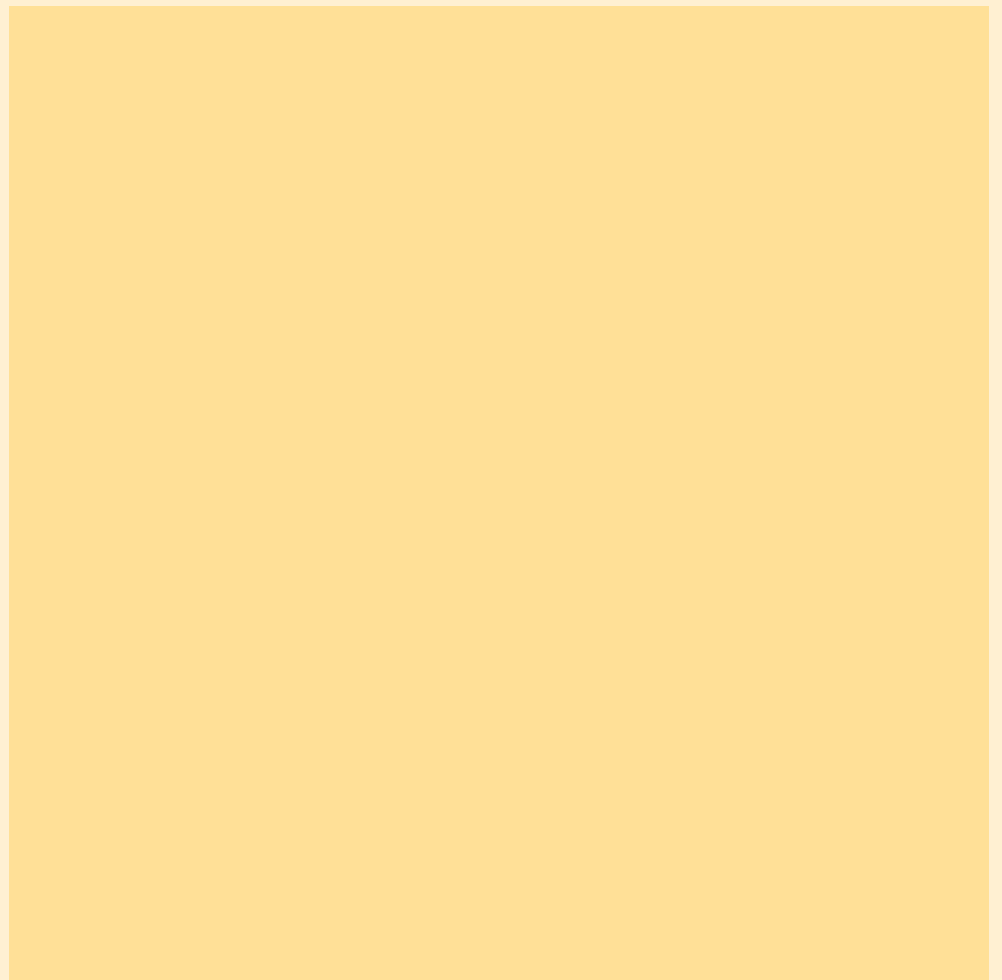




Work organisation and health at work in the European Union



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European Foundation for the Improvement of Living and Working Conditions

Work organisation and health at work in the European Union

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Annie Thébaud-Mony

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Foreword

Working conditions in Europe have deteriorated over the course of the past ten years, as the surveys of working conditions carried out by the European Foundation for the Improvement of Living and Working Conditions demonstrate. As well as the classic risks which are still present in the workplace (for example, one worker in three claims to be subject to painful or tiring postures for at least half of their working time, and almost one in four is obliged to carry heavy loads at least half the time), new health risks have emerged which are linked to the work intensification and which affect one worker in two during at least half of their working hours.

This report, based on the Foundation's Third European Survey of Working Conditions, examines the links between work organisation and working conditions. It first outlines the typology of the different forms of work organisation, from which four groups can be delineated: 'constrained' work, 'flexible' work, 'autonomous' work and 'automated' work. Each of these forms of organisation corresponds to individual risks and impacts on health. The report highlights those groups which are more exposed than others to certain health risks and shows that the choices of work organisation are not without consequences from the point of view of health and safety.

We hope that this report will assist relevant actors at company and government level to further their knowledge of this subject in order to be able to implement policies and actions for better occupational health and safety at work.

Raymond-Pierre Bodin
Director

Willy Buschak
Deputy Director

Introduction

In 1989, the Community Framework Directive (EEC) No 89/391 on the organisation of health and safety in the workplace created for the first time a European framework for 'harmonising the progress' of national legislations and of practices aimed at protecting the health of workers in the workplace. Despite this groundbreaking achievement, just ten years after the adoption of the directive the Third European Survey on Working Conditions by the European Foundation reveals a number of changes regarding health risks for workers in the EU which give cause for concern.

In fact, the trends observed reveal the juxtaposition of 'classic' occupational risks (physical and chemical) and of increasingly significant time and productivity constraints, thereby confirming the results of national surveys (in particular in France) which demonstrate the persistence of physical and chemical risks and the increasing intensification of work. Moreover, asbestos is a tell-tale sign of the epidemic of occupational cancers. Finally, even where regulations exist (exposure limits, compulsory safety protection), millions of workers are subjected to noise, to cold or heat, and to risks of accidents. Another worrying fact, common to all countries, is the prevalence of repetitive strain injuries as the result of strict time pressures. Although this persistence of risks is known statistically, the mechanisms which make it possible have never been precisely identified and the health impacts which result from it are largely rendered invisible by the very forms of work organisation and the transformation in social relationships at work and in society. An analysis of this change has been conducted, in the form of thematic research work, by the Institut national de la santé et de la recherche médicale (National Institute of Health and Medical Research (INSERM)), the Centre national de la recherche scientifique (National Centre for Scientific Research (CNRS)) and the Institut de recherche sur les sociétés contemporaines (Institute for Research into Contemporary Societies (IRESCO)) published in the form of a joint study¹. Moreover, the conference organised in Brussels in September 2001 by the Swedish Institute for Working Life and the European Trade Union Technical Bureau for Health and Safety made it possible, by means of exchanges between researchers and trades unionists from different EU countries, to launch, on the basis of recent research findings, a debate on the links between choices of work organisation and the changes in conditions of health at work.

The questions relating to the consequences and implications of working conditions on health and employment integrated into the European Surveys on Working Conditions conducted by the Foundation take this same direction and the incorporation of new indicators in the course of the three surveys reveal how important this question is. So, for the first time, the indicators relating to accidents at work have been integrated into the survey conducted in 2000. These surveys open up the prospect for analyses of the risks involving health at work which take account of the determining factors both of the type of work but also of the socio-demographic and structural determinants.

We conducted the secondary statistical exploitation of the data produced from the Third European Survey on Working Conditions taken in 2000 with a focus on health at work. We asked questions about the connections which exist between forms of work organisation and risks to health at work in the European Union. To do so, we were required to study the responses to questions on health and on the risks to health as the result of working conditions in reference to the constraints of work organisation and to the structural characteristics of the employment market.

¹ Thébaud-Mony, Appay, 1997.

Taking a sociological approach to the questions of health at work, we attach the utmost importance to the influence of social relationships on changes in the social organisation of work; the insecurity of work, and also the gender division of work and the emergence of new divides at the very heart of the workforce between temporary and 'secure' workers — between permanent workers and contract workers — are important in the way that work translates into social reality. Thomas Coutrot [1999], too, stresses that 'the forms of social division of work result from historical processes in which politics, ethics, and social power struggles play crucial roles'. Starting from this sociological position, we echo the criticism uttered by Laurent Vogel [1997], concerning the purely technical approaches of most preventative policies in terms of health and safety, to attempt, as he proposes, to integrate into the analysis 'the essential social determinants' such as gender or job status, for example.

The social division of work

In line with the above points, we have chosen to perform the statistical evaluation of the sub-populations of men and women observed separately. It is not a case of comparing men with women, but of carrying out an analysis of the forms of work organisation, taking into account the social division of work between women and men resulting from gender relationships, and its influence on economic production and on the family². In fact, in the 2000 survey, it is apparent that the structural distribution of men and women is different: there are in fact two labour markets (see Annex I). Moreover, within the same sectors of business, men and women do not generally occupy the same types of posts. They are exposed to different constraints. The decision to perform the analysis on these two separate groups is guided by the idea that the health risks to workers are different for men and for women.

The connection between temporary job status (i.e.: under a non-permanent and/or part-time contract) and poor working conditions has been proven³. Our theory is that, over and above this, there are connections between this external flexibility and the social division of the risks and health impacts. Other economic imperatives are also involved in work organisation, resulting from the increasing prevalence of subcontracting relations, of quality control programmes, of the absolute value placed on flexibility and reducing costs. The consequences of these factors are seen in multiplying the risks and constraints of work, as shown by the case of the nuclear industry⁴. Danièle and Robert Linhart [1998] have, moreover, stressed the contradictions cropping up in these 'new forms of work organisation', in particular between the extreme tightening of time constraints and the responsibility of each worker taken individually in achieving the production targets imposed by the employer or the boss. They put forward the theory that these contradictions are a source of physical and mental suffering to the workers who experience them. We shall attempt, by analysing the different types of work organisation, to show how this fits into the reality of perceived risks and health impacts.

Taking the size of the sample into account, detailed comparisons by country are not possible. Nevertheless, individual country characteristics are apparent with respect to the distribution of the categories derived from the typologies of the forms of work organisation. Bearing in mind the structural differences which exist within the European Union, we shall examine to what extent

2 Kergoat, 1998.

3 Letourneux, 1998; European Foundation, 1999.

4 Thébaud-Mony, 2000.

there exist geographical zones in Europe which are more or less exposed to the forms of work organisation linked to certain risks to health at work. For a real comparison, it would be useful to go further and to observe, for example, individual national legislation in terms of health and safety at work. Furthermore, comparative knowledge of the relationship of subordination induced by the employment contract in each country (arising from the legal tradition of the country, but also from the social and institutional power relationships at the very root of labour law) is indispensable to a correct comparative analysis⁵.

Concepts

The study is organised around three themes: health, risks and work organisation. The conceptual definitions and dimensions presented below are drawn from the research studies already carried out on health at work. The variables used as indicators of these different dimensions are shown in Annex III.

Health

We start from a definition of health as a social construct, on which the sociological founding of our research work, conducted for more than ten years within the teams for 'Social inequalities, industrialisation and health' (INSERM U 292) and 'Health at work' (INSERM E99-05) is based: 'Health is a dynamic process by which an individual builds himself and grows, a process which is recorded in the body, through work experiences, living conditions, events, pain, pleasure and suffering, through everything which makes an individual history unique but also collective through the influence of the multiple dynamics into which it fits.'⁶

The historical dimension is hard to integrate into any statistical approach. But on the basis of what people feel, we would suggest that changes in health at work do not necessarily arise from the specific situation of those involved at the time of the survey, but correspond to the accumulation of years of work and of exposure to risks.

Risks — working conditions

The risks to health and safety at work are defined on the basis of the description of the conditions of work and of the work environment supplied by people. We have added the human environment to the physical environment, by integrating the forms of physical and moral violence experienced in the context of work. 'To define a risk is to adjudge that the duration or the intensity of exposure to a constraint or to a cause of harm is sufficient to cause a potential injury to the health of the worker' (Héran-Leroy). In this sense, we have defined the thresholds beyond which exposure to painful or dangerous working conditions could be classified as risk: starting from exposure during half the working hours for risks of a physical nature, and starting from exposure lasting one quarter of the working hours for toxic risks.

We begin by defining the three forms of health impact conceptualised by Philippe Davezies [1999] to describe workplace risks:

Physical health problems: These problems arise from exposure to physical risks such as falls or toxic products, but also excessive noise, heat or cold, etc. Tolerable exposure limits have been drawn up for some of these, but others have not yet been evaluated.

⁵ See in particular on this subject A. Supiot, 1992, *Les notions de contrat de travail en Europe*, Report for the Commission of the European Communities and A. Supiot, 1999, *Au-delà de l'emploi. Transformations du travail and devenir du droit du travail en Europe*. Flammarion, Paris.

⁶ Thébaud-Mony, 1996.

Work pressures: This problem occurs as a result of inappropriate or excessive work practices affecting men and women at work. It is due to the activity itself: very repetitive work, permanent pressure, etc. and is linked to the phenomenon of the intensification of work⁷.

Affronts to dignity: Factors such as victimisation at work, the ignoring of physical or mental suffering and the rejection of the individual are all psychological problems which pose a threat to the health of workers.

Work organisation

The concept of work organisation covers several levels of reality:

1 — A macrosociological level composed of all the employment regulations, the conditions and constraints of work and the bodies representing workers.

2 — A second level is composed of the enterprise in the broad sense: a network incorporating workers of different statuses and different types of workplace.

3 — The third level is composed of working conditions and the constraints of work organisation at the actual place of work.

It is essentially this third level, which is obviously conditioned by the first two, that we will use as our starting point to define the conceptual dimensions of the analysis. All the indicators linked to work organisation in the survey have been combined according to three sub-sets:

the temporal frame, comprising the variables linked to internal flexibility of working hours (quantitative and qualitative)⁸ and the speed constraints of an industrial nature (automation, quantitative production standards).

the room to manoeuvre for workers in their work: degree of autonomy in the organisation of their work and the degree of control over the work via qualitative standards and self-evaluation.

The work by Damien Cru (1987) demonstrates the connections which exist between the room for manoeuvre in work and the possibility of individual and collective monitoring of health and safety in the workplace. Autonomy will also be observed with respect to what B. Appay (1994) calls 'controlled autonomy', a concept reflecting the antagonisms which may exist between room for manoeuvre and responsibility being given to workers on the one hand, and control and results imperatives which are increasingly strict on the other.

the social relations in the enterprise⁹: possibility of discussion within the enterprise, influence of the direct external demand (customers, patients, students, the public, etc.) on the pace of work and possibility of continuing training.

⁷ Gollac & Volkoff, 1996.

⁸ We refer to the definition proposed by M.T. Join-Lambert (1994):

— Quantitative internal flexibility consists in the possibility of varying the duration of work and the remuneration.

— Qualitative internal flexibility consists in the possibility of altering the work organisation and the assignment of workers.

— Quantitative external flexibility concerns recourse to outsourcing, the increased flexibility of the dismissal law and recourse to temporary employment.

⁹ In respect of this dimension of social relationships, it would be interesting to integrate in future surveys some variables relating to membership of a trade union, the existence of systems for representation of personnel or again, the existence of health and safety committees (or European equivalents) in the enterprise.

The works of Tom Dwyer (1991) and Annie Thébaud-Mony (1995) on accidents at work have demonstrated the importance of taking into consideration the social relations induced by work organisation to comprehend the nature of accidents at work.

The time constraints of a commercial nature [Gollac, Volkoff, 1996] are considered as an indicator of the social relations in the workplace, to the extent that the commercial relationship is a social relationship: a relationship involving the power of the customer over the person who delivers. The relationship to the customer can therefore be defined at three levels: (i) a direct relationship (over the counter, of service) to the public; (ii) the pressure applied in managerial discourse, whereby work becomes an immediate response to a request from the customer; and (iii) the customer-supplier relationship in the frame of subcontracting relations¹⁰.

Continuing training also comes under the heading of 'social relationship' in the sense that the possibility of training in the context of one's enterprise, and thus the prospects of promotion in one's career, is connected to one's integration in a work community and this may have repercussions on the relations maintained with colleagues or management, and with work in general. Furthermore, Antoine Laville and Serge Volkoff (1993) have demonstrated the connections existing between the absence of options for promotion at work and accelerated processes of attrition at work.

Population studied

The population studied with respect to the observation of health problems due to work corresponds to the whole of the sample in the survey. In fact, on the basis of the conceptual definition adopted for health, we began not only with the idea that the answers to these questions can be linked to the job held at the time of the survey, but also to the occupational history of the person throughout his lifetime. Consequently, we do not exclude any case, even if the position occupied at the time of the survey is marginal. (N = 21 703; 11 906 men and 9 797 women).

For our study of the risks due to working conditions, we consider that persons working less than ten hours per week are too marginal¹¹. Even if we are aware that for certain risks (especially carcinogenic ones) there is no threshold of harmlessness, we have adopted the exposure periods (for example each quarter of working hours) which may reflect a certain probability of health disorders associated with the existence of these risks. Hence we felt that for under ten hours a week, these periods of exposure were insignificant. (N = 21 303; 11 775 men and 9 528 women) .

For the second part of the study on the forms of work organisation, we have excluded the unemployed from the analysis. In fact, the problem of the connections existing between forms of work organisation and risks to the health of workers is constructed for the employed population, which is subject to, and does not choose, the work organisation. The agricultural sector, which is too atypical, has also been excluded from the analysis for the constitution of the typologies of work organisation¹². The sub-population of workers studied excludes, for the same reasons as previously, persons working less than ten hours per week. (N = 17 464; 9 213 men and 8 251 women).

All the statistical analyses were made using weighted data.

¹⁰ Morin, 1994; Thébaud-Mony, 2000.

¹¹ Persons working less than ten hours per week represent 2% of the total sample (N = 400). This marginal category is composed of 61% women and 39% men. We exclude 3% of the total number of women from the survey and 1% of the men.

¹² The sub-population of farmers (workers and unemployed) is nevertheless observed from the point of view of health problems and health risks (see Annex IV).

Stages of the analysis

The first part of the analysis consists of an inventory of the health problems as perceived by the workers within the European Union. We then observe the work-related risks on the basis of the description by the workers of their working conditions (environment, workstation) built up over the exposure period. Finally, we examine the trends and the changes over a ten-year period.

The second part of the analysis presents a typology of the forms of work organisation constructed on the basis of the theoretical framework previously presented. From this theoretical construction, we will consider to what extent it is possible to examine the work organisation with respect to the risks to the health and the safety of workers in the European Union. This part concludes, in the same way as the first, with an examination of the trends and changes in work organisation in the European Union over the past ten years.

The analysis does not consist of causal connections. The statistical models utilised permit statistical connections to be established between variables or groups of variables: cross analysis, analysis of multiple correspondences and mixed classification.

Inventory of health at work in the European Union

The relations between work and health cannot be explained on a monocausal and instantaneous basis, nor is this first part about establishing a causal connection between risks and symptoms expressed. However, most of the risks mentioned and most of the time constraints do, as is known, affect health and can be considered as risks of immediate or more long-term disorders¹³. This first part, then, consists of producing an inventory, a look ‘from all sides’ at health at work as expressed by European workers, first at the level of their specific health problems due to work, and second at their situation and work environment. This inventory is useful in showing how health at work ought to be a concern of the highest magnitude — the recommendations of the Lisbon Summit on the quality of employment are in line with this — and will be necessary as a global reference during the more precise examination which is undertaken in the second part, on the basis of the typologies of work organisation.

Work-related health problems experienced by workers in the EU¹⁴

In total, 28% of the workers in the European Union believe that their health or their safety is at risk because of their work. If European workers are questioned precisely about the health problems specifically linked to their work¹⁵, almost two thirds (60%) declare at least one health problem caused by their work while the remaining 40% state that their work does not affect their health. These two indicators refer to different times in the personal history of the workers: the responses concerning health problems which are named specifically related to the state of health experienced at the time of the survey; the more general question on the threat posed by work to health reflects a projection of their opinions on what the future will bring. As such, the proportion of 28% is high: over a quarter of workers in the European Union are living in personal insecurity (physical integrity threatened) because of the risks presented by their work to their health and safety.

Figure 1 shows that at least one European worker in four claims to be suffering from back problems (34%), from stress¹⁶ (28%), from overall fatigue (24%) and/or muscular pains in the neck and shoulders (23%). The first statement which must be made is that work is still physical: back pain constitutes the most frequently cited health problem, affecting one worker in three. Other health problems of a physical nature — muscular pains in the shoulders and the neck, and, to a lesser extent, in the arms and in the legs — are also evidence of tiring, even exhausting, work situations. When these muscular pains become chronic, painful and truly disabling in the long term, they are called (among other things) musculo-skeletal disorders (MSDs).

‘These occupational illnesses [MSDs], which are becoming more and more widespread, designate a broad spectrum of pathologies. Their effects are multiple and take the form of muscular and

13 Volkoff and Thébaud-Mony, 2000.

14 Because the consequences of work on health cannot only be due to the job occupied at the time of the survey, but also to a previous job, we observe the entire survey sample, with no exclusions (contrary to the later stages of the statistical analysis).

15 The questionnaire includes a question on the specific health problems experienced by the workers of the EU. This question firstly establishes the relation between the work of the persons and these health problems. It is formulated as follows (Q35):

‘Does your work affect your health, or not?

(IF YES) In what way does it affect your health ? (SHOW CARD – READ OUT – SEVERAL ANSWERS POSSIBLE)

No, it does not affect my health.....1,

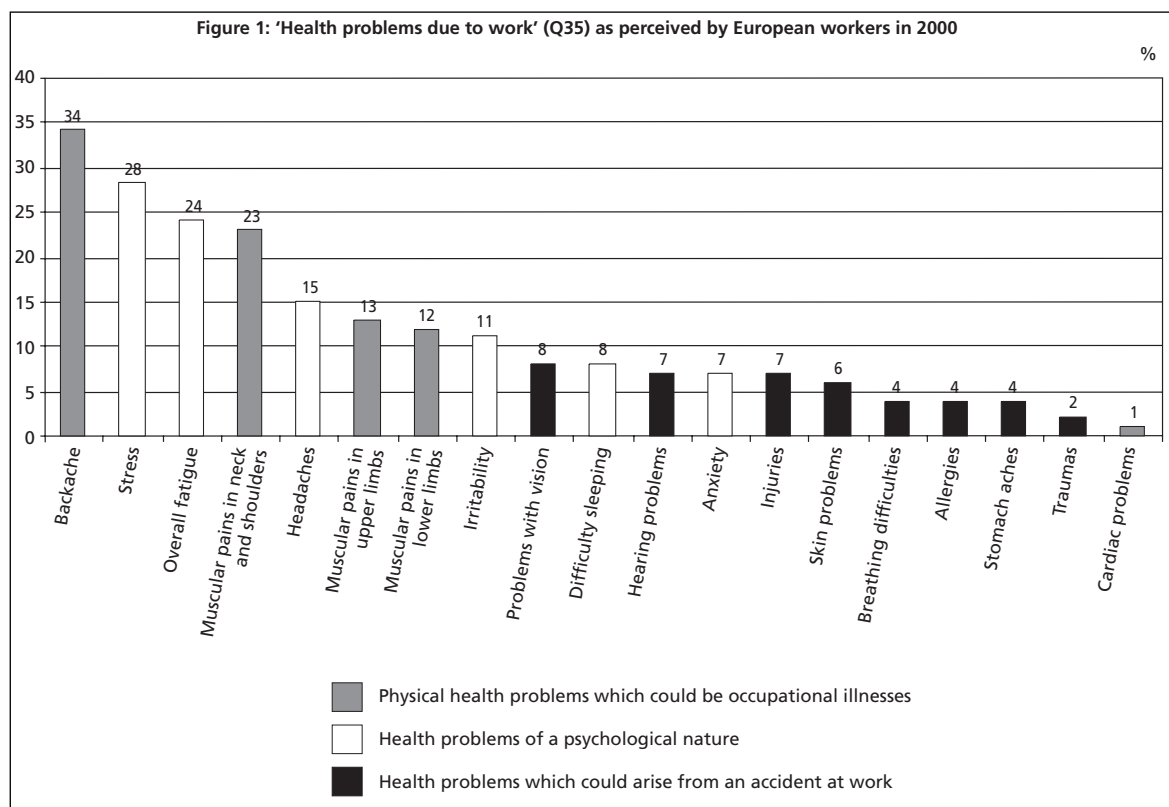
Yes, hearing problems..... 2,

Yes, eye problems.....3,

Yes, skin problems.....4,

etc. ’

16 Stress is approached here solely by modality 14 of question q35. So this means the sensation of stress. We consider that perceived stress constitutes a de facto indicator of the psychological pressure exerted on workers. The model ‘job control–job demand’ by Karasek and Theorell (1991) supplies an approach to the pressure experienced doing interesting work. Nevertheless, we are not using it here, in view of the fact that it would take up a complete study in itself (see S. Dhondt, 1998).



skeletal, but also vascular and nervous disorders. Other countries call them problems attributable to repetitive work (IARW) or repetitive strain injuries (RSI) ... These pathologies are multi-factorial in nature. In the work environment, these are problems attributable to repetitive work under strict spatio-temporal constraints¹⁷. MSDs have been increasing massively in the past few years: in France, where they are recognised as occupational diseases, the number increased from 673 recognised cases during 1985 to 8,972 cases in 1998¹⁸. However, this figure more than likely represents only a small proportion of the actual number of workers, both men and women, who are affected¹⁹. The problem of MSD has been posed at EU level for several years and discussions are underway with a view to improving the statistical counting tools²⁰.

In 2000, in the European Union, more than one worker in four (28%) is affected by at least one type of MSD: 7% of workers suffer from the three cumulative types of MSD (8% of men and 6% of women) and 21% of the total suffer from one or two cumulative MSDs, i.e. one worker in five (20% of men and 23% of women).

The observation of the combinations of responses between the three variables of the survey shows that of the 23% of workers claiming to suffer from MSD of the neck and shoulders, 11% are suffering at the same time from MSD of the arms and legs and 5% are affected by another MSD (4% suffer at the same time with their arms and 1% suffer at the same time with their legs).

17 Bourgeois et al., 2000.

18 Data from the Caisse Nationale d'Assurance Maladies (National Sickness Insurance Fund).

19 In France, for carpal tunnel syndrome alone, more than 100,000 operations per year are recorded. And yet this affliction is just one among the many other musculo-skeletal disorders.

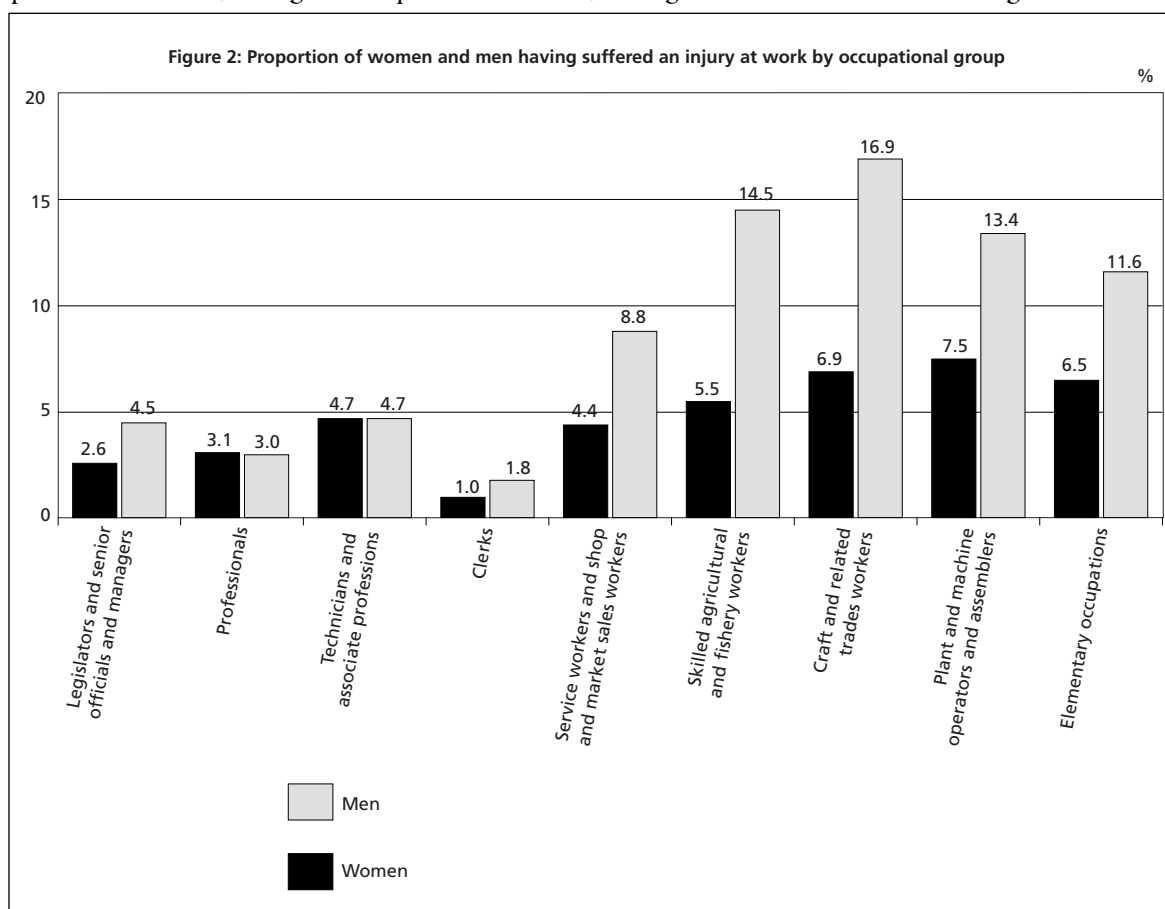
20 Karjalainen et al., 1999.

The observation according to gender shows that men are more exposed to a cumulation of the three types of MSD (8% compared with 6% among women). On the other hand, women are more exposed to MSD of the neck and shoulders only (13% compared with 10% of men) and suffer more from MSD in the legs (3% compared with 2%).

The modalities corresponding to problems of a physical nature may all correspond to an occupational illness²¹, especially highly-specific problems such as hearing difficulties, respiratory problems or allergies. According to the comparative European study of occupational illnesses in Europe²², apart from MSD, these problems count among the five most often diagnosed in recent years (1994–96)²³.

The health problems of a psychological nature caused by work such as irritability (11% of workers suffer from this), sleeping problems (8%) or anxiety (7%) are clear evidence of work which wears people out from the psychological point of view, giving rise to health problems which may have consequences, outside work, detrimental to social and family life.

Absenteeism on the grounds of health problems due to work is an indicator of the gravity of health problems at work, though an imperfect indicator, taking account of the fact that large numbers of



21 It would be interesting for this reason to add an indicator of the occupational illnesses in the next survey, of the type 'do any of these problems correspond to a recognised occupational illness?'; 'If yes, which one?'.
 22 Eurogip, 2000.

23 It must however be borne in mind that it is difficult to establish comparisons between the different countries of the EU with respect to recognition of occupational illnesses. The heterogeneity of the legislations and of the practices concerning reporting and recognition for 1996 is manifest in the differences observed: the number of reported cases varies from 5 per 100 000 workers in Greece to 651 per 100 000 in Denmark, and the number of cases of recognition varies from 4 per 100 000 in Greece to 136 per 100 000 in Belgium.

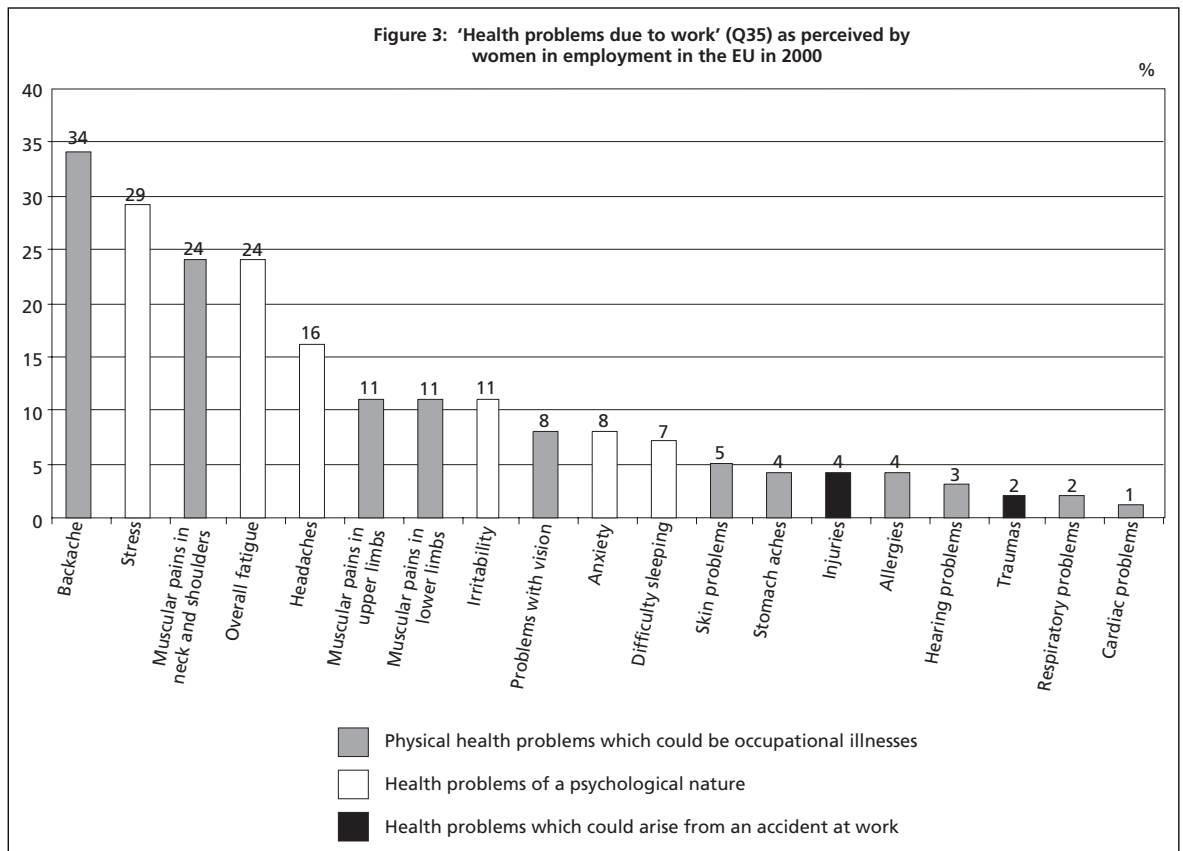
persons suffering from chronic changes in health at work adopt strategies aimed at ‘saving themselves’ physically in their work precisely in order to avoid having to stay off work²⁴. In total, 11% of European workers had at least one day off in 1999 because of a health problem due to their work (same proportion among men and women).

Accidents at work²⁵

Each of the items linked to physical health and, more precisely, the injuries or traumatism which occur at work, may correspond to an accident at work. Figure 2 shows that the incidence of accidents at work clearly affects the unskilled and manual occupations more, in line with existing knowledge²⁶.

Absenteeism on the grounds of an accident at work is the sole indicator in the survey with a precise bearing on this subject: globally, 8% of European workers had at least one day off work on the grounds of an accident at work in the 12 months preceding the 2000 survey, men being affected more than women (9% compared with 6%).

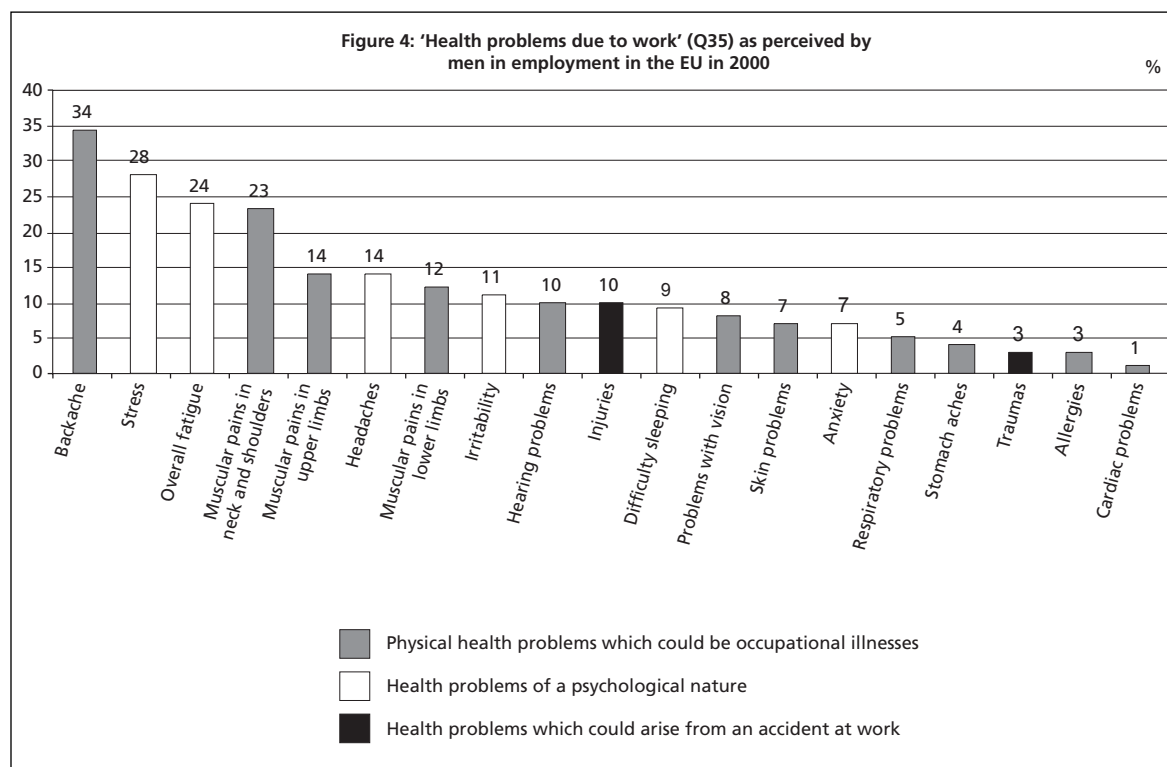
In Europe, Eurostat puts a figure of 4.8 million on the number of accidents at work causing more than three days off work each year (figures for 1996): over 4,000 in every 100,000 persons who are in work have an accident at work of this type each year. According to Eurostat, this corresponds to 150 million days of work ‘lost’ per year. To the number of days ‘lost’ from the economic point of



24 Bourget-Devouassoux and Volkoff, 1991.

25 We start from the general definition of an accident at work proposed by Eurostat [1992], in the frame of the ESAW programme (European statistics on accidents at work): ‘any event, no matter how modest, occurring in the course of a professional activity and occasioning physical or psychological injury’.

