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The effect of job quality on health of older workers in Europe[1]

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Abstract

This paper estimates the causal effect of job quality on the physical and mental health of older European workers. We combine longitudinal data from the Survey of Health, Ageing and Retirement in Europe (SHARE) with occupation- and country-level job-quality measures from the European Working Conditions Survey (EWCS) for 14 European countries. To address endogenous occupational sorting, we focus on workers who remain within the same 3-digit ISCO occupation across waves, and estimate individual fixed-effects models that exploit exogenous within-occupation changes in working conditions over time. We find that deteriorations in job quality significantly worsen health outcomes. In particular, higher work intensity, poorer working time quality, and weaker job prospects reduce mental health and selected physical health outcomes. Pronounced gender heterogeneity emerges: women's mental health is more sensitive to changes in work intensity and working time quality, while men's health is more consistently affected by job discretion, including cardiovascular risk. Institutional context further moderates these effects, with smaller health penalties in countries with stronger healthcare capacity, stricter employment protection, and more comprehensive occupational health and safety regulation. Overall, the findings highlight the role of labour market conditions as causal determinants of health and the importance of integrated policy responses in ageing societies.

Keywords: *Working conditions, physical and mental health, healthcare systems and institutions*

JEL codes: I1, J01, J28

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1. Introduction

Population ageing and the extension of working life mean that a growing share of Europeans will face job demands at older ages. As statutory pension ages rise, the health consequences of work become more salient for individuals and for public budgets through healthcare use, disability, and early labour-market exit (Carrino et al., 2020; Ardito et al., 2020). Prior evidence indicates that remaining employed can protect health and wellbeing, but it also shows that policy-driven extensions of working life may generate health costs that depend on the type and quality of work, and on baseline health and socioeconomic resources (Coe and Zamarro, 2011; Belloni et al. 2016; Carrino et al., 2020; Bertoni et.al. 2023; Lugova et.al. 2025).

While many studies have examined prolonged labour-force participation and health, fewer have analyzed the role of specific job characteristics and working conditions in shaping physical and mental health of older workers. This question has become even more relevant as job design, task content, and work organisation have evolved over the last decade, including during the COVID-19 period (Fana et al., 2020; Eurofound, 2021). Beyond health risks, job quality also shapes broader well-being at work through work-life compatibility, autonomy, and the quality of social relations in the workplace. These features of job design are plausible policy levers through which work can sustain connection and psychological well-being at older ages, especially when retirement ages rise. Understanding which margins of job quality matter for health, and for whom, is relevant for labour and health policies that aim to extend working lives without widening health inequalities.

This paper investigates the causal impact of working conditions on the physical and mental health of European workers in later midlife, by combining longitudinal worker-level data from the Survey of Health, Ageing and Retirement in Europe (SHARE) with occupation-level measures of job quality from the European Working Conditions Survey (EWCS), covering 14 countries between 2010 and 2022. Following Eurofound's framework (Eurofound, 2017), we construct six job-quality indices that capture the multidimensional nature of work, including aspects such as the physical environment, work intensity, working time quality, social environment, discretion, and career prospects.

Identifying the causal effect of working conditions on health is challenging: Identifying causal effects of working conditions on health is challenging: while credible quasi-natural experiments are rare in this setting, endogenous sorting into jobs and health-related job changes likely generate reverse causality. Additionally, justification bias may arise in surveys if individuals report to be in bad health to justify a job change. Following Belloni et al. (2022), our identification strategy exploits within-

person changes in job quality over time in a fixed-effects framework. Individual fixed effects absorb time-invariant confounders and addresses the endogenous sorting of individuals into occupations. To limit bias from health-driven occupational mobility across jobs categories, we focus on full-time workers aged 50–59 who remain within the same 3-digit ISCO occupation across waves – a weak selection criterium for older workers, so identification comes from exogeneous changes in working conditions within occupations over time. Finally, measuring individual health and working conditions from two separate sources help adressing the risk of justification bias. We report results separately by gender and assess robustness using alternative sample definitions and alternative constructions of the indices. We study both mental and physical health. Mental health is measured using the validated EURO-D depression score, which indicates the number of depressive symptoms and ranges from 0 to 12, and the EURO-D caseness (Castro-Costa et al., 2007), a binary variable capturing the clinical risk of depression, defined as the likelihood of reporting more than three depressive symptoms. Physical outcomes include self-rated health, joint pain, cardiovascular conditions, and the frequency of doctor visits. Beyond average effects and gender heterogeneity, we investigate heterogeneous effects by education and test whether institutional context moderates the relationship between job quality and health, focusing on healthcare system capacity, occupational health and safety regulations and employment protection legislation.

This study contributes to the literature in four key ways. First, it moves beyond single proxies by adopting a multidimensional job-quality framework that captures both job demands and job resources. Second, it employs a robust identification strategy that mitigates endogeneity concerns by controlling for individual fixed effects and exploiting within-occupation variation in working conditions. Third, it explicitly focuses on older workers, a group underrepresented in previous causal studies, despite being central to policy debates as retirement ages rise and health constraints become more salient. Fourth, it exploits cross-country variation to assess whether healthcare and labour-market institutions shape how working conditions translate into health outcomes, thereby strengthening the policy relevance of the findings.

Working conditions are a policy-relevant social determinant of health. In the EU, psychosocial risks affect tens of millions of workers and have been linked to sizeable productivity losses and healthcare costs exceeding €20 billion annually (EU-OSHA, 2002). By providing harmonised cross-country evidence on job quality and health in later working life, and on the role of institutions, our results speak directly to the design of labour-market and health policies in ageing societies.

The remainder of the paper is structured as follows. The remainder of the paper is organized as follows. Section 2 reviews the relevant literature and outlines the main contribution of the study. Section 3 describes the data sources and the construction of the job-quality indices. Section 4 presents descriptive evidence on working conditions over time and across occupations. Section 5 outlines the empirical strategy and discusses the identifying assumptions. Section 6 presents the main results, while Section 7 explores heterogeneity and mechanisms. Section 8 reports robustness checks, and Section 9 concludes.

2. Background and literature review

A large interdisciplinary literature links job quality to both mental and physical health, but economists have only more recently developed designs aimed at separating causal effects from selection. Early works, such as Case and Deaton (2005), documented a strong association between deteriorating job conditions and worsening health among less-educated workers, helping to shift attention toward work-related determinants of population health.

A comprehensive review by Barnay (2016) summarizes consistent associations between adverse working conditions (e.g., irregular hours, temporary contracts, physically demanding or psychosocially stressful tasks) and poorer mental health, but also highlights why causal interpretation is difficult in observational settings, due to issues such as reverse causality and unobserved heterogeneity. Health status can influence job selection, while deteriorating health may force individuals out of certain occupations, complicating attempts to isolate the direction of causality (Ravesteijn et al., 2018). Moreover, confounding factors like education, personality traits, and health preferences often correlate with both job type and health, leading to potential omitted variable bias.

To address these challenges, several studies have employed strategies that control for unobserved heterogeneity or exploit exogenous variation in job characteristics. Evidence from panel data suggests that changes in job demands and resources are predictive of subsequent health and well-being, with differences by gender and job dimension (e.g., Robone et al., 2011; Cottini and Lucifora, 2013; Cottini and Ghinetti, 2017, 2018). Other contributions focus on physical exposures and job control, often finding that cumulative demands and low discretion are particularly harmful as workers age (e.g., Fletcher et al., 2011; Ravesteijn et al., 2018). However, many estimates still rely on variation that may remain endogenous, because job changes, task reallocation, or occupational transitions can respond to unobserved health changes, or on the strong assumption that job characteristics are constant within occupations over time.

Belloni et al. (2022) address some of these concerns by combining individual panel data with occupation-level indicators of job quality from the European Working Conditions Survey (EWCS)

and focusing on individuals who remain in the same occupation. This strategy limits bias from endogenous occupational mobility and, with individual fixed effects, removes time-invariant confounders. Crudu and Pasini (2025) exploit lifetime working histories from SHARE(LIFE) data to estimate the effect of cumulative physical exposure – approximated by Metabolic Equivalent of Tasks (MET) - on several physical and mental health measures later in life.

Despite progress, several gaps remain salient for health policy. First, little is known about how working conditions, and their health implications, shifted around the COVID-19 period, when work organization changed rapidly (remote work, intensified workloads, and heightened insecurity), with documented concerns for mental health (e.g., Bertoni et al., 2025). Second, evidence on older workers remains limited, even though this group is central to policy debates on extending working lives and preventing health-related exits from employment (d'Errico et al., 2022). Existing studies are informative but partial: Suari-Andreu et al. (2022) focus narrowly on job insecurity, leaving other job-quality dimensions aside, while Henseke (2018), using SHARE, links better job quality (intrinsic characteristics, security, pay) to lower musculoskeletal disorders and better mental and overall health among workers aged 50+, but relies on self-reported measures of both job quality and health, raising concerns about reporting bias. Moreover, the literature is largely country-specific, limiting what can be inferred about how labour-market institutions and health-system capacity shape the health effects of job quality across settings. This paper aims to fill these gaps by providing new, robust evidence on the health effects of recent changes in working conditions among older workers in a cross-country setting, allowing us to investigate heterogeneity across health-care systems and labour-market policies.

3. Data and descriptive statistics

Our study combines longitudinal individual-level data on health and sociodemographic characteristics (SHARE) with aggregated external information on job characteristics (EWCS).

3.1 SHARE

The Survey of Health, Ageing and Retirement in Europe (SHARE) is a cross-national panel survey representative of Europeans aged 50+, with harmonised information on health, employment, and socio-economic conditions. We use Waves 4 (2010), 6 (2015), and 9 (2021–22), which include the COVID-19 period and align closely with the EWCS fieldwork years used to construct our job-quality indices (section 3.2).

We focus on outcomes that are widely used in health policy research and comparable across countries. Mental health is measured using the EURO-D depression scale (0–12), a validated instrument based

on respondents' reporting of depressed mood, pessimism, suicidality, guilt, sleep disturbance, lack of interest, irritability, loss of appetite, fatigue, difficulty concentrating, lack of enjoyment, and tearfulness (Prince et al., 1999). A threshold score of four or more has been suggested as indicative of clinically relevant depression (Castro-Costa et al., 2007). Physical health measures include an indicator for joint pain, the number of doctor visits in the past 12 months, and a harmonised cardiovascular disease (CVD) index based on heart attack or stroke diagnoses. Details on how these variables were created are available in Appendix A. Self-rated health (SRH) is measured on a five-point scale (excellent to poor), coded so that higher values indicate worse health, and it has strong predictive validity for mortality, health-care utilization, and morbidity (Ahmad et al., 2014).
SHARE records occupations using the International Standard Classification of Occupations codes (ISCO-08, up to 4-digit), which we use to link respondents to occupation-level job-quality measures from the EWCS.

3.2 European Working Conditions Survey (EWCS)

To capture time-varying working conditions by occupation and country, we use the EWCS Waves 5 (2010), 6 (2015), and 7 (2021; phone-based fieldwork during the pandemic). EWCS provides multidimensional information on working arrangements, job organisation, and work–life balance across Europe. Occupational information is consistently available at the ISCO 4-digit level across waves. However, we constructed occupation-level indices at the ISCO 3-digit level rather than at the 4-digit level due to constraints on cell size.

Following Eurofound's multidimensional job-quality framework, we construct six composite indices capturing key demands and resources in the work environment: (1) physical environment, (2) work intensity, (3) working time quality, (4) social environment, (5) discretion, and (6) career prospects. These indices summarise, respectively, exposure to physical risks and demands; workload and pace, scheduling arrangements and work–life compatibility, workplace support and psychosocial risks; autonomy and participation in decision-making; and job security and advancement opportunities.

For each 3-digit ISCO-country-wave combination, we compute the average scores for each job quality index and link them to the corresponding occupational categories in the SHARE dataset. All indices are standardized on a scale from 0 to 100, with higher scores indicating better job quality (see summary statistics in Table 1). The work intensity index is recoded so that higher values correspond to lower intensity and therefore higher job quality. Appendix B1 provides additional information on

how we constructed the longitudinal dataset on working conditions, as well as the specific components of each index.

