CHAMBRE DES SALARIÉS
LUXEMBOURG

N°3 APRIL 2026

BETTERWORK

WELL-BEING
AND HEALTH
AT WORK

N° 33 NEWS FROM THE
QUALITY OF WORK INDEX

Quality of work INDEX LUXEMBOURG

UNIVERSITÉ DU LUXEMBOURG

WORK AND AGE – HOW ARE JOB QUALITY AND EMPLOYMENT QUALITY RELATED TO AGE?

Author: P. SISCHKA

18 rue Auguste Lumière | L-1950 Luxembourg
B.P. 1263 | L-1012 Luxembourg
T +352 27 494 200 | F +352 27 494 250
csl@csl.lu | www.csl.lu

Demographic change is altering the age structure of the workforce and increasingly bringing age-related differences in working conditions, employment quality, and well-being into focus. This Better Work newsletter examines how age is related to key dimensions of job quality, employment quality, and various aspects of well-being.

The analyses show that age-related differences are generally moderate and often cannot be described by simple linear relationships. For example, mental demands, time pressure, and emotional demands tend to be higher in mid-career, while physical strain tends to decrease with age.

With regard to employment quality, there is a slight increase in income satisfaction with age, while work–life conflicts are most pronounced in mid-career. Overall, the findings highlight that agerelated differences need to be analyzed in a nuanced way and pro-vide important insights for designing age-appropriate work and employment.

1. Work and age

Demographic change is leading to longer career trajectories and is placing age-related differences in working conditions and well-being at the center of occupational psychology research. Meta-analytic findings show that age is only weakly related to objective job performance, but is systematically associated with psychosocial working conditions and subjective well-being (Ng & Feldman, 2008; Beier et al., 2022).

Accordingly, older workers report, on average, higher job satisfaction, fewer negative affects, and less counterproductive work behavior. This can be explained, among other things, by improved emotion regulation and shifting life priorities over the lifespan (Ng & Feldman, 2010; Ng & Feldman, 2013). At the same time, studies show that the effects of certain job quality dimensions, such as autonomy, depend on age (Ng & Feldman, 2015).

Contrairement aux stéréotypes répandus, les travailleurs plus âgés ne sont ni globalement moins motivés ni plus surchargés, mais se distinguent des plus jeunes principalement par leurs ressources, leurs besoins et leurs stratégies d'adaptation (Ng & Feldman, 2012). Les approches actuelles centrées sur le cycle de vie soulignent donc que les différences liées à l'âge en termes de qualité du travail et de bien-être résultent de l'interaction entre le développement individuel et les conditions de travail (Truxillo et al., 2012 ; Truxillo et al., 2015 ; Beier et al., 2022).

In this context, it is essential to analyze in a differentiated way the relationship between age, psychosocial working conditions, employment quality, and various dimensions of well-being in order to identify levers for age-appropriate work design.

This newsletter therefore examines how age is related to different dimensions of job quality and employment quality, as well as to various aspects of well-being. To this end, it analyzes, first, agerelated differences in key dimensions of job quality (e.g., demands, resources, and strains); second, the relationships between age and aspects of employment quality (e.g., income satisfaction, job security, and work–life conflicts); and third, age-related patterns in work-related and general well-being.

Particular attention is paid to non-linear age trends, as many age-related changes cannot be adequately described by simple linear patterns (Birdi et al., 1995; Huffman et al., 2013; Karanika-Murray et al., 2024; Sischka, 2025; Zacher et al., 2014).

The data used come from the Quality of Work Survey (QoW; 2025 wave) - an annual representative survey of employees in Luxembourg (for details, see box: Method). The analyses combine graphical representations with regression models to capture both linear and non-linear relationships with age. This allows for a more nuanced presentation of age-related patterns.

In this newsletter, only the masculine generic is used for the purpose of clarifying the text. It refers to any gender identity and thus includes both female and male persons, transgender persons as well as persons who do not feel they belong to either gender or persons who feel they belong to both genders.

