have any influence on what you do at work?</li> </ul>	<ul style="list-style-type: none"> <li>• Q50(A–C) - able to choose order/methods/speed of work</li> <li>• Q51C - you are consulted before targets for your work are set</li> <li>• Q51E - you have to say in the choice of your working partners</li> <li>• Q51I - apply own ideas in your work</li> <li>• Q51O - you can influence decisions</li> </ul>
<b>Domain: Interpersonal relations and leadership</b>		
<b>Social support from colleagues</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• How often do you get help and support from your colleagues?</li> <li>• How often are your colleagues willing to listen to your problems at work?</li> <li>• How often do your colleagues talk with you about how well you carry out your work?</li> </ul>	<ul style="list-style-type: none"> <li>• Q51A - your colleagues help and support you</li> </ul>
<b>Social support from supervisors</b>	JCQ - abbreviated list of the recommended Format (49 q.): <ul style="list-style-type: none"> <li>• ‘supervisor is concerned’</li> <li>• ‘supervisor pays attention’</li> <li>• ‘hostile supervisor’</li> <li>• ‘helpful supervisor’</li> <li>• ‘supervisor good organiser’</li> </ul>	<ul style="list-style-type: none"> <li>• Q58(A–E) - leadership quality variables</li> <li>• Q51B - your manager support and helps you</li> </ul>
<b>Social community</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Is there a good atmosphere between you and your colleagues?</li> <li>• Is there good co-operation between your colleagues at work?</li> <li>• Do you feel part of a community at your place of work?</li> </ul>	<ul style="list-style-type: none"> <li>• Q77D - I feel at home</li> <li>• Q77E - I have very good friends</li> <li>• Q77G - The organisation motivates me</li> </ul>
<b>Job rewards</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Is your work recognised and appreciated by the management?</li> <li>• Does the management at your workplace respect you?</li> <li>• Are you treated fairly at your workplace?</li> </ul>	<ul style="list-style-type: none"> <li>• Q77B - I am well paid</li> <li>• Q77C - Possibility for career advancement</li> </ul>
<b>Domain: Work–individual interface</b>		
<b>Work–life balance</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Do you often feel a conflict between your work and your private life...?</li> <li>• Do you feel that your work drains too much energy...?</li> <li>• Do you feel that your work takes too much time...?</li> <li>• Do your friends and family tell you that you work too much?</li> </ul>	<ul style="list-style-type: none"> <li>• Q39 - chose working time arrangements set</li> <li>• Q41 - working hours fit in with your family commitments</li> <li>• Q42 - worked in your free time</li> <li>• Q43 - difficulty in taking a couple of hour off</li> </ul>
<b>Job insecurity</b>	COPSOQ II long version: <ul style="list-style-type: none"> <li>• Are you worried about becoming unemployed?</li> <li>• Are you worried about new technology making you redundant?</li> <li>• Are you worried about it being difficult for you to find another job if you became unemployed?</li> <li>• Are you worried about being transferred to another job against your will?</li> </ul>	<ul style="list-style-type: none"> <li>• Q77A - I might lose my job</li> </ul>

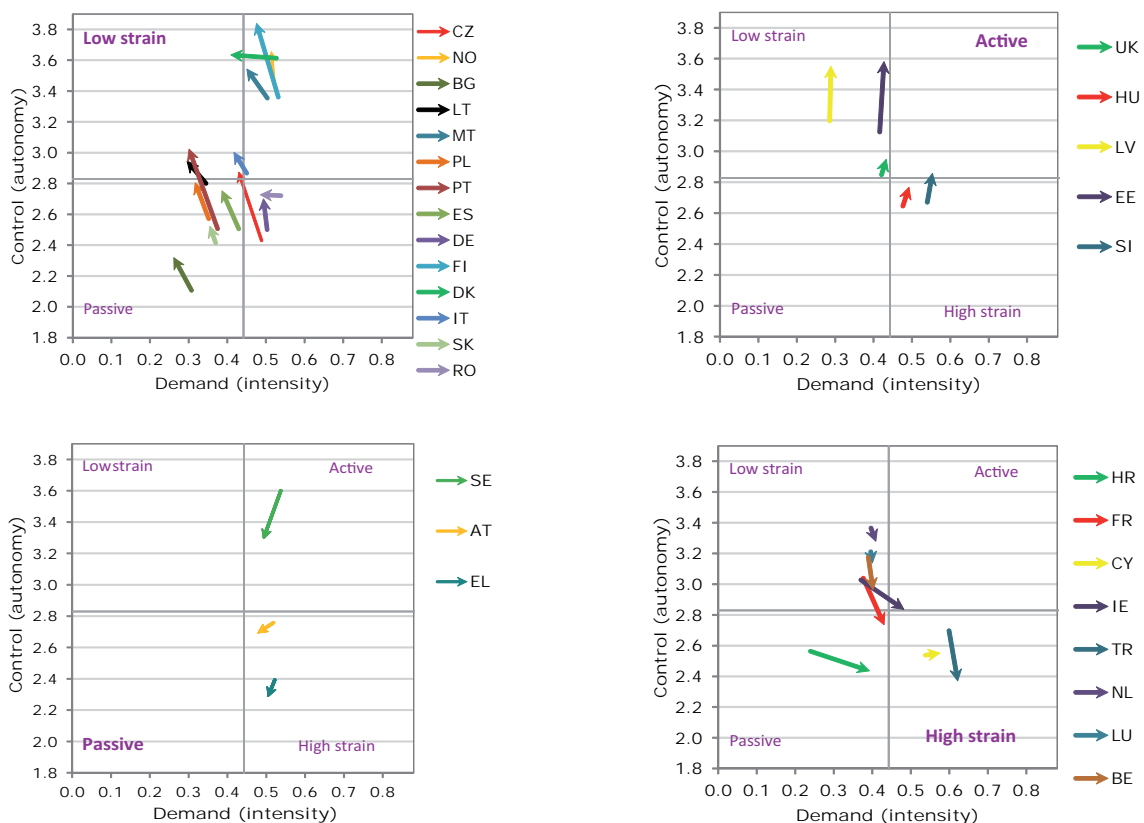
## Application of the demand-control model to EWCS data

First, the Karasek model is replicated using the composite indicators of ‘autonomy’ and ‘intensity of work’, corresponding to Karasek’s concepts of ‘job control’ and ‘job demands’, to form an initial picture of the matter.

In general terms, the classification of countries according to this model is confirmative of previous findings from Eurofound’s European Working Conditions Survey (Eurofound, 2007c). Malta and Nordic countries, particularly Finland, Norway and Sweden, are in the active jobs group, which is identified as the best organisation leading to high performance without negative consequences for working conditions, since greater demands on the worker are counterbalanced by greater autonomy and control over job content, reducing the potentially detrimental impact of work intensity. Conversely, Cyprus, Greece, Turkey and the former Yugoslav Republic of Macedonia approach most closely the high strain group, the form of work organisation that has the most negative impact on working conditions.

Figure 19 gives a concise representation of what happened from 2005 to 2010, grouping countries according to how they moved in the demand–control space. A very general movement towards higher levels of control emerges. There are just very few countries where workers’ level of control has lowered in a statistically significant way. The second major movement is towards lower levels of intensity, again with few exceptions. The two movements are often combined: in fact, about half of the countries moved towards the low-strain group. This is somehow in contrast with the long trend observed since 1991 (Eurofound, 2007a), which was towards higher intensity, but is consistent with the current weak macroeconomic situation. A high proportion of workers in 2010 may fairly have worked fewer extra hours than usual; many are under some income support measures, such as partial unemployment or temporary layoff schemes, which keep them in employment but either with shorter working time or not working.

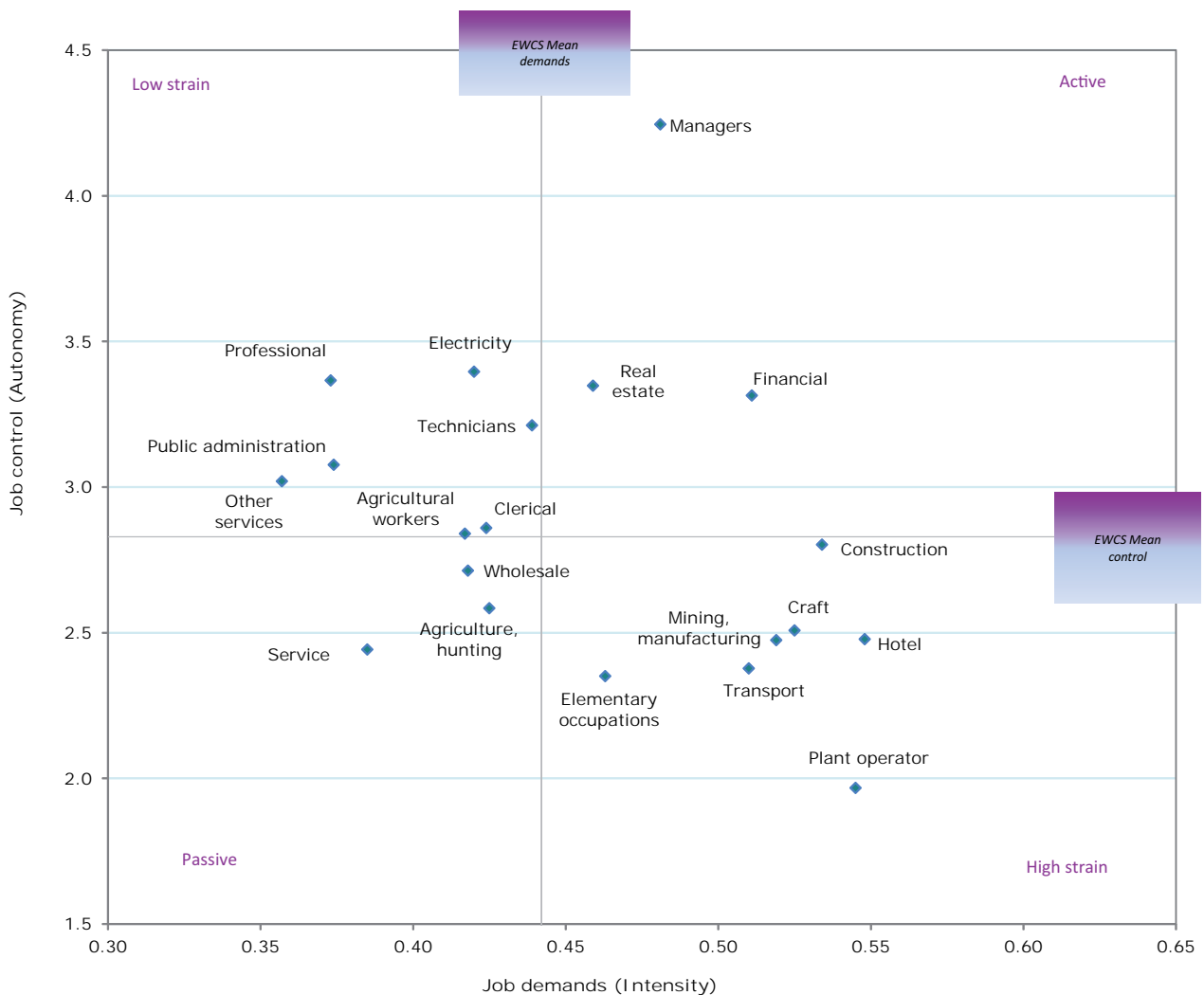
Figure 19: Changes in average scores of job demand and control, by country, 2005–2010



Note: Axes are fixed at 2010 mean levels. Employees only.  
Source: EWCS 2005 and 2010

Figure 20 illustrates how occupation and sector fit into the Karasek model. Unskilled occupations and sectors are dominant in the high-strain work organisation: workers in the transportation, hotel and manufacturing sectors particularly have to face very high demanding situations without the possibility of compensating for such stressful conditions with a sufficient extent of control over the content of their work.<sup>8</sup> Financial and real estate workers, and to a greater extent managers, are the only ones to fit into the active category. Professionals, those working in public administration and services are closest to the low-strain work organisation category. Finally, the agricultural, services and retail sectors are closest to the ‘passive work organisation model’.

Figure 20: Job demand and control average scores, by occupation and sector



Note: Employees only.  
Source: EWCS 2010

<sup>8</sup> Looking at the changes from 2005 and 2010, a further reduction in the level of autonomy for those working in elementary occupations and transportation was observed.

Table 2 shows which is the average psychological well-being in the four groups, considering also the social support dimension. As predicted by the model, it is high-strain situations which lead to the lowest well-being; the same group is the one where social support has the biggest importance.

Table 2: Average well-being (WHO-5%), by Karasek groupings (%)

	With social support	Without social support	Gap (%points)
Mid-population	66.69	59.99	6.70
Low strain	70.10	66.54	3.56
Passive	69.37	62.13	7.24
Active	68.82	62.17	6.65
High strain	66.17	55.40	10.77
Total	68.34	60.37	7.97

Note: The Job Content Questionnaire (JCQ) centre suggests identifying the groups by the exclusion of that segment of the population that is closest to the population mean (mid-population), by dividing both the psychological demands and the decision latitude scales into quartiles. This method is used here, but by dividing into tertiles so as not to lose too many observations.

Source: EWCS 2010

## Descriptive analysis of psychosocial work environment indices

Table 3 offers a descriptive picture of psychosocial indicators by gender and age categories. Looking at the ‘demand’ scales it is clear that the situation is split between genders: women show higher levels of emotional demands, as well as demand for hiding emotions, while men are more exposed to cognitive and psychological demands. This is true in all age groups, even if differences decrease with age. The most demanding situation at work concerns middle-aged male workers, who experience the highest level in almost all the demanding features.

Table 3: Average psychosocial work environment scores, by age and gender

Variable	Under 35		35–49		Over 50	
	Men	Women	Men	Women	Men	Women
Psychological demand	34.9	30.2	33.1	29.9	28.9	26.9
Cognitive demands	59.1	48.0	62.8	53.1	59.5	53.2
Emotional demands	44.8	51.2	51.2	57.1	52.1	58.5
Demands for hiding emotions	35.8	41.3	36.1	42.5	35.5	38.7
Skill discretion	63.6	62.4	66.2	64.1	65.4	62.5
Decision authority	56.5	54.2	62.5	59.4	64.1	61.6
Support from colleagues	74.2	74.4	72.5	72.9	71.5	72.3
Support from supervisors	66.3	70.7	60.6	65.7	53.9	61.6
Social community	65.9	66.9	67.0	68.7	68.6	69.9
Job rewards	50.5	48.7	48.8	45.5	46.0	41.8
Work–life balance	64.8	65.9	64.7	66.6	68.4	69.2
Job security	67.3	67.1	70.4	71.8	73.3	73.5

Note: All scales are normalised to 100 scores.

Source: EWCS 2010

The possibility of using and developing their own skills and competences at work is higher for men than women at all ages. Both men and women experience a positive trend across age for level of autonomy, which tends to increase from 56 to 64 and from 54 to 61, respectively.

Regarding interpersonal relations at work, women report a slightly better working climate and higher support from managers, although lower rewards, compared to men. However, the higher support from managers among women may also be attributable to the lower proportion of women in managerial positions. There is an interesting pattern which emerges in both genders: the satisfaction of social relationships at work increases and the rewards dimension decreases when workers become older.

Work–family conflicts are slightly more spread among male workers than women. This may be seen as a quite paradoxical result, but it is most likely due to the cross-sectional design of the study. It is likely that a selection process affects the gender composition, resulting in a lower proportion of women employed, compared to men who are or are not associated with processes of adaptive preferences that would influence the level reported. It may therefore be that dissatisfied men are working, whereas potentially dissatisfied women occupy some other labour force status.

