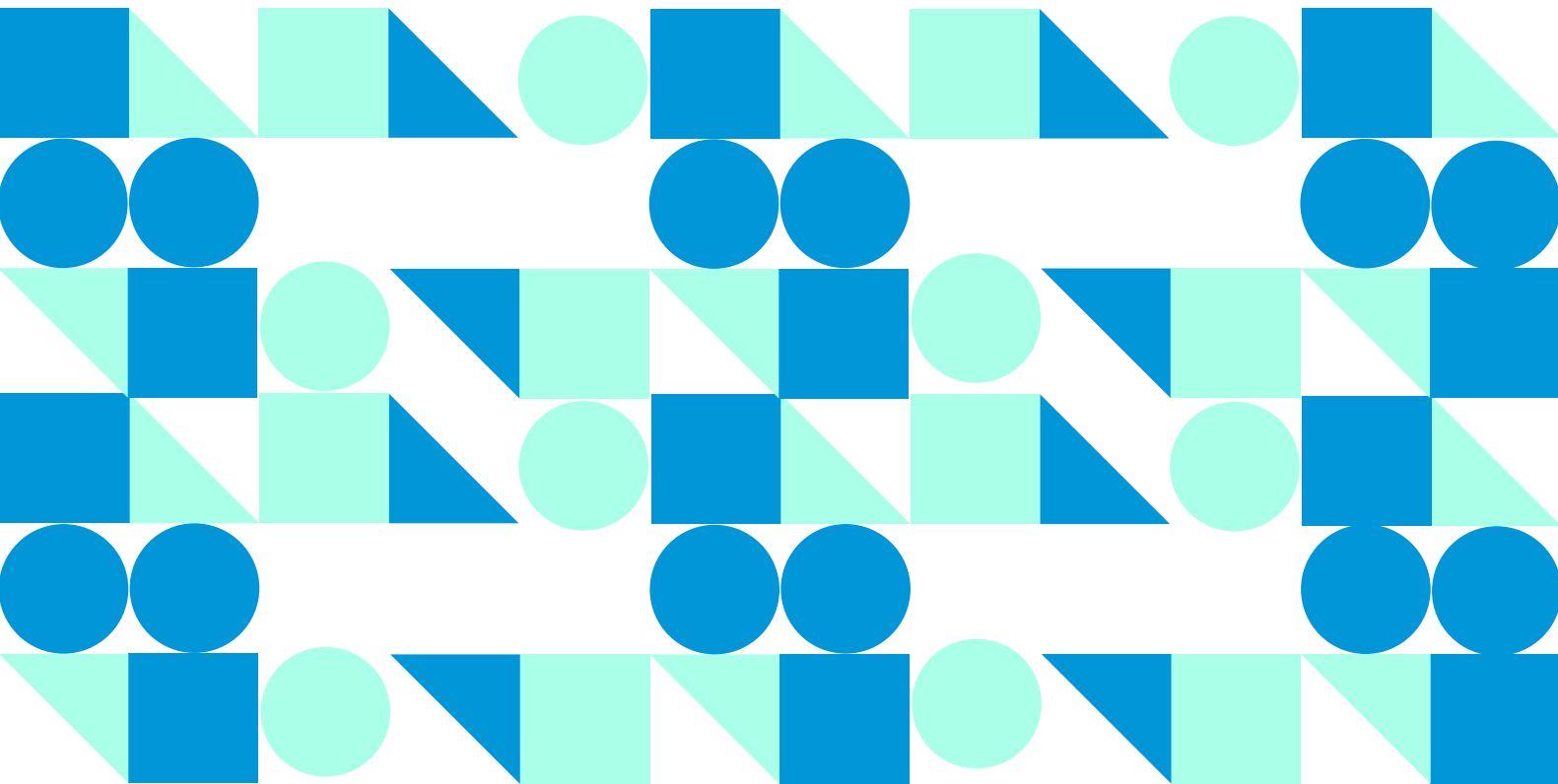




Research paper

Skill development and employment pathways for adults with low skill levels





Skill development and employment pathways for adults with low skill levels

Please cite this publication as:

Cedefop. (2026). *Skill development and employment pathways for adults with low skill levels*. Cedefop research paper. Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/4558680>.

A great deal of additional information on the European Union is available on the internet. It can be accessed through the Europa website (<http://europa.eu>).

Luxembourg: Publications Office of the European Union, 2026



© Cedefop, 2026

Unless otherwise noted, the reuse of this document is authorised under the [Creative Commons Attribution 4.0 International \(CC BY 4.0\)](https://creativecommons.org/licenses/by/4.0/) licence. This means that reuse is allowed, provided appropriate credit is given and any changes made are indicated. For any use or reproduction of photos or other material that is not owned by Cedefop, permission must be sought directly from the copyright holders.

[PDF](#) ISBN 978-92-896-3967-5
ISSN 1831-5860
Doi: 10.2801/4558680
TI-01-26-017-EN-N

The European Centre for the Development of Vocational Training (Cedefop) is the European Union's reference centre for vocational education and training, skills and qualifications. We provide information, research, analyses and evidence on vocational education and training, skills and qualifications for policymaking in the EU Member States. Cedefop was originally established in 1975 by Council Regulation (EEC) No 337/75. This decision was repealed in 2019 by Regulation (EU) 2019/128 establishing Cedefop as a European Union Agency with a renewed mandate.

Europe 123, Thessaloniki (Pylaia), Greece
Postal: Cedefop service post, 570 01 Themi, Greece
Tel. +30 2310490111, Fax +30 2310490020
Email: info@cedefop.europa.eu
www.cedefop.europa.eu

Jürgen Siebel, *Executive Director*
Tony Donohoe, *Chair of the Management Board*

Table of contents

Foreword.....	1
Acknowledgments	2
Executive Summary	3
Chapter 1. Introduction	10
1.1. Setting the scene	10
1.2. Motivation and research objectives	16
Chapter 2. Definition and characteristics of adults with low qualifications and skill levels.....	19
2.1. Background and methodological approach.....	19
2.2. Analysing low-qualified and low-skilled adults	22
2.2.1. Gender and age characteristics	22
2.2.2. Educational characteristics	24
2.2.3. Occupational characteristics	25
2.2.4. Job complexity of low-skilled adults	27
Chapter 3. Skills development of adults with low qualifications and skill levels.....	29
3.1. Training participation and upskilling needs.....	29
3.2. Educational mismatch of adults in low-skilled jobs	34
3.3. Digital skills level of low-qualified and low-skilled adults	36
Chapter 4. Employment trends of low-qualified and low-skilled adults.....	41
4.1. Employment trends by sector	41
4.2. Employment trends by occupation.....	45
4.3. Future employment by qualification and skill levels	53
4.4. Labour market outcomes of low-qualified and low-skilled adults.....	59

Chapter 5. Conclusions.....	70
Abbreviations.....	72
References.....	73
Annex.....	77

Tables and figures

Tables

1.	Share of those with low skill and low foundation skill requirements at their main job.....	15
2.	Definition of low-qualified and low-skilled adults	21
3.	Employment structure by age and education attainment level (in %)	23
4.	Share of workers with low qualifications across broad occupational categories (in %)	26
5.	Share of workers in jobs with low skill and low foundational skill level (in %).....	26
6.	Obstacles to participation in education and training, by level of education (in %)	34
7.	Employment change by broad occupational categories (2019–2024, in %).....	46
8.	Employment change by broad occupations and education level (2019 –2024, in %).....	46
9.	Employment change by selected two-digit occupational categories (2019–2023, in %).....	47
10.	Share of low-skilled workers using low-level skills by two-digit ISCO.....	48
11.	Employment change by occupation skill level aggregates (2013–2023, in %).....	50
12.	Sectors by employment share of low-qualified workers (in %).....	57
13.	Occupations at risk: qualification change, employment change and skill level.....	58
14.	Share of low-qualified workers, low-skilled jobs and unemployed by occupation.....	62
15.	Employment rate by education attainment level (2024, in %)	78

Figures

1.	Unemployment rate by educational attainment (in %)	11
2.	Share of low-qualified adults in the active population (in %)	12
3.	Employment structure by level of education attained (in %)	23
4.	Field of study by qualification type (Vocational/General/All) for low-skilled individuals (%).....	25
5.	Share of workers reporting complex job activities in low-skilled jobs (in %).....	28
6.	Participation rate in education and training by educational attainment level (in %).....	29

7.	Participation of low-qualified adults in education and training (2023, in %)	30
8.	Participation in education and training (last 12 months, in %, by skill level)	31
9.	Upskilling needs of adults in low-skilled jobs (in %)	32
10.	Digital upskilling needs of adults in low-skilled jobs (in %)	32
11.	Share of adults (aged 25–64) reporting obstacles to education and training (in %)	33
12.	Share of over- and underqualified adults with low skill level by occupation in the EU (in %)	36
13.	Share of low-qualified workers with at least basic digital skills in the EU (in %)	37
14.	Shares of adults with at least basic digital skills across the DigComp components (2023, in %)	38
15.	Share of workers with low skill levels using basic and advanced digital skills across occupations (ISCO one-digit, in %)	39
16.	Employment change by economic sector in the EU (2019–2024, in %)	41
17.	Employment share of low-qualified jobs across economic sectors (in %)	43
18.	Share of workers using low-level skills by economic sector (2021, in %)	44
19.	Employment change and share of low-skilled jobs by sector	45
20.	Intervals of skill level categories (by share of jobs with low skill level)	51
21.	Employment change and share of low-skilled jobs by occupation (two-digit ISCO)	52
22.	Structure of the labour force by broad qualification level (in %)	53
23.	Future job openings by occupation and broad qualification level (2021–2035) (in millions)	54
24.	Future employment change (vertical axis) and change in the employment share of low-qualified workers (horizontal axis) between 2022 and 2035 (in %)	56
25.	Average unemployment rate of low-qualified workers (in %)	60
26.	Unemployment rate, age group, and qualification level (in %)	61
27.	Difference between median equivalised net income by low and medium qualification levels (in %)	64
28.	Share of people at risk of poverty or social exclusion by education level (in %)	65
29.	Perceived payment satisfaction by skill level requirements (%)	66
30.	Perceived satisfaction for working conditions by skill level requirements (%)	67
31.	Share of workers (%) in low-skilled jobs who report low levels of satisfaction	68
32.	EU-27 employment (in millions)	77

33.	EU+ employment rate in 2024 (age group 20–64, in %)	77
34.	Employment share (2023, horizontal axis) and trend (2013–2023, vertical axis) of low-qualified adults in the EU (in %)	79
35.	Change in the employment share of low-qualified adults across Europe (2013–2021 and 2021–2023, in %)	80
36.	Share of low-qualified adults and the share of workers in low-skilled jobs (2021).....	81
37.	Individuals with basic or above-basic overall digital skills for all adults and low-qualified adults (aged 25 to 64, in 2023)	82

Foreword

In the ever-evolving landscape of the European labour market, the value of skills and lifelong learning has become increasingly pronounced. This urgency is clearly articulated in Mario Draghi's report, which warns that Europe faces an existential threat from declining competitiveness, stagnant productivity growth and the impending shrinking of its future workforce. Global crises and the impact of the twin transitions have significantly reshaped employment and skills development trends, accelerating demand for occupations with higher-level skills. As a result, the vulnerabilities of adults with low levels of skills and qualifications become increasingly evident. The European Centre for the Development of Vocational Training (Cedefop) estimates that almost 50% of adults may need upskilling or reskilling to boost productivity, wages and economic equality. This highlights the urgent need for targeted policies and initiatives to support the employability of adults with low and qualifications and skill levels through skills development and career growth.

With this publication, Cedefop aims to explore the characteristics, skills development, employment trends and related challenges faced by low-qualified adults and those employed in jobs with low skill requirements. It draws on Cedefop's unique datasets of European skills and jobs survey, Cedefop's skills forecast and other evidence provided by Cedefop's skills intelligence resources.

Cedefop, with its expertise in vocational education and training, plays a pivotal role in providing policymakers with evidence-based insights that are essential for informed decision-making. By understanding the vulnerabilities of adults with low qualifications and low skill levels, policymakers and stakeholders can develop effective strategies to mitigate their exposure to risks related to job displacement, long-term unemployment and being locked into low-quality jobs.

The publication underscores how individual characteristics, educational background and sector-specific challenges shape employment outcomes for adults with low qualifications and skill levels. It emphasises the critical need for targeted upskilling and reskilling initiatives, which will help these adults to adapt to changing labour market demands. This will foster a more inclusive and resilient workforce, capable of driving productivity, equity and economic growth in Europe's transition era.

Jürgen Siebel
Executive Director

Antonio Ranieri
Head of the Department for VET and Skills

Acknowledgements

This publication was produced by Cedefop's Department for VET and Skills, under the supervision of Antonio Ranieri.

Cedefop experts [Jiri Branka](#) and Aikaterini Tzafilkou were responsible for producing the report. The publication greatly benefitted from review and recommendations by Cedefop experts [Pier Paolo Angelini](#), [Stelina Chatzichristou](#), [Lidia Salvatore](#) and [Giulia Santangelo](#).

Special thanks go to Cedefop expert [Konstantinos Pouliakas](#) for his valuable insights on the metrics and methodology of the European skills and jobs survey.

Executive summary

Objectives of the paper

Evidence-based insights into the challenges faced by adults with low qualifications and skill levels are crucial for policymakers. Understanding the patterns that affect their jobs, including employment trends, job complexity, skill mismatches, skills development and workers' characteristics such as gender, age or education, can inform effective strategies. These strategies should help them unlock their potential while reducing risks of job displacement, long-term unemployment or persistent low-quality employment.

Introduction

Setting the scene

The European labour market has undergone significant changes in recent years, shaped by the COVID-19 pandemic and the energy price shock crisis triggered by Russia's unprovoked invasion of Ukraine. Digitalisation and automation trends have also changed the employment and skills development landscape, requiring continuous upskilling and more advanced digital skills across almost all types of occupations. These trends have highlighted the vulnerabilities of adults with low qualifications and skill levels, who face declining job opportunities, often unfavourable working conditions and increased risk of being pushed into long-term unemployment or labour market inactivity. Further, Europe's ageing population and negative workforce outlook exacerbate the need to tap into the potential of workers with low skill levels.

Defining adults with low qualifications and skill levels

Skills development is a multidimensional and dynamic process that extends beyond skills and competences gained through formal education environments, to include also those acquired through training, informal learning and work experience. In line with this conceptualisation, Cedefop (2017) refers to adults with low levels of skills (or low-skilled) as those with a low qualification level, but also those with at least medium qualifications working in elementary occupations or those with low digital or cognitive skills. In this study, low-qualified adults are defined as those with education attainment levels from 0 to 2 of the [International Standard Classification of Education \(ISCED\)](#), while adults with low levels of skills are, following the [European skills and job survey \(ESJS\)](#) definition, those employed

in jobs requiring low skill levels. Low-qualified adults and adults in low-skilled jobs are not a homogeneous group; this population comprises individuals with diverse characteristics and needs, requiring a comprehensive and strategic approach to upskilling.

Methodological approach

This publication utilises a wide range of sources. While microdata of the second wave of Cedefop's ESJS are at the core of the methodological approach, they are combined with the latest figures from Cedefop's skills forecast and with relevant employment and skills indicators produced by Cedefop's skills intelligence tool. In addition, aggregates from publicly available Eurostat datasets ([Adult education survey](#) (AES), [European labour force survey](#) (EU-LFS), the survey on the use of ICT in households and by individuals, and [European statistics on income and living conditions](#) (EU-SILC) enrich the insights into employment and skills development of low-qualified adults and adults employed in low-skilled jobs.

From a statistical perspective, descriptive analyses were conducted to examine the frequencies and distributional shares of workers with low qualifications and skill levels across the relevant components and datasets. Significant associations between variables in Cedefop's ESJS microdata were primarily assessed using chi-square tests. Additionally, logistic regression models were selectively applied to identify factors associated with low-skilled job characteristics.

Key findings

Gender and age

Men are slightly more likely to hold low qualifications or be in low-skilled jobs, but the gap between males and females is decreasing. A higher share of women in low-skilled jobs engage in basic digital activities, while men in the same group are significantly more involved in advanced digital skills.

There is a substantial difference between the oldest and youngest cohorts in low-skilled jobs, and the share of low-qualified adults is highest among very young and old workers (younger than 25 or older than 59 years).

In addition, women in low-skilled jobs and older workers show substantially lower levels of pay satisfaction, although the pay gap and heightened risk of poverty affect most workers with low qualifications and skill levels.

Educational background

Over two thirds of adults in low-skilled jobs have lower-secondary education or below, and a majority of those have VET backgrounds, while significant differences exist between the fields of study. Adults in low-skilled jobs are more likely to hold qualifications in the fields of manufacturing and construction, healthcare and services.

Higher educational attainment reduces the likelihood of being in a low-skilled job. Although only a small share of adults working in low-skilled jobs have attained a tertiary education, this nonetheless underscores the significant mismatch between the educational attainment and the skill requirements of their jobs.

Occupational characteristics

Low-qualified workers are mostly employed in elementary occupations, skilled agricultural work, and craft and related trades. Roles relevant to manual, service or elementary occupations show an increased possibility of performing only low-skilled tasks. However, there are notable differences in the employment of workers with low qualifications and skill levels by occupational categories. For example, clerical support workers have a relatively high share of jobs requiring low skill levels despite employing a substantial share of workers with higher-level qualifications.

In addition, there is a significant share of high-end jobs (such as those at the managerial or professional level) where workers report the use of low-level skills. Several factors may contribute to relatively frequent low skill demand levels among occupations associated with the highest job complexity; one of which could be, paradoxically, the increasing penetration of information technologies, which has been connected to growing routinisation of even high-end jobs.

Job attractiveness

Significant labour market imbalances persist in occupations employing workers with low qualifications and skill levels, and many jobs with low skill requirements rank high in Cedefop's Labour and Skills Shortage Index. However, these shortages are not solely driven by supply–demand gaps. Factors such as poor working conditions, wages and challenges in adapting to digitalisation and automation make many skill-specific occupations unattractive or inaccessible to young graduates. To address shortages in some occupations, improvements in working conditions are more likely to be an effective recipe.

Job complexity

A large majority of workers who rarely or never engage in complex work activities are employed in low-skilled jobs, where 'complex work activities' are situations in

which workers can choose methods or tools, plan work activities, react to unexpected situations, do varying assignments and learn new things. Learning new things is among the least frequent work activities of adults employed in low-skilled jobs.

Low-complexity jobs discourage adults from recognising their skill gaps and engaging in upskilling activities. This lack of engagement can negatively impact their long-term employability and prospects for upward job mobility, further entrenching them in low-skilled roles.

Educational mismatches

A large share of adults in low-skilled jobs face qualification mismatches. Mismatch levels are especially high among vocational graduates, who report higher rates of both overqualification and underqualification compared with general education graduates. This is evident across many occupations, with the highest overqualification among elementary workers, service and sales staff, and machine operators, while technicians and associate professionals display the lowest underqualification rates.

Skills development

Low-qualified adults have consistently lower participation rates in education and training – less than half the average of the whole population. Countries with the highest participation rates in education and training usually display a smaller gap between the participation rates of adults with low- and high-level qualifications, and narrowing this gap across the whole EU should remain a priority for skills development policies.

Although a high share of workers in low-skilled jobs saw a general need for skill development, most did not perceive the need for upskilling in technical or numerical skills. Only 8% strongly felt the need to improve digital skills. Compared to higher-skilled adults who report significantly greater digital upskilling needs, this finding highlights a lack of motivation and possibly also limited development opportunities for the workers in low-skilled jobs, which is also relevant for their numerical and technical skills.

Digital skills

Adults in low-skilled jobs tend to have significantly lower levels of digital skills than adults in jobs requiring higher skill levels. Nearly 40% of EU+ ⁽¹⁾ workers who only perform basic digital tasks are in low-skilled jobs. While these workers frequently

(¹) EU-27, Norway and Iceland.

possess digital communication and collaboration skills, major gaps remain in digital content creation and problem-solving. These gaps are critical since employers most often demand digital content creation and problem-solving skills, highlighting the need for targeted upskilling initiatives for adults with low qualifications and skill levels.

Employment developments

Both past and forecast employment developments point towards further decline of job opportunities for people with low qualification levels, and a growing risk for those who only use low levels of skills at work. Cedefop's skills forecast expects that the decline of job opportunities for people with low qualifications will accelerate in the next decade, resulting in the loss of 32% of these jobs by 2035.

The sectoral developments are reflected in the occupational structure. The occupations with higher qualification and skill needs, driven by job creation in sectors with higher value-added, are growing substantially in number. As a result, the pressure on upskilling and reskilling people with low qualifications grows stronger over time. It affects the most occupations that face a negative employment outlook, and at the same time, they experience the fastest decline of jobs with low qualification requirements. Occupations that have predominantly low skill requirements are also quite sensitive to these developments. Cedefop has argued that workers in such jobs often accumulate several vulnerabilities, are more likely to be in precarious jobs and are at the highest risk of unemployment.

Occupations that combine very negative employment and a low qualification level forecast – while also including a large share of workers who only use low levels of skills at work – include general and keyboard clerks, other clerical support workers, protective services workers, skilled agricultural workers, skilled forestry, fishery and hunting workers, handicraft and printing workers, food processing, woodworking, garment and other craft and related trades workers, stationary plant and machine operators, drivers and mobile plant operators, and cleaners and helpers. Together, these occupations represent almost 44 million jobs. Of these 44 million, more than 10 million have low qualifications and over 30 million are employed in low-skilled jobs.

Labour market outcomes

People with low qualifications and skill levels face notable challenges in the labour market, and their disadvantage grows over time. In 2024, adults with low qualification levels in the EU had employment rates below 60%, with only three Member States exceeding 70%. While unemployment rates for this group have been steadily declining, the pace of improvement has lagged behind that of

individuals with medium- or high-level qualifications. Among low-qualified workers, younger cohorts (younger than 40 years) remain the most vulnerable category. Occupations with a higher share of low-skilled jobs also seem to expose their workers more to unemployment risks, although the lack of longitudinal data does not allow for full confirmation of this observation.

Aside from employability, supporting adults with low qualifications and skill levels to upskill and gain higher qualifications also has other benefits in terms of higher pay and job quality.

On average, workers with low qualifications earn 18% less than workers with medium qualifications, and one third of them are at risk of poverty or social exclusion.

Similarly, adults in low-skilled jobs earn substantially less than higher-skilled workers and report lower satisfaction with pay and working conditions. Job quality is regarded as particularly poor in elementary, service and sales occupations, along with skilled agricultural, forestry, and fishery workers.

While poor job quality is consistent across gender, age, and education groups, significant differences in pay satisfaction remain, with women and older workers (55–64) reporting the lowest levels. The findings highlight key challenges, including the gender gap prevalent in low-skilled jobs and the limited opportunities for development among older workers.

Policy pointers

To address the challenges faced by adults with low qualifications and skill levels in the European labour market, the development of targeted upskilling and reskilling programs should become a priority, focusing on enhancing their digital skills, as well as technical and numerical skills, to help them adapt to the changing labour market demands.

Persistent educational mismatches (particularly among VET graduates in low-skilled jobs who are often over- or under-qualified for their jobs) call for better alignment between education and training programmes and current labour market needs.

Recognition of individual learning needs and addressing barriers to learning are essential and should inform a coordinated effort to provide tailored learning opportunities, guidance and both financial and non-financial support to facilitate learning access.

Promotion of job quality and decent working conditions through engagement and coordination with stakeholders and social partners could help in addressing skills shortages that are often associated with low-skilled jobs. Particular attention

should be paid to addressing the persistent pay gap and limited access to development opportunities faced by women and older workers in low-skilled jobs.

This can be achieved through initiatives such as targeted training programs tailored to the needs of these groups and outreach efforts to promote their participation in upskilling and reskilling programs.

Finally, an ever closer collaboration between educators, employers, workers' representatives and policymakers is needed to build a more inclusive and resilient workforce and to make the digital and green transitions work for everyone.

Conclusions

The future of adults with low qualifications and skill levels in the European labour market faces significant challenges, such as declining job opportunities, limited participation in continuing skills development, increased risks of unemployment and being 'locked in' to poor-quality jobs. At the same time, many of the jobs with low-skill characteristics are classified as shortage ones and their vacancies are often hard to fill. Many aspects of the low-skilled workplaces, such as earnings, working conditions, access to training, opportunity to work on varying and meaningful tasks and possibility for career growth, make them unattractive to workers and exacerbate the recruitment difficulties that employers perceive.

By understanding the characteristics, skills development needs and employment trends of adults with low qualifications and skill levels, targeted initiatives to support their job mobility and growth can be developed. Well-designed upskilling and reskilling programs, along with increased engagement initiatives for training participation, are essential to help this group adapt to the changing labour market demands and ensure their long-term employability. Addressing these issues will require a concerted effort from educators and social partners.

CHAPTER 1.

Introduction

1.1. Setting the scene

The European Union's economy had to absorb two significant shocks in recent years. The COVID-19 pandemic brought unprecedented changes to the labour market, temporarily shutting down large segments of the EU's economy and putting, at the height of social distancing measures, two fifths of EU workers on full telework (Eurofound, 2020). The disruption of business operations and the decline of customer demand in many key sectors resulted in more than three million jobs lost (Cedefop, 2022a).

Since early 2021, the EU labour market has started to recover, but one year later, another challenge struck when Russia invaded Ukraine in February 2022. A large refugee wave – over 5.6 million Ukrainians were recorded as refugees in Europe (UNHCR, 2025) – combined with energy prices and inflation spikes (European Parliament, 2023), put the recovering EU economy under renewed pressure.

