

## Chapter 4

# Are All Jobs Good for Your Health? The Impact of Work Status and Working Conditions on Mental Health

*This chapter presents new evidence on the evolution of work-related mental illness in OECD countries and on the role that new work patterns have played in affecting it. Despite the steep rise in disability benefit receipt for mental illness in many countries, available indicators do not suggest an overall increase in mental health problems among the working-age population across the OECD area. However, mental health appears to have worsened in certain countries and for certain workforce groups, while the reported incidence of certain potentially stressful working conditions has increased in Europe. Longitudinal analysis for individual workers in five countries shows that non-employment generally is worse for mental health than working and that the mental-health payoff to employment varies depending on the type of job contract and working conditions, and pre-existing mental health problems. In particular, the mental health benefits for inactive individuals who obtain a “non-standard” job appear to be smaller than for those moving into standard employment arrangements, especially for persons with pre-existing mental health problems.*

## Introduction

Mental health problems among the working-age population constitute a major public health burden and are a leading cause of sickness leave and disability in OECD countries. Mental illness is the second biggest category of occupational ill-health after muscular-skeletal problems (Weiler, 2006), and mental health problems constitute five of the ten leading causes of disability worldwide (Gaston and Gabriel, 2002). The economic cost of mental health problems, including treatment and the indirect cost of lost productivity and days off work, is estimated at more than 2% of GDP in the United Kingdom (Layard, 2005) and at approximately 1.7% of GDP in Canada (Stephens and Joubert, 2001). These costs may also be growing since exit from employment to disability benefits due to mental health problems has been increasing in a number of OECD countries (OECD, 2003).

Although work can be beneficial to mental health, there is growing concern about whether employment patterns or working conditions are evolving in ways that may cause or aggravate mental illness. Changes in the demographic composition of the working population, which is ageing and includes a rising proportion of women, may also have an impact on how work affects mental health. In addition, work-related stress may have become more prevalent or more intense due to changes in the structure of employment associated with *e.g.* a greater use of ICT and just-in-time delivery, more service-oriented jobs and the diffusion of “non-standard” employment contracts which imply lower job security. Some of these trends may contribute to explaining why 22% of European workers report suffering from stress and fatigue due to their jobs, a share that has risen over the past decade (Parent-Thirion *et al.*, 2007).

The aims of this chapter are two-fold: i) to document recent trends in mental health among the working-age population in OECD countries; and ii) to assess how changes in the labour market and working conditions affect mental health. Section 1 documents the rise in disability due to mental illness in some OECD countries. It also surveys prior research showing that employment status and working conditions can have significant effects on mental health and that employment patterns and working conditions have changed in ways that might plausibly have increased work-related mental health problems. Section 2 then uses data from different national surveys to document the recent evolution of mental illness in the OECD countries for which these data are available. The analysis considers alternative measures of mental health problems and also takes account of the possibility that there has been an increase in the propensity to diagnose mental illness, especially when there are economic incentives to report mental health problems (*e.g.* in order to access disability benefits). Section 3 makes use of longitudinal micro-data for individual workers in five countries to estimate more precisely how employment status and different working conditions affect mental health. Care is taken to control for non-work-related factors that might affect mental health problems (*e.g.* family structures and community ties). The longitudinal analysis also investigates whether the generally beneficial impact of being employed (or of returning to work) on mental health also applies

to persons suffering from a longstanding illness or disability or to persons moving into nonstandard jobs, questions that are particularly salient for disability policy. The concluding section discusses the implications of the empirical analysis for labour market, health and social security policies.

## Main findings

- *There is no uniform trend in mental health among the working-age population:*
  - ❖ Over the past decades, mental health of the working-age population has evolved differently across the sub-set of OECD countries for which data on mental health are available over time, but there is no sign of a significant deterioration across the board. Despite that, the number of workers who move to disability benefits because of mental illness has increased in many countries.
  - ❖ Mental health problems are more prevalent among unemployed and inactive persons, than among the employed. Among the latter, there are marked differences by sector and occupation. A higher incidence of mental illness is found among unskilled workers, for whom mental illness has also increased over time.
  - ❖ The European countries that have experienced the largest increases in the share of workers reporting work-related mental problems also tend to have seen the largest increases in the number of workers reporting stressful working conditions. In particular, increases in the incidence of long working hours, discrimination and low job satisfaction have been associated with increases in the incidence of mental health problems. Changes in other working conditions (e.g. working shifts) do not show any significant cross-country association with changes in mental health.
- *Mental health suffers when individuals move from employment to unemployment or inactivity.* The panel analysis for individual workers in five countries shows that non-employment is detrimental for mental health. The estimated impact of time spent in non-employment on mental health differs across countries and by gender. In some countries, individuals suffer in terms of mental health in case of long-term unemployment, while in others they do not, perhaps because of habituation to being unemployed or because of the structure of unemployment benefits.
- *The type of employment has a substantial impact on mental health, but overall, getting a job is more beneficial for mental health than staying out of work.*
  - ❖ Employees who change from a standard to a “non-standard” employment – measured by the type of contract or working hours – generally experience a decline in their mental well-being. Individuals who were previously not employed tend to experience a substantial improvement in their mental health when they get a job, but the effects tend to be smaller if they move into a “non-standard” job. These results hold for a variety of indicators capturing different dimensions of “non-standard” employment, such as the type of contract, working hours, shift work and low job security.
  - ❖ Current mental health is highly correlated with previous mental health and *when information on previous mental health is taken into account, the positive impact of work is reduced significantly but not eliminated.* This suggests that part of the association generally found between mental health and work is driven by the predisposition of certain individuals to develop a mental illness and to be non-employed, rather than by a strong effect of employment or certain working conditions on mental health.

- Overall, the chapter's analysis implies that *recent trends in employment patterns and working conditions do not appear to have been a major factor aggravating mental health problems among the working-age population.*
  - ❖ In particular, policies aimed at increasing employment flexibility and, especially, those leading to an increase in “non-standard” jobs do not appear to have led to rising mental illness among the workforce, even though working conditions associated with these jobs can aggravate pre-existing mental health problems.
  - ❖ This finding suggests that the policy response to mental health problems in the working-age population should focus on providing direct assistance to the individuals experiencing mental health problems. Other OECD work (OECD, 2003) indicates that the goal of the more targeted policies should be both to support the retention of workers with mental health problems in employment and to reinforce activation programmes for those already out-of-work, where the avoidance or mitigation of stressful working conditions for these workers probably can play a significant role in supporting both retention and activation. Careful monitoring of sickness absence and early intervention in terms of both medical and vocational rehabilitation also appear to be a key to preventing workers from entering long-term inactivity, where their mental health tends to deteriorate.

## 1. Why study the link between work and mental health?

### 1.1. Poor mental health accounts for a rising share of disability

The share of the working-age population relying on disability and sickness benefits as their main source of income has tended to increase in many OECD countries. The average growth in benefit recipiency rates between 1980 and 1999 increased from 6.1% to 6.9% for sickness and disability combined (Carcillo and Grubb, 2006). In a majority of countries, the cost of disability benefits as a percentage of GDP increased during the same period and many OECD countries currently spend more on disability benefits than on unemployment benefits. Spending on disability benefits amounts to 3-4% of GDP in the Nordic countries and between 1% and 2% in the English-speaking countries (Carcillo and Grubb, 2006).


The limited available evidence suggests that many OECD governments have been confronted by a tendency for mental illness to account for a growing share of disability receipt. Mental problems were found to comprise between one-quarter to one-third of the stock and flow of disability recipiency rates in the 1990s, with the share of recipients with mental health problems appearing to be highest among young people (OECD, 2003). The share of inflows to disability rolls of those with mental health problems also has been increasing. Mental disease has become significantly more important as a reason for acquiring disability benefits in most of the countries for which disability data are available by health condition (see Table 4.1).

### 1.2. Prior research shows that work affects mental health

Might recent developments in the workplace be a driving factor behind the increase in disability recipiency due to poor mental health, observed in some OECD countries? A necessary precondition for this connection to be important is that work or the absence of it affects mental health significantly. This section briefly reviews prior research which shows this to be the case.

Table 4.1. **Share of inflows into disability due to mental diseases in selected OECD countries<sup>a</sup>**Persons aged 15-64<sup>b</sup>

	First year (%)	Last year (%)	Percentage change
Australia	..	29.1	..
Austria	9.9	17.3	74.0
Denmark	26.2	43.4	65.4
Finland	32.8	31.8	-3.0
France	27.0	..	..
Germany	16.8	28.0	66.6
Norway	22.0	25.4	15.5
Poland	12.2	16.9	38.4
Spain	..	9.7	..
Sweden	15.8	24.2	53.3
Switzerland	28.6	41.0	43.6
United Kingdom	31.2	34.3	10.0
United States	20.8	22.4	7.7

StatLink  <http://dx.doi.org/10.1787/348405634742>

.. Data not available.

a) 1990-1999 for Austria, Germany, Sweden and the United States; 1995-2004 for Norway, Poland and Switzerland; 1999 for France; 1999-2006 for Denmark; 2000-2005 for the United Kingdom; 2003-2006 for Finland; 2004 for Spain; and 2005 for Australia.

b) 16-66 for Norway; 20-64 for Australia, Finland, Poland, Spain, Switzerland and the United Kingdom; and 20-67 for Denmark.

Source: OECD (2003, 2006 and 2007).

Many studies have confirmed the association between unemployment and poor mental health (Clark, 2003; Shields and Wheatley Price, 2005), but there is still a debate about the mechanisms through which unemployment can lead to worse mental health. In particular, mental health deterioration might occur due to the stress related to the job loss itself or through other financial and psychosocial problems accompanying unemployment. Unemployment may constitute a negative income shock which can have negative consequences on mental health. A study from Sullivan and von Wachter (2006) focusing on mortality illustrates how unemployment may affect mental health: the impact of unemployment on mortality follows a U-shaped pattern, being relatively high in the years following a job loss and after a prolonged period of time spent unemployed. This is consistent with an initial peak in acute stress experienced after losing one's job and a long-term increase from chronic stress resulting from a lasting decrease in earnings associated with spells of long-term unemployment. Indeed, unemployment may lead not only to a lower current income but also to long-lasting declines in earnings and earnings instability. Lower future earnings can arise because unemployment increases the likelihood of future unemployment due to employers' belief that an unemployment spell is a signal of low ability. In addition, unemployment can lead to skill attrition and a further decrease in future wages because of lower human capital accumulation (Caroll, 2005).

There might also be large non-pecuniary costs of unemployment affecting mental health. Winkelman and Winkelman (1998) decompose the cost of both effects and conclude that pecuniary costs are small compared with the non-pecuniary costs. Non-pecuniary costs include for instance emotional damage to an individual's self-esteem because of the loss of categories of experience that are by-products associated with employment. Employment is expected to contribute to mental well-being by providing a

set of psychosocial assets such as time structure, opportunities for social contact and for defining social identity (Jahoda, 1982), and unemployed persons are deprived of these opportunities.

Two main theories describe the relevance of the psychosocial work environment for mental health: the demand-control model and the effort-reward model. The former identifies an elevated risk of stress from the imbalance between a high level of psychological demands and a low level of decision latitude, and the risk is further enhanced by a lack of support in the workplace (Karasek, 1979). Psychological demands may include features such as overwork or unrealistic deadlines and might be aggravated by job insecurity because uncertainty about the stability of one's job is also associated with stress (Ferrie *et al.*, 2002, 2005; Siegrist, 1996). Lack of support might go beyond receiving help from colleagues and include other factors such as discrimination and harassment. The second theoretical model predicts an elevated risk of stress-related diseases stemming from the imbalance between high effort and low rewards (Siegrist, 1996). Many studies from epidemiology and sociology have found evidence of both theories but they tend to rely on cross-sectional data or on specific industry examples which might be difficult to generalise. For instance, the "Whitehall II" study followed a cohort of British civil servants and found evidence that social support and control at work protect mental health while high job demands and effort-reward imbalance are risk factors for future psychiatric disorder (Stansfeld *et al.*, 1999). On the other hand, there is less work supporting the negative effect of low decision latitude (Plaisier *et al.*, 2007).

A limited number of economic studies find moderate effects of more tangible work characteristics (type of contract, hours) and of job satisfaction on mental health and well-being. The theoretical justification behind the studies relies on the unemployment literature and postulates that workers in "non-standard" employment may suffer from mental health problems because they might be at a higher risk of unemployment (particularly those with fixed-term contracts), or have less stable careers. Even if labour market instability is not a problem, they might be in jobs where there is less human capital accumulation, especially if they benefit less from training, or where non-pecuniary benefits are lower. Most studies have focused on a sample of employed individuals and there is thus limited empirical evidence on whether different types of working conditions have an impact on mental health for those previously out of work. A few studies have investigated the effect of length of contract and they find that an increase in job security improves mental health (Adam and Flatau, 2005; Dockery, 2006) and that temporary employment has lower positive effects on health than permanent employment (Gash *et al.*, 2006). In terms of working hours or patterns, there is less clear-cut evidence since some studies have found only modest effects (Bardasi and Francesconi, 2004; Ulker, 2006) while Dockery (2006) showed that working non-standard hours worsens mental health. Job satisfaction is highly correlated with better mental health (Datta Gupta and Kristensen 2008; Fischer and Sousa-Pouza; 2006).

### **1.3. Trends in employment rates and working conditions**

Since a considerable body of research has shown that employment status and working conditions affect mental health, it is interesting to examine whether labour markets have evolved recently in ways to become a growing source of mental illness. This section briefly surveys recent trends in OECD countries in work patterns to assess whether they suggest increased exposure to conditions which prior research has identified as likely to have a

negative impact on mental health. In the interest of brevity, this discussion is limited to average trends in working patterns for the OECD area and provides no information about the considerable cross-country variation characterising these trends.

A striking feature of OECD labour markets during the past decade is that both employment and participation rates have increased significantly (see Figure 4.1). Perhaps most significantly in terms of mental health, unemployment rates have decreased, meaning that fewer workers are being exposed to this key economic stress factor which has been linked to poor mental health. While the overall rise in employment rates should be a positive factor for mental health, some of the increase in employment rates reflects higher participation rates by demographic groups for whom working might be relatively more stressful. In particular, participation rates have risen for women, who may have greater difficulty reconciling work and family responsibilities than men, and older workers, for whom work may become increasingly difficult to support as their physical capacities decline.

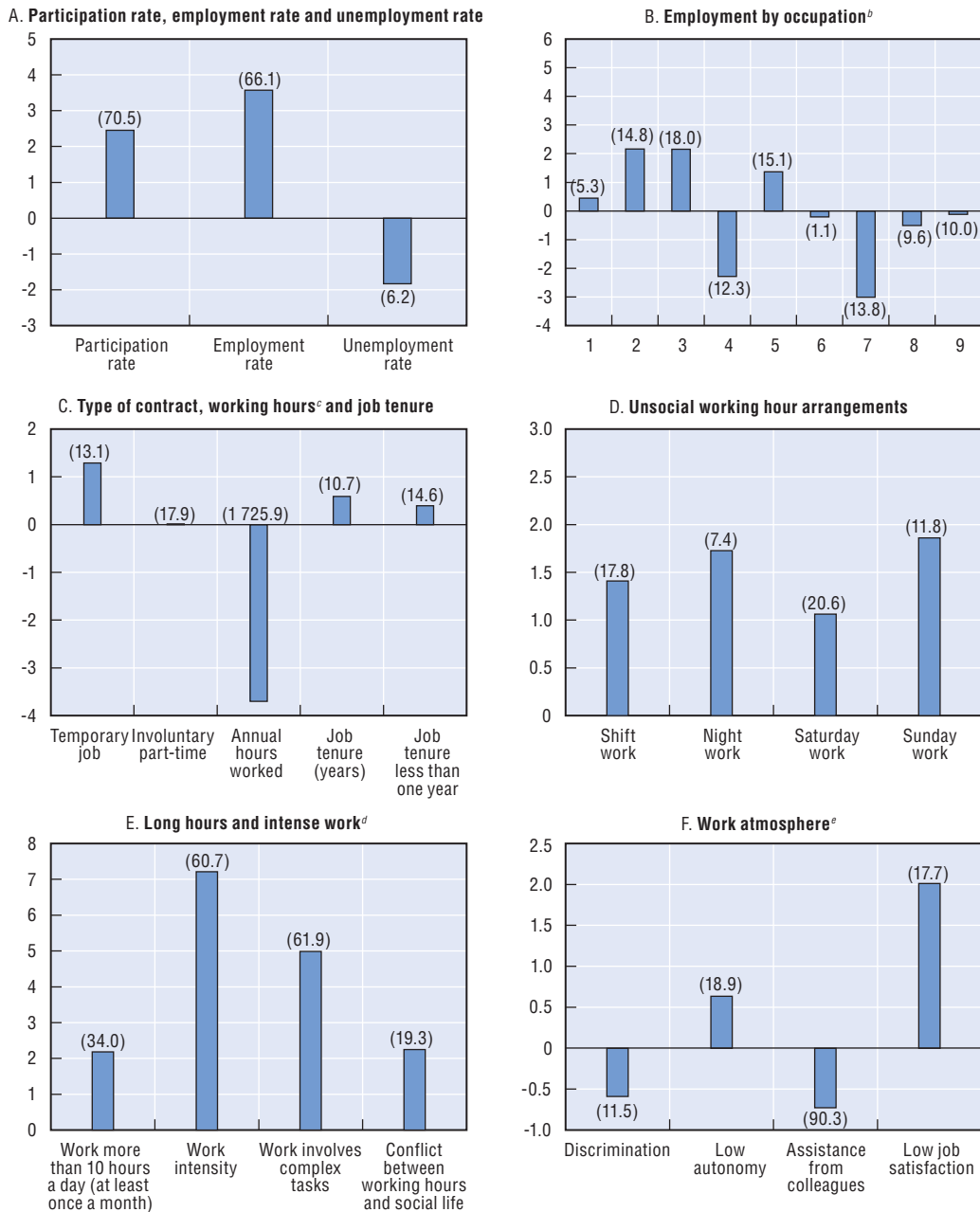
In terms of the sectoral composition of employment, the share of workers employed in manufacturing and other goods-producing industries has fallen, while the employment share in service industries has grown, especially in real estate and business services. The share of workers employed in professional and technical occupations has grown strongly, while that of less skilled white-collar workers (*e.g.* clerical and sales workers) has gone down. The percentage of workers with temporary contracts has risen across the OECD area, but job tenure data do not provide a clear indication of whether this has resulted in less employment security. Average job tenure has increased in the OECD area, suggestive of increased job stability. However, the share of employees with less than one-year tenure has also increased, indicating that total labour turnover has probably risen, but that this rise in turnover may be relatively concentrated among new entrants, rather than affecting the entire labour force more or less equally.

A rising share of workers regularly works evenings, nights or week-ends, or does shift work. Even though average annual hours per worker have trended downward, the share of workers reporting working ten or more hours in a day on a relatively frequent basis has increased. The self-reported exposure of European workers to a number of stressful working conditions suggests a trend increase in psychological demands or effort for workers. For example, there has been quite a large increase in the number of workers reporting that they have to work at high intensity (high speed and to tight deadlines). The number of employees reporting that their work does not fit their family life shows a smaller increase. Other working conditions reflecting decision latitude or work atmosphere show more mixed trends. The share of workers having low autonomy at work and experiencing discrimination has declined while the percentage of workers reporting low job satisfaction has increased quite sharply.

The evidence presented in this section suggests that certain working conditions likely to have a detrimental impact on mental health have become more common in recent years in many OECD countries. However, other labour market trends, especially generally decreasing unemployment rates, are likely to have been a source of improved mental health. Of course, OECD averages hide very different patterns across countries (see Annex 4.A1 for changes across OECD countries underlying the average changes in Figure 4.1). To investigate further whether changes at the workplace are behind the growth in disability recipients for mental illness, the next section tests whether an increase in the

Figure 4.1. **Change in selected labour market outcomes and working condition indicators in OECD countries, 1995-2006**

Percentage-point change, unweighted average of OECD countries<sup>a</sup>



StatLink <http://dx.doi.org/10.1787/347773751850>

- a) Values within parenthesis are the OECD average in the last year.
- b) Occupation based on ISCO-88, one-digit occupations: 1: Legislators, Senior Officials and Managers; 2: Professionals; 3: Technicians and Associate Professionals; 4: Clerks; 5: Service Workers and Shop and Market Sales Workers; 6: Skilled Agricultural and Fishery Workers; 7: Craft and Related Trades Workers; 8: Plant and Machine Operators and Assemblers; 9: Elementary Occupations.
- c) Percentage change for average annual hours worked.
- d) 2000-2005 for the share of employees working more than ten hours a day (at least once a month) and for those who experiencing difficulties in reconciling working hours and family or social commitments outside work; 1990-2005 for work intensity; and 1995-2005 for work involves complex tasks.
- e) 1995-2005 instead of 1995-2006.

Source: OECD calculations based on the OECD database on Labour Force Statistics for Panels A and C; European Labour Force Survey (EULFS) for Panels B and D; and European Working Conditions Survey (EWCS) for Panels E and F. For further details on variables and definitions, see Annex Tables 4.A1.2 and 4.A1.3.



prevalence of mental illness is observed among the working-age population or certain of its sub-groups.

## 2. Has mental health worsened?

This section provides a descriptive analysis of trends in mental health and how their prevalence varies with labour force status and work characteristics. For this purpose, a certain definition of mental health is chosen and this definition is applied to representative samples of the working-age population. A series of mental health indicators based on register data, national health surveys and working conditions surveys are used to assess the state of mental health and its association with work status in OECD countries. Given the complexity of mental health, its definition and measurement presents significant challenges, especially in a study which attempts to make international comparisons (see Box 4.1).

### Box 4.1. Measuring mental health

Mental health can be described in several dimensions. Positive mental health relates to well-being and the ability to cope with adversity. Measures for this dimension include self-esteem, mastery or optimism. Negative mental health comprises mental disorders as well as psychological distress. The former corresponds to a psychiatric diagnosis made by a specialist according to a definition of syndromes. The latter refers to the presence of symptoms (mainly depression or anxiety) that do not reach the threshold for a diagnosis according to psychiatric classification systems. This study focuses on the analysis of negative mental health.

Routinely-collected statistics, such as cause of death, do not fully reflect the reality of the majority of mental health problems, which do not lead to death or hospitalisation, but may be measured quite accurately and are available for most OECD countries (see Annex 4.A1 for coverage). Comparability of cause-of-death data has been made possible world-wide through the development and revisions of the International Statistical Classification of Diseases and Related Health Problems (ICD). Although the ICD is intended to provide a standard way of recording the underlying cause of death, comparison of cause-of-death data over time and across countries is subject to certain limitations. In particular, the procedures for recording a death as a suicide are not uniform and certain countries might require a suicide note or a coroner's investigation for the death to be classified as a suicide. Some degree of misattribution or miscoding might occur because of incorrect diagnosis, incorrect or incomplete death certificates, misinterpretation of ICD rules for selection of the underlying cause, and variations in the use of coding categories for unknown and ill-defined causes. Socio-cultural norms almost certainly play a role in the registration of suicides because varying degrees of stigma, and even criminality, are attached to suicide across countries and over time. For these reasons, one of the main difficulties for the reliability of the data may be the varying extent of suicide under-reporting. The evidence from studies suggests that these sources of error are randomised, at least to an extent that allows epidemiologists to compare rates between countries, between demographic groups, and over time (Sainsbury and Jenkins, 1982).