Psychological demand at work is highest among craft workers, plant and machine operators (Table 4). Levels of emotional demand are higher among professionals, especially women, managers and agricultural workers. The need to hide emotion concerns, in particular, managers, professionals and service workers.

Table 4: *Average psychosocial work environment scores, by occupation and gender*

Variable	Manager		Professional		Technician		Clerical		Service		Skilled agriculture		Craft		Plant		Elementary	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Psychological demand	33	32	30	28	32	32	33	29	29	26	28	28	35	36	36	42	34	29
Cognitive demands	75	72	80	71	76	68	56	56	43	34	47	35	69	49	43	43	32	23
Emotional demands	58	60	61	70	50	56	44	47	49	54	61	64	46	52	43	43	36	41
Demands for hiding emotions	46	45	44	48	37	44	36	38	45	45	25	21	29	33	33	33	29	29
Skill discretion	74	74	81	79	75	72	62	63	62	58	62	56	62	52	54	44	48	40
Decision authority	84	81	73	66	65	60	53	54	56	53	76	75	57	54	44	35	45	51
Support from colleagues	78	79	74	76	71	74	71	72	73	74	73	69	76	71	68	70	70	63
Support from supervisors	45	55	65	72	71	72	72	76	64	66	16	11	63	54	65	65	62	62
Social community	75	76	71	71	69	70	64	68	66	68	67	72	67	65	62	60	60	61
Job rewards	58	57	58	52	56	50	50	49	46	42	33	28	48	40	41	35	39	36
Work–life balance	68	68	66	64	68	68	67	70	62	65	73	74	65	70	60	63	66	70
Job security	75	74	78	77	74	74	70	69	68	67	79	80	66	66	64	60	63	63

Note: All scales are normalised to 100 scores. M = Male, F = Female.

Source: *EWCS 2010*

As expected, more highly qualified occupations correspond to higher cognitive demands and higher decision latitude and skill discretion. It is also the case that both decision latitude and skill discretion are lower among women than men in most occupational groups and reach worryingly low levels among female plant and machine operators (35 and 44, respectively).

In the social relationship domain, lower-skilled occupations report lower social support from colleagues and a less satisfying working climate. As expected, support from managers is lower among managerial occupations and skilled

agricultural workers. Skilled agricultural workers also have the lowest levels of rewarding aspects of their work, such as the possibility of a career and satisfaction with salary (33 and 28, for men and women respectively).

Table 5 shows that psychological demands are generally higher among those working without a contract or with an atypical contract. Self-employed people with employees face high psychological demands. Emotional demand affects self-employed workers to a greater extent than employees, and mainly women.

Table 5: Average psychosocial work environment score, by type of employment and gender

Variable	Self-employed, without employees		Self-employed, with employees		Employee, permanent contract		Employee, fixed or temporary contract		Employee, no contract/other type of contract	
	Male	Women	Male	Women	Male	Women	Male	Women	Male	Women
Psychological demand	29	25	34	27	33	30	33	30	40	32
Cognitive demands	59	48	66	65	64	56	52	43	49	37
Emotional demands	58	62	64	67	47	56	44	50	46	46
Demands for hiding emotions	36	36	44	41	35	43	34	40	42	41
Skill discretion	66	64	69	74	67	65	60	59	56	55
Decision authority	83	81	86	83	57	56	49	48	48	50
Support from colleagues	60	60	81	82	74	74	73	74	72	71
Support from supervisors	0	0	0	0	77	78	76	75	77	74
Social community	68	74	78	78	68	69	62	64	60	62
Job rewards	44	43	56	55	51	47	46	45	43	40
Work–life balance	73	76	69	69	64	66	62	65	61	65
Job security	76	76	80	77	73	74	51	51	60	62

Source: EWCS 2010

As might be expected, decision authority is largely higher among the self-employed, although levels of skill discretion (such as learning new things, solving unforeseen problems) are quite similar among the self-employed and employees with a permanent contract.

The characteristics of the social environment are very positive for the self-employed with employees; this may reflect the different perception between employers and employees of the quality of the working climate, which is viewed as more favourable by the former, probably because of the position of power they occupy in their companies.

In terms of the rewarding dimension of work, the worst situation is faced by employees without a contract or with an atypical contract, and by the self-employed without employees. Employees with fixed or temporary attachment to work also have the lowest levels of job security, as expected. The possibility of reconciling work–life commitments is higher among self-employed, particularly those without employees, probably because of their higher control of their work schedule, which allows a better arrangement of work and family duties. On the contrary, employees without permanent contracts are those with the greatest difficulties in balancing work–life domains.

By sector of activity, the most exposed workers are those in transportation. They face the worst conditions for several of the psychosocial work environment indicators: they have to cope with quite high psychological demand, although with low support from colleagues or supervisors (most of them probably work alone driving trucks or coaches) and low rewarding aspects, such as pay, career advancement or job security. Another sector with worryingly poor psychosocial work environment conditions is construction, with highly demanding jobs without correspondingly high discretion, autonomy, satisfaction or reward.

# Determinants of well-being 3

Several surveys found that the following factors are those that people mostly mention as determinants of well-being: material conditions and consumption, a fulfilling family life such as being married and having children (Conceição and Bandura, 2008; Cantril, 1965; Frey and Stutzer, 2002). Personal and family health is also a significant determinant, as well as work-related issues (Eurofound, 2007b; Poggi et al, 2011). Although international and domestic issues are rarely mentioned, studies have found that these have a significant influence on people's happiness, too (Frey and Stutzer, 2002). Van Hoorn (2007) suggests classifying this wide variety of determinants in six broad categories: personality; contextual and situational; demographic; institutional; environmental; economic factors.

Work is just one of these factors, but a pivotal one, since it not only provides an individual with an adequate income to fulfil material needs but also gives people a sense of identity, meaning and accomplishment. Indeed, people in employment report a significantly higher average level of life satisfaction than those who are unemployed (Clark, 2009). But having or not having a job is just a part of the story. The quality of work varies significantly among sectors and workforce groups. There are certain jobs (for instance, those which do not allow for personal development, or which are dangerous and unhealthy) whose detrimental effect on well-being is even higher than that of unemployment (Grün et al, 2008).

For this reason, the relationship between well-being and quality of work and employment is taken as a starting point, considering several indicators of quality. Then the analysis goes deeper into two aspects, which are of particular importance – income and job insecurity/employability.

## Quality of work and well-being

The importance of quality of work on individual well-being is clear, but there is not a single definition of it. The perspective adopted here takes an objective approach stemming from the seminal theoretical framework provided by Maslow's need-satisfaction model (1954). The main tenet is that people have basic needs they seek to fulfil through work, which include the need for survival (pay, security), social needs (need for interpersonal interaction, membership, friendship), individual needs (need for self-esteem and autonomy), and self-actualisation needs (Beham et al, 2006). In this view, job quality is constituted by generic elements that meet universal needs. The extent of those needs will differ according to a person's circumstances, including the social and physical environment in which a person lives, but their universality is why many authors, among which are Green (2006 and 2011), Muñoz de Bustillo and Fernandez (2005) and others, suggest that an objective concept of work and employment quality should be investigated.

Eurofound (2002) provides a useful framework for this purpose, which conceives quality of work as a multidimensional construct that includes four key areas: ensuring career and job security; maintaining and promoting the health and well-being of workers; competence development; combining work and non-working life. Green (2006) develops the idea that a 'good job' is one that allows workers to achieve well-being and to achieve a range of personal goals, offering a high capability to do and be things that they value. The following section considers the four dimensions listed above. Eurofound's report *Trends in job quality in Europe* (2012b) describes the methodology for building these indicators and provides results. The report looks at indexes at the level of the job, distinguishes extrinsic job features, such as 'earnings' and 'prospects', as well as a larger set of intrinsic features of the work itself, 'intrinsic job quality' – which is further divided into 'a safe physical environment', 'a secure and trusting social environment', 'skills and autonomy' as well as 'work intensity which constitutes a negative feature towards job quality' – and 'working time quality':

- 'Earnings' refer to the level of monetary rewards associated with the job. The target indicator is monthly earnings.
- 'Job prospects' refer to those aspects that contribute to a person's material and psychological needs for employment continuity and self-esteem. The key figures composing the index are the perception of job security, whether there are prospects of career advancement and the type of contract.

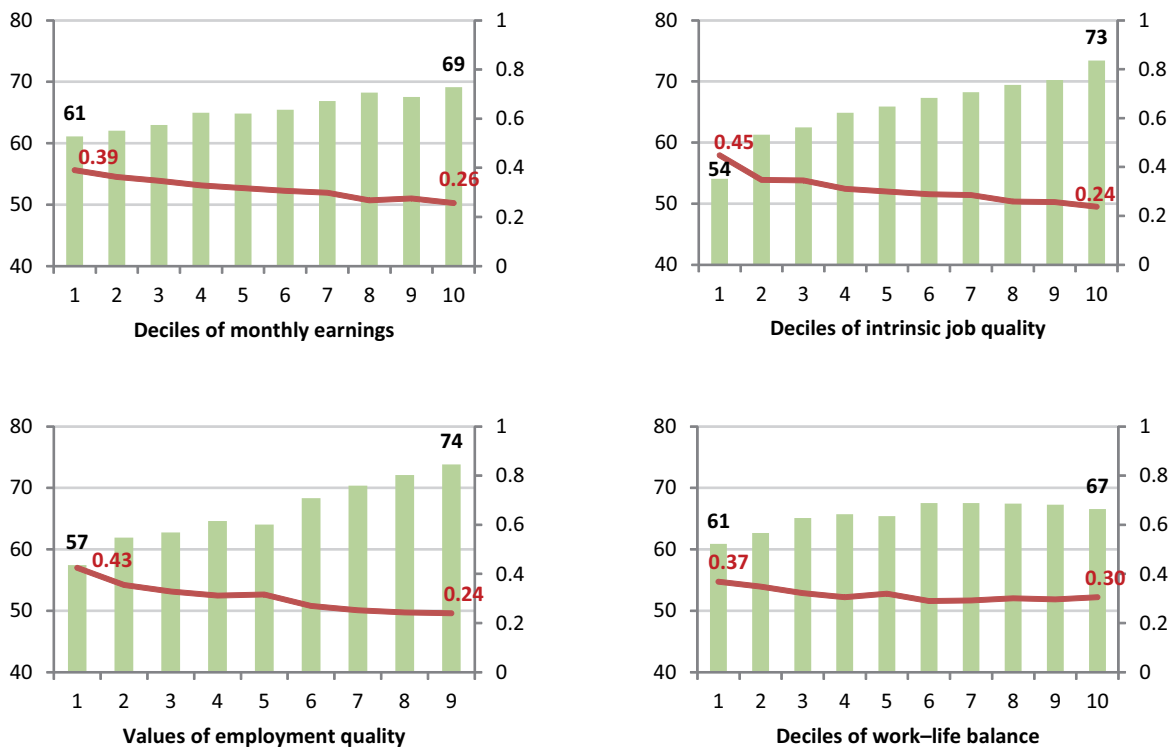
- ‘Intrinsic job quality’ refers to aspects of the work itself and of its environment. Here there are four core sets of features included: the quality of the work itself (skill, autonomy, organisational involvement), the social environment in which workers are situated (support from manager and colleagues, absence of abuses and positive climate), the security and quality of the physical environment (low risk exposure), and the intensity of work (tight deadlines, number of pressure sources, demand for emotional and value conflicts).
- ‘Working time quality’ measures the extent to which a job allows a better conciliation of work and family duties, taking into account number of hours worked, the flexibility of work arrangements and working schedule (night, weekend and shift work).

In Figure 21, the average level and variability of well-being are reported for different levels of the four quality indices. Three main facts can be highlighted. First, for all indicators there is a clear positive relationship between well-being and quality. This is expected as each index is composed of factors selected because they have been proved to be associated with health outcomes in prospective longitudinal studies.

Second, the aspects that are more effective in shaping workers’ well-being are the intrinsic job quality as well as employment quality, with a well-being gap between the highest and lowest quality level of 19 and 16 points respectively. It is worth noting that these aspects of quality are not monetary.

Finally, there is a negative relationship between quality and variability of well-being. As is the case for job satisfaction, variability tends to decrease when quality improves. This means that once very good working conditions are achieved individuals have consistent levels of well-being. It is in facing bad job quality conditions that differences in the individual and/or collective capacity to cope emerge. There are clearly many individuals who are capable of compensating their situation and people with worryingly low levels of well-being.

Figure 21: Average level and variability of well-being, by quality of work indicators



Note: WHO-5 variability (red lines) is measured by the coefficient of variation.  
 Source: EWCS 2010; Indices are based on Eurofound 2012b



The overall facts depicted here hold for different genders and age groups. However, some interesting specificities do emerge (see Table 6). For women, intrinsic job features are more relevant than employment quality in determining well-being, while for men the two dimensions present the same correlation with well-being. Interestingly, working time quality affects both genders' well-being in the same way. The variability of well-being at very low level of quality of work is quite similar between the two.

More pronounced differences emerge according to age groups. Job quality is more effective in shaping the well-being of older workers, since for them the correlation between well-being and quality of work is stronger for all the indicators. Furthermore, older workers show a higher variability in the well-being scores when quality of work is very bad. This is a policy-relevant result for the issue of 'managing an ageing workforce' to promote the participation of older workers and discouragement of early retirement.

Table 6: *Correlation between well-being and quality of work, and variability of well-being at very low levels of quality of work indicators, by gender and age*

	Correlation between well-being and job quality		Variability of well-being at very low levels of job quality	
	Men	Women	Men	Women
Monthly earnings	0.09	0.11	0.38	0.4
Intrinsic job quality	0.27	0.25	0.44	0.45
Employment quality	0.2	0.25	0.41	0.43
Work-life balance	0.1	0.1	0.37	0.37
	Under 50	Over 50	Under 50	Over 50
	Monthly earnings	0.1	0.14	0.38
Intrinsic job quality	0.24	0.29	0.44	0.48
Employment quality	0.22	0.24	0.42	0.44
Work-life balance	0.09	0.12	0.36	0.42

Source: *EWCS 2010*

## Income and happiness

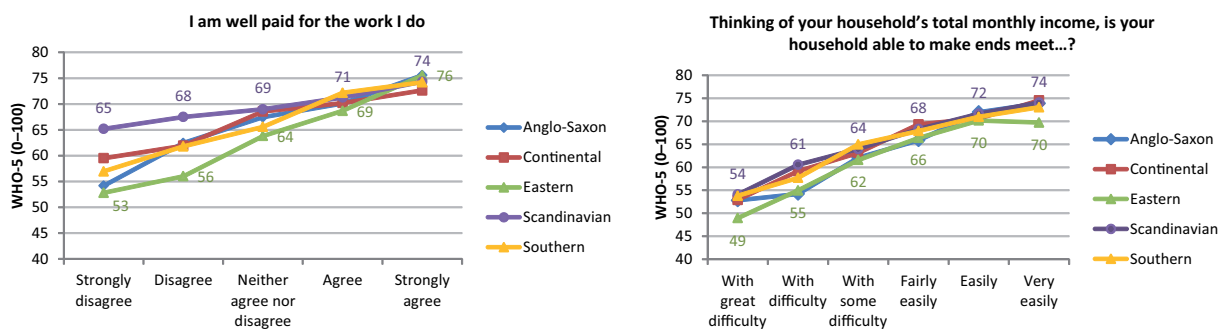
Although the job quality index on earnings shows a relatively weak association with well-being, the relationship deserves a closer look. Easterlin, in a seminal work, was the first to find some puzzling evidence, showing that over time happiness does not increase when a country's income increases (Easterlin, 1974). This is what has long been claimed as the happiness-income paradox, a result supported in a number of other studies (Easterlin, 1974, 2005; Easterlin et al, 2010; Myers, 1995). Actually, some recent works provide convincing evidence that self-reported measures of well-being such as happiness or life satisfaction do rise with income also in a longitudinal perspective (Stevenson and Wolfers, 2008; Diener and Biswas-Diener, 2002), but the relationship does not follow a linear shape, the effect dampening down with income.