In the face of considerable odds, the EU's labour market has shown marked resilience. The COVID-19 employment depression was relatively mild and short (considering the scale of the pandemic's impact) and, since then, almost 10 million new jobs have been added to the EU economy, pushing the total employment to 201.3 million in 2024 (see Annex, Figure 34).

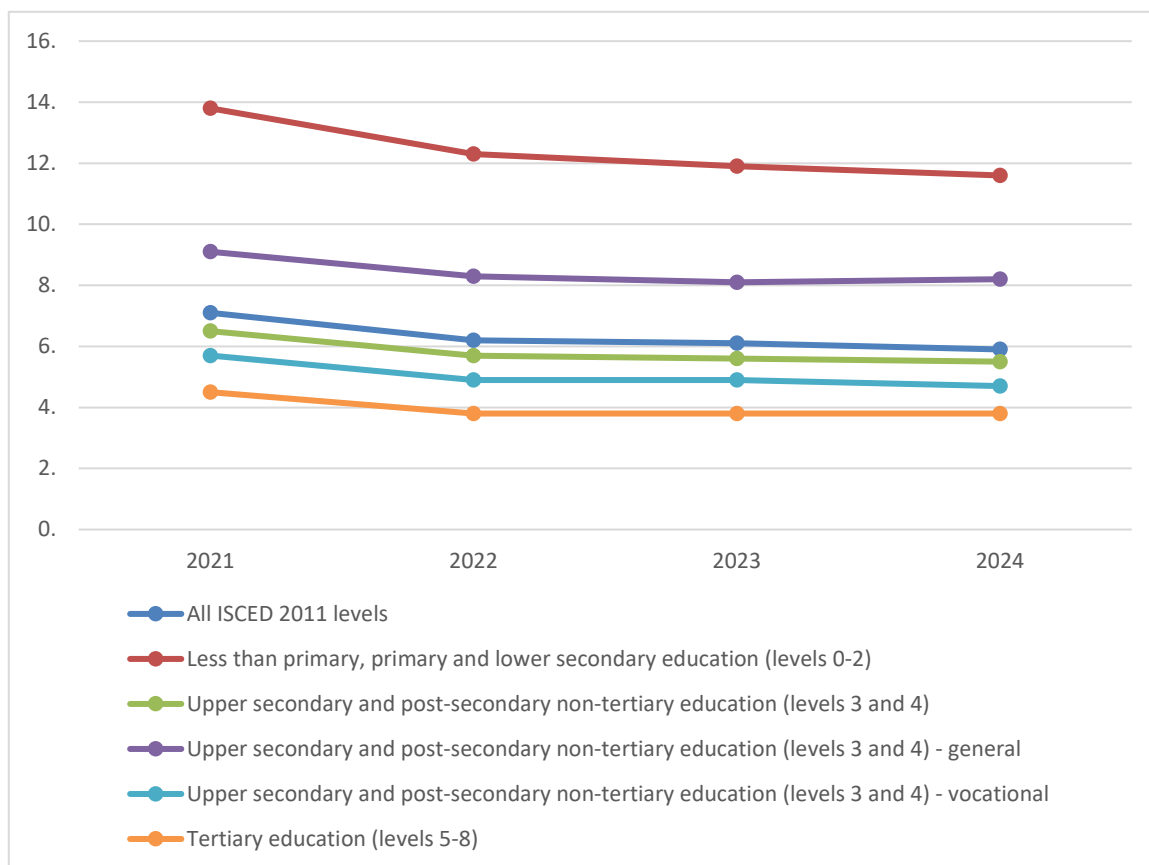
With the rise in total employment, employment rates also increased, reaching almost 77%. In 19 EU countries, the employment rate has already exceeded the declared 2030 EU target of 78% (see Annex, Figure 35).

The rising job creation and employment rates marked a positive development for people, who could choose from an increasing number of work opportunities and became less exposed to the risk of unemployment. These benefits, however, were not equally shared across the diverse European population.

Employment rates, while high and growing overall, have displayed significant differences across educational attainment and skills levels. They reached over 80% for highly educated workers (ISCED level 5–8) across all countries, but, in the case of workers with low levels of education (ISCED level 0–2), they were markedly lower and above 70% in only three EU+ countries (see Annex, Table 15).

The unemployment rates also largely kept the differences driven by educational attainment. People holding tertiary education levels or with upper secondary vocational education fared the best in the job market, while the unemployment rate of people with low qualification levels remained approximately 2.5 times higher (see Figure 1).

Figure 1. **Unemployment rate by educational attainment (in %)**

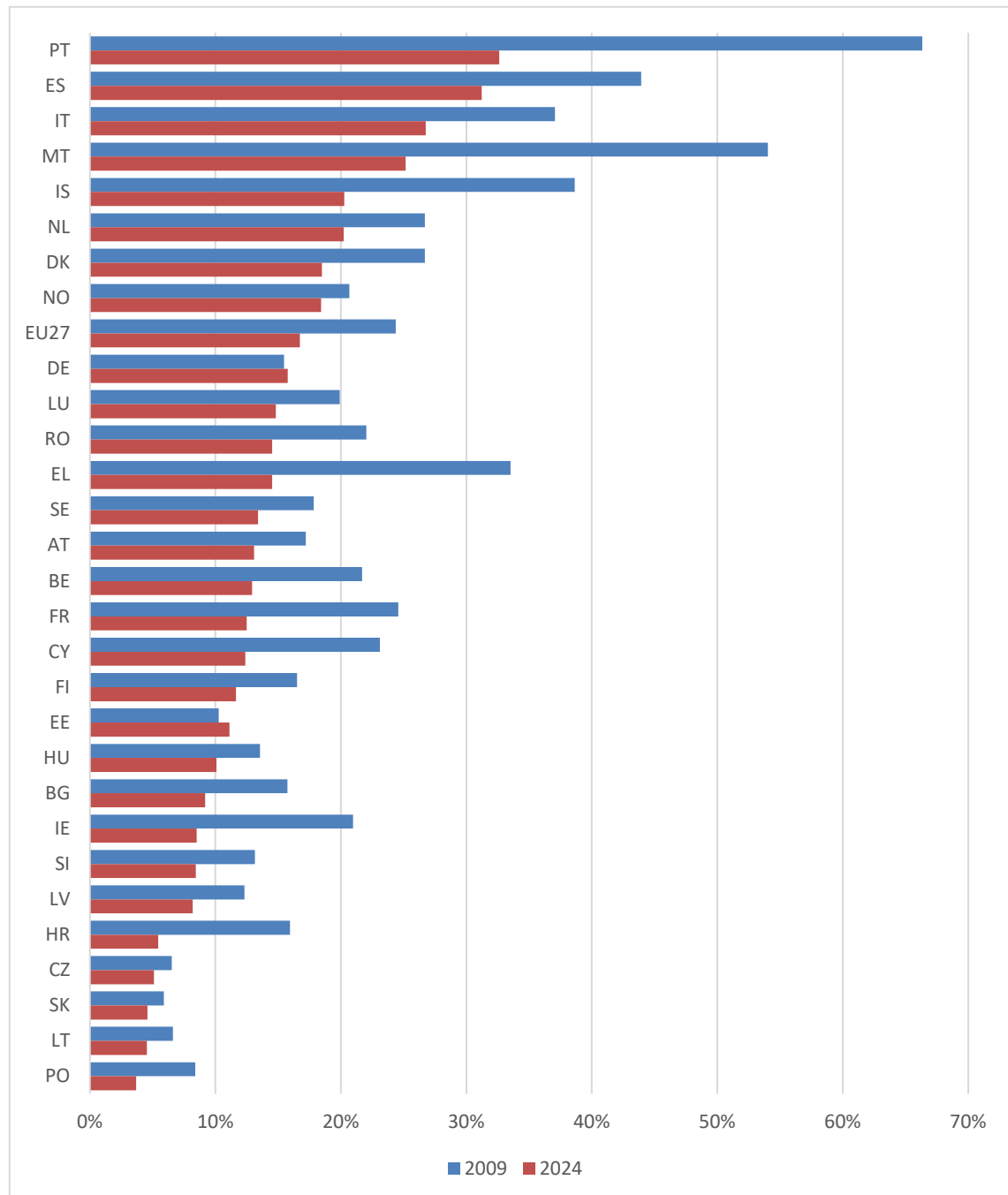


Source: Eurostat. EU-LFS. Unemployment rates by sex, age and educational attainment level (%). Online data code: lfsa_urgaed.

Across the EU, low-qualified adults represent higher shares of the population in southern European countries, such as Portugal, Spain or Italy (where their share still exceeds 25%), and the lowest shares in central and eastern European countries, such as Poland, Lithuania, Slovakia or Czechia (with a 5% or lower share of the total active population). Over time, their shares in the population are declining everywhere, and the differences between European nations are decreasing (see Figure 2). The only exceptions to that trend in the 2009–2024 period were Germany – which was likely caused by a significant influx of migrant workers, whose numbers have been rising steeply in recent years, going from

85 000 in 2010 to over 350 000 in 2022 (Statistisches Bundesamt, 2023) – and (possibly for similar reasons) Estonia (OECD, 2023).

Figure 2. Share of low-qualified adults in the active population (in %)



Source: Eurostat. Active population by sex, age and educational attainment level (1 000) [lfsa_agaed__custom_15171744].

The employment of low-qualified workers shows similar patterns, but, aside from Germany, more countries have registered their growing share of total employment, such as Estonia and Czechia (see Annex, Figure 34).

Generally, the employment shares of low-qualified workers have declined across Europe until 2021 (in 26 out of 29 countries analysed) but grew in most countries (16 out of 29) between 2021 and 2023. It is possible that this (likely) temporary upward trend in the data was influenced by the Russian military aggression in Ukraine, as many of the countries which recorded higher increases in the share of low-qualified people in employment were those that received a substantial number of Ukrainian refugees (see Annex, Figure 35). Although many Ukrainian refugees, primarily highly educated women, have entered the labour market quickly, their employment often reflects available social networks rather than their qualifications. As a result, many work in low-skilled or part-time jobs, leading to widespread skills mismatches, often influenced by childcare responsibilities (OECD, 2023).

The evidence on the employment share of low-qualified people (Figure 2) is similar to findings of research work on adults' level of cognitive skills in literacy and numeracy. OECD (2019) has concluded that 26% of adults are at most able to complete some very basic reading and mathematical tasks, and Cedefop (2022) estimated that around one in four workers in the EU+ rarely perform basic numerical calculations or read anything beyond simple texts at work.

Even earlier rounds of Cedefop's skills forecast (Cedefop, 2018) had projected a reduction of manual occupations and a growing importance of jobs frequently requiring communication and social skills. At the same time, new challenges have emerged from digitalisation and automation trends, which have rendered adults with low qualifications and skill levels more vulnerable to shifting skill needs. Cedefop's skills forecast digitalisation scenario (Cedefop, 2024) foresees that 80% of the European population will reach at least a basic level of digital skills by 2030, and while it acknowledges that digitalisation is a significant factor in new job creation, it also highlights that digitalisation has adverse effects on employment, heavily impacting jobs in sectors with a high risk of automation such as manufacturing, construction and agriculture.

Recent analysis of online job advertisements concluded that demand for digital skills in non-IT jobs is growing, and some sectors that relied less on digital skills only a few years ago are now going through a rapid and profound digital transformation. Many EU countries will need to upscale their digital skills provision drastically (Cedefop, 2023), as basic levels of digital skills are essential across most types and levels of jobs (Cedefop, 2015, 2018, 2021).

Analysis of the ESJS dataset revealed that nearly 50% of the EU+ jobs are classified as low-skilled in terms of job skill requirements, defined across literacy, numeracy, interpersonal skills and problem-solving. Those with low foundation skills requirements (including only literacy and numeracy) compose almost 47% of EU+ employment.

This finding reaches a similar conclusion as some previous estimates on the prevalence of low-skilled work (Cedefop, 2020c) and implies that low-skilled jobs extend far beyond the low-qualification boundaries and that they bring substantial risks for workers employed in them.

Regarding jobs with low skill requirements (as depicted in Table 1), they reach the highest share in Czechia, Lithuania, Latvia, and Hungary. The situation is different for those with only low foundation skill requirements (literacy and numeracy), where Italy ranks first, followed by France, Bulgaria and Lithuania, while Czechia and Latvia appear much lower in the list. The lowest share of jobs with low skill requirements is found in Ireland, while the lowest share of workers with low foundation skills is in Luxembourg.

Table 1. **Share of those with low skill and low foundation skill requirements at their main job**

Country	Low skills	Low foundation skills
CZ	60.9%	46.9%
LT	60.1%	51.6%
LV	59.2%	46.2%
HU	58.6%	50.4%
SK	54.4%	42.8%
EE	54.3%	49.0%
IT	52.9%	55.0%
FR	52.8%	52.2%
PL	52.3%	46.2%
CY	52.2%	51.0%
DE	52.1%	47.7%
IS	51.7%	45.1%
BE	51.6%	47.5%
HR	49.5%	44.4%
BG	48.8%	52.1%
NL	48.6%	41.3%
PT	45.8%	43.8%
AT	45.7%	41.6%
SI	45.6%	39.3%
EL	44.5%	45.2%
NO	44.4%	43.4%
MT	43.6%	46.2%
LU	43.6%	33.4%
DK	43.6%	38.9%
RO	43.5%	37.8%
ES	43.4%	41.0%
FI	42.8%	42.8%
SE	42.6%	39.2%
IE	40.3%	39.4%

NB: Low skills = low levels of literacy, numeracy and social skills. Low foundation skills = low levels of literacy and numeracy.

Source: Own calculations based on the ESJS micro dataset (2021).

There is a notable paradox in comparing the order of countries by the share of low-qualified workers and the share of workers in low-skilled jobs. In some European countries, such as Portugal, Spain, Malta or Italy, the difference between the share of low-qualified workers and the share of workers in low-skilled jobs is

rather small, while it is substantial in countries like Czechia, Lithuania, Latvia or Slovakia (see Annex, Figure 36).

This indicates that while achieving at least the upper-secondary level of educational attainment is an important factor (especially when the risks of unemployment and poverty are considered), it does not automatically grant access to higher-quality jobs, as this publication illustrates later.

1.2. Motivation and research objectives

The level of qualification and skills individuals possess greatly impacts their employment opportunities and career growth. With rising employment rates and draining of the EU's talent pool, creating opportunities for individuals with low levels of qualification and skills to develop personally and professionally remains one of the most important avenues to support Europe's future competitiveness.

Cedefop (2017) has argued that people with low levels of skills are particularly vulnerable in the labour market, and that improving and maintaining high-level skills and workforce competences is essential to ensure that Europe remains competitive and innovative globally in the face of rapidly changing labour market needs and demographic challenges. Recent findings point towards a strong link between low educational attainment, a heightened risk of unemployment, lower employment rates and a greater vulnerability to poverty, social exclusion and financial traps (European Commission, 2025). The [EU's union of skills](#) strategy has also recognised that adults with low skill levels face challenges in accessing training, even though they need it the most.

Significant labour market imbalances persist in occupations employing workers with low qualifications and skill levels (European Labour Authority & Fondazione Giacomo Brodolini, 2024). Many jobs with low skill requirements rank highly in the latest edition of [Cedefop's Labour and Skills Shortage Index](#), and lower-qualified workers are forecasted to be in shortage (Cedefop, 2025b). However, these shortages are not solely driven by supply–demand gaps. Factors such as poor working conditions, wages, migration and challenges in adapting to digitalisation and automation make many skill-specific occupations unattractive or inaccessible to young graduates (Causa et al., 2025). Cedefop (2024b) has concluded that workers in shortage occupations are, on average, more likely to carry out relatively lower-skilled, manual tasks, and that improvement in working conditions is more likely to be effective in addressing shortages in some occupations.

Vocational graduates are particularly vulnerable, but at the same time, VET qualifications are among the most difficult to recruit for (European Labour Authority

& Fondazione Giacomo Brodolini, 2024), also because they are often linked to jobs with poorer working conditions. These factors contribute to ongoing labour shortages and may partly explain the skill mismatches and cases of over- or underqualification frequently observed among low-skilled VET graduates.

Green and digital megatrends are also key factors contributing to the growing vulnerability of workers in low-skilled jobs. As these jobs typically demand fewer digital skills, the growing risk of automation and task displacement makes developing digital skills essential for sustaining quality employment and adapting to technology-driven workplaces. Data from the digital decade (European Commission, 2024) reveal that individuals with higher qualifications are significantly more likely to possess basic digital skills than those with low education, underscoring persistent disparities across education levels and age groups.

With almost half of the employed population in the EU+ working in low-skilled jobs, it is essential to analyse the factors that heighten their vulnerability in relation to employability and skill development. However, these workers are not a homogeneous group; they include individuals with diverse characteristics and needs, requiring a comprehensive and strategic approach to upskilling (Cedefop, 2020). Relevant factors include not only the type and level of educational background but also skill needs, access to training opportunities, demographics, job complexity and occupational characteristics. Although various sources identify individuals with low educational attainment and skills as a vulnerable group facing significant labour market challenges (European Commission, 2025), in-depth analysis of their key characteristics, challenges and opportunities across the EU remains limited.

To shrink this research gap, this publication focuses on understanding the characteristics, employment trends and challenges for adults with low levels of qualification and skills. It utilises the latest employment and training participation data, combined with Cedefop's unique datasets of [European skills and job survey](#), [skills forecast](#), and [skills intelligence](#).

The main objectives of this paper are to:

- (a) examine the individual, educational and occupational characteristics of low-qualified and low-skilled adults in the EU;
- (b) explore educational mismatches, training needs and digital skills within these groups;
- (c) analyse occupational and sectoral employment trends, identifying key challenges and opportunities for low-qualified and low-skilled adults in the EU.

This paper's primary contribution lies in providing a deeper understanding of the diverse characteristics and vulnerabilities of this heterogeneous group,

shedding light on the factors that shape their employment prospects and development pathways. The evidence provided highlights the importance of adult learning and continuous upskilling and reskilling for career progression and labour market readiness, particularly for adults with low qualifications and skill levels.

The findings aim to inform policymakers in designing well-targeted, evidence-based initiatives that promote skill development and enhance labour market inclusion for adults with low qualifications and skill levels across the EU. By unpacking the nuanced barriers and opportunities facing these subgroups, this paper supports a more tailored approach to addressing persistent inequalities in access to quality employment.

CHAPTER 2.

Definition and characteristics of adults with low qualifications and skill levels

2.1. Background and methodological approach

There are various definitions of who constitutes the group of people with low skill levels. The most frequent one, which is also the narrowest in its scope, is the use of the levels of education provided by the ISCED. Using the ISCED, people with low levels of qualifications are those with education attainment levels from 0 to 2, which correspond to (0) early childhood education, (1) primary education and (2) lower secondary education.

The advantage of the ISCED is that it is an established variable in key socioeconomic based, EU-wide surveys (such as the EU-LFS, Adult Education Survey or the Survey on Income and Living Conditions), but it does not take into account different types of skills, abilities and factors that can result in low-skilled status, such as long-term unemployment, skills obsolescence, under-skilling or socioeconomic factors such as a migrant background (Cedefop, 2017).

Another approach, building mostly on the [International Standard Classification of Occupations](#) (ISCO), utilises the methodology of [European socio-economic groups](#), a derived classification that allows the grouping of individuals with similar economic, social and cultural characteristics.

The European socioeconomic groups comprise seven broad categories. Four of them are identical to broad ISCO occupations (managers, professionals, technicians, associate professionals and clerical support workers), while the remaining three provide different groupings: small entrepreneurs, skilled industrial employees and 'lower-status' employees. The last two groups are also ISCO-based, but provide larger aggregations, based on a mix of one- and two-digit ISCO occupations.

Within this classification, the 'lower-status employees' group, which consists of persons employed within occupations coded ISCO 51 (personal service workers), 52 (sales workers), 6 (skilled agricultural workers) or 9 (elementary workers), is the closest to the nature of low-skilled jobs. Lower-status employees have the highest share of people with low qualification levels, but they also include 21% of workers with medium qualification levels and 5% of workers with high qualification levels.

The OECD embraces the low-education-level approach, but it also incorporates in its definition the adults with low cognitive skill levels: those who

score at proficiency level 1 or below in literacy or numeracy on the OECD survey of adult skills (PIAAC). Such adults can perform at most very simple reading tasks, like reading brief texts on familiar topics, and basic mathematical tasks, such as one-step or simple processes involving counting, sorting, basic arithmetic operations, and understanding simple percentages (OECD, 2019).

In addition to these two criteria, low digital skills are recognised as an obstacle to societal and economic participation and represent another dimension of low skills (ibid).

Cedefop (2020a) builds further on this approach and developed its definition of adults with low skill level, which comprises four distinct categories: (a) adults with low education (EU-LFS); (b) adults with medium–high education working in elementary occupations (EU-LFS); (c) adults with low digital skills (community statistics on information society); and (d) adults with low cognitive skills (PIAAC).

The realisation of the second wave of Cedefop’s European skills and jobs survey in 2021 allows for defining the low-skilled adults using a much more streamlined methodology. It has been introduced in Cedefop’s [main survey publication](#) (Cedefop, 2022). In this approach, adults with low skill levels are identified by the nature of their job tasks and work characteristics. Similar to the OECD approach, their roles typically involve low overall skill demands and require limited foundational skills (literacy and numeracy). This approach makes job skills a proxy of occupational tasks, as described in Eurofound (2025), since task profiles vary clearly among occupations, including manual, cognitive and social categories.

The paper analyses data for both low-qualified and low-skilled groups of workers according to the availability of the selected datasets.

Table 2. **Definition of low-qualified and low-skilled adults**

Low-qualified adults	Adults possessing an education level below upper secondary, encompassing early childhood education (ISCED 0), primary education (ISCED 1) and lower secondary education (ISCED 2).
Adults in low-skilled jobs	The term follows the ESJS definition, which classifies those adults as employed in jobs with limited skill requirements. Skill levels are assessed across three categories: foundation skills (literacy and numeracy), social/interpersonal skills (*) and problem-solving and creativity skills (**).

* Interpersonal skills include a) providing advice or counselling; b) presenting products, services or ideas related to work; c) interacting with people outside the organisation (e.g. customers or clients); d) teaching or training others; e) offering emotional support or personal care; f) persuading others to take action or make purchases; and g) working in a team to plan and achieve shared objectives.

** Problem-solving and creativity skills include a) searching for relevant information or documentation (e.g. books, online sources) to solve problems; b) seeking input from colleagues or others; c) experimenting with new ideas; d) developing or improving products or services; and e) creating new or improved ways of working.

The findings of this paper are based on the analysis of various datasets.

- (a) The EU-LFS. This is the largest European household sample survey, focusing on individuals of working age (15 years and above). Thematically, the EU-LFS focuses (among other topics) on employment and education characteristics of the workforce. In this publication, we explore several summary tables available at [Eurostat's online database](#) and the EU-LFS-based indicators included in [Cedefop's skills intelligence tool](#).
- (b) [Eurostat's survey on the use of ICT in households and by individuals](#). This covers households with at least one member aged between 16 and 74 years, and individuals aged between 16 and 74 years.
- (c) The European Union statistics on income and living conditions (EU-SILC). This is a household and individual collection of data on income, poverty, social exclusion and living conditions. All household members are surveyed, but only those aged 16 and older are interviewed.
- (d) Eurostat's AES. This survey covers adult participation in education and training (formal, non-formal and informal learning). Up to 2016, the survey covered the resident population aged 25 to 64 and, from 2022, the population aged 18 to 69. The 12 months before the interview are used as the reference period for participation in education and training.
- (e) [The Cedefop skills forecast dataset](#) (2025 release). This provides quantitative projections of future employment trends by economic sector and occupational group. The analysed forecast incorporates global economic developments up to autumn 2023 and covers the period until 2035.
- (f) The second wave of Cedefop's ESJS. The survey collects data on job–skill requirements, digitalisation, skill mismatches and workplace learning from over 46 000 adult workers across 29 European countries. In the analysed dataset,

23 179 workers are classified as low-skilled, representing nearly half of the total sample.

From a statistical perspective, descriptive analyses were conducted to examine the frequencies and distributional shares of workers with low qualifications and skill levels across the relevant components and datasets. Significant associations between variables in Cedefop's ESJS microdata were primarily assessed using chi-square tests. Additionally, logistic regression models were selectively applied to identify factors associated with low-skilled job characteristics.

2.2. Analysing low-qualified and low-skilled adults

2.2.1. Gender and age characteristics

In terms of demographics, men are more likely to hold low qualifications; although the difference between men and women decreases over time. In 2024, 19% of men were low-qualification holders, compared to just 14% of women. In 2014, these shares were 23% and 18%, respectively. In the whole population of low-qualified adults, the ratio between men and women reached 53:47 (Eurostat, 2025). From the viewpoint of skill characteristics, the proportion of adults in low-skilled jobs is nearly equal between men and women, with both genders accounting for roughly 50%.

Regarding age groups, the share of people with low qualification levels is the highest among very young and old workers (younger than 25 or older than 59), while, inversely, the share of people with high qualification levels is the highest among young and middle-aged workers (25–59, see Table 3 for 2019 and 2024).

Over time, the share of people with tertiary qualifications rises across all age groups. In the past five years, the share of people with medium-level qualifications only grew in the age group 60+, while the share of people with low qualification levels only grew in the age group 15–24.