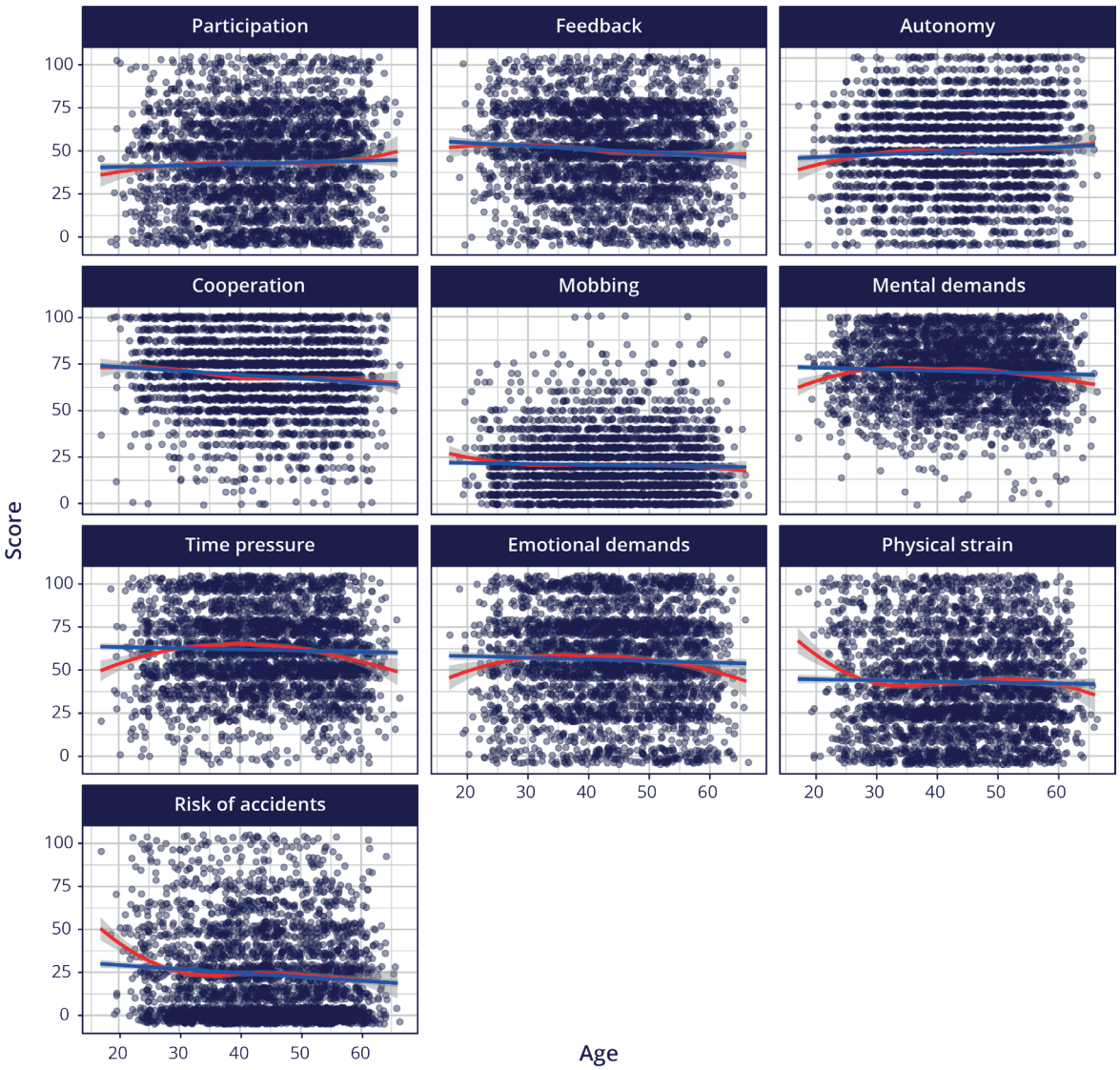
2. Age and job quality

Figure 1 shows that the relationship between age and different dimensions of job quality is generally weak, but not consistently linear. Participation and autonomy show a slight increase with age, while feedback and cooperation decline slightly over the course of working life. Workplace harassment (mobbing) remains relatively stable across all age groups.

