

Building **skills** for the **world to come**

The role of VET

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Ministero dell'Istruzione e del Merito

Rome, 21 February 2025



The future will always surprise us

Impact



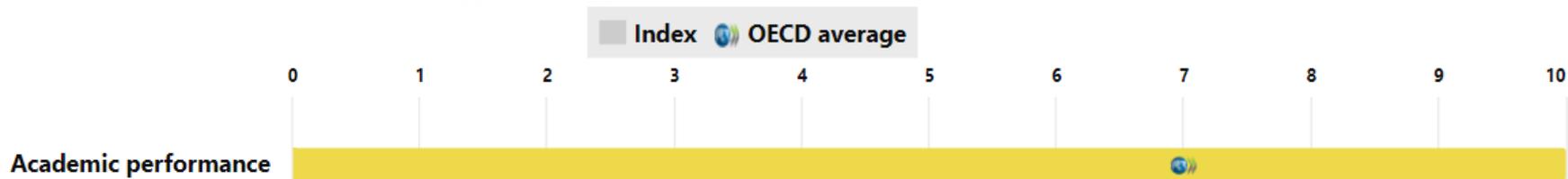
Uncertainty



PISA 2022 outcomes:



Japan

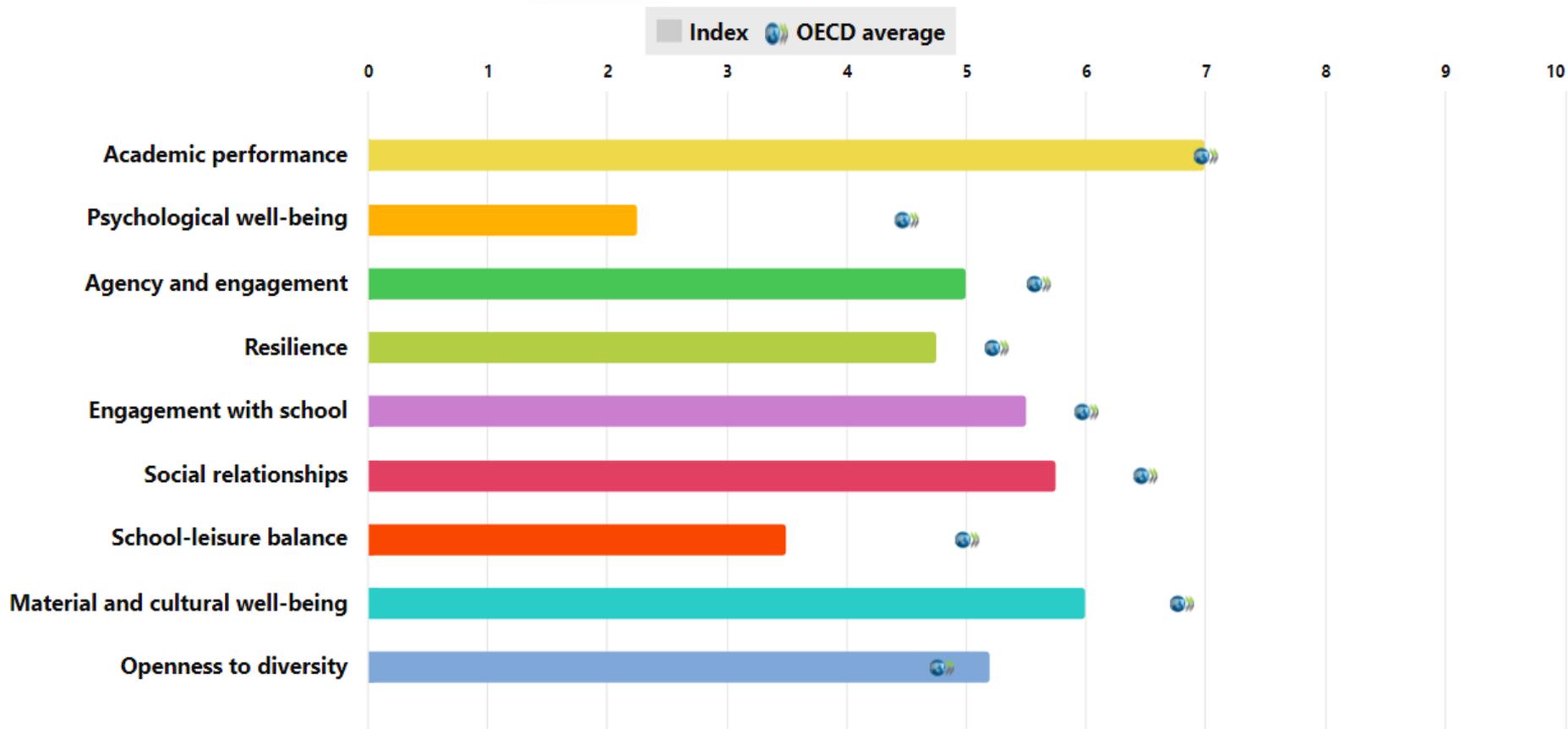




PISA 2022 outcomes:



Italy

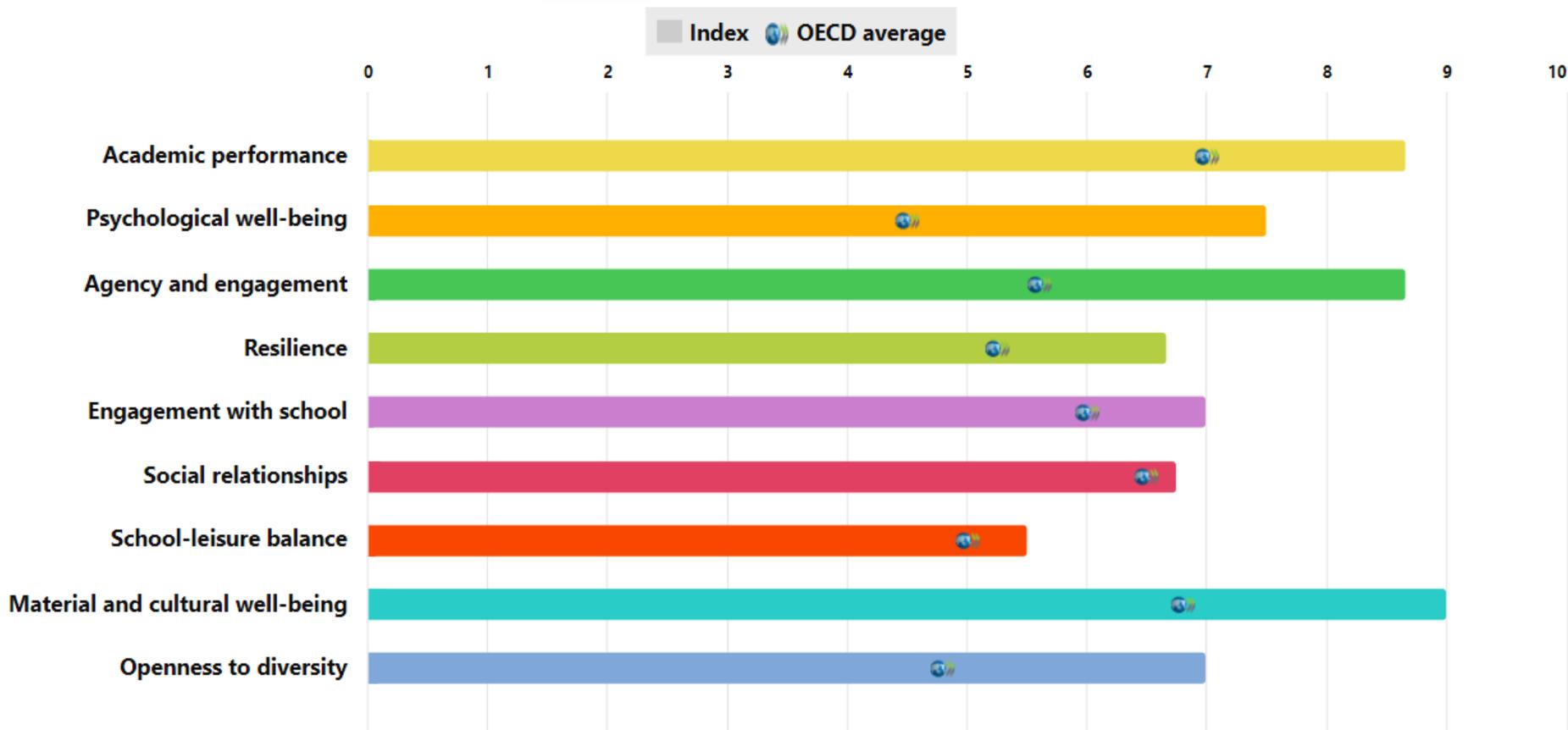




PISA 2022 outcomes:



Denmark

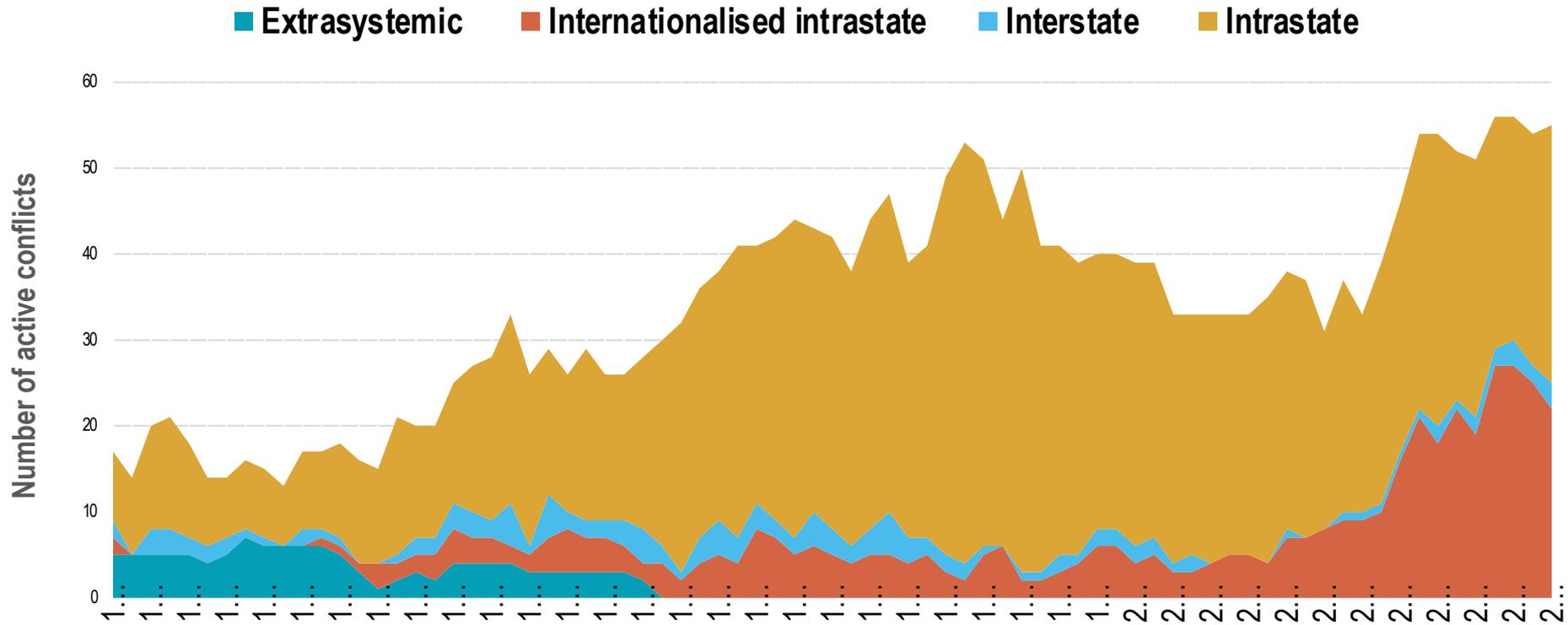




Global conflict on the rise

Figure 1.1.