26 Caisse Nationale d'Assurance Maladie des Travailleurs Salariés (National Sickness Insurance Fund for Employed Persons [CNAMTS]), 2000; Cristofari, 1994.



view, one may pose the question of the number of days lost from the viewpoint of the human cost, taking into account the number of accidents leaving irremediable sequelae on the victims or else taking account of the consequences, in terms of reduced stability of employment, of any change in health caused by accidents doing repetitive work or even by exhausting working conditions, in the long run²⁷. As for fatal accidents, these are evaluated at 5,500 per year in the EU, by Eurostat.

Gender differences

Men and women are exposed in similar proportions to the four worst health problems (Figures 3 and 4): back pain, stress, overall fatigue and musculo-skeletal disorders of the neck and shoulders.

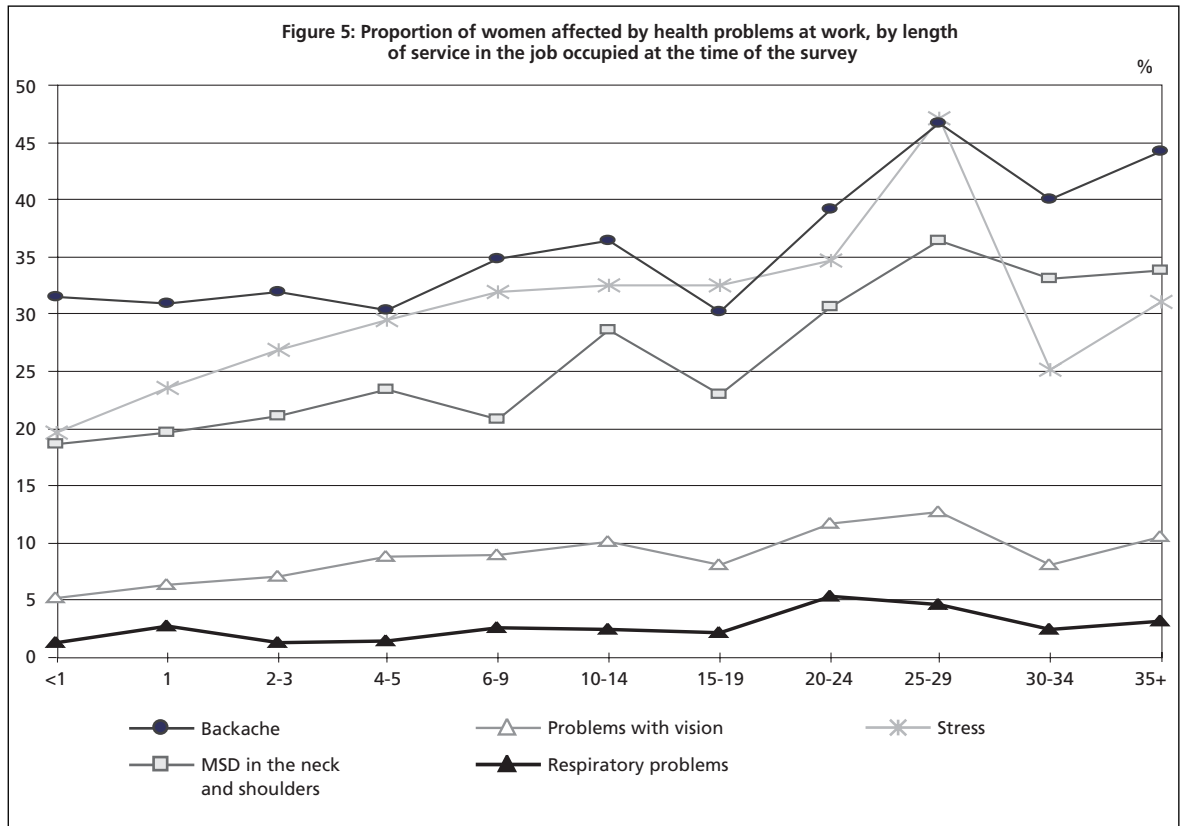
Men are more exposed to physical health problems due to work, notably to risks of accidents at work and specific occupational illnesses (10% of men have had an injury at work, compared with 4% of the women; 10% are exposed to hearing problems compared with 3% of the women). This is found for the following global indicator: 31% of the men replied 'yes' to the question 'is your health or safety put at risk because of your work?', compared with 23% of the women.

In view of the observations made, it will be noticed that men and women claim to suffer from health problems due to work in proportions which are often similar, with an over-exposure of the men to the incidence of accidents at work and to occupational illnesses (hearing and skin problems).

The changing nature of health at work and length of time in the job

The dynamic concept of health used for the study (see introduction) poses health as a process which is always in flux, which can be understood in reference to a person's individual and

²⁷ Daubas-Letourneux and Thébaud-Mony, 2000.



collective history. The forms of changes in health at work expressed as the result of Question 35 are experienced at the time of the survey, but can be more or less old or recent, depending on the duration of exposure of workers to the pollutants which are the cause. We formulate the hypothesis that the proportion of workers suffering from various forms of changes in health due to work increases in proportion with the time in the job — thus with exposure to the health risk factors — especially for health problems linked to physical attrition, such as periarticular or muscular disorders, and for highly specific problems linked to exposure to risks with delayed damage, such as respiratory difficulties.

The hypothesis of physical and psychological attrition at work for women is validated by Figure 5: one can observe a clear increase in the proportion of women who claim to be suffering from muscular pains in the neck and shoulders, of back pain or again, from stress, up to 29 years length of service.

In the same way, visual problems and respiratory difficulties due to work, two forms of changes in health at work which are typical of occupational illnesses, concern proportions of women which rise continuously up to 29 years in service and decrease thereafter.

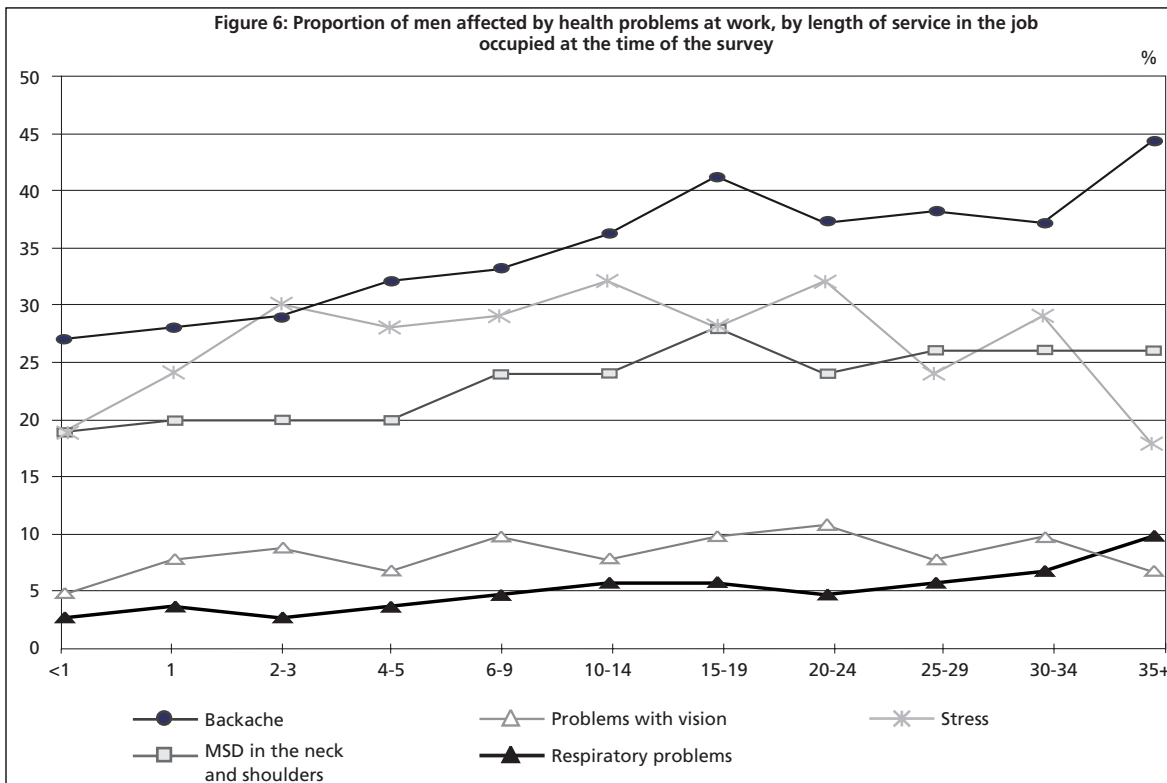
From 30 years' length of service, the five curves clearly fall, then rise again slightly for extremely long service (only 1% of women are in service for 35 years or more). This observation resulted in the formulation of the hypothesis of 'selection-exclusion processes' [Dessors et al., 1991] on criteria of attrition at work within an enterprise: the women suffering from chronic changes in health leave their job at the end of a certain number of years in service — and are more likely to

find themselves unemployed than in another suitable position — which explains the fall in the proportion of women claiming to suffer from these health problems. A qualitative longitudinal study has thus shown, in France, how the employment histories of women in long-term unemployment could clarify their leaving work, sometimes permanently, as the health of these women was so damaged [Frigul, 1997].

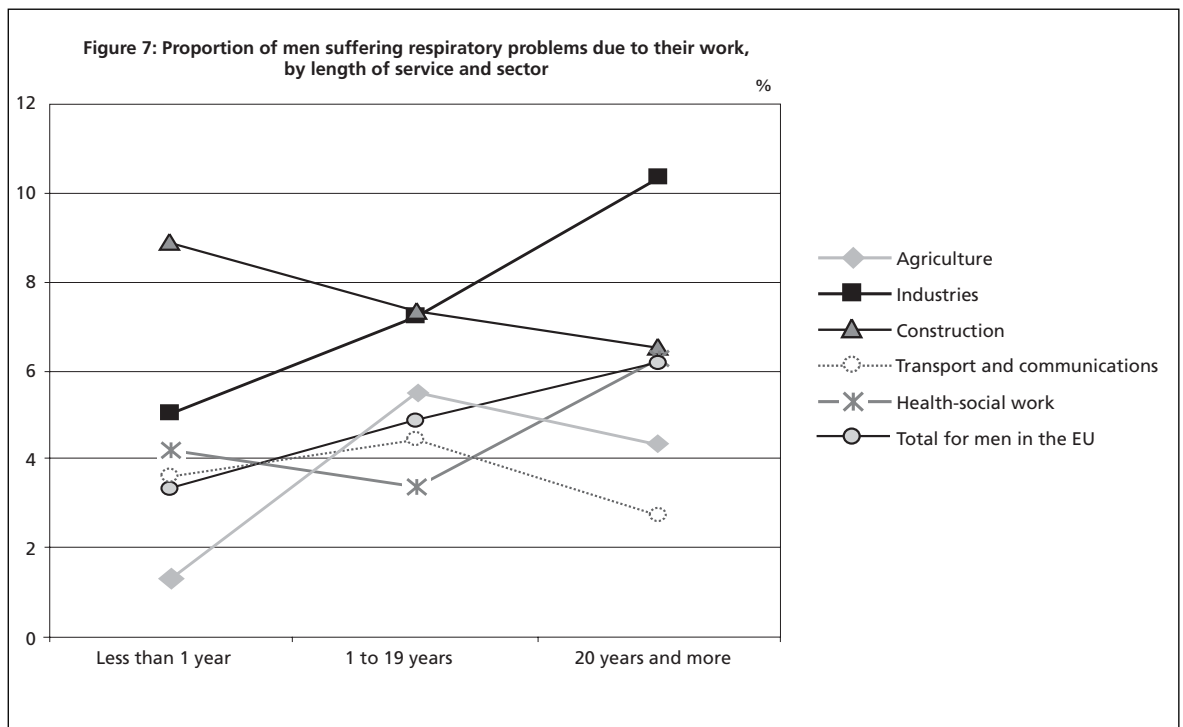
For the five types of changes in health due to work we used, the hypothesis of attrition at work which was greater for the persons occupying the same job for a long time is validated. The dip observed starting from 30 years' service on the other hand confirms the hypothesis of selection-exclusion processes of employment on the criteria of changes in health from a certain age. In fact, the logic of increasing physical and psychological attrition would have led to a continuous increase in the curves, the women having a very long length of service and still occupying a job (since they were questioned in the survey) being proportionately even more significant, concerned by these health problems.

The selection-exclusion processes which one may assume for the women are less apparent for the men: the curves are in fact less uneven than for Figure 5, attesting to a continuous progression in the proportion of men suffering from health problems represented in proportion to the increase in length of service, except for stress.

The clear and continuous increase in the number of men suffering from respiratory difficulties as their length of service increases validates the hypothesis of an exposure to risks with delayed outcomes over time. So the occupational illnesses due to dust inhalation (asbestos, wood, glass, etc.) — which express themselves in a significant diminution of the respiratory capacities — rarely start until after several decades of exposure and sometimes not until retirement.



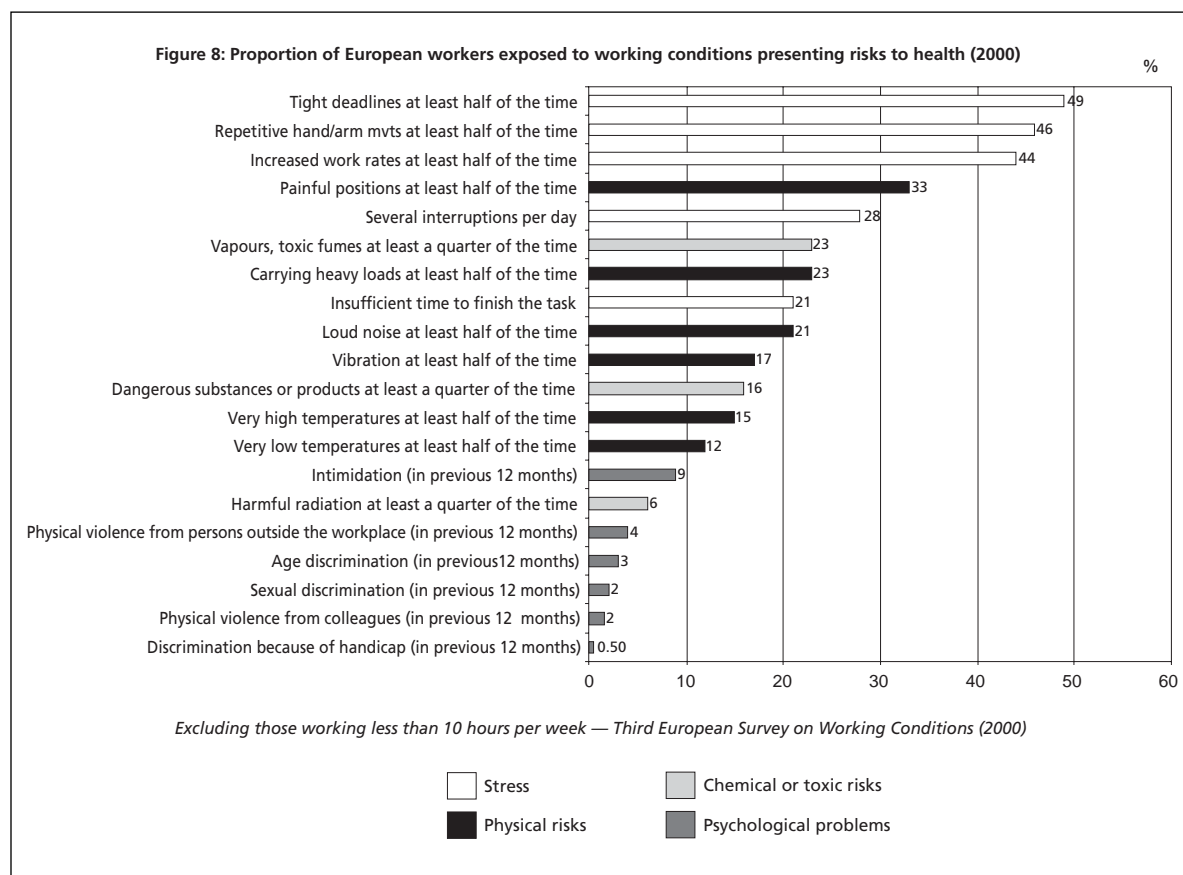
With under one year on the job, 3% of men claim to be suffering from respiratory difficulties. This proportion doubles after 20 years in service. The observation for the most exposed sectors (Figure 7) shows that it is in industry that the increase is greatest. In construction, on the other hand, the proportion of men suffering from respiratory difficulties diminishes in inverse proportion to the time in service. One may theorise that it is hard to keep the same job in construction when suffering from respiratory difficulties due to work. In this sector, asbestos did and still does constitute a major respiratory risk in certain countries. But other types of dust (silica, wood dusts, metallic dusts) and toxic or allergenic substances (for example, certain components contained in paints or



varnishes) may also contribute to a progressive alteration in respiratory function, rendering outdoor work impossible. What becomes of those who are excluded? There is no precise quantitative data on the state of health of the unemployed which would make it possible to identify the proportion of former workers injured by pneumoconiosis or other respiratory difficulties associated with work. Nevertheless the huge increase in recognised occupational illnesses linked to asbestos and the proportion of workers exposed to toxic fumes and substances raised in this survey supports the hypothesis of a significant population of European workers suffering from respiratory difficulties and forced into unemployment.

The same reasoning can be used with respect to the agriculture and transport sectors, beyond 19 years in service. Finally, one notes that the health/social services sector stands out for its great lengths of service, moving to third place of the sectors exposed to respiratory difficulties at over 19 years in service.

Perceived health questions the dangerousness of working conditions. We observe, in the following paragraph, the inventory of the risks arising directly from working conditions described by workers in the EU.



The working conditions of Europeans: what risks to health?

Starting from the conceptualisation proposed by Philippe Davezies [1999] (cf.: introduction) — risks of physical health problems, pressure, infringement of dignity and self-esteem — Figure 8 shows the distribution of risks for European workers.

The risks linked to stress are the most strongly represented among European workers in 2000 (men and women combined): very tight deadlines, heavy repetition, fast paces of work do in fact affect almost one worker in two. These new forms of risks are characteristic of an intensification of work which continues to increase, as attested by the results of the statistical surveys conducted 10 years ago²⁸. For all that, some risks arising from more traditional working conditions, involving a high degree of physical labour, continue at a high level: one worker in three states that painful or tiring positions have to be held at least half the time and almost one in four has to carry heavy loads for at least half the time.

There is a high risk from chemicals or toxins: 23% of the workers in the European Union say they are breathing toxic vapours or fumes for at least a quarter of the time.

With respect to the forms of violations of dignity such as discrimination in the workplace, one notes however that 9% of European workers have been subjected to intimidation during the 12 months

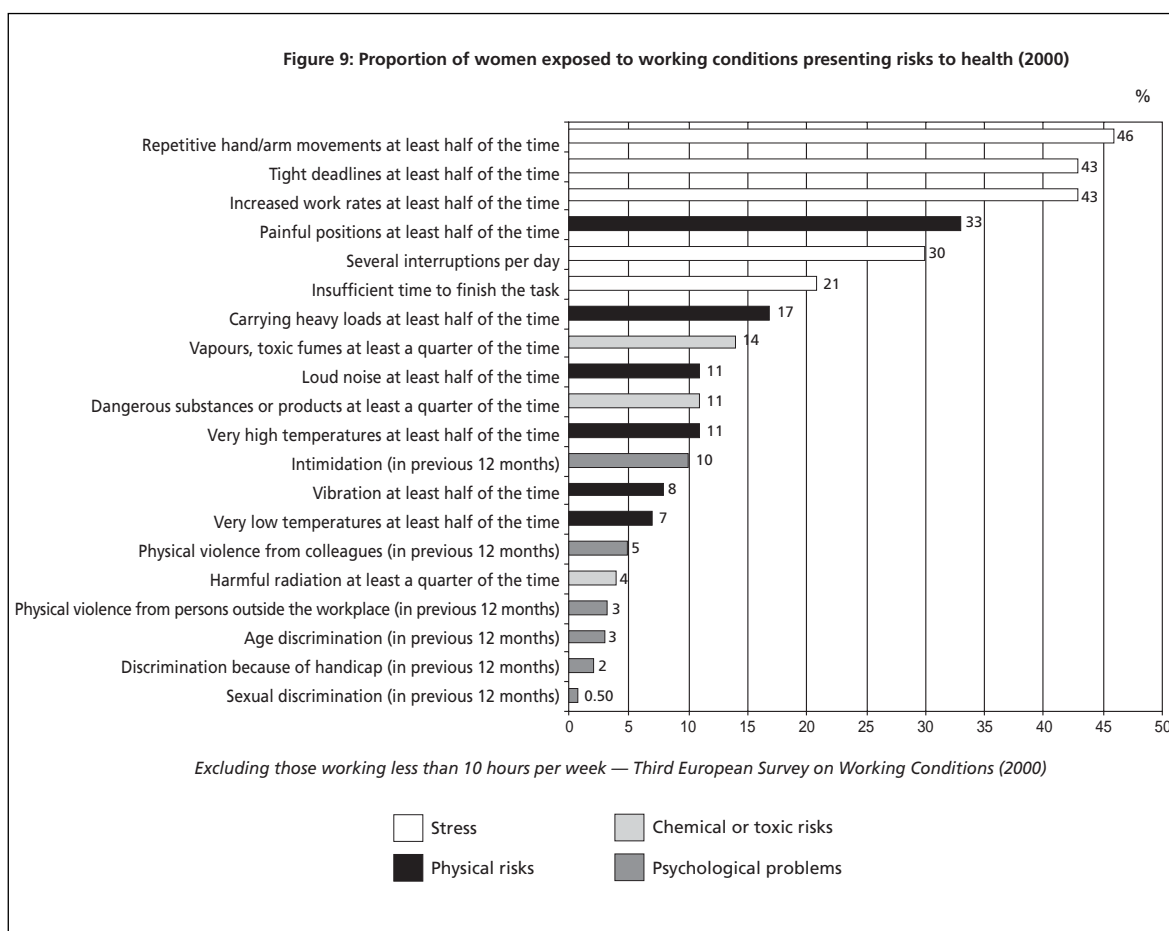
²⁸ See, inter alia, Dhondt, 1997 for the European context and Gollac and Volkoff, 1996; Bué and Rougerie, 2000 for the French context.

preceding the survey and 4% have suffered physical violence from persons from outside the workplace.

Gender differences

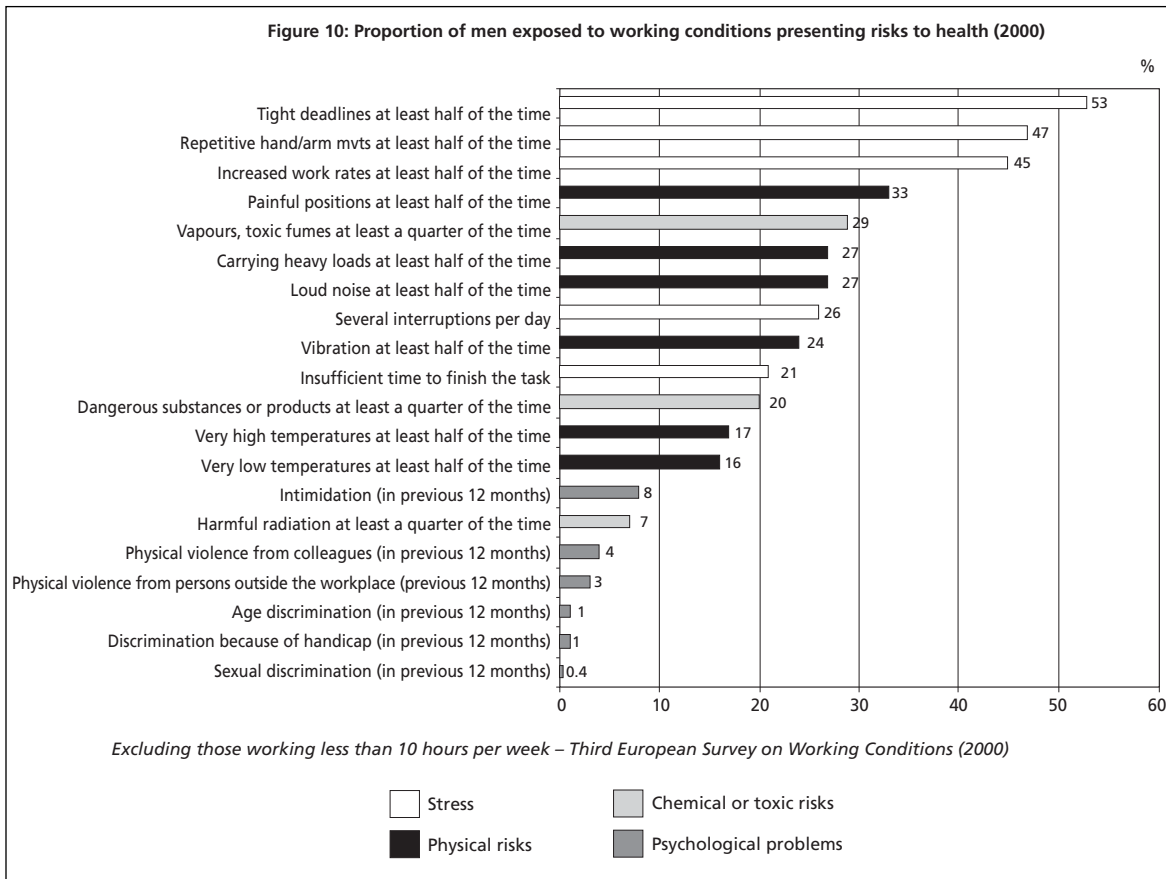
Figures 9 and 10 illustrating the distribution of the risks due to exposure to dangerous working conditions for women and for men show a relatively similar distribution. It will however be noted that the women are less exposed than the men to risks to their physical integrity. The risks in connection with stress at work consequently appear at the forefront (but the proportions are similar between men and women). The women are more exposed to acts of intimidation at their place of work than the men (10% compared with 8%).

Apart from the fact of tolerating the constraints linked to stress at work, men are very exposed to direct risks of attacks on their physical integrity. The percentage observed for an exposure lasting at least half the time to painful postures (33%), to carrying heavy loads (27%), to very loud noises (27%), and to vibrations (24%) are very high: in 2000, physically painful work remains a reality for more than one man in four.



Finally, it is noted that the risks which can have delayed outcomes, such as exposure to toxic fumes or vapours (29% of men are subjected to this at least during a quarter of the time and 14% of the women), handling dangerous substances or products (20% of the men are faced with this at least a quarter of the time and 11% of the women) or even forms of radiation (7% of the men are exposed for at least a quarter of the time and 4% of the women), expose a higher proportion of men than of

women to consequences for their health which are still, largely, unknown at this time, taking account of the delay which often exists between the onset of the occupational illness and exposure to the risk. It must be stressed that even if the proportion of women is less, female workers are not protected from these negative outcomes.



In view of the risks originating directly from the working conditions of men and of women in the EU, the question arises of the application of the European directives relating to health and safety at work in the different countries of the EU [Vogel, 1994]: What is the point of Directive No 89/391/EC, Article 6.2d on the measures necessary to adapt ‘the work to the individual? (...) with a view, in particular, to alleviating monotonous work and work at a predetermined pace and to reducing their effect on health’, when the repetitiveness of the movements of the arms and of the hands affects 53% of men and 46% of women during at least half the time?

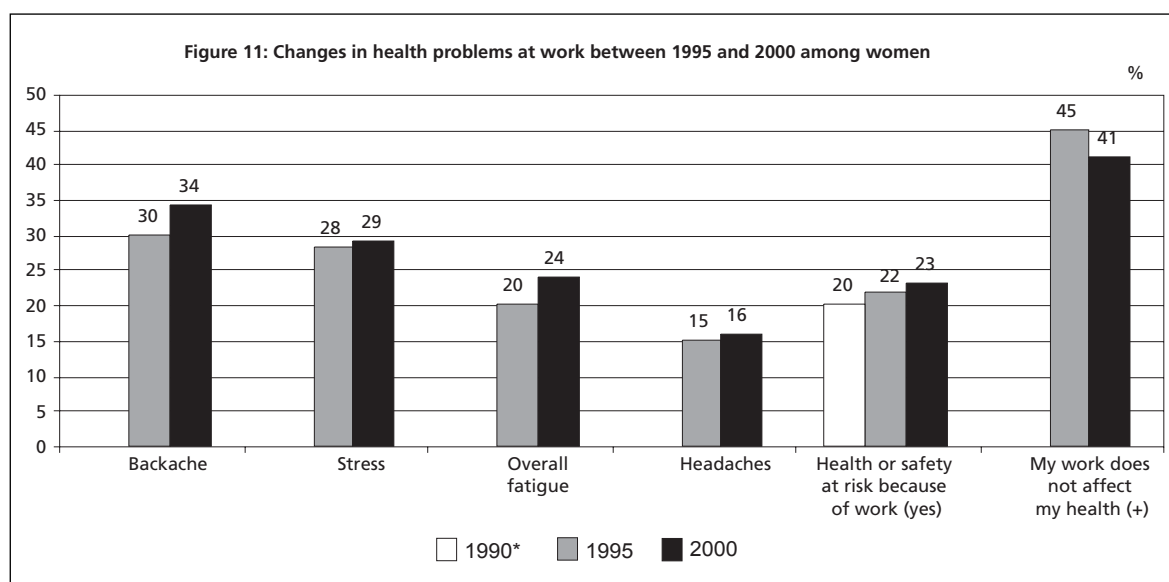
What is the point of Directive No 90/269/EC, Article 3.1. aimed at avoiding ‘the need for the the manual handling of loads by workers’, when the carrying of heavy loads for at least half the time still affects more than one man in four (27%)?

One could again cite all the other European directives on health and safety at work. Without wishing to question their pertinence, it is important, on the contrary, to display how topical they are and to raise, henceforth, the question of their effective application.

Changes and trends observed since the European surveys of 1990 and 1995

A comparative look at the three European Surveys on Working Conditions realised by the Foundation in 1990, 1995 and 2000 highlights the changes in terms of health at work and of risks.

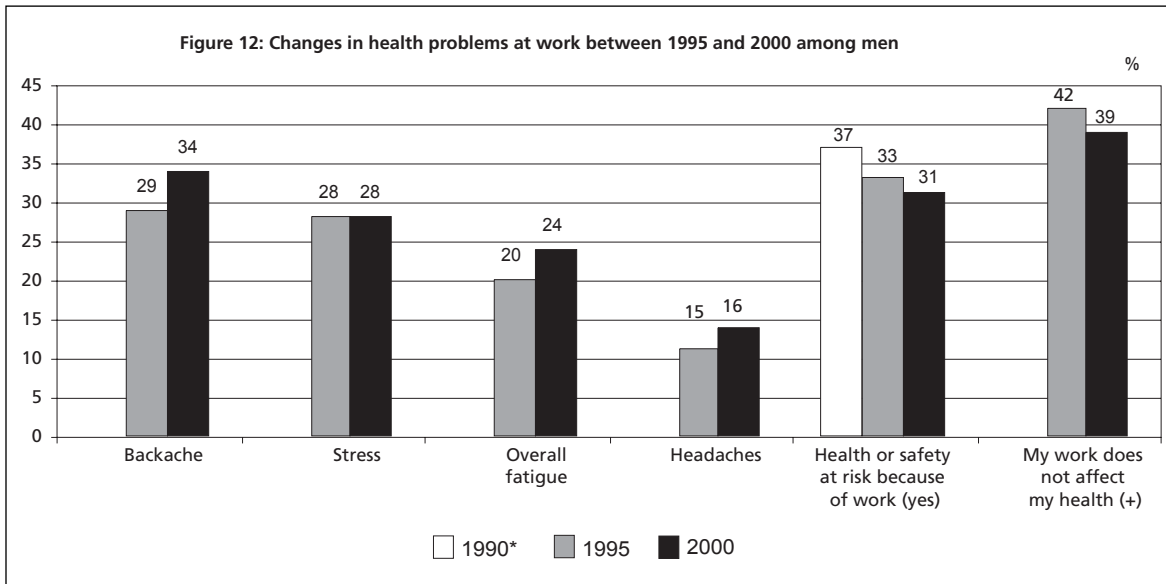
In 1995, the five health problems affecting the greatest number of persons were the same ones as in 2000: back pain, stress, overall fatigue, muscular pains in the arms or the hands and headaches. Figures 11 and 12 show a rising trend for these problems, in particular back pain and overall fatigue (four or five percentage points up in five years). The feeling of stress on the other hand remains the same, remaining in second position of health problems due to work experienced by workers.



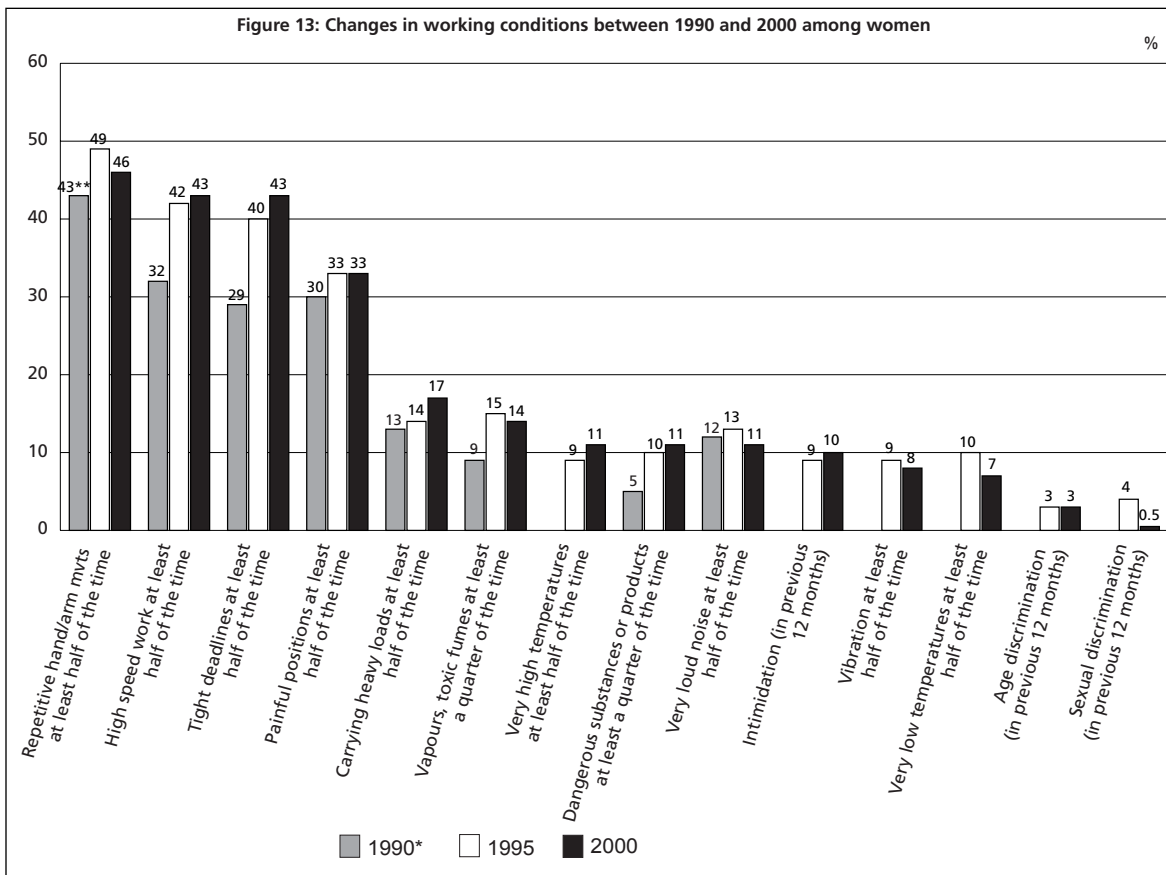
It is not possible to make a comparison concerning musculo-skeletal disorders as the variables have been modified. In 1995, 16% of women and 17% of men said they were suffering from ‘muscular pains in the arms or in the legs’. The percentages observed in 2000 for muscular pains in the arms (11% of women, 14% of men) and in the legs (11% of women and 12% of men) tend to show an increase in the problem, if one adds the two variables. Above all, the new variable added to the survey for 2000 on ‘muscular pains in the neck and shoulders’ (24% of women and 23% of men) proves to be a significant indicator of musculo-skeletal disorders: one quarter of the workers in the EU (24% of women and 23% of men) suffer from this type of change in health at work.