3.3 Sample selection and summary statistics

Our analysis sample matches SHARE Waves 4/6/9 to EWCS Waves 5/6/7 in the years 2010, 2015, and 2021–22. We include 14 countries observed in all waves of both surveys: Austria, Germany, Sweden, Spain, Italy, France, Denmark, Switzerland, Belgium, Czech Republic, Poland, Portugal, Slovenia, and Estonia.

We further restrict the sample to respondents (i) aged 50–59, (ii) employed full time (≥40 hours/week), (iii) with non-missing occupational codes, and (iv) remaining in the same ISCO 3-digit occupation for at least two consecutive SHARE waves; we exclude the third observation if an occupation change occurs (see Section 5). The age selection is dictated by selectivity issues: above age 59, the minimum old-age retirement age in Europe in the analysed period, workers may be in better health or work in better jobs. However, our findings are robust to expanding the sample to include workers aged up to statutory pension age in each country. Full-time workers are of particular interest because their exposure to work environments is substantial, making job characteristics more likely to affect health outcomes.

Our final sample includes 4,232 individuals (2,272 men, 1,960 women). Table 1 summarises health outcomes, job-quality indices and socio-demographic characteristics by gender. Consistent with prior evidence on mental health at older working ages (Marcus et al., 2012; Bracke et al., 2020; Platt et al., 2021), women show higher average EURO-D scores and higher depression caseness, while differences in physical health measures are more modest. With respect to job quality, women score higher than men on most dimensions, which may partly reflect occupational sorting.

Table 1: Summary descriptive statistics

	Females		*Males*	
	mean	*sd*	*mean*	*sd*
Health outcomes				
EURO-D caseness	0.23	0.42	0.14	0.34
EURO-D score	2.25	2.00	1.65	1.67
Pain	0.39	0.49	0.34	0.47
Doctor visits	1.80	0.95	1.54	1.02
Cardiovascular disease (PCA)	1.48	8.44	2.10	9.72
Self-rated health: Excellent	0.12	0.32	0.12	0.32
Self-rated health: Very good	0.25	0.44	0.28	0.45
Self-rated health: Good	0.41	0.49	0.42	0.49
Self-rated health: Fair	0.19	0.39	0.16	0.37
Self-rated health: Poor	0.03	0.16	0.02	0.14
Job quality (0–100)				
Physical environment	80.84	10.05	79.13	10.33
Social environment	81.35	8.24	80.87	9.07
Intensity	59.69	14.72	55.28	13.14
Discretion	69.04	14.08	65.99	16.15
Working time quality	69.06	12.80	69.60	12.31
Job prospects	65.85	14.86	64.31	14.47
Socio-demographics				
Age	55.18	2.63	55.47	2.54
In couple	0.26	0.44	0.15	0.36
Number of children	2.03	1.15	2.11	1.17
Number of grandchildren	1.19	1.71	0.85	1.50
Household income (log)	9.74	1.54	10.10	1.63
N obs	1960		2272	

4. Trends and heterogeneity in working conditions.

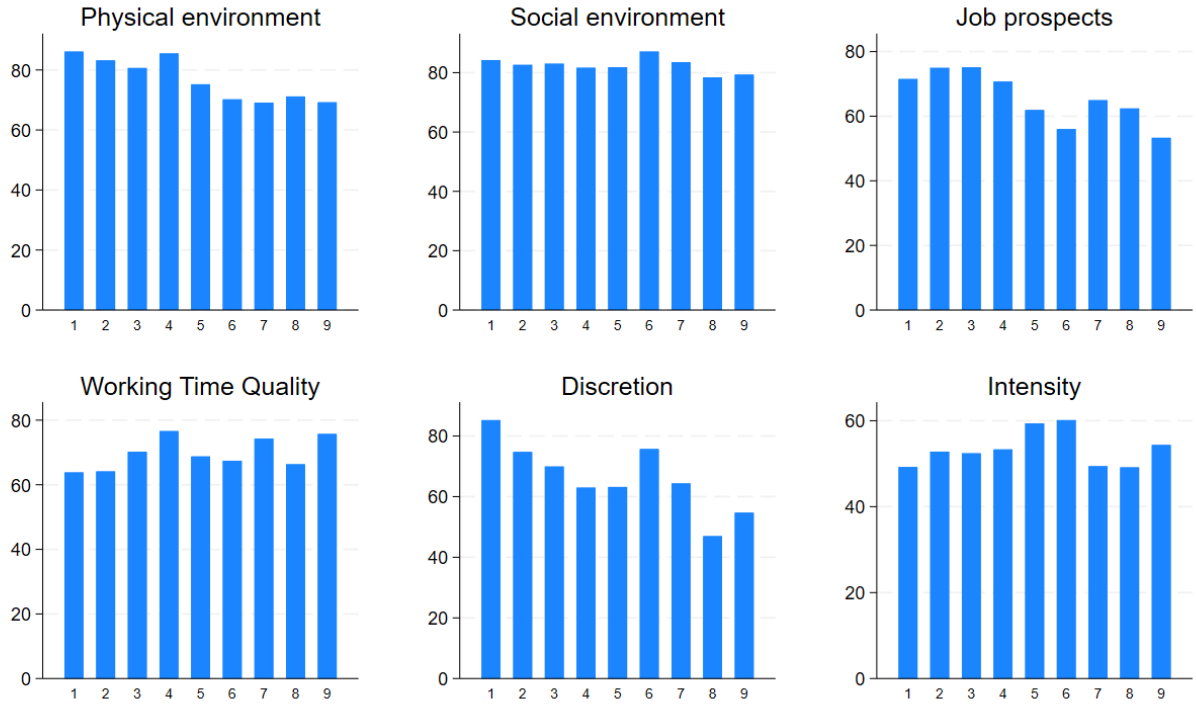
Figure 1 presents the average values of various dimensions of working conditions across occupations, classified at the ISCO 1-digit level. It shows substantial dispersion in job quality across major groups and confirms that different occupations combine demands and resources in systematically different ways.

The sharpest gradient concerns the physical environment. High-skilled and white-collar groups, including managers, professionals, and clerical support workers, score about 8 percent above the overall mean, while plant and machine operators and elementary occupations face markedly worse conditions, consistent with greater exposure to physical risks and physically demanding tasks. Stark contrasts also emerge for job discretion, which refers to the degree of autonomy and decision-making

authority afforded to workers. Managers and professionals report the highest discretion, while plant and machine operators are among the lowest, with differences approaching 30 points on the 0 to 100 scale. By contrast, work intensity and working time quality exhibit weaker occupational stratification. Service and sales workers report comparatively lower work intensity, but they face distinct challenges in the social environment, including above-average exposure to adverse social behaviours such as verbal abuse, unwanted sexual attention, and threats (Eurofound, 2021).

Overall, Figure 1 motivates analysing multiple dimensions of job quality rather than relying on a single proxy.

Fig. 1. Job quality indices scores, by ISCO 1-digit codes (average values across all countries and years).



Note: ISCO 1-digit codes on the horizontal axis: 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. Source: EWCS data (waves 5, 6, and 7).

A key feature of our indexes is that they are consistently defined across waves, allowing us to investigate trends in working conditions over time. We summarise the main patterns here; further details are reported in Appendix B, Figure B1. The physical work environment has deteriorated between 2015 and 2021, with larger declines observed for service and sales workers, as well as for elementary occupations. During COVID-19, exposure to infectious materials became a salient risk beyond healthcare, especially in customer-facing jobs. This is consistent with evidence of widespread exposure to adverse environments and with earlier signs of gradual deterioration in working

conditions and health indicators (d'Errico et al., 2022). Work intensity also worsened between 2015 and 2021 across most occupations[3]. After a modest improvement between 2010 and 2015, which may reflect the post-2008 to 2009 recovery phase, work intensity rises sharply in 2021. Managers and professionals consistently report higher work intensity than other groups, consistent with faster pace and tighter deadlines. Eurofound (2022) reports that in 2021 nearly half of the EU-27 workforce worked at high speed (49 percent) and under tight deadlines (48 percent) either always or often, with particularly acute pressures in essential sectors. Moreover, working time quality also declined in 2021 after improving between 2010 and 2015. The overall index falls by about seven points, and the share of workers reporting work during free time increased from 17 percent in 2015 to 29 percent in 2021 (Eurofound, 2022), with particularly marked increases among managers and professionals. This pattern is consistent with pandemic-era work reorganisation, including telework, which often blurred boundaries between work and non-work time. In parallel, presenteeism declines, as a higher share reported staying home when sick. By contrast, the social environment improved in 2021, largely reflecting fewer reports of abuse and intimidation, possibly due to reduced face-to-face interactions in certain settings. Perceived job security and career prospects also improved, consistent with the role of employment-protection measures adopted during the pandemic (Eurofound, 2023).
Finally, the index of discretion, reflecting workers' participation in organisational decision-making, improved across all occupational categories between 2010 and 2021. In particular, remote work arrangements appear to have enhanced workers' autonomy, especially in terms of deciding how to organise their tasks and manage their work schedules.

A central channel during COVID-19 was the expansion of telework, both at the extensive margin (more workers working from home) and at the intensive margin (more hours worked remotely). Telework can plausibly reduce physical strain while increasing work intensity and blurring boundaries between work and non-work time. Bertoni et al. (2025) provide causal evidence that the largely involuntary transition to remote work worsened mental health, increasing sadness and depression, with stronger effects among women and specific household and regional contexts. Eurofound (2022) documents pronounced heterogeneity across work arrangements during the pandemic. Frontline workers faced the greatest physical and psychosocial demands, on-location service and production workers experienced heightened insecurity and financial strain, and homeworkers, about 35 percent of the EU workforce in 2021, combined long hours and high intensity with greater flexibility and reduced physical exposure.

[3] An increase in intensity corresponds to a decrease in our reverse-coded index

5. Empirical strategy

As discussed in Section 2, identifying the causal impact of job quality on health is challenging, primarily due to reverse causality and omitted variable bias. Health can affect access to, or retention in, particular jobs (reverse causality), for instance, workers with chronic conditions may sort into less physically demanding roles. In addition, unobserved factors such as education, stable preferences for health, and risk attitudes may shape both occupational sorting and health trajectories, confounding cross-sectional comparisons.

To address these concerns, we adopt an individual fixed-effects panel strategy that follows Belloni et al. (2022). We exploit within-individual variation in working conditions over time to control for time-invariant, unobserved individual heterogeneity. This approach accounts for endogenous sorting into occupations that arises from stable characteristics such as innate ability, preferences, and background. Nonetheless, time-varying selection remains a potential threat: job quality may change endogenously if workers switch occupations in response to health shocks or anticipated job stressors. Therefore, we restrict the analysis to a balanced panel of individuals who remain within the same ISCO 3-digit occupational category across consecutive SHARE waves. This restriction allows us to focus on variations in job quality that are external to the individual, such as changes induced by macroeconomic shocks, sectoral restructuring, or the COVID-19 pandemic. These sources of variation are arguably exogenous from the perspective of individual health trajectories.

Formally, we estimate:

$$y_{ijct} = \sum_{k=1}^{K} \beta_k JQI_{jct}^{k} + \gamma X_{ijct} + \delta_i + \tau_t + \varepsilon_{ijct}$$

Where *y* is a physical or mental health outcome for individual *i*, in occupation *j*, country *c*, at time *t;* JQI is a vector of k=1,..,6 time-varying job quality indices (scaled 0-100) measured at the ISCO 3-digit and country level; *X* is a vector of time-varying individual-level controls; δ_i and τ_t denote individual and time fixed effects respectively, while ε_{it} is the idiosyncratic error term. Standard errors are clustered at the ISCO-3-digit level to account for the fact that job quality indices vary at the occupational rather than the individual level, which introduces potential within-cluster correlation of residuals.

The control vector X_{ijct} includes: age and age squared, weekly working hours, number of children and grandchildren, log household income, and a binary indicator for living as a couple. In robustness

checks, we further control for industry (sector) fixed effects, as well as country-specific trends to account for local labor market dynamics and unobserved macro-level shocks.