To assess morbidity across the working-age population, two types of self-reported data will be used: an index of psychological distress and an indicator of longstanding mental illness or disability. The first of these indicators captures general psychological distress and is therefore not a symptom-specific measure. It is evaluated based on a series of checklists and may include questions about anxiety, depression, anger, irritability and other mood alterations. In some countries a well-established screening instrument (such as the SF-36 or GHQ-12, see Annex 4.A1) is used and the scores of each question can easily be aggregated into an index in order to assess possible mental health

#### Box 4.1. **Measuring mental health** (cont.)

problems. The second self-reported indicator is often coded according to the International Classification of Diseases. These more comprehensive measures of the prevalence of mental health problems are often subject to potentially large measurement error— including under-reporting due to under-recognition of mental conditions, as well as over-reporting motivated by economic incentives. Furthermore, some of the diagnostic criteria have changed over the past decades, making comparisons over time problematic. Sample surveys may also be affected by non-random attrition problems which can bias estimates of the prevalence of mental health problems, since persons having mental health problems might drop out of the sample at a disproportionate rate. On the other hand, data using the most reliable instruments (*e.g.* professional diagnostic interviews for mental disorders) are often available only for clinical studies which are not representative of the general population, are only performed occasionally and are thus of limited value for trend analysis. Finally, the biggest challenges found in using these morbidity instruments are the lack of standard measures across countries and within countries over time. Such measures are collected in national health surveys but many OECD countries do not regularly perform such surveys or have incorporated mental health issues only recently. As a consequence, these instruments are only available for a limited set of countries and generally different countries use different definitions (see Annex 4.A1 for details).

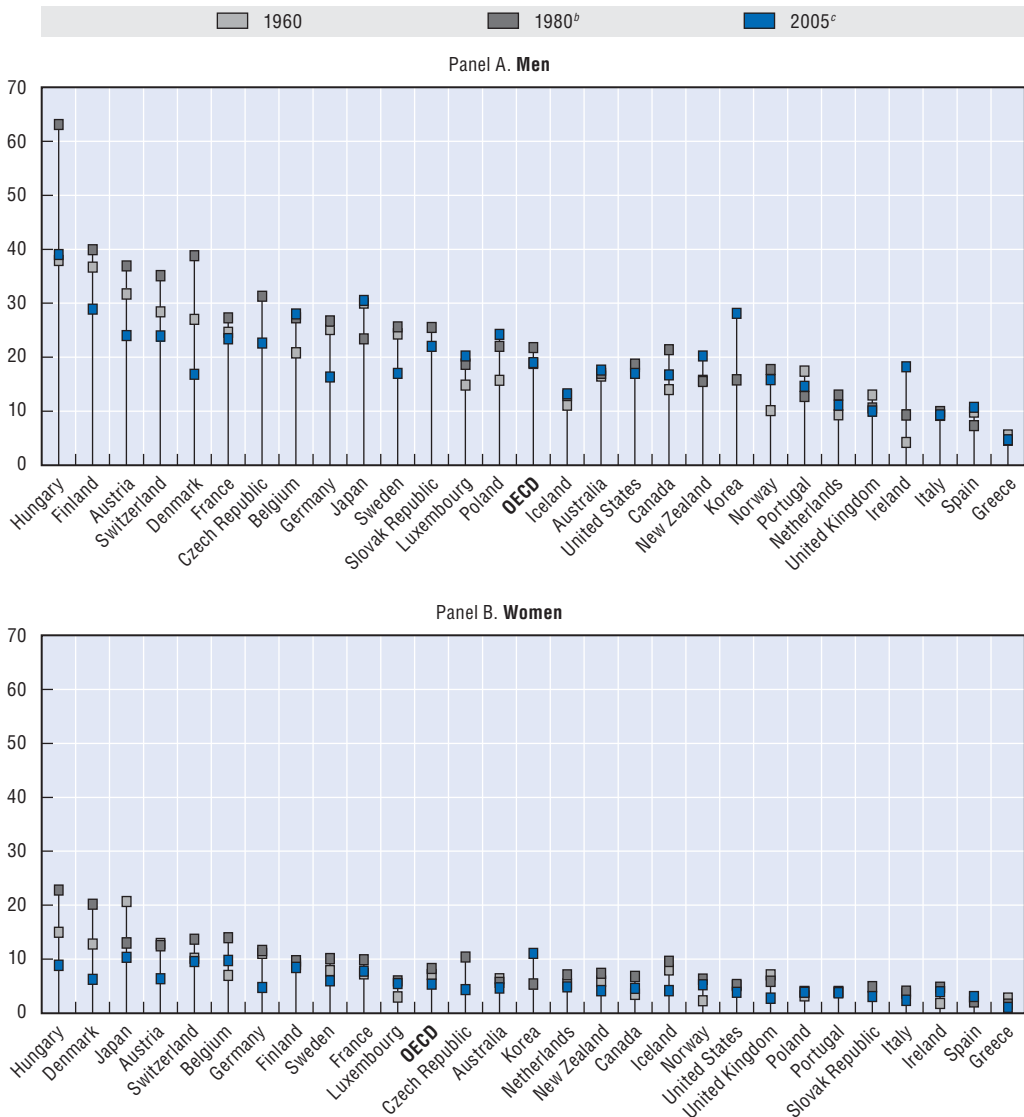
A final set of mental health indicators is based on employees' responses to questions about whether their work adversely affects their health. Those reporting such a link are then asked about specific symptoms which include stress, sleeping problems, anxiety and irritability. A composite indicator of work-related mental health problems will be calculated based on these self-reported symptoms. The advantage of such a measure is that it provides an easily comparable indicator of mental health morbidity across European countries and that data contain a high level of detail on working conditions. On the other hand, it does not constitute a well-validated instrument capturing the population at risk of mental illness such as the above-mentioned indexes.


### 2.1. **Trends in suicide rates**

Suicide trends over time do not seem to indicate an overall deterioration in mental health but there are marked differences across gender, countries and in their evolution over time (see Figure 4.2). To start with, reported suicide rates for males are almost four times as high as for females. Both rates appear to have increased in the 1970s and reached a peak at the beginning of the 1980s. In the case of males, the OECD average rate in the most recent year is roughly the same as in 1960, while for females the average rate is around 23% lower than in 1960. The country having the highest mortality rate over this 40-year span for both males and females is Hungary (53 per 100 000 males and 18 per 100 000 females). Finland, Austria, Switzerland and Denmark emerge as countries with high suicide rates for both sexes and Japan appears to have high rates for females only. At the other end of the spectrum are the Mediterranean countries (Portugal, Italy, Spain and particularly Greece) with very low suicide rates, as well as Ireland and the United Kingdom. A small group of countries exhibits an overall worsening over time, including Japan, Korea, Ireland, New Zealand and Poland. The data also reveal disparities in the changes in mortality across age groups for the different countries (see Annex Figure 4.A1.1). Most countries show a profile where mortality originally increased with age in the 1950s and 1960s. Since the 1970s and especially the 1980s, a small group of countries (Australia, Ireland and New Zealand) have experienced a sharp increase in suicide among the young 15-29.<sup>1</sup>

Figure 4.2. **Evolution of age-standardised suicide rate in OECD countries, 1960-2005**

Annual number of suicides per 100 000 persons<sup>a</sup>



StatLink  <http://dx.doi.org/10.1787/347817875784>

- a) OECD refers to the unweighted average of countries shown.
- b) 1986 instead of 1980 for the Czech Republic; 1985 instead of 1980 for Korea; 1979 instead of 1980 for Poland; and 1992 instead of 1980 for the Slovak Republic.
- c) 2005 corresponds to 2005 or the latest year available. Countries ranked by decreasing prevalence of suicide rates from right to left based on average suicide rates for the entire 1960-2005 period.

Source: OECD Health Data 2006, October 2006. For further details on definitions and method, see Annex 4.A1.

Suicide is strongly connected to a (family) history of mental health problems but it also responds to changes in economic circumstances, social factors such as divorce and demographic factors such as ageing (Becker and Posner, 2005). Because suicide remains a rare event, people who choose to commit suicide are assumed to be at one extreme of the utility distribution. For this reason, circumstances that affect mean utility are likely to push some people below the suicide threshold. An economic recession or an increase in unemployment rates lowers the future expected income of individuals or economic

opportunities in general and, as a result, could increase suicide rates. Older individuals should have a lower expected lifetime utility and should also be more prone to suicide.

Table 4.2 presents cross-country time-series regressions of suicide rates as a function of selected economic, social and labour market conditions. The regression analysis suggests that suicide rates are pro-cyclical, with lower economic growth and higher unemployment being associated with higher suicide rates, but that social variables matter as well. Divorce rates correlate with higher suicide rates, especially for those in their prime working age. The impact of economic growth on suicide is stronger for females and for the young. Higher unemployment is related with higher suicide for females only. It is also interesting to test whether suicide rates are affected not only by economic conditions that influence overall earnings or job possibilities but also by labour market duality. The percentage of temporary workers appears to have no impact on suicide rates for the older age-group (50 to 64) – nor for young women – while there is a small impact for young men. Temporary employment appears to matter for those in the prime working age: the group aged 30 to 49. Overall, suicide rates among women seem to be more sensitive to economic and labour market conditions: inequality, unemployment and incidence of temporary employment affect women more than men.

There appears to be some evidence that negative labour market conditions are linked to increased mental illness, but one must consider the strengths and weaknesses of using suicide as an indicator for mental illness before generalising these findings. Mortality statistics are available for most OECD countries for a substantial number of years and are recorded according to the ICD, allowing for a detailed international trend analysis. Nevertheless, differences remain in the recoding of suicides (see Box 4.1) which could explain some of the variation in suicide rates across countries and over time within a country. In addition, suicide remains a rare event and there is a risk of making priority assessments based on such a rare outcome. Morbidity indicators capturing the population having a mental illness or at risk of developing one are therefore also used below.

## **2.2. Trends in morbidity-related mental health**

The description of morbidity-related mental health surveyed in this section includes three types of indicators: psychological distress, self-reported mental illness and self-reported work-related mental health problems. Psychological distress captures a series of emotional and mood-related problems using a series of checklists that are clinically validated and that indirectly reveal whether the person is at risk of a diagnosable disorder. Mental illness describes whether the person believes to have a longstanding or chronic illness that is of mental nature, such as depression for instance. The last indicator includes mental or emotional problems which the interviewee reports as being work-related (see Annex 4.A1 for further details).

### ***Psychological distress***

There is no uniform trend across selected OECD countries in psychological distress (see Figure 4.3). In Canada, Korea (using suicidal thoughts as a proxy) and New Zealand, the overall trend is negative with substantially less people suffering from psychological problems over time. Similarly, in the United Kingdom, there has been a decrease in prevalence of psychological distress, although smaller than in the previous countries and with fluctuations over time. In Australia, Italy and the United States, prevalence has

Table 4.2. **Impact of some socio-economic variables on the log of suicide rates in OECD countries**

Panel regression results


	Panel A. Persons aged 20-29			
	Men		Women	
	(1)	(2)	(1)	(2)
GDP per capita	0.000	0.000	0.000	0.000
GDP growth	-0.015***	-0.015**	-0.018***	-0.012*
Crude divorce rate	0.130***	0.145***	0.064	0.140***
Unemployment rate	0.001	0.002	0.015***	0.018***
Gini coefficient	0.010***	0.011***	0.005	0.007*
Incidence of temporary work	0.004*	0.002	0.004	0.000
Country	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Country-specific trend	No	Yes	No	Yes
Number of observations	482	482	482	482

	Panel B. Persons aged 30-49			
	Men		Women	
	(1)	(2)	(1)	(2)
GDP per capita	0.000	0.000	0.000	0.000
GDP growth	-0.016***	-0.010*	-0.014**	-0.006
Crude divorce rate	0.171***	0.261***	0.137***	0.261***
Unemployment rate	0.000	0.000	0.020***	0.025***
Gini coefficient	0.006**	0.006*	-0.001	-0.001
Incidence of temporary work	0.010*	0.015**	0.018**	0.014*
Country	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Country-specific trend	No	Yes	No	Yes
Number of observations	420	420	420	420

	Panel B. Persons aged 50-64			
	Men		Women	
	(1)	(2)	(1)	(2)
GDP per capita	0.000	0.000	0.000*	0.000**
GDP growth	-0.016**	-0.014**	-0.020***	-0.013**
Crude divorce rate	0.074*	0.121***	0.097*	0.181***
Unemployment rate	-0.003	-0.003	0.026***	0.035***
Gini coefficient	0.004	0.002	-0.002	-0.002
Incidence of temporary work	-0.008	-0.012	0.008	0.006
Country	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Country-specific trend	No	Yes	No	Yes
Number of observations	420	420	420	420

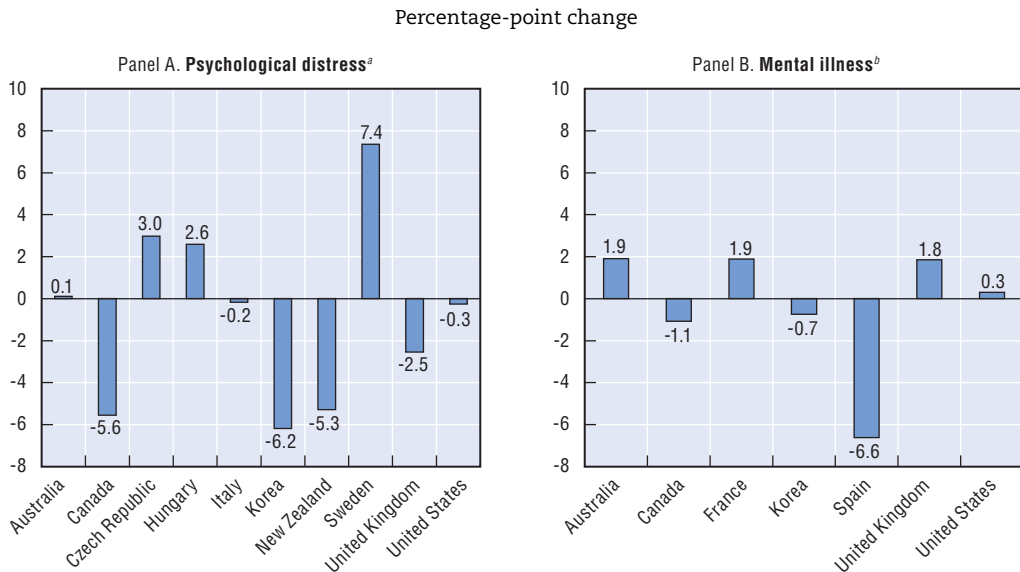
StatLink  <http://dx.doi.org/10.1787/348432860546>


\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

Source: OECD estimates based on OECD Health Data 2006, October 2006. For further details on definitions and method, see Annex 4.A1.

remained fairly stable suggesting that the underlying rate of mental illness in the population has not changed over time. Countries where psychological distress has worsened include Sweden, Hungary and the Czech Republic.<sup>2</sup>

Figure 4.3. **Change in the prevalence of psychological distress and mental illness in selected OECD countries**



StatLink  <http://dx.doi.org/10.1787/347828886563>

a) 2001-2004/05 for Australia; 1994/95-2004/05 for Canada; 1996-2002 for the Czech republic; 1996/97-2002/03 for New Zealand; 2000-2003 for Hungary; 2000-2005 for Italy; 1998-2005 for Korea; 1968-2001 for Sweden; 1991-2004 for the United Kingdom; 1997-2005 for the United States.

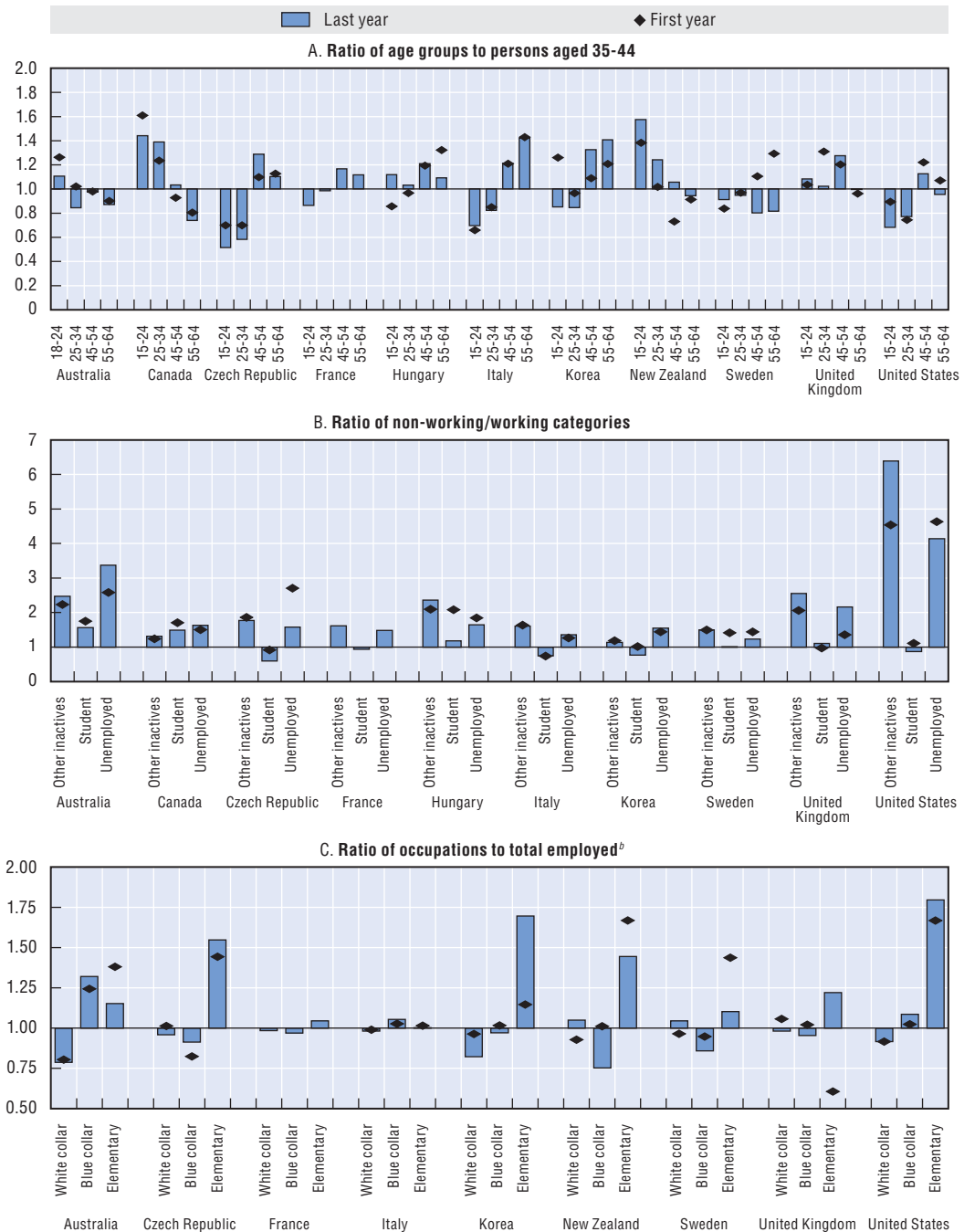
b) 2001-2004/05 for Australia; 1994/95-2004/05 for Canada; 1992-2003 for France; 1998-2001 for Korea; 1987-2003 for Spain; 1991-2004 for the United Kingdom; 1997-2005 for the United States.

Source: OECD calculations. See Annex 4.A1 for further details on sources, methods and calculations.

In addition to the overall trend in psychological distress, there has been concern about whether certain demographic and labour force groups may have experienced a worsening but the analysis does not confirm this hypothesis. Across countries, women are systematically reporting a higher level of psychological distress, but the relative prevalence of distress among women has declined over time except in Korea and the United States, where it has increased, and in Canada and New Zealand, where there has been little change over time (see Figure 4.A1.2 in Annex 4.A.1). There is still considerable questioning about whether this reflects higher levels of distress or reporting differences between men and women. In addition, the results show that in many countries, except in a group of four Anglo-Saxon countries (Australia, Canada, New Zealand and the United Kingdom) distress is more prevalent among older age groups and there are no particular signs of worsening for younger individuals (see Figure 4.4). A notable exception is Sweden: in the 1970s older age groups suffered more from distress but in 2000 prevalence is highest among those in the prime working age. The youngest age group (15-24) has experienced the largest relative increase in Sweden. A similar trend is observed in Hungary: the relative prevalence among young people has increased while that among the older group has diminished.

There are notable differences in the prevalence of psychological distress by activity status,<sup>3</sup> indicating that those employed enjoy better mental health. A deterioration of psychological distress for the non-employed is not observed across all countries, but in a significant number of them since it has occurred in half of the countries. The difference in prevalence of distress between those inactive and those employed is highest in the United States. Likewise, the ratio between the unemployed and employed is highest in the United States while Korea has the lowest difference between those working and those not working.

Figure 4.4. **Relative prevalence of psychological distress by socio-economic variables in selected OECD countries<sup>a</sup>**



StatLink <http://dx.doi.org/10.1787/347883132571>

- a) The years considered for each country are the following: 2001-2004/05 for Australia; 1994/95-2004/05 for Canada; 1996-2002 for the Czech republic; 2003 for France; 2000 for Hungary; 2000-2005 for Italy; 1998-2005 for Korea; 1968-2001 for Sweden; 1991-2004 for the United Kingdom; 1997-2005 for the United States. For Panel C, 2003 only for France; 1981-2001 instead of 1968-2001 for Sweden; and 1997-2003 instead of 1997-2005 for the United States.
- b) Three broad occupational groupings were defined in terms of the nine one-digit occupations of the ISCO-88: white-collar occupations correspond to occupations 1-5 (i.e. legislators, senior officials and managers; professionals; technicians and associate professionals; clerks; and service workers and shop and market sales workers); blue-collar occupations correspond to occupations 6-8 (i.e. skilled agricultural and fishery workers; craft and related trades workers; and plant and machine operators and assemblers); and elementary occupations correspond to occupation 9.

Source: OECD calculations. See Annex 4.A1 for further details on sources, methods and calculations.

In all countries distress is more prevalent among unskilled occupations (elementary occupation) and workers in the personal services and/or social sectors. Relative prevalence among unskilled workers has risen substantially in most countries except in Australia, New Zealand and Sweden. On the contrary, over time there are relatively fewer workers suffering from distress within the personal and social services sectors (see Figure 4.A1.2 in Annex 4.A1).

### **Mental illness**

As for psychological distress, analysis of mental illness over time shows a mixed pattern across selected OECD countries. In the United Kingdom and France, the proportion of persons suffering from a mental illness has more than doubled since 1991 (Figure 4.3). A similar increase has been observed in Australia between 2001 and 2005 while in the United States, the increase has been less dramatic. At the other end are Spain, Canada and Korea where overall prevalence of mental illness has decreased significantly.<sup>4</sup>

Females are at higher risk of suffering from mental illness, as are older people. In particular, compared to men prevalence among females is almost four times higher in Korea in 1998 while in Australia and the United Kingdom, differences are less marked by gender (see Figure 4.A1.3 in Annex 4.A1). In addition, the prevalence of mental illness among females has shown a more rapid increase than among males in half of the countries surveyed (France, Spain and the United Kingdom), while the reverse has occurred in the other countries (Australia, Canada, Korea and the United States). The evolution of mental illness by age groups shows a steeper increase at older ages (45-54 and 55-64) for all countries except Australia and France (see Figure 4.5). In Spain and Korea, decrease in mental illness has been more rapid among the young population.