Table 3. Employment structure by age and education attainment level (in %)

2019	15–24	25–39	40–59	60+
Low (levels 0–2)	26%	12%	18%	23%
Medium (levels 3–4)	59%	45%	49%	46%
High (levels 5–8)	15%	43%	33%	31%

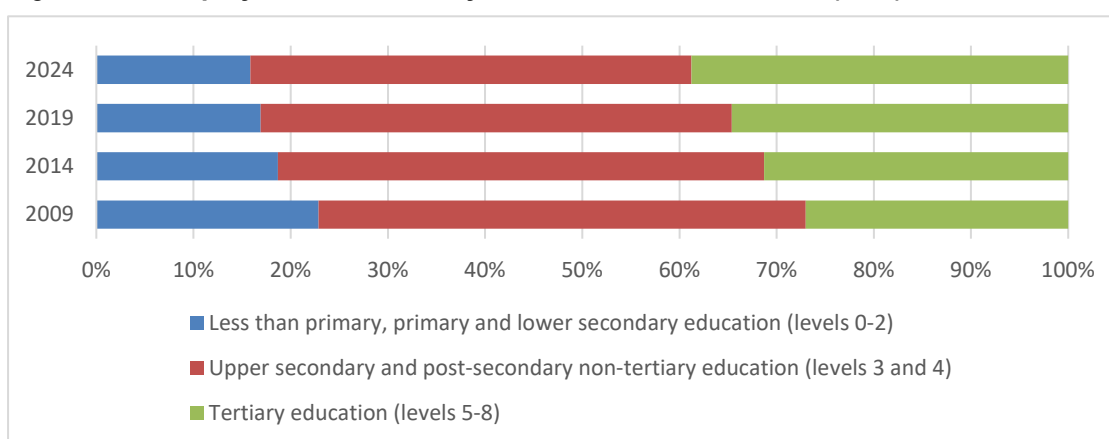
2024	15–24	25–39	40–59	60+
Low (levels 0–2)	27%	11%	17%	21%
Medium (levels 3–4)	56%	41%	46%	47%
High (levels 5–8)	18%	47%	38%	32%

NB: Change in time between 2019 and 2024 – red stands for decline, green stands for growth.

Source: Eurostat. EU-LFS. Employment by sex, age and educational attainment level (1 000) [lfsa_egaed__custom_16621152].

These developments have impacted on the overall qualification structure of the EU workforce. Since 2019, there have been more than 10 million new jobs occupied by people with high qualifications, while the jobs with low and medium qualification levels decreased by one million and three million, respectively. From the longer-term perspective, the shifting qualification-level structure of employment displays a steady trend (see Figure 3), although the job opportunities for mid-level qualifications seem to be declining a bit faster, which in the past triggered intense discussions on the technology-influenced ‘hollowing out’ of related occupations (Cedefop, 2020b).

Figure 3. Employment structure by level of education attained (in %)



Source: Eurostat. EU-LFS. Employment by sex, age and educational attainment level (1 000) [lfsa_egaed__custom_16621152].

From a skills perspective, the differences between age groups go in a similar direction. The share of workers in jobs with low foundational skills requirements ranges from 44% among those aged 35–44 to 52% among those aged 55–64.

However, when considering low-skilled jobs across all skill dimensions, a notable gap emerges between the oldest and youngest cohorts: 50% of adults aged 55–64 are employed in low-skilled jobs, compared to only 40% of those aged 25–34. In terms of gender distribution, women are slightly more represented in the low-skilled employment, accounting for nearly 51%.

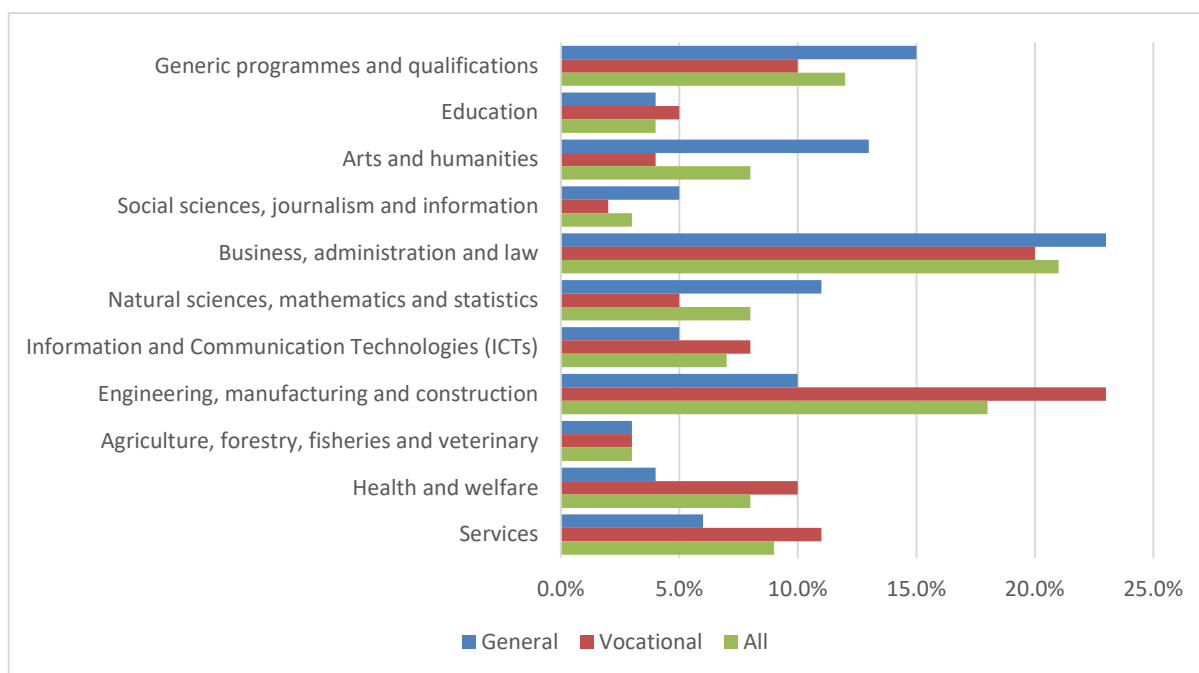
2.2.2. Educational characteristics

Just under two thirds (64%) of workers who have lower-secondary education or below (ISCED 0–2) are employed in low-skilled jobs, with vocational education backgrounds overrepresented (60% versus 40% for general education). This share is even higher (72%) for those in jobs with low foundation skills requirements. In contrast, only 36% of adults who have attained a tertiary-level education (ISCED 5–8) work in low-skilled jobs, and just 27% in those with low foundation skills requirements. Considering the nature of jobs which usually require tertiary education, these shares nonetheless appear to be quite high and indicate significant overqualification rates.

The share of adults in low-skilled jobs among workers with upper-secondary or post-secondary non-tertiary education (ISCED 3–4) is 59%. The differences in the distribution of required occupational skill levels across qualification categories are statistically significant (χ^2 test, $p < 0.001$), underscoring the importance of higher educational attainment in reducing the likelihood of having a low-skilled job.

Based on regression analysis results, educational characteristics like the field of study and qualification level are strongly associated with the risk of being employed in low-skilled jobs ($p < 0.001$). However, this pattern does not hold consistently across all fields of study. In disciplines such as engineering, manufacturing and construction, healthcare and services, adults with vocational degrees are much more likely to work in a low-skilled job. In contrast, fields such as ICT, business administration, arts and humanities, social sciences, natural sciences, mathematics and statistics, and generic programmes and qualifications show lower proportions of VET graduates in low-skilled jobs (see Figure 4).

Figure 4. **Field of study by qualification type (Vocational/General/All) for low-skilled individuals (%)**



Source: Cedefop. Own calculations from ESJS microdata (2021).

2.2.3. Occupational characteristics

Even though workers in low-skilled jobs overwhelmingly hold low qualifications, there are notable differences when comparing the structure of low-qualified workers and those with low skill levels by occupational categories.

The share of low-qualification holders is steadily declining across all occupational categories. It fell under 10% in the case of managers, professionals, technicians and associate professionals already by 2014. The employment data, based on the EU-LFS, are supported by the analysis of the qualification structure in the ESJS microdata, for which the data collection took place in 2021. Table 4 illustrates the differences by occupational categories, where the share of low-qualified ranges between 5 % and 50% (ESJS dataset) and 1% and 47% (latest available EU-LFS data), respectively.

Table 4. **Share of workers with low qualifications across broad occupational categories (in %)**

Occupational category	2014 (EU-LFS)	2021 (EU-LFS)	2021 (ESJS)	2024 (EU-LFS)
Total	19%	16%	20%	16%
Managers	9%	8%	6%	7%
Professionals	1%	1%	5%	1%
Technicians and associate professionals	7%	7%	11%	6%
Clerical support workers	11%	10%	14%	10%
Service and sales workers	24%	22%	31%	22%
Skilled agricultural workers	44%	32%	44%	31%
Craft and related trades workers	27%	25%	28%	26%
Plant and machine operators and assemblers	31%	29%	38%	28%
Elementary occupations	49%	47%	50%	47%

Source: Eurostat. EU-LFS. Employment by sex, age, occupation and educational attainment level (1 000) [lfsa_egised__custom_17997811]. Cedefop. ESJS microdata. Own calculations.

While the differences between broad occupation groups concerning the share of low-skilled jobs reach a similar magnitude (around 50 percentage points separating the occupations with the highest and lowest shares), they are markedly higher, reaching as high as 77% for the share of low-skilled jobs in the plant and machine operators and assemblers occupation, and 76% for the share of jobs with low foundational skill level in the elementary occupations (see Table 5).

Table 5. **Share of workers in jobs with low skill and low foundational skill level (in %)**

	Low skills	Low foundational skills
Total	50%	47%
Managers	25%	22%
Professionals	35%	28%
Technicians and associate professionals	46%	36%
Clerical support workers	55%	41%
Service and sales workers	53%	65%
Skilled agricultural workers	62%	71%
Craft and related trades workers	64%	61%
Plant and machine operators and assemblers	77%	74%
Elementary occupations	70%	76%

Source: Cedefop. Own calculations from ESJS microdata (2021).

Clerical support workers (ISCO main group 4) are the occupation group with the largest difference between the two indices: they are close to the highest-skilled occupations in terms of the (very low) share of people with low qualifications, and at the same time have a relatively high share of jobs requiring low skill levels.

For elementary occupations (ISCO main group 9) and plant and machine operators and assemblers (ISCO 8), both skill-focused indices put the share of workers in low-skilled jobs over 70%, while for the agricultural and trades workers occupations (ISCO 6–7) it is between 50% and 70%. The share of jobs requiring low levels of skills drops for the non-manual mid-level occupations (clerical and service jobs, ISCO groups 4–5, to 53–55%) and is the lowest for managers, professionals, technicians and associate professionals (ISCO 1–3), where it usually stands between 20% and 40%. The results align with those of Eurofound (2025), reporting that low levels of cognitive tasks but relatively high levels of communication skills are required for ISCO 5 occupations, and higher levels of cognitive tasks, communication and use of digital devices for ISCO 1–4 occupations.

In terms of skill requirements, the occupation classification is significantly associated with the level of job skills requirements. In particular, the roles relevant to manual, service or elementary occupations show an increased possibility of low-skill requirements.

2.2.4. Job complexity of low-skilled adults

Although higher-skilled occupations are generally more complex, a notable proportion of workers in these jobs perform only low-complex job tasks. Job complexity is associated with job autonomy and professional development and is defined based on the following dimensions: choosing methods or tools, planning work activities, reacting to unexpected situations, doing varying assignments and learning new things (Cedefop, 2022). Job complexity is a key factor in providing interesting, high-quality work with fewer routine tasks (Bessen, 2015, 2016; Menon et al., 2020) and is also linked to higher levels of perceived job satisfaction (Brown et al., 2010). Hence, the low complexity of jobs is proven to discourage adults from engaging in upskilling activities and learning opportunities (Cedefop, 2020).

Based on the analysis of the ESJS (2021) dataset, among workers who reported that their main job often involves complex activities, 45% were classified as low-skilled. In contrast, low-skilled jobs accounted for about 75% of those who reported little or no involvement in complex job tasks (i.e. rarely or never).

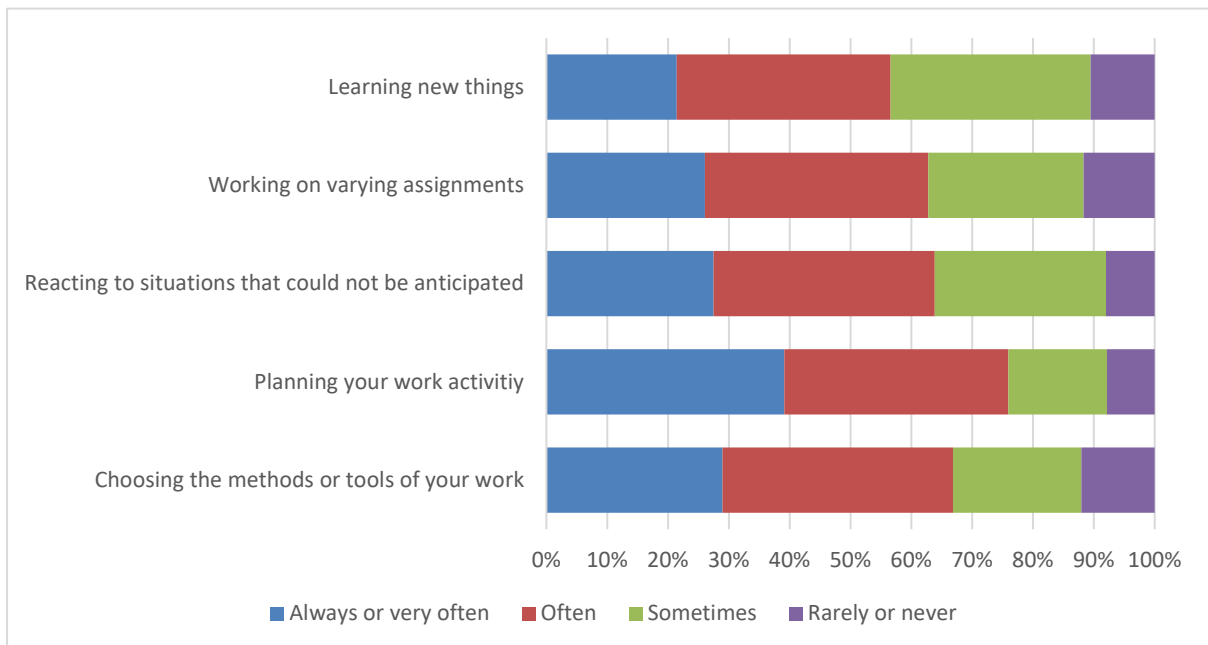
In terms of occupations, complex job activities were reported more frequently (i.e. always or often) among managers, professionals, technicians and associated professionals (concerning jobs with low-skill requirements), with percentages

above 33%. Planning work activities was the most frequently reported complex activity, mentioned by nearly 41% across the three occupational groups, followed by working on varying assignments (35%). Learning new things had the lowest share (32%). A similar trend in the reported frequency of job complexity activities was observed within the overall low-skilled population (Figure 5).

The analysis showed that individuals who engage less frequently in complex job activities are significantly more likely to be in low-skilled jobs ($p < 0.001$). The biggest differences between workers in higher- and lower-skilled jobs were observed in learning new things and planning work activities.

Similarly, workers in low-skilled jobs who engaged in more complex activities, such as working on different assignments or learning new things, were significantly more likely to report a need for upskilling. In contrast, those who rarely planned their work or reacted to unexpected situations were significantly less likely to perceive such a need. This outcome aligns with previous research findings (Cedefop, 2020) and suggests that exposure to more complex or variable work environments increases awareness of skill development needs among workers in low-skilled jobs. The findings underscore that the opportunity to perform complex job activities represents a significant motivation for workers to develop and upskill.

Figure 5. **Share of workers reporting complex job activities in low-skilled jobs (in %)**



Source: Cedefop. Own calculations from ESJS microdata (2021).

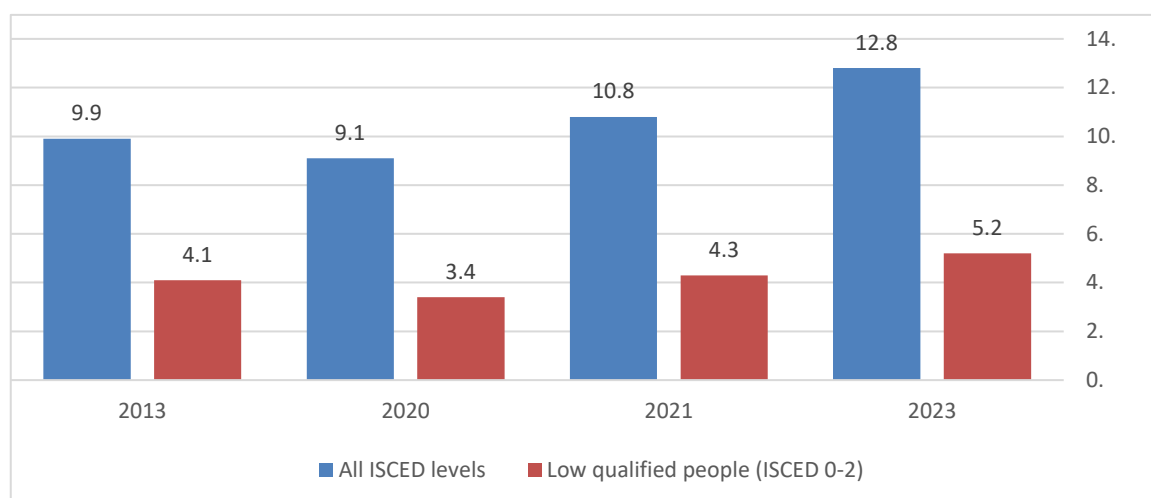
CHAPTER 3.

Skills development of adults with low qualifications and skill levels

3.1. Training participation and upskilling needs

People with low qualifications tend to have fewer opportunities to further develop their skills. Additionally, adults in low-skilled jobs find it more difficult to recognise their own learning needs and are less likely to seek out training opportunities (Cedefop, 2022; OECD, 2019). Over time, the participation rate of low-qualified adults in education and training stays at less than half of the average for the entire population (see Figure 6).

Figure 6. **Participation rate in education and training by educational attainment level (in %)**

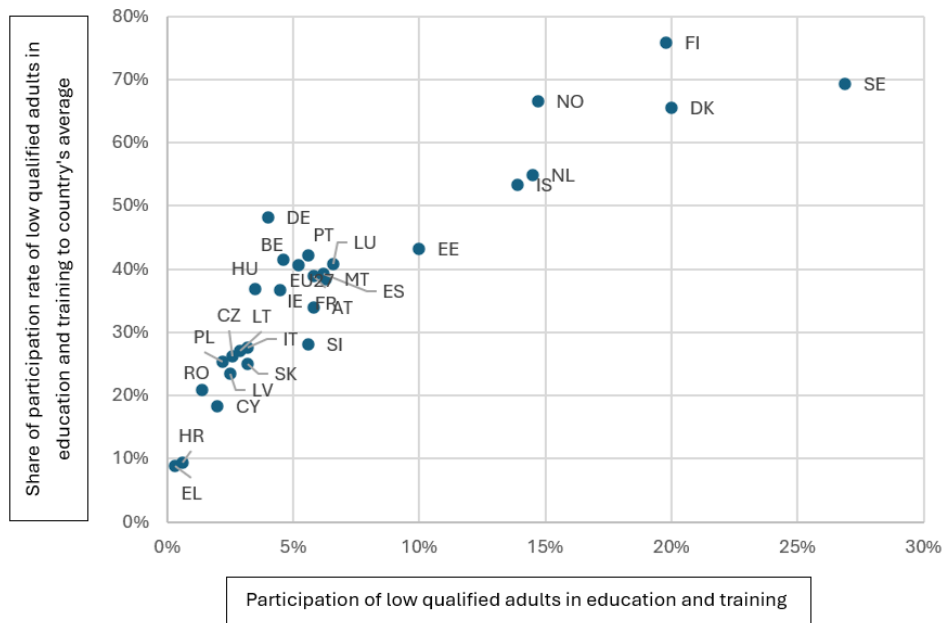


Source: Eurostat. EU-LFS. Participation rate in education and training (last four weeks) by sex and educational attainment level [trng_lfse_03_custom_15395176]. Please note that there was a substantial change in the methodology of the survey in 2021.

In nominal terms, there are notable differences in participation of low-qualified adults in education and training, from almost 27% to less than 1%. Northern European countries – Sweden, Denmark, Finland and Norway – achieve much higher participation rates; however it is notable that, in relative terms (measured as the share of low-qualified adults' education and training participation to average adults' education and training participation), the order of the countries is similar (see Figure 7).

This means that countries with higher participation of low-qualified adults in education and training achieve that not (only) by having higher participation rates in general, but especially by pushing low-qualified adults' participation rates close to average participation rates. In the countries in the lower-left part of Figure 7, low-qualified adults tend to participate in education and training much less frequently than people with higher qualifications, which amplifies their vulnerability to labour market and skill needs changes.

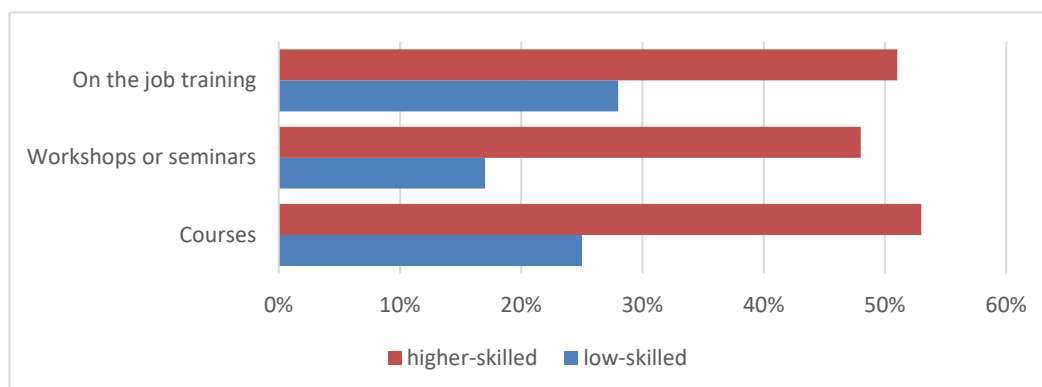
Figure 7. **Participation of low-qualified adults in education and training (2023, in %)**



Source: Eurostat. EU-LFS. Participation rate in education and training (last four weeks) by sex and educational attainment level [trng_lfse_03_custom_15395176].

According to the analysis of the ESJS dataset (2021), adults in low-skilled jobs had significantly lower participation rates in training and education programmes over the past 12 months compared to adults in medium- or high-skilled jobs across all different types of training (χ^2 test, $p < 0.05$, see Figure 8).

Figure 8. **Participation in education and training (last 12 months, in %, by skill level)**



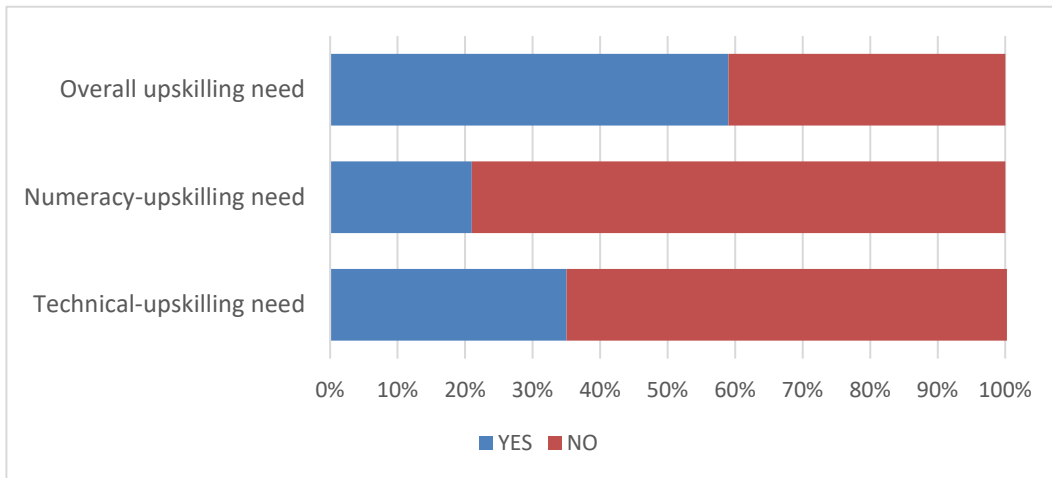
Source: Cedefop. Own calculations from the ESJS microdata (2021).

On average, only one third of all workers who reported training participation in the last 12 months were employed in low-skilled jobs. Almost one in four of these adults participated in courses, and 28% in job training. Workshops and seminars were the least common training option among the workers employed in low-skilled jobs (17%). The low participation rates are more evident when compared with adults with higher skills requirements who reported significantly higher levels of participation across all different types of training (seminars 48%, courses 53%, on-the-job training 51%).

The findings align with previous reports showing that adults in jobs with low skill requirements are less likely to participate in job-related adult learning compared to those with higher skill requirements. Previous reports (OECD, 2019; Shadovitz et al., 2021) show that this participation gap is also evident between low-wage and medium- or high-wage earners. The workers in low-skilled jobs have generally lower perceived upskilling needs. Only 42% of adults who reported a general need to develop new skills were in low-skilled jobs, compared to their 50% share of total employment. The findings of this analysis confirm the lack of motivation or skill development opportunities for the workers in low-skilled jobs, as reported in Cedefop (2021). Similarly, the perceived need to improve numerical or technical skills for adults in low-skilled jobs remained comparably low compared to the overall population (around 35% of those who reported a technical or numeracy upskilling need were low-skilled), rendering workers in low-skilled jobs a vulnerable group in terms of skills and career development.

Among workers in low-skilled jobs, 68% reported no need for skill development, and a larger share did not perceive a need for technical (job-specific) or numerical upskilling (Figure 9). Workers in low-skilled jobs made up nearly one third of those reporting a need for numeracy or technical upskilling, significantly less than their share of the total workforce (50%).