For dimensions of work intensity, more differentiated patterns emerge: mental demands, time pressure, and emotional demands generally follow a slightly curvilinear pattern, with higher levels in mid-career and lower levels at the beginning and end of working life. Physical workload and accident risk are higher particularly among younger workers and then decrease slightly across the rest of the age range.

Overall, the results indicate that age-related differences in job quality are less characterized by clear linear trends than by moderate, sometimes non-linear changes that vary depending on the dimension considered.

Figure 1: The relationship between aspects of job quality and age



Note: The figures are based on data from the 2025 QoW survey and show the relationship between age and different dimensions of job quality. The scales range from 0 to 100. The blue line represents the estimated linear regression line and depicts the average linear

relationship between age and each job quality dimension. The red line represents a LOESS curve, a locally weighted regression estimate that allows non-linear patterns between age and job quality to be visualized. The LOESS curve is used for exploratory visualization of possible curvilinear trends that would not be captured by a linear model.

Table 1 presents the results of the regression analyses, confirming the patterns observed in the figures. The relationship between age and job quality is generally weak, but several dimensions show non-purely linear changes, sometimes curvilinear or cubic. Age alone explains no more than 2% of the variance for any of the job quality dimensions studied. This suggests that age, taken in isolation, is not a strong predictor of perceived job quality. Nevertheless, some dimensions show systematic age-related changes, especially when non-linear effects are considered.

For resource-oriented job dimensions such as feedback, autonomy, and cooperation, the linear age effects are generally small. While the explanatory power of linear models remains very low, model fit improves significantly for several dimensions when quadratic or cubic age effects are included in the analyses.

Non-linear age effects are much more pronounced for mental demands, time pressure, and emotional demands. For these dimensions, the explained variance increases significantly when quadratic age effects are added to the models. In particular, for time pressure, the explained variance rises substantially, indicating a pronounced curvilinear pattern. The graphical results suggest that these demands are highest in mid-career and lower among younger and older employees.

For physical workload and accident risk, significant improvements in model fit are observed when cubic terms are included. This indicates more complex age patterns, where strain and risk do not change uniformly over the course of a career, but rather decrease or increase more strongly at certain age phases. These results also align with the visual findings, which indicate a decrease in physical strain and accident risk with age, though not in a strictly linear manner.

Table 1: Linear, quadratic and cubic relationships between age and dimensions of job quality

Work dimension	Model 1: Age (R^2)	Model 2: Age + Age² (R^2)	Model 3: Age + Age² + Age³ (R^2)	ΔR^2 (M2–M1)	ΔR^2 (M3–M2)
Participation	0.001 [0.000; 0.006]	0.001 [0.000; 0.007]	0.002 [0.000; 0.012]	0.000	0.001
Feedback	0.006 [0.001; 0.014]	0.006 [0.002; 0.016]	0.007 [0.002; 0.017]	0.000	0.001
Autonomy	0.004 [0.000; 0.011]	0.005 [0.001; 0.015]	0.006 [0.002; 0.018]	0.001	0.001
Cooperation	0.012 [0.004; 0.026]	0.014 [0.004; 0.030]	0.014 [0.006; 0.032]	0.001	0.000
Mobbing	0.001 [0.000; 0.006]	0.001 [0.000; 0.008]	0.003 [0.000; 0.014]	0.000	0.002
Mental demands	0.003 [0.000; 0.009]	0.011 [0.005; 0.022]	0.012 [0.005; 0.026]	0.008***	0.001
Time pressure	0.001 [0.000; 0.007]	0.017 [0.008; 0.032]	0.018 [0.009; 0.035]	0.016***	0.000
Emotional demands	0.001 [0.000; 0.007]	0.008 [0.003; 0.018]	0.008 [0.003; 0.020]	0.007***	0.000
Physical strain	0.000 [0.000; 0.005]	0.004 [0.000; 0.014]	0.013 [0.003; 0.030]	0.003*	0.009***
Risk of accidents	0.008 [0.002; 0.018]	0.011 [0.003; 0.027]	0.019 [0.006; 0.041]	0.003*	0.007**