The point is that the relation between monetary income, satisfaction of needs and well-being is not always clear-cut. Several theories have been proposed to disentangle this relation, such as the diminishing marginal utility of money (Veenhoven, 2006; Frey and Stutzer, 2002) and the 'values shift' theory (Inglehart, 1990). Another set of processes that work as confounding factors between individuals' real experience and its evaluation are the so-called 'relative comparison', 'expectation' and 'adaption' processes, as summarised by Michalos in his 'multiple discrepancy theory' of satisfaction (1985).

The richness of the fifth EWCS data makes it possible to shed some light on the issue, since it provides both a subjective and objective view of the respondents' income. Figure 22 correlates well-being and two additional income measures, the first of which is the difficulty of the workers' family to make ends meet. This is an objective measure of income which, compared to monthly earnings, proxies in a more direct way the role of work for satisfying basic needs. The gradient is still the expected one: the greater the difficulties, the lower the well-being. However, it is interesting to note that the gap in well-being between the lowest and the highest groups is far more pronounced compared to the gap associated with monetary earnings. Second, there is almost no heterogeneity among the different country groupings considered in Figure 22: the difficulties in making ends meet smooth well-being differences among European workers.

The other measure considered in Figure 22 ('I am well paid for the work I do') is subjective. Again, the gradient is the expected one: workers with higher income satisfaction present higher levels of emotional well-being. The interesting point is that country differences are more apparent: the role of (satisfaction about) income is stronger in the less affluent countries of the sample, such as eastern European countries (where the correlation is  $r=0.29$ ), while Scandinavian countries show the lowest association ( $r=0.15$ ). Scandinavian countries are at the same time among the richest in the sample and the ones with lower inequality in income distribution. The lower correlation in these countries looks coherent with the social comparison and the 'values shift' theories.

Figure 22: Average well-being, by material living conditions and country groups (%)



Note: Values shown only for eastern European and Scandinavian countries.  
Source: EWCS 2010

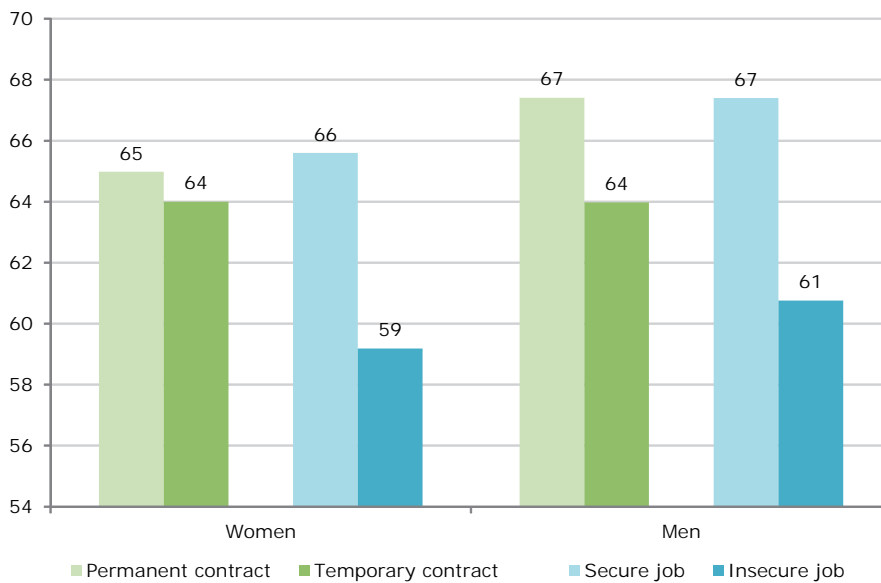
### Effect of the risk of unemployment on individual well-being

A strong negative relationship between individual well-being and unemployment has been a pillar result of the empirical research: not having a job when you want one reduces well-being more than any other single factor, including important negative ones such as divorce and separation (Clark and Oswald, 1994).

Although the effect of unemployment on well-being is not directly observable in the EWCS, the effect of the risk of unemployment may be studied. There is evidence that this effect is of considerable size, too (Di Tella et al, 2001). This point has to a certain extent already been touched on in previous analyses on job quality – it is a part of the relationship between the 'prospects' indicator and well-being – but it deserves a closer look.

When looking separately at the average well-being associated with having a permanent contract (versus a temporary one) and of perceived job security (versus job insecurity), there is a greater role for job insecurity compared to the type of contract (Figure 23)<sup>9</sup>, particularly for women. Nonetheless, for both genders the fear of losing a job is associated with a remarkable drop in average well-being.

Figure 23: Average well-being, by contract and job security, stratified by gender (%)



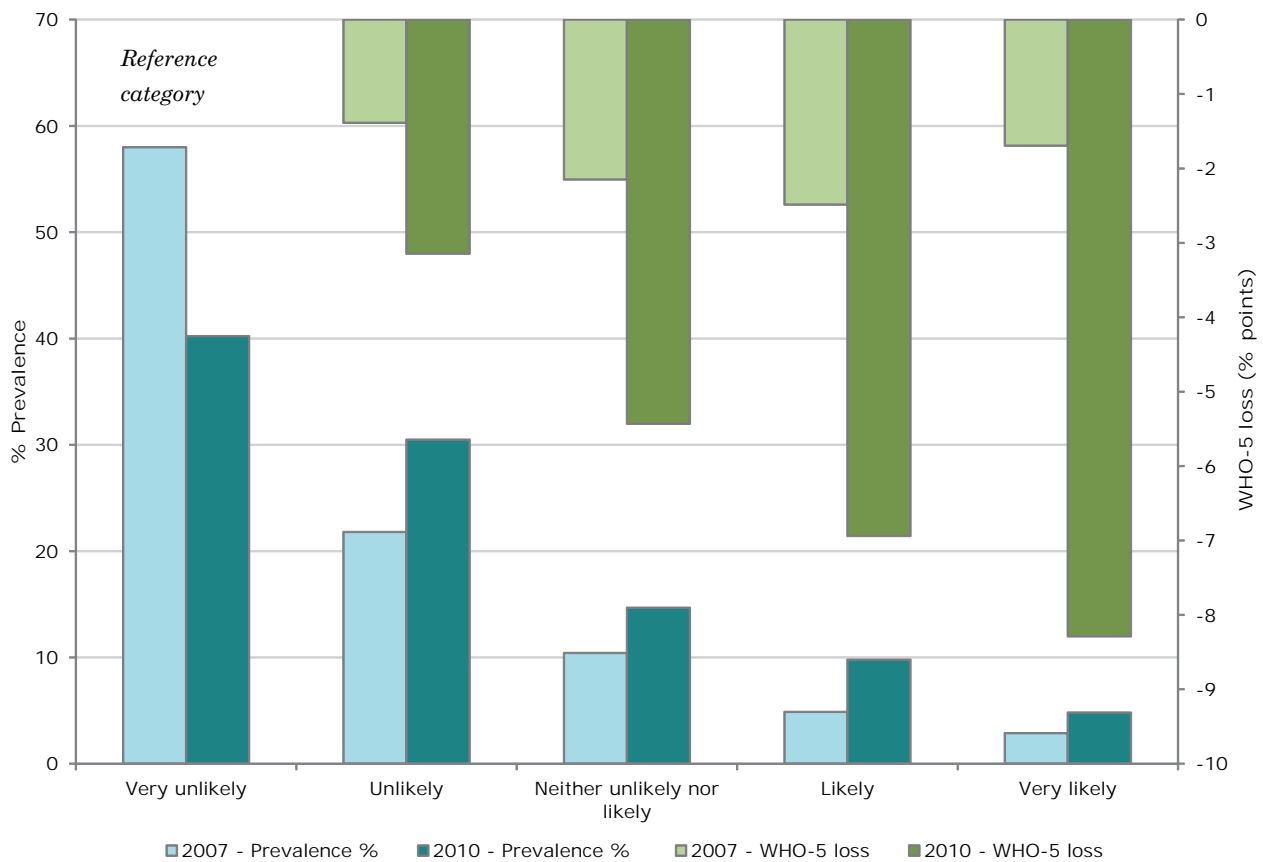
Source: EWCS 2010

It is important however to contextualise the relationship, both when compared to the macroeconomic conditions and with the employability of the worker: both may change dramatically the emotional impact of the risk of losing the job.

Figure 24 deals with the first point. As both the EQLS and EWCS include the WHO-5 index and the same unemployment risk questions, it is possible to compare the drop in well-being associated with perceived job insecurity in very different macroeconomic conditions: in 2007 (EQLS), months before the world economy was hit by the financial crisis, and in 2010 (EWCS), beyond its lowest point but still distant from a full recovery.

<sup>9</sup> Job security is based on Q77A: ‘How much do you agree or disagree with the following statement: I might lose my job in the next 6 months’, with five possible answers: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree. Those defined as ‘job insecure’ were those answering strongly agree or agree, and those defined as ‘job secure’ were those answering neither agree nor disagree, disagree or strongly disagree.

Figure 24: Prevalence of perceived job insecurity (bottom) and its effect on workers' well-being (top), 2007 and 2010



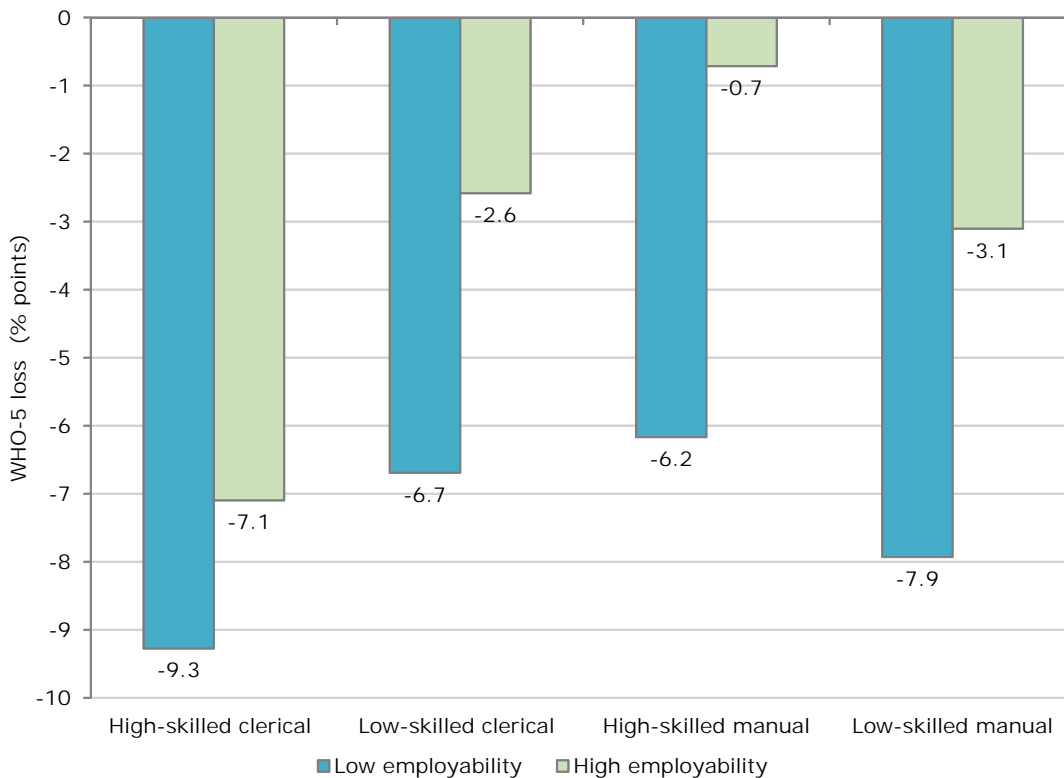
Note: EQLS 2007 data refer exclusively to workers. The well-being loss is calculated with reference to those who answered 'very unlikely'.  
Sources: EWCS 2010, EQLS 2007

As expected, the prevalence of job insecurity has increased since 2007: 'very unlikely' answers have fallen sharply and 'likely' and 'very likely' have increased (bottom-left axis). At the same time, the negative effect of unemployment risk on well-being has increased severely (upper-right axis). Taking those answering 'very unlikely' as a term of reference, the well-being loss due to job insecurity in 2010 has increased by more than three times compared to 2007 for workers who say that they are likely or very likely to lose their job. It is worth noting that there is a significant gradient in the 2010 figures. The well-being loss was quite similar among different workers' groups in 2007, whereas in 2010 the more insecure a worker was, the higher was the loss of well-being.

The second key aspect to consider is that of employability, as in the ability of individuals to find and sustain employment. Employability clearly modifies the impact that job insecurity may have on well-being: less employable people will be more prone to distress and more hurt by the fear of being unemployed. It has been estimated that an increase in employability from zero to 100% reduces the detrimental effect of job insecurity on well-being by more than half (Green, 2011).

Here employability is considered using the following EWCS question: ‘If I were to lose or quit my current job, it would be easy for me to find a job at a similar salary’.<sup>10</sup> As shown in Figure 25, insecure workers have considerable losses in well-being compared to secure workers, with the high-skilled clerical workers suffering the biggest fall in well-being (9.3 points), and the high-skilled manual workers the least (6.2 points). It is interesting to note that the role of employability in reducing the detrimental effect of job insecurity is quite different across occupations. The results show that high-skilled clerical workers suffer a loss that is not much modified by their employability level. In contrast, high-skilled manual workers are almost untouched by the fear of losing their current job when employability is high.

Figure 25: Effect of perceived job insecurity on well-being, by employability and occupational groups



Note: Employability difference in well-being loss is not statistically significant for high-skilled clerical workers.  
 Source: EWCS 2010

<sup>10</sup> The question presents five possible answers going from ‘strongly disagree’ to ‘strongly agree’. ‘High employability’ refers to those who answer ‘agree or strongly agree’ and ‘low employability’ refers to those who answer ‘disagree or strongly disagree’.



# Work environment and health 4

This chapter explores the association between the health of workers and the psychosocial work environment. Research has proven that stress at work is associated with a number of physical and psychological negative effects at the individual level, such as cardiovascular diseases, musculoskeletal disorders, immunological problems and mental health problems (anxiety and depression disorders).

As for the health outcomes, the focus is first on the self-assessment of general health conditions. In particular, the study assesses those individuals reporting ‘bad’ or ‘very bad’ health, and those individuals mentioning more than two health problems. The analysis then focuses deeper on specific aspects of physical and mental health arising as musculoskeletal symptoms or as anxiety and depression disorders. Finally, there is an analysis of the prevalence and determinants of work accidents.

The aim here is to identify whether, once controlling for the job and individual characteristics, there are specific predictors for each health and safety outcome among the many domains of the psychosocial work environment, as implemented along the domains proposed in Chapter 2. Also, a specific focus on country and industry effects will be conducted.

The first section discusses the main determinants of health used in the analysis. The second describes the health and safety outcomes: general health, musculoskeletal symptoms, anxiety and depression disorders, and work accidents. Then the predictors of general health are presented that can be singled out among psychosocial work environment domains as well as among individual and job characteristics, while the subsequent paragraphs do the same, focusing in turn on musculoskeletal symptoms, anxiety and depression disorders, as well as work accidents.