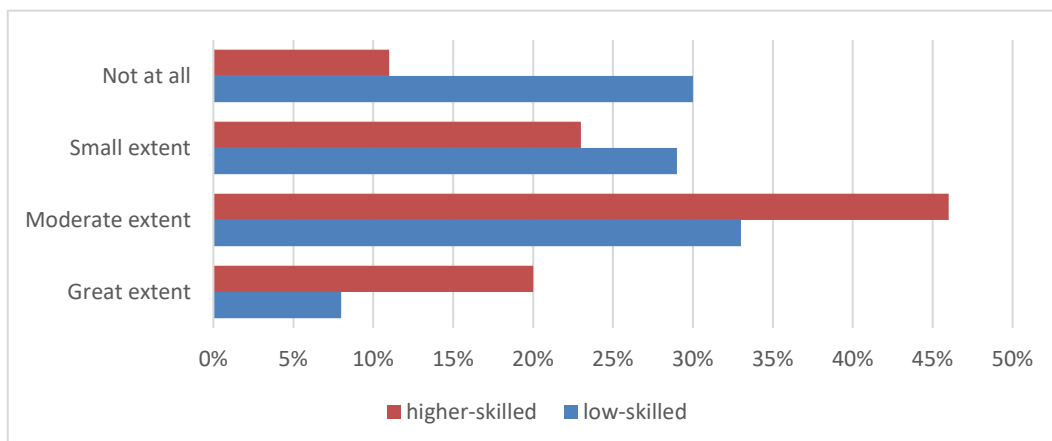
Figure 9. **Upskilling needs of adults in low-skilled jobs (in %)**



Source: Cedefop. Own calculations from the ESJS microdata (2021).

Only a very small share (8%) of workers in low-skilled jobs reported a strong need to improve digital skills, while nearly one third perceived a moderate need for digital upskilling. The crucial need to consider these low rates is confirmed by the difference from adults employed in higher-skilled jobs who reported significantly higher levels of digital upskilling needs (χ^2 test, $p < 0.05$) (Figure 10). As argued in previous Cedefop reports (Cedefop, 2022), although new technologies don't necessarily cause mass unemployment, they tend to change job tasks, creating a need for upskilling and reskilling. To this end, job-skills requirements are the strongest drivers of participation in digital skills training. Educational background, individual attitudes and perceptions towards technology are also important drivers of digital skills training participation (Bertoni et al., 2024).

Figure 10. **Digital upskilling needs of adults in low-skilled jobs (in %)**

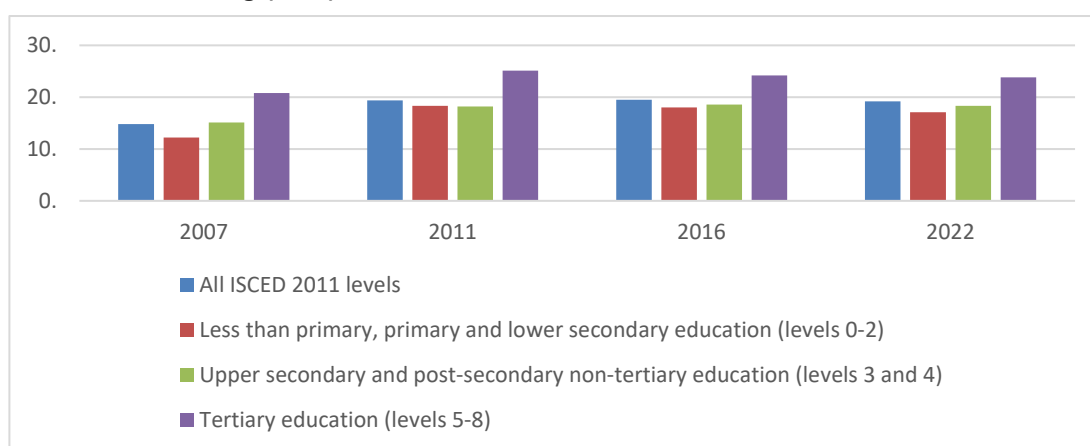


Source: Cedefop. Own calculations from the ESJS microdata (2021).

The perceived need to upskill was significantly different for the workers in low-skilled jobs among occupational groups (χ^2 , $p < 0.001$). More than half of these workers who reported no need for overall upskilling are employed in elementary occupations or as skilled agricultural, forestry and fishery workers. The need for upskilling is most pronounced among professionals (68%) and managers (63%). A more nuanced analysis reveals that adults in several occupations, such as health associate professionals, ICT associate professionals and science and engineering professionals, perceive the highest need for upskilling. In contrast, workers in roles like cleaning and helping, market-oriented skilled agriculture, food processing assistance, personal services, and legal, social, and cultural professions report the lowest need for upskilling, suggesting that their current skill sets are more aligned with the requirements of their jobs.

Several key barriers prevent adults with low qualifications and skill levels from engaging in learning opportunities, including financial and time constraints, motivational factors, lack of holistic guidance, institutional support and the lack of flexible and modular learning (OECD, 2019). The European AES has also focused on the challenges of adults with low qualification levels regarding access to education and training. Low-qualified adults (aged 25–64) display, on average, the lowest engagement in education and training, with only 17% stating they wanted to participate but encountered difficulties (see Figure 11). In previous years, the engagement of low-qualified adults improved somewhat and came closer to the EU average (see the figures for 2011), only to fall back a bit in the latest two (2016 and 2022) rounds of AES results.

Figure 11. **Share of adults (aged 25–64) reporting obstacles to education and training (in %)**



Source: Eurostat. Population not participating in education or training by main reason and educational attainment level [trng_aes_197_custom_18209348].

The AES dataset also allows for identifying barriers in education and training access. Overall, costs, family reasons and scheduling reasons are the three most significant obstacles for low-qualified adults; however, all these issues are common across all adults, no matter their qualification level.

When comparing the obstacles to education and training, low-qualified adults report health or age-related reasons as obstacles much more frequently, while they tend to complain about a lack of suitable offers or scheduling much less than adults with higher education levels (see Table 6).

Table 6. **Obstacles to participation in education and training, by level of education (in %)**

Obstacles to participate in education and training	All ISCED levels	ISCED 0–2
Distance	2.4	2.5
Costs	13.7	15.2
Family reasons	14.4	15.5
Other personal reasons	8.4	9.8
Health or age reasons	6.0	10.9
No suitable offer for education or training	7.0	5.4
Lack of support from the employer or public services	7.6	7.5
Schedule	22.8	14.6
Course booked out	2.5	1.7
Too few registrations	1.5	0.7
Other reason	4.0	7.9
No response	9.8	8.1

NB:

Much more significant
Slightly more significant
Similar
Slightly less significant
Much less significant

Source: Eurostat. Population wanting to participate in education and training, by main reason for not participating and educational attainment level [trng_aes_181__custom_18187876].

Over time, there are some notable shifts in the composition of obstacles to education and training for the low-qualified adults. Health, age, other personal reasons and scheduling issues become more important. On the other hand, obstacles like the lack of support from employers or public employment services or costs became less severe, indicating possible success of public policies aimed at improving access of low-qualified adults to learning. These shifts indicate that non-financial support may become more important in future upskilling initiatives.

3.2. Educational mismatch of adults in low-skilled jobs

Educational mismatches are often associated with lower wages and decreased job satisfaction compared to similarly educated adults in well-matched positions (McGuinness & Pouliakas, 2017). Overqualification has been proven to hinder

investment in skill formation (Cedefop 2018, 2025), resulting in lower rates of training participation for adults with low skill levels. In parallel, underqualification may indicate a need for individuals to upgrade their skills and qualifications to better align with contemporary labour market demands.

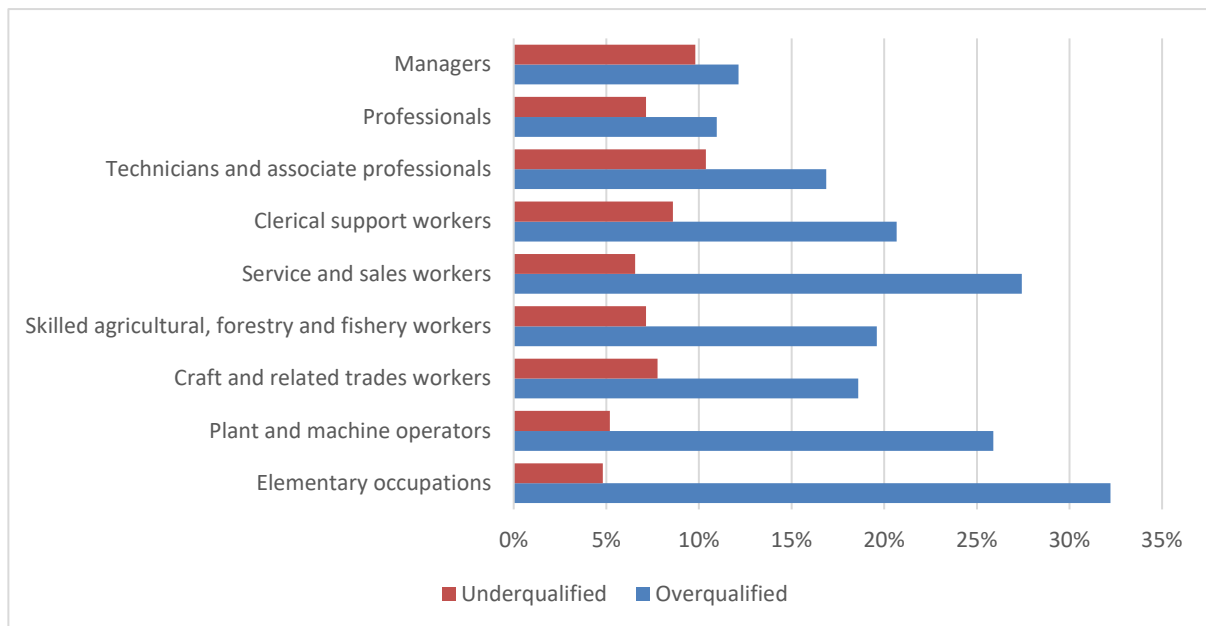
Although the educational mismatch is more prominent in skilled, non-manual and non-routine occupations, it also significantly affects VET graduates in low-skilled jobs. This could be explained by the fact that adults in low-skilled jobs may work in positions outside their field of study or lack the diplomas/credentials documenting their skill level, although they have gained the required skills through experience (Cedefop, 2022).

The ESJS data analysis showed that 62% of individuals who reported that they are overqualified were in low-skilled jobs. This overqualification rate for workers in low-skilled jobs was significantly higher than that of workers in jobs with higher skill requirements, where only 13% were overqualified (χ^2 test, $p < 0.001$). In addition, around 48% of those who reported underqualification were in low-skilled jobs. The shares were similarly distributed among those with jobs requiring only low foundation skills as well.

VET graduates in low-skilled jobs reported significantly higher rates of overqualification compared to graduates from general education (χ^2 test, $p < 0.001$), a difference that also remained significant in the whole population. In general, VET graduates reported higher levels of both overqualification and underqualification (56%) compared to general education graduates (44%), regardless of the level of their job skill requirements (χ^2 test, $p < 0.001$).

The difference was also significant among different occupations (at both the ISCO one-digit and two-digit levels), where workers in low-skilled jobs reported higher shares of overqualification among elementary occupations (32%), service and sales workers (27%) and plant and machine operators (26%). The largest shares of underqualification for low-skilled workers were reported among technicians and associate professionals (10%) (Figure 12).

Figure 12. **Share of over- and underqualified adults with low skill level by occupation in the EU (in %)**



Source: Cedefop. Own calculations from the ESJS microdata (2021).

3.3. Digital skills level of low-qualified and low-skilled adults

The rapid growth of digital technologies is reshaping the skills required for the modern workforce, making digital literacy essential in most jobs and across all skill levels.

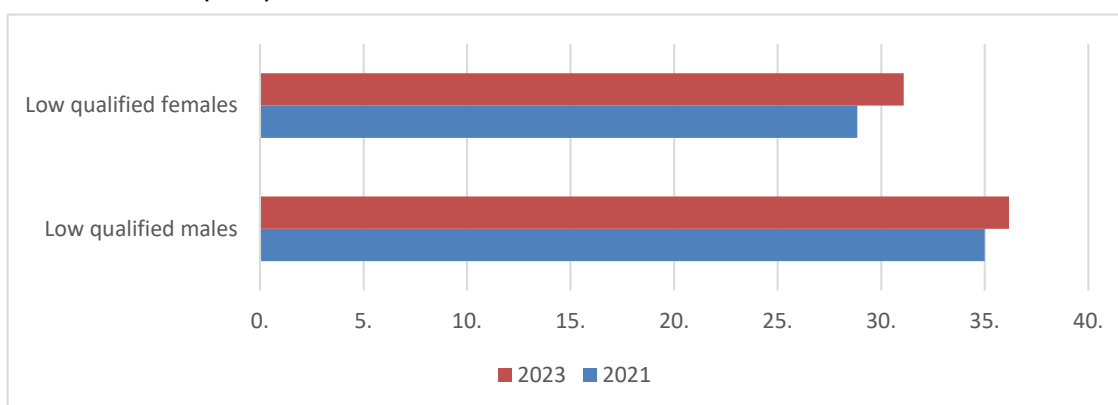
Low qualifications and skill needs are often associated with jobs that require lower levels of digital skills. However, with the rising risk of task displacement due to automation, acquiring digital skills is critical not only for preserving quality employment but also for adapting to the fast-evolving demands of technology-driven workplaces. These demands go beyond technical expertise to include analytical thinking, problem-solving and leadership competencies, which are vital for future work environments (Draghi, 2024).

According to the digital decade (European Commission, 2024), significant differences are remarkable between different educational levels and age groups. People with higher qualifications tend to possess higher levels of digital skills and are significantly more likely to possess at least basic digital skills (80%) compared to those with low or no formal education (34%), a gap of 46 percentage points. Younger people, aged 16–24, are far more likely to have basic digital skills (70%). By contrast, only 28% of those aged 65 and older possess basic digital skills.

Almost 55% of all adults in the EU possess at least basic digital skills compared with only 31% of low-qualified individuals, based on Eurostat's ICT dataset for 2023. This disparity is particularly pronounced in countries like Ireland, Cyprus, Czechia, Hungary and Greece. In Finland, a slightly larger share of low-qualified individuals has at least basic digital skills compared to all individuals (84% versus 82%), while Estonia and Norway exhibit some of the smallest differences (see Annex, Figure 37).

Although the gender gap for all individuals in digital skills is narrowing, it seems to persist among the low-qualification holders. Despite the slight increase in the share of both low-qualified men (+ 1 percentage point) and women (+ 2 percentage points) who possess basic or above basic levels of digital skills between 2021 and 2023, the difference between the two genders remains almost stable (Figure 13).

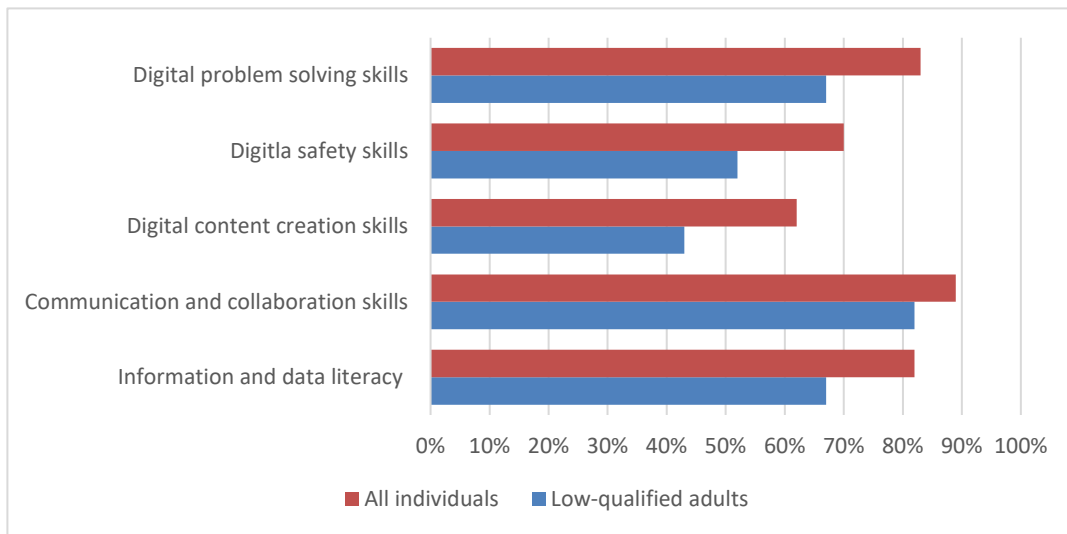
Figure 13. **Share of low-qualified workers with at least basic digital skills in the EU (in %)**



Source: Eurostat. Individuals' level of digital skills (from 2021 onwards) [isoc_sk_dskl_i21].

When considering the digital skills categories according to the DigComp framework (Vuorikari, 2022), the gap between low-qualified adults (aged 25–64) and all individuals is notable, especially in the digital content creation category, but also in the digital problem-solving and digital safety categories (Figure 14).

Figure 14. **Shares of adults with at least basic digital skills across the DigComp components (2023, in %)**



Source: Eurostat. Individuals' level of digital skills (from 2021 onwards) [isoc_sk_dskl_i21].

The analysis contrasts with Cedefop findings that most [online job advertisements request skills for using digital tools for collaboration, content creation and problem-solving](#). As such, upskilling initiatives focused on digital content creation, and problem-solving skills could significantly improve the employability prospects of low-qualified adults in the labour market.

When comparing the digital skills of employed and unemployed individuals, the unemployed generally have lower levels of digital skills than the employed across all EU countries. The share of unemployed adults in the EU-27 in 2023 with basic or above basic digital skills across all five DigComp components was almost 48%. The differences are smaller in Finland and Norway, while Lithuania, Slovenia and Slovakia exhibit the largest gaps between the two groups.

A significant share of EU+ adult workers (41%) either do not use computers at work or score low on the [Digital Skills Index](#), with individuals with low skill levels over-represented in this group (Cedefop, 2022). These jobs are generally low in complexity and offer few opportunities or incentives for skill development or participation in learning activities.

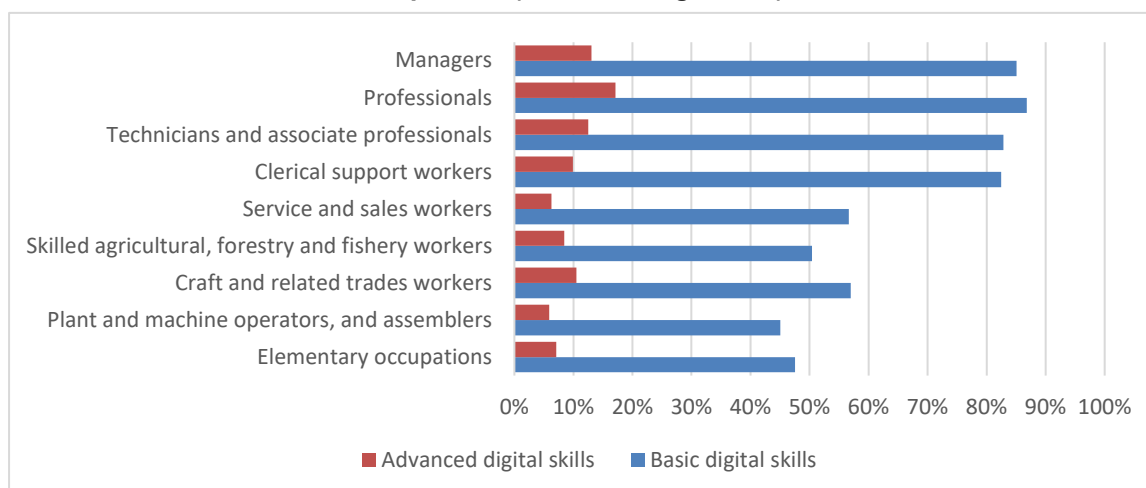
Although low digital skill levels are common among adults in low-skilled jobs, important differences and specific characteristics should be considered, especially when assessing their upskilling and reskilling needs. Based on the analysis of the ESJS dataset (2021), nearly 40% of workers in the EU+ who use digital devices for basic tasks such as browsing the internet or editing text are employed in low-skilled jobs, which is relatively close to their share in the overall workforce (50%).

Decreasing shares of workers in low-skilled jobs use more advanced digital skills: 36% report the use of spreadsheet functions, 23% prepare presentations and only 20% use more advanced computer skills such as managing databases, programming or maintaining IT systems.

Among workers in jobs with low skill requirements, those who perform basic computer tasks like using the internet are more frequently working as professionals, managers, technicians and associate professionals, especially in ICT and business administration roles. The same roles have the highest share of workers reporting the performance of advanced digital tasks like programming, managing databases and monitoring IT systems.

Interestingly, plant and machine operators, and not elementary occupations, report the lowest frequency of using either basic or advanced digital activities.

Figure 15. **Share of workers with low skill levels using basic and advanced digital skills across occupations (ISCO one-digit, in %)**



Source: Cedefop. Own calculations from ESJS microdata.

In terms of sectors, the least frequent usage of basic digital skills among workers with low-skill levels is reported in accommodation and food services and transportation and storage sectors, while the highest frequency is in education, financial and insurance activities, ICT, and professional, scientific and technical activities sectors.

There is a significant association between gender and the use of computing devices for basic tasks like searching the web or editing text (χ^2 , $p < 0.001$) among workers positioned in low-skilled jobs. A higher share of women (77%) than men (72%) reported using basic skills at their main job activities. However, men reported significantly higher levels ($p < 0.001$) of performing advanced digital activities (e.g. databases, programming, IT systems) than women in low-skilled

jobs (25% versus 8%). These findings are consistent with previous evidence on the whole population, indicating a persistent gender gap among all skill levels that widens as digital skill levels increase. The disparity is particularly pronounced for advanced digital skills; for example, previous research showed that men are approximately four times more likely than women to possess coding skills (Unesco, 2017).

In terms of age, advanced digital skills like programming were found to be much more common among younger workers in low-skilled jobs, with 24% of those aged 25–34 reporting their use, compared to fewer than 9% among those aged 55–64. The differences are also significant (χ^2 , $p < 0.001$) for basic skills, where the usage of web and text editing is highest among workers aged 35–44 and lowest among those aged 25–34 and 55–64.

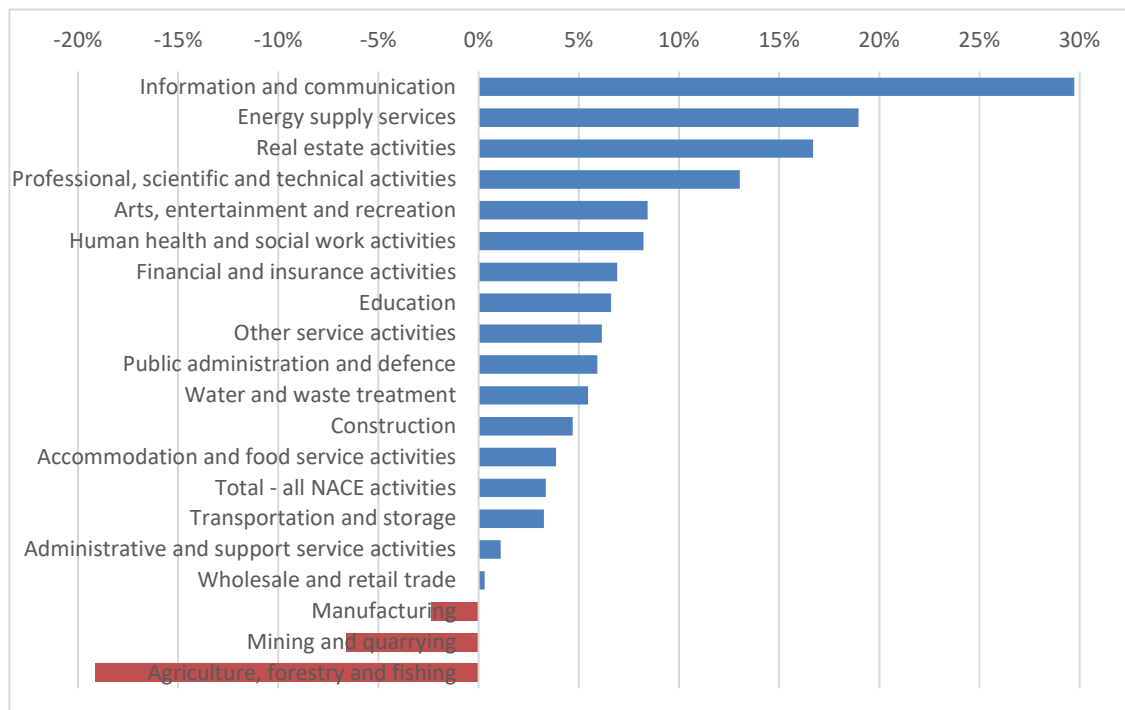
CHAPTER 4.

Employment trends of low-qualified and low-skilled adults

4.1. Employment trends by sector

In recent years, employment trends in the European economy were mainly influenced by the two large crises that impacted its labour market severely. Technology and knowledge-intensive services sectors such as ICT, energy supply and professional, scientific and technical activities were the clear winners in the job-creation comparison, and they together added almost 3.5 million jobs between 2019 and 2024.

Figure 16. **Employment change by economic sector in the EU (2019–2024, in %)**



Source: Eurostat. EU-LFS. Employment by sex, age and economic activity (from 2008 onwards, NACE Rev. 2) – 1 000 [ifsa_egan2_custom_16598111].