*Note. R^2 = explained variance. ΔR^2 = change in explained variance compared with the previous model (F-test). 95% confidence interval for R^2 (using the bootstrap method) shown in brackets * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.*

3. Age and job quality

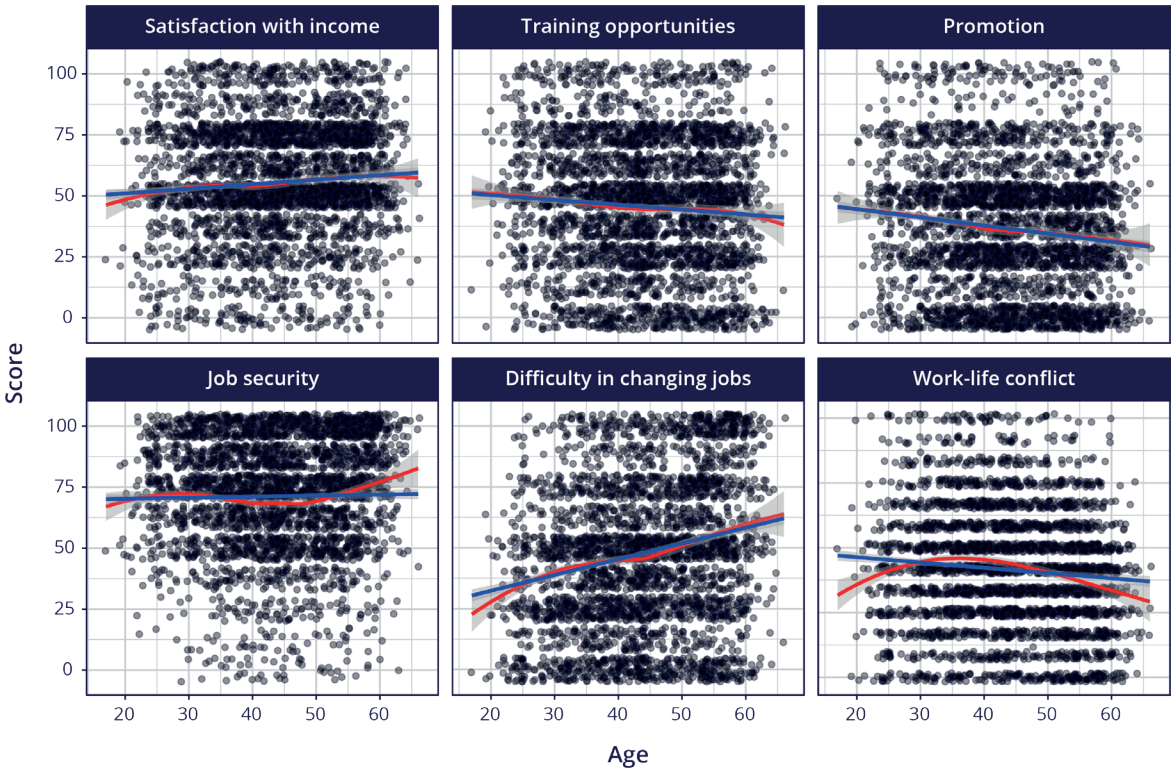
Figure 2 shows the relationships between age and different dimensions of employment quality. Overall, agerelated differences are also moderate here and do not always follow a linear pattern. Income satisfaction shows a slight increase with age, while training and promotion opportunities tend to decrease over time.