The main results of the analyses are presented in various tables and figures; additional results, which are presented and commented on only in the text, are available upon request.

## Determinants of health and safety at the workplace

Key determinants of health and safety at the workplace include:

- individual characteristics (age and gender), as they are naturally linked to health;
- human capital endowment (years of education, experience and tenure, training spells) measuring the level of general as well as job-specific knowledge the worker has;
- general job characteristics (industry, firm size, job contract, occupation) as catch-all features of working conditions.<sup>11</sup>

Crucially, in addition to these determinants, the EWCS makes it possible to observe and analyse the impact of factors relating to work organisation, as well as of the psychosocial work environment domains. The psychosocial work environment domains are defined according to how they were discussed in Chapter 2, while factors relating to work organisation are defined as follows:

- Hours of work: number of hours; unsociable working hours (such as during the night, evenings, on Sundays); having to face hours variability.<sup>12</sup>

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<sup>11</sup> Earnings are not included because of the numerous non-responses, to avoid losing statistical power as non-responses would be dropped from the analysis and to avoid a selection bias in the results. Furthermore, it was possible to include many and detailed job features so that they can capture the effect of earnings as well.

<sup>12</sup> Q37 A to E, the last reversed, grouped in one factor.

- Pace of work: pace of work determines whether pace of work is dependent on other factors<sup>13</sup>; presence of frequent and disruptive interruptions; piece-rate pay.
- Physical factors: working outside; environmental hazards (such as exposure to chemicals, cold<sup>14</sup>); posture-related hazards (such as working in awkward postures, lifting, standing<sup>15</sup>).
- Specific features: need to travel for work (work at clients', patients', customers' premises, or in a car); work with clients; having to cope with the introduction of new processes or restructurings.
- Other challenges: second job, whether occasional work or not.

The aim of this exercise is to look inside the 'black box' of the general definition of a job (occupation, contract) to determine the most significant associations between specific features of the content of the job and health/safety outcomes. The same set of determinants were the focus for all the outcomes in the analysis, to be able to compare their different impact on general as well as physical and mental health, and on safety.

### Statistical approach

A multivariate analysis is conducted, in order to measure the change in the prevalence of the health outcome when changing the value of one of its determinants and holding the value of the other determinants as constant (the so-called 'marginal effects').

This implies that 'residual' country (or industry) effects can be read as catching different levels of prevalence of the health outcomes as if all individual and job characteristics were the same in all countries (or industries); hence they are labelled 'residual'; in other words, due to historical or institutional differences or to any other relevant element not included in the multivariate models used here.

All analyses have been performed weighting the data according to the sample fraction in each country.

## Health and safety outcomes

'Bad health' and '2+ health problems' were described in Chapter 1, where it emerged that bad health is mentioned by 2.5% of European workers, while on average 50% of female and 45% of male European workers mention more than two health problems. Here, the analysis also takes into account individuals mentioning 'backache', 'muscular pains in shoulders, neck and/or upper limbs' and 'muscular pains in lower limbs (hips, legs, knees, feet, etc.)'. Because of their high correlation, the three outcomes are assessed jointly, generating a single indicator signalling the existence of at least one of the three problems and with a prevalence in the population of around 60%.<sup>16</sup>

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<sup>13</sup> The number of external inputs – all Q46 modalities – inflated on a 0–100 scale.

<sup>14</sup> All modalities recorded by Q23, grouped in one factor. All factors vary on a 0–100 scale.

<sup>15</sup> Q24 A to D modalities grouped in one factor.

<sup>16</sup> The impact of the abovementioned determinants is remarkably similar on the three outcomes when analysed separately, so that it is safe to analyse them jointly.



Individuals are then considered who mention ‘depression or anxiety’, with a prevalence among European workers of about 9.5%. The two outcomes, jointly asked in the EWCS, have been chosen as best indicators of mental health, as they have a clear pathological dimension and often prompt medical intervention, while fatigue or insomnia can be mentioned more freely and can be biased by self-perception of own general well-being.

Finally, the analysis looks at days of absence from work due to work-related accidents. In the EWCS, the absence is self-reported, and includes short absence, contrary to most national registers. The average prevalence of work accidents by length of absence is shown in Table 7.

Table 7: *Prevalence of work accidents by length of absence*

Days off	White-collar workers (%)	Blue-collar workers (%)	All (%)
None	97.15	93.78	95.96
1+	2.85	6.22	4.04
1–3	1.07	1.93	1.37
4+	1.78	4.29	2.67

Source: *EWCS 2010*

As expected, workers mentioning more than two health problems or reporting bad health are much more likely to experience both musculoskeletal symptoms and depression or anxiety disorders, or to have experienced recently (during the year of the interview) an accident at work (Table 8). Results point to an indissoluble connection between physical and mental health.

Table 8: *Average prevalence of musculoskeletal symptoms, depression or anxiety disorders and work accidents (%)*

Days off	Musculoskeletal symptoms	Depression or anxiety	Work accidents
<b>3+ health problems</b>			
No	30.5	1.4	2.4
Yes	93.0	17.7	5.9
<b>Bad health</b>			
No	59.5	8.5	3.9
Yes	89.1	34.8	8.5
<b>All workers</b>	<b>60.2</b>	<b>9.2</b>	<b>4.0</b>

Source: *EWCS 2010*

## General health

This section analyses the impact of each determinant as listed in the previous paragraph on both ‘3+ health problems’ and ‘bad health’.

The findings reveal that the prevalence of ‘3+ health problems’ is higher among women. In Chapter 1 the same feature was observed, on average, but more can be learned here. In fact, the analysis now looks at ‘marginal effects’ (see box on ‘Statistical approach’): the prevalence of ‘3+ health problems’ is higher among women once they are considered as if they were holding the same kind of job men hold; in other words, their prevalence is higher not because they hold jobs of a specific kind (the so-called ‘composition effect’), but because of some specific feature that is unobservable.

Ageing, as expected, is associated with an increase in the prevalence of general health problems, again holding job characteristics as if they were constant across age groups. The following paragraphs show that gender and age have the same impact also on musculoskeletal symptoms, on anxiety and depression disorders, and on work accidents.

Human capital endowment has no significant link with the outcomes. This means that education, tenure and training sort workers among jobs (putting high human capital workers in healthier jobs), but then human capital on its own has no impact on general health. The same is true for the type of contract, with the exception of self-employed and informal workers, who experience a higher prevalence of 'bad health' and '3+ health problems' respectively. Workers employed in elementary occupations face worse general health conditions compared to all other occupational groups.

Observable job features usually do not go beyond those discussed up to this point. The EWCS makes it possible to deepen the analysis much further. It emerges that it is not the number of worked hours as such that hampers general health, but it is working during unsociable hours or facing variable working hours, as well as facing disruptive interruptions, that does so. Other features of work organisation hamper one or both aspects of general health of workers: having to travel, work with clients, face restructurings or environmental hazards. The next paragraphs, focusing on specific health outcomes, will explore whether these specific job features are more disruptive for physical or mental health; or whether they are more disruptive for manual or non-manual workers.

Crucially, it appears that the psychosocial work environment has a significant impact on the general health of workers. The prevalence of '3+ health problems' increases with high demands at work, and job insecurity, but also with high decision authority. It decreases with skill discretion, good interpersonal relations and a good work-life balance. The same associations appear in association with 'bad health', even though skill discretion and decision authority bear no significant impact on it. Several of these associations will appear again alongside physical and mental health.

It is worth noting that holding constant individual and job features, residual country effects<sup>17</sup> seem to group countries in 'low prevalence', 'average prevalence' and 'high prevalence' of general health problems (Figure 26), although bad health seems to be more evenly distributed across countries.<sup>18</sup> On the contrary, again holding constant individual and job features, residual industry effects<sup>19</sup> are not significantly different from each other.<sup>20</sup> This last result is new and important.

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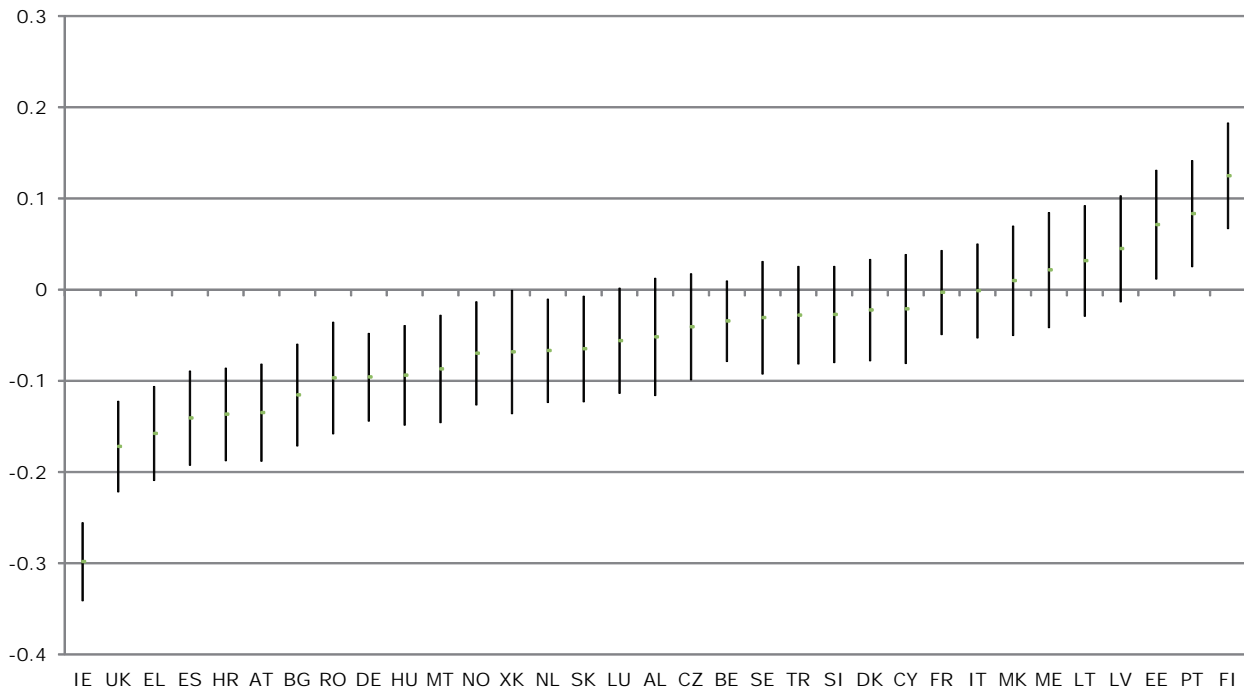
<sup>17</sup> In total, 33 country dummies are included in the model. Poland is the reference country (excluded category).

<sup>18</sup> Not reported.

<sup>19</sup> A total of 20 industry dummies are included in the model. Manufacturing is the reference industry (excluded category).

<sup>20</sup> Confidence intervals are overlapping.

Figure 26: Residual country effects from multivariate analysis on reporting three or more health problems



Note: Vertical bars refer to confidence intervals at 95%. The Y axis shows the percentage-point differences in prevalence (expressed in decimals) with respect to the reference country Poland.  
 Source: *EWCS 2010*

### Physical health outcomes: backache and muscular pains

To analyse the impact of each determinant on this physical health dimension (backache and muscular pains) all workers were analysed together, then separated into white-collar and blue-collar categories to acknowledge the different nature of manual and non-manual tasks; they were further separated into two groups: those whose WHO-5 mental health index is above the median and those whose WHO-5 index is below the median.<sup>21</sup> The last split is to control for the existence of reverse causality between low well-being and the propensity to ‘complain about everything’. This is relevant, as backache or muscular pains are quite generic problems, not subject to a specific diagnosis, so they can be mentioned freely according to individual propensity to voice physical health issues. Table 9 shows that the average prevalence of reported increases in backache and muscular pains when individual well-being is lower, confirming the importance of controlling for this possible source of reverse causality. Hence the results to be discussed as more reliable will be those arising from the models that separate manual and non-manual workers and exclude low WHO-5 individuals.

Individual characteristics are relevant: women mention backache or muscular pains more often; age increases the likelihood of facing backache or muscular problems, as expected. Human capital endowment, as measured by education, is associated with a lower prevalence of backache or muscular pains among white-collar workers only.<sup>22</sup>

<sup>21</sup> WHO-5 value at the European level computed by occupation: 68 for blue-collar workers and 72 for white-collar workers.

<sup>22</sup> Tenure increases backache and muscular pains, but only among low well-being blue-collar workers, a result at risk of reverse causality, that is that it might be ascribed to a general fatigue of individuals having had to do – maybe unwillingly – a manual job for a long time.

The formal definition of the job (firm size, contract, public/private legal setup) and even occupation – once separating blue-collar and white-collar workers – has no significant impact on the prevalence of backache or muscular pains. Also, no significant differences emerge among industries, with very few exceptions.<sup>23</sup> This is a novel and important finding, and it shows that when controlling for the actual content of the job, its formal definition becomes non-informative. This is rarely done, since in most datasets only industry, firm size, contract and occupation are observable. This calls for the use of rich datasets like the EWCS, and a shift in policy focus to the actual content of the job.

Looking into the requirements of the ‘job’ specifically, the following emerges. Among physical factors, environmental hazards increase backache or muscular pains significantly for all workers. Table 9 shows that their effect on backache or muscular pains is stronger at higher values of well-being, and more so for white-collar workers than for blue-collar workers. The size of the impact is not small: for instance, given an average marginal effect in the population of 0.4 percentage points, an increase in the environmental hazards from 0 to a score of 50 (half of its range) leads to an increase of 20% in the prevalence of backache or muscular pains, which is one third of the average prevalence (59.9%).

Work organisation proves important for the physical health of individuals. Piece-rate pay increases the prevalence of backache or muscular pains among blue-collar workers (the only group facing the possibility of this pay setting) and suggests that this kind of production incentive might put too much strain on manual workers, and that workers might be persuaded to trade health for a higher pay. No other aspects of work organisation change the prevalence of backache or muscular pains among blue-collar workers. White-collar workers, nevertheless, report an increase in the prevalence of backache or muscular pains with the introduction of new processes or restructurings in the workplace, maybe because the organisation and implementation of these innovations is a source of stress for them. Working with clients, also potentially stressful, increases their prevalence of backache or muscular pains, while having to travel for work decreases it.

Psychosocial work environment domains are decisive in explaining the prevalence of backache or muscular pains, confirming the double nature of these physical health outcomes, both physical and psychological. Furthermore, controlling for well-being is crucial in disentangling reverse and direct causality of each determinant, but chiefly of psychosocial determinants. It is estimated that ‘psychological demand’ increases backache or muscular pains (coherently with Linton, 2001; Ariens et al, 2001) for white-collar workers. Coherently with this first result, ‘skill discretion’ is protective, while – at odds with it – ‘decision authority’ appears to increase backache or muscular pains. Decision authority increased the prevalence of ‘3+ health problems’ as well, and it appears that it also increases the prevalence of depression and anxiety disorders. This unexpected effect might arise because decision authority can be associated with stressful heavier responsibility. In fact, the assumption of linearity of the effect of demand and control on health in Karasek’s model has been criticised, based on the considerations that too much decision authority may be as stressful as having too little of it, and that decision authority may have a U-shaped relationship with health (Warr, 1994). In the estimates applied here, a linear relationship is imposed and hence only one side of the U-shape can emerge.