Public service sectors – health and social care, education and public administration and defence – grew by smaller margins but overall added a similar volume of new jobs: 3.4 million.

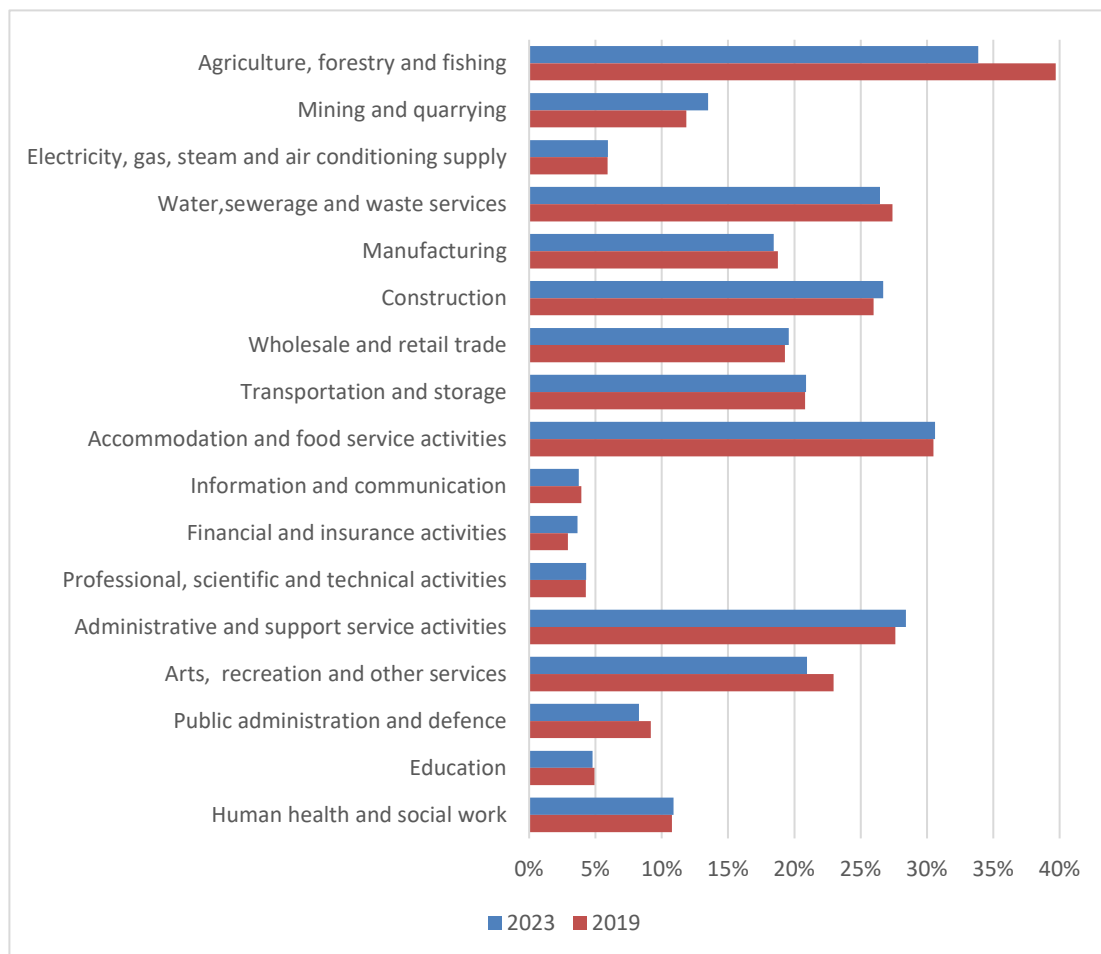
The sectors hardest hit during the COVID-19 pandemic – accommodation and food, wholesale and retail trade, transportation and storage, and construction –

grew even more slowly, but, given the size of their job losses in 2020–2021, their recovery can still be considered a success story.

Agriculture and manufacturing sectors, together with mining, have remained in the red over the past five years. Together, they lost over 2.3 million jobs, mostly those requiring either low or medium qualification levels. However, the employment of highly qualified people grew even in these sectors by roughly 1.2 million.

Based on the latest employment data, the agriculture, forestry and fishing sector displays both the highest share of low-qualified jobs (34% in 2023) and the highest decline in the share of these jobs (from 40% in 2019). In most other sectors, though, the low-qualified jobs – which represent most low-skilled jobs – decline only slightly or not at all (see Figure 17), indicating that a certain amount of these jobs is still demanded and cannot be fully replaced by jobs requiring higher-level qualifications.

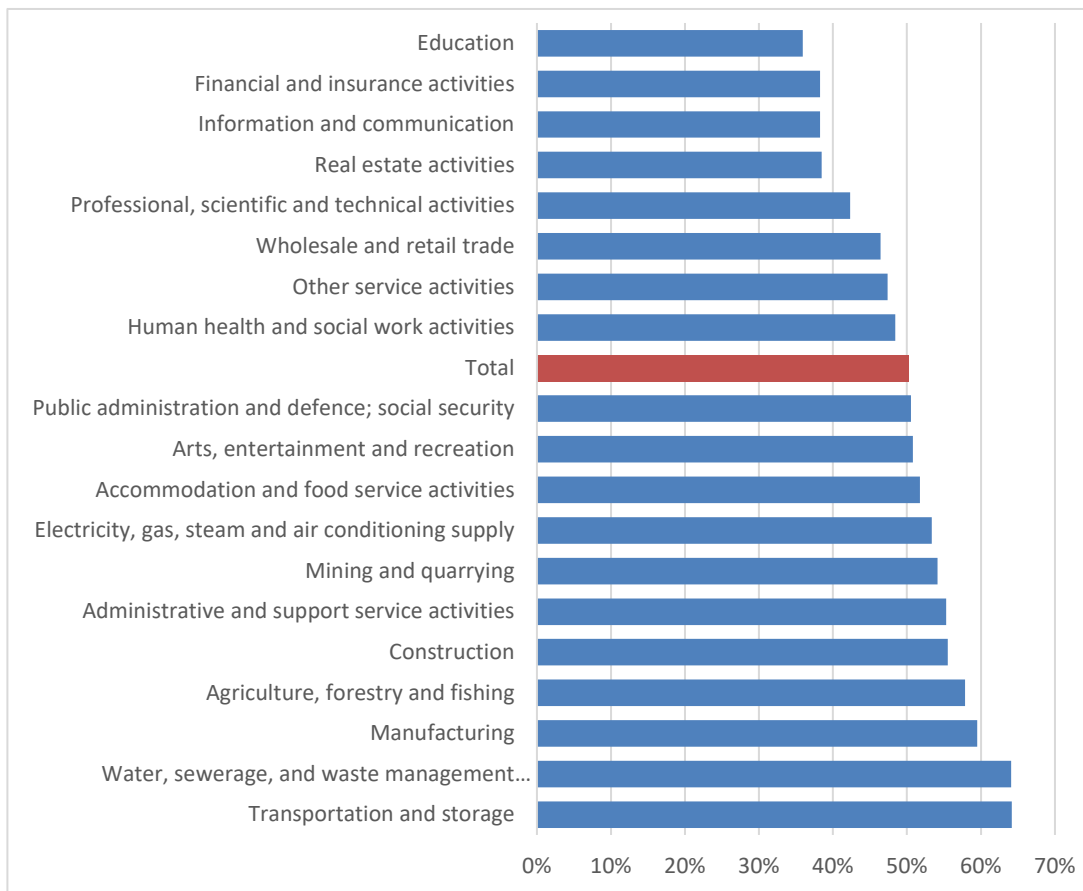
Figure 17. **Employment share of low-qualified jobs across economic sectors (in %)**



Source: Eurostat. Skills intelligence calculations from EU-LFS data.

The ESJS-based analysis allows for a comparison of economic sectors in terms of the share of jobs requiring low skill levels. Economic sectors with the highest share of workers who only use low skill levels at work include transportation and storage, water, sewerage and waste treatment services, and manufacturing, while education, financial and insurance activities, information and communication and real estate activities display the lowest shares (see Figure 18).

Figure 18. **Share of workers using low-level skills by economic sector (2021, in %)**



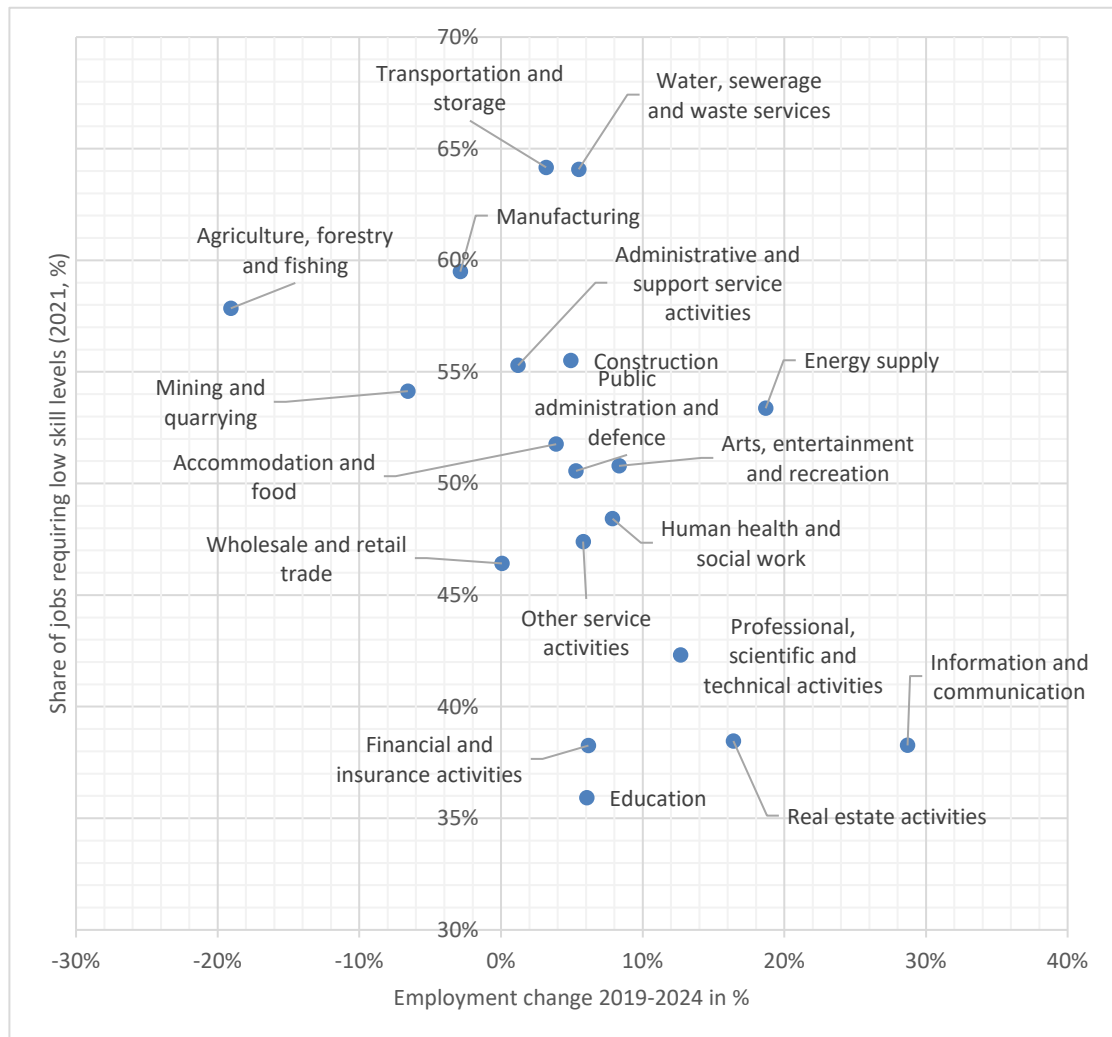
Source: Cedefop. Own calculations from ESJS microdata.

The share of jobs requiring low levels of skills negatively correlates with the sectors' employment developments. However, the relationship appears not to be very strong, with several sectors experiencing similar employment developments yet having significantly different shares of jobs that require low levels of skills.

Agriculture is the most significant outlier, with only an average share of low-skilled jobs and the highest employment decline (see Figure 19).

Figure 19. **Employment change and share of low-skilled jobs by sector**

Source: Eurostat and Cedefop. EU-LFS and ESJS calculations.



4.2. Employment trends by occupation

Occupation level trends reflect the sectoral developments. The employment of professionals (ISCO 2) – the group of occupations with the highest skill and education levels – grew the fastest (and by a large margin). Only two other broad occupational categories – managers and clerks – ended up with a net increase of employment, but on a much smaller scale (see Table 7).

Table 7. **Employment change by broad occupational categories (2019–2024, in %)**

Occupational category	% change	Absolute change (thousands)
Managers	5.9%	608
Professionals	23.2%	8 957
Technicians and associate professionals	– 0.5%	– 164
Clerical support workers	5.9%	– 1 120
Service and sales workers	0.1%	35
Skilled agricultural, forestry and fishery workers	– 23.9%	– 1 699
Craft and related trades workers	– 1.7%	– 404
Plant and machine operators and assemblers	– 3.0%	– 468
Elementary occupations	– 3.6%	– 646

Source: Eurostat. EU-LFS. Employment by sex, age, occupation and educational attainment level (1 000) [lfsa_egised__custom_16622142].

The share of workers with high levels of qualification has increased in every broad occupational category in the past five years. Medium-level qualifications have grown only in the case of managers and professionals, while jobs with low-level qualifications holders grew in the case of managers, professionals, technicians and associate professionals, and clerical support workers (see Table 8).

Table 8. **Employment change by broad occupations and education level (2019 – 2024, in %)**

Occupations and educational level	Low	Medium	High
Managers	5%*	5%	7%
Professionals	65%*	22%	23%
Technicians and associate professionals	6%	– 7%	7%
Clerical support workers	8%	1%	16%
Service and sales workers	1%	– 2%	7%
Skilled agricultural, forestry and fishery workers	– 37%	– 20%	10%*
Craft and related trades workers	0%	– 5%	24%
Plant and machine operators and assemblers	– 4%	– 4%	18%*
Elementary occupations	– 5%	– 4%	17%

NB: * indicates values with low sample size and lower data reliability.

Source: Eurostat. EU-LFS. Employment by sex, age, occupation and educational attainment level (1 000) [lfsa_egised__custom_16622142].

At a more detailed occupational level, all six professional categories (ISCO 2.21–2.26) are among the top growing occupations, with ICT professionals adding 40% of jobs in recent years. Office clerks, ICT technicians and care workers are complementing the top growing occupations. Figure 27 well illustrates the increasing shift towards higher qualifications in the cases of similar occupations that differ primarily by qualification and skill levels: Science and engineering

professionals (+ 20%) versus science and engineering technicians (– 10%), social, legal and cultural professionals (+ 10%) versus social, legal and cultural associate professionals (– 13%).

Among the group of occupations with the greatest employment decline in recent years, there is only one that is predominantly elementary, with low qualification requirements (cleaners and helpers), while all the others employ mostly people with secondary qualification levels (see Table 9).

Table 9. **Employment change by selected two-digit occupational categories (2019–2023, in %)**

	Occupational categories	% change	Absolute change (thousands)
2.25	ICT professionals	40%	1 434
4.41	Office clerks	31%	2 007
2.24	Business administration professionals	26%	1 971
3.35	ICT technicians	20%	1 221
2.21	Science and engineering professionals	20%	339
2.23	Teaching professionals	15%	1 458
2.26	Social, legal and cultural professionals	10%	557
2.22	Health care professionals	10%	551
5.53	Care workers	10%	581

4.42	Numerical clerks	– 5%	– 202
1.13	Technical managers	– 5%	– 201
8.82	Assemblers	– 6%	– 105
5.51	Personal services workers	– 6%	– 600
7.73	Handicraft and printing workers	– 9%	– 94
9.91	Cleaners and helpers	– 9%	– 689
4.43	Accounting clerks	– 10%	– 684
3.31	Science and engineering technicians	– 10%	– 800
6.61	Skilled agricultural workers	– 11%	– 679
3.34	Social, legal and cultural associate professionals	– 13%	– 530

Source: Eurostat. EU-LFS. Cedefop skills intelligence calculations from EU-LFS microdata.

Chapter 2 has concluded that, by exploring the ESJS dataset, it was possible to estimate the overall share of people who only use low-level skills at work at 50%, with only three out of nine major occupation groups having lower than 50% shares (see Table 5).

A more granular approach, at the two-digit level of the ISCO classification, shows that 17 occupations have 50% or fewer jobs requiring a low-skill level, while 21 occupations have more than 50% jobs requiring a low-skill level. Out of 40 occupations at the ISCO two-digit level, two have been removed from the analysis because of a low number of observations ⁽²⁾.

There are five occupations with the highest skills requirements: all four managerial occupations, and teaching professionals. For these occupations, the share of workers reporting the use of low levels of skills ranges only between 22% and 27%.

There are 12 occupations with medium to high skill requirements: these consist of the remaining five professional categories, all five technician and associate professional categories, sales workers, and customer service clerks. For these occupations, the share of workers reporting the use of low levels of skills ranges between 34% and 49%.

There are 15 occupations with low to medium skill requirements: three service and sales occupations, three clerical occupations, all five craft and trade occupations, two agricultural occupations and two elementary occupations. For these occupations, the share of workers reporting the use of low levels of skills ranges between 54% and 68%.

Finally, there are six occupations with low skill requirements. Interestingly, all three plant and machine operators and assembler occupations belong here, as do the three remaining elementary occupations. For these occupations, the share of workers reporting the use of low levels of skills goes above 70%. Table 10 provides an overview of all the mentioned categories.

Table 10. **Share of low-skilled workers using low-level skills by two-digit ISCO**

ISCO code	Occupation name	Share of workers reporting the use of low-level skills	Skill level categorisation
11	Chief executives, senior officials and legislators	22%	High
12	Administrative and commercial managers	24%	High
13	Production and specialised services managers	27%	High
14	Hospitality, retail and other services managers	23%	High
21	Science and engineering professionals	38%	Medium to high
22	Health professionals	34%	Medium to high

⁽²⁾ ISCO 63 – Subsistence farmers, fishers, hunters and gatherers and ISCO 95 – Street and related sales and service workers.

Skill development and employment pathways for adults with low skill levels

ISCO code	Occupation name	Share of workers reporting the use of low-level skills	Skill level categorisation
23	Teaching professionals	26%	High
24	Business and administration professionals	41%	Medium to high
25	Information and communications technology professionals	39%	Medium to high
26	Legal, social and cultural professionals	39%	Medium to high
31	Science and engineering associate professionals	49%	Medium to high
32	Health associate professionals	47%	Medium to high
33	Business and administration associate professionals	46%	Medium to high
34	Legal, social, cultural and related associate professionals	41%	Medium to high
35	Information and communications technicians	45%	Medium to high
41	General and keyboard clerks	58%	Low to medium
42	Customer services clerks	47%	Medium to high
43	Numerical and material recording clerks	60%	Low to medium
44	Other clerical support workers	58%	Low to medium
51	Personal service workers	55%	Low to medium
52	Sales workers	45%	Medium to high
53	Personal care workers	57%	Low to medium
54	Protective services workers	58%	Low to medium
61	Skilled agricultural workers	63%	Low to medium
62	Skilled forestry, fishery and hunting workers	55%	Low to medium
71	Building and related trades workers, excluding electricians	68%	Low to medium
72	Metal, machinery and related trades workers	66%	Low to medium
73	Handicraft and printing workers	72%	Low
74	Electrical and electronic trades workers	54%	Low to medium
75	Food processing, wood working and other trades workers	65%	Low to medium
81	Stationary plant and machine operators	74%	Low
82	Assemblers	76%	Low
83	Drivers and mobile plant operators	79%	Low
91	Cleaners and helpers	81%	Low
92	Agricultural, forestry and fishery labourers	60%	Low to medium
93	Labourers in mining, construction, manufacturing and transport	67%	Low to medium

ISCO code	Occupation name	Share of workers reporting the use of low-level skills	Skill level categorisation
94	Food preparation assistants	62%	Low to medium
96	Refuse and other elementary workers	71%	Low

Source: Cedefop. Own calculations from ESJS microdata.

As the total employment grew in the EU-27 in the past decade, occupations at all skill levels have grown in numbers during that period (see Table 11). The magnitude of the growth, however, differs substantially. High-skilled and medium-to-high-skilled occupations added a substantial number of jobs between 2013 and 2023 (17% and 19%, respectively), while low-to-medium-skilled jobs contributed by 4%. In the short-term perspective, comparing the latest available employment data with the pre-COVID-19 situation (2019), the low-skilled jobs displayed a decline, while the remaining three groups grew by different margins, generally corresponding with their skill levels.

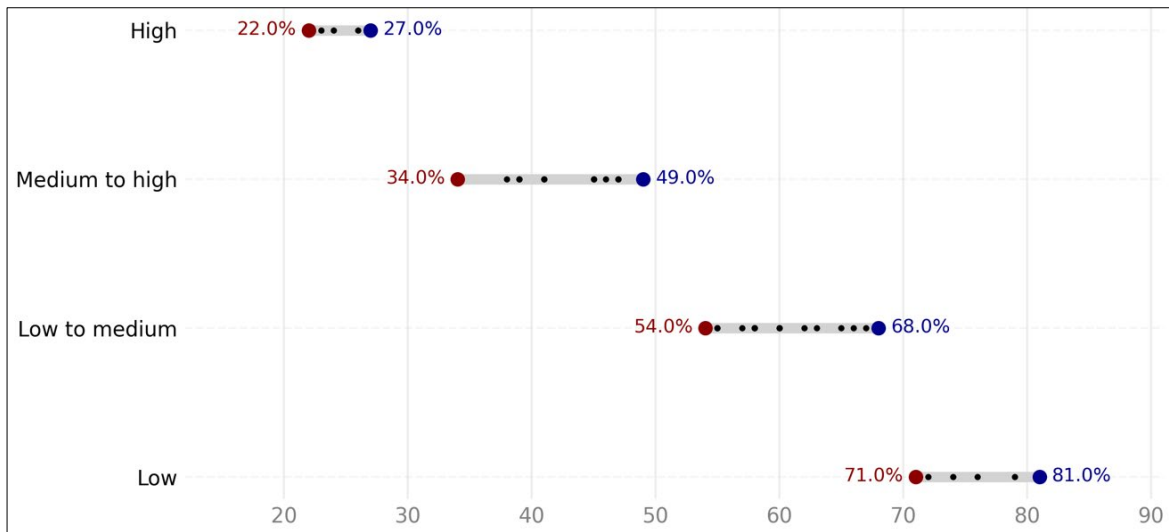
Table 11. **Employment change by occupation skill level aggregates (2013–2023, in %)**

Skill level	2013	2019	2023	2013–2023 % change	2013–2023 absolute change (thousands)	2019–2023 % change
High	10%	10%	11%	17%	1 299	9%
Medium to high	39%	41%	42%	19%	5 504	6%
Low to medium	38%	36%	35%	4%	1 233	1%
Low	14%	13%	12%	0%	36	– 3%
Total	100%	100%	100%	11%	8 072	3%

Source: Eurostat. EU-LFS. Cedefop skills intelligence calculations from EU-LFS microdata.

Placing almost all professional job categories – including science and engineering professionals (ISCO 21), health professionals (ISCO 22), and ICT professionals (ISCO 25) – into the medium-to-high skilled category looks controversial, but the analysis of the ESJS dataset shows a clear gap between these occupations and the highest skill level group (see Figure 20).

Figure 20. Intervals of skill level categories (by share of jobs with low skill level)

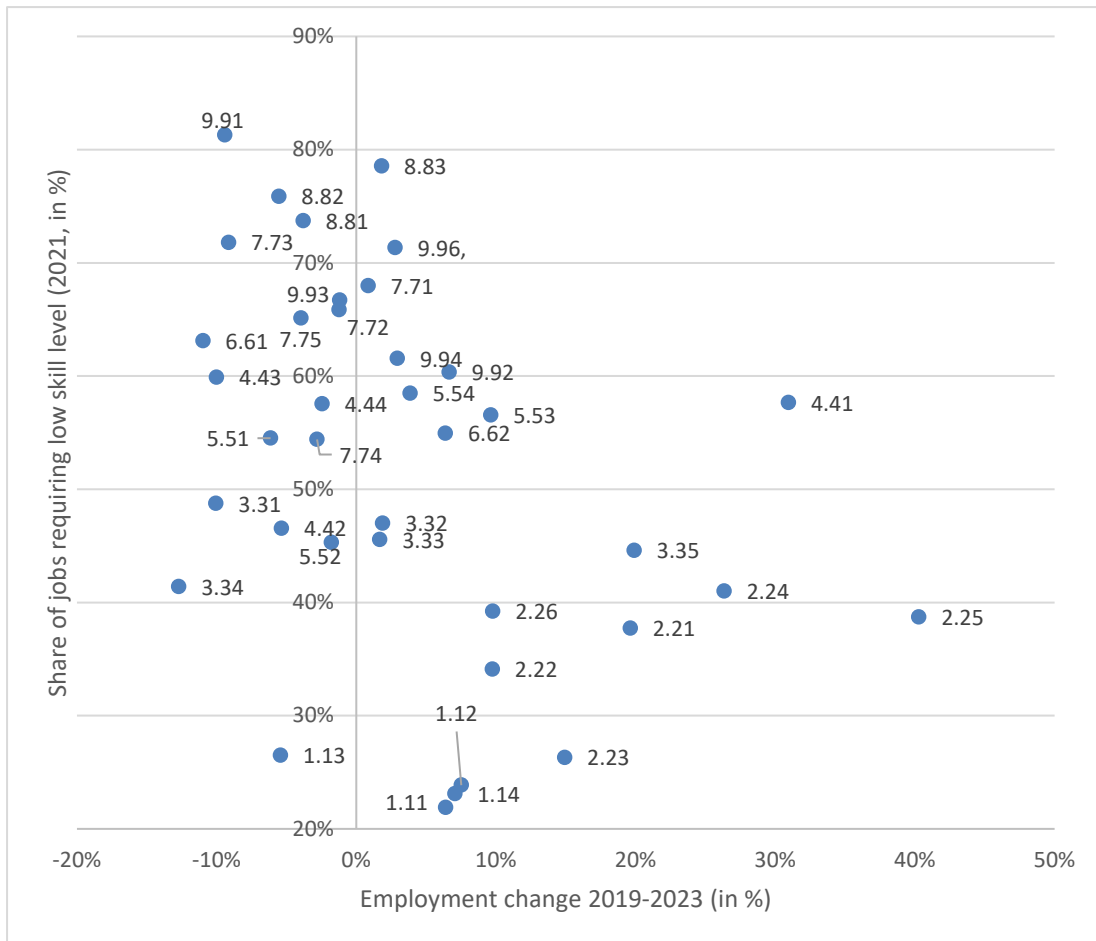


Source: Cedefop. Own calculations from the ESJS microdata.