Similarly, the proportion of persons who do not believe that their work affects their health (they do not select any of the items proposed concerning health problems at work) is decreasing: from 45% to 41% for the women and from 42% to 39% for men.

The question of a more general nature on ‘health or safety put at risk by work’ shows a different outcome for women and for men: the change in the percentages shows a deterioration among women (20% thought so in 1990 and 23% in 2000) but reflecting an improvement among men (from 37% in 1990 to 31% in 2000). This contrary change brings about a reduction in the gap between men and women on this question. This finding leads to the assumption of a greater deterioration of health at work among women during these past ten years, and on the other hand the perception of an improvement among men. However, the fact remains that one in three men still believe that their work is a threat to their health and their safety in 2000. Furthermore, the observation of the changes over the past 10 years with respect to working conditions of men does not show any improvement.



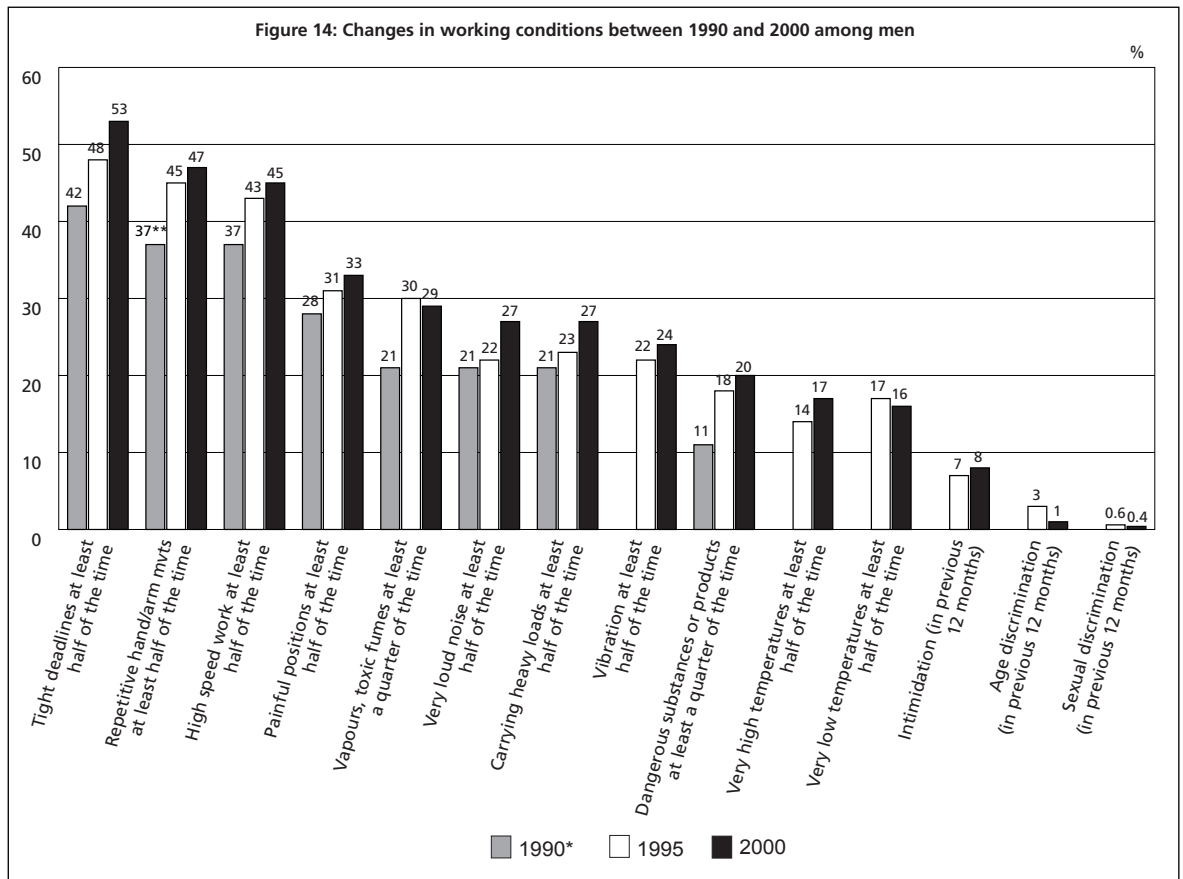
Figures 13 and 14 reflect a trend towards deterioration of working conditions over ten years. The fact that people are working to strict and short deadlines and during at least half the time is the variable with the greatest increase, up from 29% of the women concerned in 1990 to 43% in 2000 and from 42% of men in 1990 to 53% in 2000.



*: The European Survey of 1990 covers the 12 countries which were then members of the European Economic Community. The figures relate to all respondents, male and female (including those working less than ten hours per week).

** : the heading was slightly different in the 1990 survey: 'Does your work involve carrying out short repetitive tasks?'

Among women, the proportion of workers exposed to certain pollutants tends to stabilise between 1995 and 2000, after having seen a marked increase between 1990 and 1995: fast work rates, repetitive work, painful or tiring postures, toxic vapours or fumes, exposure to dangerous products or substances or else exposure to noise. While repetitive movements continue, to which 46% of women are still exposed half the time or more, on the other hand, exposure to very low temperatures and sexual discrimination decreased, for women, between 1995 and 2000.



*: The European Survey of 1990 covers the 12 countries which were then members of the European Economic Community. The figures relate to all respondents, male and female (including those working less than ten hours per week).

** : the heading was slightly different in the 1990 survey: 'Does your work involve carrying out short repetitive tasks?'

In terms of change, men express a deterioration in working conditions more sharply than women: the proportions of workers exposed to painful working conditions has been steadily increasing since ten years ago, with respect to almost all risks.

A stabilisation is noted between 1995 and 2000 concerning the proportion of men exposed at least half the time to toxic vapours or fumes, to dangerous substances or products or to very low temperatures. Chemical or toxic risks thus affect a constant proportion of women and men in their work. One can theorise that these are particular sectors in which, for five years, both the risks and the number of workers exposed have remained constant.

The proportion of male and female workers having been subjected to acts of intimidation at their place of work has remained constant since 1995.

This inventory of the health of the workers of the European Union in 2000 gives cause for concern, and shows that the trend is not one of improvement. Yet, since the figures observed correspond to a mean for all workers, it seems possible that certain groups are in much less favourable situations, because they are more exposed than others to risks to their health and their safety at work. We did not conduct a close observation in this sense in this first part, since it is not by means of the existing structural categories (economic sectors, occupational groups) that we wish to observe health at work, but by means of a typology of the forms of work organisation.

The second part of the study presents the construction of this typology (one for female, one for male workers), then returns to the risks connected with working conditions and to the forms of alteration in health at work observed by means of the different types of work organisation brought to light.

The work organisation in question

2

The sociological position adopted for this study is that of posing the question of work organisation and of the social relationships which run through it, to find out to what extent there exist, on the European labour market, any correlations between certain forms of work organisation and a greater exposure to risks of impairment to health at work. This choice makes it possible to go beyond the structural categories defined by the institutional classifications into economic sectors (NACE code) or into occupational groups (ISCO code) in order to highlight groups which are more homogenous in terms of work organisation. By taking this approach, the aim is to question some organisational choices, which may or may not be the source of specific risks for the health and the safety of workers. A recent study on accidents at work in France²⁹ has thus brought to light the characteristics of work organisation which preceded the occurrence of numerous accidents, even before the actual risks: a constant time pressure, inducing urgency in work and less vigilance or even non-compliance with elementary safety rules in order to meet deadlines, an organisation which is permanently short-staffed, leading to reduced scope for manoeuvre by the workers faced with working situations which are actually dangerous, or again, lesser integration into the work community, inducing a lack of solidarity and causing personal isolation. This theoretical and methodological stance is based on the hypothesis that observation and research relating to safety to health at work must not stop at merely confirming that there are dangerous working conditions (a confirmation which is nevertheless indispensable, the first step to stricter working regulations in order to protect the health and the safety of workers), but must also take into account the fact that it is often because certain organisational choices are made that working conditions become dangerous.

Overview of work organisation

Table 1 provides an overview of the conditions of work organisation for female and male workers in the EU, in 2000, arranged according to the three conceptual dimensions defined for the purpose of a questionnaire on health at work (presented in the introduction) the temporal framework, the scope for manoeuvre and the social relationships in the enterprise.

It is immediately apparent that the social relations resulting from the customers-supplier relationship of domination are an essential characteristic of work organisation nowadays: 68% of the workers³⁰ in the EU consider that their rates of work depend on direct demand from customers, the public, students, etc. This type of commercial constraint on rates affects one working woman in four in Europe (75%). [sic]

Alongside commercial constraints, there are also still the characteristics of a more traditional work organisation: the pace constraints of an industrial nature (automatic speed of a machine or of a product) affect one worker in five (21%), men being markedly more exposed to this than women (27% compared with 14%). Night work (at least once a month) affects one man in four and slightly more than one woman in 10 in 2000. Shift work and Sunday working (at least once a month) are a reality for one quarter of the workers in the European Union.

29 Daubas-Letourneux and Thébaud-Mony, 2000.

30 Excluding agriculture and leaving out those who work less than 10 hours per week.

Table 1: Characteristics of work organisation in the EU in 2000

<i>Population observed: workers excluding the agricultural sector, and leaving out those who work less than 10 hours per week</i>		Men	Women	EU Total	
Temporal framework	Internal flexibility	No fixed times to start or end the working day	30%	25%	28%
		Night work (at least 1/month)	25%	12%	19%
		Shift work	24%	21%	23%
		Days of over 10 hours (at least 1/month)	38%	19%	30%
		Sunday working (at least 1/month)	25%	24%	24%
Pace constraints of an industrial nature	The pace depends on the automatic speed of a machine or of a product	27%	14%	21%	
	The pace depends on quantitative standards of production	38%	21%	31%	
Scope for manoeuvre	Autonomy	No possibility of choosing or modifying the speed of work	33%	32%	33%
		No possibility of choosing or modifying the methods of work	34%	31%	33%
		No possibility of choosing or modifying the sequence of tasks	40%	37%	39%
		Cannot take a break when they want	41%	48%	44%
Control	Compliance with precise quality standards	75%	64%	70%	
	Personal evaluation of the quality of the work	76%	69%	73%	
Social relationships	Commercial constraints	The pace depends on the direct demands of customers, passengers, students, etc.	62%	75%	68%
	Discussions	No possibility of discussing the work organisation when any changes occur	22%	23%	23%
		No possibility of discussing your working conditions in general	20%	20%	20%
	Continuing training	Not a single day of continuing training in the past 12 months	65%	65%	65%

Paid employment is controlled, standardised: 70% of workers have to comply with precise qualitative standards and 73% have to evaluate the quality of their work themselves. This high level of strictness may help to relativise the degree of autonomy at work (methods, pace, sequence of tasks) expressed by two thirds of workers. Furthermore, this explicitly takes account of the transformation in the obligation of work, consisting in the wage-earner's relationship of subordination, into an obligation of results, as shown by numerous surveys highlighting the impact of the imposition of quality standards in the processes of the intensification of work³¹.

³¹ Dassa and Maillard 1996; Thébaud-Mony, 2000.

Moreover, it is noted that one third of European workers are not free to choose or to modify the pace and the methods of their work. Overall 39% are not allowed to modify the sequence of tasks and 44% are not allowed to take a break when they wish. Women are more affected by this last characteristic (48%). The intersection between the ability to modify pace and the fact of having to respect precise quality standards shows that 77% of men and 65% of women who cannot modify their pace of work have to respect precise quality standards in their work.

Discussions at work on the organisation or the conditions of work are possible for 80% of workers in the European Union, and only one worker in three has benefited, in the course of the 12 months preceding the survey, from at least one day of training paid for by his or her employer.

Construction of the typologies of work organisation for female and male workers in the European Union

The characteristics of work organisation stated above are combined, to a greater or lesser extent, with each other. On the basis of an analysis of the multiple correspondences (AMCs) realised on all the indicators of work organisation (the 17 variables in Table 1), then of a mixed classification, we propose to construct a typology of the forms of work organisation in order to observe, among women and among men, what types of work organisation can be discerned in Europe. In a second phase, it will be seen to what extent certain forms of work organisation are connected more than others with risks to the health and to the safety of workers.

Principles and methodology

A theoretical construction

The construction of the typology is primarily a theoretical construction. It goes without saying that work organisation cannot be separated from working conditions as such, or from the more macroeconomic characteristics of the labour market. Our starting point is the conditions of work organisation resulting from organisational choices entering into the work management strategies adopted by enterprises. These choices concern policy on employment and on the division of tasks, temporal organisation of work, but also the deadlines and technical standards to be respected. These organisational choices also determine any scope for manoeuvre the workers may have to discuss work organisation and to modify standards and rules within the activity of work itself. These organisational choices are themselves called into question in the dynamic of the social relationships, not only within the enterprise, but in the subcontracting relations between enterprises, in the relations between labour and management, at all levels of the productive system and, ultimately, in relations between these latter, the States but also the European authorities which intervene in the legal and normative framework of work, in all the countries of the European Union.

Statistical method

There are four consecutive stages:

- First of all, a multiple correspondence analysis (MCA³²) was realised on the basis of the 17 representative variables of work organisation (dichotomic variables) on the two sub-populations of female and male workers [filter: workers, working over 10 hours a week, exclusion of agricultural sector (and the construction sector for women)].

32 'Homals' method on SPSS.

- The dimensions produced by the MCA were observed and commented on, in conjunction with the active variables of the MCA, then with respect to 'passive' structural variables (since the SPSS (Statistics Package for the Social Sciences) method of Homals (homogeneity analysis by means of alternating least squares) does not allow the integration of passive variables, we calculated the coordinates of the representative points of the modalities of each variable based on the mean of the factors produced by Homals. This was operated on standardised factors).
- We then proceeded to a mixed classification to see if any groups would stand out around the three dimensions which had appeared for each MCA.
- The mixed classification consists of : (a) A classification into dynamic clusters, for the purpose of reducing the number of lines to be processed (from 7,939 to 800 for women and from 9,039 to 900 for men). (b) An ascending hierarchical classification (AHC) was then operated on the reduced file (consultation table). We asked for 2 to 4 classes to be recorded. (c) Finally, by merging the original file and the consultation table, the representative variables of the classes produced by the AHC have been incorporated into the original file.
- A series of two-way tables finally allows the groups to be tested and qualified, by observing them from the point of view: (i) of the 'active' variables of the MCA, (ii) of the structural variables, (iii) of the variables connected with risks resulting from working conditions, and (iv) of the variables representative of health problems at work.

Dimensions of work organisation: MCA results

The 17 indicators of work organisation produced by the 2000 European Survey on Working Conditions were integrated into the statistical model of the multiple correspondence analysis (MCA), in order to see which variables were the most discriminant in the structuration of the populations of male and female workers in the EU. In these two sub-populations, one can thus go from 17 indicators to 3 factors, corresponding to the dimensions produced by the MCA. We shall see that, for women as for men, the results validate the conceptualisation proposed for work organisation (see Table 1).

Female workers

The MCA was realised on the sub-population of female workers, excluding the sectors of agriculture (too atypical) and of construction (not representative enough) and of workers who work less than 10 hours per week (marginal employment situations).

We retain the first three dimensions produced by the MCA, representing a cumulative inertia (eigen value) of 40%. A reading of the discrimination measures and of the quantifications (see the results of the MCA in Annex V) shows which variables or groups of variables are the most representative of each dimension:

- **dimension 1**, the inertia of which is 16.5%, is structured around the absence of scope for manoeuvre at work and, to a lesser degree, the impossibility of discussion at work. The positive modalities of these variables (existence of scope for manoeuvre and of discussion) have less strong coordinates³³.

³³ The coordinates correspond to the quantifications.

- **dimension 2**, the inertia of which is 13.5%, is representative of internal qualitative and quantitative flexibility, entailing flexibility in working hours: night work (at least once a month), Sunday work (at least once a month), and shift work are the most discriminant variables along this dimension (the 'yes' modalities having the most extreme coordinates). Next come the days of more than 10 hours (at least once a month) and the fact of not having fixed times to start and end the day.

- **dimension 3** has an inertia of 9.6%. The variables linked to standards at work are the most discriminant here: quantitative production standards and qualitative control standards. The 'yes' modalities (existence of standards) express the same view (negative coordinate), but it will be noted that the most extreme ones do not match: on the other hand there are quantitative standards (-1.043) while there are no qualitative standards on the other (0.736). The production rate constraints here are well discriminated as are, to a lesser degree, the possibilities for discussion (same view as the presence of standards and automatic rates).

Observation of the results of the MCA here may help validate the three conceptual subsets proposed for the observation of work organisation (temporal framework, scope for manoeuvre and social relationships), to the extent that, being constructed in accordance with a theoretical logic, they prove to structuralise the various forms of work organisation in the European Union. Among them, it is the scope for manoeuvre and the social relationships (discussions) which are the most discriminant, ahead of time flexibility, which in turn comes before the pace constraints of an industrial nature and the control induced by quality standards for the work.

The figure (see Annex V) of passive variables according to the three dimensions (see methodology above) allows the coherence of the results to be validated. It can be seen that in fact there is a juxtaposition, on dimension 1, of the assembly operatives (little autonomy) and the intellectual occupations and senior managers. Industry is the economic sector which is most typical of an absence of autonomy at work. Dimension 2 (flexibility of working hours) combines the sectors of healthcare and of hotels and catering (night work, shift work, Sunday working) as well as very large enterprises. On the other side are found services, public administration and sales. Finally, dimension 3, representing standards at work and pace constraints of an industrial nature, contrasts skilled operatives and industry on one side with the hotel-catering sector. It will be noted that no occupational group really stands out on the side of no standards at work.

Male workers

An MCA based on the 17 characteristic variables of work organisation was realised on the same model as for women, on the sub-population of male workers, excluding the sector of agriculture and workers who work less than 10 hours per week.

The first three dimensions produced by the MCA have a cumulative inertia of 41%. A reading of the discrimination measures and of the quantifications (see the results of the MCA in Annex VI) shows that the dimensions are structured about the same characteristics of work organisation as among women:

- **dimension 1**, the inertia of which is 18%, is structured about the absence of scope for manoeuvre at work and, to a lesser degree, the impossibility of discussion at work. As for women, this dimension is mainly constructed on negative modalities (absence of autonomy and of the possibility of discussion).

- **dimension 2**, the inertia of which is 13.2%, is representative of flexibility of working hours, night work and Sunday working being the two most discriminant variables, followed by shift work, days of more than 10 hours and, finally, the fact of not having fixed times to start and end the day.

- **dimension 3** has an inertia of 10%. The variables linked to standards at work, whether quantitative or qualitative, are the most discriminated and, as for women, express the same view (same sign for the 'yes' modalities), with more marked extreme coordinates for the existence of quantitative standards and the absence of qualitative standards. The production rate constraints are, after that, the best discriminated on this dimension.

Just as for women, we verified the coherence of the dimensions produced by the MCA by showing in graph form the economic sector, the occupational group and the size of the enterprise, as passive variables (see Annex VI). The results are in line with what we have observed for women, and thus validate the dimensions.

The similarity of the results of the two MCAs realised on the sub-populations of female and male workers demonstrates that, beyond the structural disparities of distribution of women and of men on the labour market (see Annex 1), the same groups of characteristics of work organisation are structuralising in both sub-populations: scope for manoeuvre and for discussions, internal flexibility and pace constraints or control constraints induced by the existence of quantitative and qualitative standards. Constructed on similar dimensions, it may be presumed that the typologies of work organisation would show similarities between women and men. The respective weighting of each type and the specificities in terms of structural distribution and of correlations with risks to health remain to be seen.

Typologies of the forms of work organisation: results of the classifications

The MCA brought to light, among women and among men, some constituent dimensions of the structure of the population: from 17 indicators, one thus goes to three continuous, structuralising variables. It is about these three dimensions (factors) which the mixed classification statistical analysis was operated.

Four groups emerge from the classification procedure, among women and among men. We present them below on the basis of two-way tabulations of the 17 indicators of work organisation. To facilitate the task of interpretation, we propose a name to refer to each of the groups, according to its specificities in terms of work organisation relative to the other groups.

Female workers

Table 2 presents the four groups produced by the ascending hierarchical classification, according to the 17 indicators of work organisation, ordered in each case according to three conceptual dimensions which are the temporal framework, scope for manoeuvre and social relationships. On the basis of these percentages, we shall name each of the four groups on the basis of the characteristics which individuate them most relative to the other groups.

One constant will be observed immediately: the commercial constraints on the pace of work (customer demand) concern the four groups of women, affecting at least two thirds in each group.

Table 2: Groups constituting the typology of the forms of work organisation among female workers

<i>Population observed: workers, excluding the sectors of agriculture and of construction, omitting those persons working less than 10 hours per week</i>		Group 1 (18% of the women)	Group 2 (7% of the women)	Group 3 (53% of the women)	Group 4 (22% of the women)	
Temporal framework	Internal flexibility	No fixed times to start and end the working day	22.2%	52.7%	25.6%	19.3%
		Night work (at least 1/month)	6.4%	96.1%	4.0%	8.5%
		Shift work	19.8%	82.3%	11.1%	28.9%
		Days of over ten hours (at least 1/month)	7.0%	62.7%	19.2%	13.9%
		Sunday working (at least 1/month)	19.5%	97.3%	14.5%	25.2%
Industrial type pace constraints		The pace depends on the automatic speed of a machine or of a product	12.8%	7.6%	3.3%	43.4%
		The pace depends on quantitative standards of production	12.8%	12.1%	14.1%	49.5%
Scope for manoeuvre	Autonomy	No possibility of choosing or modifying the pace of work	61.0%	36.4%	10.9%	62.2%
		No possibility of choosing or modifying the methods of work	62.7%	29.3%	6.4%	66.9%
		No possibility of choosing or modifying the sequence of tasks	70.9%	39.1%	12.5%	71.3%
		Not allowed to take a break when they wish	62.8%	66.1%	35.2%	66.1%
Control		Respect of precise quality standards	39.3%	70.7%	63.6%	89.6%
		Personal evaluation of the quality of their work	38.4%	78.6%	76.9%	79.5%
Commercial constraints		The pace depends on direct demand from customers, passengers, students, etc.	66.1%	95.9%	77.3%	71.4%
Social relationships	Discussions	No possibility of discussing work organisation when changes occur	82.5%	13.4%	8.8%	12.2%
		No possibility of discussing your working conditions in general	74.5%	11.6%	7.9%	10.0%
Continuing training		Not a single day of continuing training in the course of the past 12 months	89.4%	44.8%	58.4%	69.7%

Group 1

This group represents 18% of female workers. This is where the impossibility of having discussions in the workplace is far and away the highest: 83% of the women in this group cannot discuss the work organisation in the event of change and 75% cannot exchange views on their working conditions generally. Moreover, 89% of the women in this group have received no continuing training in the past 12 months. This is also the highest proportion.

Another typical characteristic of this group is the very low proportion of women with autonomy in their work: 71% cannot choose or modify the sequence of their tasks, 63% have no influence on working methods and 61% cannot alter the pace of work.

If this group is less affected by long working days or by night-time working, it is nevertheless not completely immune to flexibility in working hours: 22% of the women in this group do not have fixed times for starting and ending the working day, and one in five works at least one Sunday a month or is involved in shift work.

We propose calling this group, which is characterised by the lowest possibilities for personal expression and action with respect to work, 'constrained work'. The term 'constrained' refers back to the service relationship, to submission, to non-choice, as confirmed by the definition given in the Larousse dictionary (*Lexis*, 1992): '(1) status of a person deprived of his independence (syn.: submission, subjection); (2) constraint, subjugation to repetitive occupations, to obligations.'

Group 2

This group represents 7% of female workers. It stands out very clearly from the others in terms of the indicators of flexibility of working hours, and as the result of this is very homogeneous: 97% of the women in this group work at least one Sunday a month, 96% work at least one night a month, 82% are on shift work, 63% have working days of over 10 hours and 53% have no fixed times to start and end the working day.

Almost the entire group (96%) is affected by pace constraints of a commercial nature (direct external demand). This finding shows the connection between flexibility of working hours and the demands of the customer, whether these demands are encountered directly, experienced by the workers or again, whether they are transmitted in discourse precisely to justify this flexibility.

The level of requirements with respect to the quality of work is very high: 79% of the women in this group have to evaluate the quality of their work personally and 71% have to comply with precise qualitative standards.

The scopes for autonomy of the women in this group are rather better than in groups 1 and 4, but more than a third cannot choose or modify the pace or the order of their tasks, and two thirds cannot take a break when they wish.

Finally, 88% of the women in this group are able to have discussions, and 55% of the women in this group had received some continuing training, which is thus the highest proportion of any of the groups.

The characteristics of work organisation which most typify this group with respect to the other three are connected with flexibility of working hours. We propose to call this group 'flexible work'.

Group 3

This group is the largest quantitatively: it represents 53% of female workers in the EU. This group stands out from the others on the grounds of autonomy at work and of the possibilities of discussion which are substantially higher: 94% are free to modify or to choose their working methods, 89% and 87% respectively can influence the pace or the order of their tasks. While one third of the women in this group are not free to take a break at will, this proportion is nevertheless low, compared with the other groups (where two thirds are affected).

Qualitative control and commercial constraints on pace of work are important: 77% of the women have to evaluate the quality of their own work and 77% say they have to submit to the requirements of their customers in their pace of work.

It must be pointed out that one woman in four, in this group, has variable times for starting and ending the working day, and that 19% have at least one day of over 10 hours per month. Taking account of the observations made on autonomy and freedom at work, it is possible to conjecture at this point that this time flexibility is characteristic of the work of managers or the senior intellectual professions.

We propose to call this group, which represents 53% of female workers, 'autonomous work'.

Group 4

This group represents 22% of the workers in the European Union. Together with group 1, it is characteristic of very low autonomy at work: 71% of the women in this group cannot choose or modify the order of their tasks, 67% cannot modify their working methods and 62% have no power whatsoever over pace. Only one woman in three of this group can decide to take a break when she so wishes.

The pace constraints of an industrial nature are characteristic of this group, where 50% have to comply with quantitative standards of production and 43% work at the pace imposed by the speed of a machine or of a product.

It is for this group, too, that qualitative standards affect the most women: 90% are exposed to them. Cumulated with the quantitative standards, one can see in this instance that the work is highly standardised for this group.

Direct external demand influences work pace for 71% of the women of this group.

Finally, discussions in the workplace are possible for a major proportion of the group: 88% can discuss work organisation when a change occurs and 90% can discuss their working conditions. In view of the lack of scope for autonomy observed for this group, incidentally, this freedom of discussion may seem paradoxical. It may be that the combined situations of work correspond to large-scale industry (highly standardised and highly automated work, 'production line work'), in which some privileges have been acquired with respect to freedom of expression by the workers, but without them in any way having true autonomy in the realisation of their work.

We propose to call this group ‘automated work’.

Figure 15 represents the four types of work organisation which have emerged in the sub-population of female workers. The arrangement of the variables in the x-axis complies with the order established with respect to the conceptual dimensions (see Table 1), and thus allows for an easier comparative reading of the curves:

The curve representing the type ‘autonomous work’ stands out clearly for the scope for autonomy in work and the possibilities of discussion.

The curve of the ‘flexible work’ type also stands out very clearly on the graph, for the indicators linked to flexibility of working hours. It can also be seen that this type of work organisation comes second in terms of autonomy at work and is the one most affected by continuing training.

The graph of the ‘constrained work’ type stands out for its almost complete absence of possibilities for discussions at work, for its low scope for autonomy and the atypical nature of the lack of control over the quality of the work.

Finally, the ‘automated work’ type is graphically illustrated for the indicators of pace constraints of an industrial nature. It can also be seen that this group is very exposed to control over the quality of the work and is, with the ‘constrained work’ type, the least open to scope for autonomy of the workers in their work.

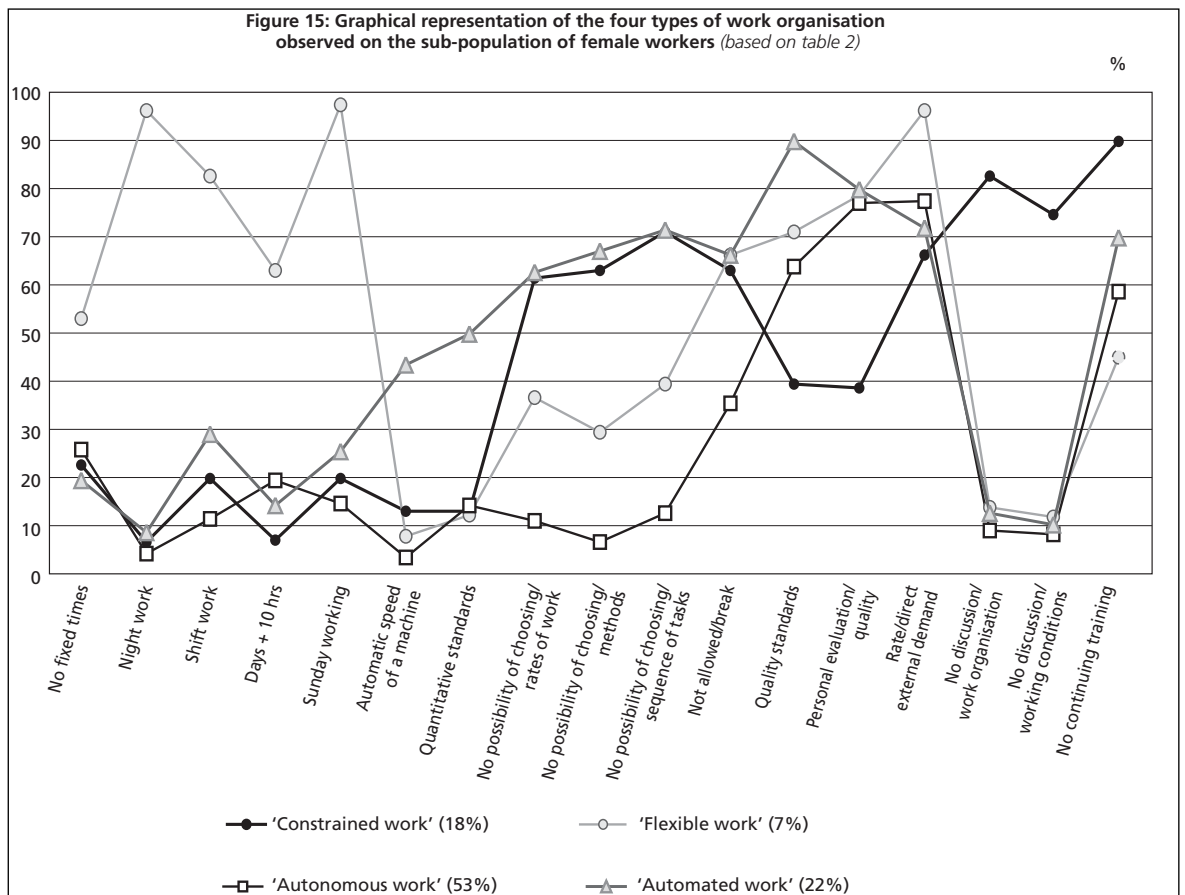


Table 3: Groups constituting the typology of the forms of organisation among male workers

<i>Population observed : workers excluding the agricultural sector and omitting those persons working less than 10 hours a week</i>		Group 1 (49% of the men)	Group 2 (17% of the men)	Group 3 (16% of the men)	Group 4 (18% of the men)	
Temporal framework	Internal flexibility	No fixed times to start or end the working day	30.4%	18.0%	56.5%	17.3%
		Night work (at least 1/month)	7.9%	3.8%	77.1%	40.4%
		Shift work	9.5%	6.2%	49.8%	56.5%
		Days of over ten hours (at least 1/month)	36.9%	15.5%	77.2%	24.5%
		Sunday working (at least 1/month)	8.6%	6.1%	83.7%	33.5%
Industrial type pace constraints	Industrial type pace constraints	The pace depends on the automatic speed of a machine or of a product	19.7%	9.6%	17.5%	71.7%
		The pace depends on quantitative standards of production	38.3%	16.8%	24.4%	73.5%
Scope for manoeuvre	Autonomy	No possibility of choosing or modifying the pace of work	12.1%	51.9%	22.8%	82.7%
		No possibility of choosing or modifying the methods of work	10.5%	59.7%	24.3%	84.3%
		No possibility of choosing or modifying the sequence of tasks	15.2%	67.7%	29.1%	91.2%
		Not allowed to take a break when they wish	25.7%	51.9%	36.4%	75.2%
Control	Control	Respect of precise quality standards	81.9%	53.8%	61.4%	92.9%
		Personal evaluation of the quality of their work	91.0%	49.5%	71.8%	70.6%
Commercial constraints	Commercial constraints	The pace depends on direct demand from customers, passengers, students, etc.	69.8%	53.0%	76.6%	40.9%
Social relationships	Discussions	No possibility of discussing work organisation when changes occur	3.5%	65.9%	18.6%	37.9%
		No possibility of discussing your working conditions in general	3.2%	59.2%	17.0%	30.3%
Continuing training	Continuing training	Not a single day of continuing training in the course of the past 12 months	57.0%	89.1%	50.8%	79.2%

Male workers

One constant emerges: the exposure of the four groups to the forms of control at work represented here by the qualitative standards to be respected and a personal evaluation of the quality of their work, which affects at least one man in two in the four groups.

To a lesser degree than among women, pace constraints of a commercial nature are also experienced in all the groups, the group least affected nonetheless amounting to 41%.

Group 1

Group 1 represents half of the workers (49%): this is the largest one. This group stands out from the other three due to an autonomy which is markedly higher than elsewhere concerning intervention on working methods (89% can modify or choose them), the pace of work (88% can modify this at will) and the order of tasks (85% can modify this at will). Though they are the ones with most freedom to decide when to take a break, the proportion nevertheless falls to 74%. The other feature which is characteristic and sharply different from the other three groups is a freedom of discussion which is more or less generalised for all the men of this group: 97% can discuss their working conditions and 96% can discuss work organisation when any changes occur.

This group is less affected by night-time working, shift work or Sunday working. On the other hand, the time flexibility linked to variations in working hours and to long working days affects about one third of the men in this group.

There are pace constraints which are either due to automation or linked to quantitative standards, even if the proportion of men concerned is in the minority in this group.

Taking account of the characteristics of work organisation which most typify this group as compared with the other, we propose calling it '*autonomous work*'.

Group 2

Group 2 represents 17% of the male workers of the European Union. This group is the one with by far the least possibilities of discussion: two thirds of the men in this group cannot discuss work organisation when any changes occur. Only 11% of the men in this group have been given continuing training in the course of the past 12 months. This is the lowest proportion.

After group 4, this group is the one presenting the least scope for autonomy at work. This group is exposed to very little time flexibility at work, but 18% nevertheless have variable times for starting and ending the working day.

Finally, commercial pace constraints affect a little more than one man in two in this group.

We propose to call this group '*constrained work*', for the same reasons as those explained for women.

Group 3

This group represents 16% of the male workers. It is illustrated by the greatest exposure to flexibility of working hours: 84% of the men of this group work at least one Sunday per month, 77% work at least one night per month, 57% have no fixed hours for starting and ending the working day and 50% are on shift work. At the same time, this is the group most subject to pace constraints of a commercial nature: 77% say their pace depends on customer demand. This is an illustration of the association between flexibility in working hours and commercial pressure (customer demand).