The coefficients β_k are our parameters of interest and represent the causal effect of job quality dimensions on health outcomes, conditional on observed and unobserved time-invariant individual characteristics. Our causal identification rests on two main assumptions. First, conditional on individual and time fixed effects, and observed covariates, changes in job quality indices are assumed to be uncorrelated with unobserved shocks to health outcomes.
Second, by restricting the sample to individuals who remain within the same ISCO-3-digit occupation, we assume that intra-occupational variation in job quality is largely driven by exogenous macro-level or institutional factors (e.g., new labour regulations, organizational restructuring, pandemic-related disruptions) rather than individual health changes.
While these assumptions cannot be tested directly, we argue that they are plausible in our context, and that our sample restriction to occupational stayers, together with fixed effects and controls, is able to reduce the most salient channels of bias. Job quality can change within an occupation due to external forces that are unlikely to be influenced by the health status of any one worker. Furthermore, by including time fixed effects and country-specific trends, we account for broad changes in institutional and economic conditions that might otherwise confound our estimates.

One potential threat to identification is that the estimation sample is non-random because it excludes individuals who change ISCO 3-digit occupational categories. Importantly, we do not exclude all job switchers. We retain individuals who change employer or role, and even type of job, provided they remain within the same ISCO 3-digit group. This approach preserves within-occupation variation in job quality while limiting bias from endogenous occupational mobility across categories. This restriction strengthens identification but may reduce external validity if occupational stayers differ systematically from movers. We assess this in supplementary analyses by comparing baseline characteristics of stayers and occupational movers (see Table C1 in Appendix).

6. Main results

Tables 2 and 3 present the estimated effects of changes in working conditions on mental and physical health outcomes respectively, separately for female and male older workers. All models include

individual and year fixed effects, together with standard socio-demographic time-varying controls. Standard errors are clustered at the ISCO 3-digit level.

The estimates reveal significant gender differences in the relationship between working conditions and health outcomes. Consistent with previous findings in the economic literature (e.g., Robone et al., 2011; Fletcher et al., 2011; Belloni, et al., 2022), women appear to be more sensitive to adverse working conditions, particularly in terms of mental health.

Table 2 shows that worsening working-time quality leads to a higher likelihood of EURO-D caseness among women, while the corresponding estimate for men is small and not statistically significant. The coefficient (−0.003), significant at the 5% level, implies that a 10-point increase in the working-time quality index reduces the risk of depression by three percentage points—about 13% of the sample mean. Results are confirmed when looking at the EURO-D score: a 10-point increase in the index reduces EURO-D by 0.16 points—about 7% of the sample mean. Work intensity exhibits a very similar pattern to working-time quality across both mental health outcomes: lower intensity is linked to better mental health among women (remember that the intensity index is reverse-coded, lower values correspond to higher intensity) while the effect for men is not statistically significant. The estimated magnitudes are nearly identical to those for working-time quality. These findings are consistent with earlier evidence that job strain may be especially salient for women at older ages (Ravesteijn et al., 2018).

Discretion at work, often associated with autonomy and control, has a protective effect on mental health (EURO-D score) for both genders, with somewhat stronger marginal effects for men, but similar effects if compared to sample means (5-8 percent, considering a 10-point change in the index). This pattern is consistent with earlier results by Cottini and Lucifora (2013) and Belloni et al. (2022), which emphasize the importance of autonomy in mitigating job-related stress, especially for men. Job prospects also matter for women's symptom severity, with better prospects associated with lower EURO-D scores, even though the corresponding caseness estimate is not statistically significant.

As expected, the physical environment does not appear to significantly affect mental health. Similarly—perhaps surprisingly—the social environment index does not appear to affect mental health in any specification. This likely reflects the index's limited variation: its standard deviation is lower than that of the other job-quality indices (Table 1), and Figure B1 indicates virtually no variation across ISCO groups between 2010 and 2015.

Table 2: Effect of changes in working conditions on mental health

	(1)	(2)	(3)	(4)
Dependent variables:	**EURO-D caseness**		**EURO-D score**	
	Females	***Males***	***Females***	***Males***
Physical environment	0.001	-0.003	0.011	0.001
	(0.003)	(0.002)	(0.014)	(0.010)
Social environment	-0.001	-0.001	0.011	0.008
	(0.003)	(0.002)	(0.011)	(0.012)
Intensity	-0.003*	-0.001	-0.012*	-0.002
	(0.002)	(0.001)	(0.006)	(0.006)
Discretion	-0.001	0.000	-0.012*	-0.014*
	(0.002)	(0.002)	(0.007)	(0.007)
Working Time Quality	-0.003**	0.002	-0.016**	-0.000
	(0.001)	(0.002)	(0.006)	(0.007)
Job prospects	-0.003	0.002	-0.018**	0.004
	(0.002)	(0.002)	(0.008)	(0.007)
Observations	1,789	1,909	1,815	1,978

Notes: All regressions include individual and year fixed effects and control for age, number of children, number of grandchildren, log household income, and cohabitation status. Robust standard errors (adjusted for clustering at the ISCO 3-digit level) in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Turning to physical health outcomes (Table 3), gender differences remain pronounced and the relevant job-quality dimensions vary by outcome. For women, improvements in working time quality lead to better self-rated health and a lower cardiovascular disease index, consistent with channels related to more regular schedules, improved recovery time, and reduced chronic strain. Pain outcomes also appear sensitive to work intensity, particularly among women. This relationship may reflect reduced recovery time, cumulative tissue loading, and stress-related physiological responses that increase muscle tension (Coenen et al., 2013). Similarly, improvements in the workplace social environment are associated with lower pain incidence, with especially strong effects for musculoskeletal pain. A hostile or unsupportive workplace can act as a chronic stressor, affecting pain through neuroendocrine and immune pathways (allostatic load) and promoting inflammation-related sensitization (Rabey and Moloney, 2022). In addition, work-related stress may increase muscle tension, exacerbating biomechanical strain and musculoskeletal pain, as documented in systematic reviews and meta-analyses (Buruck et al., 2019; Oakman et al., 2025).

In addition, improvements in job prospects result in fewer doctor visits among women, consistent with reduced stress and insecurity documented in studies of older workers (Henseke, 2018; Suari-Andreu et al., 2022). Along the same lines, improvements in the physical work environment result in fewer doctor visits for women, indicating that lower physical demands and ergonomic risks remain

salient even within this older, full-time working sample. This provides further evidence that extended working lives can be particularly costly for health in physically demanding jobs (Ardito et al., 2020; Carrino et al., 2020).

For men, the most consistent effects involve discretion. Improvements in discretion lead to better self-rated health and lower cardiovascular risk, which is consistent with stress-related mechanisms emphasised by the job demand-control model (Karasek, 1979) and with the idea that greater autonomy can buffer the physiological consequences of work pressure.

Overall, the estimates underscore that occupational health risks at older ages are gendered and multidimensional. From a policy perspective, interventions that improve schedule quality and reduce excessive intensity may be especially relevant for women's health, while measures that increase autonomy and control may be particularly beneficial for men.

Table 3: Effect of changes in working conditions on physical health

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variables:	**Pain**		**Doctor visits**		**Self-rated health**		**Cardiovascular disease (PCA)**	
	Females	***Males***	***Females***	***Males***	***Females***	***Males***	***Females***	***Males***
Physical environment	0.002	0.001	-0.012**	-0.007	0.014	-0.013	-0.001	0.003
	(0.003)	(0.003)	(0.005)	(0.005)	(0.017)	(0.018)	(0.004)	(0.008)
Social environment	-0.006**	-0.000	-0.000	-0.004	0.011	-0.005	0.002	0.004
	(0.003)	(0.003)	(0.005)	(0.004)	(0.016)	(0.018)	(0.006)	(0.006)
Intensity	-0.004*	0.002	0.002	-0.002	0.014	0.005	0.000	-0.003
	(0.002)	(0.002)	(0.003)	(0.004)	(0.010)	(0.009)	(0.003)	(0.005)
Discretion	0.002	-0.001	-0.003	-0.006	-0.008	-0.022*	-0.002	-0.008*
	(0.002)	(0.002)	(0.003)	(0.004)	(0.009)	(0.013)	(0.004)	(0.005)
Working Time Quality	-0.000	-0.002	0.002	0.000	-0.025**	0.006	-0.006*	0.005
	(0.002)	(0.002)	(0.004)	(0.005)	(0.011)	(0.011)	(0.003)	(0.005)
Job prospects	0.001	0.001	-0.008**	0.001	-0.004	-0.003	-0.002	0.001
	(0.002)	(0.002)	(0.003)	(0.004)	(0.016)	(0.013)	(0.004)	(0.007)
Observations	1,810	1,976	1,815	1,978	1,815	1,978	1,809	1,975

Notes: All regressions include individual and year fixed effects and control for age, number of children, number of grandchildren, log household income, and cohabitation status. Given that self-rated health is an ordinal categorical outcome, the corresponding specifications are estimated using an ordered logit model with fixed effects. Robust standard errors (adjusted for clustering at the ISCO 3-digit level) in parentheses: *** $p<0.01$, ** $p<0.05$, * $p<0.1$

7. Heterogeneity

7.1. Heterogeneity by education

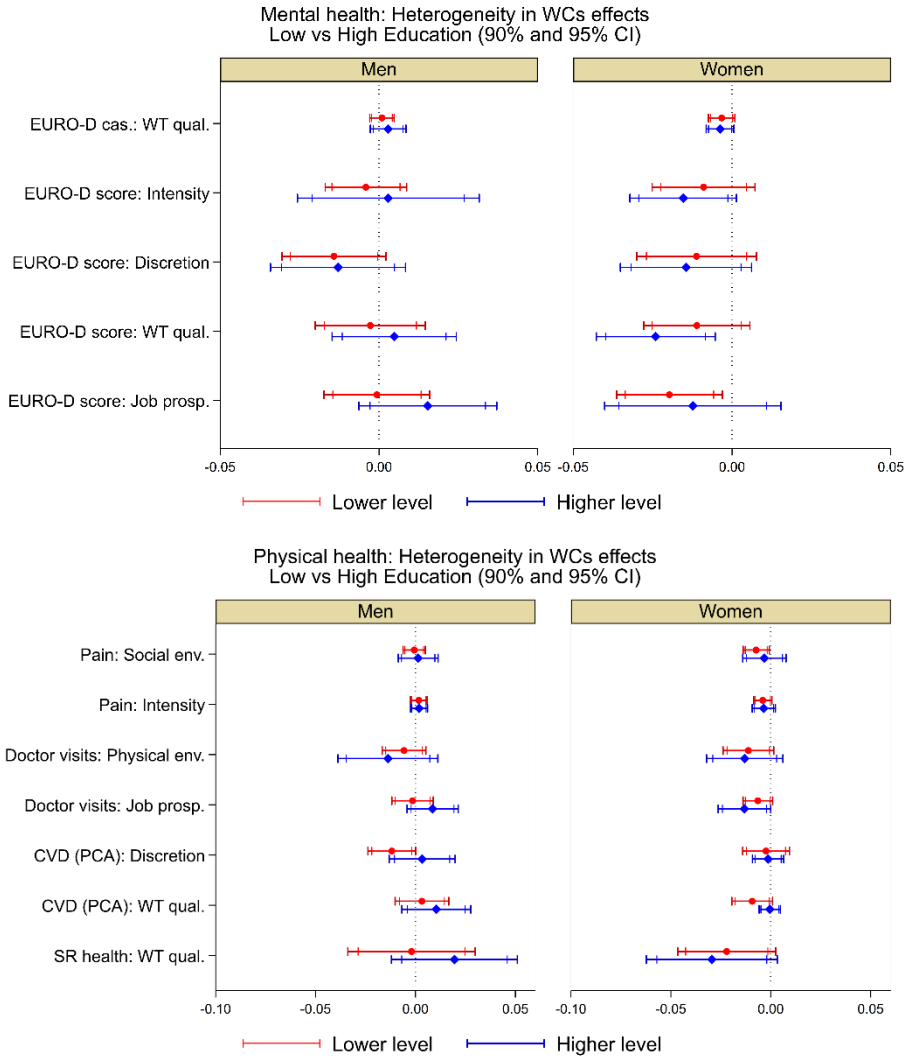
In Section 6 we documented that changes in job quality are associated with mental and physical health among older workers, with differences by gender. We now assess whether these relatinships vary by

education, treated as predetermined at ages 50 to 59. Education is expected to moderate health responses because it shapes both exposure to job risks and the resources available to cope with them. First, it affects sorting into jobs with different material burdens, including physical risks, adverse ergonomics, and physical intensity (Feinstein et al., 2006). Second, it is linked to psychosocial resources at work, including discretion and autonomy, which are central in the job strain literature (Karasek, 1979; Feinstein et al., 2006). These mechanisms imply a clear prediction for physical health: improvements in working conditions should translate more strongly into better physical outcomes among the less educated, who are more likely to be exposed to hazardous jobs and may have fewer coping resources (Cutler and Lleras-Muney, 2010; WHO, 2002). For mental health, predictions are less uniform because education may increase job control but also responsibility and pressure, and the causal evidence is mixed (Feinstein et al., 2006; Kondirolli and Sunder, 2022; Dahmann and Schnitzlein, 2019; Avendano et al., 2020).