Job security is perceived as lowest by mid-career workers, whereas employees around 55 years and older rate their job security higher. At the same time, the perceived difficulty of changing jobs increases noticeably with age, reflecting age-related limitations in external labor market opportunities.

For work–life conflicts, a curvilinear pattern emerges: the burden is generally higher in mid-career and lower among younger and older employees.

Overall, the findings indicate that age-related differences in employment quality are not characterized by pronounced linear trends, but rather by moderate and sometimes non-linear changes that vary by dimension across the working life.

Figure 2: The relationship between aspects of job quality and age



Note: The figures are based on data from the 2025 QoW survey and show the relationship between age and different dimensions of employment quality. The scales range from 0 to 100. The blue line represents the estimated linear regression line and depicts the average linear relationship between age and each employment quality dimension. The red line corresponds to a LOESS curve, a locally weighted regression estimate that allows non-linear trends between age and employment quality to be represented. The LOESS curve is used for exploratory visualization of possible curvilinear patterns that would not be captured by a linear model.

Table 2 complements the graphical results by quantifying the linear, quadratic, and cubic relationships between age and different dimensions of employment quality. Overall, it confirms that age explains only a limited share of the variance in the dimensions considered (ranging from just over 1% to 5.7%). For income satisfaction, training, and promotion opportunities, the explained variance remains low across all model variants, and including non-linear age effects does not significantly improve model fit.

For job security, model fit improves significantly when quadratic and especially cubic age effects are included. This highlights the non-linear pattern observed in the figure, with relatively low job security for mid-career employees and higher values among younger and older workers.

For work–life conflicts, the explained variance also increases notably when a quadratic term is added, indicating a pronounced curvilinear relationship with higher burdens in mid-career.

The strongest age-related explanatory power is observed for the perceived difficulty of changing jobs. Even the linear model alone explains a substantial share of the variance, while adding non-linear terms only provides minor improvements. This suggests a mainly linear increase in perceived job-change barriers with age, which is also reflected in the graphical representations.

Table 2: Linear, quadratic and cubic relationships between age and dimensions of job quality

Work dimension	Model 1: Age (R^2)	Model 2: Age + Age² (R^2)	Model 3: Age + Age² + Age³ (R^2)	ΔR^2 (M2–M1)	ΔR^2 (M3–M2)
Satisfaction with income	0.007 [0.001; 0.016]	0.007 [0.002; 0.018]	0.007 [0.002; 0.018]	0.000	0.000
Training opportunities	0.006 [0.001; 0.015]	0.006 [0.001; 0.017]	0.006 [0.002; 0.019]	0.000	0.000
Promotion	0.018 [0.008; 0.031]	0.018 [0.008; 0.034]	0.018 [0.008; 0.033]	0.000	0.000
Job security	0.000 [0.000; 0.004]	0.007 [0.002; 0.015]	0.012 [0.006; 0.022]	0.006***	0.005**
Difficulty in changing jobs	0.055 [0.037; 0.075]	0.055 [0.037; 0.075]	0.057 [0.039; 0.079]	0.000	0.002
Work-life conflict	0.009 [0.002; 0.020]	0.024 [0.016; 0.038]	0.025 [0.016; 0.041]	0.015***	0.001

*Note. R^2 = explained variance. ΔR^2 = change in explained variance compared with the previous model (F-test). 95% confidence interval for R^2 (bootstrap) shown in brackets * p < 0,05; ** p < 0,01; *** p < 0,001. 95% CI for R^2 (bootstrap).*