There is strict control in connection with the quality of the work: 72% of the men in this group have to evaluate the quality of their work themselves. There are also quantitative production standards: these affect one quarter of the group.

Finally, this group is illustrated by the highest proportion of workers having benefited from continuing training in the past 12 months (49%).

We propose to call this group 'flexible work'.

Group 4

This group represents 18% of the male workers. It stands out from the other groups for the variables linked to pace constraints of an industrial nature: 72% of the men note that their pace of work is regulated by the automated speed of a machine or of a product and 74% depend on quantitative production standards affecting pace. It is also in this group that the scope for autonomy is lowest: 91% cannot choose or modify the order of their tasks, and more than four out of five have no influence on the speeds or methods of work (83% and 84% respectively).

Quality control over work has a high profile in this group: 93% have to respect qualitative standards and 71% have to evaluate the quality of their work themselves. As they are also highly subject to quantitative standards, it can be said that men in this group are in a highly standardised work organisation.

We propose to call this group 'automated work'.

Figure 16 represents the four types of work organisation captured for men. As for women, the arrangement of the variables in the x-axis allows the curves to be observed according to the conceptual dimensions. This clearly brings out the type of 'autonomous work', as seen from the scope for autonomy and the possibilities of discussion. Also emerging very clearly is the 'automated work' type, sharply higher than the others for pace constraints of an industrial nature, but also for an absence of scope for autonomy at work, where the curve greatly exceeds the one representing the type known as 'constrained work'.

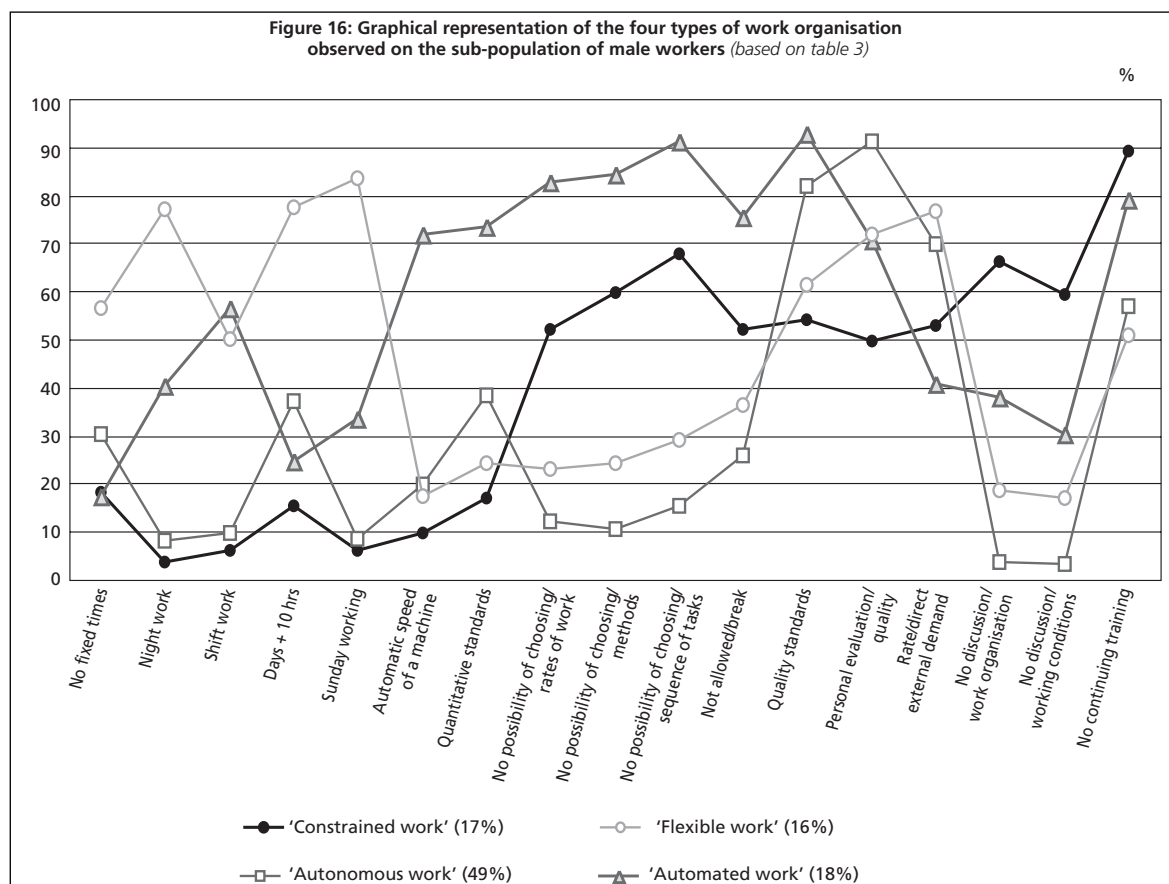
The curve representing 'constrained work' stands out for the lack of autonomy (in second place after the type referred to as 'automated work') and the absence of discussion at work. The fact that this group is not in the least exposed to flexibility is equally clear.

Finally, the curve representing the type 'flexible work' stands out, logically, for the indicators relating to flexibility of working hours. This group is the closest to 'autonomous work' in terms of autonomy and the possibilities of discussions at work.

Comparison of the typologies for women and men

The four types of work organisation brought to light in the sub-populations of female and of male workers of the European Union are structured around the same characteristics of work organisation, and thus bear the same names³⁴.

³⁴ It may be noted that the four groups do not appear in the same order at the end of the ascending hierarchical classification (AHC). The factors resulting from the MCA on which the classifications are realised have their own specificities for each sub-population. This explains these different orders. To facilitate the reading of the graphs and tables, we have opted for the same order of the types in both sub-populations.

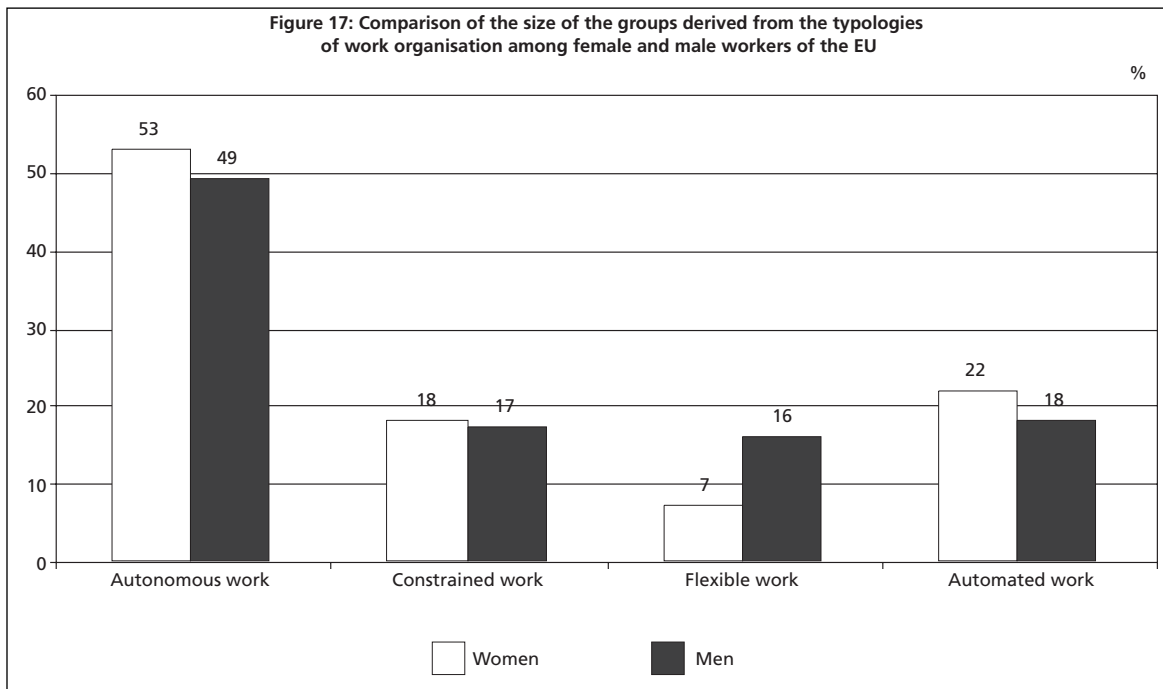


These similarities are interesting to observe in as much as they show that neither women, nor men, can escape a type of work organisation engendered by the social division of labour which is established at the level of the employment market. What matters at this point is to show the existing specificities, for female and male workers: the respective proportion of each type is not the same in both sub-populations and the very definition of the types sometimes includes nuances which need to be pointed out.

First of all, from a quantitative point of view, the groups are not always comparable, as shown by Figure 17: the 'flexible work' type covers 16% of the men and only 7% of the women. This is a logical finding, taking into account the greater exposure of men to night work, to long working days or again, to Sunday working.

Conversely, the jobs with an 'automated' work organisation involve a greater proportion of women than of men, in each of the sub-populations (22% compared with 18%).

Apart from the quantitative aspect, there are some specificities for the same type of work organisation in both sub-populations. So 'automated work' is characterised, among male workers, by an absence of autonomy at work which is noticeably higher than the other three types, which is not true among women: more than 80% of the men in the 'automated work' group have no autonomy in their work at all, while between 52% and 68% of those in the group doing constrained work are affected; among women, 'automated work' and 'constrained work' are both affected in the same proportions by a lack of autonomy (61% and 72% of the groups).



The type ‘constrained work’, moreover, stands apart more markedly from the other three groups among women than among men, from the point of view of the impossibility of discussion in the workplace.

Another difference between women and men from the point of view of work organisation lies in the time pressure caused by the customer-supplier relationship. This characteristic of work organisation has a high profile among all the groups, but it was noted that women, regardless of the type of work organisation to which they belong, are much more exposed to this constraint than men, especially for two groups: 71% of the women in a job characterised by ‘automated’ work organisation are subject to pace constraints of a commercial nature, compared with 41% of the men exposed to the same type of work organisation; and 66% of the women involved in ‘constrained work’ are exposed to this type of constraint, while ‘only’ 53% of the men doing ‘constrained work’ are. This is where the idea of a social division of work between women and men appears, the former being more exposed to a discourse or to a commercial pressure, for jobs which tend to be less skilled.

It remains to be seen to what extent these four types of work organisation which have developed among women and men are distributed structurally over the European labour market. In a second phase, crossing the typologies with the indicators of risks and impairments to health will make it possible to see how far certain types of work organisation have closer correlations with risks to health at work.

Structural distribution of the types of work organisation

How far is the typology of forms of work organisation constructed for female and male EU workers distributed structurally over the labour market?

We observe the distribution of the typologies according to economic sector, occupational group, the size of the local unit, job status, age, length of service, and finally by country.

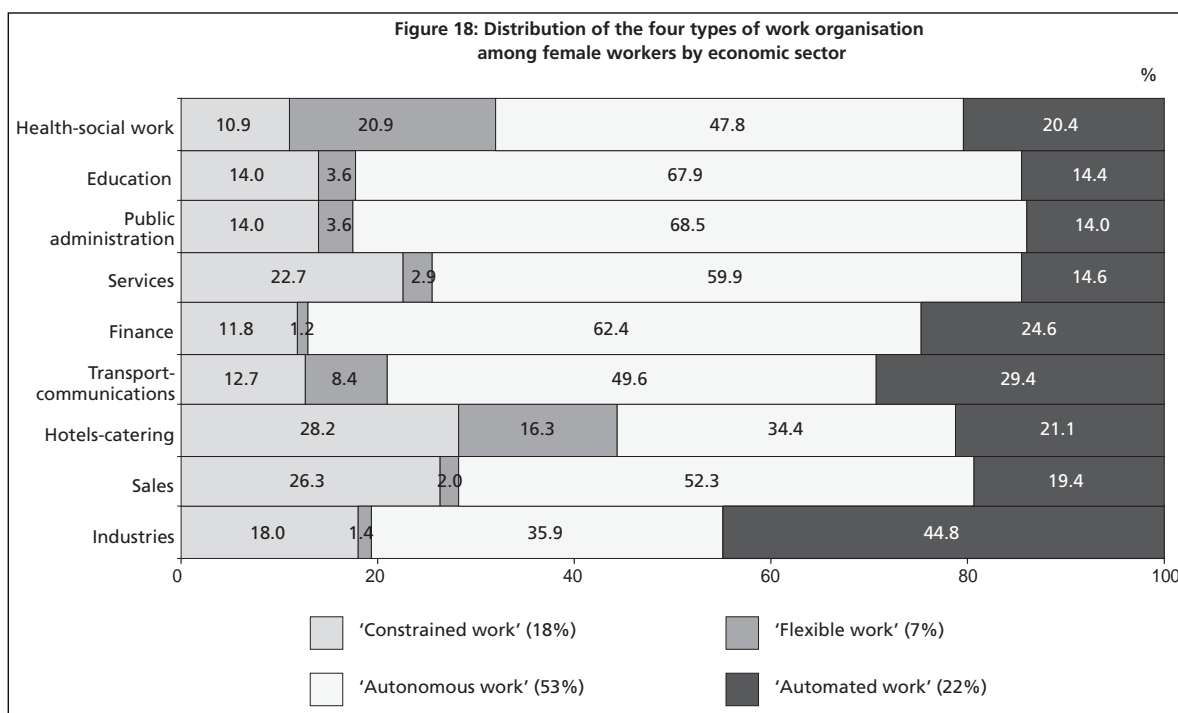
Profile of female workers associated with the four types of work organisation

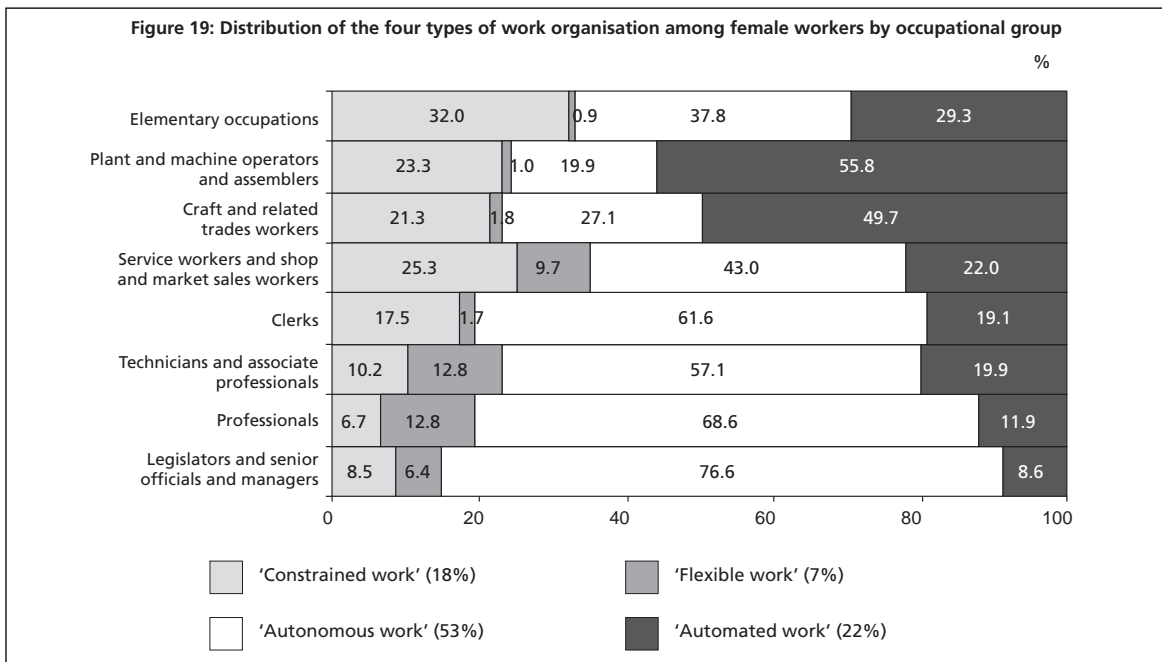
Figure 18 shows the distribution of the typology by economic sector (regrouped into 11 modalities: see Annex VII). One can immediately see that the four types of work organisation exist within each sector, without exception. The specificities of distribution reveal the structural distribution of the forms of work organisation, which corresponds to a social division of work.

The jobs connected to the type of work organisation known as ‘flexible’ can be clearly seen to be situated mainly in the sectors of health-social work (21% of the sector) and in hotels-catering (16%): two sectors particularly exposed to flexibility of working hours by the very reason of a direct relationship with the public (patients, customers). The sector of transport and communications is also more involved in this type of work organisation, but the marginal nature of this sector (3% of the female working population) must be taken into account here. The distribution of the sectors within each group (see Annex VIII) shows that this ‘flexible work’ consists of 60% women in the health-social work sector.

The jobs typified by an organisation of the ‘servitude’ type have the highest proportional representation in the sectors of hotels and catering (28% of the sector), in sales (26%), services (23%) and, to a lesser degree, in industries (18%). One may think of jobs such as cleaning, which are performed outside the hours of public contact. A detailed observation on a non-aggregated variable will confirm this hypothesis: in the sector of ‘households employing domestic staff’, this type of work organisation represents 46% of the jobs.

The sectors of public administration, of education, of finance and of services are those where jobs of the ‘autonomous’ type are most represented. This type of work organisation, which grants a great deal of autonomy to workers, is thus mainly linked to administrative and service jobs.





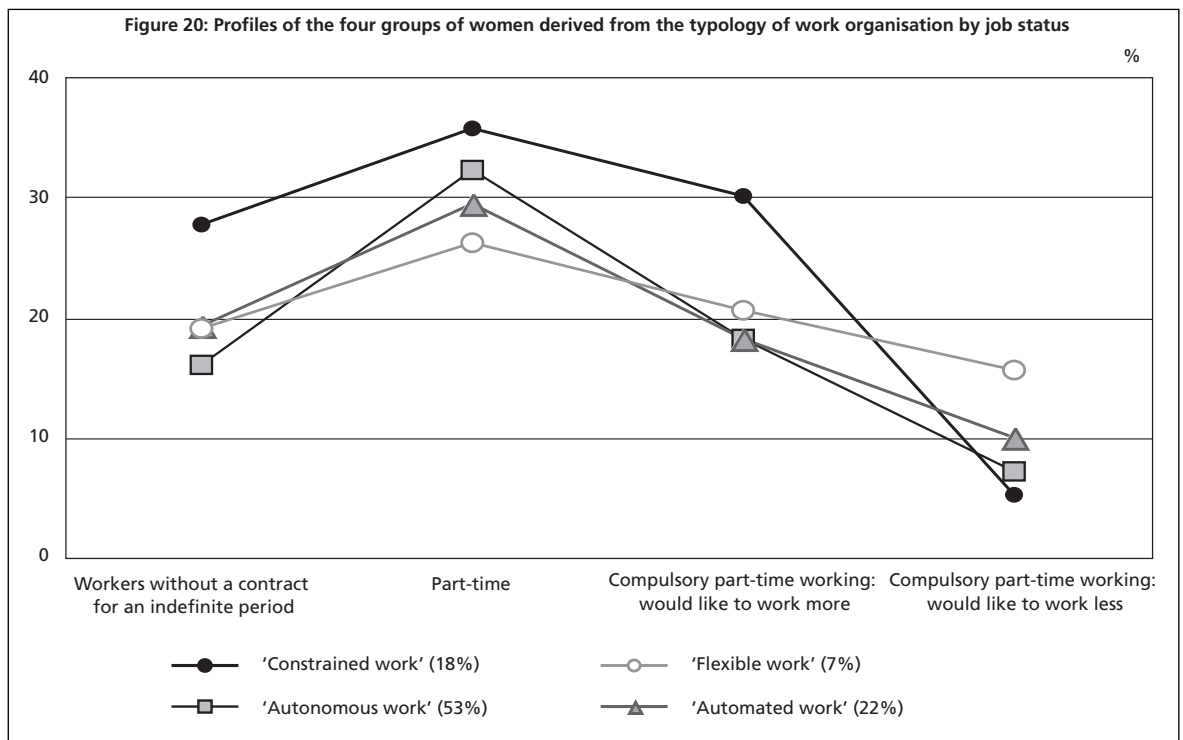
The jobs where the work organisation is of the 'automated work' type are by far the most represented in the sector of industries (45% of the sector), which makes sense, considering the constraints of an industrial nature which typify this group. One will, however, note that this type of work organisation concerns 29% of the jobs in the transport-communications sector, 25% of the finance sector, 21% of the hotels and catering sector and 20% of the health-social work sector. In these sectors, there exist the types of jobs particularly subject to standards with little scope for autonomy: so one may [think] of the routine tasks executed by computer (data input, cheque processing in the finance sector, etc.), or of female telephone operators in the transport-communications sector, of fast-food employees, subject to genuine cadences of a quantitative nature and with no scope for autonomy in their work, or again, of nursing auxiliaries, who are more and more constrained by very precise standards to be followed in the execution of their tasks, and have neither autonomy nor any opportunities for discussion.

The distribution according to occupational groups (Figure 19) shows the pyramids which contrast the types of work organisation for 'autonomous work' on the one hand, and 'automated work' and 'of servitude' on the other: the proportion of the jobs of the 'autonomous work' type increases in line with qualifications, senior managers and directors being 77% of those in a job of this type, compared with only 20% of assembly workers, and on the other hand, one may observe a maximum proportion of jobs of the 'automated work' type among the assembly workers (56%), against 9% among the managers and directors and the highest proportion of jobs 'of servitude' among labourers and unskilled workers, compared with 7% among the intellectual and scientific professions. At this point it will be noted that female sales assistants and unskilled female workers in service jobs are the second group most concerned by work of the 'of servitude' type (25%).

The jobs characterised by a work organisation of the 'flexible' type are proportionally those most represented among intermediate professions ('technicians') and the intellectual and scientific professions ('professionals'), where 13% of the workers occupy a job of this type. The high representation of nursing staff and of hospital managers in these sectors (48% of the intermediate

professions and 29% of the intellectual and scientific professions are in the health sector) may explain this finding.

The observation according to the size of the local unit of the enterprise shows that the jobs characterised by a work organisation of the ‘servitude’ type are proportionally the most numerous in small enterprises of less than 50 workers: 70%, compared with 64% of the jobs in ‘autonomous work’, 52% of the jobs in ‘automated work’ and 44% of the ‘flexible’ jobs. These latter are the most concerned by the very large enterprises of 500 workers and over: 22% of this group are in fact found there, compared with 14% of the jobs ‘automated work’, 10% of the jobs in ‘autonomous work’ and only 5% of the jobs of the ‘of servitude’ type. This latter finding is in line with the ever-increasing amount of sub-contracting in service activities (cleaning, catering), which tends to ‘emerge’ from the contractual relation of work for the workers performing these tasks. Social relationships in the workplace are characterised, for the performance of these service tasks, by a relationship of submission to the ‘needs’ not only of the principal but of his workers. These workers are excluded from representative bodies (Comité d’entreprise [elected workers’ council] (CE), Comité d’Hygiène, de Sécurité et des Conditions de Travail [Health, Safety and Working Conditions Committee] (CHS-CT)), having a union outside their workplace. Their presence is often ‘invisible’ to the workers on the site.



The view of types of work organisation according to job status (Figure 20) reinforces the ‘servitude’ side of the jobs characterised by this type of work organisation: these are in fact the jobs with the highest concentration of workers employed on non-permanent bases (28%), and working part-time compulsorily (30% of the women working part-time would like to work more, thus one in three).

Work of the ‘autonomous’ type concerns the largest proportion of women employed on a permanent basis: 84% have a contract for an indefinite period and, while the proportion of women working part-time is high (32%), it nevertheless includes the fewest compulsory part-timers.

Figure 21: Distribution by age bracket of the four groups of women derived from the typology of work organisation

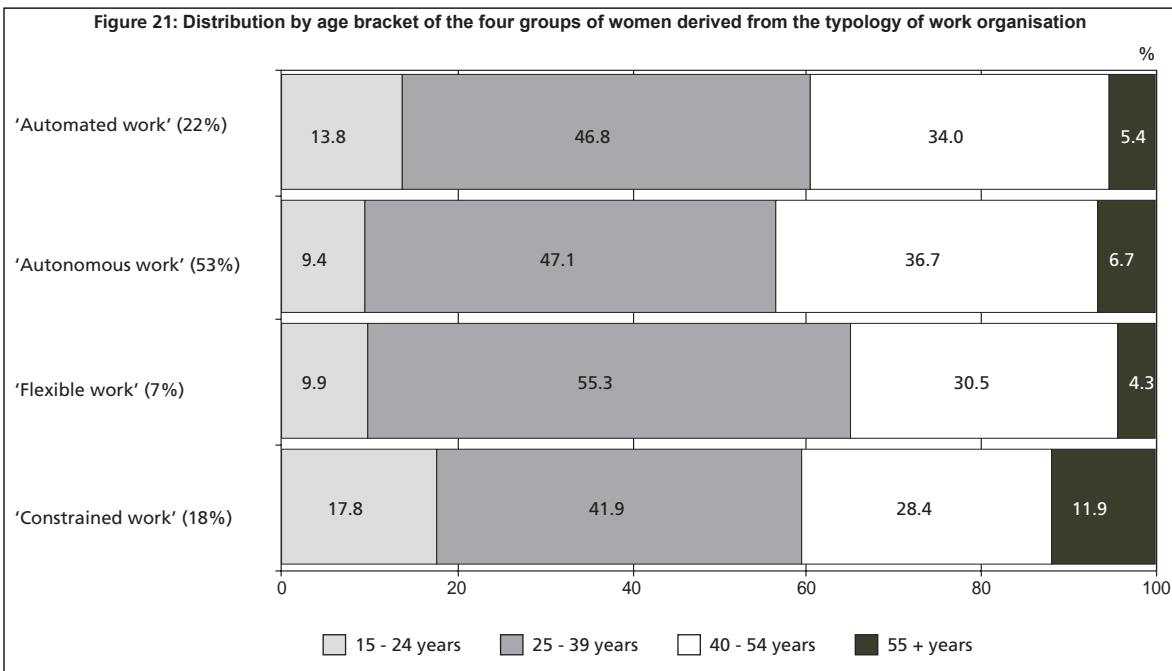
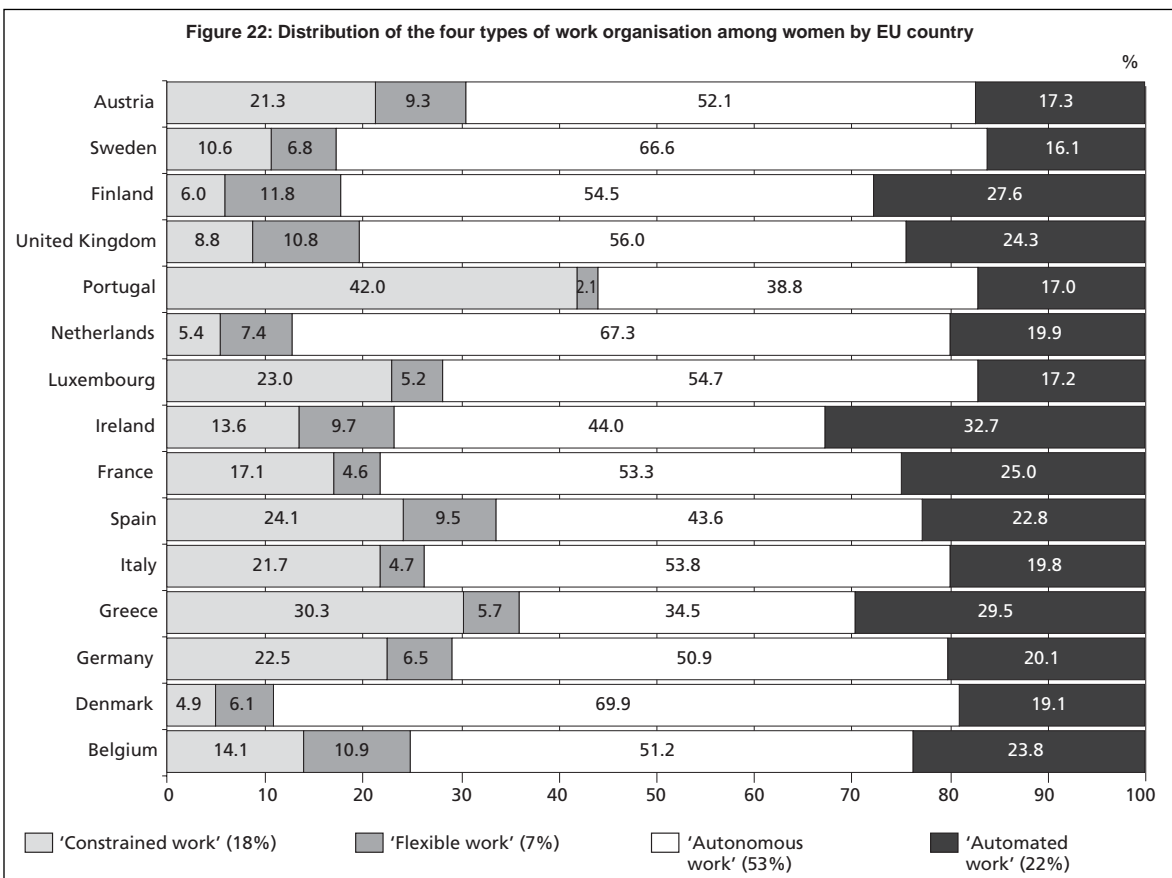


Figure 22: Distribution of the four types of work organisation among women by EU country



From this graph it will be noted that the jobs which are 'flexible' are those where compulsory part-time working, in the sense that women 'would like to work less', is the most developed. The ratio between the proportion of total part-time working in the group (relatively low) and the (high)

proportion of women subjected to this part-time working reveals, for this group, that their recourse to part-time working is imposed for the most part by the choice of work organisation, and not by personal choices.

Figure 21 shows that it is in the jobs characterised by a work organisation of the 'servitude' type that the respective proportions of women who are either very young (under 25) or at the end of their working lives (55 and over) are the highest. One may speculate here that the type of jobs occupied by these women corresponds to compulsory jobs, not chosen, to jobs taken 'of necessity'. And yet it is at the start of working life and at the end of working life that it is least easy to refuse such types of jobs, all the more so when one is not qualified to seek a different job.

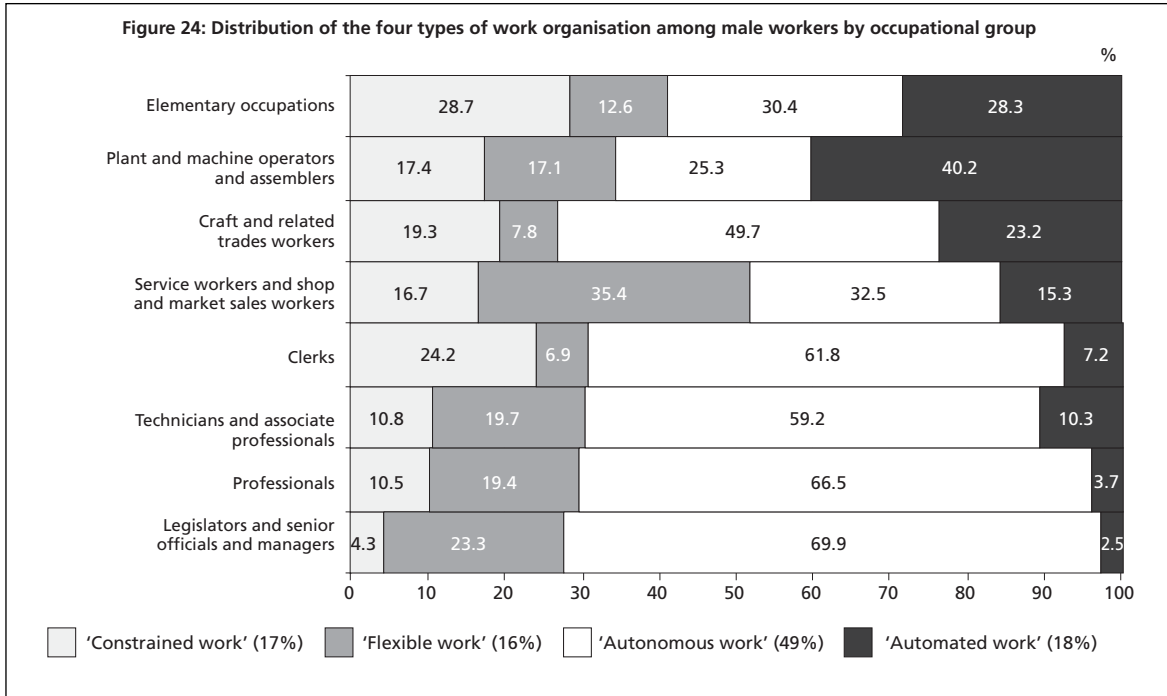
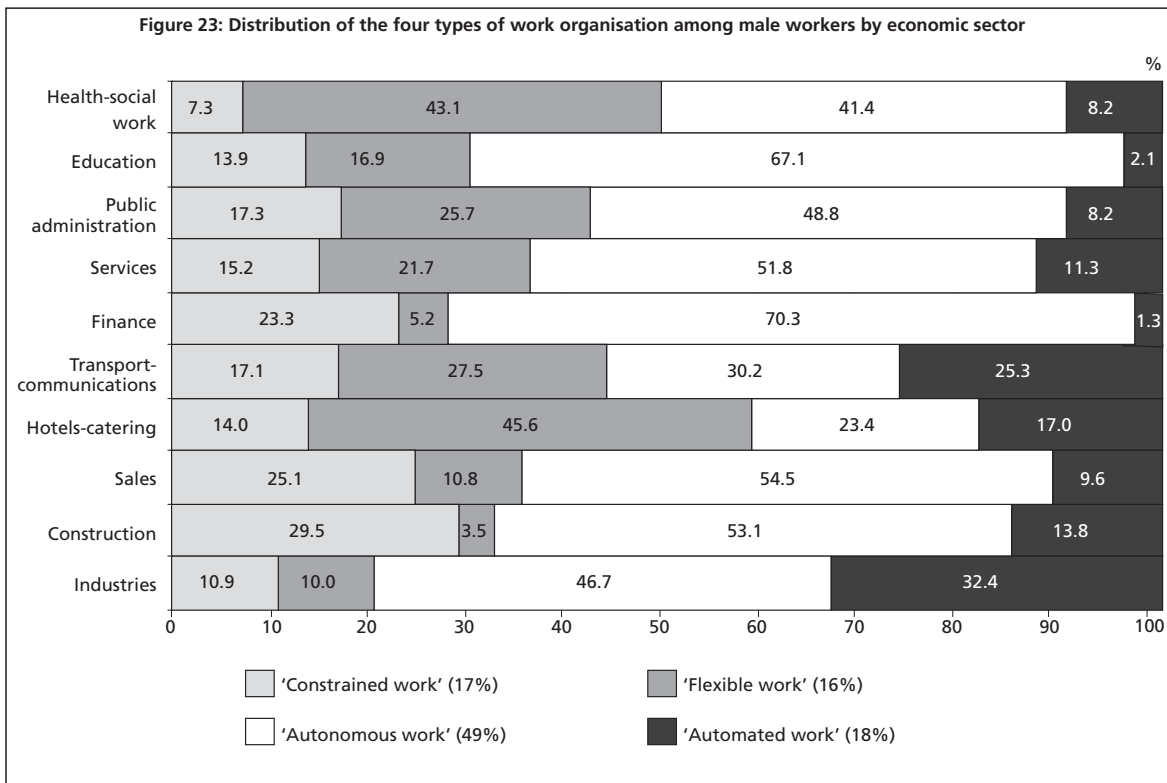
The jobs with a work organisation of the 'automated' type, are then those with the highest proportion of very young women (14%).

The group with the lowest proportion of women of 40 and over is that of 'flexible work'. One may conjecture at this point that in this type of work organisation, which is particularly tiring as the result of its time flexibility, workers who are too old cannot withstand it, so do not 'keep up' over time. In a process of selection-exclusion based on criteria of attrition and of fatigue, women would leave this type of job more quickly than in the other groups.

Logically, the observation on length of service follows the distribution by age classes: one third of the women having a job of the 'servitude' type have been there for a year or less, compared with 56% of the women in a job of the 'automated work' type, 21% of the women having a job of the 'autonomous work' type and 20% of the women in a 'flexible' job. The highest proportion of women having more than 19 years' length of service concerns the type of job 'in autonomous work' (14%), compared with 13% for the type 'automated work', 12% for the 'flexible' type and 10% for 'constrained work'.