State-based armed conflict by type, worldwide (1946-2022)



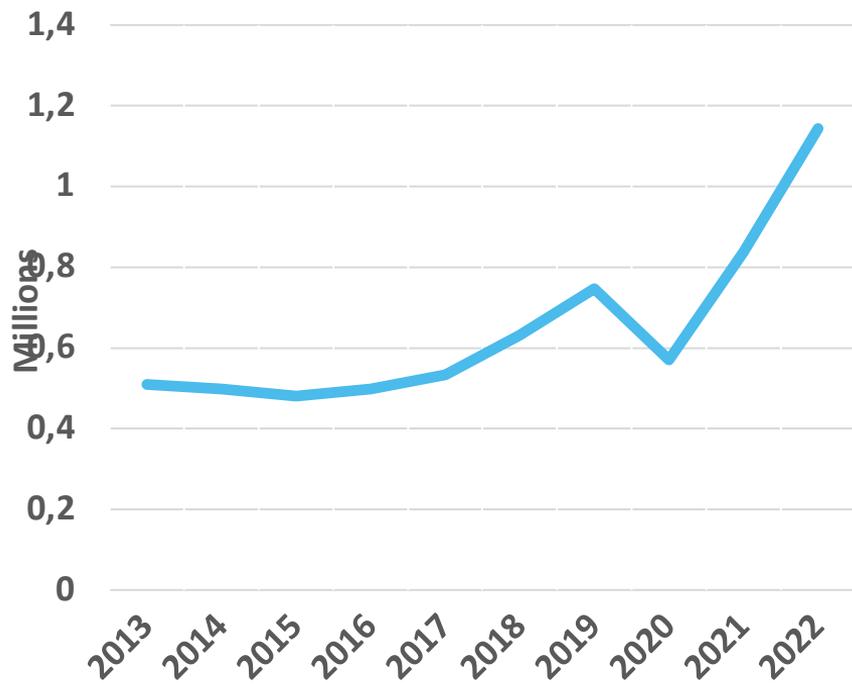


The return of international migration

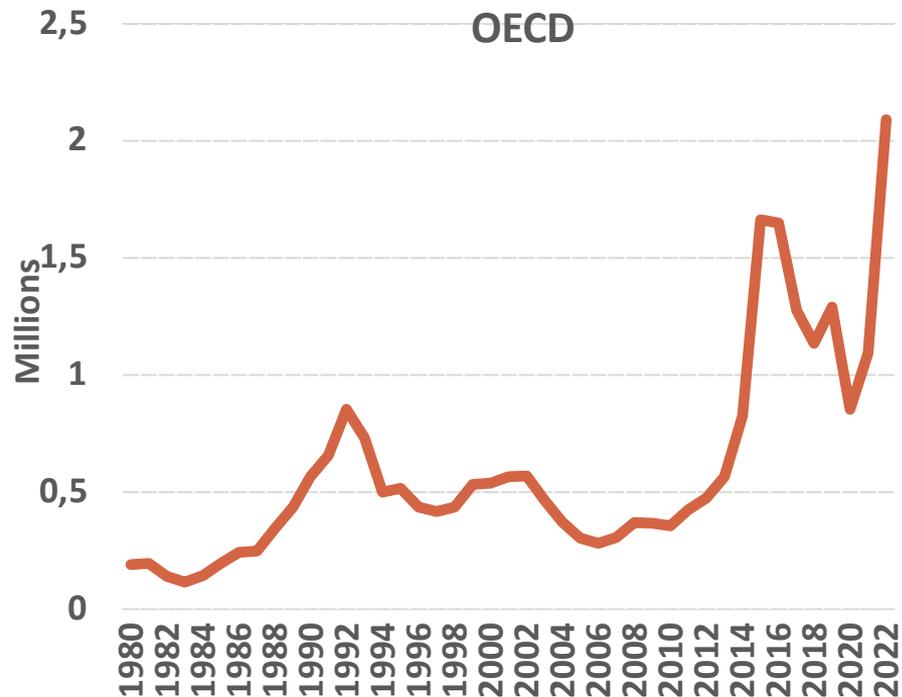
Figure 1.3.

A. Permanent-type labour migration ; B. New asylum applications, OECD countries (2013-2022)

A. Labour migration



B. New asylum applications to the OECD

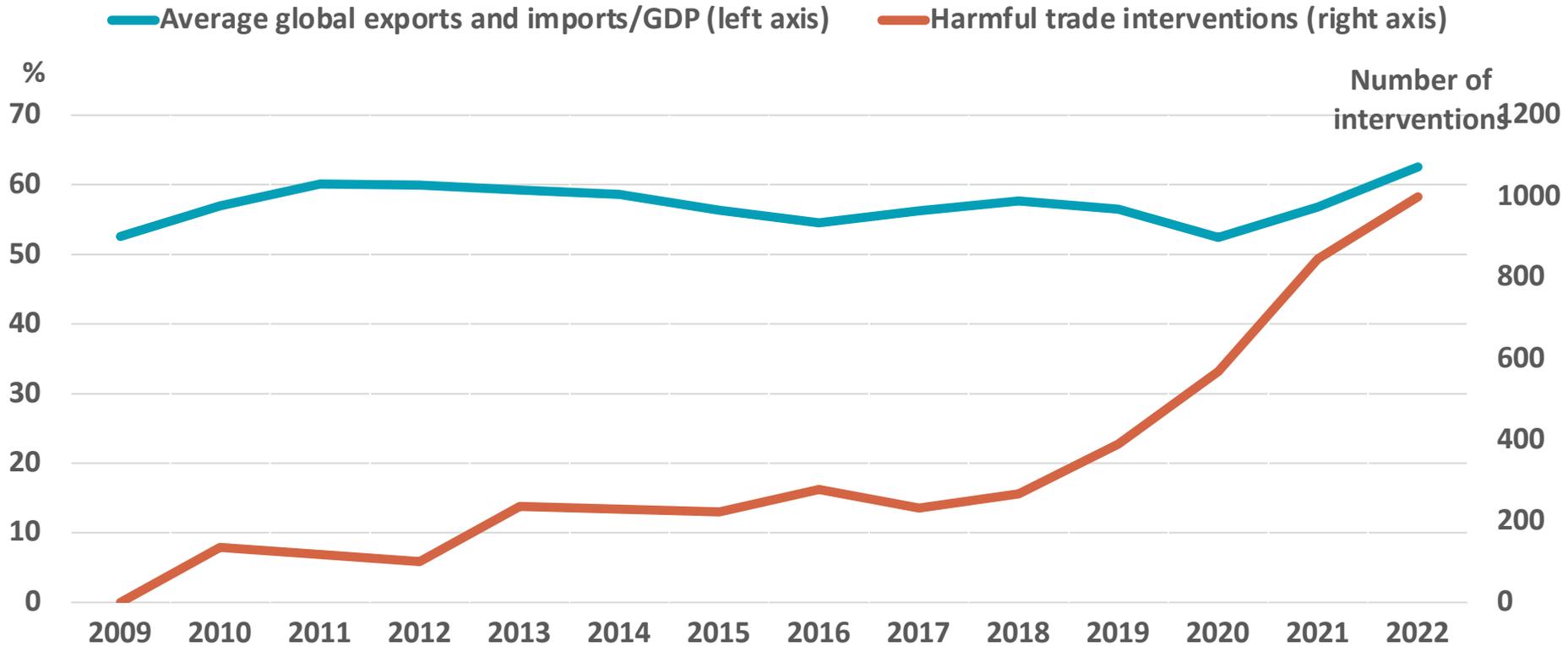




Global trade slowing, restrictions rising

Figure 1.5.

Average global trade as a share of GDP; global trade restrictions (2009-2022)



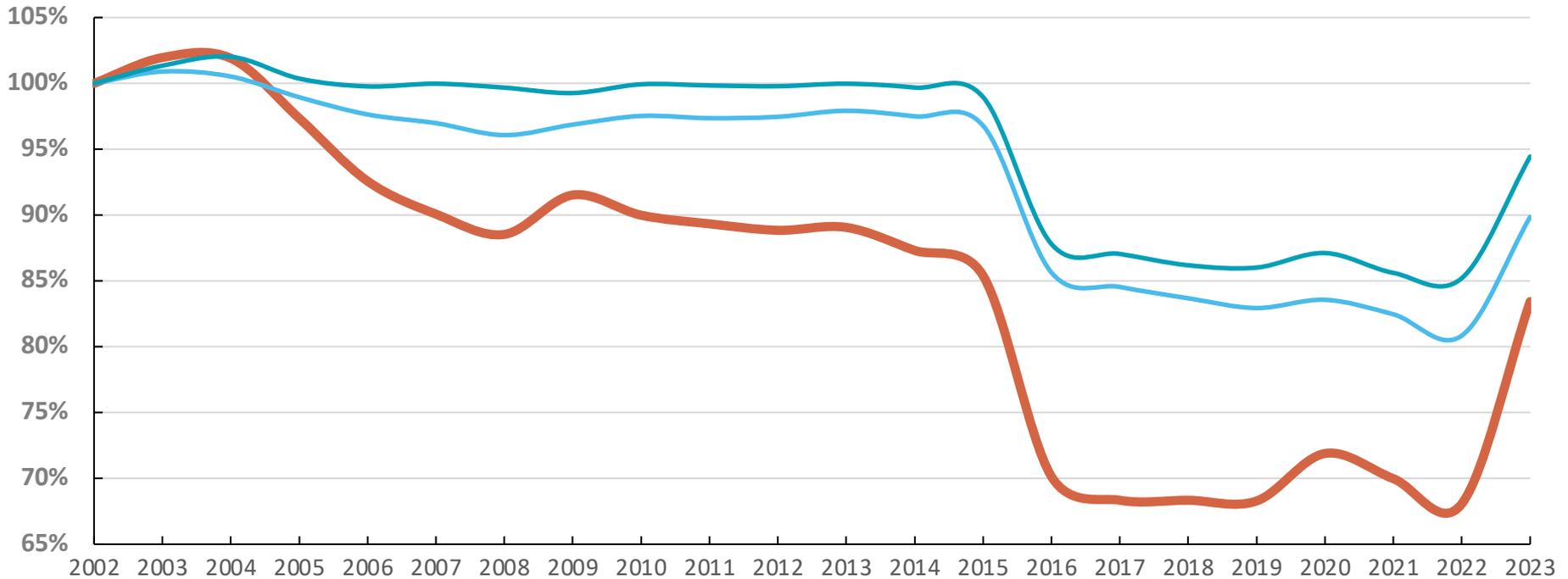


Young people change jobs increasingly more often than older cohorts

Figure 2.4

Change in average job tenure by age group, OECD average (2002-2022)

15 to 24 25 to 54 55 to 64

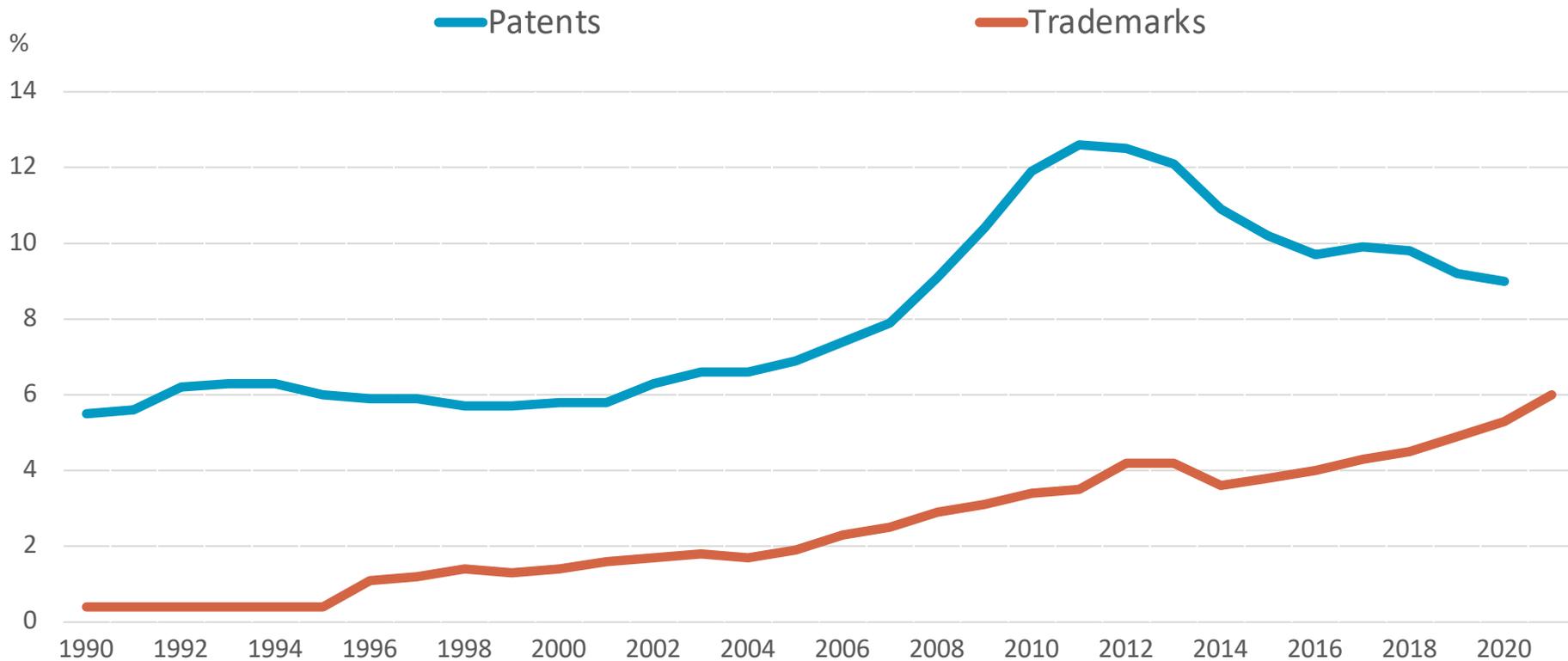




Rising commercialisation, falling innovation

Figure 1.11

Share of global patents and trademark filings in climate-related technologies (1990-2021)