We test these predictions by interacting each job-quality index with an indicator for high education (tertiary or above). Figure 2 reports the estimated effect of an improvement in job-quality on mental health (EURO-D and EURO-D caseness) and physical outcomes (pain, doctor visits, cardiovascular risk, and self -rated health), separately by gender and education. Coefficients are displayed according to pre-specified inclusion rules; details are provided in Appendix D. The estimates broadly align with the physical-health prediction: overall, improvements in working conditions are more strongly associated with better physical outcomes among the less educated, while the corresponding associations are attenuated for the highly educated. For mental health, heterogeneity is more dimension-specific. Among women, improvements in job prospects are more strongly associated with better mental health for the less educated, consistent with job insecurity being more consequential when outside options are limited (Robone et al., 2011). By contrast, among highly educated women, work intensity and working-time quality are significantly associated with mental health, consistent with evidence that education increases job control but, in high-skilled jobs, is also accompanied by greater pressures and responsibilities that are particularly salient for psychological well-being (Feinstein et al., 2006). Among men, improvements in discretion are more strongly associated with better mental health for the less educated, consistent with low control generating job strain (Karasek, 1979; Feinstein et al., 2006).

Overall, these patterns suggest that improving job quality can contribute to reducing education-related health inequalities, consistent with evidence that working conditions account for a meaningful share of the education gradient in health (Schram et al., 2021).

Figure 2: Impact of working conditions on health – heterogeneity by education level.



Note: Figure 2 shows coefficients and 90% and 95% confidence intervals for the interaction between each working-condition measure and an indicator for high education, reported separately by gender. The outcomes are EURO-D depression score in the first panel, and pain, doctor visits and cardiovascular-risk index in the second panel. All regressions include individual and year fixed effects and control for age, number of children, number of grandchildren, log household income, and cohabitation status. Standard errors are clustered at the ISCO 3-digit level

7.2. Heterogeneity by healthcare system capacity

We next extend the heterogeneity analysis to the institutional context. Differences in healthcare system capacity may affect the extent to which changes in working conditions translate into health outcomes, through access to diagnosis and treatment and through the management of emerging and

chronic conditions. This hypothesis is consistent with cross-country evidence linking job quality, mental health, and institutional context (Cottini and Lucifora, 2013). More generally, barriers to timely care are associated with worse physical and mental health outcomes and greater distress (Moscelli et al., 2016; Reichert and Jacobs, 2018).

We therefore measure healthcare capacity using a composite index of health-system resources, constructed following the approach in Cottini and Lucifora (2013) and using indicators consistent with OECD reporting (OECD, 2025). The index combines: public health expenditure per capita (PPP) hospital beds, physicians, and nurses per 1,000 inhabitants (World Bank, 2025); unmet medical needs due to cost, distance, or waiting times (Eurostat, 2025). Unmet need captures realised access and it also has a distributive dimension, since socioeconomically advantaged groups tend to report fewer unmet needs due to better system navigation and lower cost constraints, so access barriers may amplify existing inequalities (Laudicella et al., 2012; Lee et al., 2015; OECD, 2025).

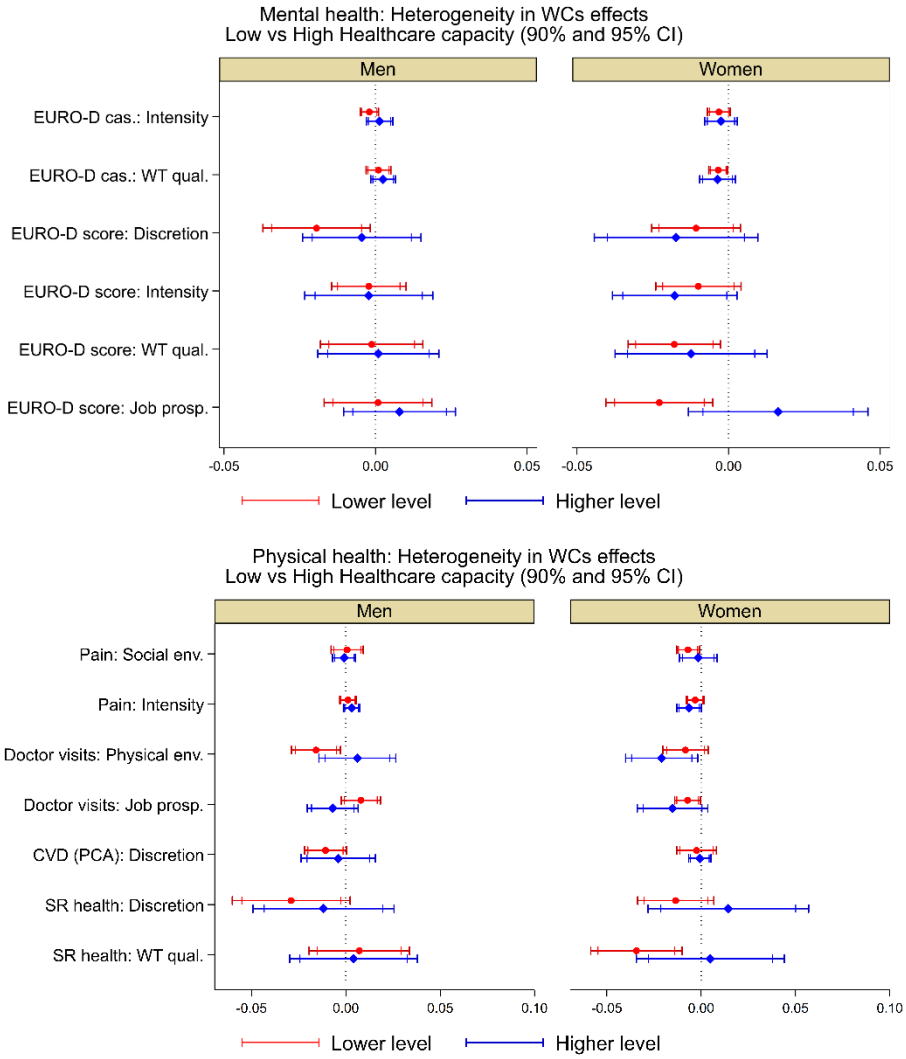
We aggregate these inputs using principal component analysis (PCA). We use 2015 values, the midpoint of the observation window, to obtain a stable pre-pandemic benchmark and avoid COVID-related shifts in spending and staffing that reflect heterogeneous pandemic exposure rather than persistent system capacity (OECD, 2025; Cylus et al., 2025). Countries are classified as low versus high capacity using the 2015 median of the composite index. Details on the PCA approach, country classification and component profiles are reported in Appendix D1. Empirically, we estimate specifications that interact each job-quality index with an indicator for high healthcare capacity. Figure 3 visualizes the overall effect of changes in working conditions on health, respectively for low health-care capacity and high health-care capacity countries for selected cases (the selection criteria for displaying results are described in Appendix D).

The results show that healthcare capacity moderates the relationship between job quality and health. Overall, associations between job quality and health outcomes are stronger in low-capacity countries and weaker or less precisely estimated in high-capacity countries. For women, poorer working-time quality and weaker job prospects lead to worse mental health only in low-capacity settings. For men, heterogeneity in mental health outcomes is most pronounced for job discretion, with significant effects in low-capacity countries. These findings align with Cottini and Lucifora (2013), who show that countries facing a worse trade-off between job quality and mental health tend to have less efficient healthcare systems.

Heterogeneity is also evident for physical health. In low-capacity countries, improvements in the social environment lead to a decrease in the number of episodes of pain among women, while better working-time quality is linked to improved self-rated health. Better job prospects are also associated

with fewer doctor visits among women in these countries. Overall, the evidence supports the view that stronger healthcare systems can mitigate the health consequences of adverse working conditions.

Figure 3: Impact of working conditions on health – heterogeneity by healthcare capacity



Note: Figure 3 shows coefficients and 90% and 95% confidence intervals for the interaction between each working-condition measure and an indicator for high vs low healthcare capacity, reported separately by gender. The outcomes are EURO-D depression score and EURO-D caseness in the first panel, and pain, doctor visits, self-rated health and cardiovascular-risk index in the second panel.. All regressions include individual and year fixed effects and control for age, number of children, number of grandchildren, log household income, and cohabitation status. Standard errors are clustered at the ISCO 3-digit level.

7.3. Heterogeneity by employment protection legislation (EPL)

We now examine whether labour-market institutions moderate the relationship between job quality and health by focusing on employment protection legislation (EPL). Labour-market institutions are part of the welfare-state architecture that shapes health inequalities, as they influence both exposure to workplace risks and the extent to which adverse shocks translate into health losses. This perspective aligns with the health economics literature on socioeconomic gradients in health and the role of institutions in shaping them (Wagstaff and van Doorslaer, 2000; Cutler et al., 2006; Marmot, 2015). Employment protection legislation is a salient margin in this context, because it can change workers' perceived insecurity and bargaining position, and it can also change how firms adjust to shocks. We measure regulation using the OECD EPL indicator "Strictness of regulation of individual dismissals of regular workers" (OECD, 2020) and classify countries as low versus high EPL based on the 2015 cross-country median (see Figure D2.1 for details).

EPL can affect how changes in working conditions translate into health through multiple, partly offsetting mechanisms. Stricter protection can reduce dismissal risk and perceived insecurity, acting as a form of insurance when private markets are incomplete (Cazes and Nesporova, 2003; Lepage-Saucier and Wasmer, 2016). At the same time, when separations are costly, firms may respond through internal adjustments such as intensified monitoring and managerial control, or by relying on managed exits that increase pressure to resign, potentially worsening psychosocial working conditions (Lepage-Saucier and Wasmer, 2016). Stricter EPL may also discourage job creation, which can be particularly relevant for older, low-skilled workers with weaker re-employment prospects (Di Novi et al., 2023). Overall, the direction of heterogeneity is therefore ambiguous *ex ante*.

Our results (Figure D2.2 in Appendix) suggest that, for women, improvements in job prospects, lower work intensity, and better working time quality are more strongly associated with better mental health in low-EPL countries. This is consistent with weaker protection amplifying the perceived costs of job loss and the expected costs of resisting unfavourable conditions (Robone et al., 2011; Moscone et al., 2016). By contrast, conditional on other dimensions of job quality, improvements in discretion are more strongly related to better mental health in high-EPL countries, consistent with the idea that, where external adjustment through dismissals is more constrained, reductions in autonomy may reflect tighter internal control and monitoring (Lepage-Saucier and Wasmer, 2016). Taken together, the results suggest that labour-market protection can change which dimensions of job quality matter most for mental health, rather than uniformly strengthening or weakening all associations.

7.4. Heterogeneity by Occupational Health and Safety Commitments

Finally, we introduce an indicator of regulatory commitment to occupational health and safety (Occupational Health and Safety commitments, OHS), measured as the number of technical and hazard-specific ILO (International Labour Organization) conventions ratified and in force in each country-year. To capture the structural and relatively persistent component of the institutional setting, for each country we compute OHS in 2010, 2015, and 2021 and then take the modal value of these three counts. We subsequently classify countries as "Low" versus "High" OHS based on the cross-country median of this modal measure (see Table D3 and Figure D3.1 for details). In interpretation, OHS proxies the formal (*de jure*) regulatory commitment to the protection of occupational health and safety.

The decision to privilege technical and risk-specific conventions is motivated by identification concerns: ratification reflects formal adherence, whereas substantive effects hinge on implementation and enforcement. Accordingly, aggregate counts of "core" ratifications may embed "decoupling" between stated commitments and effective protection (Peksen & Blanton, 2017), yielding a noisy proxy of the true regulatory stance. By contrast, measures based on broader sets, including both core and hazard-specific ratificationsm exhibit positive associations with safety outcomes, such as lower occupational fatality rates (e.g. Wilson et al., 2007). Consistent with this evidence, our measure aims to more closely align the *de jure* component with the channels of the framework and the dimensions of working conditions under consideration.