4. Age and wellbeing

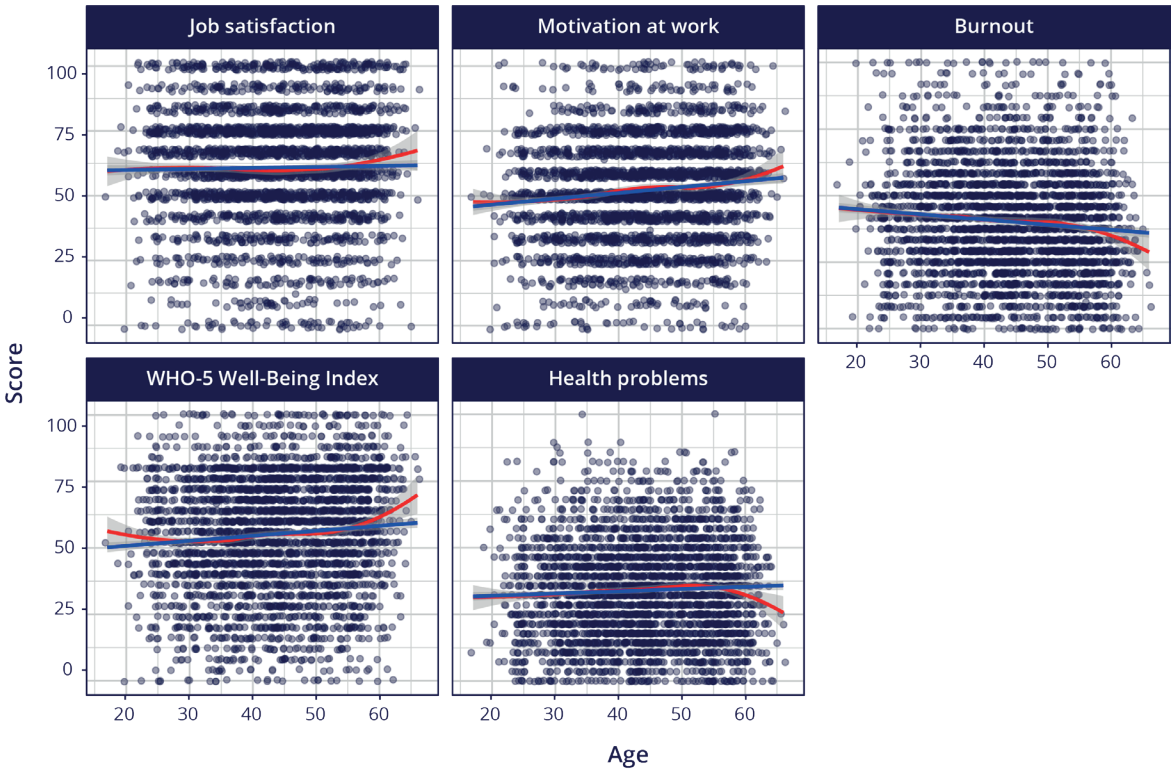
Figure 3 shows the relationships between age and different dimensions of work-related and general well-being. Overall, agerelated differences in this domain are also moderate and do not always follow a linear pattern. Job satisfaction and work motivation show a slight increase with age, which is particularly visible in the linear regression lines. At the same time, the LOESS curves indicate that these positive age-related trends are slightly more pronounced among older employees.

Burnout symptoms tend to decrease with age. General well-being shows a curvilinear pattern: mid-career employees report the lowest levels of overall well-being.

Health problems remain relatively stable across much of the career but decrease slightly at older ages. Again, the graphical results suggest a moderate and non-strictly linear relationship.

Overall, these findings indicate that age-related differences in well-being are not determined by pronounced linear trends, but rather by gradual and sometimes curvilinear changes that vary depending on the well-being dimension considered. These observations underscore the importance of a nuanced analysis of age-related developments in the workplace context.