Figure 22 illustrates some differences in the distribution of the typology in the countries. As we explained in the general introduction, it is difficult to comment in detail on the differences in distribution of the types of work organisation without first having conducted a proper bibliographical search to find out the institutional, cultural and historic specificities which play a role in the construction of the social relations of work. We present below the specificities observed, without going into detail, but making reference to the general tables showing the structure of the national employment markets in the EU (see Annex IX):

- The 'constrained work' type is highly visible in Portugal (42% of the paid jobs occupied by women) and in Greece (30%). On the other hand in the countries of northern Europe (Denmark, Sweden and Finland) and in the Netherlands the number of 'servitude' type jobs is lowest.
- The type 'flexible work' is proportionally more important in Finland (12%) and in the United Kingdom and in Belgium (11%). But there is very little in Portugal (2%).
- It is in Denmark, in Sweden and in the Netherlands that jobs of the 'autonomous work' type are the most strongly represented: two jobs in three are of this type in these countries. Greece, Portugal, Spain and Ireland on the other hand are less concerned.
- Finally, work 'automated work' represents one third of female jobs in Ireland, 30% in Greece and 28% in Finland. Sweden, Portugal, Austria and Luxembourg are the least affected by this group.



These disparities may overlap with some forms of international division of work between the different European countries. By making use of relocations and of subcontracting, some European firms can exploit the differences which exist between countries (labour policies, wages, health/work regulations, trades unions, etc.) to reduce the cost of labour. Harmonisation of legislations thus

takes on a particular urgency in order that equivalence of rights can be brought about in the sense of an improvement and not of a deterioration of the conditions of work in all the countries of the European Union.

Profile of male workers associated with the four types of work organisation

The distribution of the types of work organisation in each economic sector (Figure 23) shows a clear predominance of jobs of the 'of servitude' type in the sectors of construction (30%), of sales (25%) and of finance (23%). In these three sectors, at least one man in four thus occupies a job characterised by a lack of autonomy, very few options for discussions, and little exposure to flexibility or to constraints of industrial pace.

Just as for women, 'flexible' type jobs are proportionally very numerous in the sectors of hotels and catering (46% of the sector) and of health (43%). The sector of transport and communications accounts for 28% of jobs of this type. These three sectors are strongly marked by the pressure of external demand. One must also note that jobs of this type represent one job in four in public administration: here, the hypothesis arises as to how far the great range of timetables or Sunday working concerns senior managers.

The sectors of finance and of education are those where the proportion of jobs 'in autonomous work' are the highest: 70% and 67% in each respective sector.

'Automated work' is represented most strongly in the sector of industry (32%), followed by that of transport-communications (25%). In this group, 57% of the men are attached to the industrial sector (see Annex VIII).

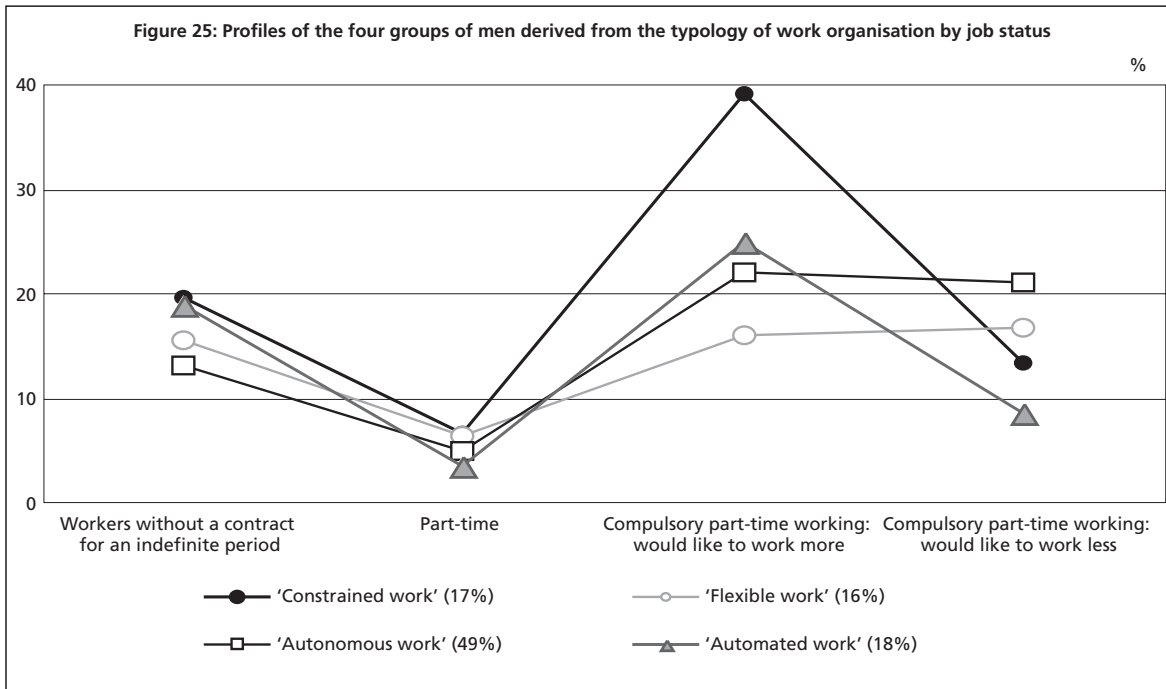
Figure 24 illustrates the respective proportion of each type of work organisation in the occupational groups. One can clearly see here an inverted pyramid for the jobs of the 'automated work' type, where the highest proportion concerns assembly workers (40%) and the lowest represents managers and directors (3%). To a lesser extent than for women, one notes that the unskilled occupational group (operatives, unskilled labourers) is less concerned by jobs of this type but on the other hand is the one most concerned by jobs of the 'servitude' type (29%).

Office workers stand out for work organisation of the 'servitude' type: almost one in four is concerned.

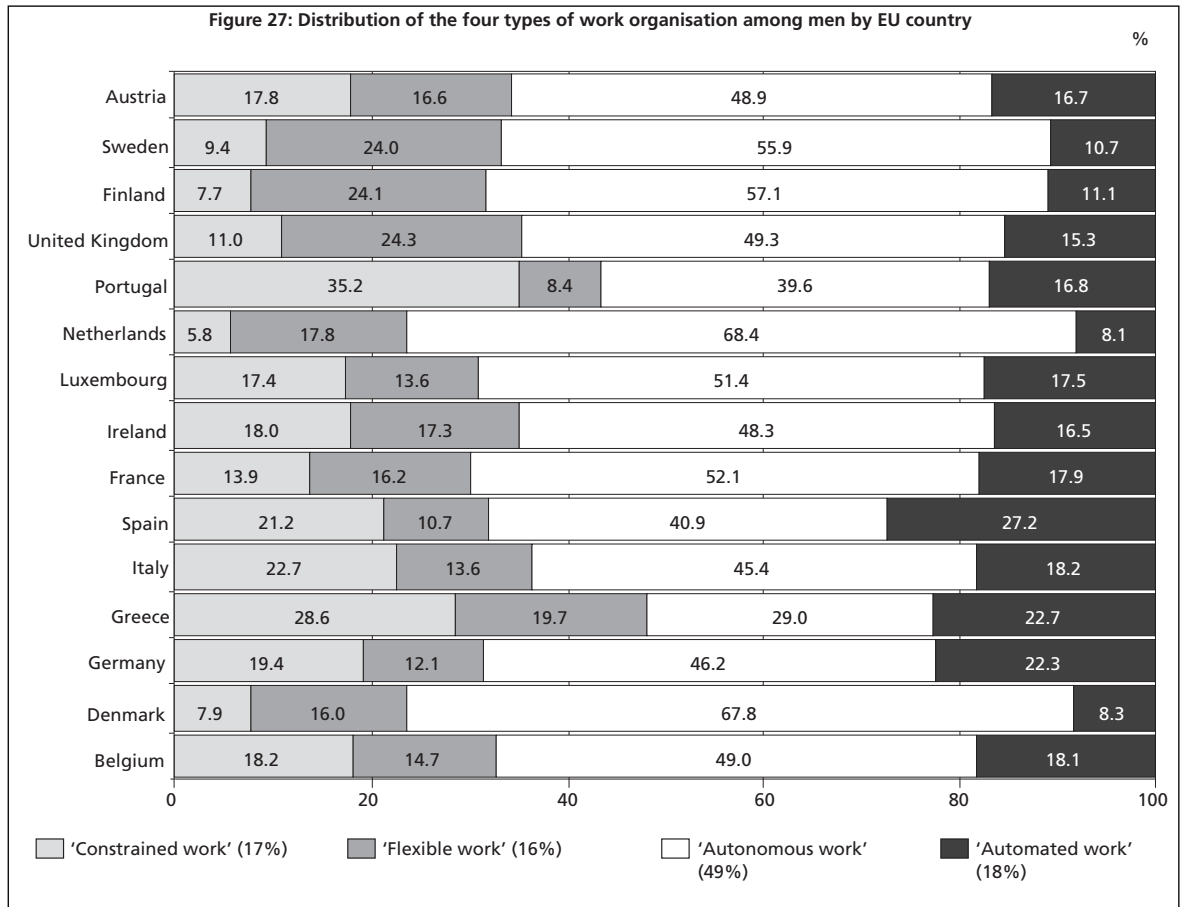
The jobs characterised by a work organisation of the 'flexible' type are proportionally the most numerous among sales staff and unskilled employees in services (35%). The three most skilled occupational groups are concerned by this type of work organisation to a level of 20%, and 17% of skilled workers are too.

Managers and directors, the superior intellectual professions and employees of the administrative type are the groups most concerned by jobs of the 'autonomous work' type.

The observation of the groups according to the size of the local unit of the enterprise where the workers actually work shows a very clear over-representation of small enterprises in the group of 'constrained work': 66% of the men in this group in fact work in an enterprise of under 50 workers,



compared with 52% of the men of the 'autonomous work' group, 45% in 'flexible work' and 38% doing 'automated work'. On the other hand it is this latter group which is proportionally the most represented by very large enterprises, which is logical, taking account of the predominance of industry in this group: one man in four of the 'automated work' group works for an enterprise of 500 workers or more, compared with 18% in 'flexible work', 16% in 'automated work' and only 9% of the group 'constrained work'.



One may, as for women, formulate the hypothesis that companies make use of subcontracting when it comes to service tasks such as cleaning, or again, maintenance, characterised by a work organisation of the 'servitude' type. So in France in the nuclear industry, certain maintenance tasks with high exposure to ionising radiation, referred to elsewhere as 'nuclear servitudes' by the EDF enterprise, are subcontracted to external enterprises, which may themselves subcontract certain of the most exposed tasks. In all, each year, between 20,000 and 30,000 'external' workers are thus exposed to 80% of the annual combined dose of radiation received in the French nuclear industry [Thébaud-Mony, 2000]. The question of the division of risks connected to employment is raised here. The typology constructed may be an aid to reading this.

The observation according to job status (Figure 25) shows, as for women, that men working under a work organisation of the 'servitude' type are also those who are the most exposed to precariousness of job status, with a maximum of non-permanent work contracts (20%) and of compulsory part-time working (39% of the men working part-time in this group would like to work more and 13% to work less).

The particularity of the men working under an organisation 'in autonomous work', who are the most numerous to be subjected to part-time working because they wish to work less, raises the hypothesis that these are persons in a situation of unrecognised invalidity, or not exercising their right to a complete cessation of work. This observation remains anecdotal in that part-time working is very marginal among men.

The distribution by age class (Figure 26) shows it is jobs of the 'automated' and of the 'servitude' type which have the highest proportion of very young men (15% and 14% respectively of the men in these groups are under 25).

The 'servitude' group is also, contrarily, that with the highest proportion of men of over 54, with the group of jobs 'in autonomous work' (10%). One will note here there is less over-representation of the branches of extreme ages than for the group 'constrained work' among women.

In the same way as for women, the very low proportion of workers of over 54 in the group of 'flexible' jobs poses the question of premature attrition at work for this type of job, and thus of processes of selection-exclusion based on criteria of age and/or of health.

The view according to length of service in the job shows that it is for the 'automated work' group that the proportion of men having a length of service of one year or less is a little bit higher: 23%, compared with 20% of the men in 'autonomous work' and 'constrained work' and 19% of the 'flexible work' group.

In all, the disparities according to length of service are relatively low for the typology of male workers.

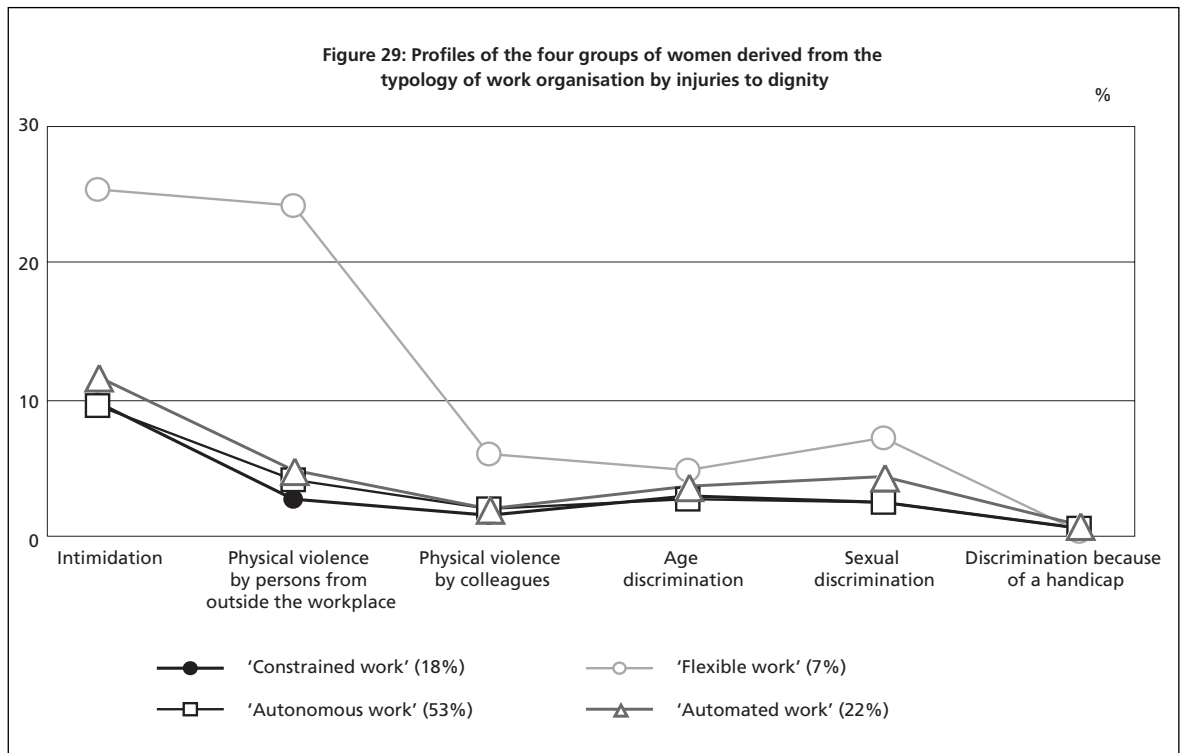
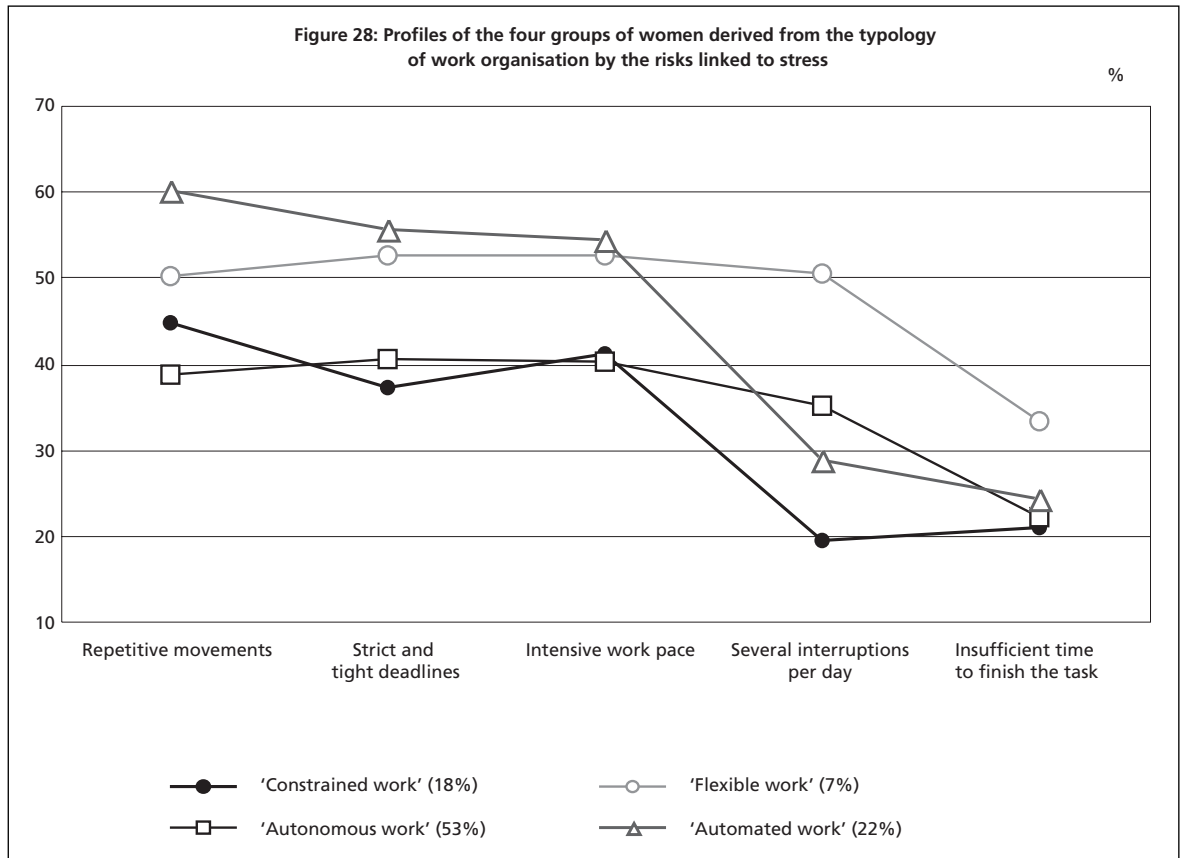
Figure 27 presents the specificities observed according to the countries. For the same reasons as previously, we are no longer commenting on the disparities without going into detail, but we refer to the general tables showing the structure of the national employment markets in the European Union (see Annex IX). The national specificities which emerge for men are along the same lines as the observations made for women:

- The type 'constrained work' is very apparent in Portugal (35% of paid jobs occupied by women) and in Greece (29%). It is in the Netherlands and in the countries of northern Europe (Denmark, Sweden and Finland) that the number of jobs of the 'servitude' type is lowest.
- The type 'flexible work' is proportionally more present in Finland, in Sweden and in the United Kingdom, where it represents one male worker in four. On the other hand it is very little developed in Portugal (8%).
- Denmark, the Netherlands, Finland and Sweden have the highest representation of jobs of the 'autonomous work' type. Greece on the other hand is by far the country least concerned by this type of work organisation.
- Finally, 'automated work' represents 27% of the male workers in Spain and 23% in Greece and in Germany.

Types of work organisation and health at work

To find out to what extent the types of work organisation correlate with certain types of risks and certain forms of impairment of health at work³⁵, we have crossed the typologies with all the

³⁵ We are making the hypothesis that the responses given concerning health problems at work are connected with the job occupied at the time of the survey, or with a former job characterised by a work organisation of the same type. We are aware that this is not always the case, but feel this probability is minimal.



indicators of risks and of impairment to health presented in part 1. The summary tables presenting all of the percentages produced from these two-way tabulations appear in Annexes X to XIII. We have extracted from them the figurical representations presented in this chapter, which make it possible to observe the respective profile of each type of work organisation with respect to the risks and to health, and facilitate the relative observation of the groups in comparison with each other.

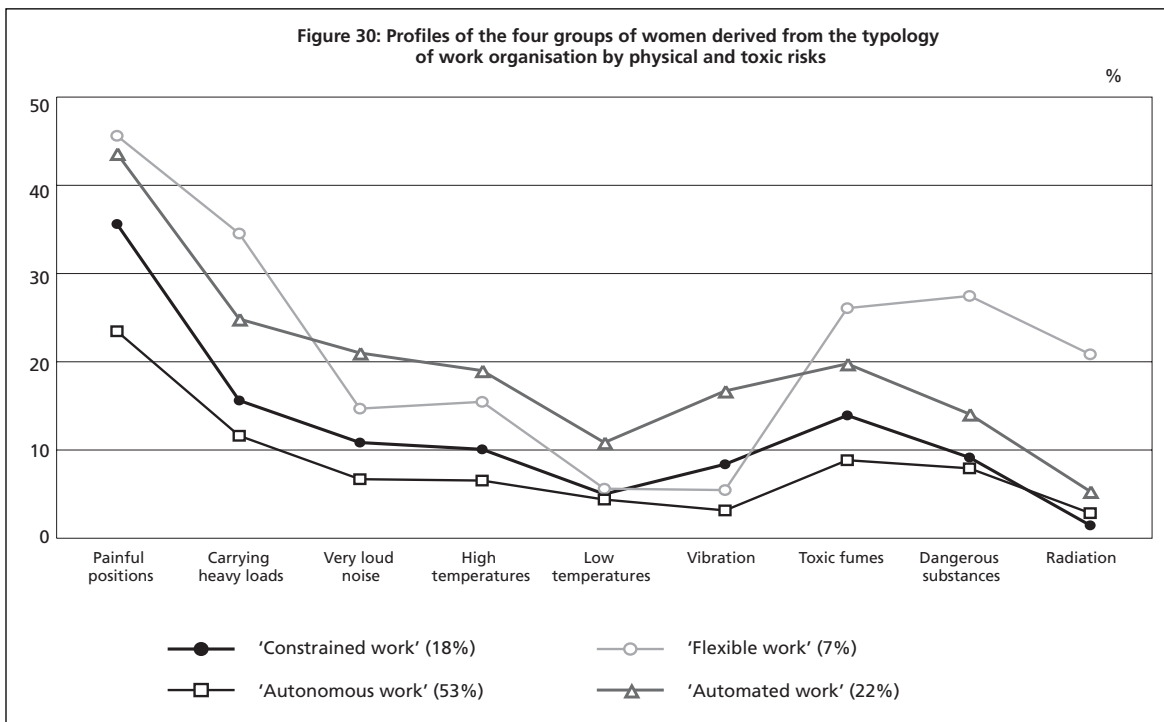
A look at the risks and the health impact among the four groups of women

Risks

The indicators of risks arising from exposure to certain tough or dangerous working conditions are grouped according to the conceptual dimensions developed previously (introduction, part 1) [Davezies, 1999]: the risks connected with pressure, the risks connected with physical health problems, the risks connected with affronts to dignity.

The risks connected with stress at work (Figure 28) are high, whatever the type of work organisation: repetitiveness, very short deadlines and fast pace affect at least 37% of the women in all the groups.

The jobs where work organisation is of the ‘automated work’ type are the most exposed to repetitive movements, to strict and short deadlines and to fast pace. The jobs characterised by a work organisation of the ‘flexible’ type have more or less the same proportion of women exposed to these risks. On the other hand, this group is well above all the others concerning unexpected interruptions and the feeling of not having enough time to complete the work. So flexibility of working hours, organised for the benefit of production, is often done to the detriment of the quality of life at work of the worker, by generating genuine risks of stress at work, which will be expressed in terms of impaired health.



Women from the groups ‘flexible work’ and ‘automated work’ are equally more exposed to physical or toxic risk factors, as illustrated by Figure 29.

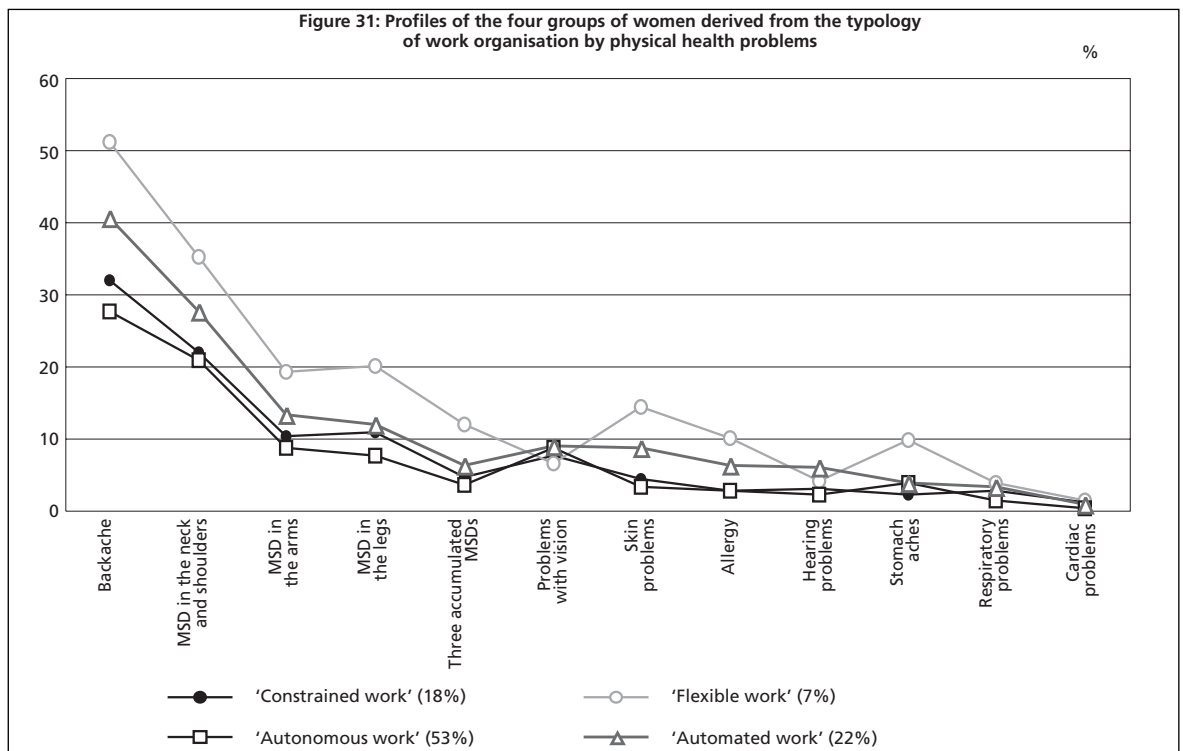
One will note the worrying situation of the women occupying jobs of the ‘flexible’ type concerning exposure to toxic risks: 21% of the women of this group are in fact exposed to radiation during at least a quarter of the time, 26% are breathing in toxic fumes or vapours during at least a quarter of the time and 28% are exposed to dangerous substances or products.

While the profile of the ‘autonomous work’ group is the lowest, it must nevertheless be noted that 23% of women are exposed to laborious or tiring positions during at least half the time and 12% are exposed to the carrying of heavy loads.

Women occupying jobs of the ‘flexible’ type are by far the most exposed to the risks connected to infringement of personal dignity (Figure 30). Acts of intimidation and physical violence by persons from outside the workplace affect one woman in four in this group. The fact that this type of work organisation is situated mainly in the sectors characterised by direct contact with the customer or patient (health-social work, hotels-catering, communications-transport) has to be taken into account here. But the intimidation can also be the acts of colleagues. The hierarchical relationships often instituted on the basis of domination by the male doctor towards the female nurse or nursing auxiliary in the hospital environment can be mentioned here. To a lesser degree, this group is also more exposed to sexual discrimination and physical violence on the part of colleagues.

We have observed the four groups with respect to information about the risks received. Are those women who are most exposed to risks the best informed?

Effectively, the ‘flexible work’ and ‘automated work’ groups are relatively well informed about the risks: 84% of the women of the ‘flexible work’ group and 77% of those in the ‘automated work’



group feel they are 'very well' or 'fairly well' informed about the risks, while 72% of women working in 'autonomous work' feel this and only 69% of women in situations of work 'of servitude'. This finding leads to the next question: Is this better information due to a de facto knowledge of the risks experienced on a daily basis by these women or does it come from a proper training in risks, given during working hours? In this second possibility, the question arises as to the pertinence and to the efficacy of the safety policies and guidance in the workplace.

The 'constrained work' group is the one which considers itself least well informed about risks, but is also one of the two groups the least exposed to risks. One may refer at this point to Laurent Vogel [1997], where he shows that awareness and expression with respect to a risk is only possible when there is scope for manoeuvre for the expression and for the modification to be made.

Health problems due to work

Figure 31 represents the indicators of physical health problems, as they are distributed in the four types of work organisation.

One will first observe that back pains and RSI of the neck and shoulders affect all the groups in significant proportions. Back problems due to work thus affect more than one quarter of the women in the group 'autonomous work' (28%); almost one third of the women doing jobs of 'servitude' (32%), 41% of the women subject to automatic pace and to standardised work and finally more than one woman in two in the 'flexible work' group.

The group of women exposed to a work organisation of the 'flexible' type is the one which suffers most from physical health problems: one in two suffer with their backs, one in three suffers from RSI of the neck/shoulders, one in five suffers from RSI in the arms or legs and 12% of them combine all three types of RSI while the other groups are between 4% and 6%. One notes for this group a not-insignificant proportion of women suffering from skin problems (14%), from allergies or from stomach problems (10%). This group is also the most exposed to risks of a toxic nature.

The profile situated just below this very exposed group is that of women in 'automated work'. Apart from backaches (41% of the group) and RSI, this group is the second in terms of being concerned by the problems typically arising from occupational illnesses: skin problems (9%), allergies (6%); hearing problems (6%) and the leader for being affected by vision problems (9%).

Women occupying jobs of the 'servitude' type suffer from back problems at a rate of 32%, but do not stand out from the group of the 'autonomous' workers for the other types of impairments of physical health. Backaches are an indicator of constrained work, unskilled work, most of the time not automated, but nevertheless demanding major physical efforts, which at the same time build up throughout the day. Furthermore, it may be supposed, as was the case for the statement on risks, that women of this group are less likely to stand back from their situation of work and of their health at work, in that they are in a situation of employment by necessity: the fact of having a job is in itself considered to be fortunate, and something about which it is difficult to complain.

Apart from back pains and RSI of the neck and shoulders, which affect 28% and 21% of women respectively, the 'autonomous work' group is the least exposed of all to forms of impairments of physical health due to work. However, it will be noted that 9% of the women of this group suffer from problems of vision. RSI in the arms affects 9% of the group and RSI of the legs 8% of the group.

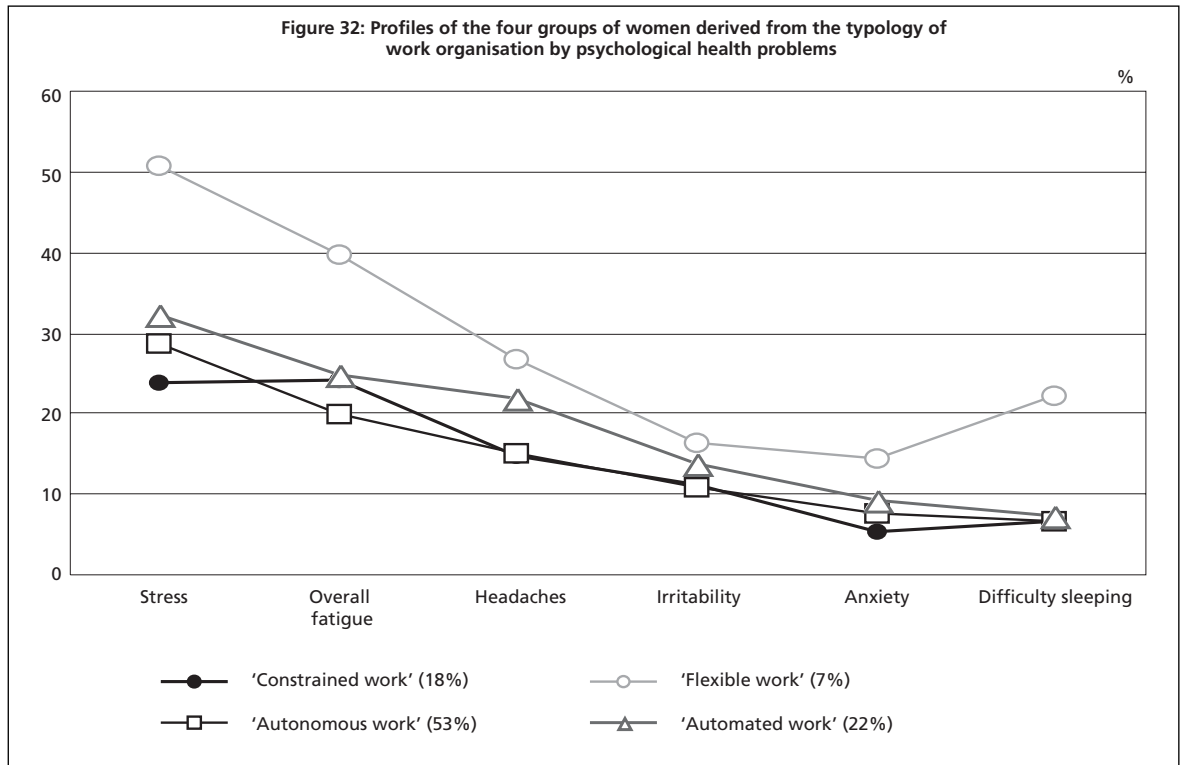


Figure 32 shows the profiles of the groups according to health impacts of a psychological nature. The group of workers subjected to a work organisation of the 'flexible' type is clearly demarcated from the others. In fact, half the women in this group (51%) feel stress, 40% feel tired generally by their work, 27% suffer from headaches and 22% have sleep problems. The fragmentation of their time off, caused by too great a flexibility in working hours, translates into genuine dangers in terms of health for the workers concerned.

This fatigue and this stress, expressed here, in addition to the problems of a physical nature, make these women a group which is particularly exposed and vulnerable.

In lower proportions in the three other groups, stress and overall fatigue are the commonest two forms of impairment of psychological health at work. With 24% of women feeling stressed or fatigued, the 'constrained work' group does not escape this.

The group of women doing 'automated work' is, again, the second most exposed to this type of impairment to health at work, but with a major disparity with respect to stress and overall fatigue.

Accidents at work and absenteeism (Figure 33)

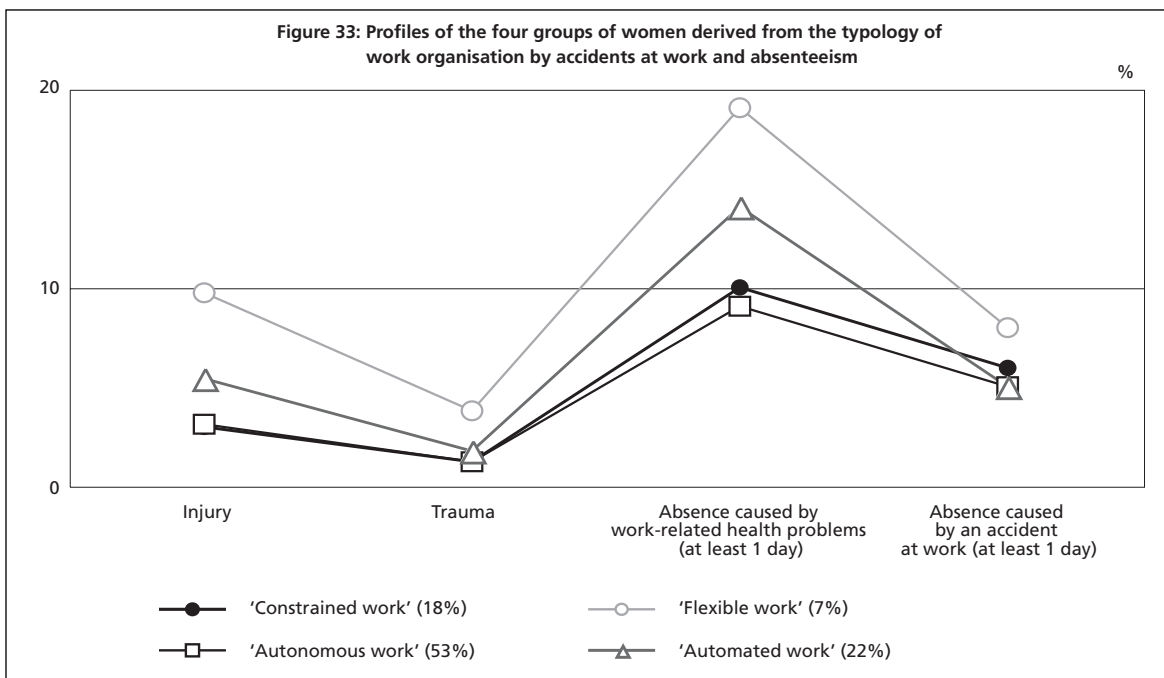
The risks of accidents at work, measured here by injuries or traumatism suffered (but which may also lie in other indicators of health problems at work), are highest in the group of 'flexible work', where 10% of the women have been injured in the course of their work.