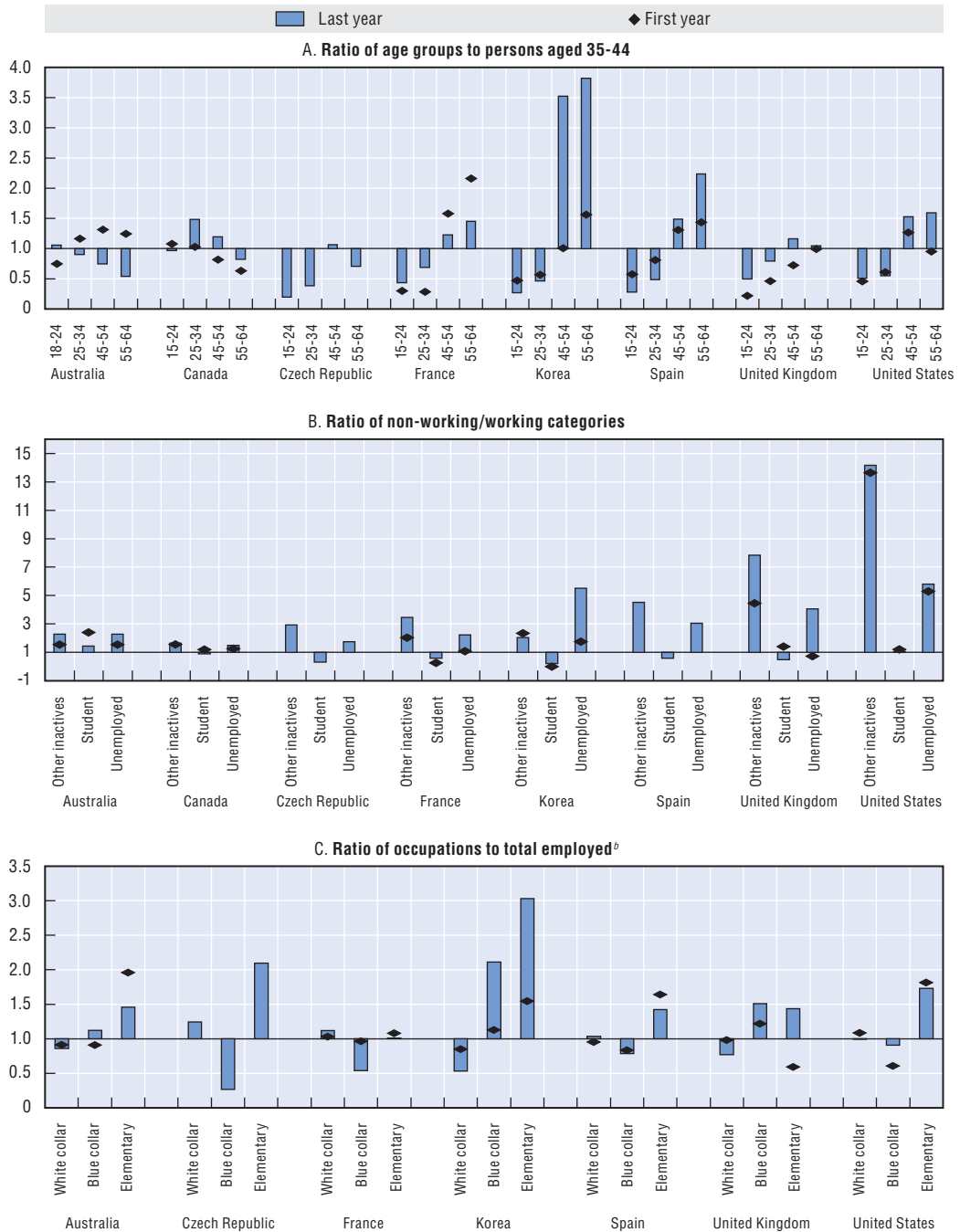
As in the case of psychological distress, labour market differences emerge in terms of the prevalence of mental illness. Non-employed individuals have a higher rate of mental illness and the relative prevalence compared to the employed has increased among the unemployed and the inactive in all countries studied. There is a higher prevalence among the elementary occupations and in the sectors of activity where more direct contact with the public is required, such as personal services and social services. Changes in prevalence for both occupation and industry do not reflect a consistent pattern across countries.

Like for suicide rates, different patterns of mental-related morbidity across countries might be related to changes in the relative weights of demographic groups and structural changes in employment which are counterbalanced by lifestyle or other factors. Using information on the actual change of characteristics (ageing, change in health behaviour, labour market composition) observed in the Health Surveys, a decomposition technique is used to predict mental health changes that should have occurred over time and to quantify the relative impact of each variable (see Box 4.2). Predictions based on this decomposition rely on observed characteristics and it is therefore possible that actual changes go in an opposite direction due to changes in other characteristics for which there is no information available.

Across all countries included in the analysis, the impact of changes in household composition and in health behaviour on psychological distress is similar while changes in the labor market have diverse effects on mental health (see Figure 4.6). Indeed, changes in household composition – with an increase in the proportion of divorcees and singles at the expense of married couples – are contributing to a worsening of psychological distress.



Figure 4.5. **Relative prevalence of mental illness by socio-economic variables in selected OECD countries<sup>a</sup>**



StatLink <http://dx.doi.org/10.1787/348004873147>

a) The years considered for each country are the following: 2001-2004/05 for Australia; 1994/95-2004/05 for Canada; 2002 for the Czech Republic; 1992-2003 for France; 1998-2001 for Korea; 1987-2003 for Spain; 1968-2001 for Sweden; 1991-2004 for the United Kingdom; and 1997-2005 for the United States. For Panel C, 2001-2003 instead of 1978-2003 for Spain; and 1997-2003 instead of 1997-2005 for the United States.

b) Three broad occupational groupings were defined in terms of the nine one-digit occupations of the ISCO-88: white-collar occupations correspond to occupations 1-5 (i.e. legislators, senior officials and managers; professionals; technicians and associate professionals; clerks; and service workers and shop and market sales workers); blue-collar occupations correspond to occupations 6-8 (i.e. skilled agricultural and fishery workers; craft and related trades workers; and plant and machine operators and assemblers); and elementary occupations correspond to occupation 9.

Source: OECD calculations. See Annex 4.A1 for further details on sources, methods and calculations.

#### Box 4.2. Decomposing the total change in health status

A multivariate decomposition procedure, the so-called Blinder-Oaxaca decomposition, is used to quantify the relative importance of the various characteristics in the change in psychological distress (or mental illness). The Blinder-Oaxaca decomposition is used to quantify the separate contributions of the change in health status over time into two components: i) change due to changes in measurable characteristics such as age, education, household composition, labour force characteristics, etc.; and ii) change due to changes in the impact that those characteristics have on health status.

The average change in mental health between period 1 and 2 can be decomposed as follows:

$$\bar{y}_2 - \bar{y}_1 = \beta^*(\bar{x}_2 - \bar{x}_1) + \bar{x}_2(\beta_2 - \beta^*) - \bar{x}_1(\beta_1 - \beta^*)$$

where  $x$  is a vector of average characteristics and  $\beta^*$  is a weighted sum average of both coefficient vectors. The first term on the right hand side is the component due to changes between period 1 and 2 in the average characteristics of the population (the explained component). This corresponds to the results presented here for each characteristic and for the overall change.

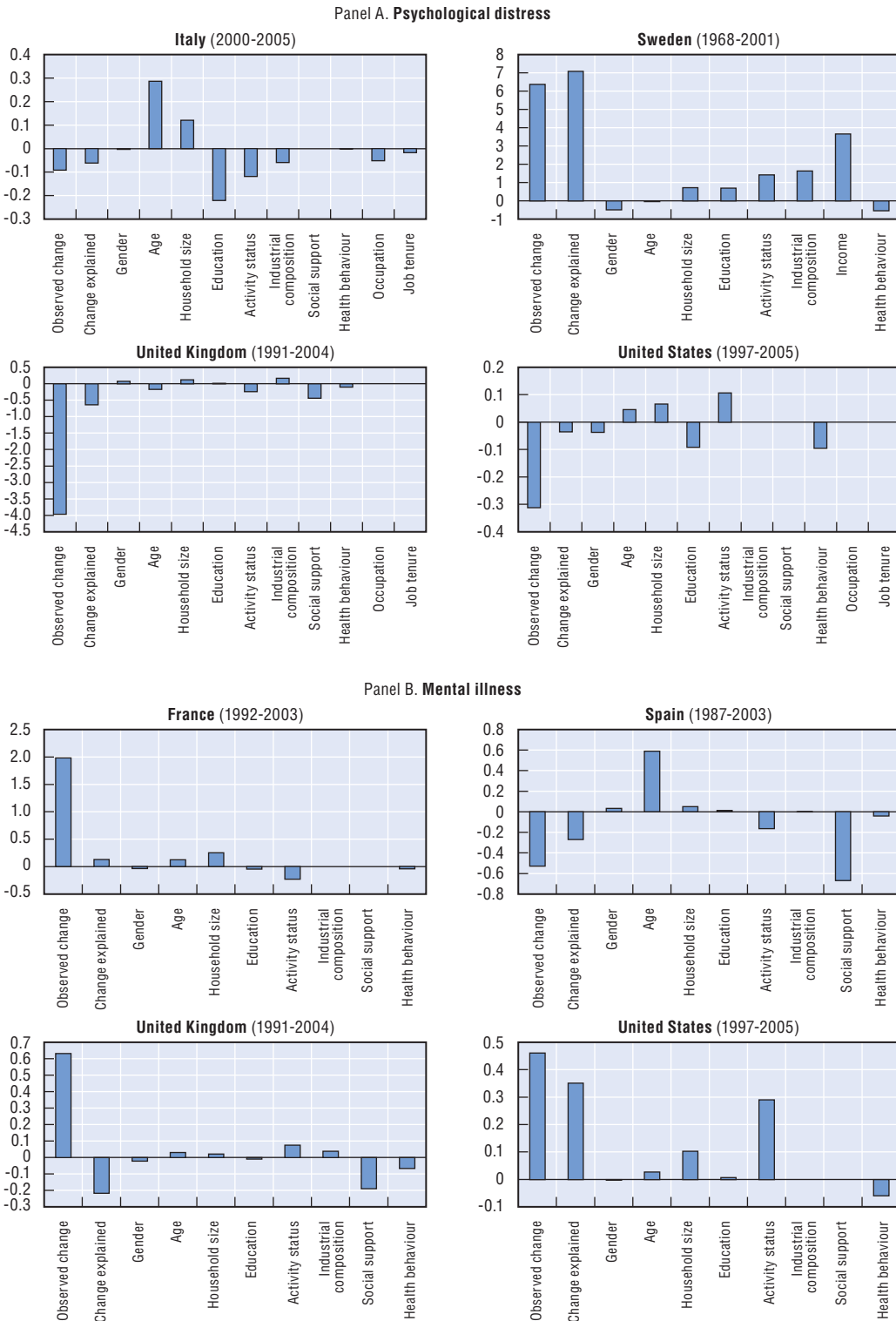
Changes in health behaviour were beneficial in all countries mainly due to a lower percentage of smokers over time. Labour market developments have contributed to a lower prevalence of psychological distress in Italy and the United Kingdom (due to less people being unemployed) and have had an opposite effect in Sweden and the United States (due to an increase of the unemployed in Sweden and other inactives in the United States). On the other hand, changes in the industrial composition contributed to worsening distress in the United Kingdom while the opposite was found in Italy. Overall, it appears that mental health improvements in the United Kingdom and the United States reflect to a larger extent changes outside the labour market such as health improvements or better social support.

With respect to mental illness, the decomposition analysis shows that changes in observable socio-economic characteristics account for a large part of the increase in prevalence in the United States and of the decrease in Spain, while it would predict a decrease in the United Kingdom (contrary to the observed increase). For the United States, the largest part of the increase is accounted for by changes in activity status, followed by an increase in the number of divorcees and an increase in average age. Improvement in health behaviour tends to offset this by contributing to a decrease in mental illness. In France, on the other hand, the increase is mostly accounted by ageing and a change in marital composition while changes in activity status should have contributed to a decrease in mental illness. The most important factor contributing to the decrease in mental illness in Spain is the improvement in social support, followed by increasing employment and health behaviour, which offset the worsening effects of ageing.

The data show very diverse patterns of morbidity across the working-age population, which are explained in turn by diverse changes in different socio-demographic characteristics. There is still a possibility that, even though mental illness has not worsened, with increased employment rates, there are more people with mental illness in the workforce who are then more likely to seek disability pensions. This is quite likely since an increase in employment

Figure 4.6. **Changes in mental health by socio-economic variables in selected OECD countries**

Oaxaca-Blinder decomposition coefficients multiplied by 100



StatLink <http://dx.doi.org/10.1787/348031582082>

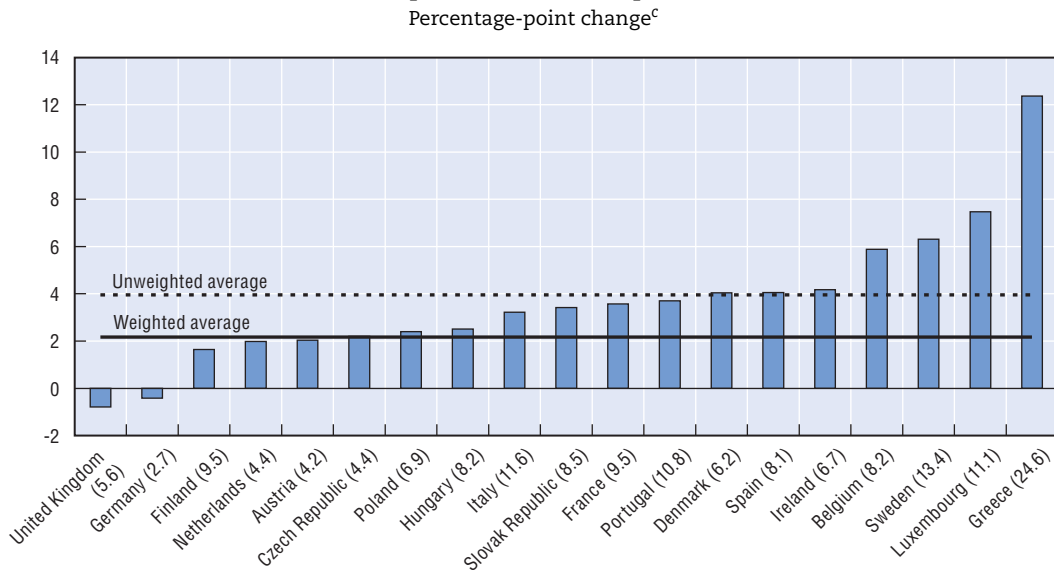
Source: OECD calculations. See Annex 4.A1 for further details on sources and methods, and Box 4.2 for details on calculations.


rates may also mean that certain groups with different social and health backgrounds are also entering the labour market. To complete the analysis of indicators, the next section surveys the rate of mental-health related problems among workers.

### 2.3. Trends in work-related mental problems

Work-related mental problems are on average on the rise among the employed population across European countries and happen more often for those with detrimental working conditions. The increase in the share of workers reporting a high number of mental problems is highest in Greece and Luxembourg (Figure 4.7). By contrast, in two countries (the United Kingdom and Germany), there has been a reduction over time (1995-2005) in the number of workers suffering from mental problems. Comparison of mental problems by working conditions shows very marked patterns across European countries: the share of employees with work-related mental problems in difficult working conditions is higher (see Table 4.3). For instance, employees with high work intensity have a prevalence rate more than two times higher compared to those not having to work at high intensity. On the other hand, relative work-related mental problems prevalence has increased only for individuals working shifts and those with low autonomy.

Figure 4.7. **Change in the share of employees reporting three or more work-related mental health problems in Europe, 1995-2005<sup>a, b</sup>**



StatLink  <http://dx.doi.org/10.1787/348042381344>


- a) The mental or emotional problems considered are: stress, sleeping problems, anxiety and irritability. Values within parenthesis after the country labels are the share in 2005.
- b) 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.
- c) Weighted and unweighted average changes are shown as solid and dashed lines, respectively. These averages are for the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. Average weighted and unweighted shares in 2005 were 7.3 and 9.1, respectively.

Source: OECD calculations based on the European Working Conditions Survey (EWCS), 1995-2005. See Annex 4.A1 for further details on definitions and calculations.

Are changes in working conditions moving in the same direction as work-related mental problems? Figure 4.8 (Panel A) shows that across countries there is a fairly strong positive correlation between increases in the percentage of people working more than

**Table 4.3. Work-related mental health problems are often associated with poor working conditions and low job satisfaction in Europe**Relative incidence of work-related mental problems reported by workers encountering selected working conditions, 1995-2005<sup>a</sup>

	1995	2000	2005
Working at least one day more than 10 hours (at least once a month)	..	1.89	1.89
Discrimination at workplace	3.76	4.16	3.80
Low work autonomy	0.85	1.10	1.22
Conflict between work and family or social commitments	..	3.22	2.78
Assistance from colleagues	0.49	0.83	0.70
Job involves complex tasks	2.07	2.48	2.14
Work at night (at least once a month)	1.94	2.02	2.09
Shift work	1.53	1.68	1.60
Saturday work	1.38	1.67	1.52
Sunday work	1.68	2.12	1.94
Low job satisfaction	3.20	3.87	4.03
High work intensity	2.38	2.12	2.19

StatLink  <http://dx.doi.org/10.1787/348445755456>

.. Data not available.

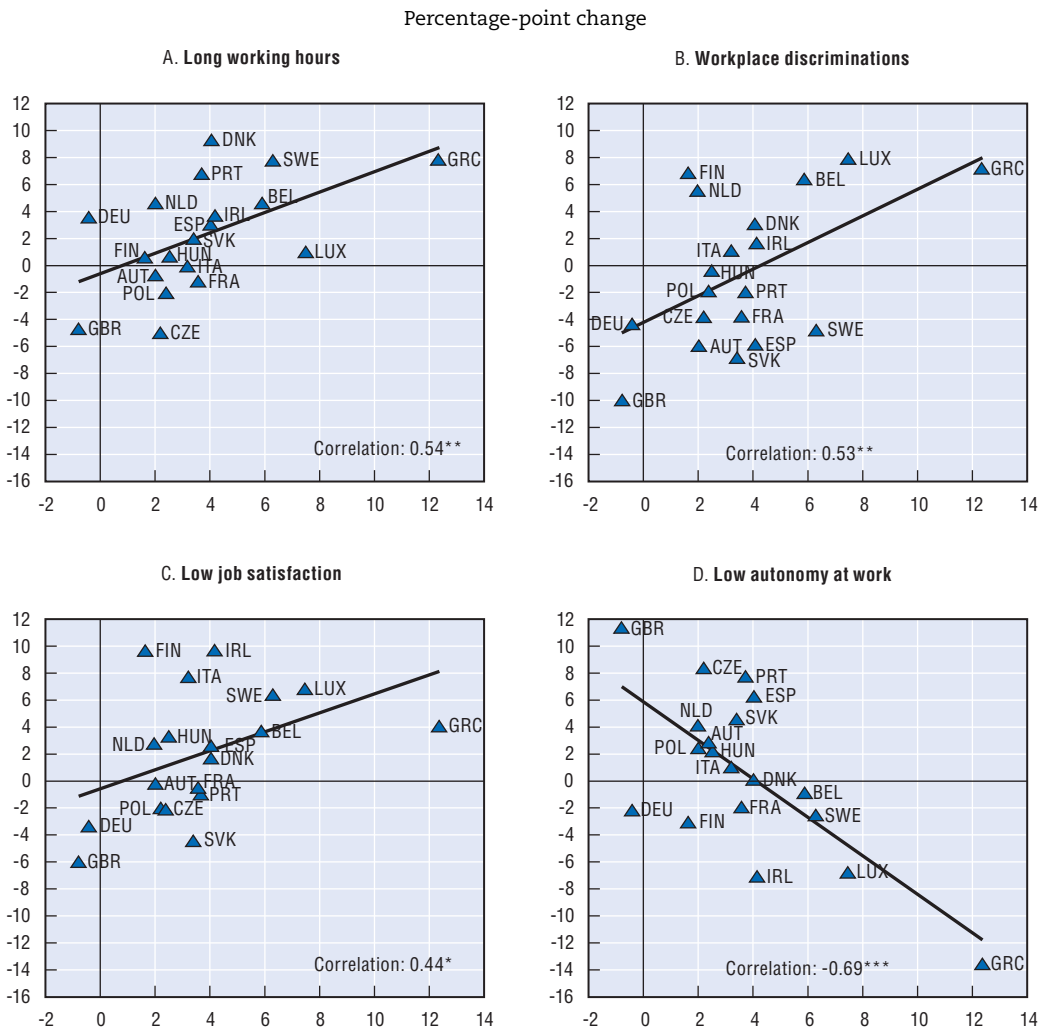
a) Ratio of the share of employees reporting the working condition who also report three or more work-related mental problems to the corresponding share for workers not reporting that working condition. Unweighted averages for the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

Source: OECD calculations based on the European Working Conditions Survey (EWCS), 1995-2005. See Annex 4.A1 and Annex Table 4.A1.4 for further details on definitions and calculations.

ten hours per day at least once a month and increases in work-related mental problems. The same is true for changes in the level of workplace discrimination (Panel B). The positive association between changes in work-related mental problems and low job satisfaction is somewhat weaker (Panel C). Increases over time in the number of workers having low autonomy are, on the other hand, associated with lower prevalence of work-related mental health problems (Panel D). Changes in other work characteristics such as work not fitting family life, performing complex tasks, receiving assistance from colleagues or working on Sunday do not reveal a statistically significant correlation with changes in mental problems. Of course, one must avoid drawing inferences about individual behavior from these cross-country correlations between the reported incidence of mental problems at work and workplace arrangements.

There is therefore mixed evidence of trends in mental health across the selected OECD countries for which data were available. Neither suicide nor psychological distress has increased on average, but the situation has worsened in certain countries (Korea and New Zealand) and for certain groups (elementary occupations). Self-reported mental illness displays different trends across countries but is rising for the older age group and the non-employed. Work-related mental problems have become more pronounced among those working longer hours or whose work does not fit family commitments, those working at high intensity, and those dissatisfied with their job. Both the decomposition and correlation analysis suggest partial evidence of workplace changes and mental health changes moving in the same direction. Indeed, in countries where certain working conditions have reportedly worsened, work-related illnesses have gone up. There are nevertheless many other factors changing in opposite directions, both within the

Figure 4.8. **Increased exposure to some stressful working conditions was associated with increased prevalence of work-related mental problems in Europe, 1995-2005**<sup>a, b</sup>



StatLink <http://dx.doi.org/10.1787/348044881485>

\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

a) The following mental or emotional problems are considered: stress, sleeping problems, anxiety and irritability. The graphs display the cross-country association between changes in the share of employees reporting three or more work-related mental health problems (horizontal axis) and changes in the share of employees experiencing the indicated working conditions (vertical axis).

b) 2000-2005 for Panel A. 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.

Source: OECD calculations based on the European Working Conditions Survey (EWCS), 1995-2005.

workforce but also at other levels such as changes in health behaviour. It remains therefore difficult to assess the effects of work on mental health without using individual-level data.

### 3. What is the impact of labour force status and workplace on mental health?

The descriptive analysis has shown some degree of correlation between not working, certain working conditions and worsening mental health but assessing the effect of work choices on mental health remains nevertheless a difficult empirical issue because causality can go both ways and other factors might be at play. A higher incidence of mental

health problems among the unemployed or a particular type of job could thus be attributed to a selection effect: people with poorer mental health may be more likely to enter unemployment or particular type of jobs. It is also possible that those whose well-being is most affected by inactivity or certain working conditions exit that state faster. Alternatively, some people might choose certain types of employment such as part-time work because they are an efficient way of coping with family demands. On the other hand, certain aspects of work may cause health to deteriorate faster because of stressful conditions. A further complication arises if there are unobservable characteristics such as genetic factors, time prevalence and the attitude towards risk, which may be correlated with both health status and employment.