Figure 3: The relationship between dimensions of well-being and age



Note: The figures are based on data from the 2025 QoW survey and show the relationship between age and different dimensions of well-being. The scales range from 0 to 100. The blue line represents the estimated linear regression line and depicts the average linear relationship between age and each well-being dimension. The red line corresponds to a LOESS curve, a locally weighted regression estimate that allows non-linear trends between age and well-being to be represented. The LOESS curve is used for exploratory visualization of possible curvilinear patterns that would not be captured by a linear model.

Table 3 summarizes the results of the regression analyses on the relationships between age and different dimensions of well-being. Overall, the explained variance remains low, indicating that age, taken in isolation, is not a strong predictor of either work-related or general well-being. Nevertheless, for certain dimensions, systematic agerelated patterns can be identified, quantitatively confirming the trends visible in the graphs.

For job satisfaction and work motivation, the explained variance remains very low across all model variants. Including quadratic or cubic age effects does not substantially improve model fit, suggesting weak and overall linear relationships with age. A similar pattern is observed for burnout: age explains a small portion of the variance, and the addition of non-linear terms contributes little additional explanatory power.

For general well-being, model fit improves significantly when a quadratic age effect is included. This indicates a slightly curvilinear trend, consistent with the graphical results, with lower well-being in mid-career and higher values among younger and older workers.

For health problems, a gradual increase in explained variance is also observed when non-linear age effects are taken into account. Although the effects remain generally small, these results suggest more complex age-related developments that cannot be described solely by linear trends.

Table 3: Linear, quadratic and cubic relationships between age and measures of well-being

Work dimension	Model 1: Age (R^2)	Model 2: Age + Age² (R^2)	Model 3: Age + Age² + Age³ (R^2)	ΔR^2 (M2–M1)	ΔR^2 (M3–M2)
Job satisfaction	0.000 [0.000; 0.004]	0.001 [0.000; 0.007]	0.002 [0.001; 0.010]	0.001	0.001
Motivation at work	0.014 [0.006; 0.026]	0.014 [0.006; 0.028]	0.014 [0.006; 0.029]	0.000	0.000
Burnout	0.010 [0.003; 0.023]	0.010 [0.004; 0.021]	0.011 [0.005; 0.026]	0.001	0.001
WHO-5 Well-being Index	0.009 [0.002; 0.018]	0.011 [0.005; 0.022]	0.011 [0.006; 0.022]	0.003*	0.000
Health problems	0.002 [0.000; 0.009]	0.004 [0.000; 0.013]	0.006 [0.002; 0.016]	0.001	0.002

*Note. R^2 = explained variance. ΔR^2 = change in explained variance compared with the previous model (F-test). 95% confidence interval for R^2 (bootstrap) shown in brackets * p < 0,05; ** p < 0,01; *** p < 0,001. 95% CI for R^2 (bootstrap).*

5. Summary and conclusion

The analyses of the relationships between age and job quality, employment quality, and well-being provide an overall coherent picture: age-related differences remain moderate across all dimensions studied and explain only a limited share of the variance. Age, taken in isolation, is therefore not a strong predictor of job quality, employment quality, or well-being. Nevertheless, several areas show systematic agerelated patterns, particularly when non-linear relationships are taken into account (Birdi et al., 1995; Karanika-Murray et al., 2024; Zacher et al., 2014).

For job quality, it becomes clear that agerelated changes do not always follow clear linear trends but are rather characterized by gradual and sometimes curvilinear patterns, varying depending on the dimension considered. While resource-oriented characteristics, such as participation and autonomy, increase linearly or remain stable with age, demand-related dimensions often show higher levels in mid-career (Zacher et al., 2014).

Income satisfaction, as well as training and promotion opportunities, are primarily linearly related to age: income satisfaction increases slightly with age, whereas training and promotion opportunities decrease over the years.

In contrast, perceived job security and work–life conflicts show non-linear relationships with age. Job security remains relatively stable across a wide age range and then increases from around age 55. Work–life conflicts show a curvilinear relationship with age, with the highest burden in mid-career - a finding that is well established in occupational psychology research (Huffman et al., 2013).