Against this background, we examine whether and to what extent regulatory commitment moderates the relationship between job quality and health. The results (see Figure D3.2) point to a systematic moderating role for mental health: in "Low OHS" countries, improvements in working time quality and job prospects (and, more marginally, work intensity) are more strongly associated with better mental health outcomes — particularly among women — whereas in "High OHS" countries these associations are attenuated. This pattern is consistent with the hypothesis that a more structured regulatory framework reduces uncertainty and perceived risk surrounding working conditions, dampening the psychosocial channel through which variations in job quality translate into psychological costs (Cottini & Lucifora, 2013). By contrast, for physical health outcomes the evidence of moderation is less systematic and more outcome-specific, suggesting that the role of regulatory commitment does not extend uniformly across all health dimensions, but operates primarily through psychosocial and perceived-risk channels.

8. Robustness checks

We test the robustness of our results by performing several sensitivity checks. More specifically, we focus on: a) adding controls for sectors, b) including country-specific time trends, c) considering alternative aggregation of job-quality indices in the EWCS (median instead of mean indicators by ISCO 3-digit and by country), d) an extended age range of the working sample, and e) the exclusion of the pandemic wave. Detailed changes and related results are reported in Appendix E. Across specifications, the main patterns in Tables 2–3 remain stable in sign and are broadly similar in magnitude; the implications are not affected.

9. Conclusions and discussion

Psychosocial and organisational risks at work are associated with substantial social costs through sickness absence, presenteeism, and healthcare utilisation (EU-OSHA, 2002). This paper studies how changes in job quality relate to changes in the health of older workers in Europe, using harmonised SHARE panel data linked to occupation level job-quality indices derived from EWCS. By exploiting within-individual variation over time, and restricting the sample to workers who remain within the same ISCO 3-digit occupation, our design reduces bias from time-invariant individual factors and from endogenous occupational mobility across categories. Within this framework, declines in job quality, especially higher work intensity, poorer working time quality, and weaker job prospects, lead to worse mental health and selected physical health outcomes among workers aged 50 and above. The results also show clear gender differences. Women's mental health responds more strongly to changes in work intensity and working time quality, while men's health is more consistently related to discretion, including for cardiovascular risk.

The findings also underscore the role of institutional context. The associations between job quality and health are stronger in countries with lower healthcare system capacity and weaker in countries with higher capacity, as measured by a composite index that captures spending, workforce and infrastructure resources, and unmet medical needs. This matters for how job strain translates into observed health, because timely access to diagnosis and treatment can limit the persistence and severity of health deterioration at older ages. More broadly, the observed heterogeneity is consistent with a welfare-state view in which institutions shape both exposure to work-related risks and the extent to which those risks translate into health inequalities (Wagstaff and van Doorslaer, 2000; Cutler et al., 2006; Marmot, 2015). Our evidence aligns with cross-country work linking job quality, mental

health, and institutional context (Cottini and Lucifora, 2013). We also find that labour-market protection influences which dimensions of job quality matter most for health, consistent with the idea that policy and firm adjustment margins affect the health relevance of insecurity, working time arrangements, and autonomy. Morevoer, OHS regulatory commitment — proxied by hazard-specific ILO ratifications —further moderates the job quality–health gradient, plausibly by shaping uncertainty and perceived risk around working conditions, with salient implications for mental health.

The COVID-19 period provides an important background for interpreting these findings. The pandemic accelerated changes in work organisation, including the expansion of telework for some occupations and intensification of demands and risk exposure for others, with potential implications for both mental health and care use. While the analysis does not aim to identify the causal effects of the pandemic itself, it underscores the job-quality dimensions most closely linked to health in later working life—precisely those that became most salient during and after COVID-19, such as work intensity, working time quality, and perceived job prospects (Eurofound, 2022; Bertoni et al., 2025).

These results have several policy implications for ageing societies. First, improving job quality should be treated as a public health priority rather than solely a labor market objective. Policies that enhance schedule flexibility, reduce excessive work intensity, and promote worker autonomy can generate substantial long-term benefits in terms of both physical and mental health. Second, targeted interventions are needed for older workers, particularly women, who face heightened vulnerability to psychosocial risks. Active labor market policies should therefore integrate age- and gender-sensitive design principles, including access to flexible work arrangements, ergonomic workplace adjustments, and opportunities for reskilling that reduce exposure to physically and mentally demanding tasks. Third, the protective role of healthcare systems highlights the complementarity between labor and health policies. Strengthening preventive and occupational health services, ensuring timely access to care, and investing in mental health support can attenuate the negative health effects of job strain, particularly in aging workforces. Fourth, improvements in working conditions can also help reduce education-related health inequalities, as job quality represents a key channel through which educational disparities translate into unequal health outcomes. This is particularly relevant at older ages, when educational attainment is largely fixed, and workplace policies constitute a more immediate and actionable lever to address health disparities. Fifth, expanding the number of ratified and in-force technical and hazard-specific ILO conventions can reinforce formal regulatory commitment to occupational health and safety. This appears particularly relevant for the mental dimension of work, as it dampens psychosocial channels through which poorer job quality adversely affects mental health.

Overall, the evidence supports a shift from a focus on employment quantity to a focus on employment quality for older workers. As European countries increasingly promote later retirement, maintaining health at older ages becomes a prerequisite for longer working careers and for the fiscal sustainability of ageing societies. Policies that improve job quality, alongside investments that ensure timely and effective access to healthcare, are therefore likely to be mutually reinforcing in fostering healthy and productive ageing across Europe.

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Appendices

Appendix A – details on physical health variables

We use the following selected measures of physical health: a) and indicator of joint pain, that indicates whether respondents are bothered by pain in back, knees, hips, or other joints, b) the number of doctor visits in the past 12 months, c) a harmonized cardiovascular disease (CVD) index based on diagnoses of heart attack or stroke, d) self-reported health status measured on the US scale, classified on a five-point scale ranging from excellent, very good, good, fair, to poor.

We needed to harmonize measurements (a) to (c) across waves. In wave 4, joint pain (a) is taken from ph010d1 ("bothered by pain in the back, knees, hips, or other joints") and coded 1 if selected and 0 otherwise; in waves 6 and 9, joint pain is defined for respondents who report general pain (ph084 = 1) and select at least one joint location (back, hips, knees, or other joints; ph087d1–ph087d4) with those cases coded 1, those with no general pain (ph084 = 0) or with general pain but no joint locations selected (all ph087d = 0) coded 0, and cases with general pain but all four location items missing set to missing; operationally, we initialize the indicator to missing and apply mutually exclusive, wave-specific rules so that each observation is coded once.
For doctor visits (b), we employ an ordered categorical specification distinguishing no visits, exactly one visit, two to five visits, and more than five visits, which reduces recall-related noise while preserving meaningful variation.
For the CVD index (c), given the low frequency of events, we aggregate diagnoses via principal components analysis (PCA) and retain the first component, which loads positively on both items, so that higher values indicate greater CVD burden.

Appendix B – Details on working conditions indices

Because the 7th wave of the EWCS was conducted during the COVID-19 pandemic via computer-assisted telephone interviews (CATI), the questionnaire was considerably shortened and contained fewer items on job quality compared to earlier waves. To ensure comparability across waves, we implemented a harmonization procedure. Specifically, we identified a core set of 22 items that were fully comparable across waves (identical wording and response categories) and an additional 10 items with minor variations. Where possible, these were recoded to enhance consistency. This yielded a final pool of 32 items, which we grouped into 11 sub-dimensions and then aggregated into the six overarching indicators summarized in Table B1.

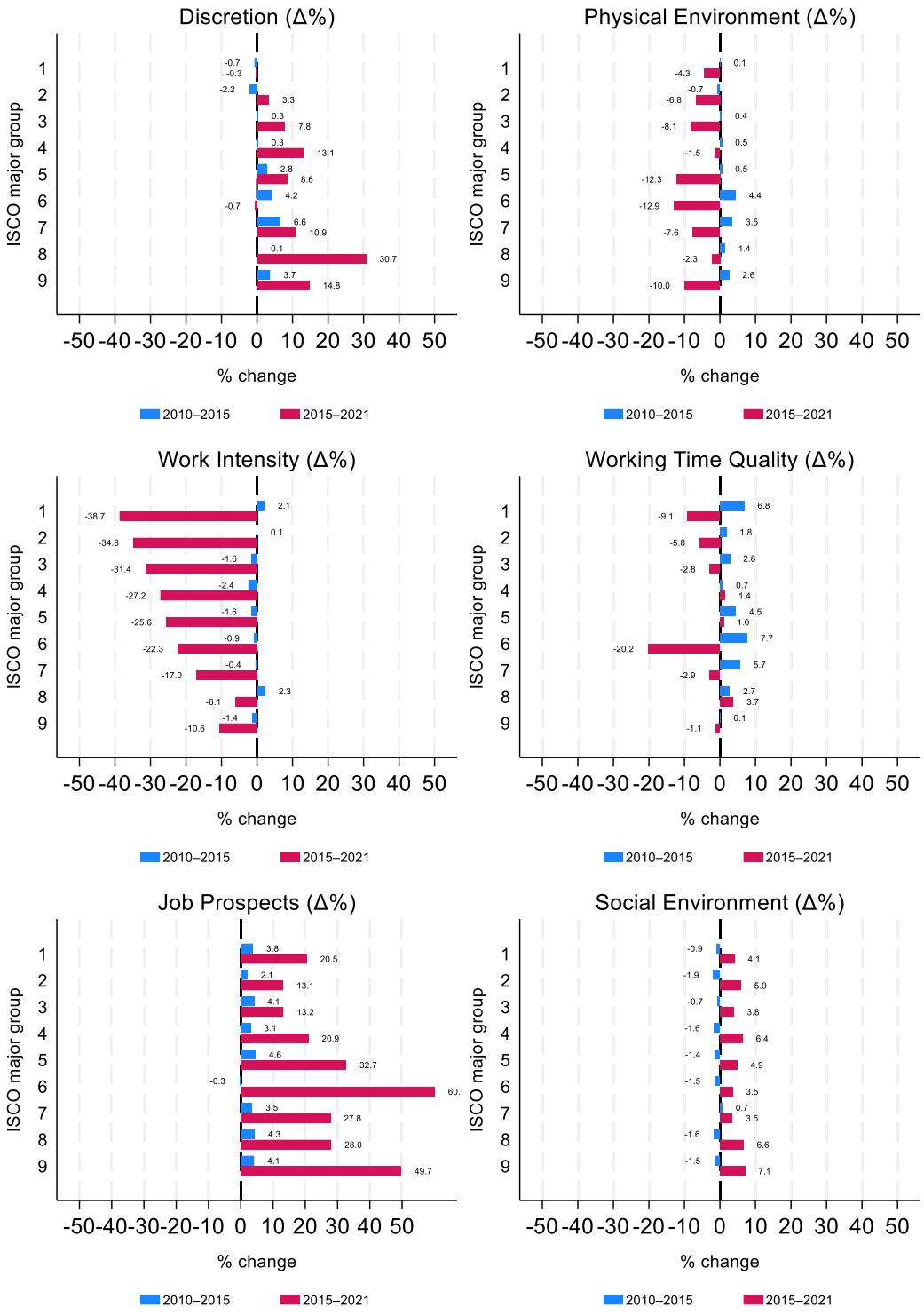
Table B1: Indicators of working conditions

Dimension	Sub-dimension	Item
Physical environment	***Physical risks***	Handling or having skin contact with chemicals Handling or being in contact with infectious materials Exposure to loud noise
	Physical demands	Carrying or moving heavy loads Lifting or moving people Tiring or painful positions Repetitive hand or arm movements
Social environment	***Intimidation***	Verbal abuse or threats Unwanted sexual attention Bullying, harassment or violence
	Discrimination	Discrimination at work
	Social support	Support from colleagues Support from managers
Work intensity	***Work intensity***	Working at very high speed Working to tight deadlines
Discretion	***Task discretion and autonomy***	Ability to choose or change methods of work Ability to choose or change order of tasks Ability to choose or change speed or rate of work
	Organisational characteristics	Ability to influence decisions that are important for your work Involved in improving the work organisation or work processes of your department or organisation Consulted before the objectives of your work are set
Working time quality	***Working time quality***	Working in free time to meet work demands Working when sick Working at night Working hours per week/month Working hours (preferred) Arranging to take an hour or two off work
Job prospects	***Training and learning opportunities***	Training paid for or provided by employer On-the-job training provided Learning new things
	Job insecurity	What kind of employment contract do you have in your main paid job? Might lose job in the next 6 months

The six indexes have thus the following meaning:

- *Physical environment*: captures exposure to physical risks (chemicals, infectious materials, noise) and physical demands (heavy loads, lifting people, awkward postures, repetitive movements).
- *Work intensity*: reflects quantitative workload and pace of work, including high-speed tasks and tight deadlines.
- *Working time quality*: measures working time arrangements, atypical hours, schedule flexibility, and ability to reconcile work and non-work demands.
- *Social environment*: encompasses both positive aspects (colleague and manager support) and negative aspects (bullying, harassment, intimidation, discrimination).
- *Discretion*: assesses autonomy over methods, sequencing, and speed of work, as well as participation in organizational decision-making.
- *Career prospects*: captures job security and opportunities for career advancement.