Several factors may contribute to relatively frequent low-skill demand levels among occupations associated with the highest job complexity. Prominent among those could (paradoxically) be IT: it has been argued that while computerisation has led to a decline of employment in occupations which involve more routine, it has at the same time led to an increase of routinisation across all jobs, including the high-skilled ones (Fernández-Macías et al., 2023)

Figure 21 illustrates the generally inverse relationship between demanded skill level and employment growth of occupations, although this relationship does not look to be very strong, with other important factors (such as sectoral trends) likely to influence the overall employment trends. ICT professionals (ISCO 25) seem to be one of the most interesting outliers, with by far the fastest employment growth, coupled with a not-so-small portion of jobs requiring only low skill levels.

Figure 21. **Employment change and share of low-skilled jobs by occupation (two-digit ISCO)**



Source: Eurostat and Cedefop. EU-LFS and ESJS calculations.

Similarly, ICT technicians (ISCO 35) display much more robust employment growth than other occupations in the technicians and associate professionals (ISCO 3) category, while having a similar share of jobs (to other ISCO 3 occupations) requiring low skill levels.

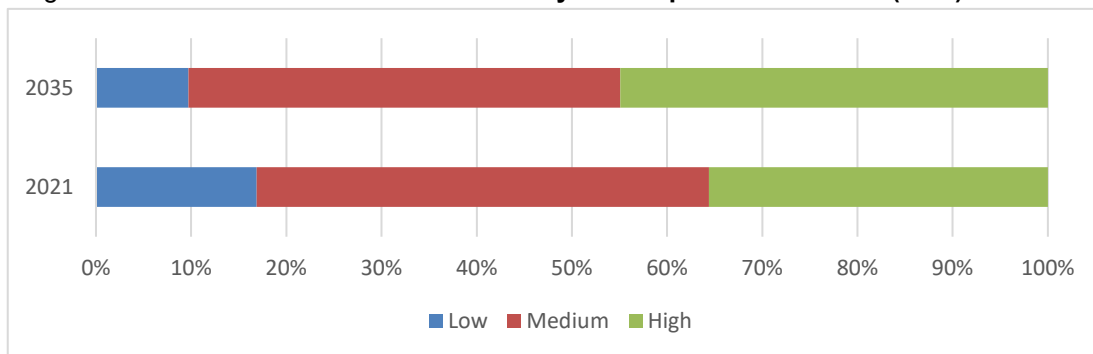
Two things are worth mentioning about the ICT occupations. First, their employment growth is strongly driven by sector trends. Second, there is a notable difference between the skill level requested depending on where ICT workers are employed. Those working directly in the information and communication sector tend to have higher skill requirements than those working outside of it. In the information and communication sector, 36% of ICT professionals are only required to use low-level skills, while outside the sector this share rises to 45%. This seems logical: ICT professionals who work in the information and communication sector are much more likely to be engaged in high complexity tasks, such as software development, while those working outside of it are much more likely to engage in

more routine and less complex activities, such as the maintenance of the ICT infrastructure or providing user support.

4.3. Future employment by qualification and skill levels

Cedefop skills forecast estimates a further decline in employment of people with low levels of qualifications until 2035. The share of low-qualified people in the labour force is expected to drop to under 10% by 2035, only slightly more than half of that share in 2021 (see Figure 22).

Figure 22. Structure of the labour force by broad qualification level (in %)

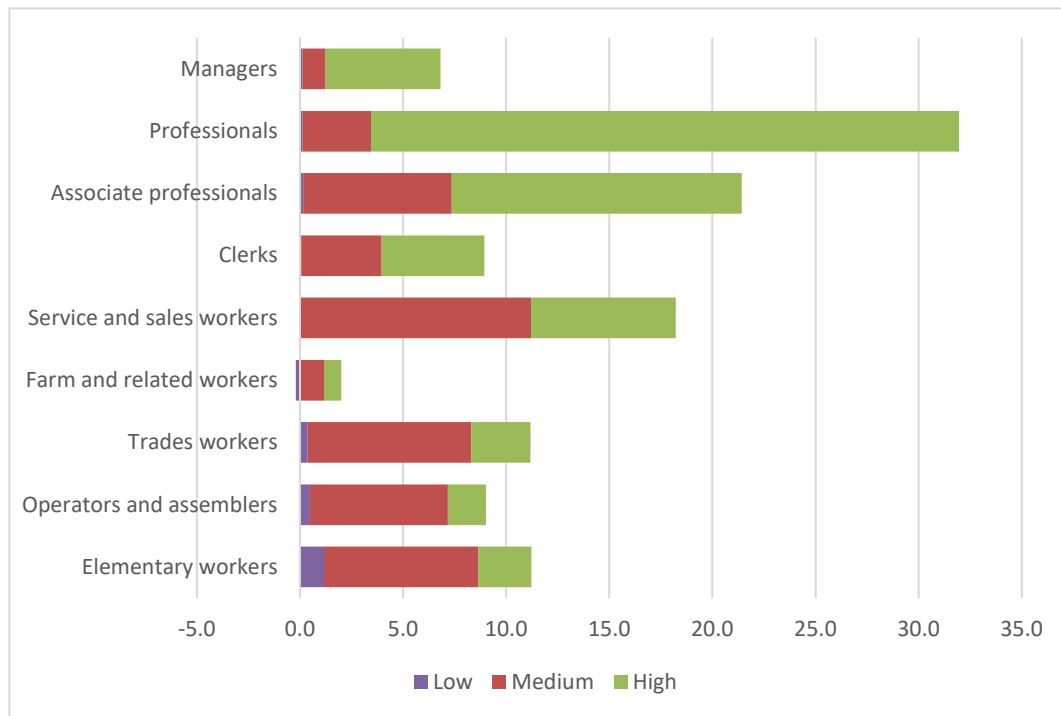


Source: Cedefop's skills forecast database.

The structure of future job openings will undergo even more dramatic change. Only 2% of all job openings between 2021 and 2035 will require low levels of qualification, while high levels will be required in more than half of them.

Even in job categories traditionally held by people with lower qualification levels, such as elementary workers or operators and assemblers, most future job openings will require at least a medium qualification level (see Figure 23).

Figure 23. **Future job openings by occupation and broad qualification level (2021–2035) (in millions)**



Source: Cedefop's skills forecast database.

The pressure on upskilling and reskilling of people with low qualifications will therefore grow stronger over time, driven by both digitalisation and technological advancements, along with the continuous expansion of human-centred services. Many jobs employing people with low qualifications and skill levels display [lower occupational resilience](#), underscoring the urgency of reskilling into more technologically adaptive roles.

Looking at more detailed, two-digit ISCO occupations, the Cedefop skills forecast estimates that the employment shares of low-qualified workers will drop in most cases between 20% and 50%. The magnitude of this decrease will have a major influence on the future job prospects of low-qualified people.

They will be in a better position in occupations that will be growing overall, as there will be more job opportunities and therefore possibly a higher willingness of employers to provide upskilling and reskilling opportunities for their staff.

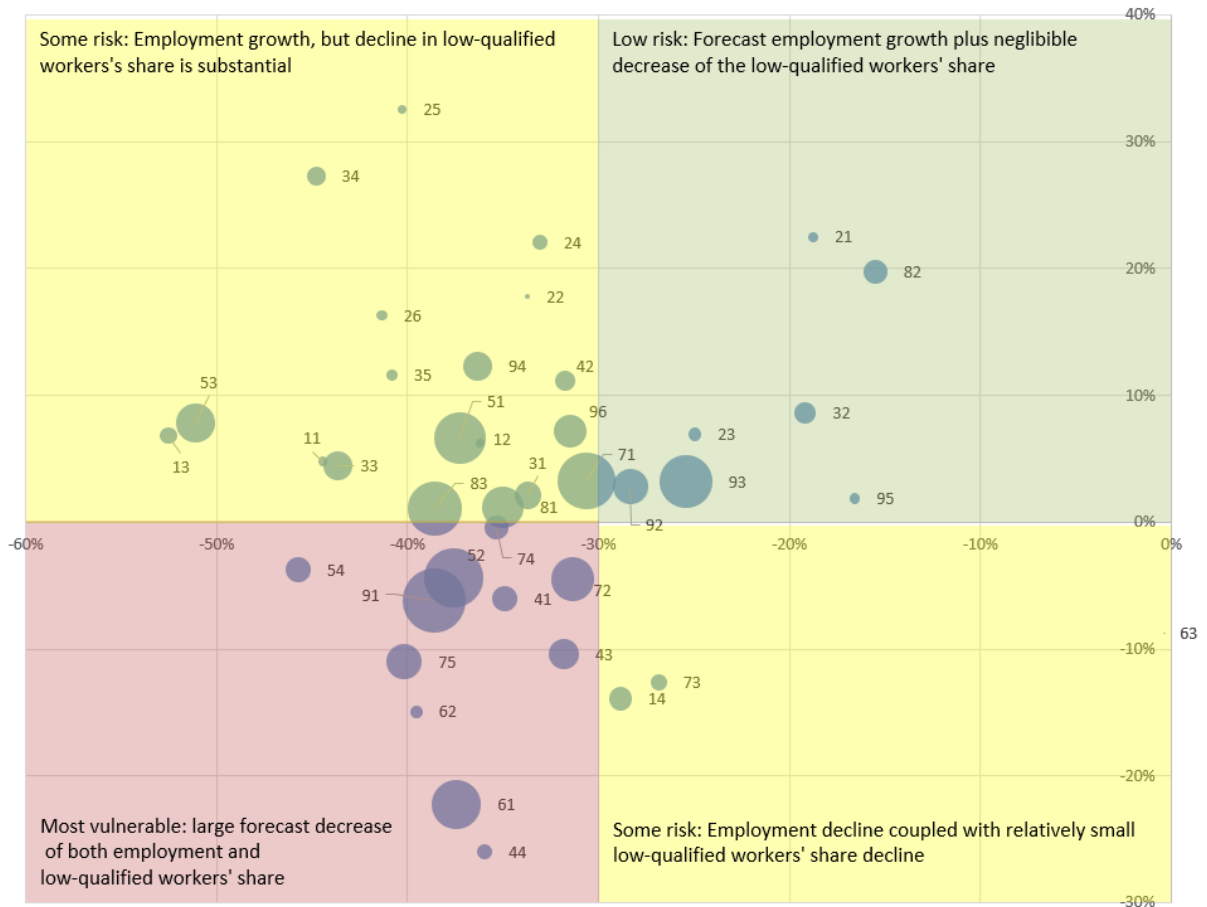
Figure 24 illustrates these different challenges. The upper part of the Figure captures the occupations with positive employment outlook: they will have more jobs in 2035 than they have today, such as ICT professionals (25), legal and social associate professionals (34) or science and engineering professionals (21).

The lower part captures those with a negative outlook, i.e. those that will have fewer jobs than today, such as other clerical support workers (44) or skilled

agricultural workers (61). The horizontal axis reflects the magnitude of decline of low qualifications within occupations: those on the left will experience faster decrease of the employment of low-qualification holders, such as retail and hospitality managers (13) or personal care workers (53), while in the case of the occupations more to the right, such as assemblers (82) or street sales and service workers (95), this decrease will be much milder.

This means that low-qualification holders in occupations in the bottom-left square may be facing the most severe challenges: not only do they work in occupations with a negative employment outlook, but these occupations will also experience the fastest decline in the share of jobs available for low-qualification holders (red square). This concerns, for example, food processing, woodworking, garment and other craft and related trades workers (75), skilled agricultural workers (61), protection services workers (54) or cleaners and helpers (91). Over 12 million workers with low qualification levels work in the most vulnerable occupations; they may need the most intensive support to reskill and upskill.

Figure 24. **Future employment change (vertical axis) and change in the employment share of low-qualified workers (horizontal axis) between 2022 and 2035 (in %)**



Source: Cedefop's skills forecast database. Own calculations.

Using Cedefop's skills forecast data, it is possible to gauge the magnitude of decline in the importance of low qualification levels. While agriculture remains the sector with the highest share of low-qualified workers of total employment, it is the wholesale and retail trade and manufacturing sectors that have the highest number of low-qualified workers. Approximately one third of low-qualified workers are employed in these two sectors (see Table 12). Also in this comparison, it is clear how quickly agriculture loses low-qualified jobs; between 2025 and 2035, these will decline by a further 63%.

Table 12. Sectors by employment share of low-qualified workers (in %)

Sectors	2015	2025	2035	Change 2025-2035
Wholesale and retail trade	16%	17%	17%	- 31%
Manufacturing	16%	16%	17%	- 29%
Accommodation and catering	8%	9%	9%	- 27%
Construction	9%	9%	8%	-37%
Administrative services	4%	5%	5%	- 26%
Human health activities	4%	4%	4%	- 24%
Agriculture, forestry, and fishing	11%	7%	4%	- 63%
Residential care and social work	3%	3%	3%	- 28%
Public administration and defence	4%	3%	3%	- 40%
Land transport	3%	3%	3%	- 37%
Other sectors	22%	24%	26%	- 26%
All sectors	100%	100%	100%	- 32%

Source: Cedefop's skills forecast database. Own calculations.

Analysis of the overall employment forecast and the developments in employment of workers with low qualification levels has identified some vulnerable occupations that are forecast to experience both significant net job loss and substantial reduction of the jobs requiring only low qualification levels. Using the classification developed based on the ESJS data, it is possible to consider both the overall employment forecast, qualification level forecast and volume of jobs in which workers only use low skill levels.

Occupations that combine very negative employment and a low qualification level forecast, in addition to including a large share of workers who only use low levels of skills at work, include general and keyboard clerks (41), other clerical support workers (44), protective services workers (54), skilled agricultural workers (61), skilled forestry, fishery and hunting workers (62), handicraft and printing workers (73), food processing, wood working, garment and other craft and related trades workers (75), stationary plant and machine operators (81), drivers and mobile plant operators (83) and cleaners and helpers (91).

Aside from cleaners and helpers, none of these occupations belong to the elementary occupations (ISCO 9) category. Together, these occupations represent almost 44 million jobs. Of these 44 million, more than 10 million have low qualifications, and over 30 million are employed in low-skilled jobs.

Figure 36 provides details for all occupations across three dimensions: qualitative assessment of risk stemming from the decline of the share of low-qualified jobs in total occupation employment up to 2035; qualitative assessment of risk stemming from the overall forecast employment share; and qualitative

assessment of risk stemming from the share of workers who reported low skill requirements.

Table 13. **Occupations at risk: qualification change, employment change and skill level**

ISCO	Occupation name	Qualification related risk	Employment -related risk	Skill level-related risk
11	Chief executives, senior officials and legislators	very high	high	very low
12	Administrative and commercial managers	high	high	very low
13	Production and specialised services managers	very high	low	very low
14	Hospitality, retail and other services managers	low	very high	very low
21	Science and engineering professionals	very low	very low	low
22	Health professionals	high	low	low
23	Teaching professionals	very low	low	very low
24	Business and administration professionals	low	very low	low
25	ICT professionals	high	very low	low
26	Legal, social and cultural professionals	high	low	low
31	Science and engineering associate professionals	high	high	low
32	Health associate professionals	very low	low	low
33	Business and administration associate professionals	very high	high	low
34	Legal, social, cultural and related associate professionals	very high	very low	low
35	ICT technicians	high	low	low
41	General and keyboard clerks	high	very high	high
42	Customer service clerks	low	low	low
43	Numerical and material recording clerks	low	very high	high
44	Other clerical support workers	high	very high	high
51	Personal service workers	high	low	high
52	Sales workers	high	very high	low
53	Personal care workers	very high	low	high
54	Protective services workers	very high	very high	high
61	Skilled agricultural workers	high	very high	high
62	Skilled forestry, fishery and hunting workers	high	very high	high
71	Building and related trades workers	low	high	very high
72	Metal, machinery and related trades workers	low	very high	high

ISCO	Occupation name	Qualification related risk	Employment-related risk	Skill level-related risk
73	Handicraft and printing workers	low	very high	very high
74	Electrical and electronic trades workers	high	high	high
75	Food processing, woodworking and other workers	high	very high	high
81	Stationary plant and machine operators	high	high	very high
82	Assemblers	very low	low	very high
83	Drivers and mobile plant operators	high	high	very high
91	Cleaners and helpers	high	very high	very high
92	Agricultural, forestry and fishery labourers	low	high	high
93	Technical labourers	very low	high	very high
94	Food preparation assistants	high	low	high
96	Refuse and other elementary workers	low	low	very high

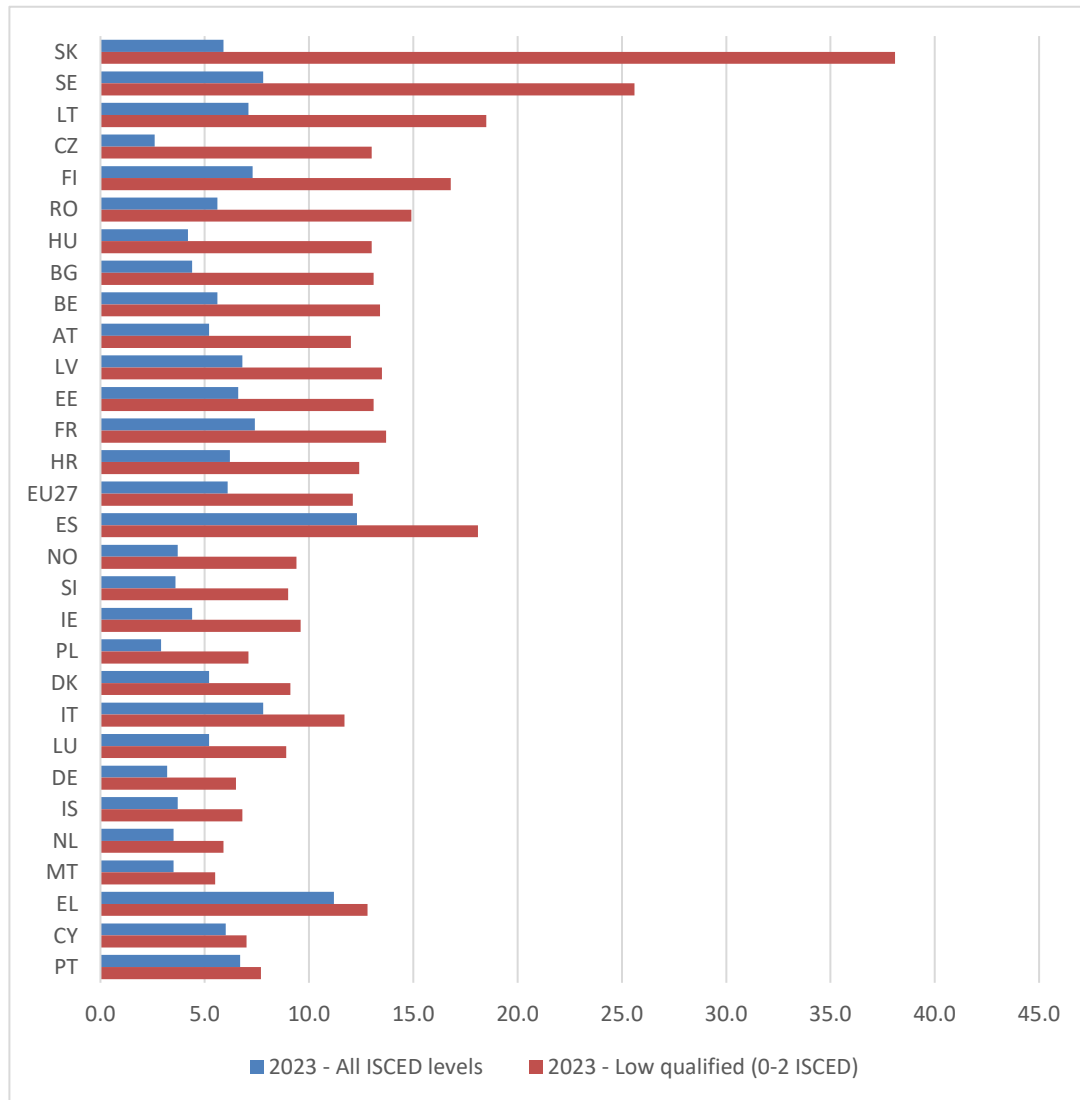
Source: Cedefop. Skills forecast and ESJS calculations.

4.4. Labour market outcomes of low-qualified and low-skilled adults

According to recent findings (European Commission, 2025), people with lower education levels (ISCED 0–2) face significantly higher unemployment rates. In fact, the unemployment rates of low-qualified adults have been declining steadily in recent years, from 20% in 2013 to only 12% a decade later. However, they were declining at a much slower rate than the unemployment rates for more qualified workers, so the labour market disadvantage of low-qualified workers grew over time.

When measuring the gap between the average unemployment rate and the unemployment rate of low-qualified workers, Slovakia, Sweden and Lithuania appear at the top, meaning that in these countries, low-qualified workers are more disadvantaged in job search compared to people with higher qualification levels (see Figure 25).

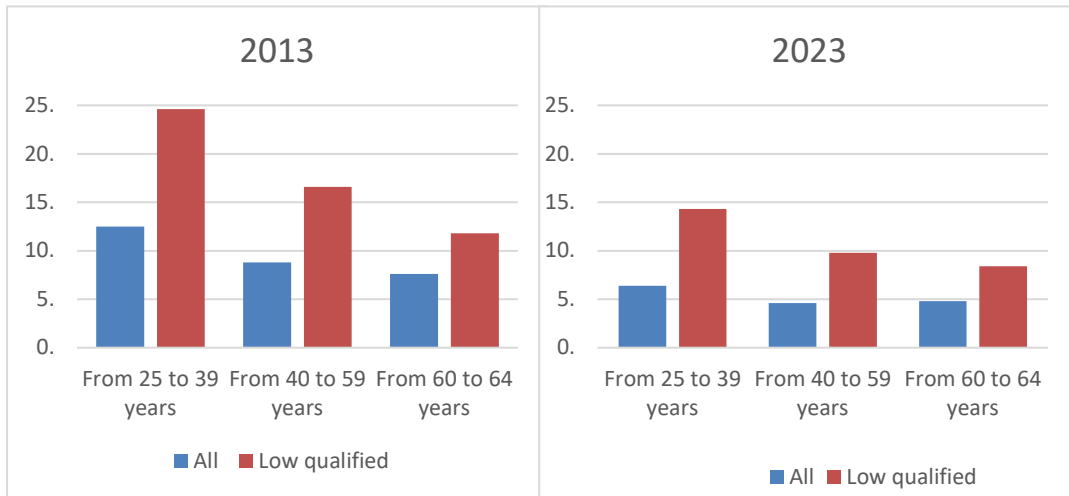
Figure 25. **Average unemployment rate of low-qualified workers (in %)**



Source: Eurostat. Unemployment rates by sex, age and educational attainment level (%) [lfsa_urgaed_custom_13451353].

Over time, this employability gap of low-qualified workers grew in most EU countries, and especially in Romania, Croatia or Slovakia, while countries like Cyprus, Germany, Latvia or Lithuania managed to narrow it down. Among low-qualified workers, younger people remain the most vulnerable category. In 2023, the unemployment rate of low-qualified workers aged 25–39 reached 14.3%, and it was more than twice as high as the unemployment rate of people aged 25–34 across all qualification levels. The difference between qualification levels matters less with increasing age (see Figure 26).

Figure 26. **Unemployment rate, age group, and qualification level (in %)**



Source: Eurostat. Unemployment rates by sex, age and educational attainment level (%) [lfsa_urgaed__custom_15314553].

Aside from qualifications, skill levels used at work are also a good indication of unemployment risk. Table 14 compares both approaches (qualification and/or skill level used). The skills level measure, based on the ESJS approach, seems to slightly better indicate the unemployment risk by occupation, especially for professional and associate professional roles.