Surveys following individuals over time provide the opportunity to distinguish whether the correlation between work (characteristics) and mental health is caused by the negative effect of unemployment (or being in certain type of jobs) on health or whether individuals with poor mental health are more likely to be found in certain jobs (or be unemployed) – see Box 4.3 for a description of the methods. The first part of the longitudinal analysis will evaluate whether becoming unemployed or moving out of the labour force is harmful for well-being and whether there are positive effects to being re-employed. The second part will include a disaggregated analysis of the health effects for employed individuals when they change between standard and “non-standard” type of jobs, comparing the effects of non-standard type of contracts (fixed-time or temporary), non-standard hours of work (part time, overtime), non-standard work arrangements (shifts, week-end work, night work) and other working conditions.<sup>5</sup> Finally, it will be evaluated whether moving into non-standard employment has a negative impact on mental health for people who were not working (unemployed and inactive for health reasons). The analysis is performed for a reduced number of countries (Australia, Canada, Korea, Switzerland and the United Kingdom) for which longitudinal surveys are available with sufficient information on mental health and work history (see Annex 4.A2 for further details).

The analysis confirms the theoretical hypothesis on the negative effects on mental health of not having a job: the detrimental effect of unemployment and inactivity persists after individual unobserved characteristics are controlled for (see Figure 4.9). The estimation captures the effect of changes in labour force status on changes in mental health and the analysis controls for other life events that might affect an individual psychological distress such as changes in marital status, births or accidents. This means that the coefficient for unemployment (or inactivity) is not measuring the effect of being unemployed but rather by how much mental health changes when an individual previously employed becomes unemployed (or inactive). A positive coefficient reflects that the change is associated with a higher psychological distress index and thus with worse mental health. The results from the regression analysis show therefore that when individuals change status and they are no longer employed, any other labour force status results in a worse psychological distress index. The detrimental effect of either unemployment or inactivity due to illness on mental health is large: both situations increase distress by more than any other life changes such as accidents, moves or changes in household situations (loss of a partner, etc.). Overall, men suffer more from being out of work than women. In Australia, Canada, the United Kingdom and Switzerland, a change from employment into sickness-related inactivity results in the worst effect on psychological distress,<sup>6</sup> with the second largest negative change being a movement into unemployment. In Korea by contrast, the largest negative effect is observed for

**Box 4.3. The impact of labour market conditions on mental health**

The effect of labour force status and working conditions on health status is estimated by fitting the following reduced-form model:

$$H_{it} = X'_{it}\beta + L'_{it}\gamma + \delta_i + u_{it} \quad [1]$$

where  $i$  and  $t$  are individual and time suffices,  $\delta$  are individual time fixed-effects and  $u$  are idiosyncratic shocks.  $X$  contains a range of socio-demographic and lifestyle variables.  $L$  contains measures of labour market behaviour (labour market history, occupation, working conditions, etc.).  $H$  is the mental health measure available and will vary by country.  $H$  is based on a psychological distress scale which indicates worse mental health for higher scores. The scale corresponds to the SF-36 in Australia, the distress index in Canada, inverse life satisfaction in Korea, frequency of blues, depression and anxiety in Switzerland and the GHQ-12 in the United Kingdom (see Annexes 4.A1 and 4.A2 for more details on the definition). While different indicators of mental health are considered for the different countries and this might raise comparability challenges, the main idea of the analysis is to provide an overview of the impact of work and working conditions on mental health rather than to compare across countries the differential effect of working conditions on mental health. Annex 4.A2 provides more details on the specific controls for each country.

The unobserved individual component  $\delta$  contains elements of the initial stock of health and other omitted individual variation. As a result,  $L$  and  $X$  may be correlated with  $\delta$ .

Having individual data over time permits to perform the analysis focusing on mental health changes, conditional on the values of the individual fixed effects. This involves taking first differences of the equation [1] to obtain:

$$\Delta H = \Delta X'\beta + \Delta L'\gamma + \Delta u \quad [2]$$

where  $\Delta$  is the first difference operator *i.e.*

$$\Delta y = y_t - y_{t-1} \quad [3]$$

for any time-varying variable  $y = H, L, X$  and  $u$ .

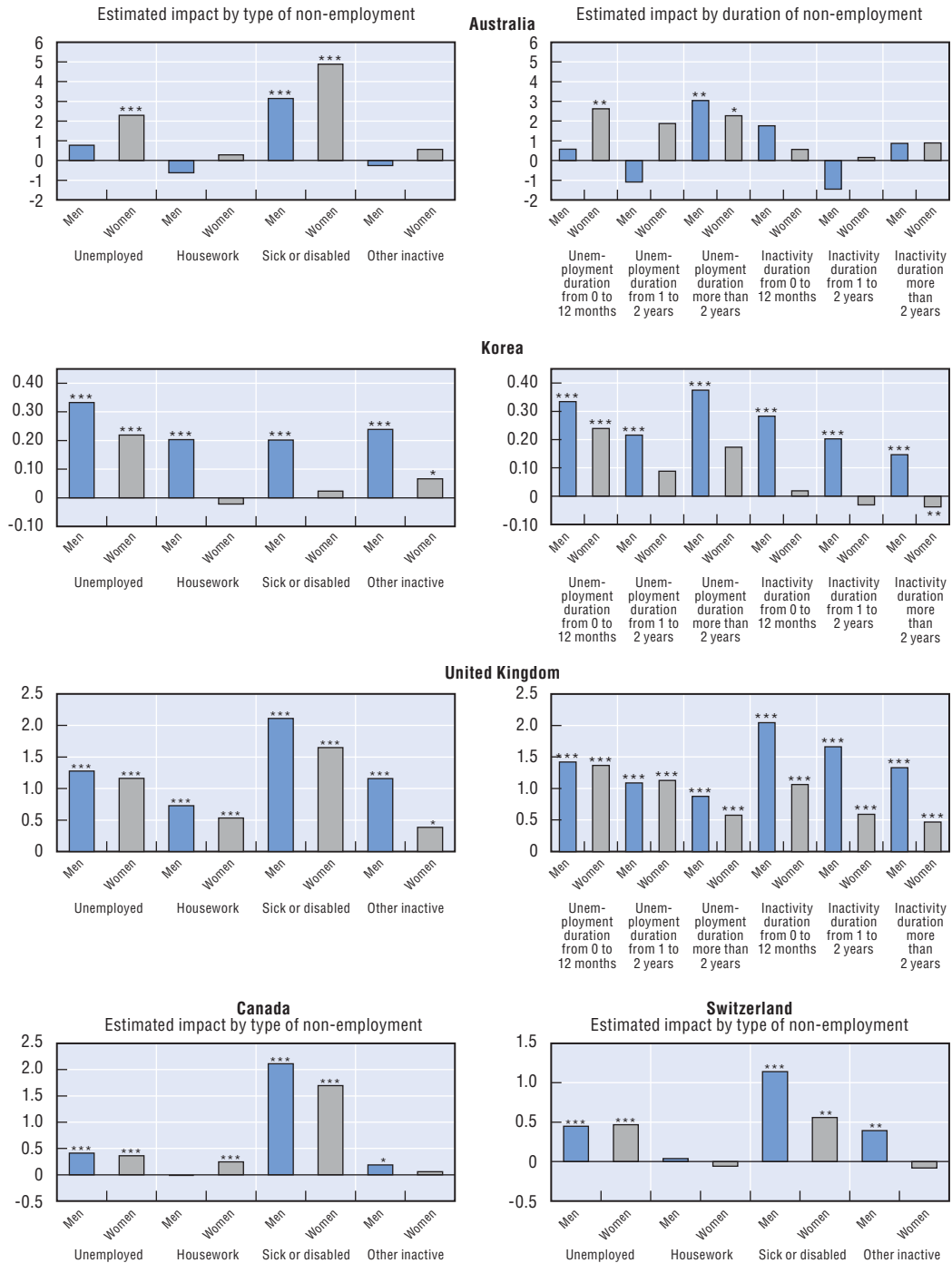
With the differencing, the permanent component  $\delta$  is purged and the resulting estimates of equation [2] yield consistent estimates of the coefficients. This depends on the assumption that  $\delta$  is constant within the relevant time frame. It also relies on the assumption that  $X$  and  $L$  are orthogonal to the error term  $u$ . Note that  $X$  also includes indicators for life events (accidents, deaths, breakdowns in partnership, etc.) in order to capture some possible correlation between  $u$  and the included regressors that could violate that assumption. In addition, first-differencing resolves endogenous selection and non-random attrition problems as long as they are related to the time-invariant individual components (see Annex 4.A2 for more details).

unemployment.<sup>7</sup> In Australia, on the other hand, unemployment does not result in worse mental health for men but it does for women. For men, only inactivity due to sickness results in a significant detrimental effect in Australia. Unemployment for Australian men is associated with a worse mental health only if physical health is not controlled for.

In addition to exploring the effect of labour force status changes, it is also interesting from a policy point of view to examine whether the psychological impact of inactivity persists. In terms of unemployment, a common assumption is that long-term unemployment is worse for mental health. On the other hand, individuals who are



Figure 4.9. **Effect of leaving employment on mental health distress<sup>a</sup>**  
Fixed-effect regressions<sup>b</sup>



StatLink <http://dx.doi.org/10.1787/348086235754>

\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

a) Sample includes persons aged 15-64 who are never enrolled in school or retired during the period analysed of the survey.

b) Regressions including controls for life events excepted for Korea.

Source: OECD estimates based on the HILDA for Australia (calculations were provided by Paul Swaim, OECD); the NPHS for Canada; the KLIPS for Korea; the SHP for Switzerland; and the BHPS for the United Kingdom. See Annex 4.A2 for details on the dependent and control variables.

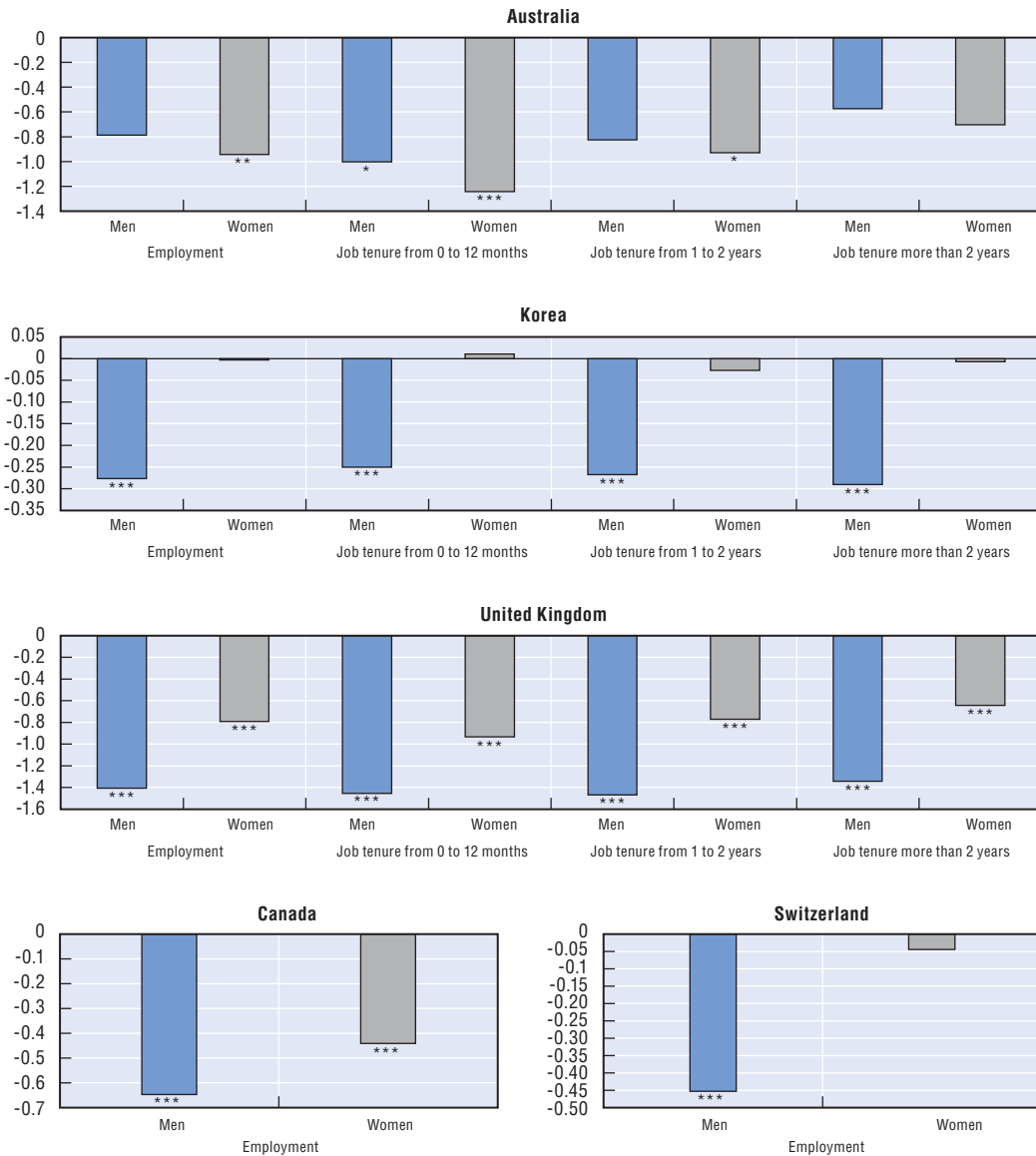
unemployed or inactive might become used to their situation, that is, there might be habituation effects (Clark *et al.*, 2001). The regressions reported in Figure 4.9 reveal that duration matters but the size of the impact is different across countries. Results from the United Kingdom confirm the presence of habituation effects for unemployment and for inactivity. Indeed, for both men and women the increase in psychological distress is worse for people who just moved into unemployment or inactivity than for those being in that state for more than two years. Habituation does happen for inactivity in Korea for men. On the other hand, Korean men do not get used to unemployment over time; their well-being is affected by unemployment whether they just got unemployed or whether they have been unemployed for more than two years. For women on the other hand, the negative impact of unemployment is only felt immediately after unemployment and disappears in the long-term. In Australia, long-term unemployment is significantly detrimental for mental health in males. In the case of women, there is no evidence that the impact of unemployment diminishes with duration.

To understand the full relation between work and mental health, it is also important to verify the health effect of the reverse change, *i.e.* a status shift from non-employment into employment. A movement to non-employment leads to a deterioration of mental health but is it the case that when individuals return to employment, their mental health improves? The regression analysis does confirm a health-improving effect of employment, but only partially so in certain countries (see Figure 4.10). Mental health improvements can be seen from the negative coefficients on a change to employment in all countries except Australia for men, and in Korea and Switzerland for women.<sup>8</sup> The results from the United Kingdom show an improvement for both men and women but the improvement tends to be higher for men, suggesting again that work is associated with more benefits for their mental health. The United Kingdom's findings also suggest that positive well-being effects of employment do diminish over time since, when looking at the effect of employment by duration, the coefficient for long-term employment (more than two years) is smaller than the one for recent employment. In Australia, a move into employment has a positive effect but it is only transitory, particularly for males.

Having found that individuals' mental health is often influenced by their activity status, the next question is to see whether changes within employment, *i.e.* across different types of jobs also matter. When comparing employed individuals who change from standard into non-standard employment, the analysis suggests that this change tends to result in a deterioration of mental health (see Table 4.4, Panel A). For this purpose, moving to non-standard employment is defined as a change to a job with either of the following characteristics: a non-standard type of contract (temporary), working other hours than full time (either overtime or shorter hours) or working irregular hours (shifts). In addition, the definition encompasses other changes which are not necessarily easily classified as non-standard employment characteristics *per se* but rather as having a job where individuals are less satisfied with the content or with certain working conditions, and thus, potentially having a negative impact on mental health. Changes in the type of contract (to non-permanent contracts) and in working hours appear to matter more than the patterns of hours worked. Across all countries, relatively more subjective indicators of working conditions appear to have a stronger impact on mental health. This is the case of job security, satisfaction with autonomy and with the balance between work and family and social commitments.

Figure 4.10. **Effect of transition from non-employment to employment on mental health distress<sup>a</sup>**

Fixed-effect regressions<sup>b</sup>



StatLink <http://dx.doi.org/10.1787/348180007345>

\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

a) Sample includes persons aged 15-64 who are never enrolled in school or retired during the period analysed of the survey.

b) Regressions including controls for life events excepted for Korea.

Source: OECD estimates based on the HILDA for Australia (calculations were provided by Paul Swaim, OECD); the NPHS for Canada; the KLIPS for Korea; the SHP for Switzerland; and the BHPS for the United Kingdom. See Annex 4.A2 for details on the dependent and control variables.


Many indicators of non-standard employment affect well-being substantially, but the evidence of the impact on mental health for Australia, Canada and Switzerland is less sizeable for certain characteristics. In Korea, Switzerland and the United Kingdom obtaining a seasonal or a temporary job leads to a significant deterioration in psychological distress. In terms of working non-standard hours, when men in Canada, the United

Table 4.4. **Effect of changes in the type of employment on mental health distress<sup>a</sup>**  
Fixed-effect regressions

Panel A. Transitions to non-standard employment										
Australia		Canada		Korea		Switzerland		United Kingdom		
Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
<b>Type of contract</b>										
Temporary worker	-0.181	-0.039			0.066 **	0.067 **	0.313 ***	0.128	0.202 **	0.180 *
<b>Working hours</b>										
Mini-job	1.040	-0.579	0.202	0.166 *	0.129 **	0.119 **	0.184	0.008	-0.285 *	0.166 *
Part-time	0.827	-0.700 *	0.162	0.018	0.249 ***	0.028	0.092	0.073	-0.044	0.093
Overtime	0.619 *	-1.006 **	0.142 **	0.110	0.013	0.009	0.039	-0.197	0.131 **	0.107
<b>Shift work</b>										
Yes	0.577 *	-0.321			0.076 ***	0.060 **	-0.028	-0.110	0.050	0.109 **
<b>Work schedule</b>										
Rotating or split shift			-0.004	0.044						
Irregular schedule or on-call			-0.013	-0.009						
Other irregular schedule			0.956 ***	-0.378						
<b>Job security</b>										
Quite secure	1.120 ***	0.804 **	0.372 **	0.350 **	0.204 ***	0.177 ***	0.074	-0.217 ***	0.132 ***	0.140 ***
Very insecure	2.701 ***	1.005 **	0.519 ***	0.516 ***	0.164 ***	0.145 ***	0.279 **	0.611 ***	0.624 ***	0.383 ***
<b>Job satisfaction</b>										
Satisfied	0.883 **	1.691 ***			0.069 ***	0.051 ***	-0.426 ***	-0.291 **	0.385 ***	0.480 ***
Not satisfied	2.651 ***	0.699			0.170 ***	0.179 ***	0.377 ***	0.301 **	1.399 ***	1.084 ***
<b>Job strain</b>										
Medium low			-0.146	0.095						
Medium high			0.064	0.335 ***						
High			0.074	0.423 ***						
<b>Psychological demands</b>										
Medium			-0.101	0.265 **						
High			0.007	0.559 ***						
<b>Work organisation</b>										
<b>Job opportunities</b>										
No									0.204 ***	0.090 **
<b>Work-stress</b>										
Medium-low			0.015	0.216 **						
Medium-high			0.206 **	0.295 **						
High			0.255 **	0.745 ***						
<b>Decision latitude</b>										
Medium			0.003	0.315 **						
Low			0.132	0.429 ***						
<b>Job autonomy</b>										
Not satisfied	0.206	0.706 *								
Satisfied	0.699 **	-0.097								
<b>Working hours and social commitments</b>										
Not satisfied	1.487 ***	1.101 **								
Satisfied	-0.140	0.504								
<b>Personal achievement</b>										
Not satisfied					0.173 ***	0.129 ***				
Satisfied					-0.026 **	-0.006				
<b>Management</b>										
Not satisfied					0.102 ***	0.104 ***				
Satisfied					0.046 ***	0.019				
Control for life events	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Number of observations	11 063	10 628	7 087	7 600	18 052	12 146	6 637	6 228	29 925	27 777

Table 4.4. **Effect of changes in the type of employment on mental health distress<sup>a</sup>** (cont.)  
Fixed-effect regressions

Panel B. Transitions to standard employment										
Australia		Canada		Korea		Switzerland		United Kingdom		
Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	
<b>Type of contract</b>										
Permanent workers	0.181	0.039			-0.066 **	-0.067 **	-0.313 ***	-0.128	-0.035	-0.014
<b>Working hours</b>										
Full-time	-0.680 **	0.780 **	-0.149 ***	-0.081	-0.030 *	-0.021	-0.052	0.006	-0.093 **	-0.125 **
<b>Shift work</b>										
No	-0.577 *	0.321			-0.076 ***	-0.060 **	0.028	0.110	-0.050	-0.109 **
<b>Work schedule</b>										
Regular schedule or shift			-0.018	-0.005						
<b>Job security</b>										
Very secure	-1.634 ***	-0.885 ***	-0.492 ***	-0.488 ***	-0.155 ***	-0.133 ***	-0.122 *	-0.197 **	-0.332 ***	-0.242 ***
<b>Job satisfaction</b>										
Very satisfied	-1.670 ***	-2.183 ***			-0.194 ***	-0.175 ***	-0.365 ***	-0.303 **	-0.654 ***	-0.647 ***
<b>Job strain</b>										
Low			0.042	-0.245 **						
<b>Psychological demands</b>										
Low			0.079	-0.336 ***						
<b>Work organisation</b>										
<b>Job opportunities</b>										
Yes									-0.253 ***	-0.198 ***
<b>Work-stress</b>										
Low			-0.100	-0.316 ***						
<b>Decision latitude</b>										
High			-0.047	-0.352 ***						
<b>Job autonomy</b>										
Very satisfied	-1.179 ***	-0.271								
<b>Working hours and social commitments</b>										
Very satisfied	-0.321	-1.017 **								
<b>Personal achievement</b>										
Very satisfied					-0.154 ***	-0.154 ***				
<b>Management</b>										
Very satisfied					-0.221 ***	-0.187 ***				
Control for life events	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Number of observations	11 063	10 628	7 101	7 600	18 052	12 146	6 637	6 228	29 925	27 777

StatLink  <http://dx.doi.org/10.1787/348465720085>

\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

a) Sample includes persons aged 15-64.

Source: OECD estimates based on the HILDA for Australia (calculations were provided by Paul Swaim, OECD); the NPHS for Canada; the KLIPS for Korea; the SHP for Switzerland; and the BHPS for the United Kingdom. See Annex 4.A2 for details on the dependent and control variables.

Kingdom and Australia move from a full-time job into one where they work overtime their mental health worsens.<sup>9</sup> In Korea, moving to a job where individuals have to work overtime, has no significant effect on well-being. This could be explained by the fact that a large fraction of both men and women work more than 48 hours per week. On the other hand, both appear to suffer from working less hours (this is also the case for women in Canada and the United Kingdom). In all countries, a transition to a job where people are not satisfied with job security or their job content is followed by worse mental health for

both men and women. More detailed information on work characteristics is only available for certain countries. Results for the United Kingdom reveal that changing to a job lacking opportunities for career advancement leads to lower well-being. In Korea, changes in working conditions related to work organisation such as opportunities for personal achievement and fair management are also highly influential on well being for both men and women. Dissatisfaction with job autonomy and the opportunities to balance work and non-work commitments are associated with lower mental well-being in Australia. Higher job strain and psychological demands lead to worse mental health for women only in Canada, similarly to low decision latitude. Both men and women experience deterioration in their mental health if there are high levels of stress at their workplace.

Movements from standard to non-standard employment or to relatively worse working conditions may seldom occur and it might therefore be more relevant to test the health effects of reverse changes. Indeed, the longitudinal data shows that roughly only 2-3% of individuals with a permanent contract change in the subsequent year to a temporary or short-term contract, while 52% of those with a fixed-term contract get a permanent contract the next year (71% for those with a short-term contract in Korea). There is slightly more mobility towards non-standard employment in Australia, with roughly 9% of individuals changing from a permanent towards either a fixed-term or a casual contract the next year.