A strong and consistent result is related to ‘rewards’ that decrease backache or muscular pains for all workers. The effect increases with skill and well-being and it is not negligible, its size being about two-thirds of the effect of environmental hazards (Table 9). ‘Cognitive demand’ (and ‘work with clients’), which is a potential stressor, increase backache or muscular pains among white-collar workers (as in Da Costa and Vieira, 2010). Finally, a good work–life balance

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<sup>23</sup> Exceptions are finance at the low extreme and ICT at the high one.

decreases backache or muscular pains among blue-collar workers, while job insecurity increases it among white-collar workers.<sup>24</sup> It is worth noting that the actual work contract (temporary or no contract at all) had no impact on backache or muscular pains, while the subjective perception of job insecurity did have. This is very important, as it denies that physical health is not associated with job security.

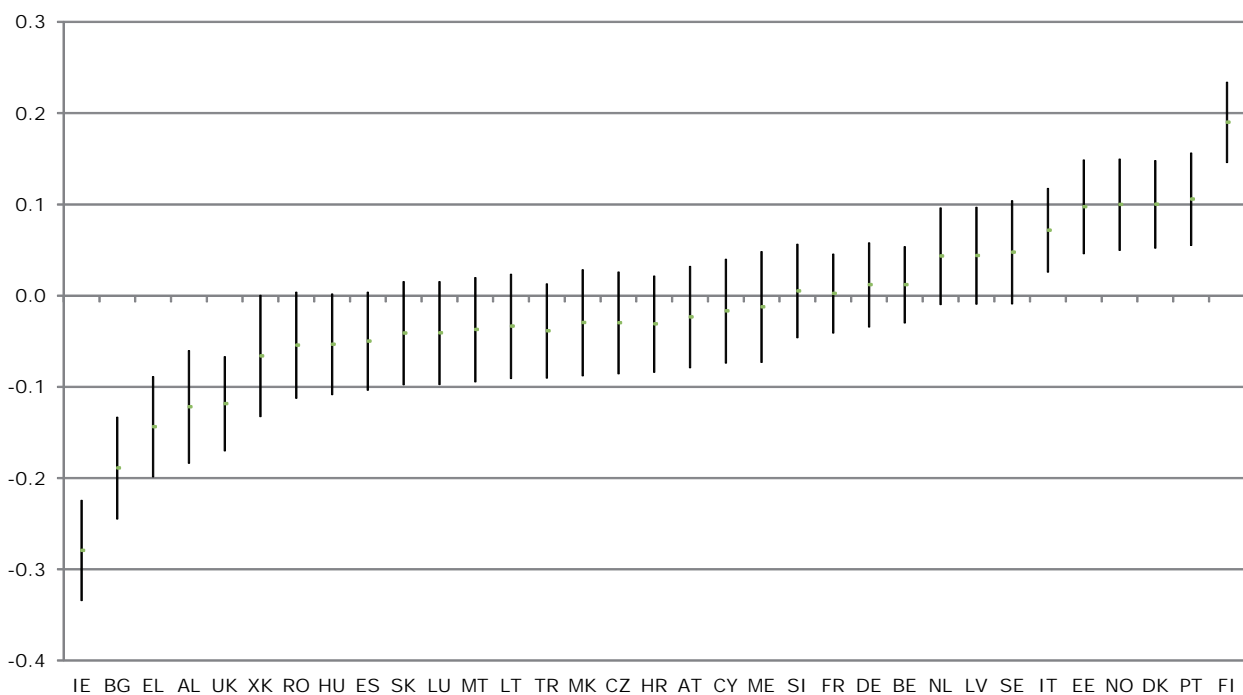
Table 9: Prevalence and marginal effects of selected determinants of musculoskeletal problems

	All	Blue-collar Low WHO-5	Blue-collar High WHO-5	White-collar Low WHO-5	White-collar High WHO-5
<b>Average prevalence (%)</b>					
	59.9	76.5	58.2	63.6	45.3
<b>Marginal effects (percentage points)</b>					
<b>Environmental hazards</b>	0.40	0.29	0.40	0.36	0.47
<b>Decision authority</b>	0.09	n.s.	0.13	0.09	0.08
<b>Rewards</b>	-0.27	-0.19	-0.27	-0.23	-0.25

Source: EWCS 2010

Lastly, once controlling for all the above determinants, the residual country effects are remarkably similar. As Figure 27 shows there is just a small group of countries showing ‘high backache or muscular pains’ (Nordic countries, Italy and Portugal) and a small group showing ‘low backache or muscular pains’ (Anglo-Saxon and some Balkan countries). This result reinforces the conclusion that it is the actual job content that determines physical health, more than its formal setup or even the institutional environment, as no institutional/cultural/political regularity seems to emerge in the ordering of countries in Figure 27.

Figure 27: Residual country effects from multivariate analysis on reporting musculoskeletal problems



Note: Vertical bars refer to confidence intervals at 95%. The Y axis shows the percentage-point differences in prevalence (expressed in decimals) with respect to the reference country Poland.  
Source: EWCS 2010

<sup>24</sup> The other psychological determinants have no impact or a significant impact only among low well-being workers, so the reverse causality effect cannot be excluded and this weakens the results.

## Mental health outcomes: depression or anxiety

It is well known in the literature that depression and anxiety have a gender dimension (Kuehner, 2003; Piccinelli and Wilkinson, 2000; Pigott, 1999), as confirmed in Table 10, where average prevalence by gender and occupation is reported. Hence in the analysis – after considering all workers together<sup>25</sup> – they are then separated by gender. Workers are further separated by occupation, to fully recognise the different nature of manual and non-manual tasks; as Table 10 shows, gender differences in the prevalence of depression and anxiety are huge among manual workers (12.9% compared to 6.7%), while they are much narrower among non-manual workers (10.7% compared to 9.3%).<sup>26</sup>

Once the sample is split by gender and occupation, several regularities emerge. First, also in the case of mental health, the formal definitions of the job (firm size, occupation, contract and so forth) have no significant impact on the prevalence of depression and anxiety; even among industries no significant differences emerge. This confirms the novel and important finding discussed in case of physical health: once the analysis can control for the actual content of the job, its formal definition becomes non-informative.

The only exception is the work contract of white-collar workers, which is associated with a higher prevalence of depression and anxiety when it is not a dependent-work contract, when it is again confirmed that those not working inside a firm (but as self-employed or without a contract altogether) face worse health conditions. In general, self-employed and workers with no contract face worse health conditions both in general terms and with reference to depression and anxiety. Nevertheless, they enjoy a lower prevalence of musculoskeletal symptoms and of work accidents, maybe due to their lower exposure to risk.

Different patterns emerge between manual and non-manual workers facing determinants related to the physical content of the job: working in the open air decreases the prevalence of depression and anxiety among blue-collar workers, while being exposed to environmental hazards increases it among white-collar workers. Among job organisation determinants able to influence both genders and both occupational classes, it emerges that the effect of introducing new processes or restructuring, as well as of facing disruptive interruptions, all increase depression and anxiety significantly. The ability of determining own pace of work reduces the prevalence of depression and anxiety among women.

Psychosocial work environment domains are crucial determinants of mental health, as expected. The effect of exposure to high demands on the risk of depression and anxiety appears particularly relevant, coherently with the findings of several studies (Rugulies et al, 2006; Paterniti et al, 2002; Wang, 2004; Shields, 2006; Kawakami et al, 1992; Virtanen et al, 2007; Bonde, 2008; Netterstrøm et al, 2008). A specific gender pattern emerges: women are more sensitive to low decision authority (manual workers) and high psychological demand (non-manual workers), both increasing depression and anxiety. Male workers are more sensitive to skill discretion (decreasing depression and anxiety), cognitive demand and work with clients.<sup>27</sup> All white-collar workers are vulnerable to the need to hide emotions and to the feeling of job insecurity (as in Stansfeld and Candy, 2006). A good work–life balance decreases depression and anxiety. Crucially, a

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<sup>25</sup> To single out the effect of gender, all workers have to be considered together. It is estimated that the prevalence of depression and anxiety among women is significantly higher than among men also holding individual and job characteristics as if they were the same across genders; this confirms what is known in the literature.

<sup>26</sup> The split by WHO-5 values (as applied when analysing backache and muscular pains) would be tautological, as depression and WHO-5 are strictly correlated by definition.

<sup>27</sup> This might explain the negative impact of unhealthy positions on depression and anxiety (that is, it decreases the prevalence of depression and anxiety) for white-collar women: it includes ‘standing’ and ‘lifting people’, both related to work with clients/patients; something that seems not depressing for women.

good social community at work and having rewards decreases depression and anxiety for all workers, and a higher emotional demand increases it for all.

Table 10 reports the marginal effects of these three crucial determinants; their impact is not small, as they are measured on a 1–100 scale. The reduction in the prevalence of depression and anxiety due to a good social community at work is quite homogeneous across genders and occupations: on average moving from a 0 score to a 50 score reduces the prevalence of depression and anxiety by more than six percentage points. Nonetheless, women are more sensitive to rewards and emotional demands compared to men: the marginal effects are almost double in size for women.

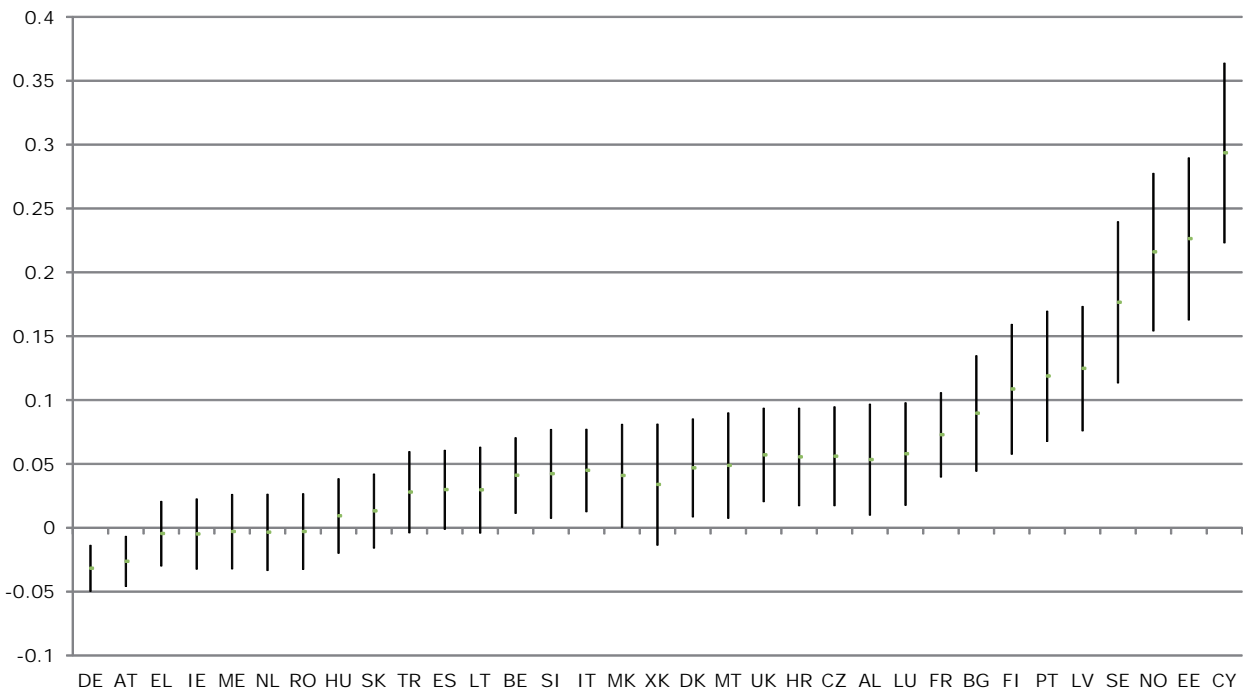
Finally, once conditioning for all the above determinants, the residual country effects are quite similar (Figure 28), although countries’ residual heterogeneity in mental health is higher compared to physical health.

Table 10: Prevalence and marginal effects of selected determinants of mental health problems

	All	Blue-collar women	Blue-collar men	White-collar women	White-collar men
<b>Average prevalence (%)</b>					
	9.4	12.9	6.7	10.8	9.4
<b>Marginal effects (percentage points)</b>					
<b>Social community at work</b>	-0.13	-0.12	-0.10	-0.13	-0.16
<b>Rewards</b>	-0.06	-0.07	-0.04	-0.08	-0.06
<b>Emotional demand</b>	0.06	0.08	0.03	0.07	0.05

Source: EWCS 2010

Figure 28: Residual country effects from multivariate analysis on reporting mental health problems



Note: Vertical bars refer to confidence intervals at 95%. The Y axis shows the percentage-point differences in prevalence (expressed in decimals) with respect to the reference country Poland.

Source: EWCS 2010

## Safety: work-related accidents

The analysis concludes by focusing on a specific risk for the health of individuals who work: the risk of experiencing a work accident. It can jeopardise physical health temporarily or permanently, it can be followed by depression or anxiety, and it can jeopardise employability.

As already mentioned, in the literature a cut-off at three days of absence due to a work accident is applied, so that minor accidents are excluded from any analysis. This is because most countries' legislation does not cover short absences and they are consequently not recorded. In the EWCS however, the absence is self-reported, and includes all absence lengths. This provides a unique chance to shed some light on minor accidents.

Three groups are defined: (i) no accident, no absence, (ii) mild accident, short absence of 1–3 days, (iii) serious accident, standard absence of 4 days or more. A general pattern emerges<sup>28</sup>: the prevalence of mild accidents is linked to determinants (individual and job characteristics) in the same way that serious accidents are, although with smaller effect size. Hence, pooling workers taking short leave to the group of workers taking no days off, that is those not experiencing even mild accidents, is misleading as they do not share the same reaction to determinants. Based on this evidence, it is possible to estimate the impact of the set of determinants on work accidents, considering all lengths of absences (one day or more), pooling mild and serious accidents, and analysing them against the group of workers experiencing no accidents at all.

In this analysis, after considering all workers together, they are separated by occupation due to the – obviously different – set of risks faced by manual and non-manual workers. Afterwards, workers are excluded whose tenure is shorter than one year, to control for risk exposure. Mainly temporary work agency and some temporary contract workers are excluded by this selection. Average prevalence of work accidents is displayed in Table 11. As expected, blue-collar workers face the highest risk of work accidents, while this experience is infrequent among white-collar workers. The exclusion of short-tenure workers increases the one-year prevalence of work accidents but only to a quite limited extent.

From the empirical analysis it appears that no individual characteristic has a significant and robust impact on the prevalence of work accidents, while the set of formal descriptors of the job retains a very limited link with work accidents: only firm size increases the prevalence of work accident, and only for white-collar workers; no occupation or industry effects emerge. Hence, even in the case of work accidents, controlling for the actual content of the job is sufficient to cancel the impact of the formal definition of the job itself.<sup>29</sup>

Among determinants linked to job organisation the following emerges. Central is the role of environmental hazards for all workers, as must be the case for work accidents (Table 11). The effect of exposure to environmental hazards doubles among manual workers compared to non-manual workers. Among manual workers, a change of the factor from 0 to 50 increases the prevalence of work accidents by almost five percentage points.

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<sup>28</sup> As part of the analysis, an econometric model (ordered probit) is applied that is more robust to misreporting and measurement errors in the outcome of interest with respect to a duration model.

<sup>29</sup> Not having a permanent contract decreases the prevalence of work accidents, but the result is weakened when excluding short-tenure workers; in fact the decrease remains significant only for workers with no contract and self-employees, for whom the very concept of tenure is blurred.



Blue-collar and white-collar workers face different patterns of determinants of work accidents among factors related to work organisation. Not working at night, evening and on Sundays decreases work accidents for white-collar workers. A second occasional job and, most interestingly, travelling for work both increase the prevalence of work accidents among blue-collar workers. This last finding is important, as accidents while travelling are seldom (or only recently) recorded in administrative data and hence this effect is difficult to observe. Table 11 shows that those travelling for work face a prevalence of work accidents 2.5 percentage points higher than the others.