Figure B1. Time changes in job quality indices, by ISCO 1-digit codes (2010–2015 and 2015-2021)



Appendix C – Movers vs. stayers: baseline characteristics (Wave 4)

Table C1: Descriptive statistics at Wave 4 by job mobility between waves 4 and 6 (movers vs stayers)

	Movers		***Stayers***	
	mean	*sd*	*mean*	*sd*
Health outcomes				
EURO-D caseness	0.30	0.46	0.20	0.40
EURO depression scale	2.45	2.12	1.99	1.88
Pain	0.48	0.50	0.48	0.50
Doctor visits	1.81	0.99	1.66	1.00
Cardiovascular disease (PCA)	2.57	10.08	1.99	9.63
Self-rated health: Excellent	0.14	0.35	0.13	0.33
Self-rated health: Very good	0.23	0.42	0.29	0.46
Self-rated health: Good	0.37	0.48	0.39	0.49
Self-rated health: Fair	0.25	0.44	0.16	0.37
Self-rated health: Poor	0.01	0.10	0.02	0.15
Job quality (0–100)				
Physical environment	80.34	10.05	79.58	10.20
Social environment	81.14	10.54	81.02	8.13
Intensity	58.42	12.89	59.00	13.15
Discretion	66.89	15.50	66.20	15.48
Working time quality	68.69	11.57	68.24	12.11
Job prospects	64.15	13.34	63.04	14.02
Socio-demographics				
Age	55.13	3.34	55.41	3.43
In couple	0.23	0.42	0.21	0.41
Number of children	2.12	1.26	2.09	1.22
Number of grandchildren	1.08	1.59	1.04	1.78
Household income (log)	10.17	1.44	10.10	1.56
Observations	186		3638	

Appendix D – Further details and results from heterogeneity analysis

The heterogeneity analysis is high-dimensional: combining six job-quality dimensions, six health outcomes, two genders, and two heterogeneity groups (low vs high), each analysis generates 144 coefficients. In this context, the aim is not to discuss each individual estimate, but to identify systematic patterns, reducing the risk of overemphasising isolated results driven by the large number of comparisons. For this reason, we define *ex-ante* selection criteria for the WC × outcome combinations reported in the figures (see Section 7).

The unit of analysis is the WC × outcome × gender combination; for each combination, we report separate estimates for the heterogeneity groups (e.g., low vs high education; low vs high healthcare capacity). The WC × outcome combinations included in the figures are selected based on two alternative criteria. First, conditional on gender, a WC × outcome combination is included if it is statistically significant both in the main specification and in the heterogeneity analysis for at least one of the two groups (low and/or high). Second, even in the absence of statistical significance in the main specification, we include WC × outcome combinations when the heterogeneity analysis suggests that the corresponding WC displays a non-episodic pattern for a given gender. We define a non-episodic pattern as the presence of at least two statistically significant associations, with the same sign, for the same WC, across outcomes within the same health domain, considering mental and

physical health outcomes separately. Once a WC × outcome combination is selected, we systematically report estimates for both heterogeneity groups (low and high) and, if the combination is included for one gender, we also present the corresponding estimates for the other gender for comparison.

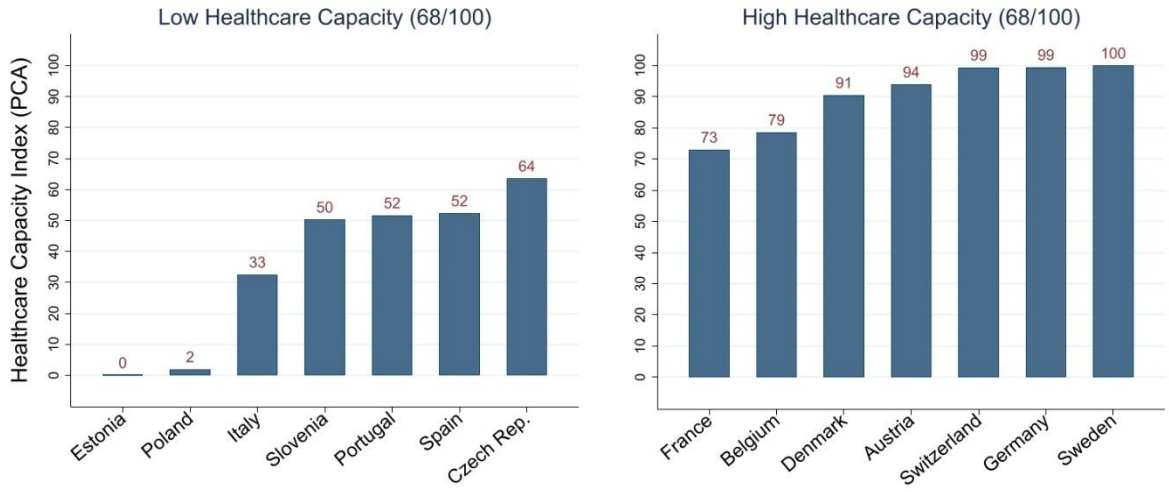
Appendix D1 – Healthcare system capacity index (construction and classification)

We hereby provide details on the methodology for the heterogeneity analysis described in section 7.2. We proxy cross-country differences in healthcare system capacity using a PCA-based composite index constructed from five indicators measured at the country level: public health expenditure per capita in purchasing power parity, hospital beds per 1,000 inhabitants, physicians per 1,000 inhabitants, nurses per 1,000 inhabitants (World Bank, 2025), and the share of the population aged 16+ reporting unmet medical care needs due to cost, distance, or waiting times (EU-SILC; Eurostat code hlth_silc_08). These variables are intended to capture complementary dimensions of capacity, including financing, infrastructure, workforce, and realised access (OECD, 2025; Cylus et al., 2025). Unmet needs also have a distributive dimension, since socioeconomically advantaged groups tend to report fewer barriers due to better system navigation and lower cost constraints, so access constraints may amplify pre-existing inequalities (Laudicella et al., 2012; Lee et al., 2015; OECD, 2025).

We compute the first principal component using the correlation matrix and use 2015 values to provide a stable pre-pandemic benchmark and to avoid COVID-related shifts in spending and staffing that reflect heterogeneous pandemic exposure rather than persistent structural differences (OECD, 2025). Countries are classified as high versus low capacity using the cross-country median of the 2015 composite score. High healthcare capacity countries are Austria, Germany, Sweden, France, Denmark, Switzerland, and Belgium. Low healthcare capacity countries are Spain, Italy, Czech Republic, Poland, Portugal, Slovenia, and Estonia (see Figure D1).

The composite index captures a latent capacity dimension and therefore does not imply identical profiles across components. For example, some countries combine relatively high physician density with comparatively lower bed availability, while others display the opposite configuration. The PCA approach is intended to summarise joint variation across financing, infrastructure, workforce, and realised access in a single parsimonious measure for moderation tests.

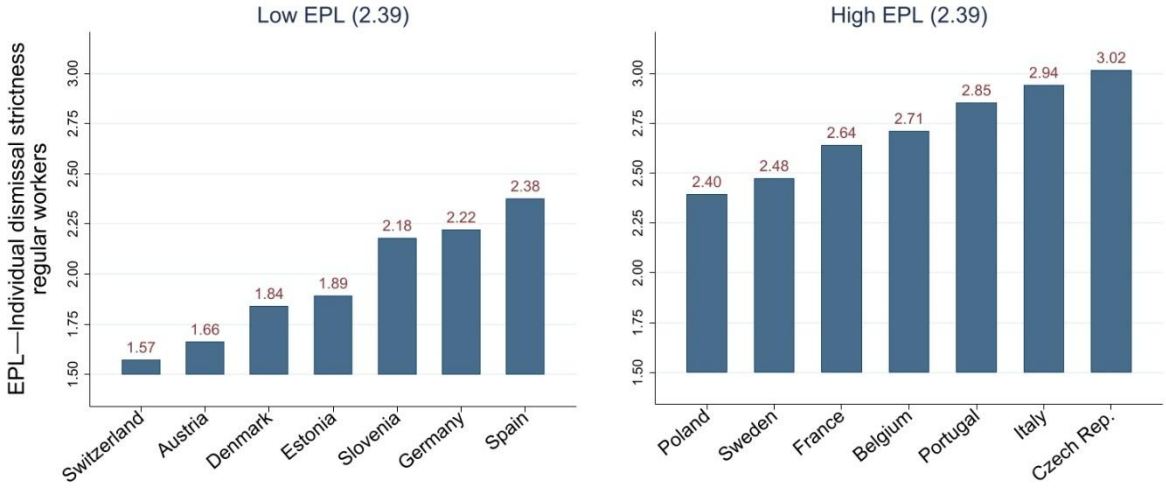
Figure D1: Healthcare Capacity Index (PCA): below vs. at or above the 2015 median, by Country



Note: Figure D1 reports the country classification used in the main analysis based on healthcare system capacity. The healthcare capacity index is constructed using principal components analysis (PCA) and rescaled to range from 0 to 100 for ease of interpretation. Countries are grouped according to whether their 2015 index value is below or at/above the cross-country median.

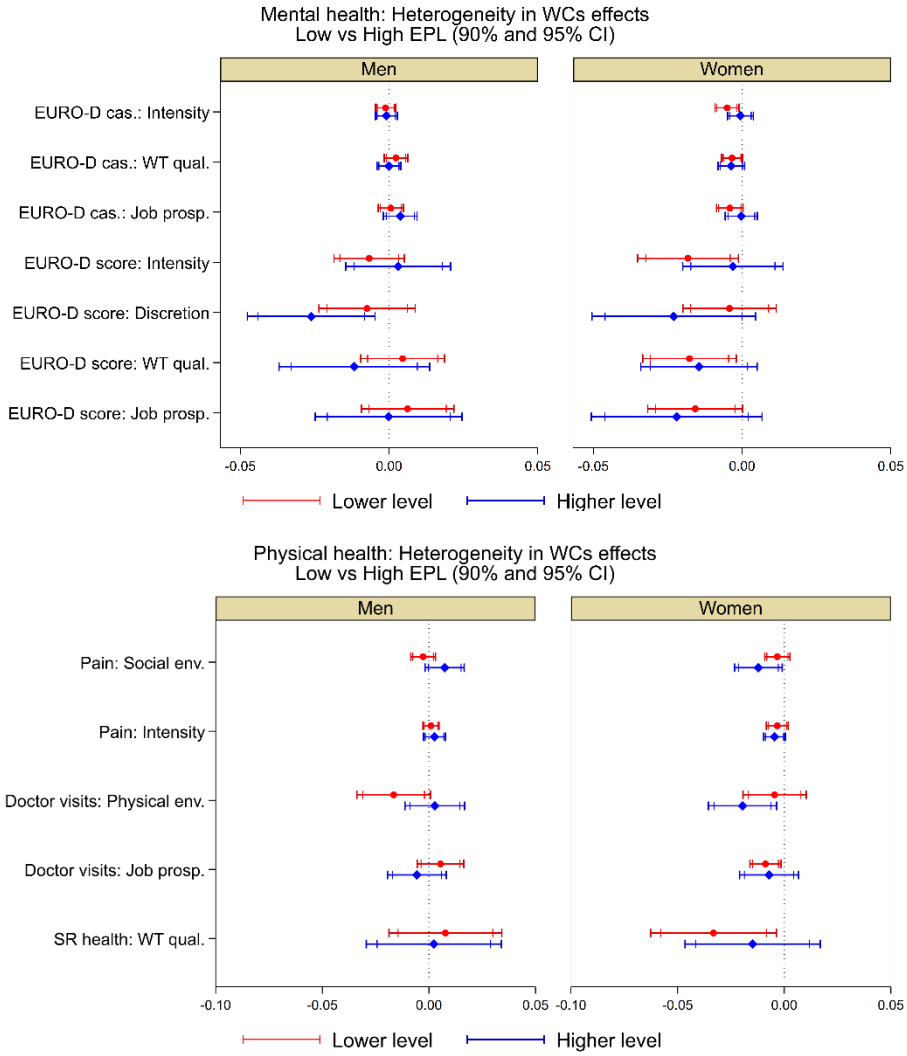
Appendix D2 – Heterogeneity analysis by labor market regulation

Figure D2.1: EPL, Strictness of Regulation of Individual Dismissals for Regular Workers: below vs. at or above the 2015 median, by Country



Note: Figure D2.1 reports the country classification used in the main analysis based on employment protection legislation (EPL). Countries are grouped according to whether their 2015 OECD EPL index is below or at/above the cross-country median.