Panel B of Table 4.4 presents estimated effects on mental health distress from transitions from non-standard to standard jobs. Significant improvements in mental health are found for many characteristics of standard employment but not in all five countries. In the case of Korea and the United Kingdom, most “standard” work characteristics are associated with significant increases in well-being. Only the type of contract does not appear to matter in the United Kingdom as no significant impact on well-being is associated with the acquisition of a permanent contract. Significant effects on better mental health are found for full-time work and the absence of shift work in Australia and for permanent contracts in Switzerland (for men only in both countries). In Canada, mental health improvements for men are observed only for changes to full-time regular hours and when acquiring a very secure job. Women in Canada do not experience improvements in mental health after changing their working hours. Significant mental health improvements for Canadian women do occur, on the other hand, with changes in the psycho-social work characteristics such as getting a job with low job strain, low psychological demands, low work-stress and high decision latitude. As was the case for the opposite change, more important improvements in mental health are observed when individuals move to jobs where they are more satisfied with subjective indicators such as job security.

For workers, movements to non-standard types of jobs have a negative impact on their mental health, but is employment, regardless of the type, better than inactivity? Regression analysis results reported in Table 4.5 show that when individuals move from non-employment to different types of employment, mental health improves but the improvement is less pronounced for non-standard employment. This result is confirmed for three different types of transitions to employment: for all persons previously non-employed, for those previously unemployed and for those previously absent from work due to sickness (as a particular case of inactivity). The type of contract matters when individuals get a job only in the case of Korea and Switzerland. Indeed, for Switzerland significant increases in well-being after employment are observed only for permanent contracts (the coefficient for temporary contracts is not significant). In Korea, changing to

Table 4.5. **Effect of changes from non-employment to different types of employment on mental health distress<sup>a</sup>**

Fixed-effect regressions

	Panel A. Men														
	Australia			Canada			Korea			Switzerland			United Kingdom		
	From...			From...			From...			From...			From...		
	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick
... To ...															
<b>Type of contract</b>															
Permanent workers	-1.226 *	-1.252	-3.349 ***				-0.226 ***	-0.209 ***	-0.142 ***	-0.186 ***	-0.167 ***	-0.144 ***	-1.299 ***	-1.210 ***	-1.768 ***
Temporary worker	-1.309 **	-1.340 *	-3.436 ***				-0.156 ***	-0.138 ***	-0.070 ***	0.031	0.064	0.096	-1.206 ***	-1.124 ***	-1.681 ***
<b>Working hours</b>															
Mini-job	-0.333	-0.338	-2.731 **	-0.463 ***	-0.224	-1.934 ***	-0.104 *	-0.086	-0.019	-0.384 **	-0.379 *	-0.969 **	-1.238 ***	-1.127 ***	-1.272 ***
Part-time	-0.631	-0.608	-3.001 **	-0.571 ***	-0.328 **	-2.039 ***	0.009	0.027	0.091 *	-0.435 ***	-0.435 **	-1.024 ***	-1.145 ***	-1.009 ***	-1.178 ***
Full-time	-1.083 *	-1.064	-3.457 ***	-0.710 ***	-0.468 ***	-2.179 ***	-0.225 ***	-0.207 ***	-0.139 ***	-0.410 ***	-0.421 ***	-1.010 ***	-1.125 ***	-0.985 ***	-1.157 ***
Overtime	-0.532	-0.508	-2.901 ***	-0.571 ***	-0.342 ***	-2.053 ***	-0.211 ***	-0.193 ***	-0.127 ***	-0.427 ***	-0.438 ***	-1.027 ***	-0.960 ***	-0.824 ***	-0.992 ***
<b>Shift work</b>															
Yes	-0.459	-0.437	-2.832 **	-0.656 ***	-0.420 ***	-2.121 ***	-0.123 ***	-0.106 ***	-0.043 *	-0.437 ***	-0.447 ***	-1.146	-1.403 ***	-1.275 ***	-2.094 ***
No	-0.948 *	-0.920	-3.315 ***	-0.615 ***	-0.378 ***	-2.079 ***	-0.234 ***	-0.217 ***	-0.150 ***	-0.430 ***	-0.439 ***	-1.138	-1.398 ***	-1.267 ***	-2.086 ***
<b>Job security</b>															
Very secure	-1.569 ***	-1.487 ***	-1.930 ***	-0.722 ***	-0.716 ***	-2.204 ***	-0.392 ***	-0.373 ***	-0.300 ***	-0.546 ***	-0.546 ***	-1.225 ***	-1.461 ***	-1.323 ***	-1.599 ***
Quite secure	-0.457	-0.381	-0.819	-0.574 ***	-0.557 ***	-2.046 ***	-0.233 ***	-0.215 **	-0.141 ***	-0.499 ***	-0.499 ***	-1.177 ***	-1.142 ***	-1.006 ***	-1.280 ***
Very insecure	1.163 **	1.259 **	0.796	-0.238 *	-0.220	-1.708 ***	-0.071 ***	-0.052 ***	0.023	-0.224	-0.227	-0.905 **	-0.523 ***	-0.388 ***	-0.661 ***
<b>Job satisfaction</b>															
Very satisfied	-1.328 **	-1.318 *	-3.800 ***				-0.298 ***	-0.276 ***	-0.215 ***	-0.463 ***	-0.460 ***	-1.146 ***	-1.779 ***	-1.646 ***	-2.339 ***
Satisfied	0.140	0.152	-2.330 **				-0.115 ***	-0.092 ***	-0.030 *	-0.480 ***	-0.477 ***	-1.163 ***	-1.137 ***	-1.005 ***	-1.698 ***
Not satisfied	2.549 ***	2.584 ***	0.102				0.053 ***	0.076 ***	0.139 ***	-0.306 **	-0.304 *	-0.990 ***	0.223 ***	0.358 ***	-0.336 ***
<b>Job strain</b>															
Low				-0.602 ***	-0.558 ***	-2.084 ***									
Medium low				-0.728 ***	-0.684 ***	-2.210 ***									
Medium high				-0.589 ***	-0.555 ***	-2.081 ***									
High				-0.495 ***	-0.450 ***	-1.976 ***									
<b>Psychological demands</b>															
Low				-0.593 ***	-0.550 ***	-2.059 ***									
Medium				-0.686 ***	-0.656 ***	-2.164 ***									
High				-0.521 ***	-0.495 ***	-2.003 ***									
<b>Work organisation</b>															
<b>Job opportunities</b>															
No													-0.515 ***	-0.443 ***	-0.379 ***
Yes													-0.273 ***	-0.192 ***	-0.128 ***

Table 4.5. Effect of changes from non-employment to different types of employment on mental health distress<sup>a</sup> (cont.)

Fixed-effect regressions

Panel A. Men																
Australia				Canada			Korea			Switzerland			United Kingdom			
From...				From...			From...			From...			From...			
Non-employment	Unemployed	Sick		Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	
<b>Work-stress</b>																
Low				-0.706 ***	-0.692 ***	-2.199 ***										
Medium-low				-0.690 ***	-0.665 ***	-2.171 ***										
Medium-high				-0.563 ***	-0.540 ***	-2.047 ***										
High				-0.501 ***	-0.460 ***	-1.966 ***										
<b>Decision latitude</b>																
High				-0.672 ***	-0.652 ***	-2.154 ***										
Medium				-0.560 ***	-0.527 ***	-2.029 ***										
Low				-0.465 ***	-0.434 **	-1.936 ***										
<b>Job autonomy</b>																
Not satisfied				-0.021	-0.106	-2.317 **										
Satisfied				-0.366	-0.460	-2.671 **										
Very satisfied				-1.458 **	-1.550 **	-3.762 ***										
<b>Working hours and social commitments</b>																
Not satisfied				0.660	0.712	-1.668										
Satisfied				-0.901	-0.855	-3.236 ***										
Very satisfied				-1.207 ***	-1.159	-3.540 ***										
<b>Personal achievement</b>																
Not satisfied							-0.064 ***	-0.045 **	0.024							
Satisfied							-0.235 ***	-0.216 ***	-0.148 ***							
Very satisfied							-0.388 ***	-0.370 ***	-0.302 ***							
<b>Management</b>																
Not satisfied							-0.105 ***	-0.086 ***	-0.017							
Satisfied							-0.207 ***	-0.188 ***	-0.120 ***							
Very satisfied							-0.428 ***	-0.410 ***	-0.342 ***							
Control for life events				Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations				2 517	2 517	2 517	19 268	19 268	19 268	7 996	7 996	7 996	36 560	36 560	36 560	



Table 4.5. **Effect of changes from non-employment to different types of employment on mental health distress<sup>a</sup> (cont.)**


Fixed-effect regressions

	Panel B. Women														
	Australia			Canada			Korea			Switzerland			United Kingdom		
	From...			From...			From...			From...			From...		
	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick
... To ...															
<b>Type of contract</b>															
Permanent workers	-0.236	-1.803 **	-4.390 ***				-0.048 ***	-0.116 ***	-0.074 ***	-0.087 *	-0.166 ***	-0.105 *	-0.731 ***	-1.123 ***	-1.440 ***
Temporary worker	-0.607	-2.203 ***	-4.790 ***				0.021	-0.050 **	-0.010	0.046	-0.045	0.031	-0.769 ***	-1.175 ***	-1.491 ***
<b>Working hours</b>															
Mini-job	-1.153 **	-2.654 ***	-5.266 ***	-0.208 **	-0.133	-1.486 ***	0.052	-0.015	0.021	-0.033	-0.456 ***	-0.432	-0.589 ***	-0.793 ***	-1.014 ***
Part-time	-1.095 **	-2.519 ***	-5.130 ***	-0.402 ***	-0.322 ***	-1.675 ***	-0.003	-0.073 *	-0.035	-0.035	-0.430 ***	-0.406	-0.697 ***	-0.863 ***	-1.087 ***
Full-time	-0.376	-1.724 **	-4.335 ***	-0.523 ***	-0.439 ***	-1.792 ***	-0.036 **	-0.103 ***	-0.061 ***	-0.149 *	-0.533 ***	-0.509 *	-0.859 ***	-0.999 ***	-1.214 ***
Overtime	-1.134 *	-2.500 ***	-5.111 ***	-0.419 ***	-0.345 ***	-1.698 ***	-0.012	-0.077 ***	-0.034	-0.261 **	-0.649 ***	-0.625 **	-0.686 ***	-0.823 ***	-1.024 ***
<b>Shift work</b>															
Yes	-1.127 **	-2.486 ***	-5.081 ***	-0.447 ***	-0.373 ***	-1.714 ***	0.032	-0.039	0.000	-0.094	-0.521 ***	-0.611 **	-0.749 ***	-1.119 ***	-1.608 ***
No	-0.843 **	-2.192 ***	-4.786 ***	-0.423 ***	-0.337 ***	-1.679 ***	-0.041 ***	-0.111 ***	-0.068 ***	-0.034	-0.462 ***	-0.552 *	-0.827 ***	-1.190 ***	-1.679 ***
<b>Job security</b>															
Very secure	-0.434	-0.429	-0.041	-0.610 ***	-0.430 ***	-2.374 ***	-0.170 ***	-0.232 ***	-0.188 ***	-0.102	-0.553 ***	-0.623 **	-0.856 ***	-1.057 ***	-1.283 ***
Quite secure	0.301	0.312	0.706	-0.541 ***	-0.349 *	-2.294 ***	-0.020	-0.083 ***	-0.039 *	-0.073	-0.519 ***	-0.588 **	-0.628 ***	-0.829 ***	-1.053 ***
Very insecure	0.484	0.516	0.908	-0.195	-0.043	-1.987 ***	0.127 ***	0.062 **	0.107 ***	0.358 ***	-0.074	-0.143	-0.332 ***	-0.531 ***	-0.754 ***
<b>Job satisfaction</b>															
Very satisfied	-1.450 ***	-2.824 ***	-5.440 ***				-0.150 ***	-0.188 ***	-0.155 ***	-0.045	-0.471 ***	-0.573 **	-1.047 ***	-1.411 ***	-1.847 ***
Satisfied	0.774	-0.593	-3.209 **				0.018	-0.020	0.013	-0.033	-0.450 ***	-0.552 *	-0.452 ***	-0.809 ***	-1.246 ***
Not satisfied	1.622 ***	0.267	-2.349 *				0.211 ***	0.174 ***	0.205 ***	0.152	-0.262 *	-0.364	0.596 ***	0.251 **	-0.187
<b>Job strain</b>															
Low				-0.690 ***	-0.510 ***	-2.510 ***									
Medium low				-0.648 ***	-0.456 ***	-2.456 ***									
Medium high				-0.443 ***	-0.246	-2.246 ***									
High				-0.357 ***	-0.147	-2.147 ***									
<b>Psychological demands</b>															
Low				-0.734 ***	-0.546 ***	-2.535 ***									
Medium				-0.607 ***	-0.406 **	-2.395 ***									
High				-0.289 ***	-0.081	-2.070 ***									
<b>Work organisation</b>															
<b>Job opportunities</b>															
No													-0.321 ***	-0.227 ***	-0.230 ***
Yes													-0.497 ***	-0.406 ***	-0.405 ***

Table 4.5. **Effect of changes from non-employment to different types of employment on mental health distress<sup>a</sup>** (cont.)

Fixed-effect regressions

Panel B. Women															
Australia			Canada			Korea			Switzerland			United Kingdom			
From...			From...			From...			From...			From...			
Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	Non-employment	Unemployed	Sick	
<b>Work-stress</b>															
Low			-0.738 ***	-0.593 ***	-2.577 ***										
Medium-low			-0.654 ***	-0.490 ***	-2.474 ***										
Medium-high			-0.603 ***	-0.407 **	-2.391 ***										
High			-0.199 *	-0.001	-1.985 ***										
<b>Decision latitude</b>															
High			-0.589 ***	-0.406 **	-2.388 ***										
Medium			-0.535 ***	-0.343 **	-2.325 ***										
Low			-0.218	-0.002	-1.985 ***										
<b>Job autonomy</b>															
Not satisfied			-0.331	-1.777 **	-4.403 ***										
Satisfied			-1.028 **	-2.492 ***	-5.118 ***										
Very satisfied			-1.289 ***	-2.776 ***	-5.402 ***										
<b>Working hours and social commitments</b>															
Not satisfied			0.841	-0.518	-3.134 **										
Satisfied			-0.316	-1.687 **	-4.302 ***										
Very satisfied			-1.224 ***	-2.619 ***	-5.235 ***										
<b>Personal achievement</b>															
Not satisfied						0.106 ***	0.037	0.078 ***							
Satisfied						-0.041 ***	-0.109 ***	-0.068 ***							
Very satisfied						-0.185 ***	-0.252 ***	-0.212 ***							
<b>Management</b>															
Not satisfied						0.093 ***	0.022	0.061 **							
Satisfied						-0.034 **	-0.102 ***	-0.063 ***							
Very satisfied						-0.217 ***	-0.286 ***	-0.247 ***							
Control for life events			Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations			3 638	3 638	3 638	23 334	23 334	23 334	21 909	21 909	21 909	10 146	10 146	10 146	40 474

StatLink  <http://dx.doi.org/10.1787/348475454374>

\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

a) Sample includes persons aged 15-64.

Source: OECD estimates based on the HILDA for Australia (calculations were provided by Paul Swaim, OECD); the NPHS for Canada; the KLIPS for Korea; the SHP for Switzerland; and the BHPS for the United Kingdom. See Annex 4.A2 for details on the dependent and control variables.

a temporary job leads to a significantly lower increase in mental health than in the case of a change to a permanent contract. The type of hours worked does provide a significantly different impact on well-being improvements across countries and gender. Overtime is associated with significantly lower increases in well-being than a regular full-time job in Australia and the United Kingdom while in Korea, working small hours (part time or mini-jobs) provides lower improvements in mental health or no significant improvements. In Canada, both types of non-standard working hours (overtime and part time) reflect lower mental health improvements than regular full-time hours. Certain jobs do show detrimental health effects for those previously not employed: this is the case of those with low job satisfaction in Korea and Australia, and also very insecure jobs in Australia.

An additional question is whether these findings hold for all workforce groups, including persons already suffering from health problems. An individual's mental well-being probably exhibits path-dependence, that is, it is likely that current mental health depends to a large extent on previous mental health status. Indeed, based on the datasets used for the analysis, between 85% and 97% of those without mental health problems in a given year do not experience them the following year. More variation exists for those with mental health problems; yet, 35% to 50% of those suffering from them still have problems within a year. To account for this state-dependence, a dynamic model is estimated, which includes previous mental health as a determinant of current mental health. The estimation results confirm that previous mental health problems have a very large impact on the probability of having a current negative mental health outcome (see Table 4.6). The detrimental effect of previous mental health is much larger than the beneficial effect of work-related variables in many of the countries analysed. Additionally, taking into account previous health reduces the significance of work variables, confirming the hypothesis that some of the estimated effects of work changes on mental distress are driven by a pre-existing condition. This is particularly the case for Switzerland and for men in Australia, where most of the work-related coefficients become insignificant once previous mental health values are controlled for. Only permanent employment and very secure employment for Swiss and Australian men, respectively, result in beneficial effects for mental health once prior mental health values are taken into account. The main conclusions still hold, however: either standard employment results in better mental health than non-standard employment or only standard employment results in significant beneficial mental health effects.

## Conclusion

Over the past two decades, mental illness has been a driving force behind the rise in inflows into disability in many OECD countries. The evidence provided in this chapter suggests that this is not due to a parallel increase in the share of working-age people with mental health problems nor to a deterioration in labour market conditions. The changes in the prevalence of mental health problems among the working-age population observed in the survey data analysed here simply do not reveal sufficiently large and general increases across OECD countries to account for trends in disability receipt. However, the limitations of the available data for analysing trends in mental health and their relationship to labour market trends need to be emphasised. The trend analysis in this chapter has made use of a variety of different measures of mental health problems, which are available for different combinations of countries and years. Further efforts to collect harmonised data on mental

Table 4.6. Effect of changes from sick leave to different types of employment on mental health, taking into account previous mental health distress

Pooled probit regressions<sup>d</sup>

	Australia		Canada		Korea		Switzerland		United Kingdom	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
<b>Previous mental health distress</b>	1.087***	0.826***	0.499***	0.457***	0.511***	0.600***	1.089***	0.859***	0.892***	0.774***
<b>Type of contract</b>										
Permanent workers	-0.200	-0.582***			-0.493***	-0.236***	-0.343**	-0.305	-0.611***	-0.387***
Temporary worker	-0.237	-0.486***			-0.211***	-0.065	-0.180	-0.038	-0.613***	-0.438***
<b>Working hours</b>										
Mini-job	0.324	-0.496**	-0.491***	-0.311***	-0.187	-0.058	-0.521	-0.441	-0.584***	-0.303***
Part-time	-0.101	-0.454**	-0.605***	-0.370***	0.103	-0.171	0.232	-0.291	-0.521***	-0.269***
Full-time	0.016	-0.491**	-0.681***	-0.381***	-0.424***	-0.180***	-0.053	-0.399	-0.414***	-0.340***
Overtime	0.068	-0.420*	-0.622***	-0.312***	-0.417***	-0.136**	0.071	-0.752*	-0.344***	-0.267***
<b>Shift work</b>										
Yes	0.048	-0.497**	-0.257***	-0.113**	-0.240***	-0.102	0.234	-0.225	-0.698***	-0.473***
No	0.075	-0.493**	-0.328***	-0.116*	-0.443***	-0.179***	-0.107	-0.509	-0.729***	-0.460***
<b>Job security</b>										
Very secure	-0.426***	-0.029	-0.821***	-0.617***	-0.830***	-0.359***	-0.176	-0.484	-0.632***	-0.417***
Quite secure	-0.201	0.014	-0.785***	-0.466***	-0.645***	-0.257***	-0.179	-0.254	-0.453***	-0.334***
Very insecure	-0.015	-0.116	-0.711***	-0.438***	-0.070	0.129**	0.054	0.220	-0.136**	-0.191***
<b>Job satisfaction</b>										
Very satisfied	-0.027	-0.574***			-0.710***	-0.319***	-0.041	-0.186	-0.965***	-0.604***
Satisfied	0.098	-0.298			-0.476***	-0.189***	-0.015	-0.277	-0.547***	-0.290***
Not satisfied	0.387	-0.151			0.010	0.189***	-0.024	-0.137	0.022***	0.000***
<b>Job strain</b>										
Low			-0.763***	-0.680***						
Medium low			-0.831***	-0.628***						
Medium high			-0.834***	-0.528***						
High			-0.711***	-0.465***						
<b>Psychological demands</b>										
Low			-0.764***	-0.710***						
Medium			-0.838***	-0.593***						
High			-0.741***	-0.485***						
<b>Work organisation</b>										
<b>Job opportunities</b>										
No									-0.104***	-0.107***
Yes									-0.240***	-0.158***
<b>Work-stress</b>										
Low			-0.805***	-0.723***						
Medium-low			-0.814***	-0.644***						
Medium-high			-0.794***	-0.559***						
High			-0.669***	-0.397***						
<b>Decision latitude</b>										
High			-0.813***	-0.639***						
Medium			-0.781***	-0.519***						
Low			-0.620***	-0.443***						
<b>Job autonomy</b>										
Not satisfied	0.008	-0.462**								
Satisfied	-0.018	-0.575***								
Very satisfied	-0.068	-0.522***								
<b>Working hours and social commitments</b>										
Not satisfied	0.246	-0.273								
Satisfied	-0.050	-0.271								
Very satisfied	0.022	-0.547***								

Table 4.6. **Effect of changes from sick leave to different types of employment on mental health, taking into account previous mental health distress (cont.)**Pooled probit regressions<sup>a</sup>

	Australia		Canada		Korea		Switzerland		United Kingdom	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
<b>Personal achievement</b>										
Not satisfied					-0.073	0.149**				
Satisfied					-0.569***	-0.308***				
Very satisfied					-0.728***	-0.505***				
<b>Management</b>										
Not satisfied					-0.095	0.146*				
Satisfied					-0.512***	-0.271***				
Very satisfied					-0.647***	-0.361***				
Control for life events	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Number of observations	8 785	9 700	15 320	18 288	17 144	19 009	6 297	8 253	31 046	34 399

StatLink  <http://dx.doi.org/10.1787/348486858786>

\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

a) Sample includes persons aged 15-64.

Source: OECD estimates based on the HILDA for Australia (calculations were provided by Paul Swaim, OECD); the NPHS for Canada; the KLIPS for Korea; the SHP for Switzerland; and the BHPS for the United Kingdom. See Annex 4.A2 for details on the dependent and control variables.

health trends and the association of mental health and employment status could make an important contribution to understanding the issues addressed here.

A more detailed longitudinal analysis for five OECD countries suggests that the risk of developing a mental health problem is higher among the inactive working-age population than among the employed, even after controlling for individual characteristics. Moreover, individuals previously not working tend to experience an improvement in mental health when they enter employment, regardless of the type of job. However, a return to work tends to be more beneficial in the case of standard employment. Individuals in non-standard employment tend to have worse mental health than workers in standard jobs, but this chapter's analysis suggests that this association primarily reflects a tendency for persons with a predisposition to develop a mental illness to hold such jobs, rather than a causal effect of stressful working conditions in undermining mental health. These findings apply to a variety of working conditions, but there is still a possibility that some working conditions not analysed in this chapter may have a detrimental impact on mental health. The longitudinal analysis is limited to five countries and its findings may not generalize to other OECD countries. Nonetheless, it concurs with the descriptive analysis for a larger number of countries in suggesting that labour market trends, such as increased use of non-standard employment contracts, probably have not been a major source of rising disability for mental health reasons.