Employment in clean energy surpasses employment in fossil fuels

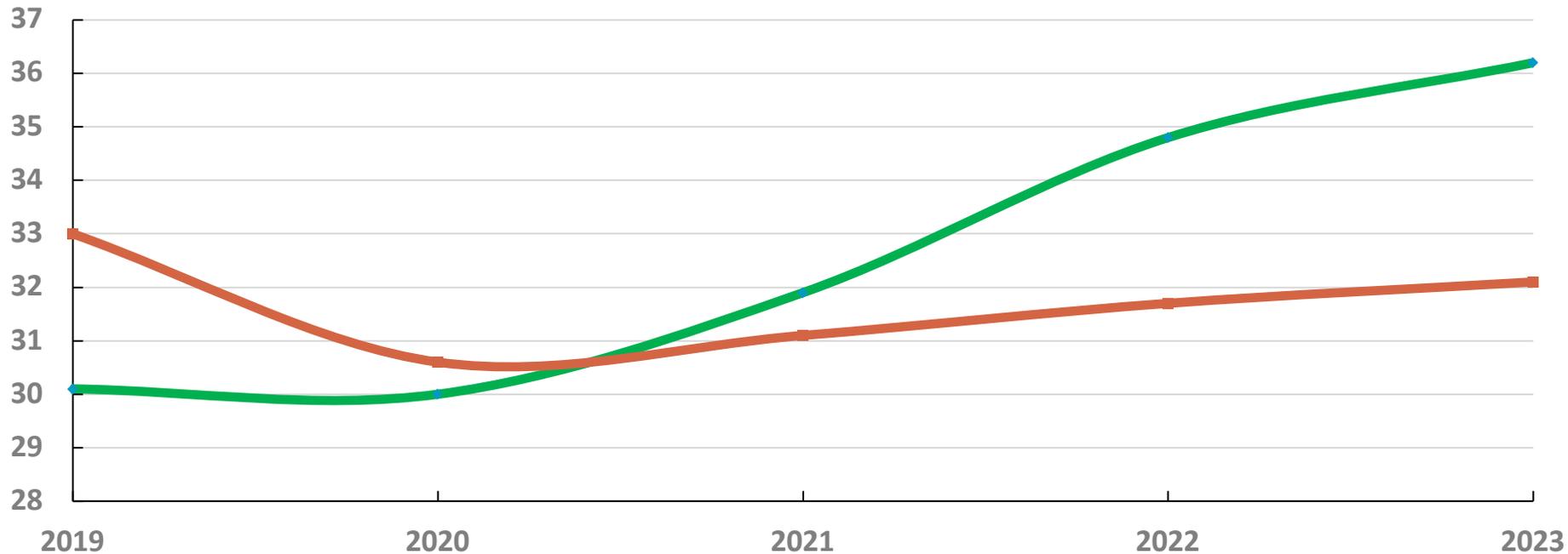
Figure 2.1.

Total employment by energy sector, worldwide (2019-2023)

Clean energy

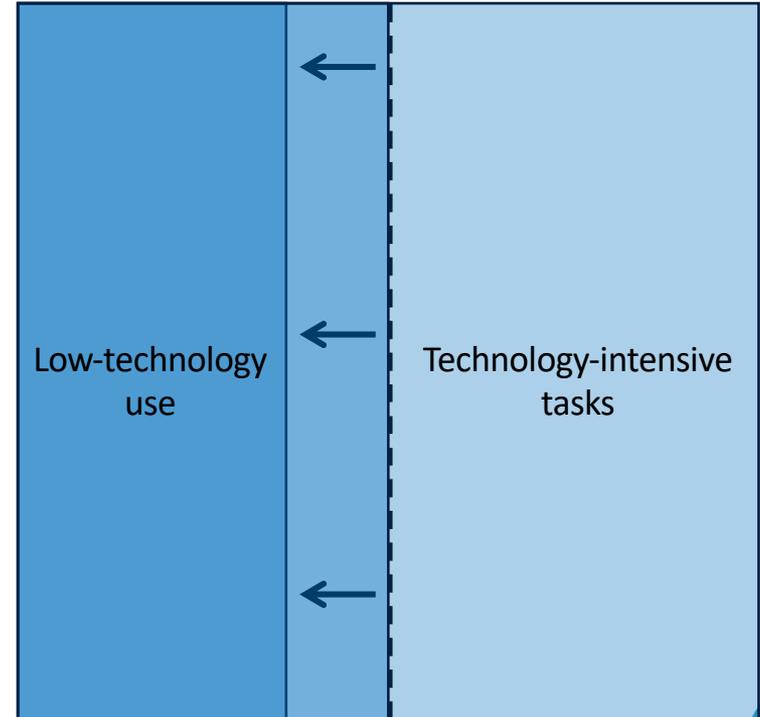
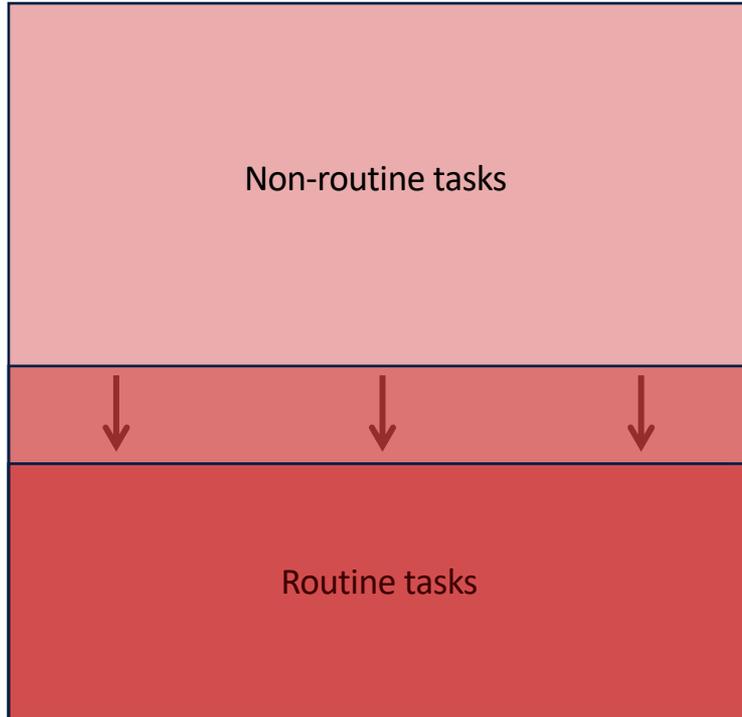
Fossil fuels

Million workers



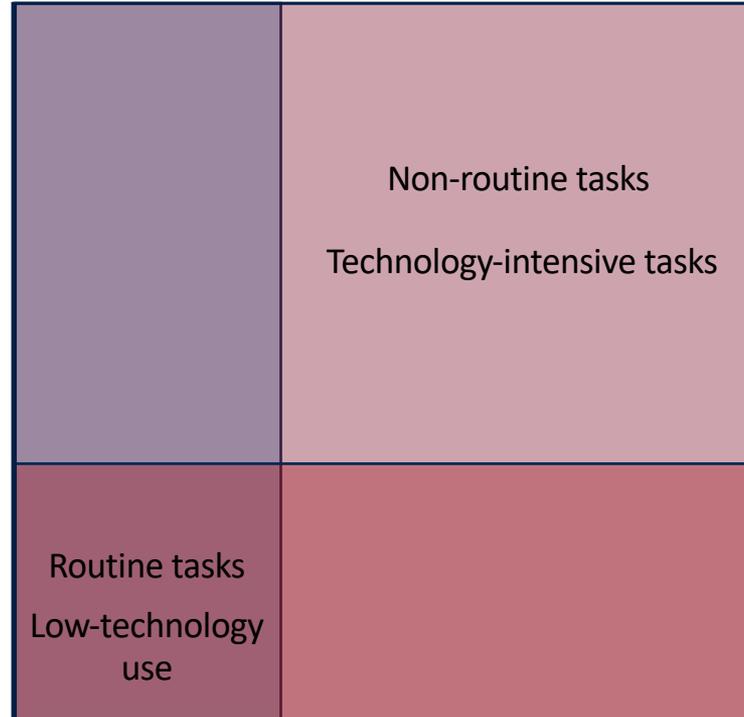


The kinds of things that are easy to teach...
... have now become easy to digitise and automate





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... have now become easy to digitise and automate