Here again, the second most exposed group is that doing 'automated work'. One may however conjecture that these are less serious accidents at work, taking account of the low percentage of absenteeism due to accidents, relative to the other groups.

Logically, these two groups are also proportionally the most concerned by stopping work on the grounds of health at work, a direct indicator of the gravity of the health impacts observed previously for these two groups. Among women of the 'flexible work', one in five has had at least one day off for a health problem due to work in the 12 months preceding the survey.

Identity at work

Certain variables in the survey are representative of what could be referred to as 'identity at work': the degree of satisfaction, the way work and life outside work fit together, the fact of imagining oneself in the same job at the age of 60, or again, the fact of feeling over-qualified or under-qualified in one's job. We observe the typologies from the perspective of these indicators insofar as identity at work, feeling 'good' about one's work, constitutes a factor of good health from the psychological standpoint.

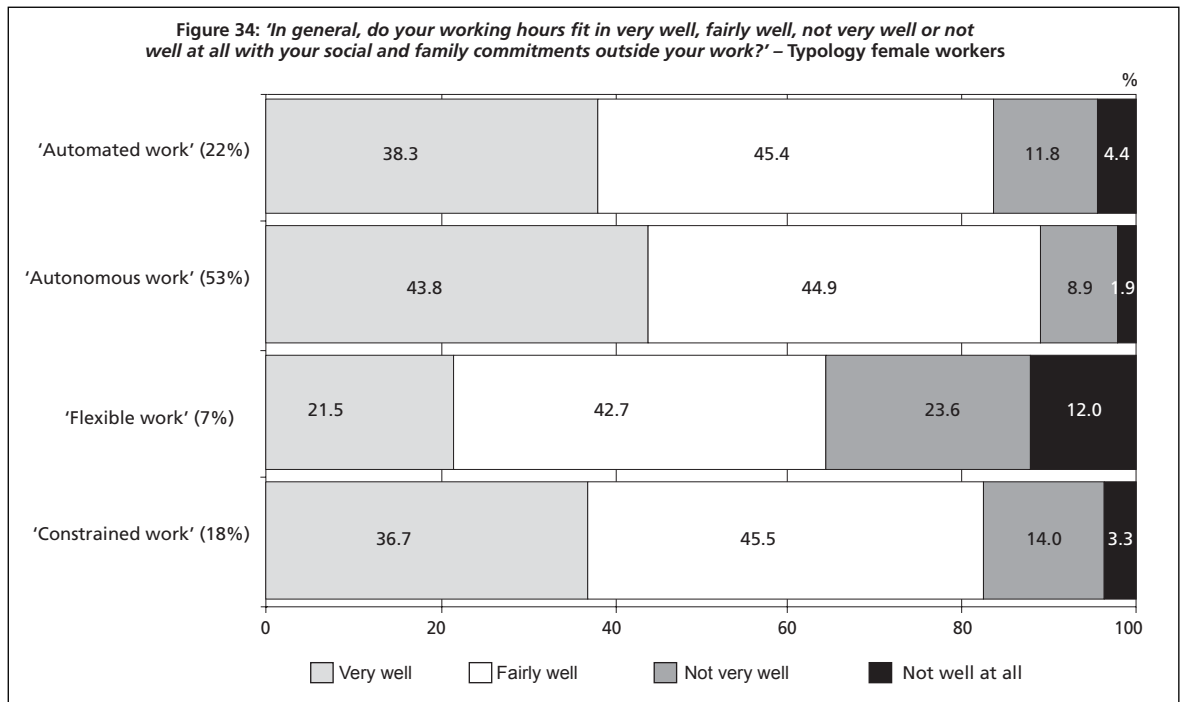


For women, Figure 34 represents the responses given about the organisation of working hours with respect to the time off spent outside work. One group stands out sharply: the workers exposed to a work organisation of the 'flexible' type: 24% of them think that this harmony between work and life outside work is 'not very good' and 12% think it is 'not good at all', so in all, more than one third of the women in this group (36%) are not satisfied or not at all satisfied with their working timetable. This observation thus illustrates the particularly destabilising and socially inconvenient nature of the disintegration of working timetables caused by the recourse to internal flexibility, as has been demonstrated elsewhere, for France, by Annette Langevin [1997] and Nathalie Cattaneo [1997], for Quebec, Karen Messing and her colleagues in a research study in partnership with trade union organisations [1999]. Of the total number of women who feel that their work does not allow them 'at all' to keep their social and family commitments in good order, a quarter belong to the 'flexible work' group.

If the same two-way-tabulation is performed on the sub-population of women who work part-time only, it becomes apparent that only the 'flexible work' group still has comparable percentages on

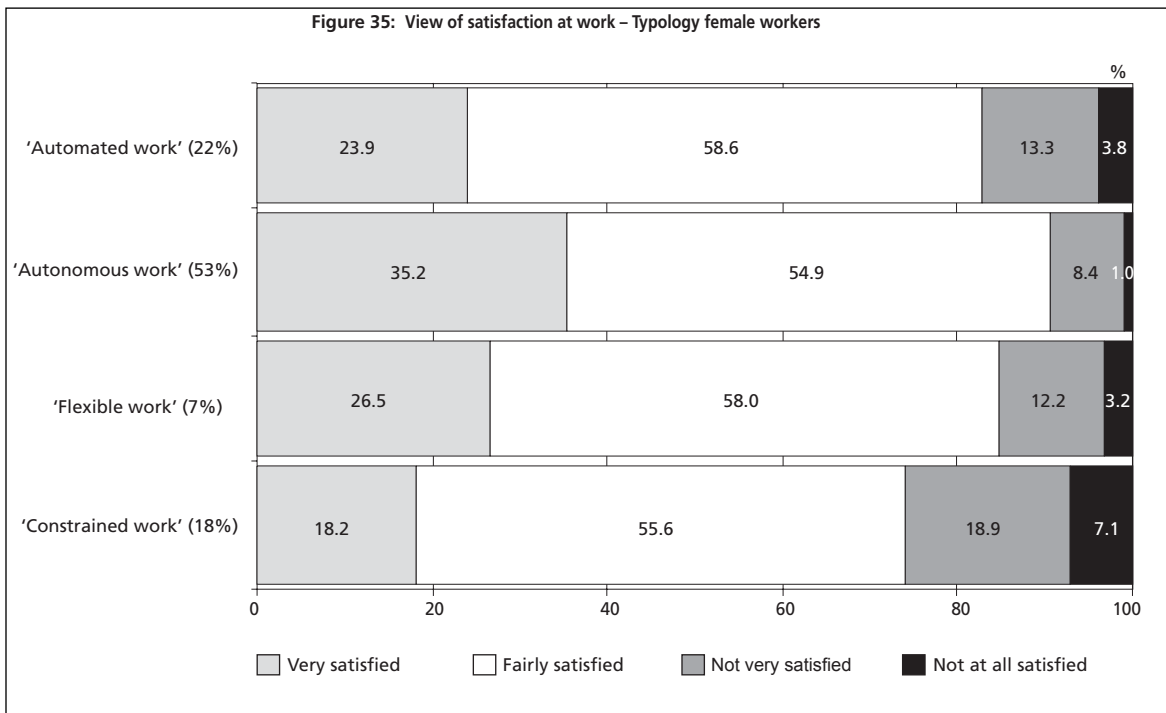
the negative modalities (25% and 12% respectively), while in the other groups, the percentages are lower. This attests to a flexibility which is also imposed on women who work part-time. One may think at this point of the case of supermarket cashiers, who, with a total of only 20 hours of work per week, may often work quite a considerable number of hours every day.

To a lesser degree, the ‘constrained work’ and ‘automated work’ groups allow for less well-organised commitments outside work than for women occupying jobs characterised by a work organisation which involves ‘autonomous work’.

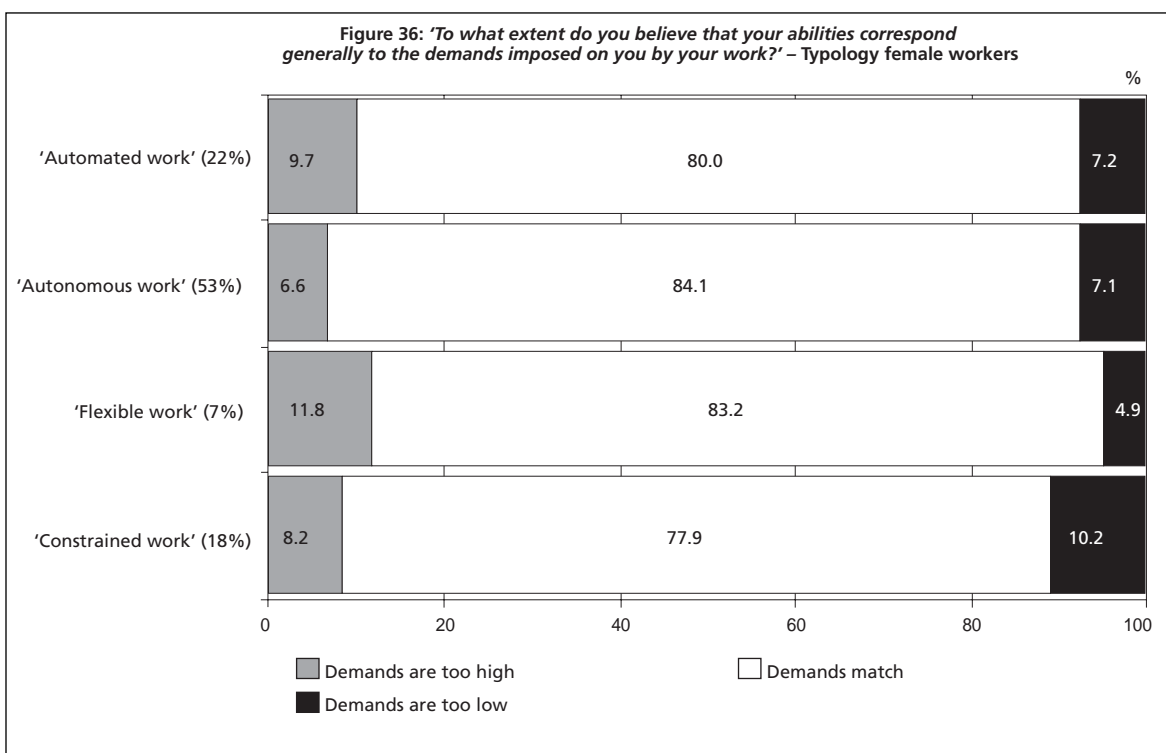


In general, the question about the harmony between working hours and social and family life is one which arises explicitly for all women. In fact, the majority of working women in paid employment are under the age of 40, i.e. the period of their lives when their children are being born and growing up. The flexibility of timetables and the intensity of the pace constraints at work are thus matched by a great intensity of their permanent preoccupation with the daily organisation of family life. The ‘double working day’ for women is very widespread in Europe, as evidenced in this survey, by the very low global change in the distribution of tasks between women and men³⁶. So all the time constraints and pace constraints must be seen in reference to their double social responsibility. One may hypothesise that all those women who wish to work longer hours are equally subject to an insufficiency of resources, the reduced wages of part-time jobs being too low to cover all household costs, especially in the case of single-parent families.

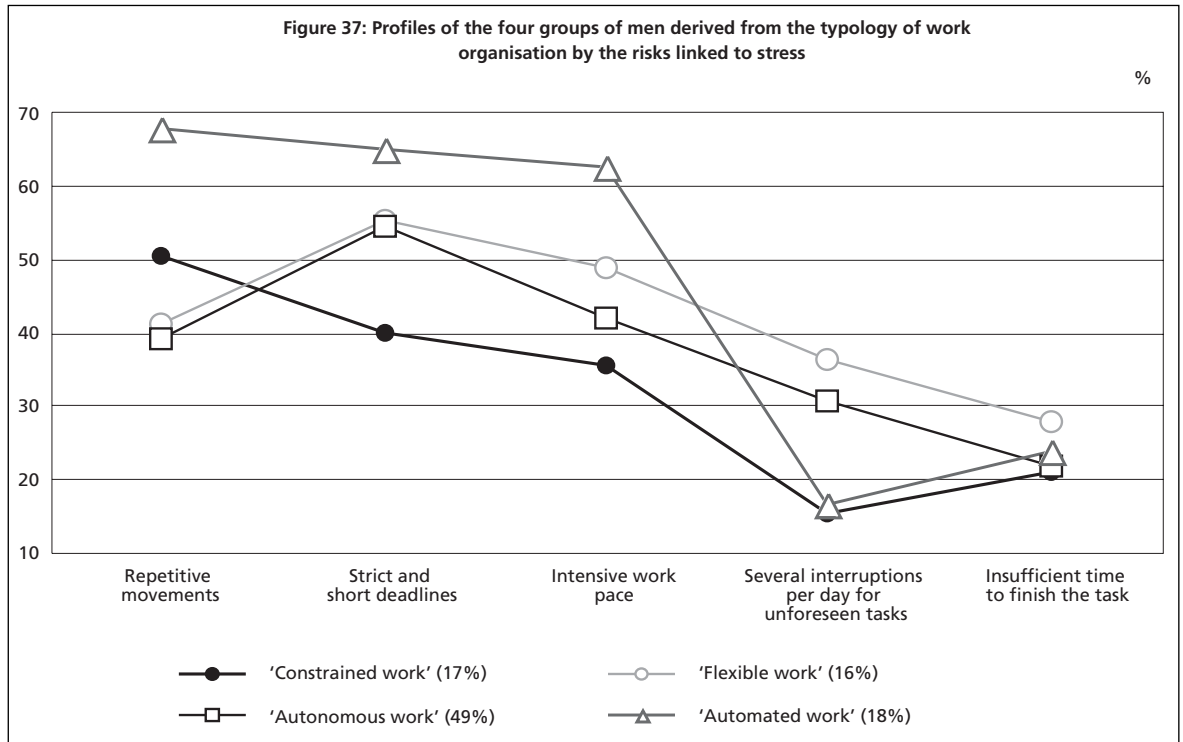
³⁶ The European Survey on Working Conditions shows that in 2000, in the European Union, 63% of women spent at least one hour a day doing housework, compared with 12% of the men, the proportions being 64% against 13% for the preparation of the meal (at least one hour per day) and 41% against 24% for looking after the children (at least one hour a day). Conversely, 49% of the men devote themselves to a ‘cultural activity’ once or twice a week compared with 12% of the women, and 11% of the men devote one hour or more a day to ‘leisure’, compared with 8% of the women. These latter percentages show that the male-female imbalance observed with respect to household and childcare chores are not necessarily to do with the time outside work devoted to leisure, thus illustrating the question of social gender relations involved in the division of work in the broad sense, in the sphere of work and of social and family life.



The satisfaction expressed with respect to work (Figure 35) is always difficult to interpret, as people's motivations differ so widely (satisfaction at having a job or with the content of the work?). We consider, however, that the fact of choosing one of the two most negative modalities constitutes a true indicator of dissatisfaction with work. Among women, the group linked to 'constrained work' is the most dissatisfied of all (19% are fairly and 7% are totally dissatisfied). Inversely, it is the women involved in a work organisation of 'autonomous work' who are the least satisfied of all.



Saying that one ‘would not want to be doing the same work at the age of 60’, constitutes an indicator of dissatisfaction with work. Women who work ‘in autonomous work’ again stand out by having the lowest percentage (9%). The three other groups consists of 12 – 13% of women who ‘would not want to be doing the same work at the age of 60’.



Feeling over-qualified or under-qualified in one’s job represents, in a quite different connection, a degree of dissatisfaction with work, connected to a non-recognition of one’s true competencies, whether these are under-exploited or, conversely, over-estimated.

Figure 36 shows that it is the group of women who work ‘in autonomous work’ which includes the the greatest proportion of women who feel properly qualified for their job (84%), before the group doing ‘flexible’ work (82%) followed by those in work ‘automated work’ and ‘of servitude’ (80% each). Women in these two groups who are dissatisfied are even more so in the sense of under-qualification for the group of ‘automated work’ and in the sense of over-qualification for the group doing work ‘of servitude’.

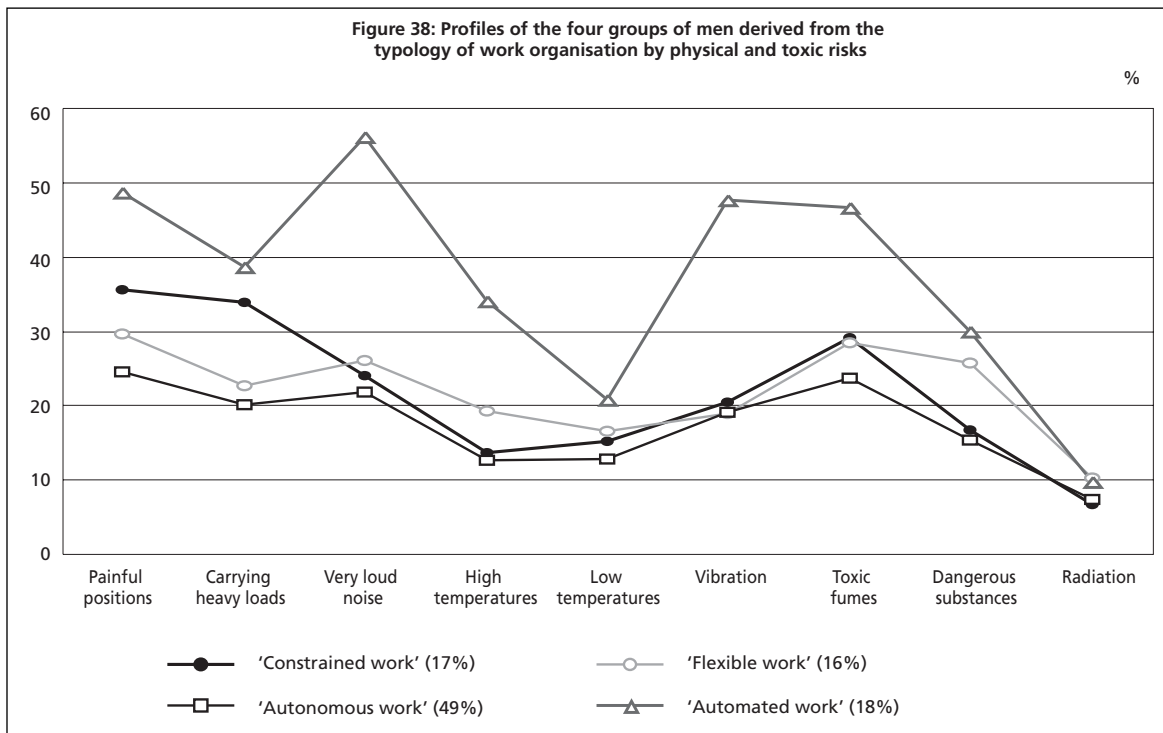
A look at the risks and the health impact among the four groups of men

Risks

The three graphs present the types of work organisation according to the risks connected with stress, physical or chemical risks and the risks connected with affronts to personal dignity. The group of men working in a work organisation ‘automated work’ is clearly the most exposed to the first two groups of risks. With respect to affronts to dignity, it is men who work in work organisations of the ‘flexible’ type, with a large proportion of autonomy who express the most risks.

Stress (Figure 37)

The ‘automated work’ group is clearly the one most exposed to repetitive movements, to strict and

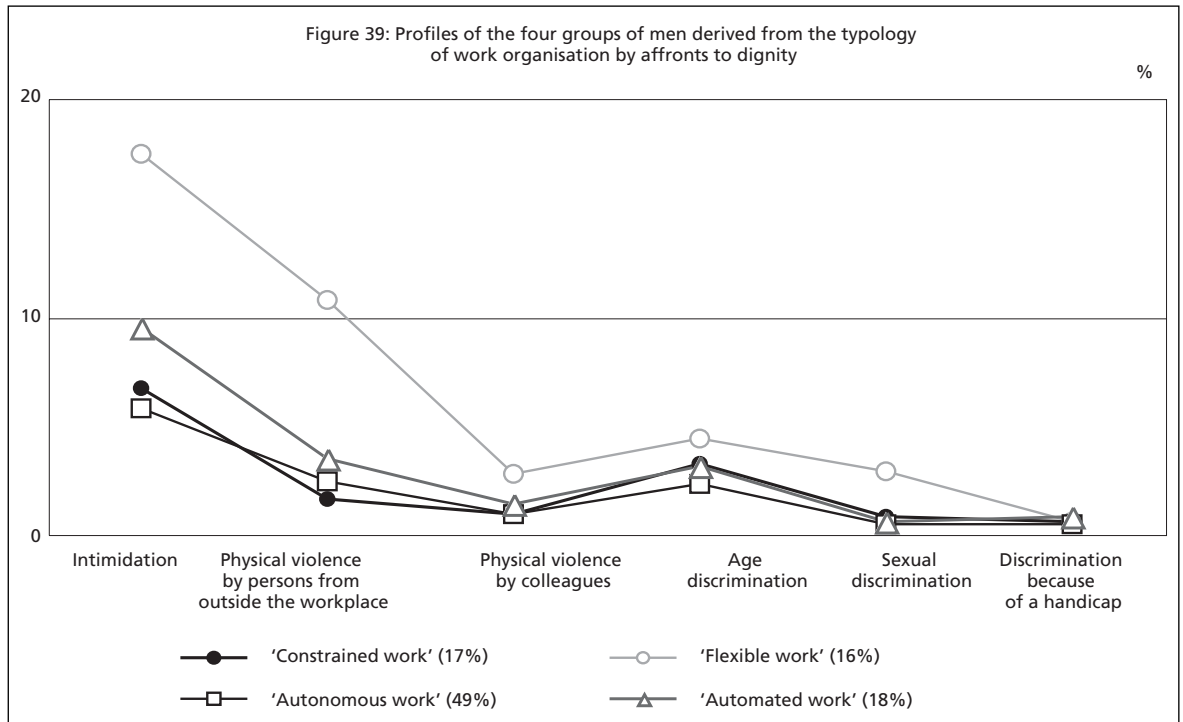


short deadlines and to high speed work pace during at least half the time: two men in three face these types of stress factors. The two other indicators used for stress are on the other hand less characteristic of this group, but connected more to the 'flexible' type of work organisation, where 36% of the men suffer unexpected interruptions to their work to perform an unforeseen task several times a day and 28% feel they do not have enough time to complete their work.

It must be noted that very strict and short deadlines affect more than one man in two in the groups 'autonomous work' and 'flexible work'. The position of the sales pitch of a commercial nature (customer-supplier relations) in the actual discourses on work organisation recurs here in terms of working conditions.

Men of the group doing 'constrained work' are the second most concerned by heavy repetitiveness of their work (50% of them suffer this at least half the time). On the other hand, they stand out sharply as those least subject to the time pressures imposed by tight deadlines and fast pace of work (40% and 36% respectively, nevertheless). This group is, with the 'automated work' group, the least exposed to stress factors such as unexpected interruptions in their work and the feeling of not having enough time to complete the work. These observations are in line with those concerning 'constrained work': physically tiring, but less subject to demands of a commercial nature because they are often performed outside 'opening hours' or cut off from the rest of the working community (cleaning).

Concerning the risks of a physical or toxic nature, the 'automated' type of work organisation is well above the others, as shown by Figure 38. In this group, 56% of the men are exposed to very loud noises, 49% suffer from laborious or tiring positions at least half the time, 48% are exposed to vibrations and 47% are forced to breathe toxic fumes or vapours at least a quarter of the time.

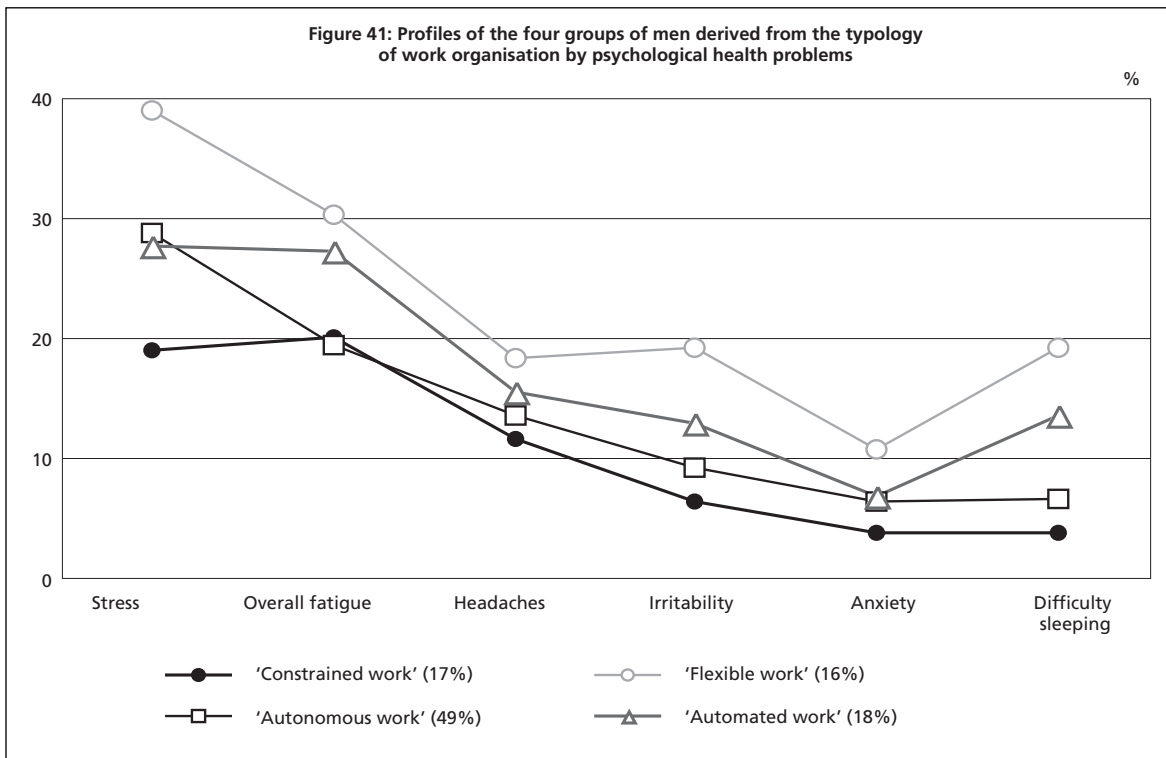
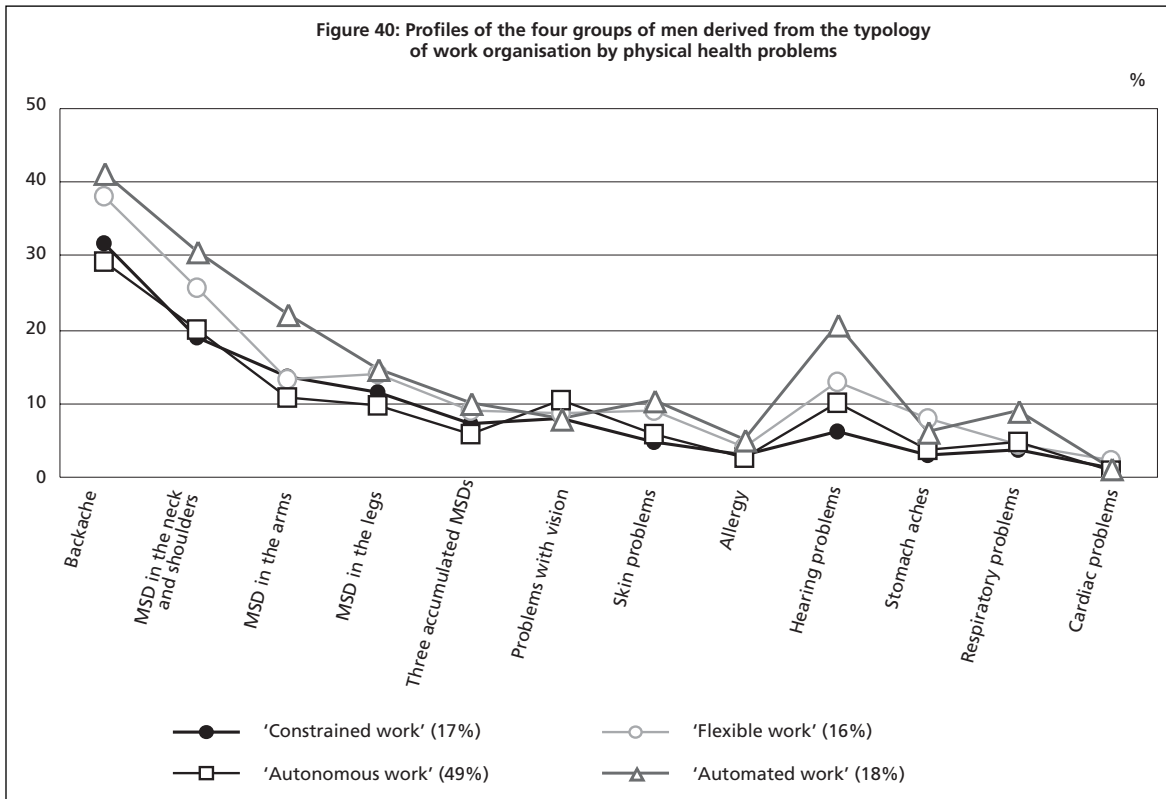


Heavy loads and very high temperatures affect more than one third of the group. Finally, 30% are exposed to the handling of dangerous substances or products. This high exposure to these kinds of risks may be connected with the high representation of the men of this group in the industrial sector (57% of the group work there). One can see here that a major proportion of this group appears not to benefit from specific equipment for protection or safety even though these have been instituted, such as for example exposure limits for noise, legislation on the carrying of heavy loads or on equipment for ventilation of premises, etc.

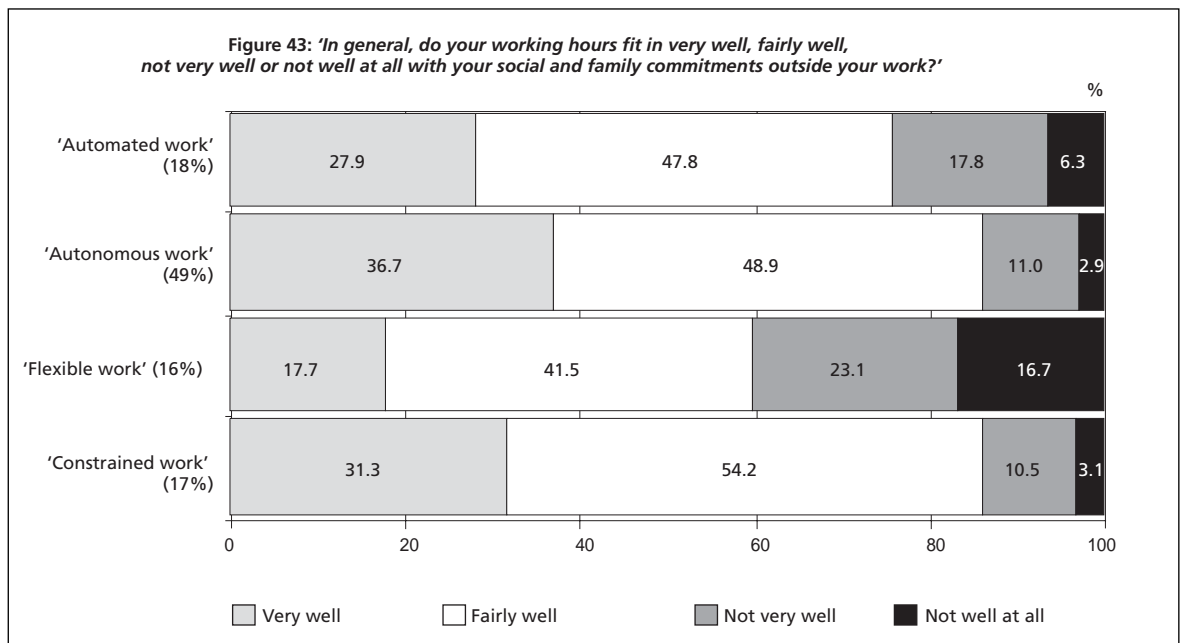
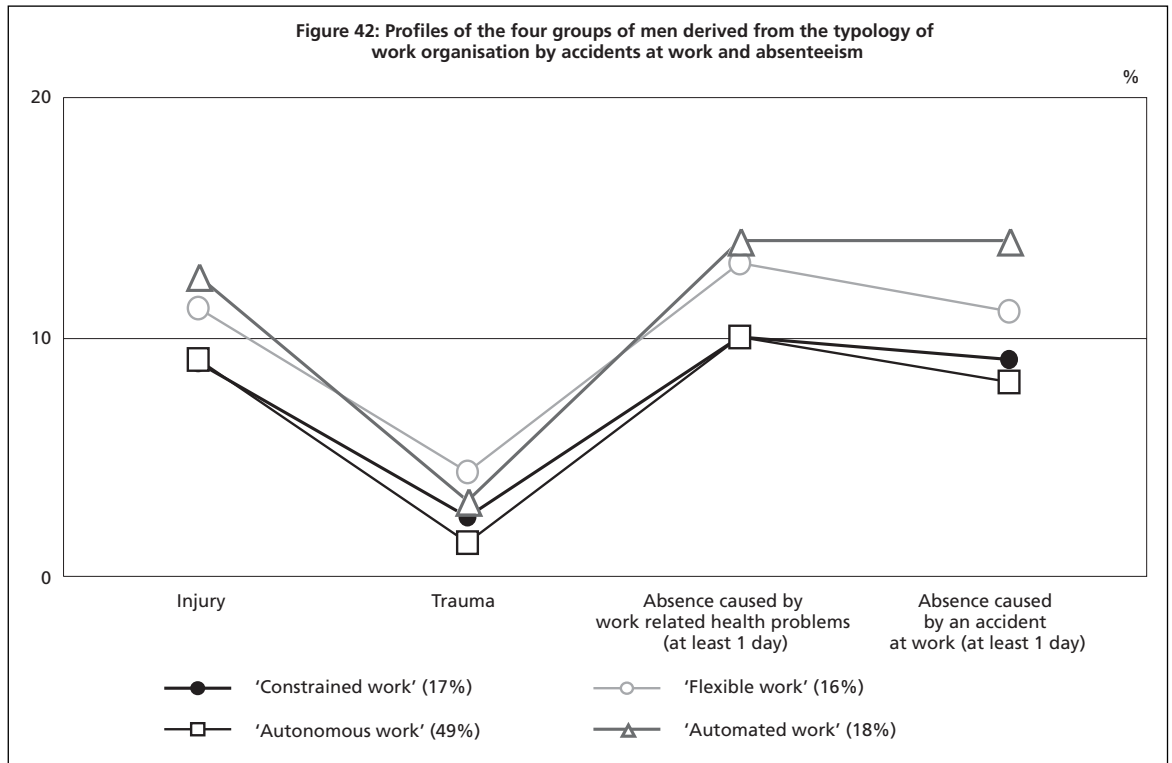
Men in the 'constrained work' group are very exposed to painful positions and to the carrying of heavy loads (36% and 34% of the group respectively suffer these at least half the time). These working conditions are typical of jobs of servitude, usually not automated, and laborious.

The 'flexible work' group stands out in second position in terms of toxic risks: 28% of the men of this group breathe toxic fumes or vapours during at least a quarter of the time, 26% handle dangerous substances or products and 10% are exposed to radiation. One may hypothesise here that these workers, exposed to extreme flexibility of their working hours, are compelled to perform tasks presenting particular toxic or chemical risks. The question of subcontracting of these risks arises once more.