Figure D2.2: Impact of working conditions on mental health – heterogeneity by labor market regulation



Note: Figure D2.2 shows coefficients and 90% and 95% confidence intervals for the interaction between each working-condition measure and an indicator for high vs low healthcare capacity, reported separately by gender. The outcomes are EURO-D depression score and EURO-D caseness in the first panel, and pain, doctor visits, self-rated health and cardiovascular-risk index in the second panel. Given that self-rated health is an ordinal categorical outcome, the corresponding specifications are estimated using an ordered logit model with fixed effects. All regressions include individual and year fixed effects and control for age, number of children, number of grandchildren, log household income, and cohabitation status. Robust standard errors clustered at the ISCO 3-digit level

Appendix D3 – Heterogeneity by Occupational Health and Safety Commitments

C3.1 OHS commitment measure and classification

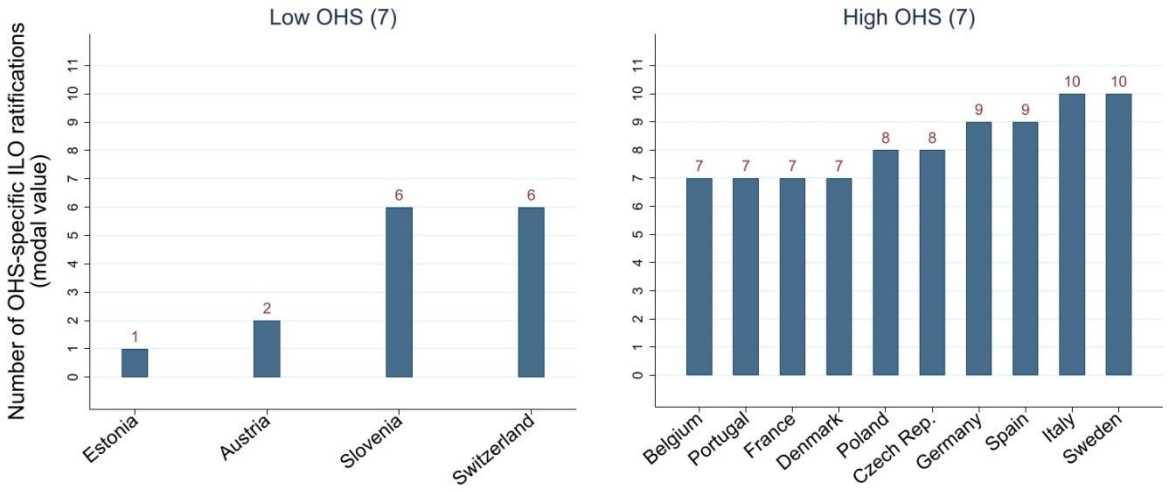
As discussed in the main text (Section 7.4), we proxy national commitment to occupational health and safety (Occupational Health and Safety commitments, OHS) using ratifications of hazard-specific ILO conventions. Specifically, we construct an indicator of regulatory OHS commitments, measured as the number of technical and hazard-specific ILO (International Labour Organization) conventions that are ratified and in force in each country-year. Table D3.1 lists the set of conventions used to build the measure. To capture the structural and relatively persistent component of the institutional setting, for each country we compute OHS in 2010, 2015, and 2021 and then take the modal value of these three counts. We subsequently classify countries as "Low" versus "High" OHS based on the cross-country median of this modal measure (see Figure D3.1). In interpretation, this ratification-based indicator proxies formal (*de jure*) regulatory commitment to the protection of occupational health and safety. We examine whether and to what extent this institutional commitment moderates the relationship between job quality and health.

Table D3.1: Technical and Hazard-Specific ILO Conventions Index (OHS)

OHS-specific ILO ratifications
C013 - White Lead (Painting) Convention, 1921 (No. 13)
C115 - Radiation Protection Convention, 1960 (No. 115)
C119 - Guarding of Machinery Convention, 1963 (No. 119)
C120 - Hygiene (Commerce and Offices) Convention, 1964 (No. 120)
C127 - Maximum Weight Convention, 1967 (No. 127)
C136 - Benzene Convention, 1971 (No. 136)
C139 - Occupational Cancer Convention, 1974 (No. 139)
C148 - Working Environment (Air Pollution, Noise and Vibration) Convention, 1977 (No. 148)
C162 - Asbestos Convention, 1986 (No. 162)
C167 - Safety and Health in Construction Convention, 1988 (No. 167)
C170 - Chemicals Convention, 1990 (No. 170)
C.176: Industry and occupation convention, 1995 (No. 176)

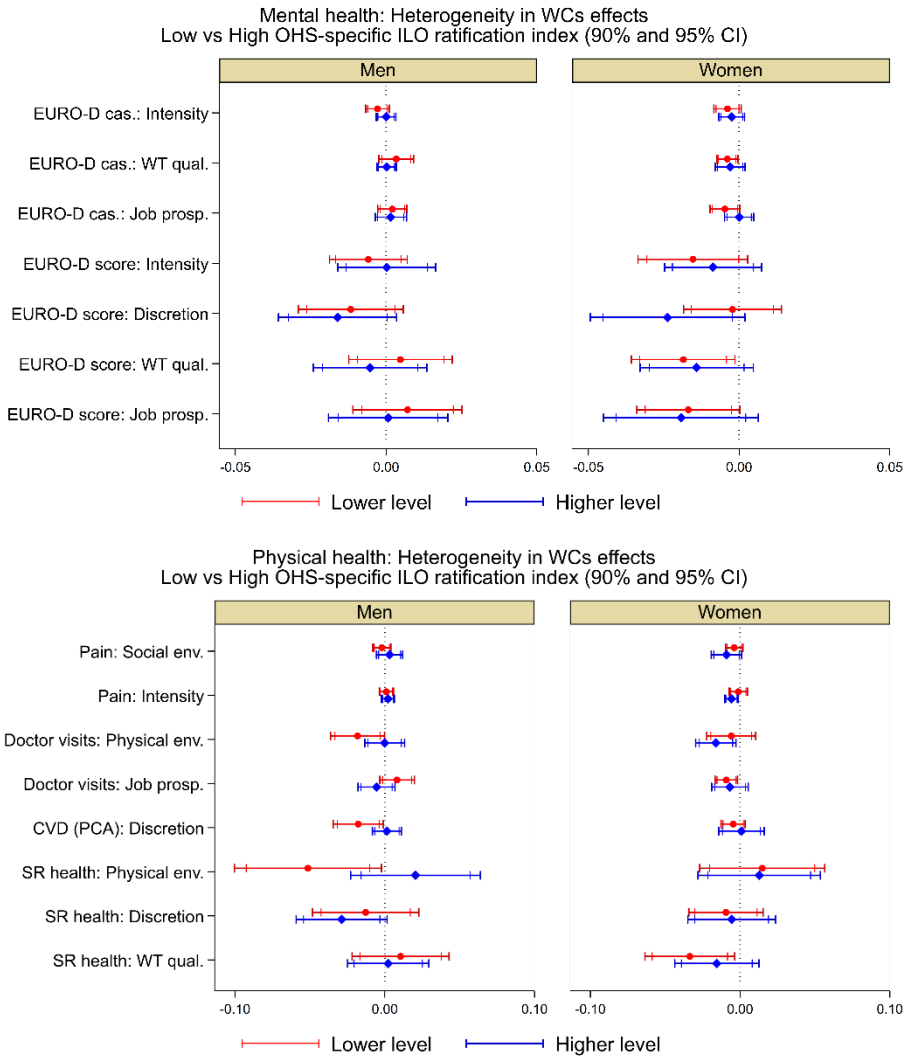
Note: The conventions listed above define our set of *technical and hazard-specific* ILO instruments used to build the OHS commitment measure. For each country-year, OHS is the count of these conventions that are ratified and in force. To capture a relatively persistent institutional component, we compute this count for 2010, 2015, and 2021 and assign each country the modal value across the three reference-year counts; countries are then classified as Low vs High OHS based on the cross-country median of this modal measure. Ratification and "in force" information are retrieved from the ILO NORMLEX database: https://normlex.ilo.org

Figure D3.1: OHS-specific ILO ratifications counts (modal value): below vs at/above the median, by Country



Note: Figure D3.1 reports the country classification used in the main analysis based on OHS-specific ILO ratifications counts.

Figure D3.2: Impact of Working Conditions on Health: Heterogeneity by OHS-Specific ILO Ratifications



Note: Figure D3.2 shows coefficients and 90% and 95% confidence intervals for the interaction between each working-condition measure and an indicator for high vs low healthcare capacity, reported separately by gender. The outcomes are EURO-D depression score and EURO-D caseness in the first panel, and pain, doctor visits, self-rated health and cardiovascular-risk index in the second panel. Given that self-rated health is an ordinal categorical outcome, the corresponding specifications are estimated using an ordered logit model with fixed effects. All regressions include individual and year fixed effects and control for age, number of children, number of grandchildren, log household income, and cohabitation status. Robust standard errors clustered at the ISCO 3-digit level.

Appendix E – Robustness tests

This appendix assesses whether the main results are sensitive to alternative constructions of the job-quality measures, alternative sample definitions, and additional controls. We report four checks relative to the baseline specification: (i) constructing job-quality indices using the median rather than the mean within each occupation–country–wave cell (WC median), (ii) expanding the sample to include workers aged 50 and above up to statutory pension age (Below pension age), (iii) adding industry fixed effects to account for sectoral differences among occupational stayers (Add industry FE), and (iv) excluding the pandemic wave (No wave 9). Results are reported separately by gender and outcome domain in Tables E1–E6.

Overall, the robustness evidence is consistent with the main results. For women's mental health (Table E1), improvements in work intensity and working time quality remain associated with lower depression risk and symptom severity across specifications, with especially stable evidence for EURO-D caseness in the intensity dimension and for working time quality in the industry-fixed-effects and no-wave-9 specifications. Job prospects also remain negatively associated with the EURO-D score across checks. For men (Table E2), coefficients are generally smaller and less precisely estimated across specifications, consistent with the weaker baseline evidence.

For physical outcomes, the robustness checks confirm the main patterns for women. In Table E3, improvements in the physical environment remain associated with fewer doctor visits, and improvements in job prospects remain associated with fewer doctor visits across specifications. Pain results for women remain concentrated in the social environment and work intensity dimensions, with signs and significance broadly stable. In Table E5, working time quality continues to be the main correlate for women's self-rated health and cardiovascular risk, with the strongest consistency in the industry-fixed-effects and no-wave-9 specifications. For men, Table E6 shows that discretion remains the most consistent dimension associated with self-rated health and cardiovascular risk, with effects that persist when the sample is expanded below pension age and are generally aligned with the baseline direction.

Across checks, we do not observe systematic sign reversals for the relationships emphasised in Section 6. Some coefficients lose statistical significance in individual specifications, which is expected given changes in sampling, aggregation, and controls, but the substantive conclusions remain unchanged.