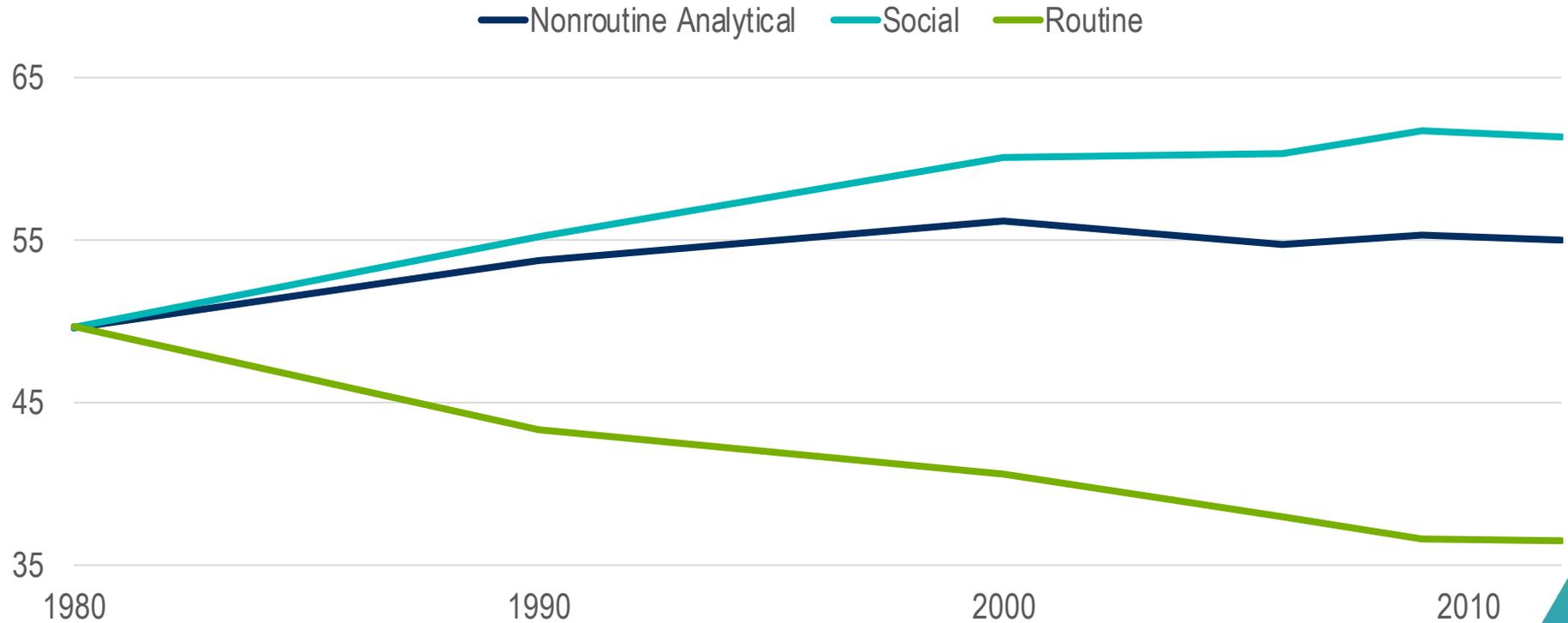




Demand for routine tasks has continued to decline

Figure 1.1

Evolution of tasks performed by workers in the United States, 1980-2012



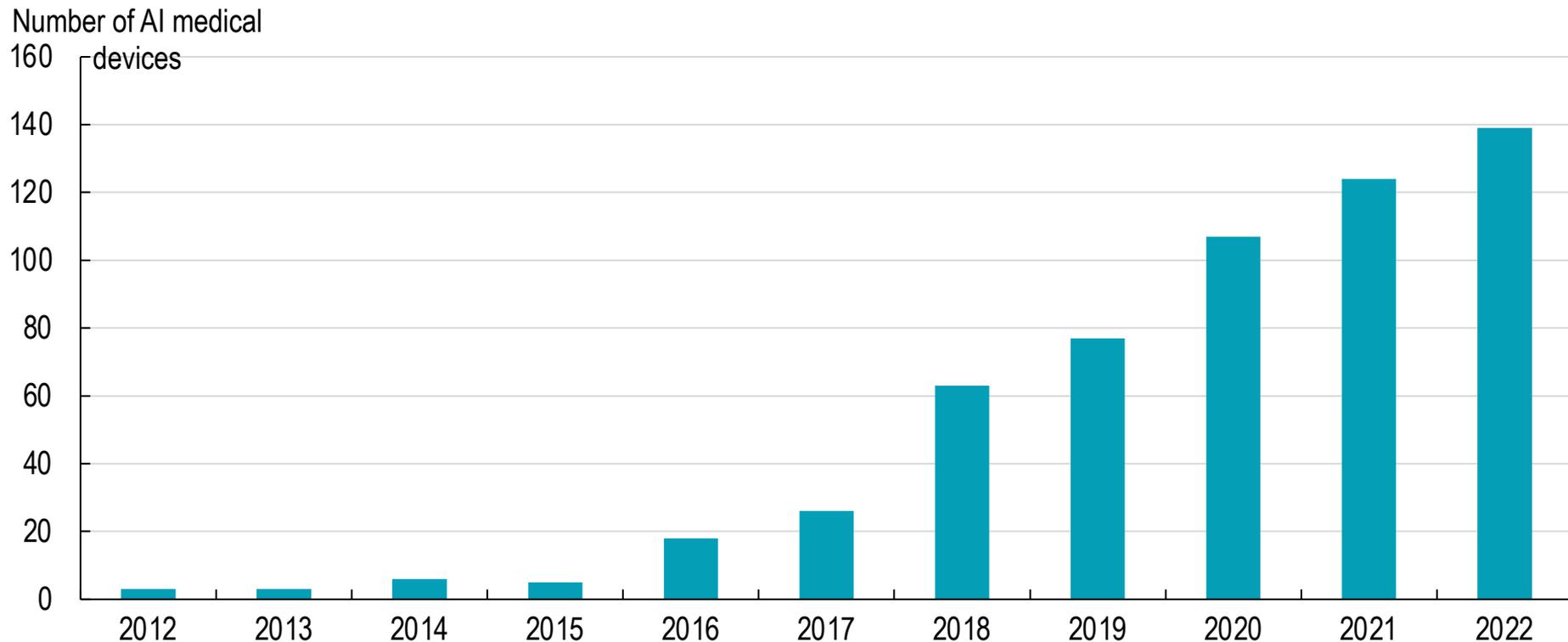
Adapted from Figure III “Worker Tasks in the U.S. Economy, 1980-2012” (Update of Figure I by Autor, Levy and Murnane (2003), “The Skill Content of Recent Technological Change: An Empirical Exploration”) in Deming (2017) “The Growing Importance of Social Skills in the Labor Market”



AI is boosting medical technologies

Figure 4.10

Number of AI medical devices approved by the United States Food and Drug Administration (2012-2022)

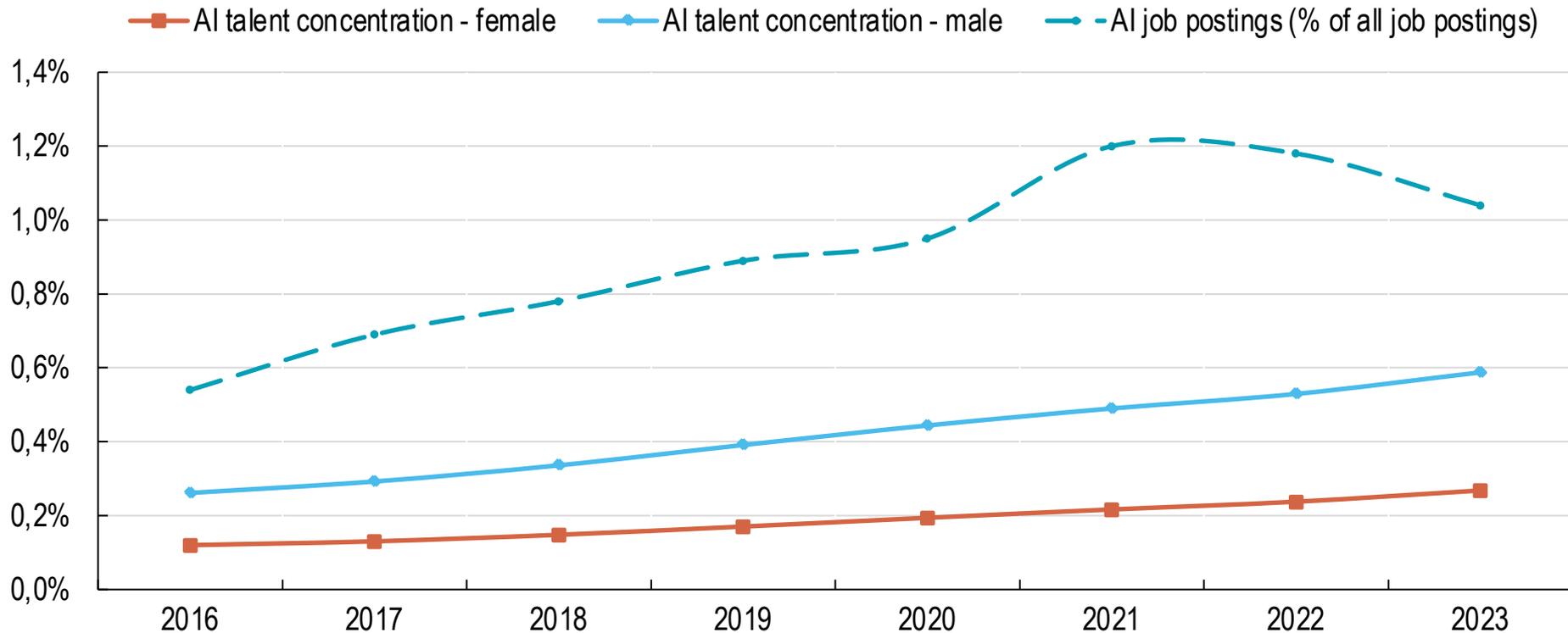




AI skills are more common and demand for AI labour is rising, but both still low

Figure 2.2

Share of LinkedIn users who are AI talents across 30 countries, by gender; Share of job postings demanding AI skills across 14 countries (2016-2023)





AI adoption changes the mix of skills demanded by firms

Figure 1.2

How skill demand evolved in establishments most likely to have adopted AI relative to other establishments

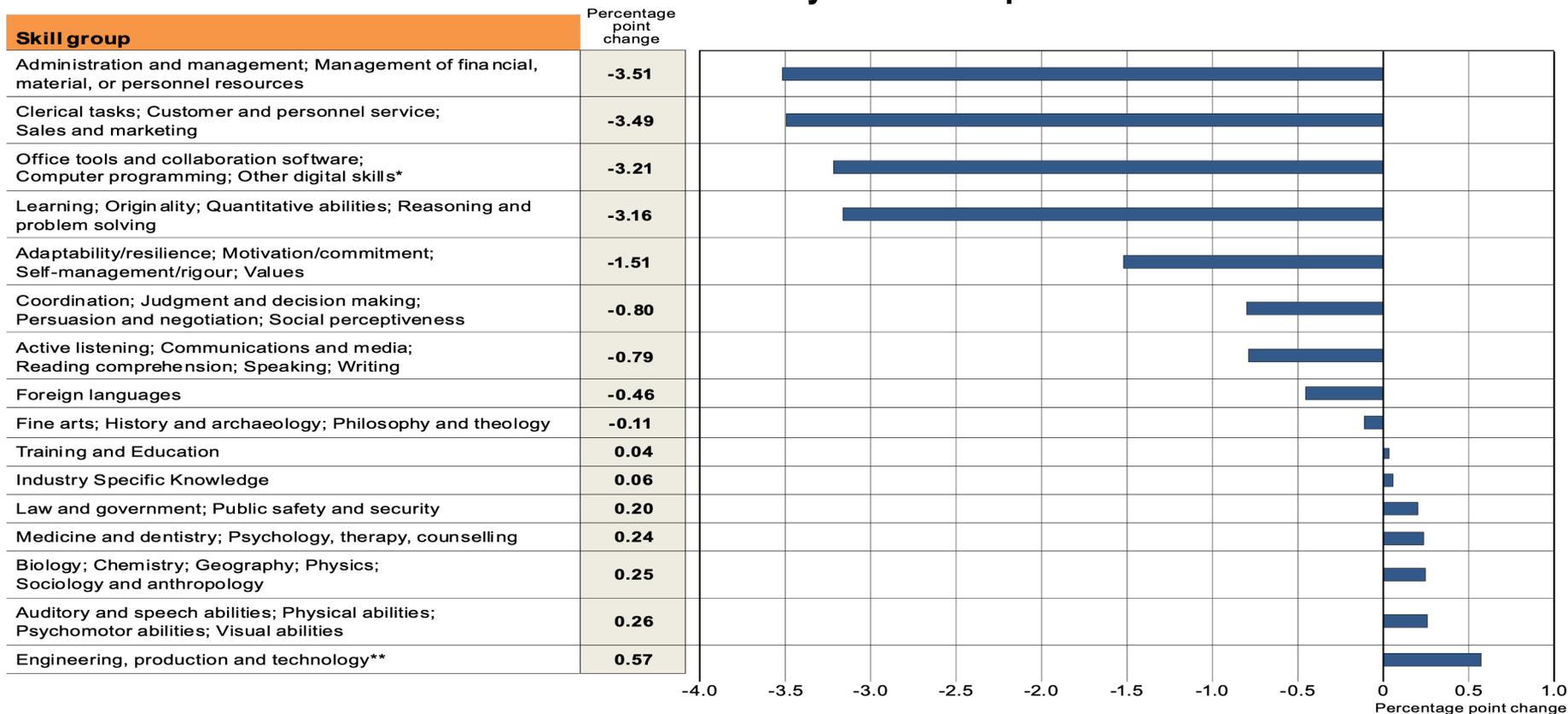
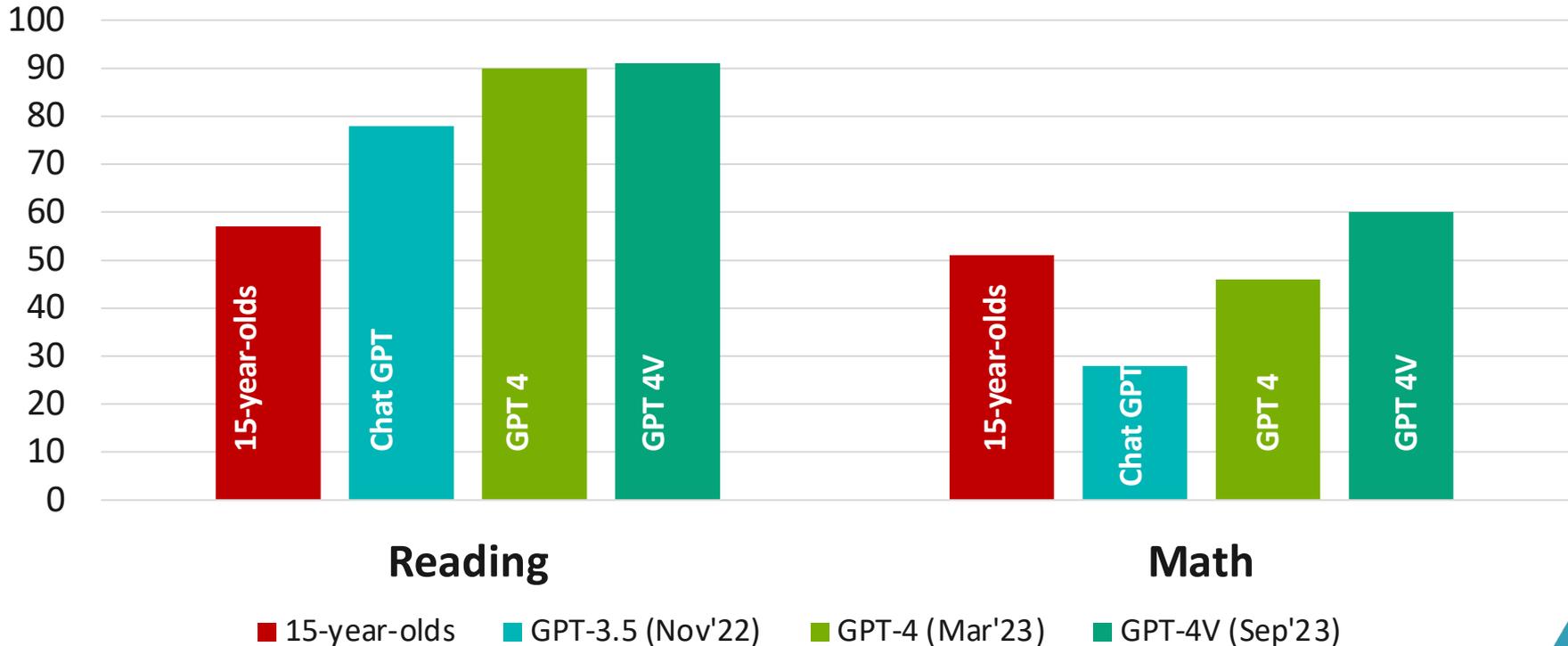