The chapter's findings highlight the potential importance of prevention and activation policies, since inactivity appears to be detrimental for mental health.<sup>10</sup> Prevention measures are meant to retain the link to work for workers falling ill by promoting early intervention and treatment. Workers with health problems are also more likely to stay in work when they are supported by their employers. This support can take many forms, including the alteration of job duties, provision for more frequent breaks, and changes in work schedules or reduced job demands (Daly and Bound, 1995). For mentally ill persons who are already out of work but capable of working, activation programs should be offered in order to motivate them to seek work. Individual case management is required to identify

suitable jobs and provide the necessary supports. The analysis in this chapter confirms that attention should be paid to the type of job since not all jobs have been found to be beneficial for workers with mental health problems. Possibilities for a gradual return to work with some initial part-time work or with vocational rehabilitation measures to prepare individuals to another type of work might also be beneficial.

## Notes

1. A comparison of the behaviour of young and older cohort is also useful to throw more light in patterns of suicide over time. For this purpose, age-specific fertility rates for various birth cohorts were calculated constructing synthetic cohorts for five years intervals. From suicide cohort analysis, we see that irrespective of the cohort, suicide rates increased in the 1970s in many countries. In Australia, Ireland and New Zealand, it is shown that cohorts born from 1950 onwards had much higher suicide rates for youth and a less steep gradient with age for higher ages. Korea and Japan depict the opposite picture with the younger cohorts having a much steeper age-gradient in suicide (figures not shown).
2. Care should be taken when interpreting the results from the Czech Republic since the indicator measuring psychological distress has changed over time. The deterioration in Sweden occurred between 1991 and the year 2000 only.
3. This classification does not take into account individuals working and studying at the same time.
4. The dates for Korea correspond to the aftermath of the economic crisis and might point to an improvement in mental health going hand-in-hand with economic recovery.
5. The definition of non-standard employment follows the description from Bardasi and Francesconi (2004).
6. It is possible that the large effect associated with departure from work for health reasons is picking up the severity of the illness which will not be captured by the dummy control variable illness/injury.
7. Mental health in Korea is measured using life satisfaction as a proxy for mental well-being. Clark and Oswald (2006) describe that life satisfaction represent an inverted scale of mental well-being while movements of life-satisfaction over the life cycle exhibit a similar behaviour.
8. Although the analysis controls for selection related to individual observed and unobserved characteristics, there might still be a selection effect for those who return to work since (re)-employment might be influenced by treatment sought in the last year.
9. A surprising result is found for women in Australia where changes to either part time or overtime appear to lead to mental health improvements. Likewise, a transition from non-standard to standard employment is associated with worse mental health.
10. In this sense, the analysis in this chapter reinforces the main recommendations from the OECD's on-going *Sickness and Disability Review* (OECD, 2006 and 2007).

## ANNEX 4.A1

*Presentation of Data Sources***Health trends*****Variables common to suicide regressions****Suicide rates*

Annual age-specific number of suicides and self-inflicted injury codified using the International Classification of Disease (ICD) for males and females. The data include all OECD countries over the 1960-2005 period, except for Korea (since 1985), the Czech Republic (since 1986), Mexico (since 1969 until 1995 but with gaps), the Slovak Republic (since 1992) and Turkey (no data available). Mexico and Turkey are excluded from the analysis because of lack of suitable data.

Suicide rates are converted into age-standardised rates per 100 000 using the OECD population of 1980 as the reference population. To compare average mortality rates across countries, age-standardised rates per 100 000 population (total, males or females) are used. An age-standardised rate is an adjusted rate which represents what the crude rate would have been in the study population if that population had the same age distribution as the standard population. In this case, the OECD 1980 population is used as the reference population. The reason to perform this standardisation is that two populations with the same average age-specific mortality rates for a cause of death will have different overall death rates if the age distributions of their populations are different. When looking at specific age groups, the standardisation is no longer necessary.

*Source:* OECD database on Health.

*GDP per capita*

*Source:* OECD Economic Outlook database.

*Divorce rates*

Total number of divorces per 1 000 inhabitants.

*Source:* OECD database on Social Indicators.

*Unemployment rate*

*Source:* OECD database on Labour Force Statistics.

### Gini index

Measure of inequality of income distribution defined as a ratio with values between 0 and 1: 0 corresponds to perfect income equality and 1 corresponds to perfect income inequality.

Source: United Nations University's World Income Inequality Database (available at [www.wider.unu.edu/research/Database/en\\_GB/database](http://www.wider.unu.edu/research/Database/en_GB/database)).

### Estimation of suicide regressions (see Figure 4.A1.1)

Linear regression is used to estimate the relationship between labour market conditions, social indicators and suicide rates. Using the subscripts  $i$  and  $t$  to index the country and year, the basic specification is:

$$SR_{it} = \alpha_t + U_{it}\chi + G_{it}\beta + S_{it}\theta + C_i + \varepsilon_{it}$$

where  $SR$  is the natural log of suicide rates by gender and three age-groups (20-29, 30-49 and 50-64),  $U$  is the unemployment rate (current or lagged),  $G$  is a vector of explanatory variables reflecting economic conditions including GDP per capita and economic growth,  $S$  is a set of social indicators (Gini index and divorce rates),  $\alpha$  a year-specific intercept,  $C$  a country fixed-effect, and  $\varepsilon$  a disturbance term. The year effect includes constant determinants of mortality that vary uniformly across countries over time and the country fixed-effect accounts for factors that differ across countries but are time-invariant.

An additional specification includes a vector of country-specific linear time trends to control for factors that vary over time within countries:

$$SR_{it} = \alpha_t + U_{it}\chi + G_{it}\beta + S_{it}\theta + C_i + C_i \times T + \varepsilon_{it}$$

Sensitivity analyses are performed including several periods lagged unemployment and employment rates, excluding any given country and different periods of time. In addition, labour market duality effects are tested by including the percentage of temporary workers.

### Morbidity indicators (see Table 4.A1.1)

#### Psychological distress

- General Health Questionnaire (GHQ)

The GHQ is a multidimensional, self-reported screening instrument to detect current, diagnosable psychiatric disorders. It focuses on the inability to carry out normal activities and measures the appearance of psychological distress through four elements: depression, anxiety, social impairment, and hypochondriasis. It has 60-, 30-, 28-, 20- and 12-item versions. All items of the shorter versions are included in the longer versions. Items ask whether a particular symptom or behaviour has been recently experienced. Responses are indicated using one of the two four-point scales depending on the nature of the question: either "Better than usual; Same as usual; Worse than usual; Much worse than usual", or "Not at all; Not more than usual; Rather more than usual; Much more than usual."

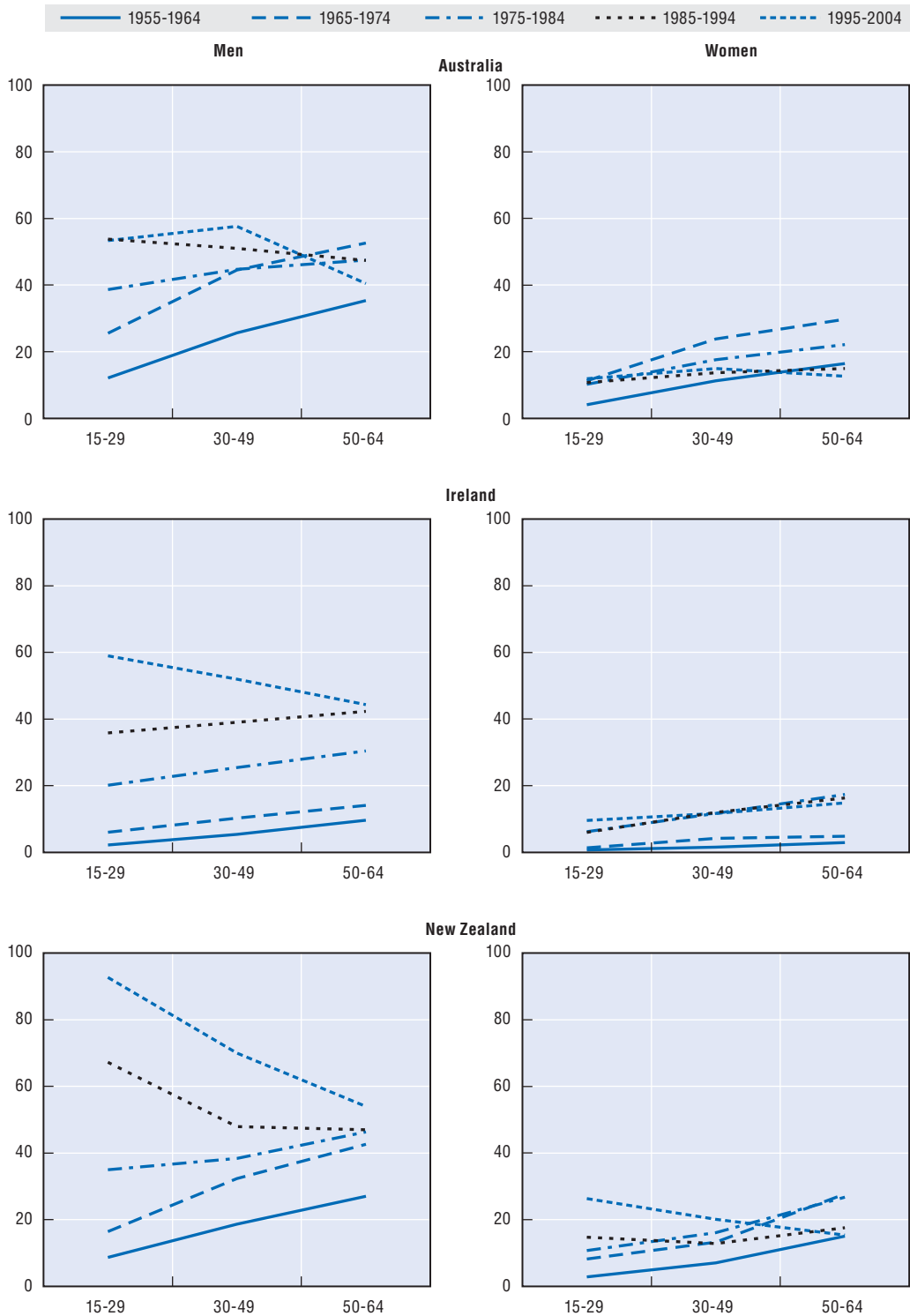
- K6 (and K10) scale

The K6 scale constitutes a short screening scale for non-specific psychological distress which was developed as a tool to detect serious mental illness. Questions refer to the past



Figure 4.A1.1. **Age-profile of suicide rates in selected OECD countries, 1950-2004**

Annual number of suicides per 100 000 persons, ten-year average



StatLink  <http://dx.doi.org/10.1787/348244452310>

Source: OECD Health Data 2006, October 2006.

Table 4.A1.1. Data sources for morbidity

	Period covered	Source	Mental health definition
Australia	2001, 2004-05	National Health Survey	K10, longstanding illness (mental)
Canada	1994/95, 2004/05	National Population Health Survey	Depression (as a proxy for mental illness), psychological distress scale
Czech Republic	1996, 2002	Sample Survey of the Health Status of the Czech Population	GHQ12 in 96, WHO(5) in 2002
France	1990/91, 2002/03	ES, Enquête Santé (INSEE)	SF-36 in 2003, Chronic illness (mental)
Hungary	2000, 2003	National Health Interview survey	GHQ-12
Italy	1999/00, 2004/05	Condizioni di salute e ricorso ai servizi sanitari	SF-12
Korea	1998, 2001, 2005	Korean National Health and Nutrition Examination Survey	Suicidal thoughts as a proxy for psychological distress, Chronic illness (mental)
New Zealand	1996, 2003	Health Survey	SF-36
Spain	1987, 2001, 2003	National Health Survey	Chronic illness (depression)
Sweden	1968, 1974, 1981, 1991, 2000	Swedish Level of Living Survey (LNU)	Psychological distress
United Kingdom	1991-2004	Health Survey of England	GHQ-12, longstanding illness (mental)
United States	1997-2005	National Health Interview Survey	K-6, longstanding illness (mental)

30 days and the interviewee answers six questions capturing feelings of anxiety and depression. Answers to items are rated based on five-point scales ranging from 0 (“none of the time”) to 4 (“all the time”). The total score ranges thus from 0 to 24. Individuals with scores of 13 and above are in the upper 10% of the general population in terms of symptoms of psychological distress that are strongly associated with having a serious mental illness. A ten-item scale version also exists for Australia.

- The Short-Form Health Survey (SF-36, SF-20, SF-12)

The Short-Form Health Survey index is a multi-purpose health survey that can be self-administered or used in interviews and covers both physical and mental health. The most frequently used version consists of 36 questions and is the SF-36. SF-36 covers eight main health domains as well as the summary measures of physical and mental health. The eight domains are divided into four physical health scales (physical functioning, role-physical, bodily pain, and general health) and four mental health scales (vitality, social functioning, role-emotional, and mental health). The range of scores possible on each of the eight scales is from 0 to 100, with 100 representing optimal functioning as measured by the SF-36. Norm-based scoring algorithms were introduced for all eight scales in 1998, making it possible to compare meaningfully scores for the eight-scale profile and the physical and mental summary measures in the same graph. SF-12 is a part of the SF-36 that reproduces the physical and mental health summary measures with fewer items.

Note that for New Zealand, the comparisons should be interpreted with caution, as the 1996/97 SF-36 instrument was a self-administered paper and pen questionnaire, while the 2002/03 instrument was interviewer-administered.

- Mental health indicators for Canada (Stephens *et al.*, 2000)

*Depression* was measured by a set of 27 questions about such symptoms, taken from the Composite International Diagnostic Interview. The total score was an estimate of the probability that the individual had a major depressive episode in the previous 12 months, stated in six levels with 90% as the definition of “probable” depression.

*Amount of distress* was assessed by a six-item symptom checklist yielding a score of 0-24. On the basis of the distribution, high distress was arbitrarily defined as a score of five

or greater. The impact of distress on life and activities was measured with a single question: “How much do these experiences usually interfere with your life or activities?” and a response of either “a lot” or “some” was used to define a life affected by distress.

- Psychological distress in Sweden

Psychological distress is based on an index calculated by the Swedish Institute of Social Research which includes whether the person during the past 12 months had a least one or a combination of the following illness: general tiredness, nervous problems or anxiety, sleeping problems and/or depression (Figure 4.A1.2).

#### *Mental illness*

- Chronic or longstanding illness or disability (mental)

A longstanding illness or disability is a health problem lasting for at least a year and that might limit daily activities and/or work. The type of illness is classified according to the ICD, which contains a category of mental illness. For the purposes of investigating the relation between work and mental health, mental illnesses that arise at birth or during childhood/adolescence such as congenital mental problems, mental retardation and problems of psychological development are excluded. Likewise, it also excludes organic degenerative mental diseases that are not likely to be influenced by work such as dementia and Alzheimer. Mental illness contains therefore mood (affective) problems such as depression, anxiety problems, stress-related problems and behavioural problems related to psychoactive substance abuse.

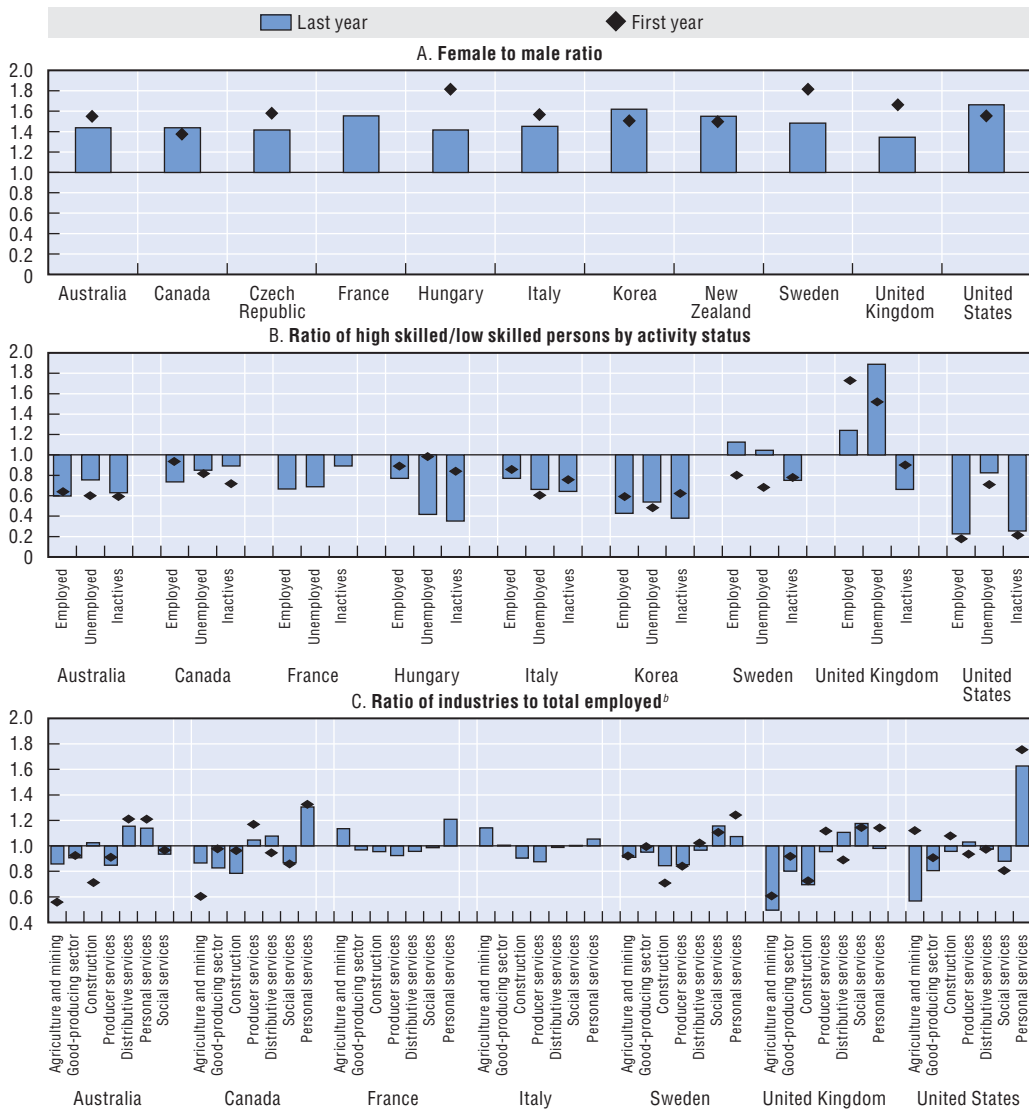
In the case of Canada and Spain, the analysis is limited to prevalence of depression due to data limitations (Figure 4.A1.3).

#### *Work-related mental problems*

Prevalence of persons having at least three mental or emotional problems caused by work among the following: stress, sleeping problems, anxiety and irritability.

Source: European Working Conditions Survey (EWCS).

Figure 4.A1.2. **Relative prevalence of psychological distress by socio-economic variables in selected OECD countries<sup>a</sup>**

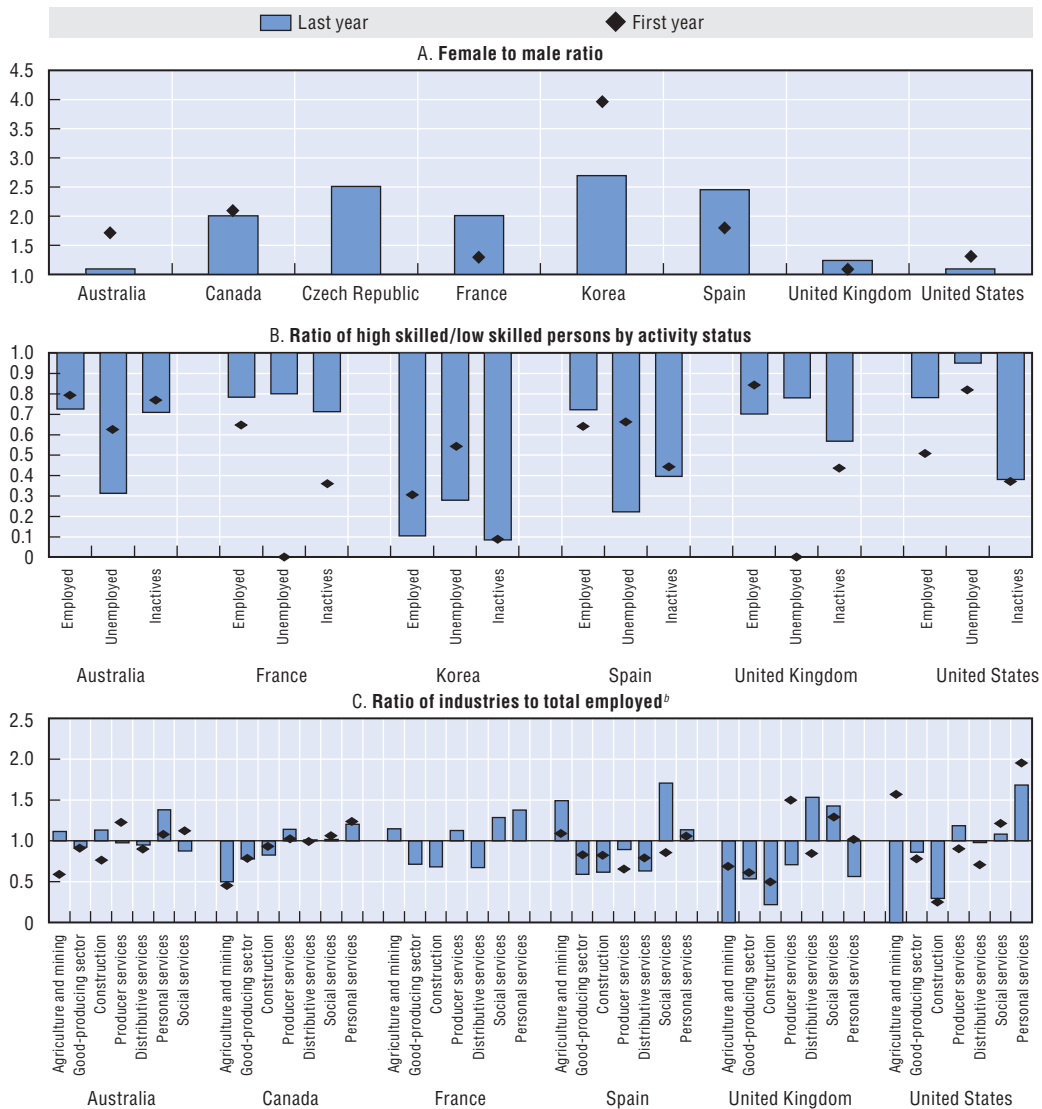


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- a) The years considered for each country are the following: 2001-2004/05 for Australia; 1994/95-2004/05 for Canada; 1996-2002 for the Czech republic; 2003 for France; 2000-2003 for Hungary; 2000-2005 for Italy; 1998-2005 for Korea; 1968-2001 for Sweden; 1991-2004 for the United Kingdom; 1997-2005 for the United States. For Panel C, 2005 only for Italy; 1968-1991 instead of 1968-2001 for Sweden; and 1994-2004 instead of 1991-2004 for the United Kingdom.
- b) Seven broad industry groupings were defined in terms of the 17 one-digit industries of the ISIC rev. 3: agriculture and mining corresponds to industries A, B and C (i.e. agriculture, hunting and forestry; fishing; and mining and quarrying); good-producing sector corresponds to industries D and E (i.e. manufacturing; and electricity, gas and water supply); construction corresponds to industry F (i.e. construction); producer services corresponds to industries J and K (i.e. financial intermediation; and real estate, renting and business activities); distributive services corresponds to industries G and I (i.e. wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; and transport, storage and communications); social services corresponds to industries L, M, N and Q (i.e. public administration and defence; compulsory social security; education; health and social work; and extra-territorial organisations and bodies); and personal services corresponds to industries H, O and P (i.e. hotels and restaurants; other community, social and personal service activities; and private households with employed persons).