Psychosocial work environment domains are crucial also in this context. The positive role of rewards emerges also in this case, decreasing the prevalence of work accidents among all groups of workers<sup>30</sup> by more than one percentage point if increased from a 0 to a 50 score (Table 11). A higher cognitive demand increases work accidents for non-manual workers while a higher decision authority is protective. A good work–life balance decreases work accidents among manual workers.

Table 11: *Prevalence and marginal effects of selected determinants of work accident absence (one day or more)*

	All	All blue-collar workers	Blue-collar workers, long tenure	All white-collar workers	White-collar workers, long tenure
<b>Average prevalence (%)</b>					
	4.3	7.3	7.6	2.9	3.0
<b>Marginal effects (percentage points)</b>					
<b>Environmental hazards</b>	0.064	0.091	0.097	0.052	0.052
<b>Travel (*)</b>	1.007	2.376	2.438	n.s.	n.s.
<b>Rewards</b>	-0.023	-0.034	n.s.	-0.017	-0.020

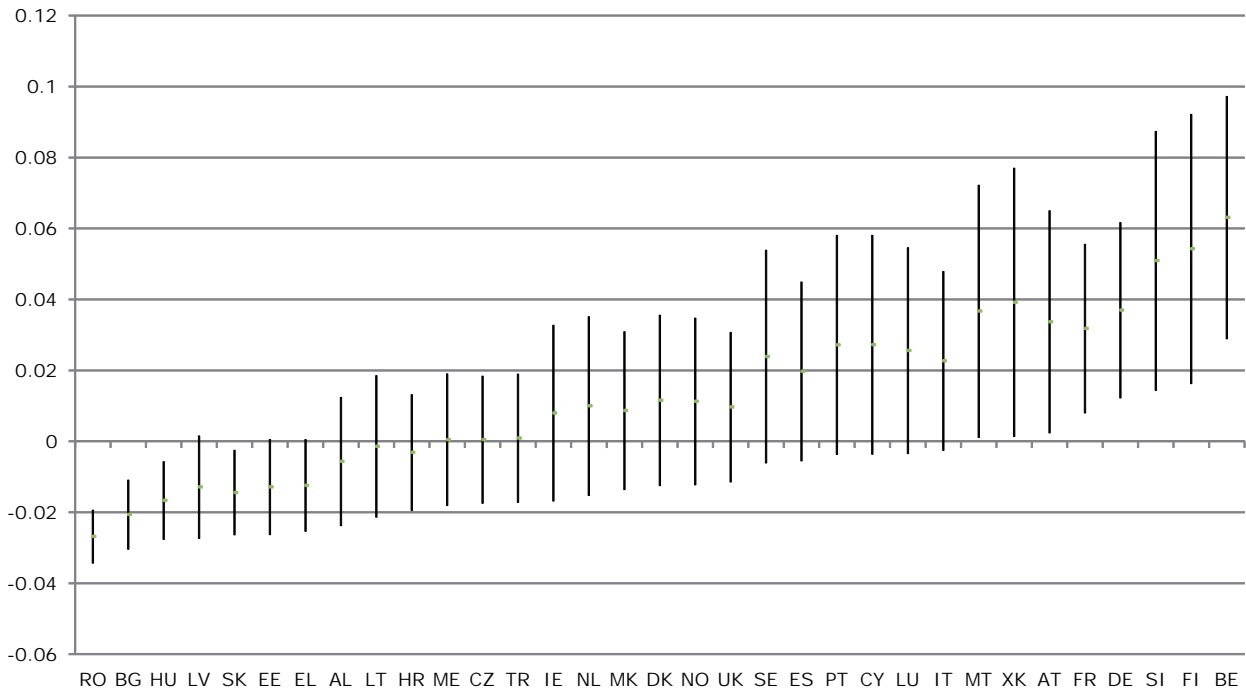
Note: (\*) dummy 0/1

Source: *EWCS 2010, data weighted*

Finally, after controlling for all the above determinants, residual country effects highlight a few significant differences: Romania, Bulgaria and Hungary enjoy a lower prevalence of work accidents, while France, Germany, Slovenia, Finland and Belgium face higher prevalence of work accidents (Figure 29).

<sup>30</sup> All but long tenure blue-collar workers, though.

Figure 29: Residual country effects from multivariate analysis on reporting an absence of one day or more because of a work accident



Note: Vertical bars refer to confidence intervals at 95%. The Y axis shows the percentage-point differences in prevalence (expressed in decimals) with respect to the reference country Poland.

Source: EWCS 2010

# Absenteeism and presenteeism 5

Sickness absence has high costs for society in terms of lost productivity and workers' compensation, and places a burden on most social security systems. This is why a growing body of literature is investigating which are the main health-related, economic and institutional drivers of it (OECD, 2010; Livanos and Zangelidis, 2010). The role played by working conditions is twofold. There is an indirect relationship, which passes through the impact they have on the physical and psychological health of individuals: the better the working conditions, the better the health of workers, the lower – all things being equal – the frequency of sick leave. Available literature however has shown that sickness absence is only partially determined by health (Marmot et al, 1995; Andrea et al, 2003; Farrel and Stam, 1988), whereas social, cultural and individual factors appear to play an important role.

The relationship that working conditions have with the health of workers has already been the subject of the previous chapter. Here, it is interesting to investigate whether they play an additional, direct role in the individual decision – given their health status – to take sick leave.

At the same time, illness or health conditions do not always lead to work absence: sickness presenteeism is the concept used 'to designate the phenomenon of people, despite complaints and ill health that should prompt rest and absence from work, still turning up at their jobs' (Aronsson et al, 2000). The importance of presenteeism relies primarily on the associated reduced productivity at work, whose costs have been estimated to exceed those attributable to both medical expenses and sickness absence (Hemp, 2004). Furthermore, the results of a few longitudinal studies suggest that presenteeism may increase the risk of developing health disorders (Kivimäki et al, 2005; Bergstrom et al, 2009).

The fifth EWCS gives the rather unique opportunity to contribute to the knowledge of the theme since it explicitly asks individuals whether they did work when they were sick during the previous 12 months.

This chapter first gives an overview on sickness absence/presence across Europe. Secondly, it attempts to disentangle the role of working conditions among the non-health factors that have a relation with both phenomena.

## Overview on absenteeism and presenteeism

To describe the diffusion of absenteeism and presenteeism, two measures are used: the average days that have been spent in the two statuses are counted<sup>31</sup>; the number of people who have been involved are counted (the so-called prevalence). To have a first overview as complete as possible, the prevalences of sickness absence and sickness presenteeism are measured as the proportion of subjects with at least one day of sickness absence and at least one day of sickness presenteeism during the previous 12 months. Later on, higher thresholds on the number of days will be considered.

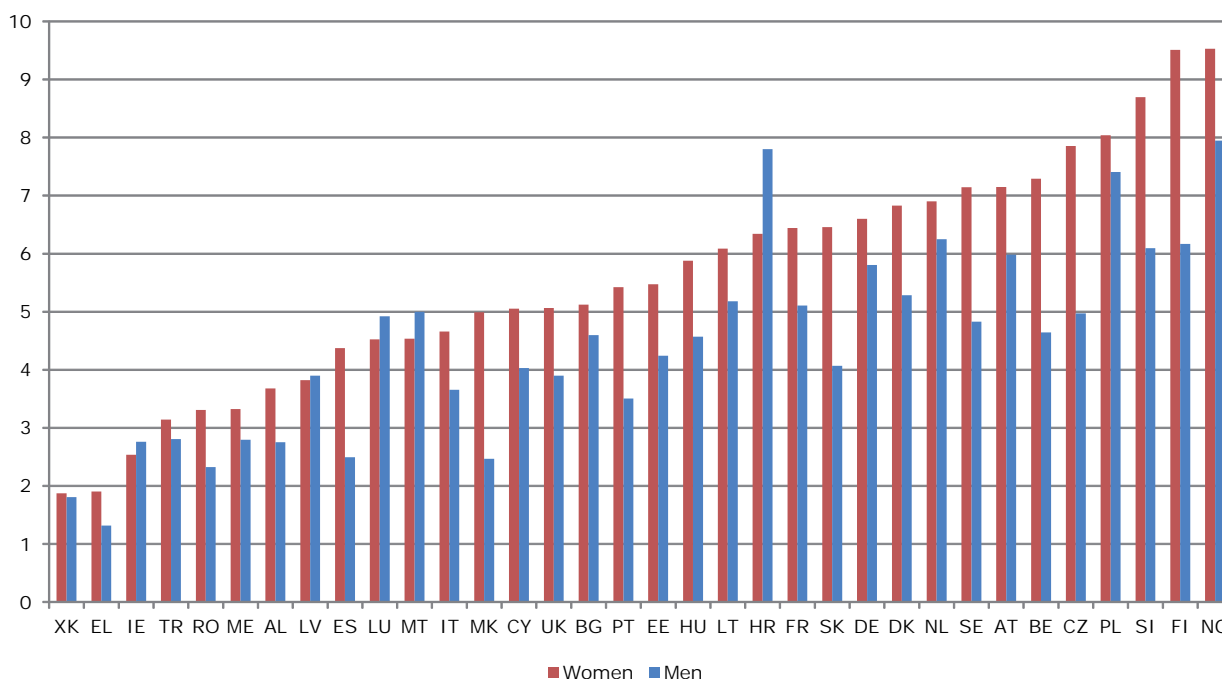
Most aggregate figures say that the prevalence of sickness absence in Europe is 40%, with an average number of five days of absence per year; both appear consistent with another Eurofound study on absence from work (Eurofound, 2010a).

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<sup>31</sup> Days of sickness absence in the previous 12 months were computed by subtracting from the days of absence for health problems (Q72) the days of absence due to work injuries (Q73), after recoding records with missing information to zero (no days absent because of injury) in the latter variable, given the high proportion of subjects with missing information (63.7%). Days of sickness presenteeism in the previous 12 months were obtained from answers to Q74b, after excluding subjects who reported not having been sick in the previous year (13.2%).

Both prevalence and average days indicate a higher risk among women: they report higher levels of absences in all countries with few exceptions (Figure 30). This regularity is present in most of the literature, which explains the difference with a number of biological and social reasons, such as pregnancy and the double burden posed by combining work and family duties. The same figure notes the higher levels of absence in the northern, compared to the southern, region of Europe, which again is consistent with previous findings (Bonato and Lusinyan, 2004).

Figure 30: Mean days of sickness absence, by country and gender



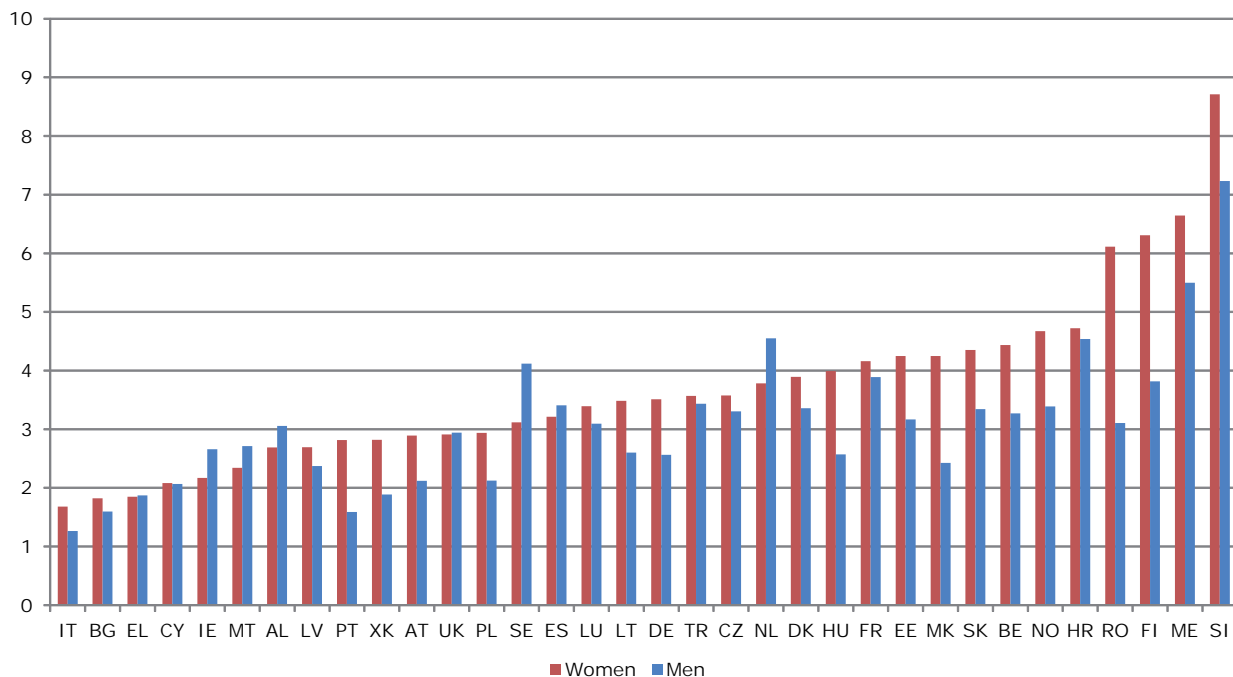
Source: EWCS 2010

Looking at occupational class, white-collar workers reported higher prevalence of sickness absence (above 40%) compared to blue-collar workers (around 35%). Mean days of absence were highest among low-skilled blue-collar workers and lowest among high-skilled white-collar workers (5.8 and 3.8 days respectively).

A factor that is often quoted as a driver of absenteeism is job insecurity: the higher the market pressure that individuals feel, the less they will tend to be absent from the workplace. This general tendency actually emerges from the data: prevalence of absence was highest among permanent employees (46%) and lowest among the self-employed (23%), while employees with a temporary or no contract showed intermediate values (38% and 31%, respectively).

Regarding presenteeism, in the sample 41% male and 45% female workers reported to have worked while ill at least one day in the previous 12 months. Considering both genders together, prevalence of presenteeism ranked highest in Montenegro, followed by Slovenia, Malta, Denmark and Sweden (all well above 50%), and lowest in Italy, Portugal, Poland and Bulgaria (23%–25%). Average days of presenteeism were 3.1 in the whole sample, again with a slightly higher figure for women (3.4 days) than men (2.9 days) (see Figure 31).

Figure 31: Mean days of presenteeism, by country and gender



Source: *EWCS 2010*

Prevalence of presenteeism was higher among high-skilled white-collar workers (around 50%), compared to the other occupational classes (35%–38%), a pattern that was observed also for mean days of presenteeism.

## Determinants of sickness absence and presenteeism

The approach now turns to a multivariate analysis in order to assess the role of working conditions among all the non-health determinants that have been pointed out in the literature. The goal is to explain the prevalence of the two measures that have been employed so far. However, a higher number of days has been chosen as a threshold in order to have a more clear-cut representation of the phenomena. For sickness absence, the probability of having spent five or more days of sickness absence in the previous year has been used, as suggested by Eurostat in the methodology for the European Statistics on Accidents at Work (ESAW). For sickness presenteeism, the outcome was based on at least two days of presence while ill, as in most previous research on sickness presenteeism (Aronsson et al, 2000; Aronsson and Gustafsson, 2005; Elstad and Vabø, 2008; Bergstrom et al, 2009; Heponiemi et al, 2010).

Respondents who reported having been employed for less than one year in the actual company or organisation (8.9% of the sample)<sup>32</sup> were excluded from the analyses. Since they have a different exposure to the risk of being absent from work, their inclusion would hamper a clear interpretation of the results. The resulting population for the analysis on sickness absence was composed of 37,353 individuals, 52% of which were men, whereas the analysis on sickness presenteeism included 32,554 people (51% men) (subjects reporting to have not been sick in the previous year were excluded).