The agerelated increase in the perceived difficulty of changing jobs is particularly pronounced, reflecting changes in opportunities in the external labor market over the course of a career (De Lange et al., 2021).

The patterns observed among mid-career workers can partly be explained by what is called the "rush hour of life" (Bittman & Wajcman, 2000). This phase of life is characterized by the simultaneous management of professional demands and family obligations, particularly starting a family, which gives work–family reconciliation a special significance at this age.

Analyses of well-being reveal, at first glance, an apparent paradox: with age, employees sometimes report better physical and mental health, as well as less pronounced burnout symptoms (see also Zacher et al., 2014). However, these findings should not be interpreted as a general improvement in health with age.

They largely reflect selective career trajectories. Employees with greater health impairments are more likely to leave the workforce prematurely, so older workers appear, on average, healthier than their age peers in the general population. This phenomenon, known as the "Healthy Worker Effect," is well documented in occupational and health research and provides a key explanation for the seemingly positive agerelated trends in employees' health and well-being (Li & Sung, 1999).

Overall, these findings emphasize that agerelated differences in work, employment, and well-being should not be understood as simple age effects. Rather, they result from the interplay of individual developmental processes, working conditions, and selective labor force participation. In practice, this means that age-appropriate work and employment design must start early to prevent health problems and support sustainable participation in working life.

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Method

As part of the 'Quality of Work Index' study, which examines the working conditions and quality of work for employees in Luxembourg, between 1,500 and 3,200 interviews (CATI; CAWI) have been conducted annually since 2013 by Infas (since 2014) on behalf of the Luxembourg Chamber of Employees and the University of Luxembourg (Table 4). The results presented in this report relate to the 2025 survey.

Table 4: Methodological framework of the QoW survey

Purpose of the survey	Study on working conditions and quality of work for employees in Luxembourg
Design, implementation, analysis	Université de Luxembourg: Department of Behavioural and Cognitive Sciences, Chambre des salariés du Luxembourg, 2014 - 2025: Institut infas, 2013: TNS-ILRES
Type of survey	Telephone survey (CATI) or online survey (CAWI; since 2018) in Luxembourgish, German, French, Portuguese or English.
Sample size	2025: 3,171

Work quality assessment scales

Scale	Number of items	Cronbach's alpha coefficient	Scale	Number of items	Cronbach's alpha coefficient
Participation	2	0.79	Mental demands	4	0.73
Feedback	2	0.79	Time pressure	2	0.80
Autonomy	4	0.77	Emotional demands	2	0.86
Cooperation	4	0.84	Physical strain	2	0.77
Mobbing	5	0.78	Risk of accidents	2	0.82

Scales for measuring job quality

Scale	Number of items	Cronbach's alpha coefficient	Scale	Number of items	Cronbach's alpha coefficient
Satisfaction with income	2	0.86	Job security	2	0.69
Training opportunities	2	0.82	Difficulty in changing jobs	2	0.83
Promotion	2	0.88	Work-life conflict	3	0.80

Well-being scales

Scale	Number of items	Cronbach's alpha coefficient	Scale	Number of items	Cronbach's alpha coefficient
Job satisfaction	3	0.83	WHO-5 Well-being Index	5	0.91
Motivation at work	3	0.76	Health problems	7	0.78
Burnout	6	0.89			

Note regarding the establishment of the scale	The scales are calculated using the unweighted average of the corresponding individual items, which are rated on a scale from 1 (e.g. 'never') to 5 (e.g. 'almost always'). The scale values are then standardised on a scale ranging from 0 to 100 [((initial scale value - 1) / 4) * 100].

Université du Luxembourg
Department of Behavioural and Cognitive Sciences
Philipp.Sischka@uni.lu
T +352 46 66 44 9782

Chambre des salariés
David.Buechel@csl.lu
T +352 27 494 306
Sylvain.Hoffmann@csl.lu
T +352 27 494 200