Figure 4.1 in Green (2024), "Artificial intelligence and the changing demand for skills in the labour market"



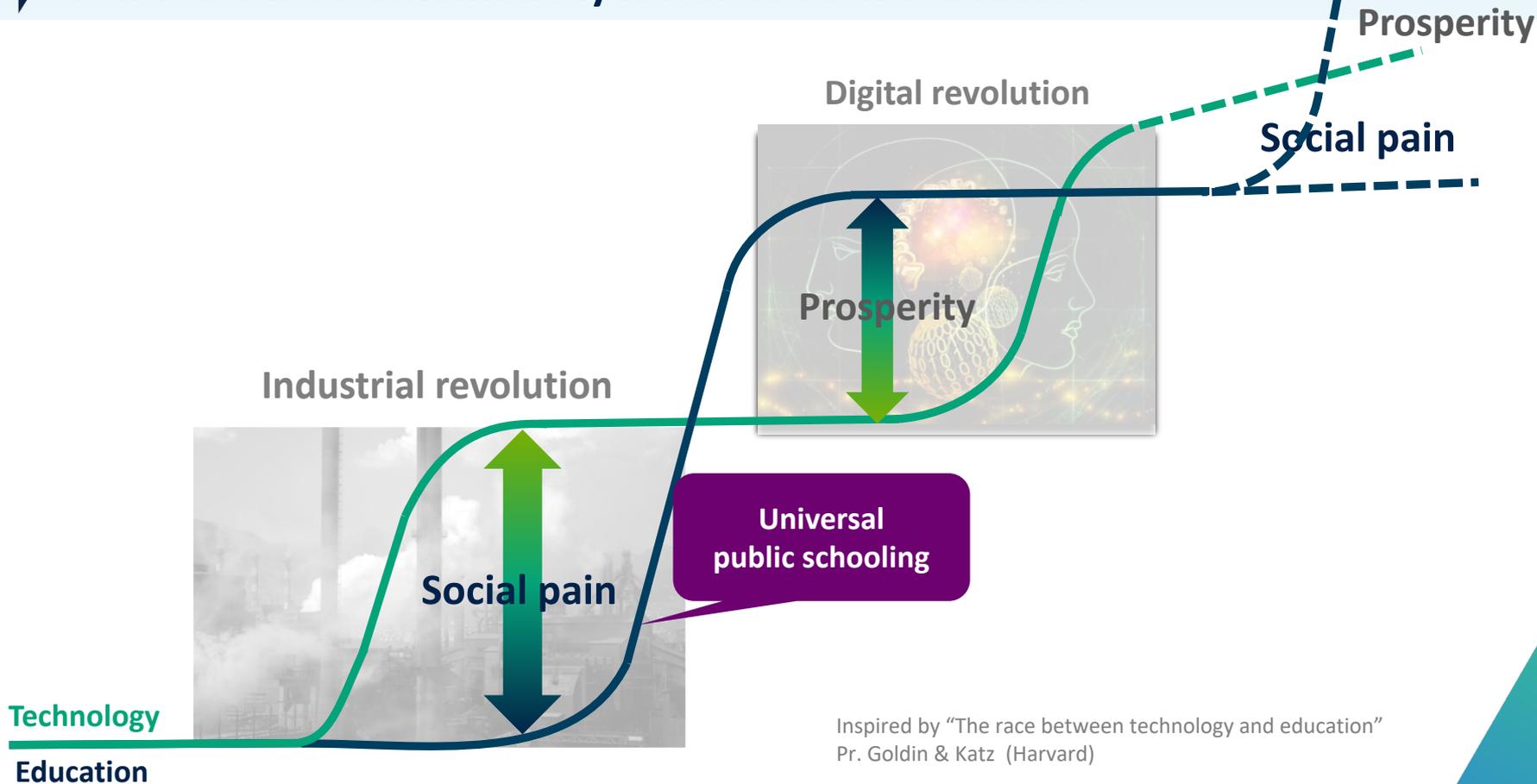
Putting AI to the test: chatGPT and student performance on PISA

Share of questions correctly answered by...





Education won the race with **technology** throughout history, but there is no automaticity it will do so in the future



Digital revolution

Prosperity

Industrial revolution

Social pain

Universal public schooling

Prosperity

Social pain

Inspired by "The race between technology and education"
Pr. Goldin & Katz (Harvard)



A balancing act



Building skills for the future

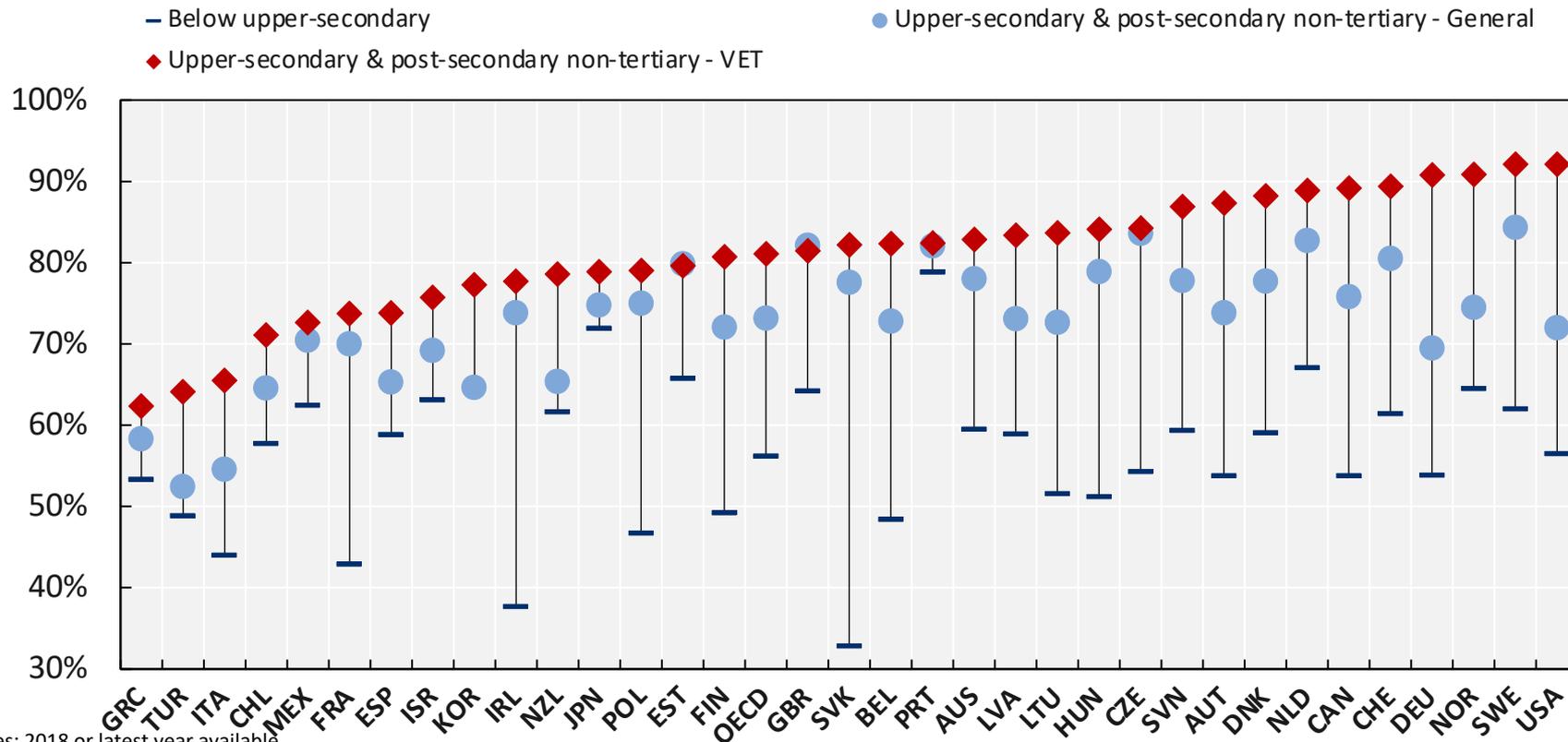
VET as the pathway to 21st century skills





VET can equip people with skills for the labour market

Employment rate of adults aged 16 to 34 not in formal education, by educational attainment



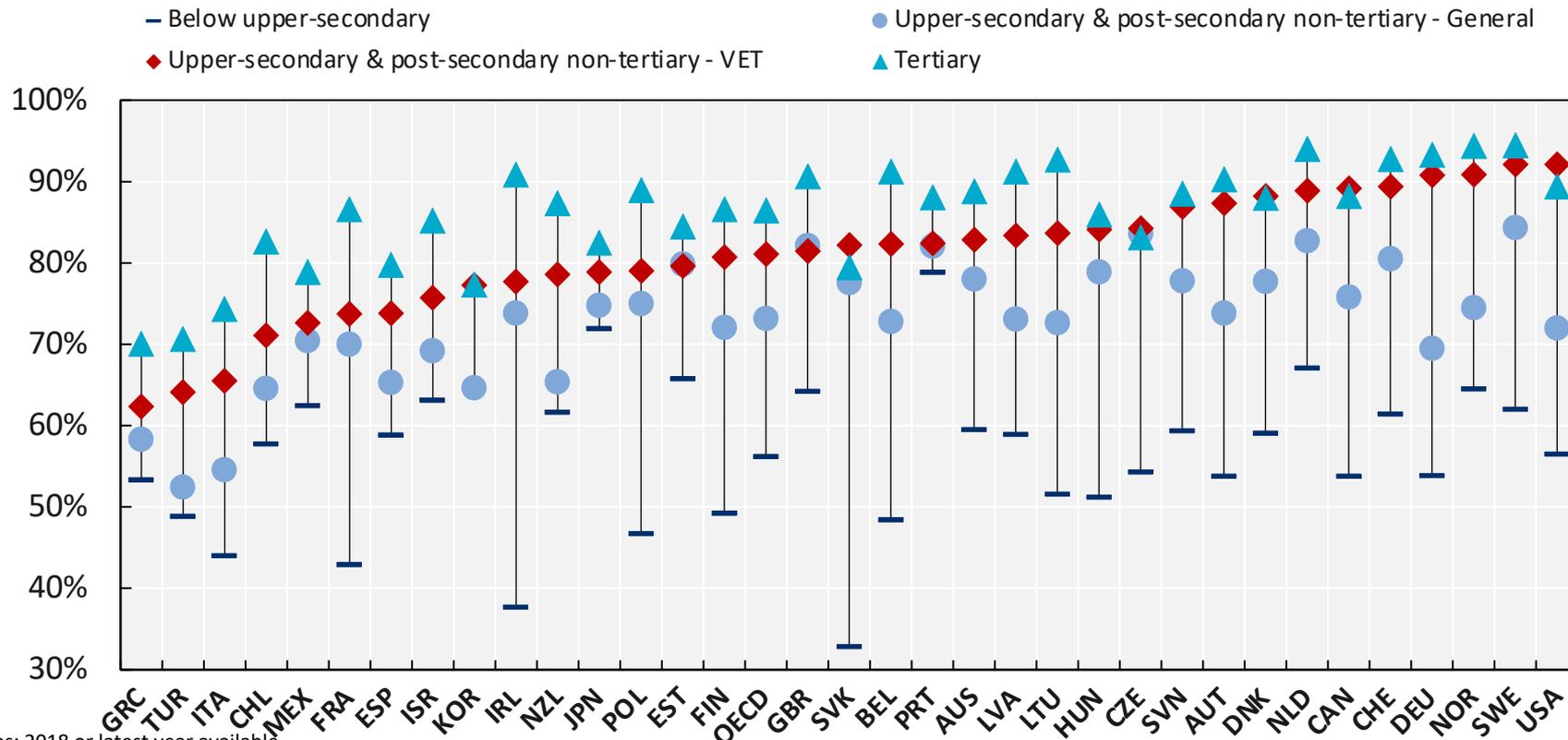
Notes: 2018 or latest year available

Source: OECD Employment Outlook 2020



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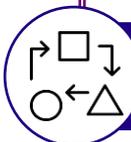
Re-engineering VET for the future