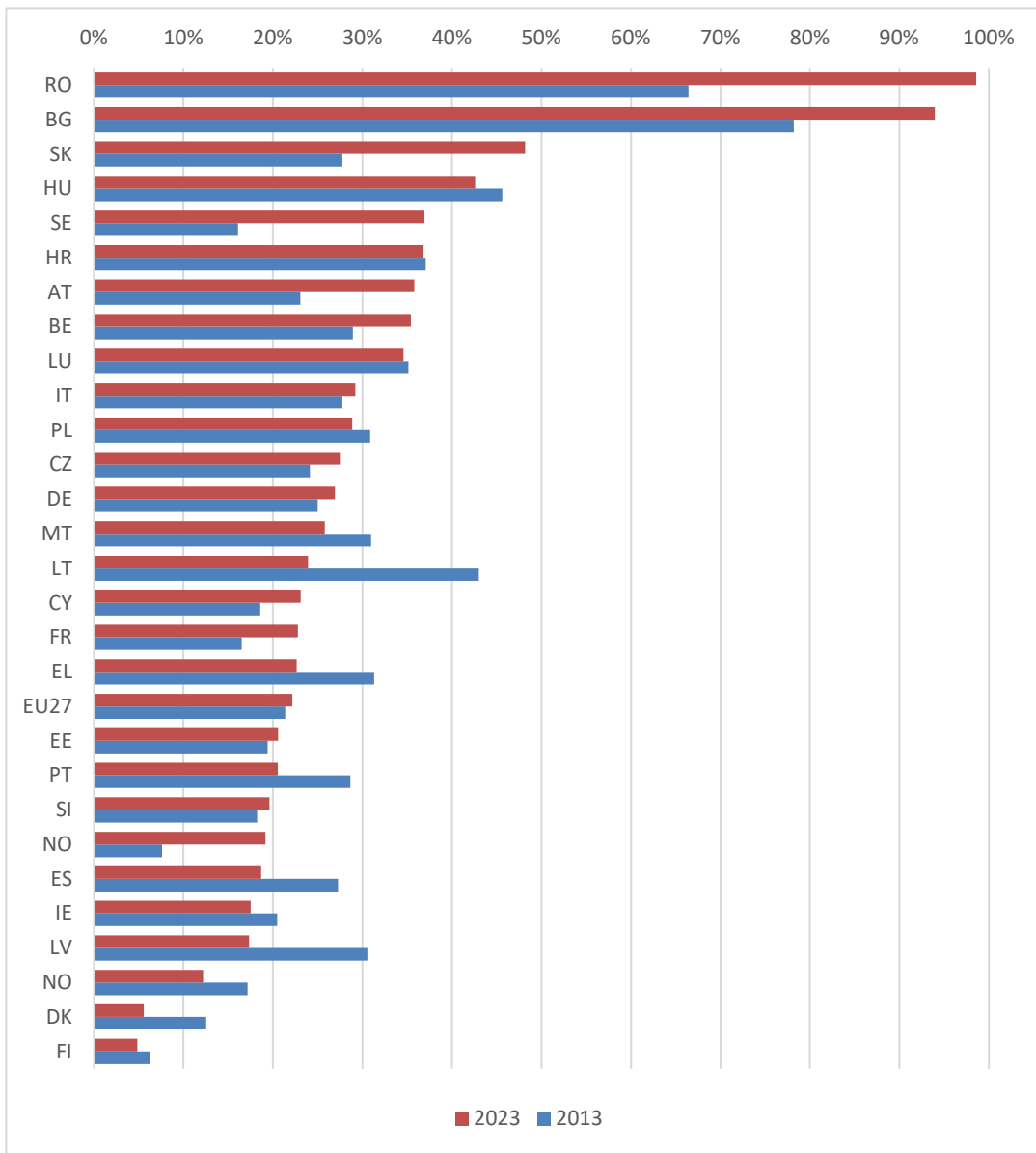
Table 14. **Share of low-qualified workers, low-skilled jobs and unemployed by occupation**

ISCO	Share of low-qualified workers (2023)	Share of low-skilled jobs (2021)	Share of unemployed (2023)
1.12	2%	24%	1.9%
1.13	7%	27%	1.4%
1.14	17%	23%	2.2%
2.21	1%	38%	1.5%
2.22	1%	34%	0.8%
2.23	1%	26%	1.5%
2.24	2%	41%	2.0%
2.25	2%	39%	1.4%
2.26	2%	39%	1.9%
3.31	9%	49%	1.5%
3.32	7%	47%	1.3%
3.33	6%	46%	2.0%
3.34	9%	41%	3.7%
3.35	7%	45%	2.6%
4.41	8%	58%	4.5%
4.42	10%	47%	2.2%
4.43	13%	60%	2.5%
4.44	12%	58%	4.0%
5.51	24%	55%	5.1%
5.52	23%	45%	3.8%
5.53	21%	57%	4.2%
5.54	15%	58%	2.5%
6.61	31%	63%	1.4%
7.71	34%	68%	3.7%
7.72	21%	66%	2.2%
7.74	15%	54%	2.3%
7.75	27%	65%	3.7%
8.81	30%	74%	3.6%
8.82	25%	76%	3.3%
8.83	29%	79%	2.7%
9.91	49%	81%	5.2%
9.92	60%	60%	9.1%
9.93	43%	67%	7.5%
9.94	45%	62%	7.0%
9.96	44%	71%	6.2%

Source: Cedefop skills intelligence. Own calculations.

In addition, recent findings have shown that low educational attainment is strongly correlated with a higher risk of poverty and social exclusion. Individuals with low qualifications are significantly more vulnerable to long-term poverty, being five times more likely than the highly educated to experience long-term poverty or severe material and social deprivation (European Commission, 2025). On average, workers with low qualifications earn 18% less than workers with medium qualifications, and this gap has remained stable over the last decade. Low-qualified workers in the northern European countries, such as Finland, Denmark or Norway, enjoy the smallest income gap, which is in some cases narrowing, while some of the eastern European countries, such as Romania, Bulgaria or Slovakia, have much substantial differences, which also tend to grow over time (see Figure 27).

Figure 27. **Difference between median equivalised net income by low and medium qualification levels (in %)**



Source: Eurostat. Mean and median income by educational attainment level [ilc_di08__custom_15273819]. Own calculations.

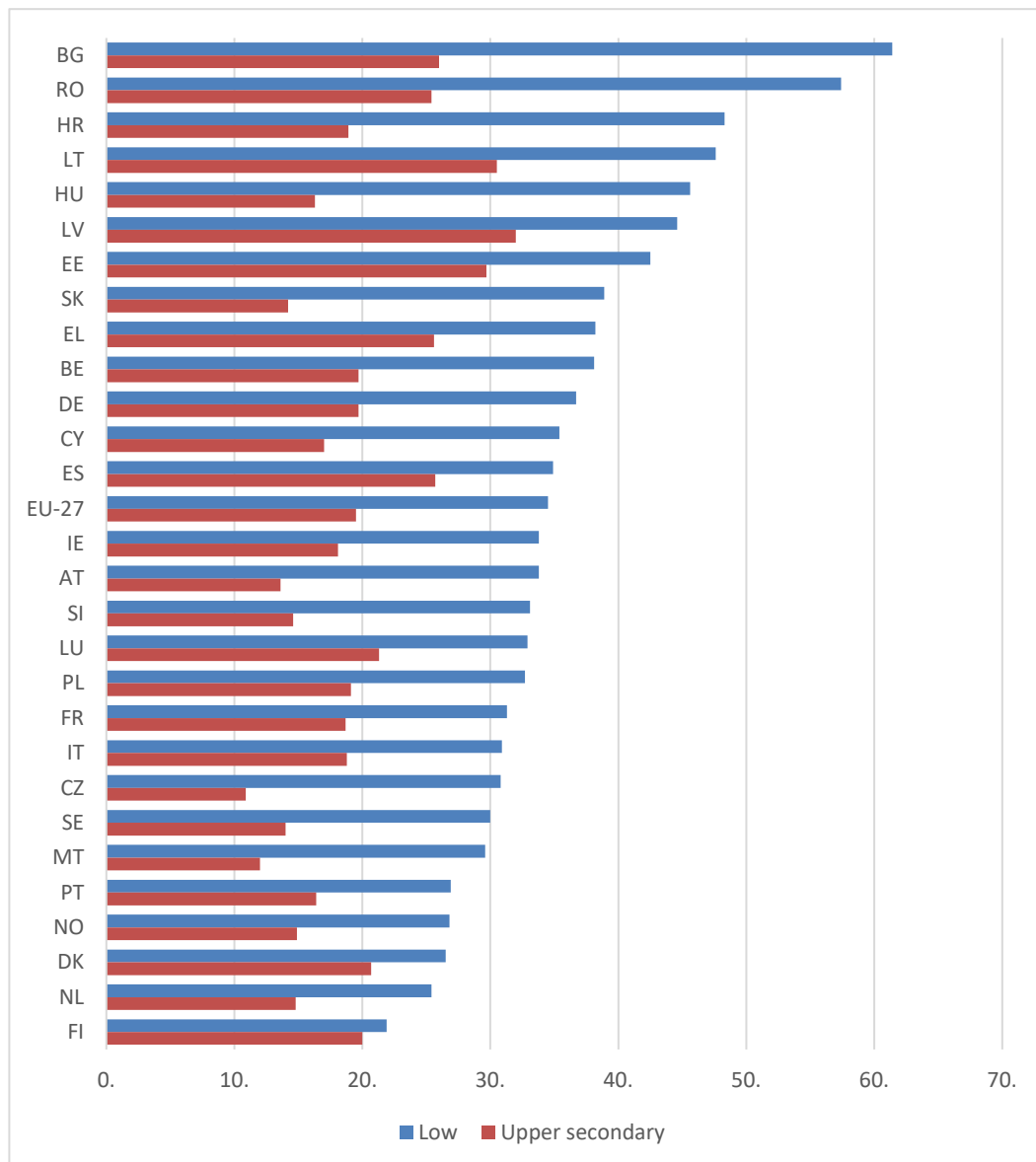
The poverty risk is closely linked to income. In 2023, more than a third of people with low qualification levels were at risk of poverty or social exclusion. In comparison, this risk concerned only 20% of people with medium qualifications, and only 10% of high qualification holders.

These figures do not change much over time: in 2013, they stood at 36%, 22% and 11%, respectively. Unlike some of the previous analyses, poverty risk does not offer a clear regional divide that is typical, for example, in income comparisons.

Overall, some of the eastern European countries, such as Czechia and Slovenia, display low poverty risk, while some others, most notably Bulgaria and Romania, have the highest ones in the whole EU.

These two countries also lead the indicator of share of low-qualified people exposed to poverty and social exclusion (61% and 57%, respectively), while the low-qualified people in Finland, the Netherlands or Denmark face the lowest poverty and social exclusion risks (see Figure 28).

Figure 28. **Share of people at risk of poverty or social exclusion by education level (in %)**



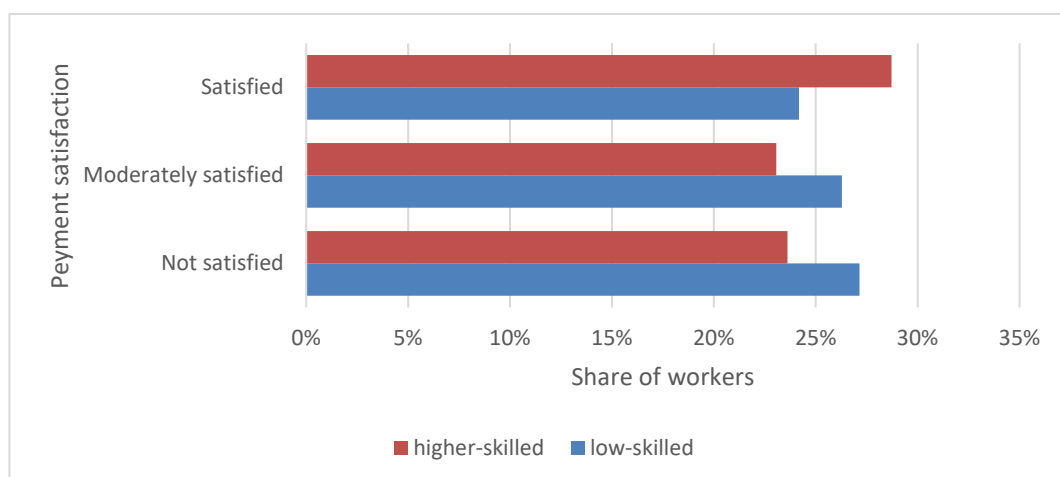
Source: Eurostat. Persons at risk of poverty or social exclusion by educational attainment level (population aged 18 and over) [ilc_peps04n__custom_15305950].

Czechia, despite having the overall lowest poverty and social exclusion risk levels, displays the largest difference between people with low and medium qualification levels: advancing from low to upper secondary education brings the highest benefits in decreasing the risk of poverty and social exclusion of all EU countries. A similar situation also prevails in Hungary, Slovakia and Croatia (also Figure 28).

Workers with low skill levels tend to perceive a higher risk of job loss and are more frequently employed in part-time or temporary positions. Previous reports (Brown et al., 2010; Cedefop, 2022) found that jobs offering greater opportunities for skill development and more complex tasks tend to yield higher levels of job satisfaction. Conversely, educational mismatches such as overqualification are associated with lower satisfaction regarding both job content and pay (Green et al., 2010). Low-skilled jobs, which often feature limited development opportunities, poor working conditions and lower wages, therefore tend to be linked with reduced overall job satisfaction among low-skilled workers. In connection with poor working conditions, significant associations have also been identified between low-skilled employment and health outcomes, with low-skilled workers facing a higher risk of poor health (Kaboth et al., 2024).

To this end, the analysis of the ESJS data showed that workers in low-skilled jobs tend to have lower overall job satisfaction compared to those in higher-skilled occupations (χ^2 test, $p < 0.001$). Adults working in low-skilled jobs report significantly lower net salaries than workers in jobs with higher skill needs. Hence, perceived payment satisfaction is also lower (χ^2 test, $p < 0.001$) for the low-skilled workers (Figure 29).

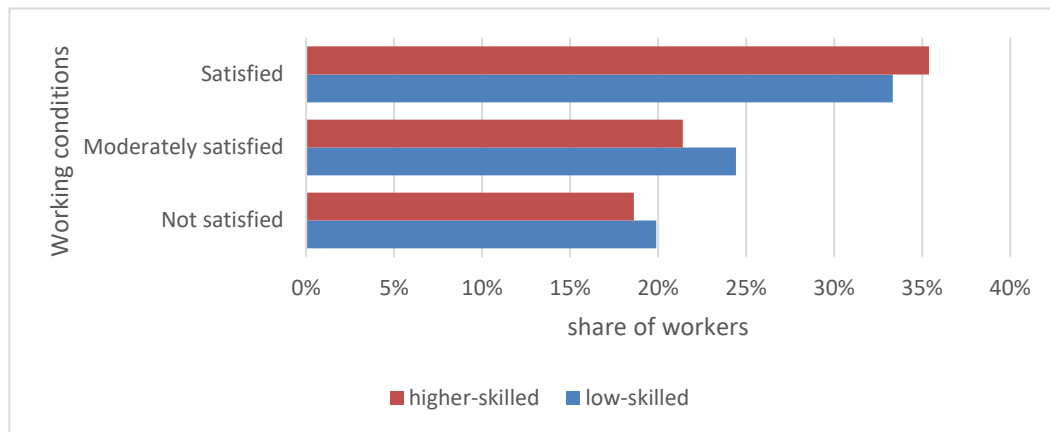
Figure 29. **Perceived payment satisfaction by skill level requirements (%)**



Source: Cedefop. Own calculations from the ESJS microdata (2021).

Working conditions are also reported to be worse by a larger share of workers with low skill levels (χ^2 test, $p < 0.001$), indicating their tendency to be 'locked' in to low-quality jobs (Figure 30). A greater proportion of these workers report moderate levels of satisfaction with the working conditions in their main job. Significant differences also exist within the low-skilled population among occupational groups (χ^2 test, $p < 0.001$).

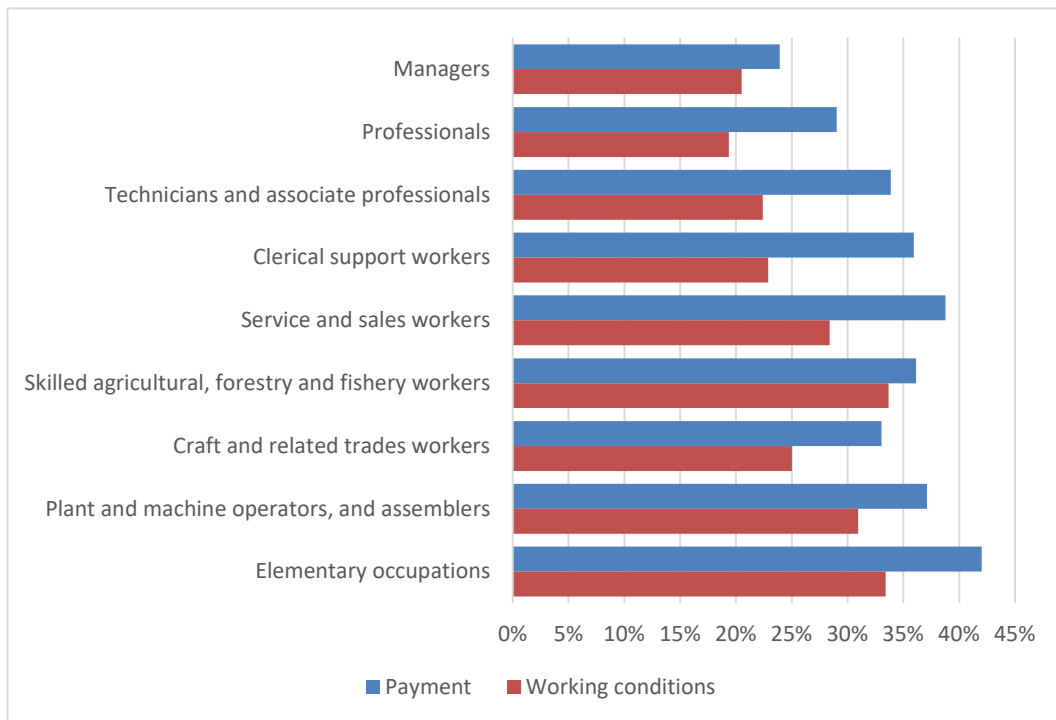
Figure 30. **Perceived satisfaction for working conditions by skill level requirements (%)**



Source: Cedefop. Own calculations from the ESJS microdata (2021).

Elementary occupations (42%) and service and sales workers (39%) show the highest levels of perceived pay dissatisfaction. Skilled agricultural, forestry, and fishery workers reported the highest level of dissatisfaction for overall working conditions (34%), followed by those in elementary occupations (33%) (Figure 31).

Figure 31. **Share of workers (%) in low-skilled jobs who report low levels of satisfaction**



Source: Cedefop. Own calculations from the ESJS microdata (2021).

A more detailed analysis across ISCO two-digit occupational groups reveals that the lowest levels of perceived working conditions are reported among refuse workers (37%), stationary plant and machine operators (35%), labourers in mining (34%), and assemblers (33%). Regarding perceived low pay, the highest shares among low-skilled workers are found in hospitality, retail, and other services managers (45%), personal care workers (40%) and sales workers (38%).

Interestingly, no significant differences in perceived working conditions were found across gender, age groups or education type (VET versus general) within the low-skilled workforce, confirming that low-skilled workers are generally employed in poor-quality jobs regardless their characteristics. However, gender and age demonstrated significant differences in perceived payment satisfaction, with women and older adults (55–64) reporting the lowest levels (χ^2 test, $p < 0.001$). The finding underscores a persistent gender pay gap among low-skilled workers across the EU. A significant portion of this gap may stem from the over-representation of women in lower-paid sectors such as care, health and education. Approximately 30% of women in the EU work in these traditionally low-wage fields, compared to only 8% of men. In contrast, nearly one third of men are employed in higher-paying STEM sectors, reinforcing structural inequalities in pay and job quality for low-skilled female workers (European Parliament, 2025).

Further, women of the older age cohorts seem to be the most vulnerable group, since the gender pay gap tends to increase with age because of the career interruptions women may experience during their working life. This renders low-skilled women at higher risk of poverty compared to men (Leythienne & Pérez-Julián, 2025).

Regardless of gender, the analysis on payment satisfaction showed differences in terms of age, revealing the overall vulnerability of low-skilled older workers who face challenges of limited professional development and are locked in to low-quality and low-waged jobs.

CHAPTER 5.

Conclusions

The European labour market is undergoing rapid transformation due to digitalisation, automation and economic shocks, exacerbating the vulnerabilities of adults with low qualifications and skill levels. These workers face declining job opportunities, precarious working conditions and heightened risks of unemployment or long-term low-quality employment. Given Europe's aging population and shifting workforce demands, unlocking the potential of low-qualified adults is critical for economic resilience and social inclusion.

This study highlights key challenges and disparities affecting adults in low-skilled jobs, particularly in terms of gender, age, education and occupational characteristics. Men are slightly more likely to hold low-skilled jobs, but women report lower pay satisfaction and fewer advanced digital skills. Younger and older workers (under 25 and over 59) are particularly vulnerable, facing higher risks of poverty and job instability. Educational mismatches are prevalent, with many vocational graduates experiencing overqualification, particularly in elementary occupations, services and sales.

Low-complexity jobs, which dominate the employment landscape for low-qualified adults, discourage skill development and upward mobility. Many jobs with low-skill requirements are considered shortage ones, because factors like working conditions, wages and challenges in adapting to digitalisation and automation make them unattractive to potential applicants.

While digital skills are increasingly essential, nearly 40% of workers in low-skilled jobs perform only basic digital tasks, lacking critical problem-solving and content creation abilities. Employment forecasts indicate a 32% decline in low-qualified jobs by 2035, further intensifying pressure for upskilling and reskilling.

To mitigate these challenges, targeted policy interventions are necessary. Key recommendations include:

- (a) expanding upskilling and reskilling programs, particularly in digital, technical and numerical skills, to align with labour market demands;
- (b) improving education–labour market alignment by addressing vocational mismatches and ensuring training programmes reflect industry needs;
- (c) providing tailored support for vulnerable groups, including women and older workers, to enhance pay satisfaction and job quality;

- (d) strengthening stakeholder collaboration among policymakers, employers, educators and workers' representatives to foster an inclusive and resilient workforce.

Without concerted action, low-qualified adults risk being left behind in the evolving labour market. By prioritising skill development, reducing educational mismatches and promoting decent work conditions, Europe can ensure that all workers – regardless of their starting point – can thrive.

Abbreviations

AES	adult education survey
ESJS	European skills and jobs survey
EU	European Union
EU-LFS	European Union labour force survey
EU-SILC	European Union statistics on income and living conditions
ICT	information and communication technology
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
IT	information technology
NACE	nomenclature statistique des activités économiques dans la Communauté européenne
OECD	Organisation for Economic Co-Operation and Development
PIAAC	Programme for the International Assessment of Adult Competencies
STEM	science, technology, engineering and mathematics
UNHCR	United Nations High Commissioner for Refugees
VET	vocational education and training

References

[accessed 22.12.2025]

- Bertoni, E., Cosgrove, J., Pouliakas, K., & Santangelo, G. (2024). *What drives workers' participation in digital skills training*. JRC137073. European Commission.
<https://publications.jrc.ec.europa.eu/repository/handle/JRC137073>
- Bessen, J. (2015). Toil and technology: Innovative technology is displacing workers to new jobs rather than replacing them entirely. *Finance and Development*, 52(1), 16–20.
- Brown, P., Lauder, H., & Ashton, D. (2010). *The global auction: The broken promises of education, jobs, and incomes*. Oxford University Press.
- Causa, O., et al. (2025). *Labour shortages and labour market inequalities: Evidence and policy implications*. OECD Economics Department Working Paper, 1832. OECD Publishing. <https://doi.org/10.1787/14e62ec0-en>
- Cedefop. (2015). *Skills, qualifications and jobs in the EU: The making of a perfect match? Evidence from Cedefop's European skills and jobs survey*. Cedefop Reference Series, 103). Publications Office of the European Union.
<https://data.europa.eu/doi/10.2801/606129>
- Cedefop. (2017). *Investing in skills pays off: The economic and social cost of low-skilled adults in the EU*. Cedefop Research Paper, 60). Publications Office of the European Union. <http://dx.doi.org/10.2801/23250>
- Cedefop. (2018). *Insights into skill shortages and skill mismatch: Learning from Cedefop's European skills and jobs survey*. Cedefop Reference Series, 106). Publications Office of the European Union.
<https://data.europa.eu/doi/10.2801/645011>
- Cedefop. (2020a). *Perceptions on adult learning and continuing vocational education and training in Europe: Second opinion survey: Vol. 1: Member States*. Cedefop Reference Series, 117). Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/6647>
- Cedefop. (2020b). *Vocational education and training in Europe, 1995–2035: Scenarios for European vocational education and training in the 21st century*. Cedefop Reference Series, 114. Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/794471>
- Cedefop. (2020c). *Empowering adults through upskilling and reskilling pathways: Vol. 1: Adult population with potential for upskilling and reskilling*. Cedefop Reference Series, 112). Publications Office of the European Union.
<http://data.europa.eu/doi/10.2801/691134>
- Cedefop. (2022a). *Employment trends during the COVID-19 pandemic: Skills intelligence data insight*. <https://www.cedefop.europa.eu/en/data-insights/employment-trends-during-covid-19-pandemic>

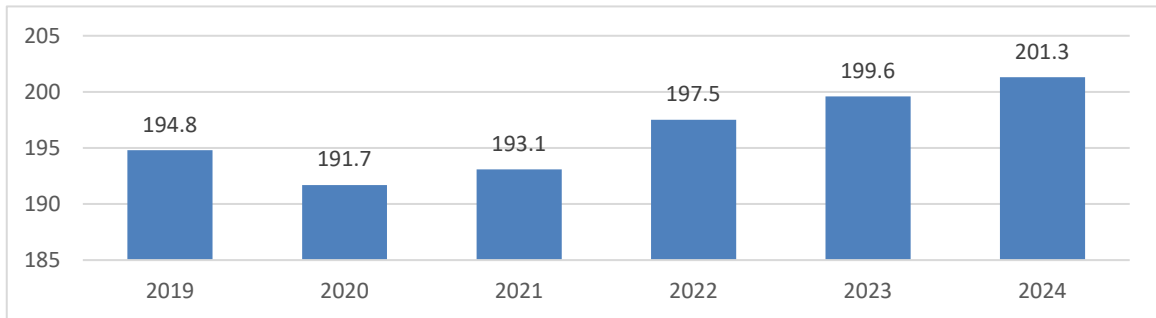
- Cedefop. (2022). *Setting Europe on course for a human digital transition: New evidence from Cedefop's second European skills and jobs survey* (Cedefop Reference Series No 123). Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/253954>
- Cedefop. (2023). *Going digital means skilling for digital: Using big data to track emerging digital skill needs*. Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/772175>
- Cedefop. (2024). *Digital skills ambitions in action: Cedefop's Skills forecast digitalisation scenario*. Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/966457>
- Cedefop. (2024b). *Untangling labour shortages in Europe: Unmet skill demand or bad jobs?*. Cedefop Working Paper Series, 20. Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/023297>
- Cedefop. (2025). *Shaping learning and skills for Europe: A time for commitment*. Publications Office of the European Union. <http://data.europa.eu/doi/10.2801/2783450>
- Cedefop. (2025b). *Cedefop labour and skills shortage index*. Publications Office of the European Union. <https://www.cedefop.europa.eu/en/publications/9202>
- Draghi, M. (2024). *The future of European competitiveness: a competitiveness strategy for Europe*. https://commission.europa.eu/document/97e481fd-2dc3-412d-be4c-f152a8232961_en
- European Commission. (2024). *Report on the state of the digital decade 2024*. Publications Office of the European Union. <https://digital-strategy.ec.europa.eu/en/policies/2024-state-digital-decade-package>
- European Commission. (2025). *Employment and social developments in Europe 2025*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2767/9505984>
- European Labour Authority & Fondazione Giacomo Brodolini. (2024). *Report on labour shortages and surpluses 2023*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2883/973861>
- European Parliament. (2023). *The direct and indirect impacts of the war on inflation*. [https://www.europarl.europa.eu/RegData/etudes/IDAN/2023/741487/IPOL_IDA\(2023\)741487_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2023/741487/IPOL_IDA(2023)741487_EN.pdf)
- European Parliament. (2025). *Understanding the gender pay gap: Definition, facts and causes*. <https://www.europarl.europa.eu/topics/en/article/20200109STO69925/understanding-the-gender-pay-gap-definition-facts-and-causes#causes-of-the-gender-pay-gap-2>
- Eurofound. (2025). *Job tasks in the EU: Implications for skills and labour shortages*. Publications Office of the European Union.