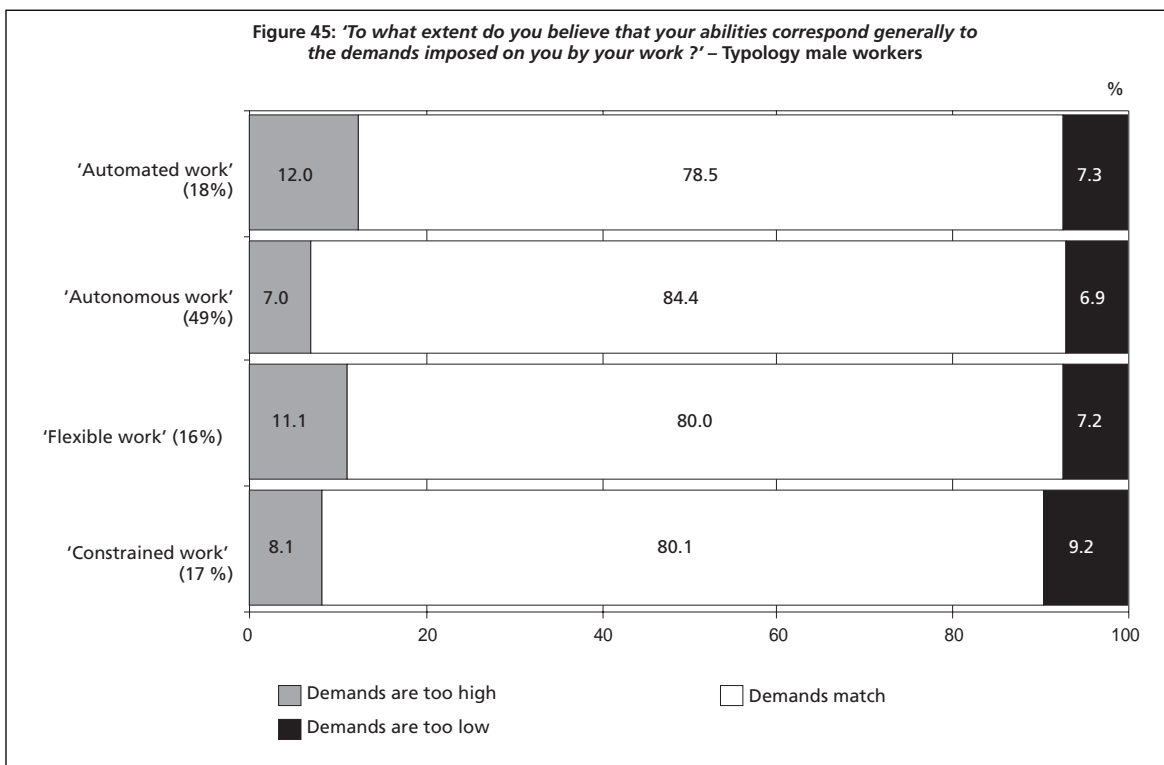
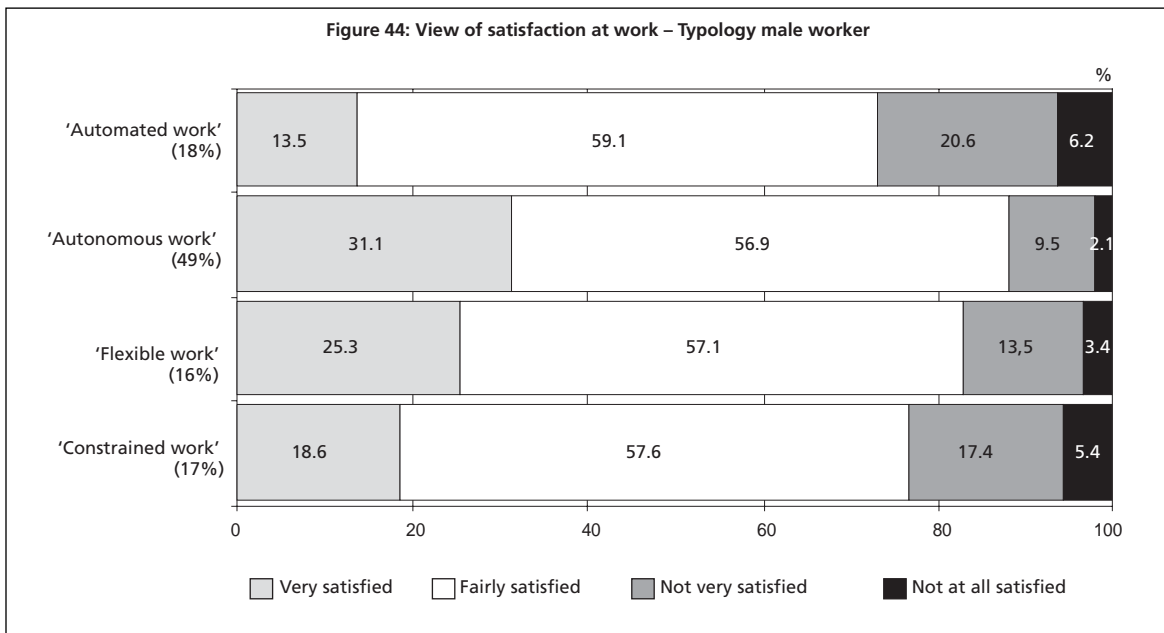
The risks connected with what Philippe Davezies calls 'infringement to dignity' are shown in Figure 39. Here it is the group of workers subjected to a work organisation of the 'flexible' type which has a markedly atypical profile. These men are in fact, by far, those most exposed to acts of intimidation (18% of them have suffered at least one in the course of the past 12 months), physical violence on the part of persons from outside the enterprise (11%) and on the part of colleagues (3%). Sexual or age-related discrimination, while they may affect a very small percentage, also affect this group more. Working mainly in the sectors of public administration, of services, of health-social work and



of hotels and catering, men of this group are very exposed to direct contact with the public, which may explain this greater exposure to this type of risks.



The observation of the groups according to the degree of information about the 'risks resulting from the use of materials, instruments or products which you handle in your work' (Question q13) shows that it is the 'constrained work' and 'automated work' groups who feel the least well informed: 15% and 14% respectively are 'not very well' or 'not at all well' informed about the risks. With respect to the over-exposure of the men of the 'automated work' group to physical and toxic risks, this poor information on the risks is paradoxical and engendered a real concern as to the health and the safety of these workers. Will they be the ones most exposed to accidents at work



and industrial diseases resulting specifically from this type of risk? As for workers of the 'servitude' group, this inadequate information, again, tends to occur in the type of job relegated to the spheres of work where expression concerning working conditions is, more often than not, non-existent.

The 'autonomous work' and 'flexible work' groups have respective percentages of 8 and 6 who feel they are not very well or not at all informed about the risks.

Health problems due to work

Back pains are the most frequently experienced problems of physical health at work: 41% of the 'automated work' group are concerned, 38% of the 'flexible work' group, 32% of the 'constrained work' group and 29% of the 'autonomous work' group.

Men subject to a work organisation of the 'automated work' type are those most exposed to physical health problems, as shown by Figure 40. The disparities are greatest, in relation to the other three groups, for MSD of the arms, hearing problems and breathing problems. Three forms of impairments specifically connected with laborious working conditions, which, if not attended to, turn into irremediable changes in health, as is the case for hearing problems. One may recall at this point that 56% of the men of this group are exposed to very loud noises during at least half the time.

The second group most affected physically by working conditions is that of 'flexible work', especially for back pains, MSD, skin problems, hearing problems and stomach disorders.

When one observes the four groups from the viewpoint of psychological health (Figure 41), the line representing 'flexible work' exceeds the other three in terms of exposure to health problems, very clearly for stress (39% suffering from it), irritability (19%) and sleeping problems (19%).

Experiencing stress or overall fatigue because of one's work concerns between one man in five and one in four in the three other groups. If men in the 'constrained work' group appear to be those least exposed to health problems of a psychological nature, these high percentages observed for stress and overall fatigue should be connected at this point to the expression of back problems and of muscular pains in the neck and in the shoulders: factors relating to impairment of health which are still vague, overall, but expressions of a genuine physical and mental attrition at work.

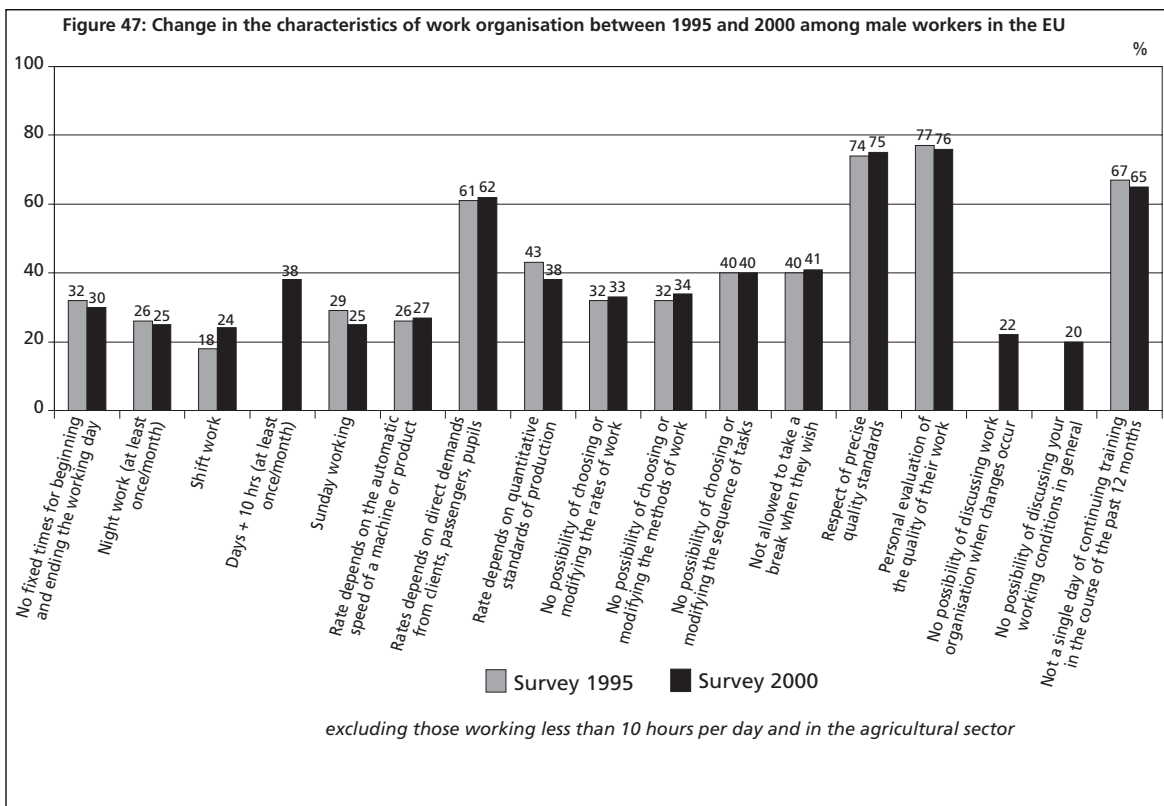
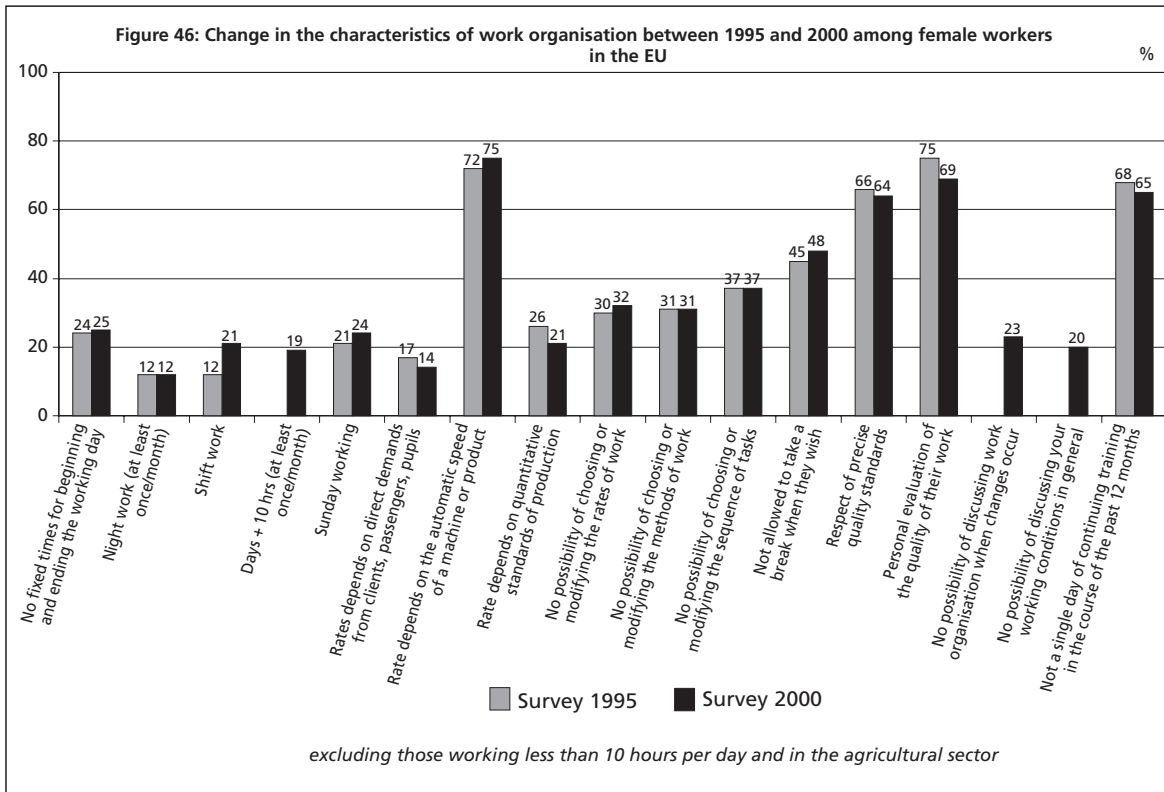
It is in the jobs characterised by a work organisation of the 'automated work' type or of the 'flexible' type that accidents at work — approximated here in an incomplete fashion by the indicators shown in Figure 42 — are the most frequent and the most serious: 13% and 14% respectively of the men from these groups have been absent at least one day, in the 12 months preceding the survey, because of an accident at work.

Identity at work

Figure 43 shows that, as for women, men of the 'flexible work' group are those with the greatest difficulties in harmonising their working hours with their social and family life: 23% of the men of this group manage this 'not very well' and 17% 'not at all', with a total of 40% of men of this group who cannot satisfactorily reconcile their work with their family and social life. Here, too, this finding poses the question of the consequences in terms of health and personal equilibrium of the increasing flexibilisation of working hours leading to a disintegration of social and family life.

Contrary to women, the 'automated work' group here is illustrated by a high proportion of men having difficulty harmonising work and life outside work: 18% of them choose the modality 'not very well' and 6% choose 'not at all'. The fact that this group is heavily characterised by night-time working (57%) must be taken into account here.

It is the group of men doing 'automated work' which expresses the greatest dissatisfaction with work (Figure 44): more than one in four (27%) is fairly or not at all satisfied with his work. This



difference from the group of women in 'autonomous work' is thus confirmed. It is important here to recall that this group is, among men, the one which is most deprived of scope for manoeuvre at work. The group of men characterised by work 'of servitude' expresses the second greatest

dissatisfaction (23% in all), followed by the group of men exposed to internal flexibility (17%). Only 11.5% of the men who do 'autonomous work' express any dissatisfaction in their work.

It is also the group of the men doing 'automated work' which expresses the highest proportion of those not wanting to ('would not want') occupy the same position at work at the age of 60: 14%. The workers connected with a 'constrained work' occupy second place here (12% would not want to do the same work at 60).

Over-qualification is experienced most in the group of 'constrained work' (9%, compared with 7% or less in the other groups). On the other hand, it is among men in 'automated work' or heavily exposed to flexibility that the feeling of being under-qualified for one's job is greatest (12% and 11% respectively).

Changes and trends observed over five years

Figures 46 and 47 show a global stabilisation of the percentages, between 1995 and 2000, concerning the characteristics of work organisation for female and male workers. Some downward changes are observed, however, among both groups: shift work and pace constraints due to production standards affect fewer workers in 2000 than in 1995. It is important, however, to remain cautious about these observations because of the slight differences in the wordings of the questions in the two surveys³⁷.

For women, a slight fall in the industrial pace constraints is noted (automatic speed of a machine) while this characteristic is static for men. In the same way, only women show a fall with respect to personal evaluation of the quality of work. Commercial constraints on pace of work affected proportionally more women than men in 1995 than in 2000, the percentages increasing slightly for women, while remaining the same among men.

The fact of working on Sundays (at least once a month) affected more men than women in 1995 (29% compared with 21%). In 2000, men and women are equally exposed to Sunday working (25%), attesting to an increase, among women, and to a fall, among men, of this type of flexibility of working hours.

The 1990 European Survey on Working Conditions allows for only limited comparisons with the two other surveys, concerning work organisation. In 1990, night work involved 12% of women and 21% of men surveyed during 'at least a quarter of the time' (for the surveys of 1995 and 2000, we used the phrase 'at least one night a month'). In 1990, the question did not specify, contrary to the subsequent surveys, the range of hours defining 'night work'. Even taking account of these differences in wording, it cannot be said that the 1990 percentages show any improvement of the situation in ten years.

The survey of 1990 combined into a single variable the scope of manoeuvre on the methods and the order of tasks. 39% of women and 37% of men then replied 'no' to the question. With respect to the non-cumulative percentages observed in the subsequent surveys, again it cannot be said that there has been any improvement here.

³⁷ The survey of 1995 mentioned 'rotating timetables' and 'shiftwork', while the survey of 2000 directly poses the question 'do you do shift work?' For the standards of production, the survey of 1995 did not specify 'quantitative standards' of production, contrary to the survey of 2000.

Conclusion

The Third European Survey on Working Conditions, conducted in 2000 on a representative sample of EU workers, brought to light a sense of deteriorating working conditions among workers. In the framework of a secondary statistical exploitation of the data produced by this survey, we have conducted an inventory of health at work for both women and men, then tried to show the links between types of work organisation and risks to health for male and female workers in the European Union. Based on the hypothesis that women and men are not integrated randomly in the social division of work, we carried out this analysis separately for each group.

In the first part of this report, the results obtained with respect to the inventory of health at work in Europe attest to a fairly negative development. First, one observes the persistence of ‘classic’ risks, showing that the prevention and control of these risks have not made any progress. These latter include as many risks of occupational illnesses as of accidents at work. On the other hand, time constraints are becoming more significant, despite the alarm bells raised, throughout the whole of Europe, by the increasing prevalence of repetitive strain injuries (RSIs) when working under strict time constraints. Finally, the danger signals regarding mental health also highlight the problems revealed through an acknowledgement of symptoms such as sleep disorders, irritation, stress and anxiety. Furthermore, questions are raised with respect to the conditions for recognition of accidents at work and occupational illnesses of the diverse forms observed. It is also necessary to emphasise the cumulative processes which are known to be involved in the forms of premature wear and tear leading to the loss of a job³⁸.

In the second part we outlined, first for female workers and then for male workers, a typology of the forms of work organisation which allows an interlinking of work organisation characteristics, structural data from the labour market, risks and descriptions of health impacts.

Types of work organisation and health at work

We have shown, for the sub-populations of female and of male workers, four types of work organisation which stand out because of specific characteristics, summarised in this section.

The biggest group in our study, in terms of quantity – it contains approximately half of all women and men workers in the European Union – is represented by a work organisation which we call ‘autonomous work’. This type is characterised by a large scope for manoeuvre in doing work but also in terms of possibilities to discuss work organisation or the conditions of work which is markedly greater than in the other groups. The workers (women and men) of this group are rarely subject to the flexible working hours connected with night work, Sunday working or shift work. They are (especially the men) a little more subject to very long working days and to the absence of fixed times for starting and ending the working day. Finally, this group tends to have a lot of control over the quality of the work, either by means of standards or self-evaluation. This type of work organisation is particularly well represented in the education and finance sectors and, for women, in public administration. This group is the least exposed to working conditions presenting health risks and to work-related health problems; however, both women and men in this group can be subject to back pains, stress, overall fatigue and RSI.

Another type of organisation developed in the model is called ‘flexible work’, because of the very significant exposure of the women and the men in this group to flexible working hours: almost

³⁸ Frigul, 1997; Dessors et al., 1991.

100% of the women and 80% of the men of this group work at least one night a month and/or one Sunday a month. Shift work, long working days and lack of fixed times for starting and ending the working day are also highly typical of this type of work organisation. It is also in this group that pace of work pressure induced by the demand of the 'customer' is felt most strongly, notably among women. Finally, the proportion of workers having some scope for autonomy at work or the possibility of discussion is relatively high. The two economic sectors most representative of this type of work organisation are health/social work and hotels, restaurants and catering. This type of work organisation affects 16% of male and 7% of female workers in the European Union,.

While some of the workers connected with this type of work organisation are senior managers who are responsible for organising their flexible work schedules, in general workers in this group have individual work situations and do not enjoy the 'protection' against the risks and abuses of power afforded to workers integrated in a real work environment. The impact of this is felt through all of the resultant negative health risks and outcomes.

This type of work organisation also has other characteristics common to the the situation of young people entering the labour market and other subordinate conditions found in the sectors represented: precarious employment, widely varying work schedules, making it impossible to arrange time for oneself, and difficult working conditions. Health problems at work appear in this instance as an indicator of the accumulation of risks and constraints. The research studies relating to, for example, fast food [De Villechabrolle, 1998] confirm and clarify these statistical results, using qualitative data.

A third type, called 'automated work', is characterised by a work organisation largely dependent on the automatic pace of machines or of the tools, with quantitative standards of production, but also qualitative ones. This type of work organisation is also very clearly characterised by the absence of scope for autonomy in work for a clear majority of the group, combined, for men specifically, with poor possibilities for discussion in the frame of work. This type covers 22% of female workers and 18% of male workers in the EU. The industrial sector is the most representative of this type of work organisation, but this group exists in not insignificant proportions in the transport and communications and hotels and catering sectors, and also, for women only, in the health/social work and sales sectors. This group is highly exposed to risks and work-related health problems.

The last type of work organisation is called 'constrained work' and covers 18% of female workers and 17% of male workers in the EU. As the name indicates, this group is especially characterised by an absence of autonomy at work, the impossibility of holding discussions about working conditions or work organisation in general, and the lack of demands in the work. Moreover, this group is the least concerned by quantitative or qualitative standards of production. Women and men involved in this type of work organisation are, however, subject to 'commercial' pressures (demands of the customer) in high proportions (66% of women and 53% of men). This group is found in all sectors, in particular in sales, hotels and catering (especially women) and construction (especially men). This form of work organisation is typically found in unclassified and unskilled manual jobs. This group is in addition characterised to a large extent by precarious job status, having the highest proportion of non-permanent and compulsorily part-time contracts among men and especially among women. This group also includes the highest proportion of youngest (under 25 years) and oldest (55 years and over) women.

The group carrying out 'constrained work', while relatively rarely exposed to risks and health problems (as statements by the workers prove), is, however, the group expressing the greatest dissatisfaction with work and a large feeling of over-qualification.

From a general viewpoint, one can observe, for the groups other than the 'constrained work' category, the importance of quality standards and the involvement of workers in the application of these standards. From being obliged to work to being obliged to obtain results is one of the principal factors behind the intensification of work, and it follows that the scope for manoeuvre mentioned by the workers is only perceived in relation to this obligation.

The four types of work organisation are found in all economic sectors and all occupational groups, according to the unequal distribution which is reflective of the social division of work. Exposure to risks and to health problems at work varies from one group to another, and hence the groups of workers particularly exposed in the EU employment market are highlighted in the study.

Women in all groups, especially the three 'non-autonomous' groups, are subject to painful positions and to carrying heavy loads, which calls into question the notion that women carry out 'light' work: according to one study, a supermarket cashier carries the equivalent of the weight of an elephant each day [Paulo Lopes Pena, 2000].

The three 'non-autonomous' groups present profiles which differ with respect to risks: women of the 'flexible work' group are very exposed to toxic substances and radiation, which raises questions about the protection conditions in workplaces regarding the most dangerous risks (carcinogenic, mutagenic and toxic to reproduction), as well as the medical follow-up, given the often non-linear careers of women who are extremely exposed to work flexibility.

The 'flexible work' group is certainly also the group which experiences the most affronts to dignity at work. This result throws into question the transformation from a relationship of domination at work — flexible work situations often do not have a work community — into a psychological and moral concept: moral harassment. Such a situation does not arise if there is collective regulation which can resist the many expressions of violence and abuse of power typical of this moral harassment.

Women doing 'automated work' are the second most exposed group to risks of a physical nature and connected with stress. Health impacts show the predominance in all groups of health problems connected with stress at work (RSI, back pains, etc.). It must also be noted that the 'flexible work' group also reports skin problems and allergies which suggest problems resulting from exposure to toxic substances; these symptoms attest to risks with deferred effects, such as cancer. Finally, reported stomach pains may be a symptom of distress which would be coherent with the individualisation of work situations.

The psychological effects show the particular position of women who are extremely exposed to flexibility, who accumulate the symptoms associated with high intensity work and heavy psychological pressure. It is also this 'flexible work' group which is most prone to accidents and to absenteeism.

Among male workers, the workers subject to 'automated work' are by far the most exposed to stress and to physical and chemical risks. This is indicative of their position in processing industries but also reflective of the forms of social division of work and the risks intrinsic to production.

Among men, the 'flexible work' group is most subject to affronts to personal dignity, as well as to health problems of a psychological nature. On the other hand, there is a certain homogeneity with respect to health problems, especially hearing difficulties, affecting a high proportion of the 'automatism' group, but also the 'flexible' and 'autonomous' groups. This is a manifestation of the persistence of exposure to noise in working environments and not only among certain positions. Noise still constitutes a very harmful factor.

Thus you can observe that the groups characterised by the most constricting conditions of work organisation are also those for whom the conditions of work are the most laborious, or even dangerous. This build-up of constraints of an organisational nature, combined with the laborious conditions connected with working conditions, seems to go hand in hand with a system of exploitation, even though this term is being used less and less [Roche, 2001].

Typology of work organisation and social division of work

The profiles of the men and women reflect the social division of work between these latter shown by different types of work organisation, levels of qualifications, types of job and business sectors. If the same forms of work organisation prevail — which is logical insofar as this stems from organisational choices in line with the objectives of competitiveness, productivity, use of technical equipment and working hours — on the other hand, the practical operation is different, since integration into economic production is different for men and for women (different sectors, different integration in terms of levels of qualification, different tasks). The resultant health risks must thus be related to this difference in integration.

It is also important to point out the existence of a social division of work within the very heart of the female and male sub-populations. This is pointed out by D. Kergoat [1998] who mentions the existence of a class split (in particular with respect to work involving cleaning, housework and care), whereby one group is at the service of the other group who are subject to intensification of work, including in the most highly-qualified posts.

Through the delineation of the 'constrained' and 'flexible' groups, one can grasp the influence of subcontracting relations in the regulation of social working relations within the current forms of work organisation. A social division of work and risks emerges as the result of the profiles observed which, theoretically, would tend to be opposed:

- 'autonomous' workers, perhaps representing the 'hard core' in enterprises characterised by the 'typical' work situation (indefinite contract, part-time work by choice) and benefitting from collective agreements as the outcome of decades of wage negotiations within the enterprises;
- workers subjected to customer-supplier relationships, those in the 'flexible' group, at once combining the constraints due to extremely difficult conditions, even dangerous work, and work intensity made possible by recourse to temporary work. Those performing automated work are also subject, albeit in a different way, to the demands of the customer and are now mostly engaged in order-induced work because of the prevalence of subcontracting production (for example, the car industry, but also the textiles, chemicals or aerospace sectors).

In this social division of work, the 'constrained' group brings to mind another form of subcontracting, not relating to customer–supplier relations, but arising from outsourcing – either within or outside of the enterprise – of certain subordinate tasks to a group of workers. One example of this is cleaning work, carried out when the premises are empty, after colleagues have left, which can when subcontracted be increasingly cut off in a double sense from the work community: both temporally and statutorily.

This typology of the forms of work organisation for female and male workers in the European Union represent a particular point of view. The groups we have mentioned have no meaning except in reference to our theoretical construct, the former validating the second and vice versa [Bernard, 1982]. The coherence of the groups obtained shows that the initial hypotheses on the connections between work organisation, social division of work and risks to health are well founded. Moreover, such an approach, which goes beyond the existing structural categories, opens new perspectives in terms of epidemiological research. Through demonstrating which work situations are the most likely to be associated with risks to health, it can result in better targeted studies and guidelines.

Certain approaches to prevention in health and safety at work are developed purely at the man–machine interface level, resulting in debates related to technical risks, to 'human error', to 'risk management' even to 'genetic predisposition'³⁹. Currently a 'Work Ability Index'– attributing to each worker a score for his or her 'capacity for work' constructed on criteria of attrition at work – is being presented in certain countries of northern Europe as a source of improvement in productivity [Goedhard, 2000]. At a time when such measures are being contemplated, it is vital to relate health at work to the individual and collective history of persons in order to highlight the relationship between work organisation and social relationships on changes in health at work, as well as the possible connections with the processes of selection-exclusion on the employment market. This approach ought to contribute to the debate on what resources should be implemented to ensure better health protection and employment.

'Work plays a major role in the creation of social inequalities of health. On the one hand, it determines the place one occupies in society, thus the conditions for living, income, housing and social protection, including when persons are excluded from it. On the other hand, the conditions and organisation of work and employment have direct effects on health and on the creation of social inequalities of health.' [Volkoff, Thébaud-Mony, 2000]. This last observation is validated by an analysis of the types of work organisation which shows an unequal distribution of the risks, constraints and health impacts connected with work. Nevertheless, it is not a question of there being protected people on one side and exposed ones on the other. The choices concerning work organisation, the social division of work and time use, influenced above all by the drive to reduce the costs of work, can lead to a general intensification of work, while at the same time reinforcing certain dividing lines among the workforce.

There does exist some scope for manoeuvre for some workers, but what value does this have when it comes to genuinely protecting their health? More precisely: what is this scope when it comes to

³⁹ The INRS (National institute for research and safety in France) has initiated a line of research into predictive medicine. Several trade union organisations have criticised this programme — defined by the INRS as aimed at 'identifying the persons at increased risk, through the creation of indicators of predisposition to occupational risks (...) resulting from a set of genetically determined factors' — on the grounds that it opens the way to the genetic selection of workers for employment. [Pajot, 1997].

exercising the right to withdraw from dangerous situations, inscribed in the European directive and in national legislation? The frequency of the risks makes one think that a certain acceptance of the inevitability of these risks is still present in the workplace, without there being any progress towards a true evaluation of the risks facing workers.

The comparison by countries has made it possible to highlight certain differences, although research by Laurent Vogel shows that it is impossible to show these differences without referring to the social history of the countries and recording the interpretation of differences observed – both with respect to the individual dynamics of social relationships in each country and with respect to the processes of the international division of work.

All European employment laws have been (historically) constructed around the concept of physical safety [Supiot, 1994]: ‘This is what lies at the centre of European social law, seen, for example, in the Single European Act, which has extended to this question of health and of safety at work, and to this alone, majority rule in decision-making among the Member States of the European Community’. (p. 69).

The deterioration of working conditions in the European Union and the health consequences for men and women arising from this are to a large extent related to the choices of work organisation, a fact that is overlooked by political leaders and health authorities, both European and national. The transformation of working conditions and the protection of health at work cannot be reduced to an aspect of the management of enterprises’ productivity. Should it not rightfully be set out as a priority for public health on the European political agenda?

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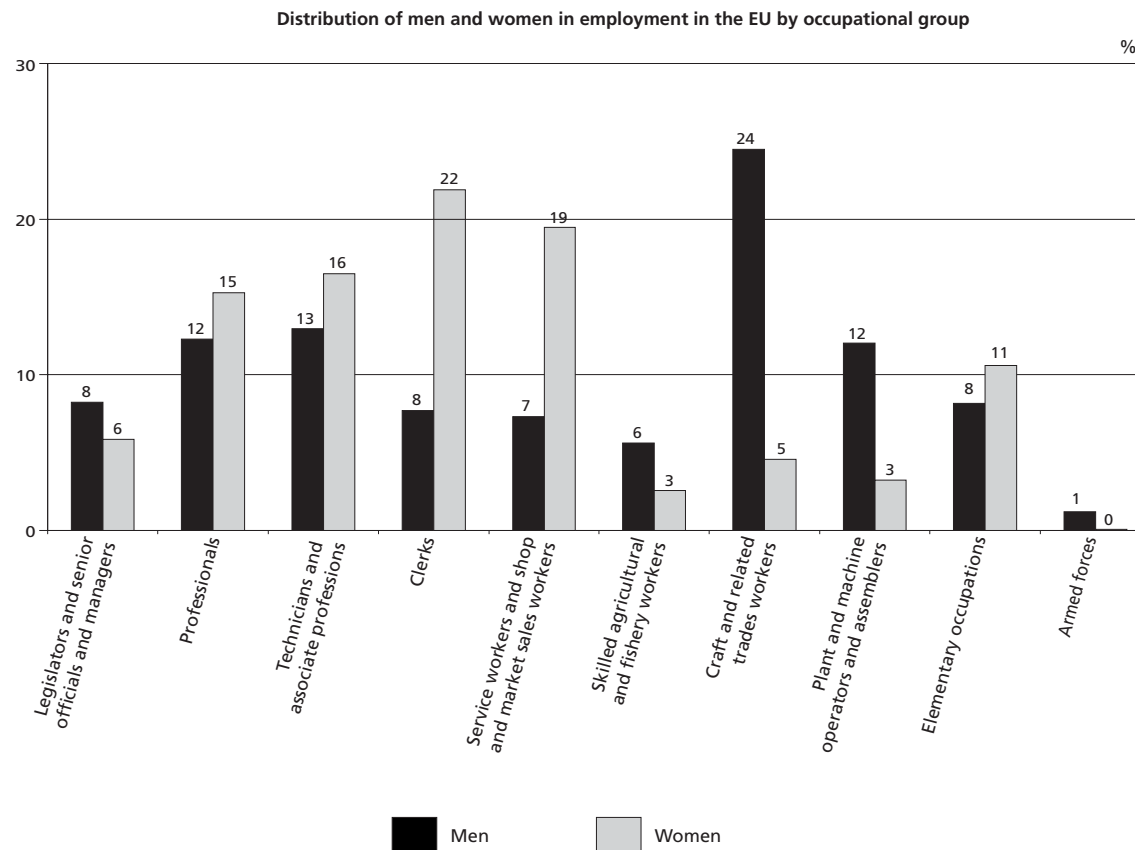
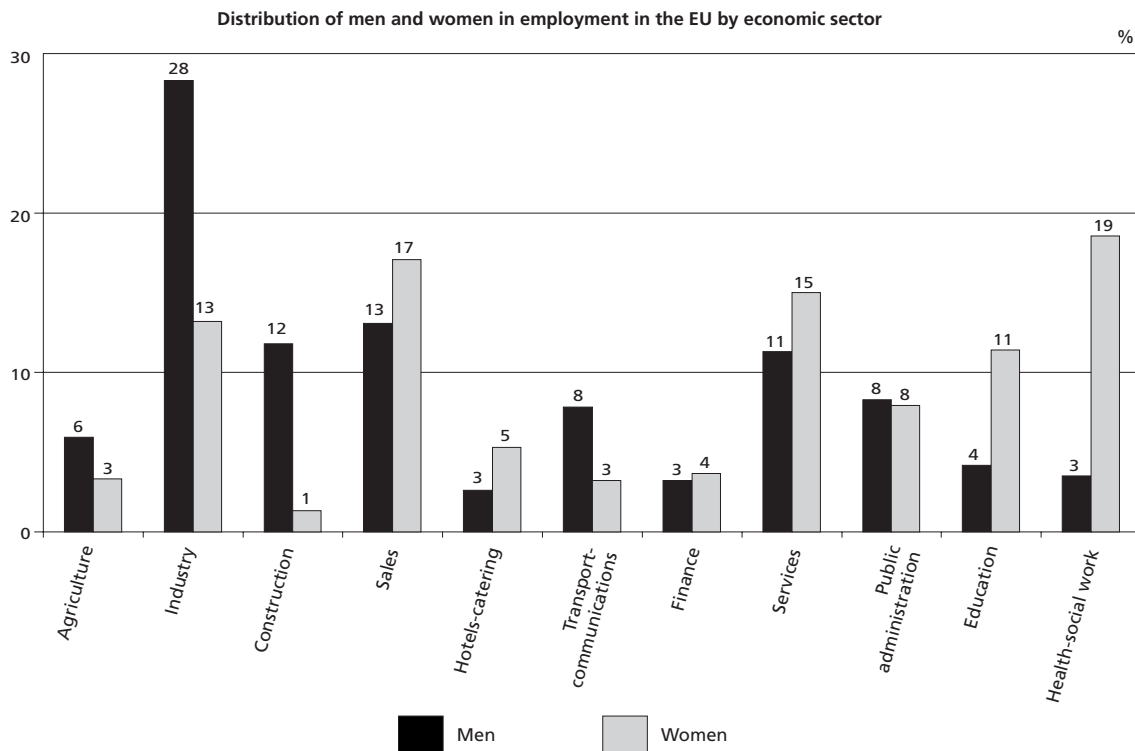
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Annexes