Source: OECD calculations. See Annex 4.A1 for further details on sources, methods and calculations.

Figure 4.A1.3. **Relative prevalence of mental illness by socio-economic variables in selected OECD countries<sup>a</sup>**



StatLink <http://dx.doi.org/10.1787/348366243271>

- a) The years considered for each country are the following: 2001-2004/05 for Australia; 1994/95-2004/05 for Canada; 2002 for the Czech Republic; 1992-2003 for France; 1998-2001 for Korea; 1987-2003 for Spain; 1968-2001 for Sweden; 1991-2004 for the United Kingdom; and 1997-2005 for the United States. For Panel C, 2003 only for France; 2001-2003 instead of 1987-2003 for Spain; and 1994-2004 instead of 1991-2004 for the United Kingdom.
- b) Seven broad industry groupings were defined in terms of the 17 one-digit industries of the ISIC rev. 3: agriculture and mining corresponds to industries A, B and C (i.e. agriculture, hunting and forestry; fishing; and mining and quarrying); good-producing sector corresponds to industries D and E (i.e. manufacturing; and electricity, gas and water supply); construction corresponds to industry F (i.e. construction); producer services corresponds to industries J and K (i.e. financial intermediation; and real estate, renting and business activities); distributive services corresponds to industries G and I (i.e. wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; and transport, storage and communications); social services corresponds to industries L, M, N and Q (i.e. public administration and defence; compulsory social security; education; health and social work; and extra-territorial organisations and bodies); and personal services corresponds to industries H, O and P (i.e. hotels and restaurants; other community, social and personal service activities; and private households with employed persons).

Source: OECD calculations. See Annex 4.A1 for further details on sources, methods and calculations.

## Labour force statistics

### **General employment trends (Table 4.A1.2)**

Average age of employed persons

Female employment share

Source: OECD database on Labour Force Statistics.

Distribution of employment by industry

Source: OECD STructural ANalysis database (STAN).

Distribution of employment by occupation

Source: European Labour Force Survey (EULFS).

### **Type of employment contract**

Share of temporary employment

Involuntary part-time employment

Source: OECD database on Labour Force Statistics.

### **Working hours**

Average annual hours of work per employed person

Source: OECD database on Labour Force Statistics.

### **Atypical working hours arrangements**

Shift work and night work

Saturday and Sunday work

Source: European Labour Force Statistics (EULFS).

### **Job instability and security**

Average job tenure

Share of workers with less than a year of job tenure

Source: OECD database on Labour Force Statistics.

## Working conditions (Tables 4.A1.3 and 4.A1.4)

### **Variable definitions**

*Working time and work-life balance*

Working more than ten hours per day at least once a month.

Difficulties to fit working hours and family or social commitments outside work.

*Nature of work*

Cognitive demands of work (meeting quality standards, assessing quality of own work, solving unforeseen problems, complex tasks, learning new things, monotonous tasks, short repetitive tasks).

*Work organisation*

Composite indicator of autonomy at work (in terms of order of tasks, methods or work, speed of work, choice of working partners, take a break).

Index of intensity of work (working at very high speed and working to tight deadlines at least around half of the time).

Support at work (support from colleagues, support from superiors, external assistance).

*Job satisfaction*

Overall job satisfaction.

*Violence and discrimination*

Index based on intimidation, sexual discrimination, unwanted sexual attention, age discrimination, ethnic discrimination, disability discrimination and nationality discrimination.

Source: European Working Conditions Survey (EWCS).


Table 4.A1.2. **Change in selected labour market outcomes in OECD countries, 1995-2006**  
Percentage-point change<sup>a</sup>

	Participation rate <sup>b</sup>	Employment rate <sup>b</sup>	Unemployment rate <sup>b</sup>	Average age in employment <sup>b</sup>	Average age in labour force <sup>b</sup>	Average share of female <sup>b</sup>	Distribution of employment by industry <sup>c</sup>										
							A-B	C-D	E	F	G	H	I	J	K	L	M-Q
Australia	1.83	4.42	-3.60	1.89	1.98	1.99	-0.09	-3.50	-0.27	1.37	-0.42	0.31	-0.21	-0.30	2.24	0.19	0.69
Austria	2.44	1.55	1.07	1.97	1.81	2.98	-0.20	-2.45	-0.31	-0.68	0.09	0.82	-0.31	-0.18	2.14	0.10	0.97
Belgium	3.78	4.10	-1.02	1.78	1.86	4.11	-0.12	-3.48	-0.09	-0.77	-0.48	0.32	0.22	-0.38	1.26	3.10	0.42
Canada	3.20	5.42	-3.22	1.87	1.90	1.69	-0.46	-0.84	-0.18	0.81	0.50	0.05	-0.44	-0.20	2.00	-1.18	-0.07
Czech Rep.	-2.01	-4.16	3.17	2.37	2.34	-0.67	-2.75	-1.89	-0.42	-1.20	1.03	0.71	-0.13	-0.05	0.80	2.08	1.83
Denmark	0.60	2.99	-3.04	2.27	2.21	2.10	-0.64	-4.13	-0.17	0.44	1.67	0.09	-0.61	-0.15	1.89	0.11	1.50
Finland	2.43	7.85	-7.75	1.46	1.48	0.40	-0.77	-3.06	-0.50	0.74	1.36	0.27	-0.81	-0.62	3.29	-1.12	1.24
France	2.20	3.18	-1.78	1.27	1.29	2.07	-0.13	-3.91	-0.14	-0.18	0.56	0.67	0.05	-0.20	3.15	-0.11	0.25
Germany	4.61	2.61	2.17	1.61	1.48	3.21	-0.28	-3.16	-0.12	-3.41	0.57	0.65	-0.41	-0.13	3.01	-0.90	4.18
Greece	6.89	6.53	-0.43	0.08	0.33	2.88	-0.57	-4.58	-0.65	1.23	2.66	1.17	-1.55	-0.54	2.53	-0.91	1.21
Hungary	3.03	4.40	-2.71	2.06	2.17	1.37	-1.40	-1.43	-1.26	1.90	3.12	0.87	-1.80	0.34	1.90	0.81	-3.05
Iceland	3.20	4.82	-1.97	1.05	1.01	-0.94	-1.94	-4.02	-0.14	1.20	1.13	0.04	0.88	0.54	3.58	-0.09	-1.19
Ireland	9.50	14.01	-7.98	1.02	1.24	4.57	-1.12	-7.27	-0.51	4.39	0.69	0.60	1.23	0.40	2.64	-0.40	-0.64
Italy	4.81	7.25	-4.79	1.49	2.05	4.92	-1.06	-3.82	-0.42	0.22	2.17	1.52	0.36	-0.69	4.37	-3.61	0.98
Japan	1.57	0.77	1.02	0.98	0.93	1.22	..	..	..	..	..	..	..	..	..	..	..
Korea	1.36	0.34	1.48	2.52	2.47	1.47	-0.31	-8.06	-0.08	-3.31	-0.47	1.41	-0.15	-0.81	5.64	0.17	5.96
Luxembourg	6.30	5.08	1.56	2.24	2.21	6.38	-0.22	-5.05	-0.19	-1.46	-1.59	-0.63	1.31	0.92	6.71	-0.40	0.59
Mexico	1.49	3.80	-3.83	2.42	2.56	4.87	-2.38	-0.09	0.27	2.00	-0.61	0.64	-0.72	-0.49	1.93	0.13	-0.68
Netherlands	5.56	7.26	-2.72	2.24	2.44	4.48	-0.30	-3.03	-0.18	-0.57	-0.59	0.17	-0.55	0.08	2.52	-0.24	2.69
New Zealand	3.36	5.08	-2.50	2.38	2.41	1.76	-0.63	-5.28	-0.48	1.80	1.33	0.42	-0.37	-0.43	3.06	0.43	0.15
Norway	0.84	1.98	-1.51	1.02	1.08	1.26	-0.62	-3.64	-0.39	1.29	0.25	-0.05	-1.46	-0.52	3.10	-0.34	2.38
Poland	-4.01	-3.67	0.34	0.06	0.26	-0.53	-0.43	-5.98	-0.38	-1.13	3.14	0.57	-0.47	-0.22	3.54	2.43	-1.06
Portugal	5.46	4.65	0.54	1.50	1.63	1.83	0.30	-4.57	-0.48	2.71	2.03	0.94	-0.10	-1.52	1.54	-0.88	0.04
Slovak Rep.	-0.74	-0.79	0.20	1.93	2.23	-0.54	-4.79	0.48	-0.20	-0.67	1.96	1.40	-1.08	0.51	1.05	1.20	0.14
Spain	9.34	17.47	-14.27	0.61	1.63	6.92	-0.79	-4.71	-0.37	2.45	-0.08	1.10	-0.22	-0.67	3.05	-0.90	1.14
Sweden	0.72	2.31	-2.14	1.19	1.08	-0.68	-0.96	-3.75	-0.17	0.20	-0.06	0.02	-0.47	-0.11	4.12	-0.10	1.30
Switzerland	2.12	1.51	0.68	1.02	0.95	2.55	-0.61	-3.31	-0.07	-1.57	-1.14	-0.44	0.22	-0.04	3.02	0.46	3.48
Turkey	-5.75	-6.47	2.25	1.28	1.34	-2.93	0.28	1.30	-0.20	-3.71	1.20	0.79	-0.27	-0.67	1.19	-0.82	0.90
United Kingdom	0.90	3.33	-3.27	1.58	1.50	1.30	-0.30	-6.71	-0.29	1.18	0.21	-0.01	0.44	-0.44	1.76	1.09	3.06
United States	-1.33	-0.54	-0.95	2.01	2.04	0.29	0.08	-3.41	-0.10	0.73	-0.40	0.40	-0.14	0.14	0.98	-0.37	2.08
<b>Unweighted average</b>	<b>2.46</b>	<b>3.57</b>	<b>-1.83</b>	<b>1.57</b>	<b>1.66</b>	<b>2.08</b>	<b>-0.80</b>	<b>-3.56</b>	<b>-0.29</b>	<b>0.21</b>	<b>0.68</b>	<b>0.51</b>	<b>-0.26</b>	<b>-0.22</b>	<b>2.69</b>	<b>0.00</b>	<b>1.05</b>



Table 4.A1.2. **Change in selected labour market outcomes in OECD countries, 1995-2006 (cont.)**Percentage-point change<sup>a</sup>

	Share of temporary employment <sup>d</sup>	Share of involuntary part-time employment <sup>e</sup>	Average annual hours per employed persons <sup>f</sup>	Average job tenure <sup>g</sup>	Share of job tenure less than one year <sup>g</sup>	Distribution of employment by occupation <sup>h</sup>								
						1	2	3	4	5	6	7	8	9
Australia	..	0.15	-3.73	..	..	..	..	..	..	..	..	..	..	..
Austria	3.12	4.80	0.49	0.41	3.70	-0.08	0.80	7.21	-1.68	2.39	0.43	-6.73	-3.14	0.80
Belgium	3.57	-8.58	-6.15	0.90	1.65	2.12	2.52	2.04	-2.54	1.24	0.16	-4.26	-1.03	-0.25
Canada	1.72	-7.54	-2.08	..	..	..	..	..	..	..	..	..	..	..
Czech Rep.	-0.55	-0.78	-3.27	1.67	-2.58	0.72	0.75	3.55	-0.89	0.63	-0.80	-4.71	4.06	-3.32
Denmark	-2.49	-1.76	5.20	0.19	1.15	0.52	3.18	4.63	-3.42	0.08	-0.49	-1.94	-2.20	-0.36
Finland	-1.97	..	-3.13	-0.15	6.10	1.91	-1.75	1.03	-3.34	3.63	-0.11	-0.49	-1.44	0.55
France	0.52	-3.38	-5.22	1.32	0.15	0.96	2.66	0.41	-3.43	0.51	0.13	-1.59	-2.01	2.38
Germany	3.74	11.66	-6.37	1.16	3.35	-0.15	2.55	2.53	-0.73	1.15	-0.01	-4.75	-0.73	0.15
Greece	1.90	13.25	-1.39	0.34	-1.98	0.46	1.22	2.61	-0.66	1.92	-0.30	-3.95	-0.13	-1.17
Hungary	0.13	-7.24	-2.42	1.43	-1.65	3.01	0.55	-1.76	-4.20	-0.86	0.03	0.95	5.01	-2.73
Iceland	-3.11	-4.24	-2.07	0.68	-0.30	-0.82	4.30	2.09	-1.56	1.24	-1.46	-3.33	-0.51	0.06
Ireland	-6.08	-12.63	-12.53	-1.19	3.26	1.37	0.72	2.17	-3.09	0.32	0.01	-0.54	-1.20	0.23
Italy	5.80	12.12	-3.15	0.19	4.93	0.05	-2.00	7.87	-3.81	1.98	-0.08	-3.28	-0.65	-0.09
Japan	3.55	11.71	-5.29	..	..	..	..	..	..	..	..	..	..	..
Korea	..	..	-13.28	..	..	..	..	..	..	..	..	..	..	..
Luxembourg	2.64	5.50	-6.69	1.13	-0.02	0.40	8.28	3.72	-0.01	-0.45	-0.26	-6.39	-3.20	-2.07
Mexico	-1.66	..	1.39	..	..	..	..	..	..	..	..	..	..	..
Netherlands	5.34	-1.87	0.00	2.33	-6.40	-0.93	3.95	-0.84	-0.95	0.33	-0.04	-2.62	-1.97	3.06
New Zealand	..	-10.26	-2.99	..	..	..	..	..	..	..	..	..	..	..
Norway	-2.87	-10.25	-5.42	-0.87	0.64	-4.35	3.56	4.81	-3.30	3.94	-0.85	-0.64	-1.42	-1.74
Poland	15.61	1.04	-0.15	0.01	-1.11	0.39	6.12	-1.99	-0.91	2.78	-0.56	-5.89	1.65	-1.58
Portugal	10.15	9.08	-7.33	0.56	0.71	1.01	1.89	-3.13	-2.40	0.90	0.80	-2.32	0.72	2.53
Slovak Rep.	1.55	10.01	-6.94	..	..	0.60	1.31	2.51	-2.37	2.38	-0.91	-4.62	2.52	-1.42
Spain	-0.62	11.93	-2.85	0.01	-6.17	0.24	1.25	3.64	-2.06	1.57	-0.83	-0.99	-2.20	-0.64
Sweden	2.17	-18.79	-2.69	0.37	5.16	0.18	3.58	-0.71	-2.44	1.71	0.31	-2.24	-1.05	0.66
Switzerland	0.58	1.49	-2.58	1.23	-1.41	1.69	3.08	0.41	-3.20	0.32	0.35	-2.57	-0.15	0.08
Turkey	-7.77	-0.85	..	..	..	..	..	..	..	..	..	..	..	..
United Kingdom	-1.42	-4.25	-4.24	0.68	-0.86	0.58	-0.98	4.52	-3.25	2.29	-0.05	-3.35	-2.14	2.38
United States	..	..	-2.43	..	..	..	..	..	..	..	..	..	..	..
<b>Unweighted average</b>	<b>1.29</b>	<b>0.01</b>	<b>-3.70</b>	<b>0.59</b>	<b>0.40</b>	<b>0.45</b>	<b>2.16</b>	<b>2.15</b>	<b>-2.28</b>	<b>1.36</b>	<b>-0.21</b>	<b>-3.01</b>	<b>-0.51</b>	<b>-0.11</b>

StatLink  <http://dx.doi.org/10.1787/348552137023>

.. Data not available.

a) Change expressed in number of years for the average age in employment and in the labour force, and for the average job tenure.

b) 2005 for Luxembourg.

c) 1995-2005 instead of 1995-2006. 1998-2005 for Australia; 1995-2004 for Luxembourg; 1995-2003 for the Netherlands; 2000-2005 for Turkey; and 1995-2003 for the United States. Industry based on ISIC rev. 3.1, one-digit: A-B: agriculture, hunting, fishing and forestry; C-D: mining and quarrying, and manufacturing; E: electricity, gas and water supply; F: construction; G: wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods; H: hotels and restaurants; I: transport, storage and communication; J: financial intermediation; K: real estate and business activities; L: public administration and defence, compulsory social security; M-Q: education, health and social work, other community, social and personal service activities, private households with employed persons and extra-territorial organisations and bodies.

d) 1995-2005 for Austria, Greece and Japan; 1997-2006 for Canada, Finland, Hungary and Sweden; 1995-2002 for Iceland; 1996-2005 for Luxembourg; 1995-2004 for Mexico; 2001-2006 for Poland.

e) 1998-2006 for Hungary; 1995-2002 for Iceland; 1995-2004 for Ireland and Turkey; 2001-2006 for Poland.

f) 1995-2005 for Greece, Iceland and Switzerland; 2000-2006 for Poland.

g) 1997-2006 for the Czech Republic, Hungary and Norway; 1995-2001 for Greece; 1995-2005 for Iceland and Luxembourg; 1996-2005 for Switzerland.

h) 1995-2005 for Iceland and Ireland; 1996-2006 for Hungary, Norway and Switzerland; 1997-2006 for the Czech Republic, Finland, Poland and Sweden; and 1998-2006 for the Slovak Republic. Occupation based on ISCO-88, one-digit: 1: Legislators, Senior Officials and Managers; 2: Professionals; 3: Technicians and Associate Professionals; 4: Clerks; 5: Craft and Related Trades Workers; 6: Skilled Agricultural and Fishery Workers; 7: Service Workers and Shop and Market Sales Workers; 8: Plant and Machine Operators and Assemblers; 9: Elementary Occupations.

Source: OECD database on Labour Force Statistics and OECD calculations based on the European Labour Force Survey (EULFS) and OECD SStructural ANalysis (STAN) database.

Table 4.A1.3. **Change in selected working conditions indicators in European countries, 1995-2005**

Percentage-point change

	Shift work <sup>a</sup>	Night work <sup>a</sup>	Saturday work <sup>a</sup>	Sunday work <sup>a</sup>	Working more than 10 hours a day <sup>b</sup>	Work intensity <sup>c</sup>	Work involve complex tasks <sup>d</sup>	Conflict between working hours and social life <sup>e</sup>	Discrimination at workplace <sup>f</sup>	Low autonomy <sup>g</sup>	Assistance from colleagues <sup>h</sup>	Low job satisfaction <sup>i</sup>
Austria	2.13	-1.20	5.14	3.06	-0.70	-9.56	6.21	-1.96	-6.07	2.41	1.83	-0.17
Belgium	-7.10	-0.46	2.65	1.71	4.66	10.93	4.97	5.56	6.30	-0.91	-4.08	3.68
Czech Rep.	3.43	2.56	10.98	7.65	-5.00	7.81	15.51	3.62	-3.83	8.30	1.75	-2.06
Denmark	-3.63	-0.35	-2.75	-0.78	9.26	15.73	13.92	2.62	2.99	0.05	3.47	1.63
Finland	1.53	-0.49	-3.53	-2.19	0.54	2.05	6.90	-2.12	6.80	-3.18	0.43	9.55
France	0.06	3.58	8.02	6.29	-1.18	9.69	3.22	-0.12	-3.85	-2.02	-4.00	-0.40
Germany	5.90	2.09	5.16	3.30	3.55	5.34	10.97	-1.16	-4.43	-2.18	0.24	-3.34
Greece	7.13	-0.58	1.90	-1.14	7.76	9.18	9.31	1.11	7.05	-13.63	-2.43	4.00
Hungary	-0.91	-3.90	-5.40	-1.77	0.60	4.05	0.71	8.01	-0.40	2.18	0.50	3.25
Iceland	0.65	-0.76	1.03	1.76	..	..	..	..	..	..	..	..
Ireland	4.71	-0.98	-7.02	-2.27	3.62	9.91	0.38	5.52	1.65	-7.20	1.02	9.62
Italy	-0.09	3.27	-2.60	5.18	-0.03	27.98	5.92	4.88	1.09	0.95	-9.23	7.66
Luxembourg	-2.43	3.00	1.98	5.39	1.05	18.13	2.36	3.83	7.84	-6.83	-0.51	6.80
Netherlands	0.12	7.32	3.50	3.75	4.64	-0.39	0.97	2.14	5.50	4.10	-0.69	2.72
Norway	4.09	1.18	-0.27	-0.12	..	..	..	..	..	..	..	..
Poland	-7.95	1.28	2.85	1.15	-1.97	-16.70	4.20	10.05	-1.98	2.80	0.45	-2.19
Portugal	10.46	7.00	-2.27	-0.87	6.76	12.51	13.59	1.25	-2.04	7.68	-3.35	-0.99
Slovak Rep.	-5.50	8.50	9.78	8.39	1.98	-3.12	13.38	0.89	-6.91	4.59	-0.03	-4.46
Spain	10.18	0.54	-8.78	-1.67	2.99	18.32	0.35	-4.97	-5.97	6.24	1.84	2.58
Sweden	-2.34	-1.43	-5.14	-4.73	7.72	12.33	-5.93	3.11	-4.84	-2.61	3.09	6.36
Switzerland	8.61	3.48	12.33	9.29	..	..	..	..	..	..	..	..
United Kingdom	1.95	4.34	-4.18	-0.44	-4.74	2.81	-12.24	0.49	-10.09	11.32	-4.08	-6.04
<b>Unweighted average</b>	<b>1.41</b>	<b>1.73</b>	<b>1.06</b>	<b>1.86</b>	<b>2.18</b>	<b>7.21</b>	<b>4.98</b>	<b>2.25</b>	<b>-0.59</b>	<b>0.64</b>	<b>-0.73</b>	<b>2.01</b>

StatLink  <http://dx.doi.org/10.1787/348567110065>

.. Data not available.

a) 1995-2006 instead of 1995-2005. 2001-2006 for the Czech Republic, Poland and the Slovak Republic; 1997-2006 for Hungary; 1995-2005 for Iceland and Ireland; 1996-2006 for Switzerland.

b) 2000-2005 instead of 1995-2006. Change in share of employees working at least once per month more than ten hours a day.

c) 1990-2005 instead of 1995-2006. Share of persons working at very high speed and/or with tight deadlines at least half of their working time. 1995-2005 for Austria, Finland and Sweden; 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.

d) 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.

e) Change in share of employees who experiencing difficulties to fit working hours and family or social commitments outside work. 2000-2005 instead of 1995-2005.

f) Change in share of employees experiencing intimidation, sexual discrimination, unwanted sexual attention, age discrimination, ethnic discrimination, disability discrimination and nationality discrimination. 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.

g) Change in share of employees who can't choose the order of tasks, the rate of speed and the method of work. 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.

h) Change in share of employees getting assistance from colleagues. 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.

i) Change in share of employees being not very satisfied and not at all satisfied by their job. 2000-2005 for the Czech Republic, Hungary, Poland and the Slovak Republic.


Source: OECD calculations based on the European Labour Force Survey (EULFS) and on the European Working Conditions Survey (EWCS).