- <https://www.eurofound.europa.eu/en/publications/all/job-tasks-eu-implications-skills-and-labour-shortages>
- Eurostat. (2025). *Employed persons by occupation and educational attainment level*. Online data code: lfsa_egised.
https://ec.europa.eu/eurostat/databrowser/view/lfsa_egised_custom_17606052/default/table
- Fernández-Macías, E., Bisello, M., Peruffo, E., & Rinaldi, R. (2023). Routinization of work processes, de-routinization of job structures. *Socio-Economic Review*, 21(3), 1773–1794. <https://doi.org/10.1093/ser/mwac044>
- Green, F., & Zhu, Y. (2010). Overqualification, job dissatisfaction and increasing dispersion in the returns to graduate education. *Oxford Economic Papers*, 62, 740–763.
- Kaboth, A., Hünefeld, L., & Himmelreicher, R. (2024). Employment in low-skilled jobs as trigger and consequence of poor health: a longitudinal perspective from Germany. *European Journal of Public Health*, 34(6), 1052–1058.
<https://doi.org/10.1093/eurpub/ckae157>
- Leythienne, D., & Pérez-Julián, M. (2025). *Gender pay gaps in the European Union: A statistical analysis based on Structure of Earnings Survey 2022 data*. Publications Office of the European Union.
- McGuinness, S., & Pouliakas, K. (2017). Deconstructing theories of overeducation in Europe: A wage decomposition approach. In S. W. Polachek et al. (Eds.), *Skill mismatch in labor markets* (Research in Labor Economics, Vol. 45, pp. 81–127).
- Menon, S., Salvatori, A., & Zwysen, W. (2020). The effect of computer use on work discretion and work intensity: Evidence from Europe. *British Journal of Industrial Relations*, 58(4), 1004–1038.
- OECD. (2019). *Getting skills right: Engaging low skilled adults in learning*.
<https://www.oecd.org/employment/emp/engaging-low-skilled-adults-2019.pdf>
- OECD. (2023). *What we know about the skills and early labour market outcomes of refugees from Ukraine*. OECD Publishing.
<https://doi.org/10.1787/c7e694aa-en>
- Statistisches Bundesamt. (2023). *Sharp rise in labour migration in 2022*. Press release, 165.
https://www.destatis.de/EN/Press/2023/04/PE23_165_125.html
- Sydney Shadovitz, A., Helsinger, A., & Cummins, P. (2021). Challenges to engage low-skilled adults in education and training: An international perspective. *Innovation in Aging*, 5(Suppl 1), 387.
<https://doi.org/10.1093/geroni/igab046.1508>
- Unesco. (2017). *Global Education Monitoring Report 2017/8: Accountability in education: Meeting our commitments*. <https://doi.org/10.54676/VVRO7638>

- UNHCR. (2025). *Forecasting refugee return to Ukraine amid ongoing war and uncertainty* (Policy Brief).
<https://data.unhcr.org/en/documents/details/117421>
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The digital competence framework for citizens: With new examples of knowledge, skills and attitudes* (EUR 31006 EN). Publications Office of the European Union.
<https://doi.org/10.2760/115376>

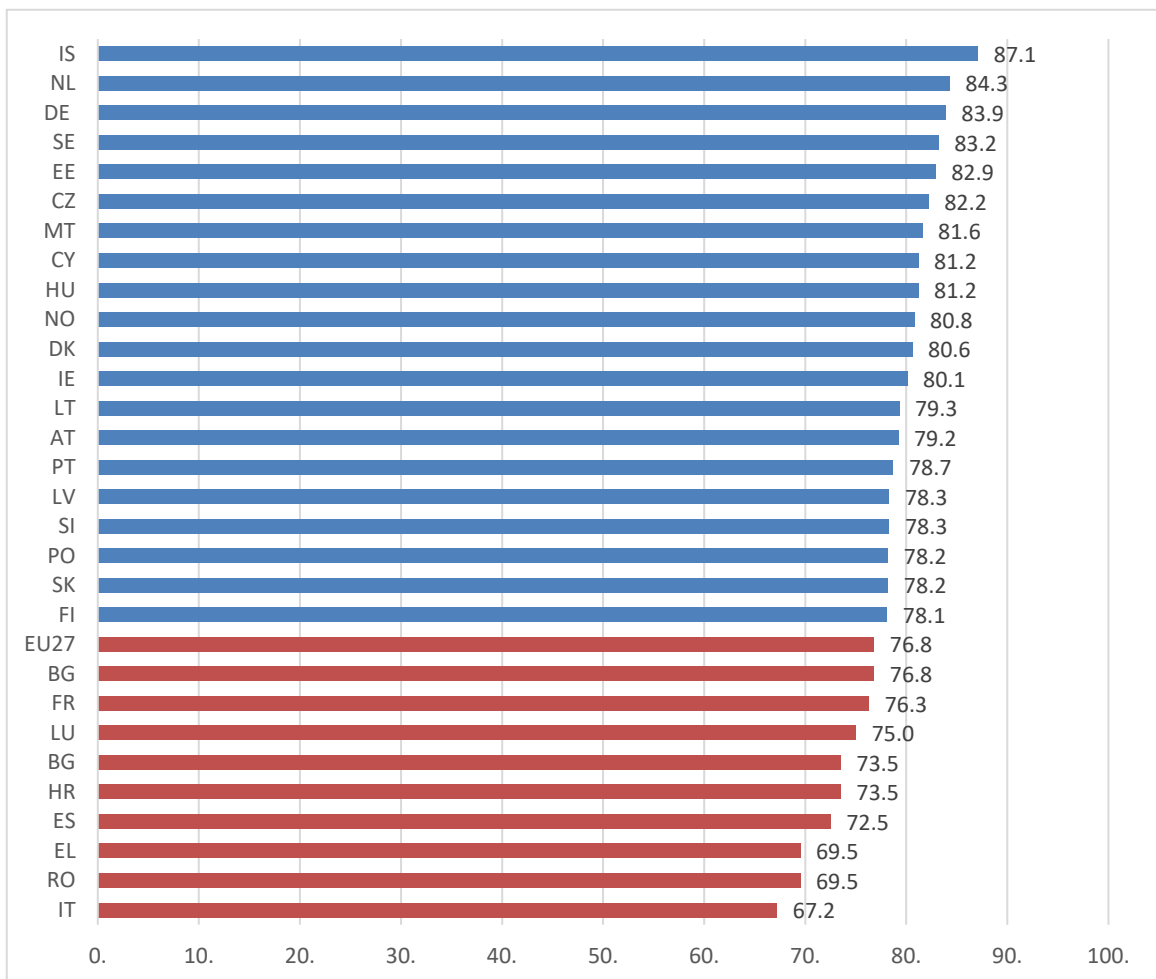
Annex

Annex Figure 32. **EU-27 employment (in millions)**



Source: Eurostat. EU-LFS. Employment by sex, age and citizenship (1 000). Online data code: lfsa_egan.

Annex Figure 33. **EU+ employment rate in 2024 (age group 20–64, in %)**



Source: Eurostat. EU-LFS. Employment rates by sex, age, educational attainment level and citizenship. Online data code: lfsa_ergaedn.

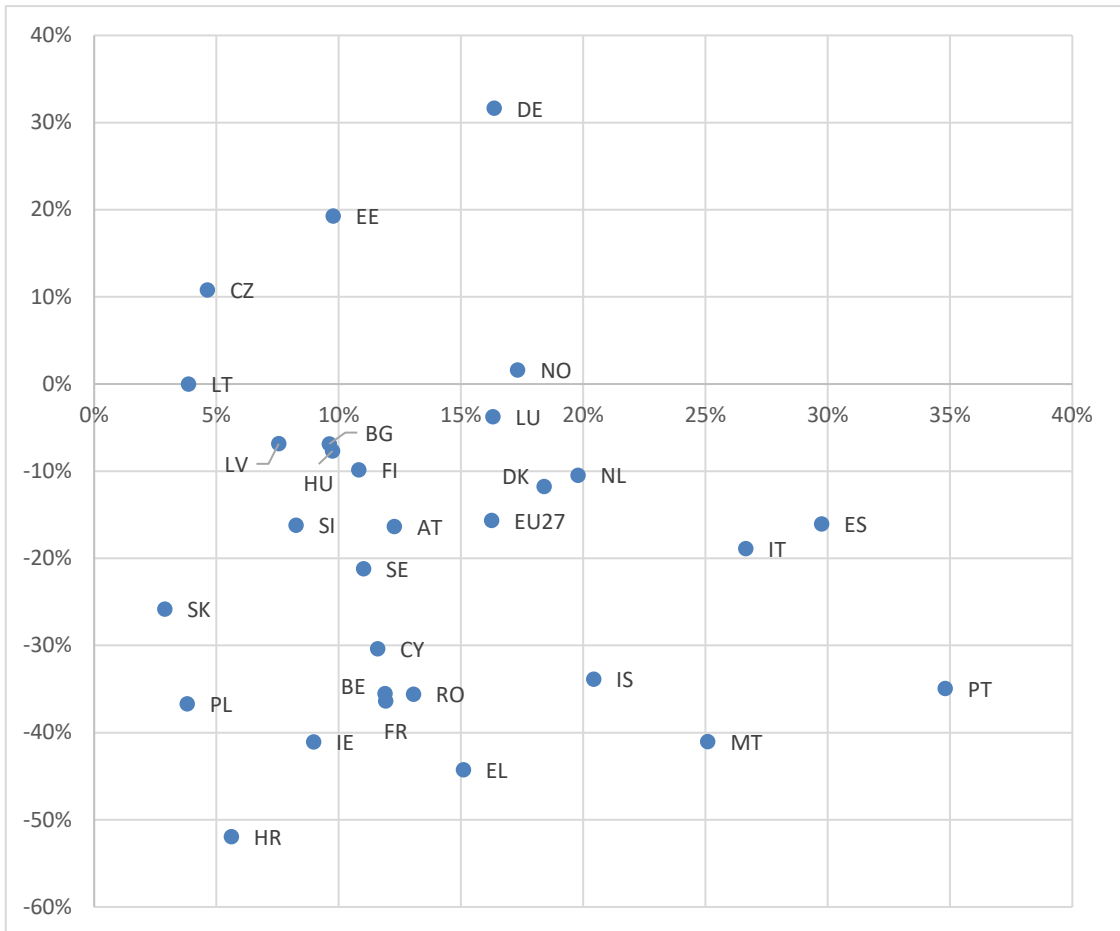
Annex Table 15. **Employment rate by education attainment level (2024, in %)**

Country	Low (levels 0–2)	Medium (levels 3 / 4)	High (levels 5–8)
IS	76.8	86.3	92.3
MT	71.8	84.7	90.6
PT	70.4	78.9	87.4
CY	69.0	75.9	85.8
NL	69.0	83.8	89.9
DE	66.5	82.1	87.9
EE	65.7	79.6	89.2
DK	61.4	80.1	88.2
ES*	61.4	66.9	82.4
SE	60.5	80.9	88.4
NO	60.5	79.0	87.7
HU	59.9	80.5	91.0
EU27	58.7	74.9	86.5
EL	58.7	65.5	80.3
CZ	58.3	82.6	87.0
LV	58.0	73.5	87.5
AT	57.0	77.1	85.3
SI	54.9	76.2	89.5
IE	54.7	75.6	87.5
LU	54.7	67.0	84.8
IT	54.5	68.6	82.2
FR*	54.2	71.9	85.8
LT	53.1	72.2	90.2
FI	50.1	74.6	87.9
BG	48.5	75.4	90.5
PL	47.7	73.0	90.9
BE	47.5	68.1	86.0
RO	45.1	71.2	90.0
HR	41.3	71.9	87.2
SK	33.8	78.2	88.0

NB: For the countries labelled with *, the definition differs. See metadata. The table is ordered by the employment rate of persons with low qualification levels.

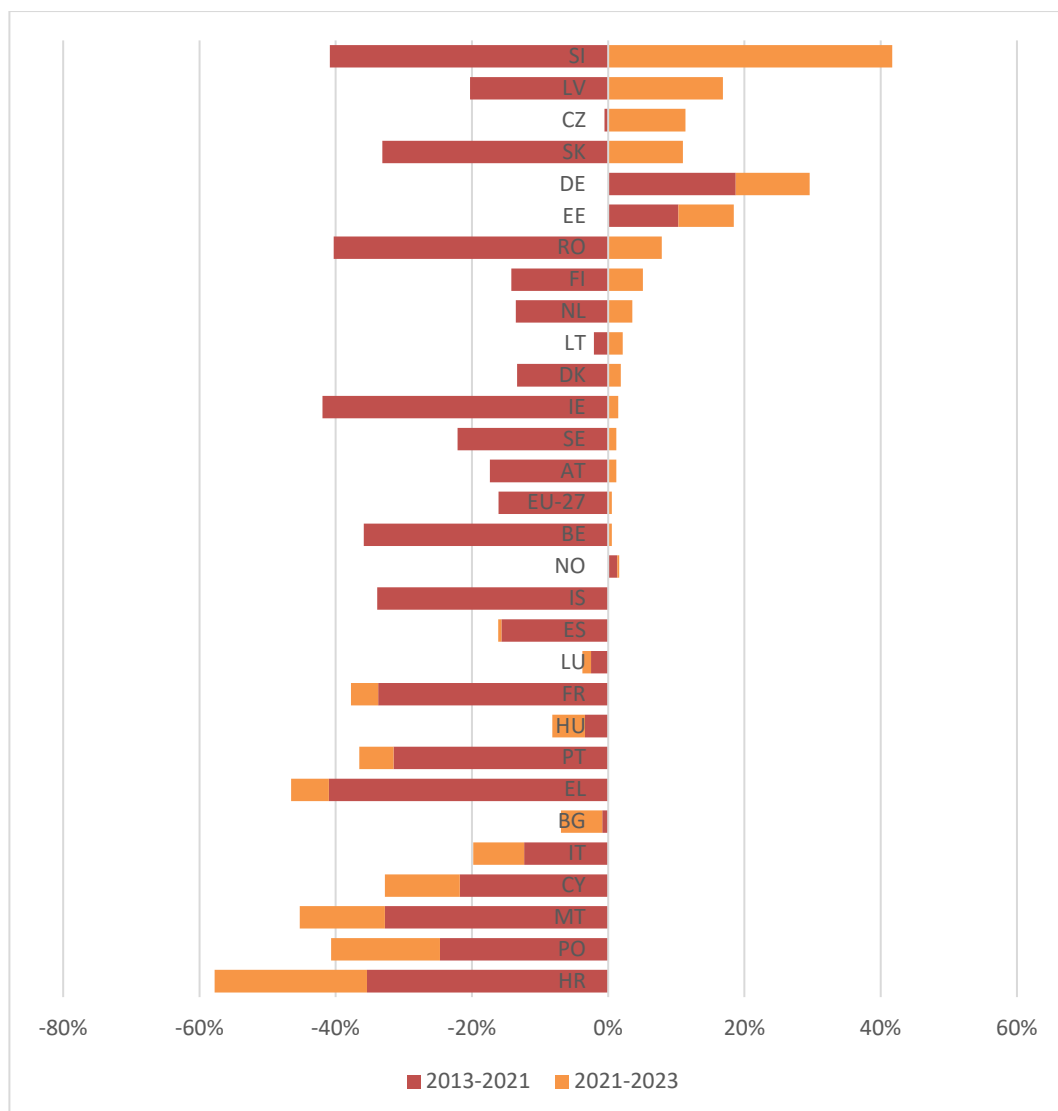
Source: Eurostat. EU-LFS. Employment by educational attainment level – annual data. Online data code: lfsi_educ_a.

Annex Figure 34. Employment share (2023, horizontal axis) and trend (2013–2023, vertical axis) of low-qualified adults in the EU (in %)



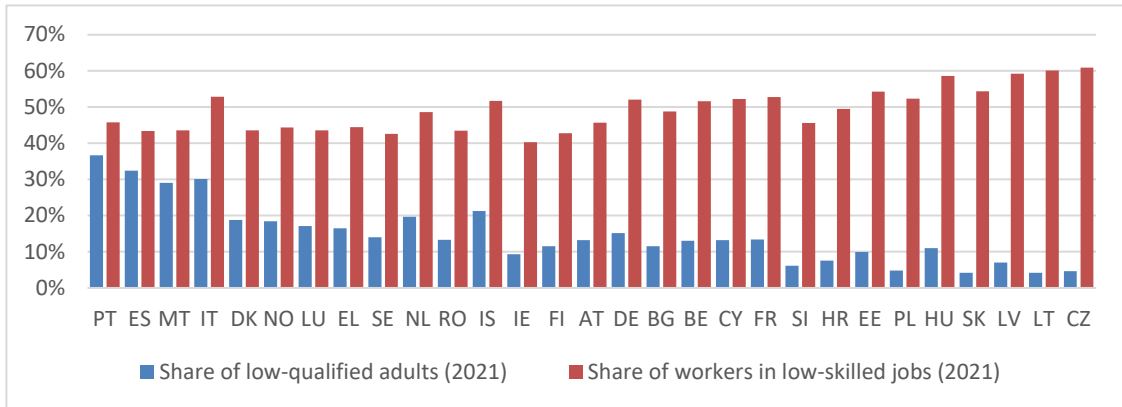
Source: Eurostat. Employment by sex, age and educational attainment level (1 000) [fsa_egaed__custom_13448969]. Own calculations.

Annex Figure 35. **Change in the employment share of low-qualified adults across Europe (2013–2021 and 2021–2023, in %)**



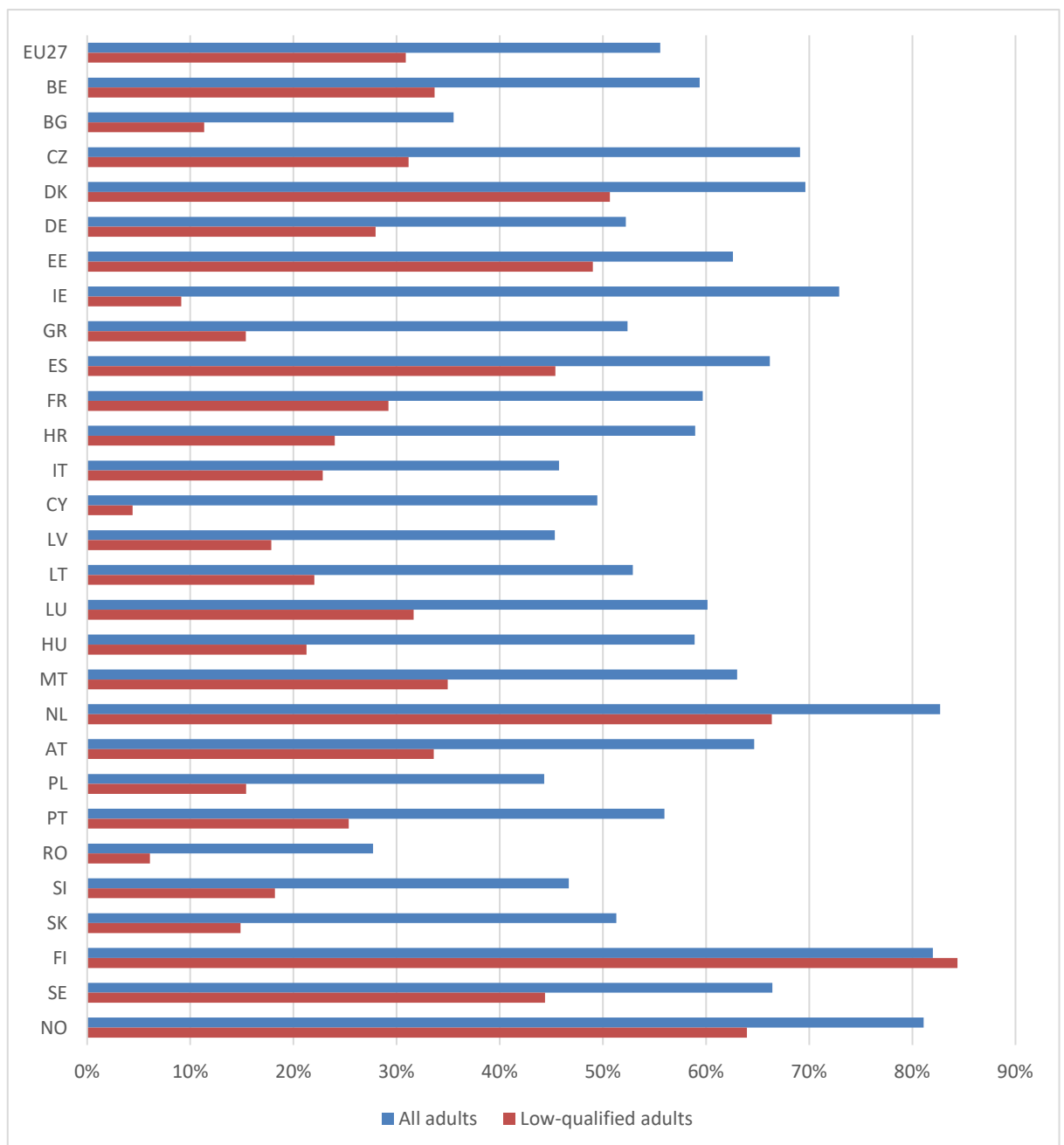
Source: Eurostat. Employment by sex, age and educational attainment level (1 000) [lfsa_egaed__custom_15311183]. Own calculations.

Annex Figure 36. **Share of low-qualified adults and the share of workers in low-skilled jobs (2021)**



Source: Eurostat. Employment by sex, age and educational attainment level (1 000) [lfsa_egaed__custom_15311183]. Own calculations based on the ESJS micro dataset (2021).

Annex Figure 37. **Individuals with basic or above-basic overall digital skills for all adults and low-qualified adults (aged 25 to 64, in 2023)**



Source: Eurostat. Individuals' level of digital skills (from 2021 onwards) [isoc_sk_dskl_i21].

Skill development and employment pathways for adults with low skill levels

This publication examines the characteristics, skills development, employment patterns and challenges of low-qualified and low-skilled adults in the European labour market. Low-qualified adults are defined as those with International Standard Classification of Education levels 0-2, while low-skilled adults are identified based on job skill requirements from the European skills and jobs survey.

Nearly half of European workers are employed in low-skilled jobs. Educational mismatches are widespread, but graduates in STEM, ICT, engineering and health fields face lower risks of low-skilled employment. Participation in education and training is significantly lower among low-qualified and low-skilled adults, making improved access to training a key policy priority.

Digitalisation and automation are reducing job opportunities for low-qualified and low-skilled workers. They face higher unemployment, lower income, greater poverty risk and lower job satisfaction. The publication concludes that targeted upskilling and reskilling, supported by coordinated stakeholder action, are essential for inclusion and long-term employability.



CEDEFOP

European Centre for the Development
of Vocational Training

Europe 123, Thessaloniki (Pylaia), Greece
Postal: Cedefop service post, 57001 Themi, Greece
Tel. +30 2310490111, Fax +30 2310490020
Email: info@cedefop.europa.eu

www.cedefop.europa.eu



Publications Office
of the European Union