Annex I

Distribution of men and women by economic sector (NACE) and by occupational group (ISCO) in the EU, in 2000



Annex II

ISCO and NACE codes

ISCO Code — International Standard Classification of Occupations (ISCO-88 (COM))

1 — LEGISLATORS, SENIOR OFFICIALS AND MANAGERS

11 - Legislators and senior officials

- 111 - Legislators
- 114 - Senior officials of special interest organisations

12 - Corporate managers

- 121 - Directors and chief executives
- 122 - Production and operations department managers
- 123 - Other departmental managers

13 - General managers

- 131 - General managers

2 - PROFESSIONALS

21 - Physical, mathematical and engineering science professionals

- 211 - Physicists, chemists and related professionals
- 212 - Mathematicians, statisticians and related professionals
- 213 - Computing professionals
- 214 - Architects, engineers and related professionals

22 - Life science and health professionals

- 221 - Life science professionals
- 222 - Health professionals (except nursing)
- 223 - Nursing and midwifery professionals

23 - Teaching professionals

- 231 - College, university and higher education teaching professionals
- 232 - Secondary education teaching professionals
- 233 - Primary and pre-primary education teaching professionals
- 234 - Special education teaching professionals
- 235 - Other teaching professionals

24 - Other professionals

- 241 - Business professionals
- 242 - Legal professionals
- 243 - Archivists, librarians and related information professionals
- 244 - Social sciences and related professionals
- 245 - Writers and creative and performing artists
- 246 - Religious professionals
- 247 - Public service officers

3 - TECHNICIANS AND ASSOCIATE PROFESSIONALS

31 - Physical and engineering science professionals

- 311 - Physical and engineering science technicians
- 312 - Computer associate professionals
- 313 - Optical and electronic equipment operators
- 314 - Ship and aircraft controllers and technicians
- 315 - Safety and quality inspectors

32 - Life science and health associate professionals

- 321 - Life science technicians and related associate professionals
- 322 - Modern health associate professionals (except nursing)
- 323 - Nursing and midwifery associate professionals

33 - Teaching associate professionals

- 331 - Primary education teaching associate professionals
- 332 - Pre-primary education teaching associate professionals
- 333 - Special education teaching associate professionals
- 334 - Other teaching associate professionals

34 - Other associate professionals

- 341 - Finance and sales associate professionals
- 342 - Business services agents and trade brokers
- 343 - Administrative associate professionals
- 344 - Customs, tax and related government associate professionals
- 345 - Police inspectors and detectives
- 346 - Social work associate professionals
- 347 - Artistic, entertainment and sports associate professionals
- 348 - Religious associate professionals

4 - CLERKS**41 - Office clerks**

- 411 - Secretaries and keyboard-operating clerks
- 412 - Numerical clerks
- 413 - Material-recording and transport clerks
- 414 - Library, mail and related clerks
- 419 - Other office clerks

42 - Customer service clerks

- 421 - Cashiers, tellers and related clerks
- 422 - Client information clerks

5 - SERVICE WORKERS AND SHOP AND MARKET SALES WORKERS**51 - Personal and protective services workers**

- 511 - Travel attendants and related workers
- 512 - Housekeeping and restaurant services workers
- 513 - Personal care and related workers
- 514 - Other personal service workers
- 516 - Protective services workers

52 - Models, salespersons and demonstrators

- 521 - Fashion and other models
- 522 - Shop salespersons and demonstrators

6 - SKILLED AGRICULTURAL AND FISHERY WORKERS**61 - Market-oriented skilled agricultural and fishery workers**

- 611 - Market gardeners and crop growers
- 612 - Market-oriented animal producers and related workers
- 613 - Market-oriented crop and animal producers
- 614 - Forestry and related workers
- 615 - Fishery workers, hunters and trappers

7 - CRAFT AND RELATED TRADES WORKERS**71 - Extraction and building trade workers**

- 711 - Miners, shot-firers, stonecutters and carvers
- 712 - Building frame and related trades workers
- 713 - Building finishers and related trades workers
- 714 - Painters, building structure cleaners and related trade workers

72 - Metal, machinery and related trades workers

- 721 - Metal moulders, welders, sheet-metalworkers, structural-metal preparers and related trades
- 722 - Blacksmiths, toolmakers and related trades workers
- 723 - Machinery mechanics and fitters
- 724 - Electrical and electronic equipment mechanics and fitters

73 - Precision, handicraft, printing and related trades workers

- 731 - Precision workers in metal and related materials
- 732 - Potters, glass-makers and related trades workers
- 733 - Handicraft workers in wood, textile, leather and related materials
- 734 - Printing and related trades workers

74 - Other craft and related trades workers

- 741 - Food processing and related trades workers
- 742 - Wood treaters, cabinet-makers and related trades workers
- 743 - Textile, garment and related trades workers
- 744 - Felt, leather and related trades workers

8 - PLANT AND MACHINE OPERATORS AND ASSEMBLERS

81 - Stationary plant and related operators

- 811 - Mining and mineral-processing plant operators
- 812 - Metal-processing plant operators
- 813 - Glass, ceramics and related plant operators
- 814 - Wood processing and papermaking plant operators
- 815 - Chemical processing plant operators
- 816 - Power production and related plant operators
- 817 - Automated assembly-line and industrial robot operators

82 - Machine operators and assemblers

- 821 - Metal and mineral products machine operators
- 822 - Chemical products machine operators
- 823 - Rubber and plastic products machine operators
- 824 - Wood products machine operators
- 825 - Printing, binding and paper products machine operators
- 826 - Textile, fur and leather products machine operators
- 827 - Food and related products machine operators
- 828 - Assemblers

- 829 - Other machine operators and assemblers

83 - Drivers and mobile plant operators

- 831 - Locomotive engine-drivers and related workers
- 832 - Motor vehicle drivers
- 833 - Agricultural and other mobile plant operators
- 834 - Ships' deck crews and related workers

9 - ELEMENTARY OCCUPATIONS

91 - Sales and services elementary occupations

- 911 - Street vendors and related workers
- 912 - Shoe cleaning and other street services' elementary occupations
- 913 - Domestic and related helpers, cleaners and launderers
- 914 - Building caretakers, window and related cleaners
- 915 - Messengers, porters, doorkeepers and related workers
- 916 - Garbage collectors and related labourers

92 - Agricultural, fishery and related labourers

- 921 - Agricultural, fishery and related labourers

93 - Labourers in mining, construction, manufacturing and transport

- 931 - Mining and construction labourers
- 932 - Manufacturing labourers
- 933 - Transport labourers and freight handlers

10 - ARMED FORCES

- 01 Armed forces
- 011 Armed forces

**NACE Code — Statistical Classification of Economic Activities in the European
Community (NACE Rev. 1 - obligatory since 1993)**

**SECTION A - AGRICULTURE, HUNTING AND
FORESTRY**

- 01 - Agriculture. Hunting and related service activities
- 02 - Forestry, logging and related service activities

SECTION B - FISHING

- 05 - Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing

SECTION C - MINING AND QUARRYING

- 10 - Mining of coal and lignite; extraction of peat
- 11 - Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction, excluding surveying
- 12 - Mining of uranium and thorium ores
- 13 - Mining of metal ores
- 14 - Other mining and quarrying

SECTION D - MANUFACTURING

- 15 - Manufacture of food products and beverages
- 16 - Manufacture of tobacco products
- 17 - Manufacture of textiles
- 18 - Manufacture wearing apparel; dressing and dyeing of fur
- 19 - Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
- 20 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 21 - Manufacture of pulp, paper and paper products

22 - Publishing printing and reproduction of recorded media

23 - Manufacture of coke, refined petroleum products and nuclear fuel

24 - Manufacture of chemicals and chemical products

25 - Manufacture of rubber and plastic products

26 - Manufacture of other non-metallic mineral products

27 - Manufacture of basic metals

28 - Manufacture of fabricated metal products, except machinery and equipment

29 - Manufacture of machinery and equipment n.e.c.

30 - Manufacture of office machinery and computers

31 - Manufacture of electrical machinery and apparatus n.e.c.

32 - Manufacture of radio, television and communication equipment and apparatus

33 - Manufacture of medical, precision and optical instruments, watches and clocks

34 - Manufacture of motor vehicles, trailers and semi-trailers

35 - Manufacture of other transport equipment

36 - Manufacture of furniture; manufacturing n.e.c.

37 - Recycling

**SECTION E - ELECTRICITY, GAS AND WATER
SUPPLY**

40 - Electricity, gas, steam and hot water supply

41 - Collection, purification and distribution of water

SECTION F - CONSTRUCTION

45 - Construction

SECTION G - WHOLESALE AND RETAIL TRADE, REPAIR OF MOTOR VEHICLES, MOTORCYCLES AND PERSONAL AND HOUSEHOLD GOODS

50 - Sale maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel

51 - Wholesale trade and commission trade, except of motor vehicles and motorcycles

52 - Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods

SECTION H - HOTELS AND RESTAURANTS

55 - Hotels and restaurants

SECTION I - TRANSPORT STORAGE AND COMMUNICATION

60 - Land transport, transport via pipelines

61 - Water transport

62 - Air transport

63 - Supporting and auxiliary transport activities; activities of travel agencies

64 - Post and telecommunications

SECTION J - FINANCIAL INTERMEDIATION

65 - Financial intermediation, except insurance and pension funding

66 - Insurance and pension funding, except compulsory social security

67 - Activities auxiliary to financial intermediation

SECTION K - REAL ESTATE, RENTING AND BUSINESS ACTIVITIES

70 - Real estate activities

71 - Renting of machinery and equipment without operator and of personal and household goods

72 - Computer and related activities

73 - Research and development

74 - Other business activities

SECTION L - PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY

75 - Public administration and defence; compulsory social security

SECTION M - EDUCATION

80 - Education

SECTION N - HEALTH AND SOCIAL WORK

85 - Health and social work

SECTION O - OTHER COMMUNITY, SOCIAL AND PERSONAL SERVICES

90 - Sewage and refuse disposal, sanitation and similar activities

91 - Activities of membership organisations n.e.c.

92 - Recreational cultural and sporting activities

93 - Other service activities

SECTION P - PRIVATE HOUSEHOLDS WITH EMPLOYED PERSONS

95 - Private households with employed persons

SECTION Q - EXTRA-TERRITORIAL ORGANISATIONS AND BODIES

99 - Extra-territorial organisations and bodies

Annex III

Variables used in the analysis

HEALTH		Variable Ref. Third European survey
Global indicators	- absenteeism for health problems caused by work	q36b
	- your work affects your health (yes/no)	q35c1
	- your health is at risk because of your work	q34
Illnesses, physical health problems	- back pains	q35c05
	- ear problems	q35c02
	- eye problems	q35c03
	- skin problems	q35c04
	- respiratory problems	q35c11
	- allergies	q35c17
RSI	- cardiac problems	q35c12
	- muscular pains in the shoulders and neck	q35c08
	- muscular pains in the upper limbs	q35c09
Stress, health problems of a psychological nature	- muscular pains in the lower limbs	q35c10
	- stress	q35c14
	- overall fatigue	q35c15
	- headaches	q35c06
	- stomach pains	q35c07
	- sleep problems	q35c16
Accidents at work	- anxiety	q35c18
	- irritability	q35c19
	- absenteeism due to an accident at work	q36a
	- injury	q35c13
	- traumatism	q35c20

Work organisation and health at work in the European Union

WORKING CONDITIONS - RISKS

Physical health problems	- painful or tiring positions	q121
	- heavy loads	q122
	- being exposed to very high temperatures	q113
	- being exposed to very low temperatures	q114
	- being exposed to vibrations from a tool or a machine	q111
	- being exposed to very loud noises (having to raise your voice, etc.)	q112
	- breathing in toxic vapours or fumes	q115
	- touching dangerous products or substances	q116
	- being exposed to radiation (laser, X-rays, radioactivity, etc.)	q117
	Work pressures	- exposure to repetitive hand/arm movements
- working to very tight deadlines		q21b2
- having enough time to complete one's work		q265
- working at very high speed		q21b1
- having several unexpected interruptions to work each day to do an unforeseen task		q23a
Affronts to dignity	- acts of intimidation	q313
	- sexual discrimination	q314
	- discrimination on the basis of age	q316
	- physical violence on the part of colleagues	q311
	- physical violence on the part of external persons	q312

WORK ORGANISATION

Temporal framework	- times for starting and ending working day fixed or otherwise	q18a3
	- night work	q16ar
	- shift work	q18b
	- Sunday working	q16cr
	- 10-hour day	q16er
	The pace of work depends:	
	- on the automatic speed of a machine or a product	q2204
- on quantitative standards of production	q2203	
Scope for manoeuvre	Autonomy:	
	- possibility of choosing or of modifying pace of work	q2503
	- possibility of choosing or of modifying working methods	q2502
	- possibility of choosing or of modifying the order of tasks	q2501
	- possibility of taking a break at will	q2602
	Control:	
	- respect of precise quality standards	q2401
- personal evaluation of the quality of the work	q2402	
Social relationships	- the pace of work depends on direct demands of customers, passengers, students, patients, etc.	q2202
	- possibility of discussing work organisation when any changes occur	q30a2
	- possibility of discussing your working conditions in general	q30a1
	- continuing training received in the past 12 months	q29r

STRUCTURE

Employment market	- economic sector (NACE code)	q5r
	- occupational group (ISCO code)	q2r
	- size of the local unit of the enterprise (where the people interviewed work)	q7
	- country	country
Individual characteristics	- age	EF11r
	- sex	EF10
	- length of service in job	q3brr
	- job status	q4, q4b
	- part-time / full-time	q17, q17b

Annex IV

Farmers: what risks to health at work?

Male and female agricultural workers are still a group which is highly exposed to risks and to constraints in their work, in particular to the physical risks due to the hard nature of the work (heavy loads, painful positions, etc.), aggravated by long working days and often being obliged to work on Sundays, or even at night for 21% of men. This means overexposure to physical health problems, in particular to back problems for more than one male agricultural worker in two and for nearly 60% of female agricultural workers. The distribution by age shows an ageing population, which helps to clarify these high percentages with respect to health problems connected with physical attrition at work (back, MSD of the neck/shoulders). Stress and the problems of psychological tension affect female agricultural workers more. On the other hand, 15% of male agricultural workers have had at least one injury as the result of their work, compared with 8% of the women.

	Paid and unpaid female agricultural workers	Paid and unpaid male agricultural workers
Organisation of working hours		
Days of over 10 hours/month	42% have at least one working day of over 10 hours per month	49% have at least one working day of over 10 hours per month
	18% have at least 19 working days of over 10 hours in a month	21% have at least 19 working days of over 10 hours in a month
Sunday working	49% work at least one Sunday/month	46% work at least one Sunday/month
	27% work every Sunday (4 or 5/month)	22% work every Sunday (4 or 5/month)
Night work	8% work at least one night a month	21% work at least one night a month
Structure		
Occupational group	74% are agricultural workers and operatives skilled in agriculture and fishery	86% are agricultural workers and operatives skilled in agriculture and fishery
	11% are unskilled labourers and operatives	6% are unskilled labourers and operatives
	5% are administrative employees	
Job status	17% are workers with no indefinite contract	11% are workers with no indefinite contract
	22% are workers with indefinite contract	31% are workers with indefinite contract
	61% are unpaid workers	58% are unpaid workers
Length of service in present job		
Less than one year	5%	8%
from 1 to 19 years	53%	54%
20 years and over	42%	38%
Part-time	20%	5%
Compulsory part-time		
Would like to work more	25%	8%
Would like to work less	5%	34%
Size of local unit of the enterprise:		
Less than 50	96%	94%
50 to 499	3%	4%
500 and over	1%	2%
Age:		
15–24 years	8%	9%
25–39 years	19%	29%
40–54 years	45%	35%
55 years and over	28%	27%

Countries: Greece (18%), Portugal (14%), Ireland (9%), Spain (8%), and, to a lesser degree, Austria (7%) and Italy (6%) have a primary sector larger than the average for the EU (5%).

	Paid and unpaid female agricultural workers	Paid and unpaid male agricultural workers
Risks ³⁶		
Repetitive movements	57%	60%
Strict and short deadlines	40%	41%
Fast speeds	40%	48%
Painful positions	60%	59%
Enough time to complete the work (yes)	85%	85%
Carrying heavy loads	40%	53%
Toxic fumes	27%	35%
Very loud noises	13%	30%
Dangerous substances	22%	34%
High temperatures	28%	30%
Low temperatures	29%	42%
Vibrations	16%	32%
Radiations	1%	3%
Physical violence by colleagues	0%	1%
Sexual discrimination	3%	0%
Health problems experienced		
Back pains	59%	51%
Stress	22%	17%
Overall fatigue	39%	35%
RSI neck-shoulders	45%	31%
RSI of upper limbs	32%	26%
RSI of lower limbs	32%	24%
Three cumulative RSIs	24%	18%
Headaches	15%	12%
Irritability	5%	6%
Vision problems	7%	4%
Anxiety	8%	6%
Sleep problems	5%	5%
Skin problems	11%	10%
Stomach pains	3%	9%
Traumatism	4%	4%
Respiratory problems	5%	5%
Heart disease	1%	2%
Injury	8%	15%
Allergy	11%	7%
Absence on the grounds of health problems due to work (any)	87%	89%
Absence on the grounds of accident at work (any)	95%	88%

Annex V

Construction of the sector variable (regrouping of the NACE code into 11 categories)

New modalities	Sections of the NACE code concerned (details: Annex I)
Agriculture	A - B
Industry	C - D - E
Construction	F
Sales	G
Hotels-catering	H
Transport-communications	I
Finance	J
Services	K - O - P
Public administration	L
Education	M
Health-social work	N

Annex VI

Distribution of structural categories in the typologies

WOMEN

Two-way SECTEU11 * TYPOFEM4 table

% in TYPOFEM4

	TYPOFEM4				Total
	'servitude'	'flexible'	'autonomy'	'automated'	
Industries	14.3%	2.7%	9.5%	28.8%	14.1%
Sales	23.6%	4.4%	15.6%	14.0%	15.9%
Hotel/catering	7.7%	10.9%	3.1%	4.6%	4.8%
Transport-communications	2.6%	4.3%	3.4%	4.9%	3.7%
Finance	2.6%	0.7%	4.7%	4.4%	4.0%
Services	18.8%	5.9%	16.6%	9.7%	14.7%
Public administration	7.5%	4.8%	12.3%	6.1%	9.5%
Education	10.1%	6.4%	16.4%	8.4%	12.8%
Health/social	12.7%	59.9%	18.4%	19.0%	20.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Table Q.2. - What is your main paid occupation? Please give your professional title. *
TYPOFEM4

% in TYPOFEM4

	TYPOFEM4				Total
	'servitude'	'flexible'	'autonomy'	'automated'	
Legislators and senior officials and managers	1.6%	3.0%	4.8%	1.3%	3.3%
Professionals	6.1%	28.7%	20.8%	8.8%	16.1%
Technicians and associate professionals	10.0%	30.9%	18.6%	15.6%	17.3%
Clerks	23.9%	5.9%	27.9%	21.0%	24.1%
Service workers and shop and market sales workers	29.8%	28.3%	16.9%	20.9%	20.9%
Skilled agricultural and fishery workers	0.1%		0.1%	0.3%	0.1%
Craft and related trades workers	4.9%	1.0%	2.1%	9.1%	4.0%
Plant and machine operators and assemblers	4.7%	0.5%	1.3%	9.1%	3.6%
Elementary occupations	18.9%	1.3%	7.4%	13.9%	10.4%
Armed forces	0.1%	0.4%	0.1%		0.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

MEN

Two-way SECTEU11 * TYPOHOM4 table

% in TYPOHOM4

	TYPOFEM4				Total
	'servitude'	'flexible'	'autonomy'	'automated'	
Industries	31.2%	21.1%	20.2%	57.3%	32.5%
Construction	12.7%	20.4%	2.6%	8.7%	11.6%
Sales	12.2%	16.3%	7.3%	5.7%	10.9%
Hotel/catering	1.2%	2.1%	7.2%	2.3%	2.5%
Transport-communications	5.5%	9.0%	15.1%	12.2%	8.9%
Finance	4.9%	4.7%	1.1%	0.2%	3.4%
Services	11.5%	9.8%	14.6%	6.6%	10.8%
Public administration	10.7%	10.9%	16.9%	4.7%	10.6%
Education	7.0%	4.2%	5.3%	0.6%	5.1%
Health/social	3.1%	1.6%	9.7%	1.6%	3.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Table Q.2. - What is your main paid occupation? Please give your professional title. *
TYPOHOM4

% in TYPOHOM4

	TYPOFEM4				Total
	'servitude'	'flexible'	'autonomy'	'automated'	
Legislators and senior officials and managers	8.4%	1.5%	8.4%	0.8%	5.8%
Professionals	16.3%	7.4%	14.4%	2.4%	12.0%
Technicians and associate professionals	16.6%	8.7%	16.7%	7.6%	13.6%
Clerks	11.7%	13.3%	3.9%	3.6%	9.2%
Service workers and shop and market sales workers	5.2%	7.7%	17.1%	6.5%	7.8%
Skilled agricultural and fishery workers	0.8%	0.7%	0.0%	0.2%	0.5%
Craft and related trades workers	27.0%	30.2%	12.8%	33.3%	26.4%
Plant and machine operators and assemblers	7.3%	14.5%	14.8%	30.6%	14.0%
Elementary occupations	5.7%	15.5%	7.1%	14.0%	9.1%
Armed forces	1.1%	0.4%	4.8%	1.1%	1.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Annex VII

Structural specificities of the countries of the EU: overview of job status, economic sector and occupational group

Table Q.4.a – Are you mainly ...? (SHOW CARD – READ OUT – ONE ANSWER ONLY)

	Countries											Total				
	Belgium	Denmark	Germany	Greece	Italy	Spain	France	Ireland	Luxem- bourg	Nether- lands	Portugal		United Kingdom	Finland	Sweden	Austria
Self-employed without employees	12.0%	2.8%	6.2%	36.5%	19.8%	16.9%	9.2%	13.3%	6.7%	3.8%	18.8%	9.7%	10.9%	6.2%	8.2%	11.4%
Self-employed with employees	4.4%	3.0%	6.5%	7.3%	5.6%	7.6%	3.7%	6.5%	5.1%	3.0%	5.6%	3.7%	3.1%	3.4%	5.6%	5.1%
Employed	82.5%	94.0%	85.5%	56.2%	74.5%	75.5%	86.7%	79.2%	87.9%	92.1%	74.9%	85.4%	84.4%	89.0%	84.7%	82.5%
Other (spontaneous)	1.1%	0.2%	1.8%	0.1%	0.1%	0.4%	0.4%	1.1%	0.4%	1.0%	0.7%	1.2%	1.6%	1.4%	1.5%	0.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table Q.4.b – Is it ...? (SHOW CARD – READ OUT – ONE ANSWER ONLY)

	Countries											Total				
	Belgium	Denmark	Germany	Greece	Italy	Spain	France	Ireland	Luxem- bourg	Nether- lands	Portugal		United Kingdom	Finland	Sweden	Austria
On an unlimited contract	88.7%	80.6%	86.6%	52.9%	84.1%	64.6%	83.2%	79.3%	89.3%	81.9%	75.0%	81.8%	76.4%	85.8%	84.9%	81.6%
On a fixed term contract	5.7%	6.0%	8.5%	5.8%	5.4%	27.1%	9.3%	6.0%	5.1%	11.3%	12.2%	10.7%	14.3%	8.8%	6.2%	10.2%
On a temporary employment agency contract	2.5%	.8%	.6%	2.8%	5.0%	2.3%	3.2%	5.0%	.7%	2.4%	.4%	2.0%	.3%	.5%	1.6%	2.2%
On apprenticeship or other training scheme	.4%	2.5%	2.1%	1.4%	4.2%	1.4%	1.4%	2.2%	2.2%	.3%	1.2%	.2%	1.0%	.4%	2.7%	1.6%
Other (spontaneous)	2.4%	8.7%	2.1%	35.9%	.9%	4.3%	2.2%	4.6%	1.8%	3.7%	10.1%	3.5%	4.5%	4.3%	3.5%	3.6%
Don't know	.3%	1.4%	.2%	1.3%	.5%	.4%	.7%	3.0%	.9%	.4%	1.2%	1.8%	3.5%	.1%	1.1%	.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table Secteu11

Sector	Countries											Total				
	Belgium	Denmark	Germany	Greece	Italy	Spain	France	Ireland	Luxem- bourg	Nether- lands	Portugal		United Kingdom	Finland	Sweden	Austria
Agriculture	2.2%	3.7%	2.6%	18.2%	5.8%	7.9%	4.4%	9.1%	3.0%	3.5%	13.7%	3.0%	7.1%	3.1%	6.5%	4.9%
Industries	19.1%	12.2%	12.5%	11.7%	12.4%	11.2%	10.5%	17.1%	16.0%	17.0%	6.6%	18.9%	18.1%	15.3%	9.9%	13.5%
Construction	6.6%	6.7%	8.6%	7.0%	7.3%	9.9%	6.4%	8.5%	8.3%	6.1%	10.7%	6.3%	6.0%	5.3%	7.8%	7.5%
Sales	14.6%	14.0%	14.0%	16.7%	16.0%	16.6%	13.5%	14.3%	13.1%	16.7%	13.9%	14.5%	11.1%	12.8%	16.0%	14.7%
Hotel/catering	3.5%	2.8%	3.1%	6.3%	3.3%	6.1%	3.2%	6.6%	4.7%	3.4%	5.3%	3.4%	2.7%	2.7%	5.7%	3.7%
Transport/ communications	7.0%	7.0%	5.3%	6.2%	5.4%	5.8%	6.4%	5.8%	7.2%	6.3%	3.8%	6.4%	8.3%	6.6%	6.4%	5.9%
Finance	4.4%	3.1%	3.5%	2.4%	3.2%	2.5%	3.2%	3.7%	10.6%	3.7%	1.8%	4.5%	2.2%	2.2%	3.9%	3.4%
Services	11.8%	12.7%	12.8%	9.7%	11.4%	13.0%	15.3%	13.0%	14.6%	15.8%	9.8%	11.8%	14.4%	14.9%	11.5%	12.8%
Public administration	9.5%	6.0%	8.3%	7.0%	8.8%	6.3%	9.3%	4.8%	13.1%	7.2%	5.9%	9.2%	5.3%	5.3%	6.5%	8.1%
Education	8.9%	7.1%	6.0%	6.1%	7.2%	6.0%	7.7%	6.2%	5.9%	6.7%	5.8%	9.1%	7.1%	7.4%	6.0%	7.1%
Health/social	10.8%	17.0%	10.2%	4.7%	6.3%	5.4%	10.5%	7.6%	7.1%	14.0%	4.1%	11.2%	14.0%	19.2%	8.1%	9.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table Q.2. What is your main paid job? Please give me your job title in full

	Countries											Total				
	Belgium	Denmark	Germany	Greece	Italy	Spain	France	Ireland	Luxem- bourg	Nether- lands	Portugal		United Kingdom	Finland	Sweden	Austria
Legislators and senior officials and managers	10.3%	7.0%	5.9%	10.6%	1.6%	8.6%	7.6%	8.9%	5.3%	11.9%	7.7%	10.3%	8.6%	5.0%	7.5%	7.3%
Professionals	19.1%	12.2%	12.5%	11.7%	12.4%	11.2%	10.5%	17.1%	16.0%	17.0%	6.6%	18.9%	18.1%	15.3%	9.9%	13.5%
Technicians and associate professionals	9.8%	17.4%	19.9%	5.6%	13.4%	8.5%	17.2%	3.8%	16.0%	17.3%	9.9%	9.9%	15.3%	20.2%	13.4%	14.4%
Clerks	15.9%	12.2%	12.9%	11.1%	14.9%	10.2%	14.3%	13.7%	16.6%	12.0%	10.7%	15.8%	9.4%	11.0%	14.3%	13.5%
Service workers and shop and market sales workers	10.4%	15.5%	11.2%	11.6%	14.1%	13.6%	12.1%	17.3%	10.0%	12.7%	14.3%	10.4%	12.3%	17.4%	13.2%	12.3%
Skilled agricultural and fishery workers	2.7%	3.0%	2.2%	19.3%	5.1%	6.0%	4.8%	8.1%	3.0%	2.1%	11.7%	2.7%	6.9%	2.6%	6.3%	4.4%
Craft and related trades workers	13.6%	12.3%	18.5%	15.8%	21.8%	17.1%	13.6%	13.2%	13.0%	11.1%	20.6%	13.7%	12.1%	11.9%	17.1%	16.3%
Plant and machine operators and assemblers	7.7%	7.7%	7.5%	7.3%	7.9%	10.3%	10.7%	8.9%	8.8%	7.1%	7.1%	7.7%	9.1%	11.0%	8.9%	8.4%
Elementary occupations	9.4%	12.3%	8.8%	5.9%	8.8%	14.1%	7.9%	9.0%	10.6%	7.9%	10.6%	9.4%	7.6%	5.3%	9.1%	9.2%
Armed forces	1.1%	.4%	.6%	1.1%	.0%	.4%	1.3%	.0%	.6%	.9%	.8%	1.2%	.6%	.3%	.3%	.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Annex VIII

Risks connected with working conditions in the types of work organisation for female workers

Risks – Conditions of work ⁴⁰		'Constrained work' (18%)	'Flexible' work (7%)	'Autonomous work' (53%)	'Automated work' (22%)
Work pressures	Repetitive movements	44.8 %	50.1 %	38.7 %	60.2 %
	Strict and short deadlines	37.2	52.5	40.4	55.4
	Fast pace	41.1	52.5	40.0	54.3
	Several interruptions per day for an unforeseen task	19.4	50.3	34.9	28.6
	Not enough time to complete the work	20.8	33.2	22.0	24.1
Physical health problems	Laborious positions	35.6	45.5	23.3	43.5
	Carrying heavy loads	15.5	34.5	11.5	24.7
	Very loud noises	10.8	14.6	6.6	20.9
	High temperatures	10.0	15.3	6.4	19.0
	Low temperatures	4.9	5.6	4.3	10.7
Toxic injuries	Vibrations	8.3	5.4	3.0	16.6
	Toxic fumes	13.9	25.9	8.7	19.7
	Dangerous substances	9.1	27.5	7.8	14.0
Affronts to dignity	Radiations	1.4	20.7	2.8	5.2
	Intimidation	9.8	25.3	9.5	11.6
	Physical violence by persons from outside	2.5	24.1	3.9	4.7
	Physical violence by colleagues	1.4	6.0	1.8	1.9
	Age-related discrimination	2.8	4.8	2.5	3.5
	Sexual discrimination	2.4	7.1	2.4	4.2
	Discrimination on the grounds of disability	0.4	0.3	0.6	0.6

⁴⁰ The thresholds chosen for the risk indicators: at least half the time for physical risks and at least a quarter of the time for chemical risks (cf.: part 1).

Annex IX

Changes in health at work in the types of work organisation for female workers

Health at work		'Constrained work' (18%)	'Flexible' work (7%)	'Autonomous work' (53%)	'Automated work' (22%)
Specific physical problems	Back pains	31.9 %	51.1 %	27.6 %	40.6 %
	RSI neck-shoulders	21.9	35.3	20.9	27.5
	RSI arms	10.3	19.3	8.7	13.4
	RSI legs	10.7	20.1	7.5	11.9
	Three cumulative RSIs	4.6	11.8	3.5	6.2
	Vision problems	7.6	6.5	8.6	9.0
	Skin problems	4.4	14.3	3.2	8.7
	Allergy	2.8	10.0	2.8	6.1
	Hearing problems	2.9	4.0	2.0	6.1
	Stomach pains	2.2	9.8	3.8	3.7
	Respiratory problems	2.7	3.7	1.3	3.3
	Cardiac problem	1.1	1.3	0.4	0.7
	Psychological health or overall fatigue	Stress	23.8	50.7	28.6
Overall fatigue		24.1	39.7	19.7	24.6
Headaches		14.5	26.5	14.8	21.7
Irritability		11.2	16.1	10.7	13.5
Anxiety		5.2	14.3	7.4	9.1
Sleep problems		6.6	22.0	6.6	7.1
Accidents at work	Injury	2.9	9.7	3.1	5.4
	Traumatism	1.2	3.8	1.3	1.8
Absenteeism	Absence for health problems due to work (at least one day)	10	19	9	14
	Absence for accident at work (at least one day)	6	8	5	5

Annex X

Risks connected with working conditions in the types of work organisation for male workers

Risks - Conditions of work ⁴¹		'Constrained work' (17%)	'Flexible work' (16%)	'Autonomous work' (49%)	'Automated work' (18%)
Work pressures	Repetitive movements	50.3	41.0	38.9	67.5
	Strict and short deadlines	40.0	55.1	54.2	64.8
	Fast pace	35.6	48.8	42.0	62.2
	Several interruptions per day for an unforeseen task	15.3	36.2	30.7	16.6
	Not enough time to complete the work	20.9	27.8	21.9	23.7
Physical health problems	Laborious positions	35.5	29.6	24.5	48.5
	Carrying heavy loads	33.9	22.6	20.1	38.6
	Very loud noises	23.9	26.0	21.8	56.1
	High temperatures	13.5	19.2	12.5	33.9
	Low temperatures	15.2	16.4	12.8	20.7
Toxic injuries	Vibrations	20.5	18.9	19.0	47.7
	Toxic fumes	29.1	28.4	23.6	46.7
	Dangerous substances	16.6	25.7	15.4	29.9
Affronts to dignity	Radiations	6.7	10.1	7.3	9.6
	Intimidation	6.7	17.5	5.8	9.5
	Physical violence by persons from outside	1.6	10.8	2.5	3.5
	Physical violence by colleagues	0.9	2.8	0.9	1.4
	Age-related discrimination	3.3	4.4	2.3	3.2
	Sexual discrimination	0.8	2.9	0.4	0.5
	Discrimination on the grounds of disability	0.6	0.5	0.4	0.8

⁴¹ The thresholds chosen for the risk indicators: at least half the time for physical risks and at least a quarter of the time for chemical risks (cf.: part 1).

Annex XI

Changes in health at work in the types of work organisation for male workers

Health at work		'Constrained work' (17%)	'Flexible work' (16%)	'Autonomous work' (49%)	'Automated work' (18%)
Specific physical problems	Back pains	31.5	38.0	29.0	41.2
	RSI neck and shoulders	18.9	25.7	19.8	30.6
	RSI arms	13.4	13.3	10.8	22.0
	RSI legs	11.5	13.9	9.6	14.7
	Three cumulative RSIs	7.2	8.8	5.6	9.9
	Visual problems	7.8	8.5	10.3	7.7
	Skin problems	4.7	8.8	5.7	10.1
	Allergy	2.7	3.9	2.4	4.8
	Hearing problems	6.0	12.7	9.9	20.4
	Stomach pains	2.9	8.0	3.4	6.2
	Respiratory problems	3.6	4.3	4.6	8.9
	Cardiac problem	1.0	2.3	0.7	1.1
	Psychological health or overall fatigue	Stress	19.0	38.8	28.7
Overall fatigue		20.0	30.3	19.2	27.1
Headaches		11.5	18.2	13.4	15.5
Irritability		6.3	19.2	9.2	12.9
Anxiety		3.8	10.7	6.2	6.8
Accidents at work	Sleeping problems	3.8	19.0	6.6	13.4
	Injury	8.9	11.2	8.9	12.5
Absenteeism	Traumatism	2.4	4.3	1.3	3.1
	Absence for health problems due to work (at least one day)	10.0	13.0	10.0	14.0
	Absence due to accident at work (at least one day)	9.0	11.0	8.0	14.0

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Based on findings from the Foundation's Third survey of working conditions 2000, this report studies the connections between work organisation and working conditions. The authors first outline the typology of different forms of work organisation, from which they construct four distinct groups: 'constrained' work, 'flexible' work, 'autonomous' work and 'automated' work. Each of these organisational work forms is shown to be subject to individual risks, health problems or an affront to personal dignity at the workplace. The report focuses on those groups which are more exposed than others and shows that the choice of work organisation can have an influence over a worker's health and safety.

The European Foundation for the Improvement of Living and Working Conditions is a tripartite EU body, whose role is to provide key actors in social policy making with findings, knowledge and advice drawn from comparative research. The Foundation was established in 1975 by Council Regulation EEC No 1365/75 of 26 May 1975.