Responsiveness: Aligning training with skill needs



Flexibility & inclusiveness: Making VET accessible to a diverse group of learners



Supporting transitions: Developing transversal skills

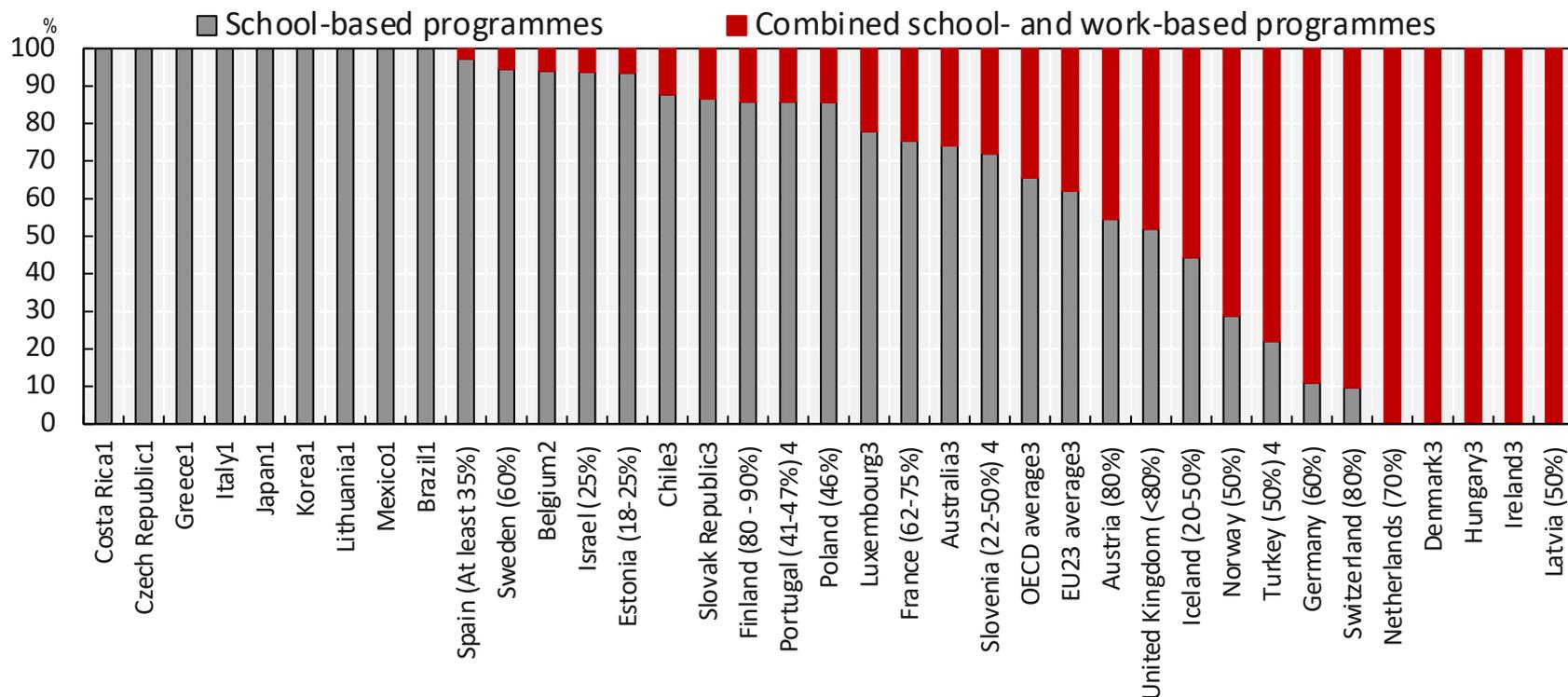


Innovation: Adopting innovative technology and pedagogical approaches



Work-based learning supports students in developing the skills employers are looking for

Distribution of upper secondary vocational students by type of vocational programme (2018)



Notes: Figures in parentheses refer to the the most typical duration of the work-based component as a percentage of the total programme duration for combined school- and work-based programmes.

Source: OECD Education at a Glance 2020



Providing more and better opportunities for work-based learning

Supporting companies with the training of trainers

- In Germany, trainers must have a relevant professional qualification and pass a trainer aptitude examination to demonstrate one's vocational and pedagogical knowledge. Training companies need to be accredited to offer work-based learning and must have at least one 'qualified' trainer

Companies working together to provide training

- In Austria, companies that cannot fulfil certain standards may form training alliances to share apprentices. Alliances of training firms are supervised at the state level by the Apprenticeship Offices appointed by Economic Chambers

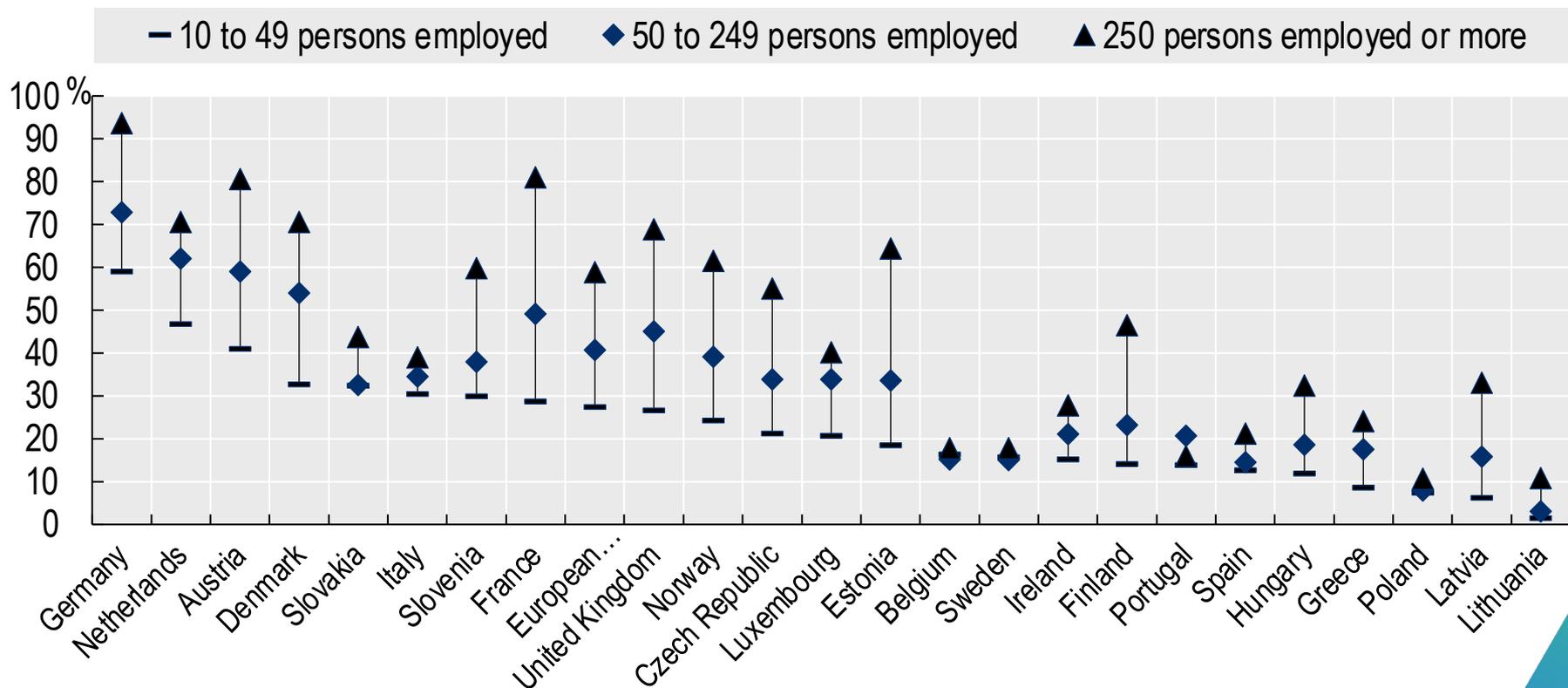
Financial incentives for employers to provide work-based learning

- In France employers receive EUR 6 000 in the first year of the apprenticeship. Larger companies can only receive the subsidy if they have at least a specific share (3-5%) of apprentices among their workforce



Social partner engagement in VET

Share of employers engaged in the provision of initial VET, by firm size



Source: Eurostat, Continuing Vocational Training Survey



Making VET more accessible to adult learners

Modularising VET

**Recognition and
validation of prior
learning**

**Part-time and
distance learning**

**Preparatory course
and flexible entry
requirements**

**VET programmes
dedicated to adults**

Financial support



Making VET more accessible to adult learners

Modularisation and RPL

VET learners in Finland can have their learning outcomes validated, irrespective of how and where they have acquired the competence, and assessed units of learning outcomes can be accumulated towards a qualification. A personal competence development plan is drawn up for each learner. Previous learning is recognised and only the missing skills are acquired.

Dedicated VET programmes for adults

Denmark provides VET courses to adults aged 25 and older (EUUV), leading to the same vocational qualifications than those for younger learners. Courses are organised on the basis of a prior learning assessment. The outcomes of the assessment can result in: i) a shortened main course and no on-the-job training; ii) a basic course of up to 20 weeks and a main course with shortened school-based time or iii) a course equivalent to a VET programme for young people.

The main requirements for adults to enter EUUV programmes are: i) having the equivalent of lower secondary education, ii) having at least two years of work experience. In addition, applicants must document their maths and language skills. However, applicants not meeting this requirement can have access to a course in Danish, Danish as a second language and/or Mathematics at the VET institution where they are applying for admission.



Strengthening career guidance for students

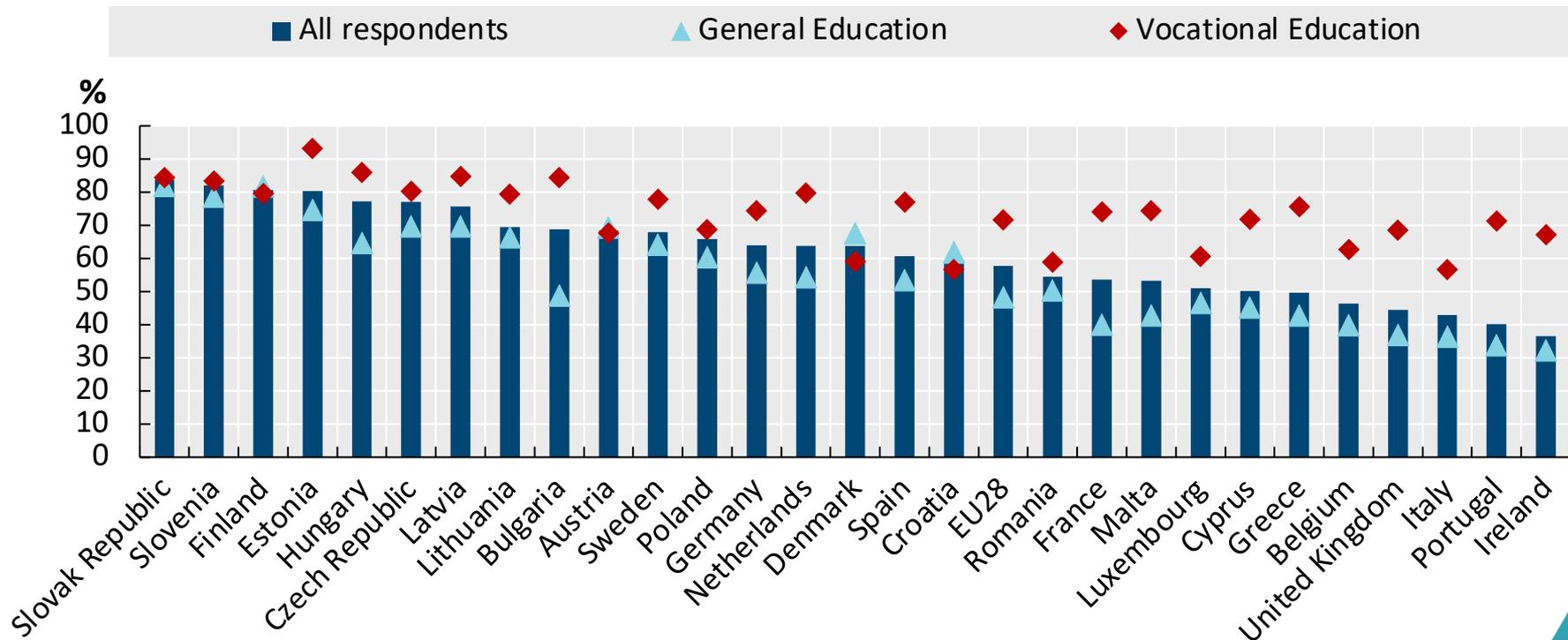
- **Better informing students about the value, importance and availability of career guidance resources**
- **Tackling students' misconceptions about VET programmes and careers**
- **Collecting and disseminating information on labour market outcomes**
- **Providing information on financing options for prospective VET students**
- **Targeting disadvantaged students**
- **Breaking gender stereotypes**
- **Investing in the quality and effectiveness of career guidance activities**

My Kid's Career is a **Scottish** web service that aims at helping parents and cares to support their children's career decision-making process, guided by information on the future of work. The website includes several tools to inform parents about the current and future jobs and skills trends, as well as resources for parents to boost kids' socioemotional skills (self-management, social intelligence and innovation), recognising that these skills will always be in demand. It also provides detailed information on the different career pathways and their susceptibility to technological change and global trends.