<sup>32</sup> As well as those with missing information in this item (2.5%). Individuals were also excluded who were employed in the armed forces (less than 1%), plus those who reported their house as the main place of work (about 3%).

In the analyses, several sociodemographic and work-related characteristics were investigated as possible determinants of sickness absence or sickness presenteeism, including organisational features and exposure to psychosocial, environmental and ergonomic hazards. They are defined as in Chapter 4, with the addition of some specific determinants detailed in the following box.

### Possible determinants of sickness absence and presenteeism

In the analyses, the following variables were investigated as possible determinants of sickness absence and presenteeism, in addition to those discussed in Chapter 4:

- working time autonomy (three categories: no control, control on either speed or breaks, control on both speed and breaks);
- preferred working hours compared to the current situation (less, same, more than currently);
- responsibility for the work of other people (0, 1–5, 6–10, >10 workers);
- discrimination (positive answer to any of seven yes/no questions);
- bullying, verbal abuse, threat, physical violence or sexual harassment at the workplace (all yes/no questions);
- household composition (single without children, single parent, couple without children, couple with child(ren));
- total unpaid working hours per week (0, 1–3, 4–7, 8–14, 15–28, 29+);
- self-perceived general health (very good, good, fair, poor, very poor);
- mental health (WHO-5 indicator treated as a continuous variable);
- income (income tertiles based on the distribution of income across Europe).

### Sickness absence

Sickness absence for at least five days during the previous year was reported by 22.5% of men and 28.1% of women. Among significant risk factors, several were consistent between genders, including poor general or mental health, younger age, longer seniority, being a permanent employee or a low-skilled clerical worker, exposure to repetitive movements of arm/hand and working full time (Table 12, first two columns).

Among men, the risk of sickness absence was also significantly increased among workers employed in firms with more than 50 workers, and by exposure to discrimination, introduction of new technology, high emotional demand and second-hand smoke, whereas very long work hours (more than 48 hours per week), high psychological demand, high supervisor support and being responsible for the work of more than 10 people were associated with a decreased risk. Among women, prevalence of sickness absence was also significantly higher among workers belonging to the public sector, high-skilled manual workers (compared to high-skilled clerical workers) and for workers reporting job rotation implying different skills or bullying. On the contrary, being a fixed-term worker (compared to permanent workers), standing and high skill discretion were found to be associated with a reduced risk of sickness absence.

The effect of age on sickness absence still appears to be controversial in the literature (Voss et al, 2001; Mastekaasa, 2000; Taimela et al, 2007; Alavinia et al, 2009), and the reverse relationship observed here supports a small, but significant, negative effect of increasing age on the risk of sickness absence in both genders, so that older age is linked to a lower prevalence of sickness absence.

The association with general and mental health (better health decreases the prevalence of sickness absence) was expected, although it explained only a minor part of the variability in sickness absence of the sample. It has been actually reported that sickness absence is only in part determined by illness or health conditions (Marmot et al, 1995; Andrea et al, 2003; Farrel and Stam, 1988). In particular, although these factors were only partially consistent between genders, the increased risk related to larger firm size, company seniority, permanent work and employment in the public sector appears coherent with the results of previous studies, where higher rates of sickness absence were found among workers employed in large firms (Barmby and Stephan, 2000; Voss et al 2001) or in the public administration (Ercolani, 2006; Scoppa, 2010), and among permanent, compared to temporary, staff (Bourbonnais et al, 1992; Virtanen et al, 2003; Bradley et al, 2007) and self-employed workers (Benavides et al, 2000; Scoppa, 2010). These work-related characteristics have been interpreted by Ichino and Riphahn (2004) as associated with sickness absence because of their relationship with employment protection, based on their analysis of different case studies in Germany and Italy.

In both genders a modest association with occupational social class was found. Furthermore, such differences were scarcely influenced by adjustment for working conditions or health status. Also, no significant differences were observed in any gender for the other indicators of socioeconomic status employed in the analyses, namely income and educational attainment. This does not seem consistent with other reports showing an inverse gradient in sickness absence by socioeconomic status, independently of the indicator used (Alexanderson et al, 1994; Feeney et al, 1998; Godin and Kittel, 2004; Ala-Mursula et al, 2002; Fuhrer et al, 2002). The lower risk of sickness absence among subjects reporting fewer than 20 work hours per week, compared to those working full time, may indicate that a shorter duration of work is beneficial in reducing absenteeism, for example through increased time for private and family life and a consequent improvement in work–life balance. The low risk of sickness absence observed for working more than 48 hours per week seems instead related to an attitude of strong commitment toward one’s job, which would combine long work hours and low sickness absence.

The absence of an association with shift work appears consistent with the results in the literature, given that most studies did not find a significant association (Kleiven et al, 1998; Voss et al, 2001; Tüchsen et al, 2008; Eriksen et al, 2003), although a few reported an increased risk (Bourbonnais et al, 1992; Morikawa et al, 2001).

Regarding physical factors in the workplace, exposure to various ergonomic hazards has been reported to increase sickness absence rates, in particular heavy lifting and repetitive movements (Voss et al, 2001), manual material handling (Alavinia et al, 2009) and awkward postures (Labriola et al, 2006; Alavinia et al, 2009), which appears partially consistent with Eurofound findings.

Concerning psychosocial factors at work, the two dimensions more consistently associated with the risk of sickness absence in the literature are low job control (North et al, 1996; Gimeno et al, 2004b; Godin and Kittel, 2004; Alavinia et al, 2009; Arola et al, 2003) and low social support (Moreau et al, 2004; Nielsen et al, 2006; Piirainen et al, 2003; Stansfeld et al, 1997). Of these, only the skill discretion component of job control was associated with sickness absence in this study among women, and only support from supervisors among men. High strain (Gimeno et al, 2004b; Moreau et al, 2004), effort–reward imbalance (Head et al, 2007; Godin and Kittel, 2004) and high emotional demand (Melchior et al, 2005) are other workplace psychosocial factors previously reported as risk factors of sickness absence, among which only emotional demand was found to increase the risk of sickness absence in the present study, and only among men.

It appears difficult to assess whether the moderate inverse association between sickness absence and psychological demand observed among men is consistent with previous studies, because this relationship presents very conflicting results in the literature: excluding studies focusing specifically on very long spells of absence (more than eight weeks), some showed a protective effect of demand (North et al, 1996; Boedeker, 2001), most of them did not find an association

(Niedhammer et al, 1998; Andrea et al, 2003; Godin and Kittel, 2004; Moreau et al, 2004; Rugulies et al, 2007; Munch-Hansen et al, 2008; Josephson et al, 2008; Roelen et al, 2009), whereas a few observed a moderate increase in risk (Kivimäki et al, 2003; Gimeno et al, 2004b; Ala-Mursula et al, 2005; Rahuala et al, 2007).

The increased risk of sickness absence associated with discrimination (among men) and bullying (among women) supports the association between sickness absence and bullying/threat of violence observed by other authors (Kivimäki et al, 2000; Voss et al, 2001).

Although part of the observed associations between workplace hazards and sickness absence may be attributable to the causal effect of these factors on health, this is not considered the main mechanism underlying the increased risk of sickness absence for being exposed to occupational factors. It has been rather suggested that sickness absence is one of the possible ways of coping with working activities that expose workers to high stress or high physical demands, through the reduction of time of exposure to workplace hazards (Kristensen, 1991; Johansson and Palme, 1996). An alternative interpretation of the positive association between absenteeism and unfavourable working conditions is provided by the social exchange theory, according to which workers do not feel fully compensated by their wages for being exposed to high levels of physical and psychosocial factors and shirk because they are not satisfied with their salary (Akerlof and Yellen, 1986).

No association was found with work–life balance, nor with family characteristics, in spite of the fact that there is consistent evidence in the literature about an increased risk of sickness absence for work–family conflicts (Goff et al, 1990; Hammer et al, 2003; Gignac et al 1996; Jansen et al, 2006), although it is less conclusive for the presence of children in the household (Brooke and Price, 1989; Van den Heuvel, 1997; Mastekaasa, 2000).

Using national unemployment rates specific to age group and gender, which were available for 26 countries (the elaboration on Eurostat's Labour Force Survey, 2009), a significantly lower sickness absence prevalence was observed for the highest quartile of unemployment compared to the lowest. This finding appears to be in agreement with studies where sickness absence has been found to increase in periods with low unemployment (Virtanen et al, 2005) and to decrease with economic recession and growing unemployment (Alexanderson, 1998). In both genders, prevalence of sickness absence and sickness presenteeism were still significantly different among several countries after adjusting for other risk factors significantly associated. This suggests that sickness absence and sickness presenteeism are strongly influenced by factors acting at the national level, probably including cultural attitudes towards absenteeism, but also national regulations on sickness absence, in particular those concerning wage replacement.<sup>33</sup>

### Sickness presenteeism

Sickness presenteeism for at least two days during the previous 12 months was reported by 36.3% of men and 40.4% of women. The prevalence of sickness presenteeism observed in the sample was lower than that reported by other researchers using the same definition of presenteeism (two or more days of presence in the previous year), where sickness presenteeism was found to be around 50% or above (Aronsson and Gustafsson, 2005; Hansen and Andersen, 2008; Elstad and Vabø, 2008; Bergstrom et al, 2009). Virtually all these studies were conducted in the Scandinavian countries, where sickness presenteeism is expected to be more common, but, even limiting the comparison to the same countries, in the sample the prevalence was still lower (44% for both genders).

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<sup>33</sup> Results not reported in Table 12.



As for sickness absence, older workers were at lower risk of sickness presenteeism (Table 12, second two columns), after taking into account differences in health, consistently with previous reports (Aronsson et al, 2000; Aronsson and Gustafsson, 2005; Hansen and Andersen, 2008). General perceived health was associated with presenteeism, but relative risks of poor health were about half those observed for sickness absence, whereas the strength of association with mental health was comparable to that for sickness absence. A negative association between health and sickness presenteeism has been confirmed by several studies and it has been suggested that sickness presenteeism may be a proxy for debilitating chronic diseases, which would affect work capacity of the individuals (Hansen and Andersen, 2008).

High-skilled clerical workers displayed a 20% higher risk of sickness presenteeism compared to subjects in other occupational classes; this finding appears to be in contrast with the results of other studies, where no difference or a higher risk of sickness presenteeism was found among workers in lower occupational classes or with lower educational level (Hansen and Andersen, 2008; Heponiemi et al, 2010; Aronsson et al, 2000).

Among men, sickness presenteeism was mainly associated with a large set of psychosocial exposures, although each showing a rather small increase or decrease in risk, including decision authority, skill discretion, psychological and cognitive demand, need for hiding emotions, working with clients, supervisor support, rewards, verbal abuse and work-life balance. Among women, fewer associations with psychosocial exposures were found, and some of them were replaced in the model by others sharing a similar concept (work intensity instead of psychological demand, discrimination instead of verbal abuse). Also, in both genders long working hours and shift work increased the risk of sickness presenteeism.

A high risk of sickness presenteeism associated with high quantitative demand (defined as time pressure or overload) has been observed also by other studies (Aronsson and Gustafsson, 2005; Hansen and Andersen, 2008), as well as a high risk for long working hours and shift work (Hansen and Andersen, 2008). Regarding the control dimension, Aronsson and Gustafsson (2005) and Johansson and Lundberg (2004) found a positive association with high control, whereas no difference in risk was observed by Hansen and Andersen (2008) after adjusting for other factors. For other psychosocial exposures, no results seem to be available in the literature; however, the associations found with demand for hiding emotions among men and with emotional demand among women seem consistent with the high risk of sickness presenteeism observed in sectors involving care, such as education and healthcare, where exposure to these factors is very common. Occupations involving care of or provision of help to others may imply a tie with the client/patient/pupil, which is believed to predispose workers to go to work despite illness (Aronsson et al, 2000). Among other findings, a possible explanation of the negative association observed with rewards is that being free to stay at home when sick may be perceived as a component of the reward dimension.

In general, the characteristics found associated with sickness presenteeism, especially high occupational class, long working hours, high psychological and cognitive demand, high decision authority and skill discretion, seem to indicate the profile of a high-grade, over-committed white-collar worker with high autonomy and who is very engaged with their own job, which is characterised by complex and intense activities often involving a relationship with other people. Presenteeism has been associated by Aronsson and Gustafsson (2005) with a personality feature which they defined as 'individual boundarylessness', meaning the difficulty people with this characteristic have in saying no to other people's demands, which appears also similar to the definition of 'over-commitment' proposed by Siegrist (1996). Nonetheless, the positive association observed with exposure to work intensity, verbal abuse or discrimination, handling chemicals, awkward postures and shift work seems to indicate that sickness presenteeism is also increased by several unfavourable working conditions to which blue-collar workers are typically more exposed. It is plausible that workers employed in more strenuous and hazardous jobs reported higher presenteeism because they have greater difficulties in performing their work duties, when sick, compared to people employed in less exposed jobs.

Among personal risk factors, involvement in unpaid work activities, in great part represented by housework and care for children, elders and disabled people, was found to increase the risk of presenteeism, in agreement with previous reports of associations with number of children in the household or living with a sick spouse (Kristensen, 1991; Hansen and Andersen, 2008).

The results presented here do not support previous observations suggesting a higher risk of presenteeism associated with smaller firm size (Virtanen et al, 2002), higher levels of cooperation with colleagues (Grinyer and Singleton, 2000), working non-standard hours and job insecurity (Virtanen et al, 2002).

Regarding job insecurity, it seems worth noting that no difference in sickness presenteeism was found between permanent and fixed-term workers in this study, as in most other studies (Aronsson et al, 2000; Hansen and Andersen, 2008; Heponiemi et al, 2010). It has been suggested that the increased risk of sickness absence reported by several authors among permanent workers, compared to temporary workers, may be actually attributable to higher presenteeism among the latter. These results do not confirm this hypothesis, indicating that the observed differences in sickness absence between permanent and temporary workers are unlikely to be explained by their differences in presenteeism.