Table E1: Robustness checks. Effect of changes in working conditions on mental health, various specifications – Females

	EURO-D score					EURO-D caseness				
Physical environment	0.011	0.007	0.010	0.007	0.010	0.001	0.000	0.004*	-0.001	-0.001
	(0.014)	(0.011)	(0.011)	(0.015)	(0.015)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)
Social environment	0.011	0.005	0.011	0.012	0.020	-0.001	-0.001	0.001	-0.001	0.002
	(0.011)	(0.010)	(0.009)	(0.013)	(0.013)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
Intensity	-0.012*	-0.015***	-0.009	-0.009	-0.015**	-0.003*	-0.003**	-0.003**	-0.004**	-0.004**
	(0.006)	(0.005)	(0.006)	(0.008)	(0.007)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Discretion	-0.012*	-0.010*	-0.017***	-0.015*	-0.009	-0.001	-0.001	-0.002	-0.000	-0.000
	(0.007)	(0.005)	(0.006)	(0.008)	(0.008)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Working Time Quality	-0.016**	-0.007	-0.008	-0.023***	-0.021***	-0.003**	-0.002	-0.001	-0.004**	-0.003*
	(0.006)	(0.005)	(0.005)	(0.008)	(0.007)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Job prospects	-0.018**	-0.015***	-0.012*	-0.019**	-0.015*	-0.003	-0.002*	-0.002	-0.003	-0.003
	(0.008)	(0.005)	(0.007)	(0.008)	(0.008)	(0.002)	(0.001)	(0.001)	(0.003)	(0.002)
Observations	1815	1815	2244	1511	1,295	1789	1789	2213	1488	1,279
Robustness implemented	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**

Notes: Each column reports a separate specification. "Baseline" corresponds to the main-text model with individual and year fixed effects and the standard time-varying controls. "WC median" reconstructs job-quality indices using the median rather than the mean within each occupation–country–wave cell. "Age 50 to pension age" expands the sample to individuals aged 50 and above up to statutory pension age in each country. "Add industry FE" adds industry fixed effects to the baseline model. "No wave 9" excludes SHARE Wave 9. Job-quality indices are scaled so that higher values indicate better job quality. Standard errors are clustered at the ISCO 3-digit level.

Table E2: Robustness checks. Effect of changes in working conditions on mental health, various specifications – Males

	EURO-D score					EURO-D caseness				
Physical environment	0.001	-0.004	-0.011	0.011	0.008	-0.003	-0.002	-0.004**	-0.001	-0.002
	(0.010)	(0.010)	(0.007)	(0.014)	(0.012)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Social environment	0.008	0.001	0.006	0.009	0.006	-0.001	-0.000	-0.000	-0.001	-0.001
	(0.012)	(0.010)	(0.007)	(0.013)	(0.012)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Intensity	-0.002	0.001	-0.001	-0.005	-0.003	-0.001	-0.000	-0.001	-0.001	-0.000
	(0.006)	(0.004)	(0.005)	(0.009)	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Discretion	-0.014*	-0.009	-0.002	-0.012	-0.010	0.000	0.000	0.002	0.002	0.002
	(0.007)	(0.006)	(0.005)	(0.010)	(0.009)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Working Time Quality	-0.000	-0.004	0.001	0.000	-0.003	0.002	0.001	0.000	0.002	0.002
	(0.007)	(0.005)	(0.005)	(0.011)	(0.008)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Job prospects	0.004	0.001	0.002	0.007	0.004	0.002	0.002	-0.000	0.005**	0.003
	(0.007)	(0.006)	(0.005)	(0.009)	(0.008)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Observations	1978	1978	2865	1649	1,869	1909	1909	2774	1582	1,800
Robustness implemented	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**

Notes: Each column reports a separate specification. "Baseline" corresponds to the main-text model with individual and year fixed effects and the standard time-varying controls. "WC median" reconstructs job-quality indices using the median rather than the mean within each occupation–country–wave cell. "Age 50 to pension age" expands the sample to individuals aged 50 and above up to statutory pension age in each country. "Add industry FE" adds industry fixed effects to the baseline model. "No wave 9" excludes SHARE Wave 9. Job-quality indices are scaled so that higher values indicate better job quality. Standard errors are clustered at the ISCO 3-digit level.

Table E3: Robustness checks. Effect of changes in working conditions on pain and doctor visits, various specifications – Females

	Pain					Doctor visits				
Physical environment	0.002	0.001	0.003	0.008*	0.008**	-0.012**	-0.012**	-0.015***	-0.010	-0.010
	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.007)	(0.007)
Social environment	-0.006**	-0.005**	-0.003	-0.006	-0.005	-0.000	-0.000	0.004	0.005	-0.002
	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.007)	(0.006)
Intensity	-0.004*	-0.003*	-0.001	-0.005**	-0.005**	0.002	0.002	-0.000	0.000	-0.001
	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)
Discretion	0.002	0.002	0.001	0.004	0.003	-0.003	-0.004	-0.003	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)
Working Time Quality	-0.000	-0.001	-0.001	-0.000	0.000	0.002	0.002	0.001	0.002	0.002
	(0.002)	(0.002)	(0.001)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)
Job prospects	0.001	0.001	0.001	0.001	0.000	-0.008**	-0.008***	-0.007***	-0.009*	-0.009**
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.004)
Observations	1810	1810	2239	1507	1,670	1815	1815	2244	1511	1,675
Robustness implemented	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**

Notes: Each column reports a separate specification. "Baseline" corresponds to the main-text model with individual and year fixed effects and the standard time-varying controls. "WC median" reconstructs job-quality indices using the median rather than the mean within each occupation–country–wave cell. "Age 50 to pension age" expands the sample to individuals aged 50 and above up to statutory pension age in each country. "Add industry FE" adds industry fixed effects to the baseline model. "No wave 9" excludes SHARE Wave 9. Job-quality indices are scaled so that higher values indicate better job quality. Standard errors are clustered at the ISCO 3-digit level.

Table E4: Robustness checks. Effect of changes in working conditions on pain and doctor visits, various specifications – Males

	Pain					Doctor visits				
Physical environment	0.001	0.000	-0.003	-0.003	-0.000	-0.007	-0.002	-0.004	-0.014*	-0.014*
	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.008)	(0.007)
Social environment	-0.000	-0.000	0.000	-0.000	0.001	-0.004	-0.006	-0.004	-0.002	-0.003
	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.005)	(0.005)
Intensity	0.002	0.001	0.003**	0.003	0.002	-0.002	-0.001	-0.001	-0.004	-0.001
	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)
Discretion	-0.001	-0.001	-0.001	-0.002	-0.001	-0.006	-0.004	-0.008***	-0.008	-0.007
	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.003)	(0.002)	(0.005)	(0.005)
Working Time Quality	-0.002	-0.001	-0.003**	-0.002	-0.002	0.000	-0.003	-0.002	0.007	0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.005)	(0.003)	(0.003)	(0.006)	(0.005)
Job prospects	0.001	0.001	0.002	0.003	0.002	0.001	0.001	0.001	0.005	0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.005)	(0.005)
Observations	1976	1976	2861	1647	1,867	1978	1978	2865	1649	1,869
Robustness implemented	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**

Notes: Each column reports a separate specification. "Baseline" corresponds to the main-text model with individual and year fixed effects and the standard time-varying controls. "WC median" reconstructs job-quality indices using the median rather than the mean within each occupation–country–wave cell. "Age 50 to pension age" expands the sample to individuals aged 50 and above up to statutory pension age in each country. "Add industry FE" adds industry fixed effects to the baseline model. "No wave 9" excludes SHARE Wave 9. Job-quality indices are scaled so that higher values indicate better job quality. Standard errors are clustered at the ISCO 3-digit level.

Table E5: Robustness checks. Effect of changes in working conditions on self-rated health and cardiovascular disease, various specifications – Females

	Self-rated health					Cardiovascular disease (PCA)				
Physical environment	0.014	0.002	0.006	0.002	0.006	-0.001	-0.004	-0.004	-0.004	-0.005
	(0.017)	(0.014)	(0.012)	(0.026)	(0.022)	(0.004)	(0.004)	(0.003)	(0.005)	(0.005)
Social environment	0.011	0.002	0.016	0.019	0.012	0.002	0.006	0.002	0.007	0.003
	(0.016)	(0.012)	(0.012)	(0.020)	(0.018)	(0.006)	(0.005)	(0.004)	(0.005)	(0.006)
Intensity	0.014	0.005	0.008	0.019	0.014	0.000	0.000	-0.001	0.003	0.002
	(0.010)	(0.007)	(0.008)	(0.012)	(0.012)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)
Discretion	-0.008	-0.005	-0.007	-0.011	-0.008	-0.002	-0.002	-0.001	-0.003	-0.003
	(0.009)	(0.008)	(0.007)	(0.011)	(0.010)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Working Time Quality	-0.025**	-0.011	-0.010	-0.036***	-0.022*	-0.006*	-0.004	-0.000	-0.009**	-0.007*
	(0.011)	(0.008)	(0.009)	(0.014)	(0.012)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
Job prospects	-0.004	0.005	-0.002	-0.007	-0.002	-0.002	-0.002	-0.001	0.000	0.000
	(0.016)	(0.012)	(0.008)	(0.016)	(0.014)	(0.004)	(0.003)	(0.003)	(0.005)	(0.005)
Observations	1815	1815	2244	1511	1675	1809	1809	2238	1506	1,669
Robustness implemented	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**

Notes: Each column reports a separate specification. "Baseline" corresponds to the main-text model with individual and year fixed effects and the standard time-varying controls. "WC median" reconstructs job-quality indices using the median rather than the mean within each occupation–country–wave cell. "Age 50 to pension age" expands the sample to individuals aged 50 and above up to statutory pension age in each country. "Add industry FE" adds industry fixed effects to the baseline model. "No wave 9" excludes SHARE Wave 9. Job-quality indices are scaled so that higher values indicate better job quality. Standard errors are clustered at the ISCO 3-digit level.

Table E6: Robustness checks. Effect of changes in working conditions on self-rated health and cardiovascular disease, various specifications – Males

	Self-rated health					Cardiovascular disease (PCA)				
Physical environment	-0.013	-0.008	-0.007	-0.001	-0.013	0.003	-0.003	0.002	0.006	0.007
	(0.018)	(0.017)	(0.012)	(0.021)	(0.020)	(0.008)	(0.007)	(0.004)	(0.007)	(0.008)
Social environment	-0.005	-0.026	0.003	0.019	0.006	0.004	0.001	0.003	0.003	0.004
	(0.018)	(0.017)	(0.010)	(0.018)	(0.019)	(0.006)	(0.004)	(0.003)	(0.007)	(0.007)
Intensity	0.005	0.010	0.021***	-0.002	0.003	-0.003	-0.002	-0.003	-0.004	-0.006
	(0.009)	(0.007)	(0.006)	(0.014)	(0.010)	(0.005)	(0.003)	(0.003)	(0.004)	(0.004)
Discretion	-0.022*	-0.012	-0.015***	-0.027*	-0.021	-0.008*	-0.004	-0.006**	-0.012	-0.009
	(0.013)	(0.010)	(0.006)	(0.016)	(0.015)	(0.005)	(0.004)	(0.003)	(0.007)	(0.006)
Working Time Quality	0.006	-0.000	0.001	0.016	0.003	0.005	0.004	0.003	0.002	0.007
	(0.011)	(0.008)	(0.008)	(0.014)	(0.012)	(0.005)	(0.004)	(0.004)	(0.005)	(0.006)
Job prospects	-0.003	-0.009	0.012	-0.001	-0.002	0.001	-0.001	0.001	-0.006	-0.005
	(0.013)	(0.011)	(0.008)	(0.017)	(0.015)	(0.007)	(0.005)	(0.004)	(0.005)	(0.006)
Observations	1978	1978	2865	1649	1869	1975	1975	2862	1646	1,866
Robustness implemented	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**	**Baseline**	**WC median**	**Age 50 to pension age**	**Add industry FE**	**No wave 9**

Notes: Each column reports a separate specification. "Baseline" corresponds to the main-text model with individual and year fixed effects and the standard time-varying controls. "WC median" reconstructs job-quality indices using the median rather than the mean within each occupation–country–wave cell. "Age 50 to pension age" expands the sample to individuals aged 50 and above up to statutory pension age in each country. "Add industry FE" adds industry fixed effects to the baseline model. "No wave 9" excludes SHARE Wave 9. Job-quality indices are scaled so that higher values indicate better job quality. Standard errors are clustered at the ISCO 3-digit level.