Career guidance

Percentage of individuals who received information on vocational education at the moment of deciding on the upper secondary track, by orientation of their upper secondary track



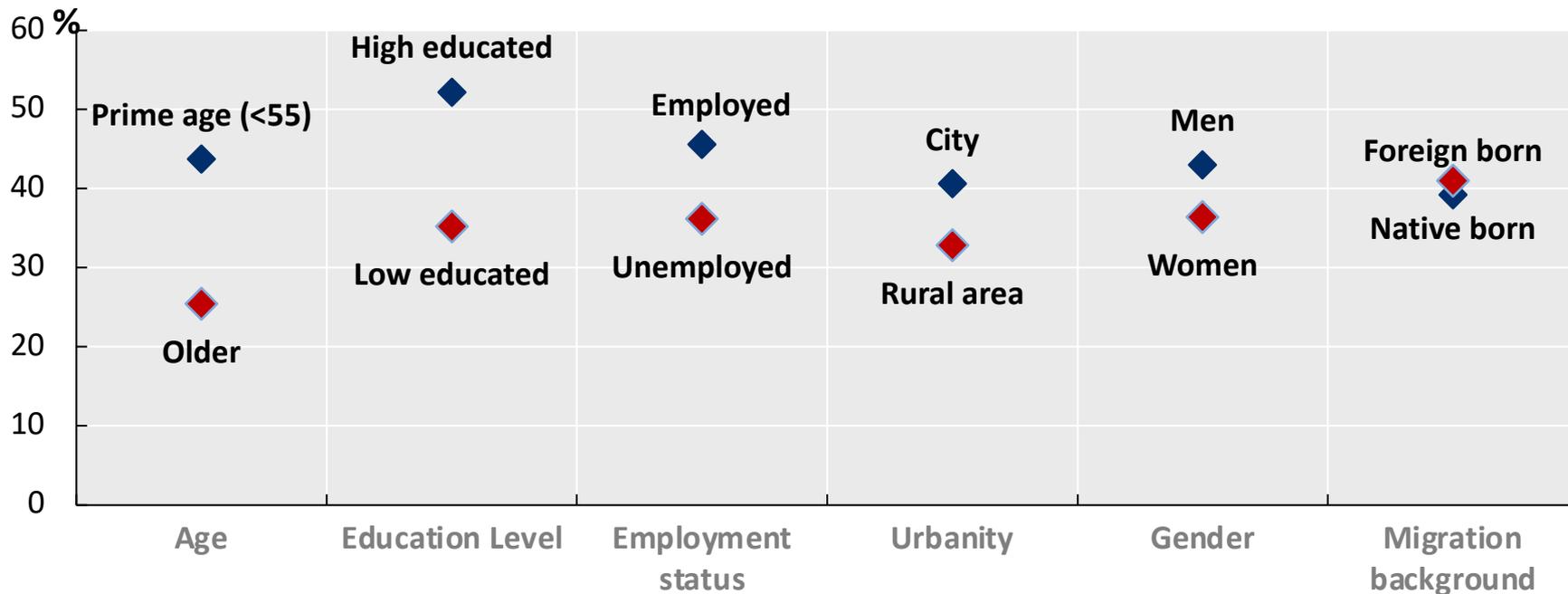
Note: The opinion survey was carried out in 2016

Source: CEDEFOP's Opinion Survey on VET - <https://www.cedefop.europa.eu/en/tools/opinion-survey-on-vet> (Accessed on 10 of May 2022)



Career guidance

Percentage of adults who have spoken with a career guidance advisor over the past five years, by group



Note: Unweighted average for the eleven countries covered by the SCGA: Argentina, Australia, Brazil, Canada, Chile, France, Germany, Italy, Mexico, New Zealand and the United States. The sample size of foreign-born adults is smaller than 50 observations in Argentina, Brazil, France, Italy, Mexico and United States. The low educated group includes adults with a low or medium level of education (i.e. less than a bachelor's degree).

Source: OECD 2020 Survey of Career Guidance for Adults (SCGA)



Informing adults about learning opportunities in VET

- **Fostering career changes**
- **Raising awareness about career guidance services for adults**
- **Reaching vulnerable groups**
- **Providing tailored information and guidance**
- **Reinforcing the quality of guidance by investing in the skills and knowledge of career advisers**

The **Swiss** platform www.orientation.ch/cariere aims to guide adults interested in changing career paths, either by moving to a different position in the same sector, moving to a different sector conducting a similar task, or changing both position and sector.

The portal provides information for users to reflect on their motivation for changing careers. It also has 12 short questionnaires in three areas: Assessing skills, knowledge and level of education; Evaluating professional motivation and interest; Assessing adults' knowledge of the options and opportunities available. Based on the information collected, adults can plan their transition toward a new career path



Potential of technology use in VET

Engage

- Targeting individuals & employers with awareness-raising and guidance
- Matching individuals and training



Train

- Improving access
- Diversifying the offer
- Safe learning environment
- Avoiding wasteful expenditure
- Personalised learning
- Motivation and engagement



Manage and communicate

- Information exchange between actors
- Following learning activities and progress of learners in different learning environments
- Automating administrative tasks

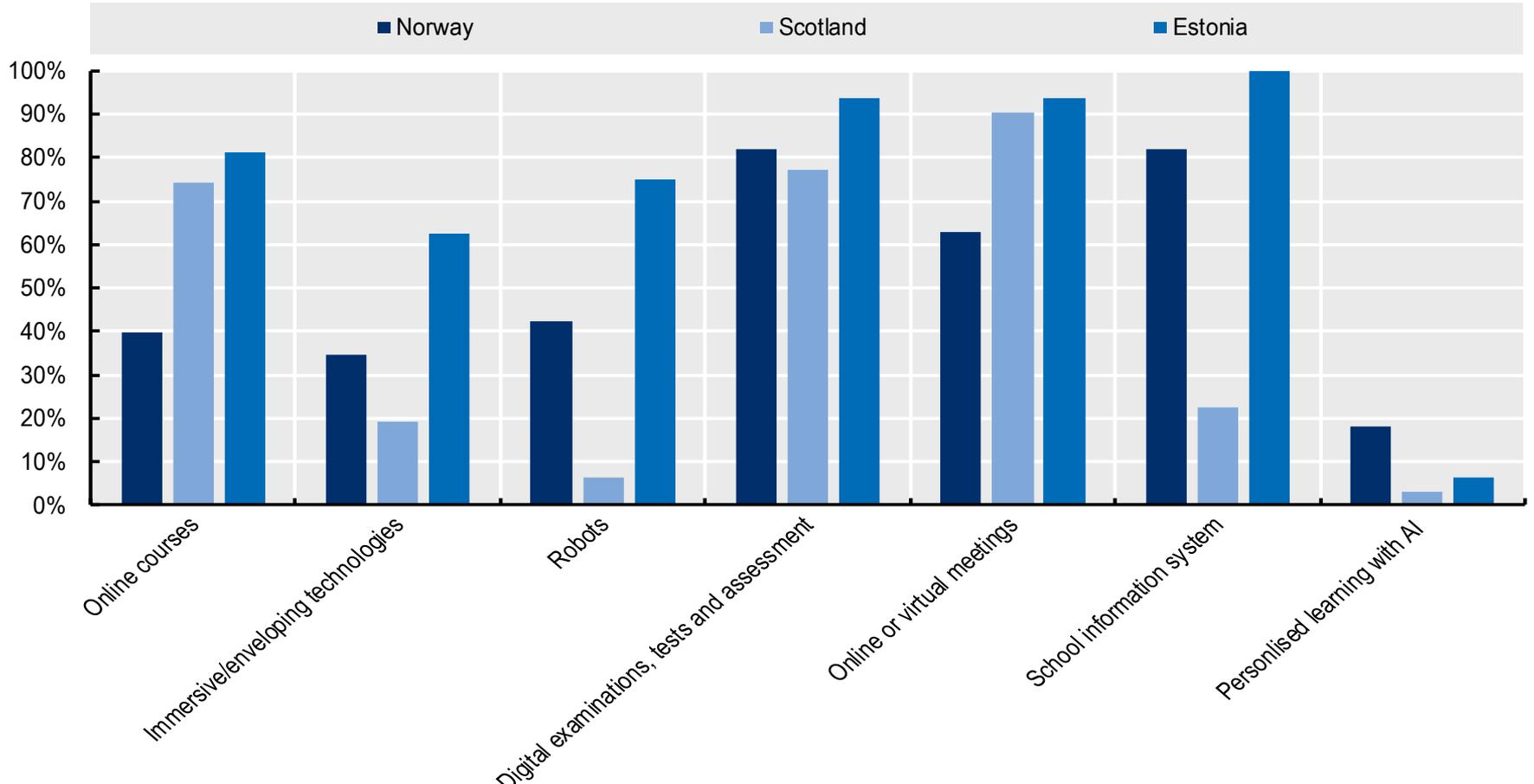


Assess and evaluate

- Assessing learners skills
- Certification of skills acquired
- Evaluating outcomes and the need for revised or new training



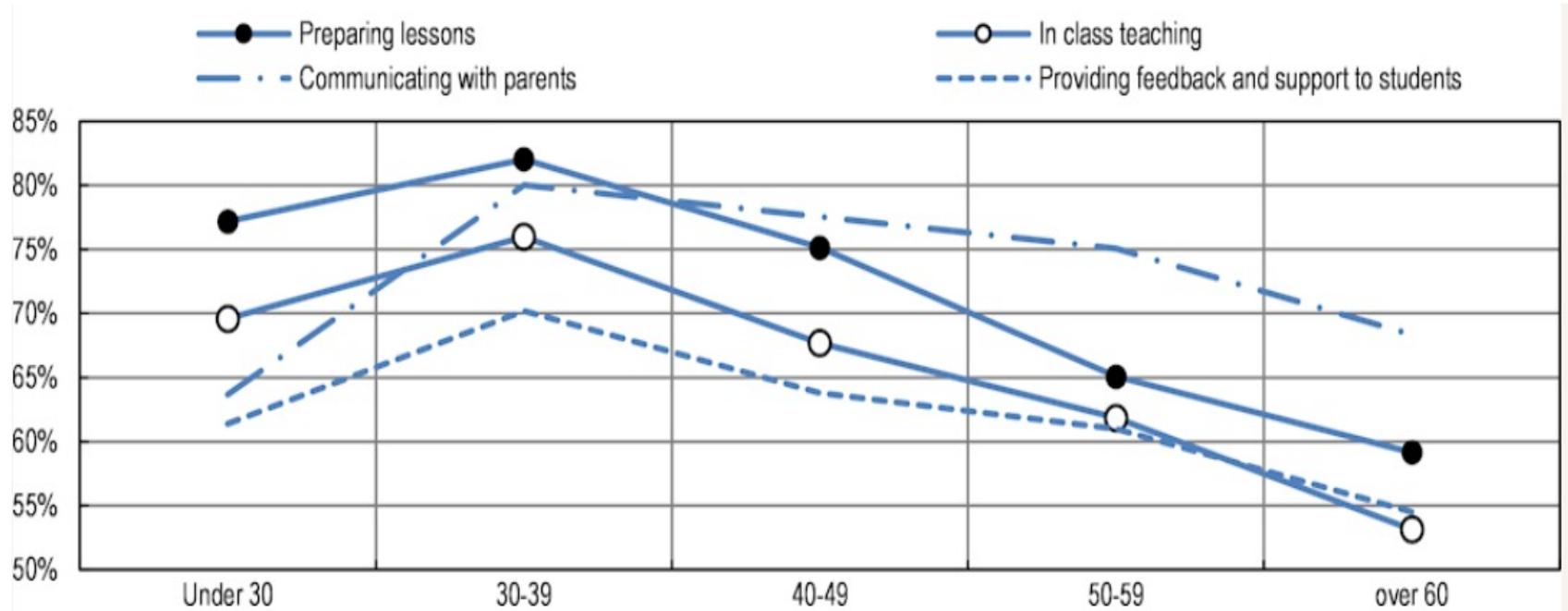
Share of respondent from VET institutions reporting using the specific technology





Teachers need to be able to integrate digital technologies in their practice

Proportion of upper secondary VET teachers in OECD countries who are (very) confident using digital technologies, by age



Notes: Participation in SELFIE is anonymous and voluntary, thus the data are not representative.