Table 12: *Relative risks of sickness absence (5+ days in previous year) and of sickness presenteeism (2+ days in previous year), by gender*

Sociodemographic and work-related characteristics	Sickness absence		Sickness presenteeism	
	Men <i>RR</i>	Women <i>RR</i>	Men <i>RR</i>	Women <i>RR</i>
<b>Age (10 years increase)</b>	<b>0.95</b>	<b>0.92</b>	<b>0.93</b>	<b>0.94</b>
<b>General health (ref. very good)</b>	1	1	1	1
good	<b>1.35</b>	<b>1.38</b>	<b>1.18</b>	<b>1.25</b>
fair	<b>1.71</b>	<b>1.78</b>	<b>1.41</b>	<b>1.49</b>
bad	<b>2.69</b>	<b>3.05</b>	<b>1.59</b>	<b>1.49</b>
very bad	<b>3.94</b>	<b>3.26</b>	1.39	1.5
<b>WHO-5 mental score (10 score increase, 100=high)</b>	<b>0.96</b>	<b>0.96</b>	<b>0.96</b>	<b>0.94</b>
<b>Occupational social class (ref. high-skilled clerical workers)</b>	1	1	1	1
low-skilled clerical workers	<b>1.31</b>	<b>1.15</b>	<b>0.80</b>	<b>0.92</b>
high-skilled manual workers	1.05	<b>1.26</b>	<b>0.80</b>	0.85
low-skilled manual workers	1.03	1.08	<b>0.85</b>	<b>0.88</b>
<b>Company seniority (ref. 0–4 years)</b>	1	1		
5–9 years	1.02	<b>1.16</b>		
10+ years	<b>1.15</b>	<b>1.12</b>		
<b>Type of employment (ref. permanent employees)</b>	1	1		
self-employed	<b>0.65</b>	<b>0.64</b>		
fixed-term or other contract	0.91	<b>0.81</b>		
<b>Sector (ref. private sector)</b>	1	1		
public sector	1.04	<b>1.16</b>		
other	<b>1.47</b>	1.02		
<b>Firm size (ref. 1 worker)</b>	1			
2–9 workers	1.18			
10–49 workers	1.22			
50–249 workers	<b>1.33</b>			
250+ workers	<b>1.33</b>			

Sociodemographic and work-related characteristics	Sickness absence		Sickness presenteeism	
	Men <i>RR</i>	Women <i>RR</i>	Men <i>RR</i>	Women <i>RR</i>
<b>Shift work (10 score increase, 100=high)</b>			<b>1.04</b>	<b>1.03</b>
<b>Hours worked per week (ref. 35–40 hours)</b>	1	1		
<=20 hours	<b>0.55</b>	<b>0.68</b>		
21–34 hours	1.17	0.98		
41–47 hours	0.91	0.97		
48+ hours	<b>0.80</b>	0.95		
<b>Preferred hours (ref. same as currently)</b>				1
less than currently				<b>1.14</b>
more than currently				<b>1.16</b>
<b>Total unpaid work hours per week (ref. = 0)</b>			1	1
1–3 h/week			1.10	1.16
4–7 h/week			<b>1.15</b>	1.10
8–14 h/week			1.11	<b>1.20</b>
15–28 h/week			1.11	<b>1.27</b>
29+ h/week			<b>1.16</b>	1.18
<b>Work–life balance (ref. low tertile)</b>			1	
middle tertile			0.95	
high tertile			<b>0.89</b>	
<b>Second-hand smoke (ref. no)</b>	<b>1.32</b>			
<b>Handling biological fluids or wastes (full-time exposure vs.no exposure)</b>			<b>0.84</b>	
<b>Handling chemicals (full-time exposure vs. no exp.)</b>			<b>1.23</b>	
<b>Awkward postures (full-time exposure vs. no exp.)</b>				<b>1.17</b>
<b>Standing (full-time exposure vs. no exp.)</b>		<b>0.88</b>		
<b>Repetitive movements of arm/hand (ref. no)</b>	<b>1.20</b>	<b>1.17</b>		
<b>Introduction of new technologies (ref. no)</b>	<b>1.10</b>			<b>1.13</b>
<b>Job rotation with different skills (ref. no)</b>		<b>1.14</b>		
<b>Cognitive demand (ref. low tertile)</b>			1	1
middle tertile			<b>1.11</b>	<b>1.12</b>
high tertile			<b>1.19</b>	1.08
<b>Emotional demand (ref. low tertile)</b>	1			1
middle tertile	1.05			<b>1.16</b>
high tertile	<b>1.15</b>			<b>1.15</b>
<b>Psychological demand (ref. low tertile)</b>	1		1	
middle tertile	<b>0.85</b>		<b>1.15</b>	
high tertile	<b>0.88</b>		<b>1.16</b>	
<b>Skill discretion (ref. low tertile)</b>		1	1	
middle tertile		<b>0.91</b>	1.03	
high tertile		0.92	<b>1.13</b>	
<b>Responsibility for workers (ref. 0 workers)</b>	1			
1–5 workers	0.94			
6–10 workers	0.90			
>10 workers	<b>0.77</b>			

Sociodemographic and work-related characteristics	Sickness absence		Sickness presenteeism	
	Men <i>RR</i>	Women <i>RR</i>	Men <i>RR</i>	Women <i>RR</i>
<b>Decision authority (ref. low tertile)</b>			1	1
middle tertile			<b>1.21</b>	<b>1.18</b>
high tertile			<b>1.38</b>	<b>1.25</b>
<b>Supervisor support (ref. low tertile)</b>	1		1	1
middle tertile	0.93		<i>0.86</i>	<i>0.87</i>
high tertile	<i>0.88</i>		<i>0.77</i>	<i>0.86</i>
<b>Rewards (ref. low tertile)</b>			1	
middle tertile			<i>0.84</i>	
high tertile			<i>0.84</i>	
<b>Need for hiding emotions (ref. low tertile)</b>			1	
middle tertile			<b>1.12</b>	
high tertile			<b>1.10</b>	
<b>Discrimination (ref. no discrimination)</b>	<b>1.11</b>			
<b>Bullying (ref. no bullying)</b>			<b>1.17</b>	
<b>Working with clients (ref. low tertile)</b>			1	
middle tertile			<b>1.14</b>	
high tertile			<b>1.19</b>	

Note: Four separate Poisson robust regression models, each including only significant variables with  $p < 0.05$  (in bold significant modalities; in italics protective effects). RR = relative risk.

# Conclusions 6

This report investigated the many relationships between the well-being and health of European workers and their working conditions. First, it produced some descriptive evidence on the issue, which confirms the main findings of already available literature, and highlights huge differences in the level of health and well-being across countries and across individuals' and job characteristics. The rest of the report is devoted to a close analysis of the main drivers – and of some consequences – of those differences.

Regarding well-being, the findings show a clear relationship with several indicators of quality of work and employment. Non-monetary measures of quality are of prominent importance. The employability of workers is also a key determinant, particularly in times of recession, when subjective perception of job security is at its lowest. Furthermore, a negative relationship between quality levels and variability of well-being was consistently found: once very good quality conditions are achieved, individuals have high levels of well-being with few exceptions, while when facing bad quality of work and employment, large differences emerge in the capacity to cope.

To perform a similar investigation on health and its determinants at work, it was necessary to draft a comprehensive set of indicators of the psychosocial work environment, which has been identified as one of the most important risk factors in contemporary and future society.

Among the several measures of health, specific health conditions were a particular focus, namely musculoskeletal diseases and mental health conditions. In addition, occupational injuries were also a key focus, investigating as possible key determinants individual characteristics (age and gender), human capital endowment (education, tenure, training), formal definition of the job (industry, firm size, job contract, occupation, hours worked), physical hazards, factors related to work organisation and the psychosocial work environment as implemented in the indicators.

Among the most interesting results is the fact that the formal definition of the job has no significant impact on many of the health outcomes considered. This is a novel and important finding, which shows that once the analysis controls for the actual content of the job (physical, psychosocial and organisational determinants), its formal definition becomes an empty box. It is worth noting that, at the same time, for musculoskeletal diseases among white-collar workers, job insecurity is a risk factor: while the actual contract (temporary or no contract at all) had no impact on them, the subjective perception of precariousness has.

A similar result holds also for country differences: they consistently tend to vanish after controlling for all the above determinants. This result reinforces the above statement, that it is the actual job content that determines physical health, more than its formal setup or even the institutional environment (as no institutional, cultural or political regularity seem to emerge in the ordering of countries).

Psychosocial dimensions reveal themselves to be a decisive factor, and not only, as might be expected, in cases of anxiety or depression. High 'psychological demand', for instance, increases musculoskeletal diseases among white-collar workers; high 'skill discretion' decreases them among all workers, while 'decision authority' increases them for both blue-collar and white-collar workers. The positive role of rewards emerges as a protective factor for all health outcomes considered and also decreases work accidents among all groups of workers. Indeed, work accidents – together with musculoskeletal disease – also show clear associations with many physical hazards that can be measured in the EWCS, such as environmental hazards, awkward postures and travelling for work.

A final part of the report is devoted to the other direction of causality. Poor health status has a direct impact on work in terms of sickness absence. Many factors may however mediate the relationship, lengthening the absence or shortening it. At the limit, there is the flip side of work absence, namely presenteeism, a behaviour that may entail short- to long-term costs for both employers and employees.

Among significant risk factors for sickness absence, several are consistent between genders, including poor general or mental health (although they explain only a minor part of the variability in sickness absences), seniority in the company longer than 10 years and being a permanent employee. Among men, sickness absence is significantly increased by exposure to discrimination and high emotional demand, highlighting again a crucial role for psychosocial factors. Among women, sickness absence is higher among workers belonging to the public sector, and lower among fixed-term contract workers. It is also higher among women reporting job rotation implying different skills, repetitive movements of the arm/hand or bullying; lower for those enjoying high skill discretion; hence the psychosocial dimensions are crucial, as for men.

Regarding presenteeism, for both genders it is highest in the Anglo-Saxon and the Scandinavian countries and lowest in eastern and southern European countries. Some characteristics are more clearly associated with presenteeism, especially high occupational class, long working hours, high psychological and cognitive demand, high decision authority and skill discretion. These characteristics seem to indicate the profile of a high-grade, over-committed white-collar worker with high autonomy and who is very engaged with their own job, which is characterised by complex and intense activities often involving relationships with other people. Nonetheless, the positive association observed with exposure to work intensity, verbal abuse or discrimination, handling chemicals, awkward postures and shift work seems to indicate that presenteeism is also increased by several unfavourable working conditions. Typically more exposed to these conditions are blue-collar workers and workers in health sector occupations involving the provision of care or help to others, and that may imply a connection with the patient, which is believed to predispose workers to go to work despite illness.

This reinforces the central role that (quality of) work and employment plays directly and indirectly in relation to well-being and growth. This calls for the development of a wider agenda to improve and monitor job quality, since it will prove very important for the future of Europe.

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# Annex: The European Working Conditions Survey series

The European Working Conditions Survey (EWCS), established in 1990, is one of the few sources of information providing an overview of working conditions in Europe for the purposes of:

- assessing and quantifying working conditions of both employees and the self-employed across Europe on a harmonised basis;
- analysing relationships between different aspects of working conditions;
- identifying groups at risk and issues of concern, as well as progress made;
- monitoring trends by providing homogeneous indicators on these issues;
- contributing to European policy development on quality of work and employment issues.

The EWCS was carried out in 1991, 1995, 2000 (with an extension to the then-candidate countries in 2001 and 2002), 2005 and 2010. The growing range of countries covered by each wave reflects the expansion of the European Union. The first wave in 1991 covered only 12 countries, the second wave in 1995 covered 15 countries, and from the third wave in 2000–2002 onwards, all 27 current EU Member States were included. Other countries covered by the survey include Turkey (in 2002, 2005 and 2010), Croatia and Norway (in 2005 and 2010), Switzerland (in 2005), and Albania, Kosovo, Montenegro and the former Yugoslav Republic of Macedonia (in 2010).

## The fifth EWCS

The fieldwork for the fifth EWCS was carried out between January and June of 2010.<sup>34</sup> In total, 43,816 face-to-face interviews were carried out, with workers in 34 European countries answering questions on a wide range of issues regarding their employment situation and working conditions.

The target population consisted of all residents in the 34 countries aged 15 or older (aged 16 or older in Norway, Spain and the UK) and in employment at the time of the survey. People were considered to be in employment if they had worked for pay or profit for at least one hour in the week preceding the interview (ILO definition).

The scope of the survey questionnaire has widened substantially since the first wave, aiming to provide a comprehensive picture of the everyday reality of men and women at work. Consequently, the number of questions and issues covered in the survey has expanded in each subsequent wave. By retaining a core of key questions, the survey allows for comparison over time. By using the same questionnaire in all countries, the survey allows for comparison across countries.

The main topics covered in the questionnaire for the fifth EWCS were job context, working time, work intensity, physical factors, cognitive factors, psychosocial factors, violence, harassment and discrimination, work organisation, skills, training and career prospects, social relationships, work–life balance and financial security, job fulfilment, and health and well-being.

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<sup>34</sup> Fieldwork continued until 17 July 2010 in Belgium, due to the extended sample size, and until 29 August 2010 in Norway, due to organisational issues.

New questions were introduced in the fifth wave to enable more in-depth analysis of psychosocial risks, workplace social innovation, precarious employment and job security, place of work, work–life balance, leadership styles, health, and the respondent’s household situation. The questionnaire also included new questions addressed specifically to self-employed workers (such as financial security). Gender mainstreaming has been an important concern when designing the questionnaire. Attention has been paid to the development of gender-sensitive indicators as well as to ensuring that the questions capture the work of both men and women. Revisions to the questionnaire are developed in cooperation with the tripartite stakeholders of Eurofound.

### Sample

In each country, a multistage, stratified random sampling design was used. In the first stage, primary sampling units (PSUs) were sampled, stratifying according to geographic region (NUTS 2 level or below) and level of urbanisation. Subsequently, households in each PSU were sampled. In countries where an updated, high-quality address or population register was available, this was used as the sampling frame. If such a register was not available, a random route procedure was applied. In the fifth EWCS, for the first time, the enumeration of addresses through this random route procedure was separated from the interviewing stage. Finally, a screening procedure was applied to select the eligible respondent within each household.

The target number of interviews was 1,000 in all countries, except Slovenia (1,400), Italy, Poland and the UK (1,500), Germany and Turkey (2,000), France (3,000) and Belgium (4,000). The Belgian, French and Slovenian governments made use of the possibility offered by Eurofound to fund an addition to the initial sample size.

### Fieldwork outcome and response rates

The interviews were carried out face to face in the respondents’ homes. The average duration of the interviews was 44 minutes. The overall response rate for the fifth wave was 44%, but there is considerable variation in response rates between countries, varying between 31% in Spain and 74% in Latvia.

### Weighting

Weighting was applied to ensure that results based on the fifth EWCS data could be considered representative for workers in Europe.

- **Selection probability weights (or design weights):** To correct for the different probabilities of being selected for the survey associated with household size. People in households with fewer workers have a greater chance of being selected into the sample than people in households with more workers.
- **Post-stratification weights:** To correct for the differences in the willingness and availability to participate in the survey between different groups of the population. These weights ensure that the results accurately reflect the population of workers in each country.
- **Supra-national weights:** To correct for the differences between countries in the size of their workforce. These weights ensure that larger countries weigh heavier in the EU-level results.

### Quality assurance

Each stage of the fifth EWCS was carefully planned, closely monitored and documented, and specific controls were put in place. For instance, the design phase paid close attention to information gathered in a data user survey on satisfaction with the previous wave and on future needs, and an assessment was made of how the survey could better address the topics that are central to European policymaking.



In order to ensure that the questions were relevant and meaningful for stakeholders as well as respondents in all European countries, the questionnaire was developed by Eurofound in close cooperation with a questionnaire development expert group. The expert group included members of the Foundation's Governing Board, representatives of the European Social Partners, other EU bodies (the European Commission, Eurostat and the European Agency for Safety and Health at Work), international organisations (the OECD and the ILO), national statistical institutes, as well as leading European experts in the field.

## Access to survey datasets

The Eurofound datasets and accompanying materials are stored with the UK Data Archive (UKDA) in Essex, UK and promoted online via the **Economic and Social Data Service (ESDS) International**.

The data is available free of charge to all those who intend to use it for non-commercial purposes. Requests for use for commercial purposes will be forwarded to Eurofound for authorisation.

In order to download the data, you must register with the ESDS if you are not from a UK university or college. For more information, please consult the ESDS page on **how to access data**.

Once you are registered, the quickest way to find Eurofound data is to open the **Catalogue search** page, select **Data Creator/Funder from the first drop-down list and** enter in the words '**European Foundation**' in the adjacent search box. Once Eurofound's surveys are listed, you can click on the name of the relevant survey for more information and download it using your user name and password.

## For more information

The **overview report** as well as detailed information and analysis from the EWCS are available on the Eurofound website at **www.eurofound.europa.eu**. This information is updated regularly.

For further queries, please contact Sophia MacGoris in the Working Conditions and Industrial Relations unit.

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