Table 4.A1.4. **Work-related mental health problems are often associated with poor working conditions and low job satisfaction in Europe**Relative incidence of work-related mental problems reported by workers encountering selected working conditions, 1995-2005<sup>a</sup>

	A. Working more than 10 hours a day (at least once a month) <sup>b</sup>			B. Discrimination at workplace <sup>c</sup>			C. Low job autonomy <sup>d</sup>			D. Conflict between working hours and social life <sup>e</sup>		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Austria	..	2.20	3.32	7.13	6.75	3.47	1.94	1.35	0.98	..	8.22	7.92
Belgium	..	1.43	1.86	7.22	4.28	7.20	0.26	1.13	2.12	..	2.77	3.95
Czech Republic	..	1.88	2.77	..	3.49	1.25	..	0.41	0.79	..	2.78	1.14
Denmark	..	2.17	2.31	4.91	2.83	5.13	3.04	1.93	2.12	..	5.41	1.65
Finland	..	1.69	1.54	3.60	2.97	3.47	0.92	1.54	1.86	..	2.65	3.55
France	..	1.98	1.52	4.24	5.01	3.17	0.66	0.79	1.25	..	2.82	2.90
Germany	..	1.91	2.23	4.34	3.70	16.89	0.98	1.01	1.78	..	4.60	4.16
Greece	..	2.94	1.47	4.39	2.96	2.57	0.92	1.34	1.40	..	2.92	2.19
Hungary	..	1.89	3.47	..	3.24	2.72	..	0.60	0.77	..	1.96	2.69
Ireland	..	2.52	2.39	5.48	12.94	3.87	1.06	0.54	0.58	..	3.40	2.70
Italy	..	2.54	2.32	3.44	7.17	3.33	0.68	0.38	0.51	..	1.92	1.93
Luxembourg	..	1.08	1.53	8.50	4.66	3.67	0.31	1.00	1.21	..	6.72	3.57
Netherlands	..	1.43	0.61	3.00	6.99	5.42	0.43	1.34	0.38	..	10.14	2.64
Poland	..	0.52	2.06	..	1.98	4.43	..	0.53	0.75	..	1.30	3.40
Portugal	..	2.18	1.57	1.34	6.26	3.54	0.72	1.01	1.33	..	2.10	2.90
Slovak Republic	..	1.14	2.86	..	4.50	3.68	..	1.57	0.97	..	1.65	3.25
Spain	..	2.37	2.43	2.96	3.06	5.12	1.63	1.48	0.85	..	2.86	1.90
Sweden	..	1.52	1.54	2.21	3.15	1.71	0.40	1.43	1.28	..	2.54	1.87
United Kingdom	..	4.63	2.26	3.80	3.86	9.59	0.98	0.58	0.70	..	2.98	4.45
<b>Unweighted average<sup>a</sup></b>	<b>..</b>	<b>2.08</b>	<b>1.75</b>	<b>3.76</b>	<b>4.16</b>	<b>3.80</b>	<b>0.85</b>	<b>1.10</b>	<b>1.22</b>	<b>..</b>	<b>3.22</b>	<b>2.78</b>
	E. Assistance from colleagues			F. Work involves complex tasks			G. Night work (at least once a month)			H. Shift work		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Austria	0.19	2.11	1.57	1.14	1.05	2.17	4.25	4.10	4.26	5.46	3.14	2.67
Belgium	1.12	0.64	1.49	3.70	2.49	3.51	1.21	1.18	2.91	..	0.90	1.20
Czech Republic	..	-	0.66	..	3.41	1.71	..	2.31	1.55	..	2.43	1.38
Denmark	0.29	-	0.71	6.76	1.22	4.79	2.24	3.97	1.75	3.14	1.33	0.83
Finland	0.79	0.62	0.32	1.60	2.22	2.16	1.52	1.35	1.91	1.44	0.97	1.41
France	0.64	1.08	0.84	2.16	2.73	1.16	2.17	1.48	2.25	1.27	1.07	1.96
Germany	0.51	1.24	0.29	1.90	1.92	1.28	1.86	1.26	1.63	1.81	1.32	1.51
Greece	0.38	0.94	0.58	1.56	2.03	1.95	1.41	2.73	1.84	0.99	1.44	1.47
Hungary	..	0.38	0.64	..	1.51	1.30	..	2.00	1.49	..	0.90	1.57
Ireland	1.09	7.44	0.51	1.67	5.23	2.74	0.93	2.59	1.73	1.49	2.12	0.85
Italy	0.47	0.69	1.01	2.23	2.02	2.84	1.71	2.03	3.03	1.13	1.20	1.96
Luxembourg	0.51	1.26	0.31	2.15	3.76	0.86	5.10	3.58	1.74	2.11	4.65	2.45
Netherlands	1.11	1.62	0.55	2.30	2.40	2.13	1.07	3.47	1.25	0.48	7.19	1.35
Poland	..	1.34	0.99	..	3.97	2.45	..	2.72	1.71	..	2.62	1.45
Portugal	1.27	0.60	0.99	3.41	6.87	2.53	1.81	5.64	2.50	1.71	2.77	3.04
Slovak Republic	..	0.56	0.27	..	2.74	2.32	..	1.70	1.68	..	1.74	1.73
Spain	0.43	1.77	1.25	2.46	2.73	4.37	5.81	1.99	2.52	1.71	2.73	1.03
Sweden	0.57	0.84	3.30	1.69	2.16	2.44	2.14	1.39	1.67	1.66	1.60	1.16
United Kingdom	0.24	0.47	1.42	2.27	5.33	2.49	1.58	2.46	1.41	1.16	2.13	1.65
<b>Unweighted average<sup>a</sup></b>	<b>0.49</b>	<b>0.83</b>	<b>0.70</b>	<b>2.07</b>	<b>2.48</b>	<b>2.14</b>	<b>1.94</b>	<b>2.02</b>	<b>2.09</b>	<b>1.53</b>	<b>1.68</b>	<b>1.60</b>

Table 4.A1.4. **Work-related mental health problems are often associated with poor working conditions and low job satisfaction in Europe** (cont.)Relative incidence of work-related mental problems reported by workers encountering selected working conditions, 1995-2005<sup>a</sup>

	I. Saturday work (at least once a month)			J. Sunday work (at least once a month)			K. Low job satisfaction			L. High work intensity <sup>f</sup>		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
Austria	5.17	3.30	3.54	2.37	4.55	5.64	3.78	8.42	4.91	2.11	5.05	1.81
Belgium	1.77	1.23	1.42	0.59	2.01	2.85	11.52	6.10	4.43	2.26	1.66	1.82
Czech Republic	..	2.31	1.29	..	3.71	2.92	..	1.39	1.04	..	1.13	4.06
Denmark	1.13	2.74	1.67	2.16	1.99	1.32	5.57	7.07	5.25	1.53	5.90	2.13
Finland	1.39	2.11	1.35	1.86	2.07	1.75	1.76	4.38	3.48	1.24	1.56	2.53
France	1.07	1.56	2.06	1.15	1.55	2.03	2.68	3.08	5.73	1.47	1.84	2.20
Germany	1.41	1.60	1.48	2.25	2.06	1.53	3.70	2.68	14.44	5.85	1.35	1.78
Greece	1.45	1.65	1.44	2.10	2.41	1.42	2.48	3.69	2.48	2.54	2.88	2.90
Hungary	..	1.59	1.26	..	1.63	1.48	..	2.85	2.66	..	2.44	2.48
Ireland	0.38	1.40	1.38	1.03	3.40	1.53	10.95	3.57	5.36	1.58	1.53	2.31
Italy	1.53	0.94	1.41	1.22	1.47	2.50	2.58	3.45	2.39	2.38	2.67	2.25
Luxembourg	1.39	2.17	2.39	2.34	2.61	2.02	4.11	5.37	2.03	2.98	3.45	2.46
Netherlands	1.09	2.05	0.71	1.80	2.82	1.58	3.05	5.55	10.95	1.60	2.11	2.29
Poland	..	1.04	0.79	..	1.21	1.95	..	2.62	2.22	..	3.60	3.52
Portugal	0.94	1.49	1.59	1.47	2.03	3.30	2.08	3.32	4.17	2.66	2.88	1.40
Slovak Republic	..	1.51	2.10	..	1.51	1.98	..	3.91	4.37	..	2.48	5.08
Spain	2.71	1.98	2.00	1.71	2.50	2.46	1.39	1.89	2.52	6.86	1.29	1.63
Sweden	1.71	1.60	1.01	2.19	1.64	1.30	3.98	2.91	4.66	3.85	3.21	2.32
United Kingdom	1.36	2.08	1.22	1.64	3.13	0.97	3.14	4.61	7.65	3.34	1.93	2.77
<b>Unweighted average<sup>a</sup></b>	<b>1.38</b>	<b>1.67</b>	<b>1.52</b>	<b>1.68</b>	<b>2.12</b>	<b>1.94</b>	<b>3.20</b>	<b>3.87</b>	<b>4.03</b>	<b>2.38</b>	<b>2.12</b>	<b>2.19</b>

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.. Data not available.

– Not enough observations to be reported.

- a) Ratio of the share of employees reporting the working condition who also report three or more work-related mental problems to the corresponding share for workers not reporting that working condition. Unweighted averages for the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.
- b) Employees working at least once per month more than ten hours a day.
- c) Employees experiencing intimidation, sexual discrimination, unwanted sexual attention, age discrimination, ethnic discrimination, disability discrimination and nationality discrimination.
- d) Employees who can't choose the order of tasks, the rate of speed and the method of work.
- e) Share of employees who experiencing difficulties to fit working hours and family or social commitments outside work.
- f) Employees working at very high speed and/or with tight deadlines at least half of their working time.

Source: OECD calculations based on the European Working Conditions Survey (EWCS), 1995-2005.

## ANNEX 4.A2

*Analysis of the Effects of Work on Health*

The following longitudinal household surveys are used for the analysis in Section 2.

**British Household Panel Survey (BHPS) – United Kingdom**

The British Household Panel Survey (BHPS) is a nationally representative household-based yearly survey which began in 1991, interviewing every adult member of sampled households. The wave 1 of the panel consists of some 5 500 households and 10 300 individuals. Additional samples of 1 500 households in both Scotland and Wales were added to the main sample in 1999, and in 2001, a sample of 2 000 households was added in Northern Ireland. These same individuals are re-interviewed each successive year and, if they split-off from original households to form new households, they are followed and all adult members of these households are also interviewed. The mental health measure available is the GHQ-12.

**Household, Income, Labour Dynamics in Australia (HILDA)**

Household, Income, Labour Dynamics in Australia (HILDA) is an ongoing household-based panel survey funded by the Department of Families, Community Services and Indigenous Affairs. The survey started in 2001 and contains at the moment five waves. Wave 1 of the panel consisted of 7 682 households and 19 914 individuals. The mental health measure available is the SF-36.

**Korean Labor and Income Panel Study (KLIPS)**

The Korean Labor and Income Panel Study (KLIPS) is an ongoing household survey which is conducted annually since 1998 and consists of 5 000 households and 13 000 individuals. The survey is focused on the study of labor market characteristics but a question about life satisfaction is included. This variable is used as a proxy of psychological well-being.

**National Population Health Survey (NPHS) – Canada**

The National Population Health Survey (NPHS) is a longitudinal survey on the health of Canadians. Conducted by Statistics Canada since 1994-95, the survey is designed to measure the health status of Canadians and to add to the existing body of knowledge about the determinants of health. The NPHS, which relies on respondents' self-reported health information, surveys the same group of respondents every two years for up to 20 years. The mental health measure available is the amount of distress index and the indicator for depression.

## Swiss Household Panel (SHP)

The Swiss Household Panel is an ongoing household panel designed to investigate trends in social dynamics among the Swiss population. The survey started in 1999 and is financed by the Swiss national science foundation, the Swiss federal statistical office and the University of Neuchatel. It was designed from the start to be compatible with various national and international surveys. A national representative sample of households was selected containing around 5 000 households in 1999. Data are collected annually at both the household and the individual level. The mental health measure available is the frequency at which the individual suffered from blues, anxiety or depression.

All longitudinal datasets cover a wide range of subjects including personality traits, occupational and family biographies, employment, participation and professional, mobility, earnings and health. We construct complete labour market histories of the individuals. We considered three possible labour market states: i) employment; ii) unemployment; iii) and out of the labour force. In addition, we disaggregate employment states by the type of employment contract and the different working conditions.

## Panel data estimation methods

As described in Section 3 (Box 4.3), the effect of labour force status and working conditions on mental health status is first estimated by fitting the following reduced-form model:

$$H_{it} = X'_{it}\beta + L'_{it}\gamma + \delta_i + u_{it} \quad [1]$$

where  $i$  and  $t$  are individual and time suffices,  $\delta_i$  are individual time fixed effects and  $u_{it}$  are idiosyncratic shocks.  $X_{it}$  contains a range of socio-demographic variables, but also includes lifestyle variables, as well as indicators for life events (accidents, deaths, breakdowns in partnership, etc.) in order to capture some possible correlation between  $U_{it}$  and the included regressors.  $L_{it}$  contains measures of labour market behaviour (labour market history, occupation, working conditions, etc.).

### Effect of changes in labour market activity on mental health distress

For the estimation on the effect of labour force status on mental health, the labour market behavior variable corresponds to 4 dummies for non-employment for Figure 4.9 and Panel A, Table 4.A2.1: a dummy for unemployment, for housework, for inactivity because of sickness or disability and a dummy for other type of inactivity. A sensitivity analysis is performed with unemployment and inactivity dummies by duration. In Figure 4.10 and Panel B, Table 4.A2.1, the labour market variable is a dummy for employment. Additional sensitivity estimates include 3 dummies for duration in employment. The following variables correspond to  $H$  and  $X$ , the controls, for each country:

#### Australia

The dependent variable is the SF-36 mental health score. All regressions include the following control variables: age, age squared, a set of dummies for marital status, and region of residence, the log of total household income, number of children (aged 14 or less) in the household, social support score and the physical functioning score (SF-36 questionnaire). Life events in past year include: birth/adoption of new child, death of close friend, death of close relative/family member, death of spouse or child, major improvement in finances, major worsening in finances, fired or made redundant, serious

injury/illness to family member, serious personal injury/illness, close family member detained in jail, detained in jail, changed job, got married, changed residence, victim of property crime, pregnancy, promoted at work, got back together with spouse, retired from the workforce, separated from spouse, victim of physical violence.

#### *Canada*

The dependent variable is the amount of psychological distress scale. All regressions include the following control variables: age, age squared, a set of dummies for marital status, and region of residence, the log of total household income, number of children (aged 12 or less) in the household and an indicator of health behaviour. Life events correspond to injuries in the past year.

#### *Korea*

The dependent variable is the life satisfaction score. All regressions include the following control variables: Age, age squared, a set of dummies for marital status, and region of residence, the log of total household income, and the number of children (aged 14 or less) in the household. No life events variable is included.

#### *Switzerland*

The dependent variable is the frequency of depression, blues or anxiety. All regressions include the following control variables: age, age squared, a set of dummies for marital status, and region of residence, the log of total household income, number of children (aged 17 or less) in the household, and a dummy for low and high emotional support. Life events correspond to illness or accident, illness or accident (closely related person), death of closely related person, termination of close relationship, conflicts with or among related persons and problems with children.

#### *United Kingdom*

The dependent variable is the GHQ-12 mental health score. All regressions include the following control variables: age, age squared, a set of dummies for marital status, and region of residence, the log of total household income, number of children (aged 14 or less) in the household, and a dummy for smoking habits. Life events correspond to an accident in past year that required hospitalization.

### ***Effect of changes in the type of employment on mental health distress***

For the estimation corresponding to Table 4.4, Panel A on the effect of the type of employment on mental health, the labour market behavior variable corresponds to different dummies for the type of non-standard employment: non-standard type of contract (temporary), working other hours than full time (either overtime or shorter hours), working irregular hours (shifts), low job security, low job satisfaction and other indicators of work characteristics available on certain countries only. In Panel B, the labour market variables correspond to dummies for the characteristics of standard employment (reverse of Panel A). Variables for H are the same as in Figure 4.9 (see above) and the controls as well, except for the fact that they also include additional controls for industry and occupation. The sample is limited to the employed population only.

### **Effect of changes from non-employment to different type of employment on mental health distress**

For the estimation corresponding to Table 4.5, the variables are as in Table 4.4. The difference is that the sample is not limited to employed individuals only and includes, in addition, the corresponding labour market dummies.

#### **Fixed-effects methods and attrition**

In panel surveys, some of the individuals leave the sample after the first wave, creating problems of attrition. The fixed-effect approach may take these possibly endogenous selection into account. This would be the case, if  $d_{it}$ , the indicator variable equal to one if the  $i$ th observation is observed and equal to zero otherwise, is governed by a latent index:

$$d_{it}^* = v_i \quad [4]$$

In this case, selection is only due to time-invariant characteristics of the individual which may be observed or unobserved, and the mean of the mental health if  $d_{it} = 1$  is

$$E[H_{it} | d_{it}^* > 0] = X'_{it}\beta + L'_{it}\gamma + E[\delta_i | d_{it}^* > 0] \quad [5]$$

since  $E[\delta_i | d_{it}^* > 0]$  does not vary over time, first difference regressions of mental health only depend on differences in  $X_{it}$ ,  $L_{it}$ , and  $u_{it}$ .

#### **Dynamic panel data methods**

In addition, there might be a state dependence whereby past mental health affects current mental health. The dependent variable is collapsed into a dichotomous indicator of poor mental health. A dynamic panel probit is specified, where the probability of observing poor mental health for an individual  $i$  at time  $t$  conditional on the regressors and the individual effect is:

$$\Pr(H_{it} = 1 | H_{it-1}, X_{it}, \delta_i) = \Phi(H'_{it-1}\phi + X'_{it}\beta + L'_{it}\gamma + \delta_i) \quad [6]$$

This equation corresponds to the estimates presented in Table 4.6 for the effect of changes from sick leave to different types of employment on mental health, taking into account previous mental health. The variables corresponding to this estimation are the same as for Table 4.5, except that the dependent variable is a 0/1 variable corresponding to the mental health index and that previous mental health is also included as an additional control.

In estimating the dynamic model, the problem of initial conditions needs to be taken into account: an individual's health at the start of the panel is not randomly distributed and will be influenced by unobservable individual heterogeneity. Following Wooldridge (2002), the distribution of the individual effects is parameterised as a linear function of the initial health at the first wave of the panel and of the time means of the regressors, assuming that it has a conditional normal distribution:

$$\delta_i = c_0 + H'_{i0}\rho + \bar{X}'_i\nu + \xi_i \quad [7]$$

Therefore the probability of observing poor mental health conditions on the regressors and the individual effect becomes:


$$\Pr(H_{it} = 1 | H_{it-1}, X_{it}, \delta_i) = \Phi(H'_{it-1}\phi + X'_{it}\beta + L'_{it}\gamma + c_0 + H'_{i0}\rho + \bar{X}'_i\nu + \xi_i) \quad [8]$$

The dynamic random effects estimation relies on the assumption of strict exogeneity of the explanatory variables conditional on  $\delta_i$ . There might be a problem of reverse causality with current mental health affecting future work status. Using a pooled dynamic probit model, consistent (yet inefficient) estimates are obtained because it only relies on contemporaneous exogeneity.



Table 4.A2.1. **Effect of changes in labour market activity on mental health distress<sup>a</sup>**  
Fixed-effects regressions

Panel A. Transitions to non-employment									
	Australia		Canada		Korea	Switzerland		United Kingdom	
<b>Men</b>									
Unemployed	1.084	0.773	0.416 ***	0.413 ***	0.333 ***	0.386 ***	0.449 ***	1.275 ***	1.276 ***
Housework	-0.517	-0.623	-0.035	-0.026	0.203 ***	0.246	0.040	0.732 ***	0.728 ***
Sick or disabled	3.811 ***	3.150 ***	2.138 ***	2.112 ***	0.202 ***	1.117 ***	1.141 ***	2.112 ***	2.110 ***
Other inactive	-0.246	-0.253	0.186 *	0.186 *	0.239 ***	0.463 **	0.393 **	1.157 ***	1.156 ***
Unemployment duration from 0 to 12 months	0.913	0.577			0.334 ***			1.422 ***	1.422 ***
Unemployment duration from 1 to 2 years	-0.657	-1.091			0.216 ***			1.090 ***	1.090 ***
Unemployment duration more than 2 years	3.198 **	3.042 **			0.375 ***			0.878 ***	0.878 ***
Inactivity duration from 0 to 12 months	2.145 **	1.767			0.283 ***			2.047 ***	2.044 ***
Inactivity duration from 1 to 2 years	-1.309	-1.454			0.203 ***			1.665 ***	1.662 ***
Inactivity duration more than 2 years	1.054	0.873			0.147 ***			1.337 ***	1.332 ***
Control for life events	No	Yes	No	Yes	No	No	Yes	No	Yes
Number of observations	12 985	12 985	20 577	20 575	20 672	8 690	8 098	36 650	36 634
<b>Women</b>									
Unemployed	2.414 ***	2.292 ***	0.363 ***	0.363 ***	0.219 ***	0.396 ***	0.468 ***	1.159 ***	1.161 ***
Housework	0.208	0.283	0.237 ***	0.246 ***	-0.022	-0.057	-0.057	0.531 ***	0.532 ***
Sick or disabled	5.398 ***	4.883 ***	1.718 ***	1.698 ***	0.023	0.599 **	0.559 **	1.647 ***	1.649 ***
Other inactive	0.601	0.557	0.062	0.060	0.066 *	-0.095	-0.081	0.384 *	0.385 *
Unemployment duration from 0 to 12 months	2.863 ***	2.627 **			0.239 ***			1.365 ***	1.366 ***
Unemployment duration from 1 to 2 years	1.819	1.878			0.088			1.129 ***	1.130 ***
Unemployment duration more than 2 years	2.428 *	2.272 *			0.173			0.575 ***	0.577 ***
Inactivity duration from 0 to 12 months	0.697	0.566			0.019			1.063 ***	1.063 ***
Inactivity duration from 1 to 2 years	-0.005	0.152			-0.031			0.591 ***	0.592 ***
Inactivity duration more than 2 years	0.859	0.889			-0.038 **			0.466 ***	0.468 ***
Control for life events	No	Yes	No	Yes	No	No	Yes	No	Yes
Number of observations	14 500	14 500	23 372	23 372	22 893	11 021	10 467	40 639	40 617
Panel B. Transition to employment									
<b>Men</b>									
Employment	-1.074 **	-0.786	-0.654 ***	-0.648 ***	-0.276 ***	-0.440 ***	-0.453 ***	-1.405 ***	-1.404 ***
Job tenure from 0 to 12 months	-1.438 **	-1.003 *			-0.250 ***			-1.454 ***	-1.453 ***
Job tenure from 1 to 2 years	-1.050	-0.825			-0.267 ***			-1.467 ***	-1.466 ***
Job tenure more than 2 years	-0.701	-0.572			-0.290 ***			-1.341 ***	-1.340 ***
Control for life events	No	Yes	No	Yes	No	No	Yes	No	Yes
Number of observations	12 985	12 985	20 577	20 575	20 672	8 690	8 098	36 650	36 634
<b>Women</b>									
Employment	-0.934 **	-0.942 **	-0.441 ***	-0.441 ***	-0.003	-0.026	-0.044	-0.788 ***	-0.790 ***
Job tenure from 0 to 12 months	-1.357 ***	-1.243 ***			0.011			-0.932 ***	-0.933 ***
Job tenure from 1 to 2 years	-0.848 *	-0.928 *			-0.027			-0.770 ***	-0.771 ***
Job tenure more than 2 years	-0.563	-0.702			-0.007			-0.641 ***	-0.643 ***
Control for life events	No	Yes	No	Yes	No	No	Yes	No	Yes
Number of observations	14 500	14 500	23 372	23 372	22 893	11 021	10 467	40 639	40 617

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\*, \*\*, \*\*\*: statistically significant at the 10%, 5%, 1% level, respectively.

a) Sample includes persons aged 15-64 who are never enrolled in school or retired during the survey.

Source: OECD estimates based on the HILDA for Australia (calculations were provided by Paul Swaim, OECD); the NPHS for Canada; the KLIPS for Korea; the SHP for Switzerland; and the BHPS for the United Kingdom.

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