Source: OECD (2021) *Teachers and Leaders in Vocational Education and Training*, using data from the European Commission's SELFIE database (October 2018-December 2020)



Developing future-ready VET systems



Aligning VET with skill needs

- Using labour market data to inform VET systems
- Engaging social partners to contribute to the VET system
- Developing higher vocational and professional tertiary education programmes to satisfy the demand for higher-level professional skills
- Equipping VET teachers with the right skills



Making VET work for all

- Developing tailored VET programmes and support to young people at risk
- Supporting migrants and refugees in their VET journey
- Ensuring that VET learners have opportunities for further (academic) learning
- Making VET more accessible to adult learners



Supporting transitions into a changing labour market & further learning

- Developing solid transversal skills in VET
- Building effective progression opportunities for VET graduates in higher education
- Providing career guidance services to smoothen transitions



Fostering the use of digital technologies

- Analysing the potential benefits of digital technologies in VET
- Examining how digital technologies can be used more effectively in VET
- Ensuring that VET teachers can adopt digital technologies and associated innovative pedagogical approaches

Assessing VET skills

The example of 'PISA-VET'



What is the **VET** **problem** that needs to be solved?

VET has fueled phenomenal economic growth in some countries and fallen short of expectations in others. Yet, currently, it is **impossible to compare the achievements of VET programmes** in one country with those in another. Moreover, the digital and green transition asks many countries to modernise their VET provision in a competitive environment.

PISA-VET: a level playing field

PISA-VET will reflect the diversity and complexity of the different VET systems

- PISA-VET will provide a level playing field for all participating students: the test will be a fair assessment of professional skills *in selected occupational areas* applied in workplace settings and will thus highlight work-based competences.
- PISA-VET will assess the preparedness of students for employment as professionals in selected occupational areas rather than their academic skills.
- PISA-VET will reflect the diversity and complexity of the different VET systems and performance on the test will be related to a wide range of contextual factors and system level conditions
- PISA-VET will provide comparative data on student performance in selected VET programmes and *will not at this stage report on countries' VET systems as a whole.*



PISA-VET Theory Of Change

PROBLEM STATEMENT: While there is data on VET enrolments, qualifications, and labour market outcomes, it is not currently possible to measure and compare the skills students have at the end of their initial VET programmes, leading to inadequately-informed policy choices and decision-making.

Core Elements In The Pisa-vet Ecosystem	Stakeholders	Mechanism	Impact
PISA-VET Framework	 Learners & Parents	<ul style="list-style-type: none"> • Generate rich, internationally comparable data on a full range of VET skills • Compare quality, equity and efficiency in VET learning outcomes • Over time, provide trend data for key VET indicators 	<ul style="list-style-type: none"> • PISA-VET becomes the world's premier yardstick for comparing quality, equity and efficiency in VET learning
PISA-VET cognitive instruments	 Educators	<ul style="list-style-type: none"> • Gain insights for improving initial VET programmes • Analyze the differences between countries and programmes, considering design and learner backgrounds • Make evidence-based instructional decisions • Raise the profile of VET 	<ul style="list-style-type: none"> • PISA-VET indicators and high performing countries provide references for VET policy considerations • PISA-VET data and analysis informs VET policy dialogues, research and domestic policy-making
PISA-VET non-cognitive instruments	 Education and Employment policymakers	<ul style="list-style-type: none"> • Compare skill levels in VET programmes across countries • Analyze differences in learner characteristics • Facilitate peer learning through outcome analysis • Interpret PISA-VET results and consider the policy implications of these 	<ul style="list-style-type: none"> • <i>Profile of VET and its attractiveness to young people is enhanced</i> • Improved equitable access to high-quality VET
Participating countries, Expert Groups & Partnerships	 Postsecondary Education	<ul style="list-style-type: none"> • Provide the full set of responses from individual students, VET institutions, trainers, and employers. • Inform postsecondary program design and decision making 	<ul style="list-style-type: none"> • Expanded access to skill-based learning and training pathways • <i>Improved admissions focused on skills</i>
Data and data collection	 Social Partners and Employers	<ul style="list-style-type: none"> • Improve alignment between education and employer needs • Provide data for employer planning and investments • Evaluate national vocational programs against international standards and assess skill evaluation methods 	<ul style="list-style-type: none"> • Greater incomes and more satisfying careers • More vibrant economy • <i>Improved hiring decisions focused on skills</i>

Assessment design



A computer-based and practical skills test taken by groups of learners on the premises of their VET institution or in their work-based learning environment



Assessment of professional skills and employability skills



Background questionnaire for student



Background questionnaires for teachers, trainers, institutions and work-based learning trainers

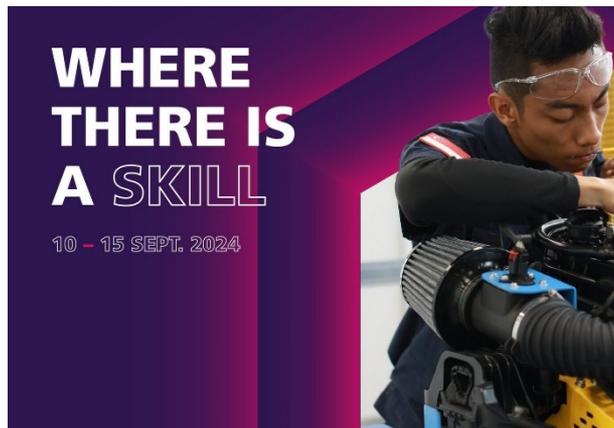


The assessment is designed to take place within a three-to-four-hour test window



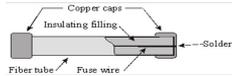
Not a paper and pencil test of knowledge

Building on the experiences of
ASCOT and ASCOT + in
Germany and WorldSkills
International, PISA-VET will
measure applied skills in
realistic workplace
environments



Three assessment types to demonstrate professional skills

The band saw where you work will not start. This saw uses 240 volts, draws 25 amps, and has 30-amp cartridge fuses. These fuses (see diagram shown) are designed to protect an electrical circuit. Your supervisor has told you to check the fuses in the band saw. By looking at the fuses, you cannot tell if they are good or bad.



You have turned off the power to the saw and removed one of the fuses. You check this fuse with a volt-ohmmeter (a device that measures resistance to the flow of electrical current). If the fuse is good, the resistance (measured in ohms) for the fuse will be:

- A. 0
- B. 10
- C. 50
- D. 100

Type #1
Knowledge assessment



Type #2
Interactive simulations of workplace tasks



Type #3
Demonstration tasks to efficiently generate insights about learners' practical skills



Data on comparative skill levels of learners across countries within specific VET programmes.

Employers in the driver's seat



Employers' understanding of skills needs, their expectations of VET graduates and their experiences of training VET learners



Will help experts to design a relevant assessment and to ensure the validity and credibility of the assessment



With the support of Business at the OECD (BIAC), OECD is implementing a call for interest for private sector entities



Employers' engagement in PISA-VET via consultations, multi-stakeholder dialogues, platforms, and collaboration with advocacy groups or similar initiatives



Providing financial support or other benefits for PISA-VET in exchange for brand visibility or defined benefits in the sponsored activity

For each occupational area, the framework:

- ✓ **DEFINES** the domain/occupation for the assessment *in broad and holistic terms*
- ✓ **DESCRIBES** the context for the occupation.
- ✓ **PRESENTS** the processes involved in the occupation from the *first contact with the client to the delivery of the product*
- ✓ **SETS OUT** the underlying *capabilities, skills and competences* required to complete the processes for the occupation
- ✓ **ELABORATES** the *knowledge content* required for the occupation



PISA



ETS USA confidential and proprietary



Target Population

Students, apprentices and trainees training to be:

- **Automotive technicians**
- **Electricians**
- **Healthcare/nursing assistants**
- **Business administrators**
- **Hotel receptionists**

In the last six months of their initial VET programmes corresponding to *ISCED levels 3-4* and *EQF levels 3-4, or equivalents.*

Example 1: Automotive Technicians

Framework & Reporting Results

Definition	Servicing, overhauling and troubleshooting light vehicles
Context	Workshop
Processes	Investigate and rectify – from first contact with the client to delivery of the product
Underlying capabilities	Investigation capability and skills and rectification capability and skills
Knowledge Content	Light vehicles systems



Reporting Results

Three proficiency levels that will be based on a numeric scale.



Example 2: Business & Administration

Framework & Reporting Results

Definition

Tasks and activities related to the management and organization of business enterprises

Context

Operational value chains in business and administration (B&A)

Processes

Identifying, analyzing and understanding B&A information...from first contact with the client to delivery of the product

Underlying capabilities

Retrieving and using B&A information and data...skills and competences

Knowledge Content

B&A operational indicators, procedures and tools



Reporting Results

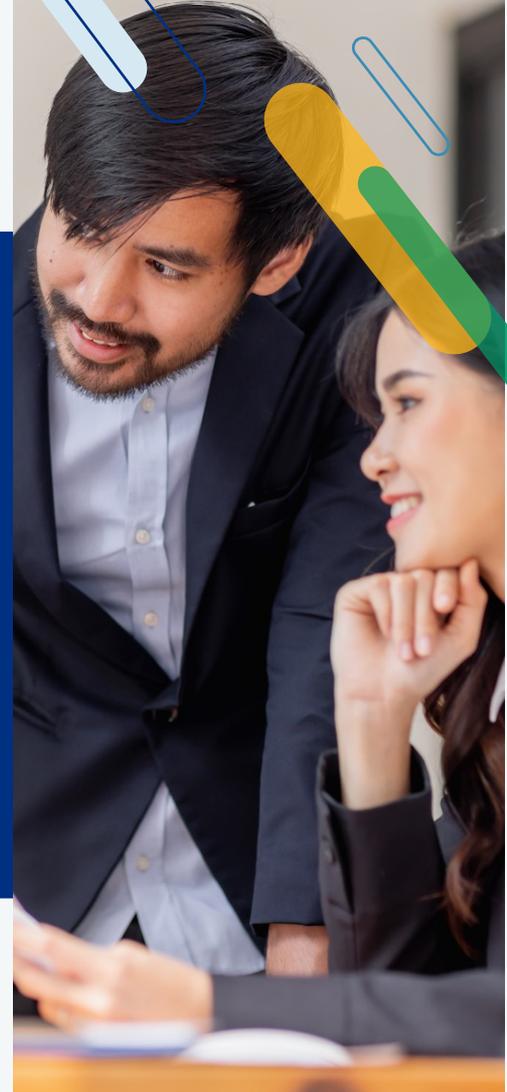
Five proficiency levels based on a numeric scale



PISA



ETS USA confidential and proprietary



In addition to occupational-specific skills, VET graduates also need employability skills that are relevant for all occupations

PISA-VET will measure key transversal employability skills using existing OECD frameworks and instruments



Literacy



Problem Solving



Task performance
(conscientiousness)



Collaboration





Find out more about our work at www.oecd.org/pisa



PISA main reports

Email: Andreas.Schleicher@OECD.org

X : SchleicherEDU

WeChat : AndreasSchleicher

Take the test: bit.ly/PISA-Test

PISA FAQs: www.oecd.org/pisa/pisafaq

PISA Data Explorer: www.oecd.org/pisa/data



PISA Country notes

