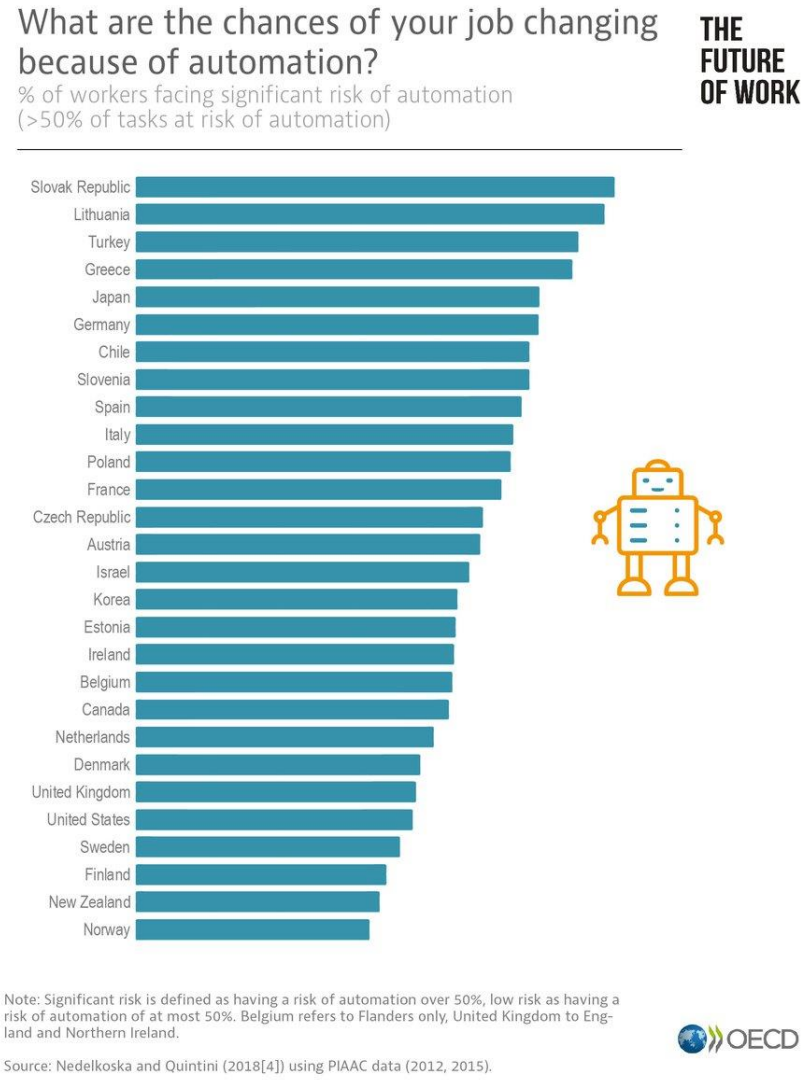
Digitalisation of labour markets and education systems

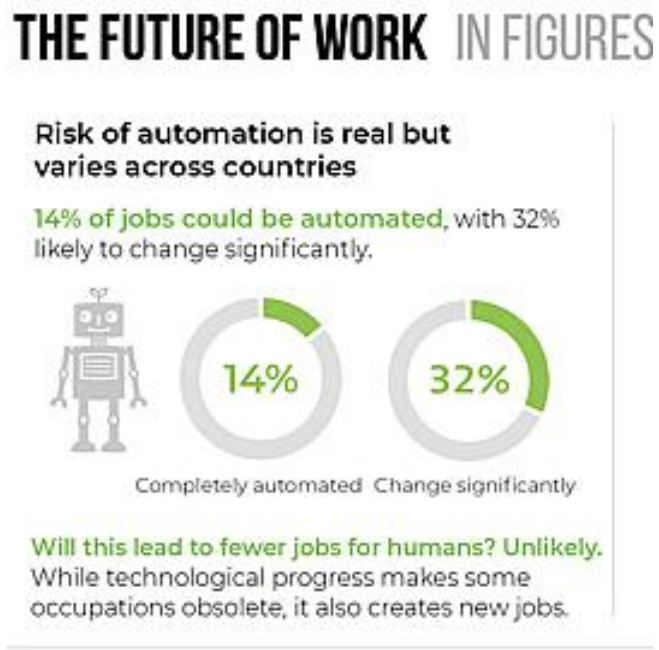
An overview of recent OECD evidence

Marieke Vandeweyer, Senior policy analyst – VET, OECD Centre for Skills

Joint Cedefop-OECD symposium on apprenticeships and the digital transition, 15 June 2023, Thessaloniki

A significant share of jobs can be impacted by automation – need for updated evidence





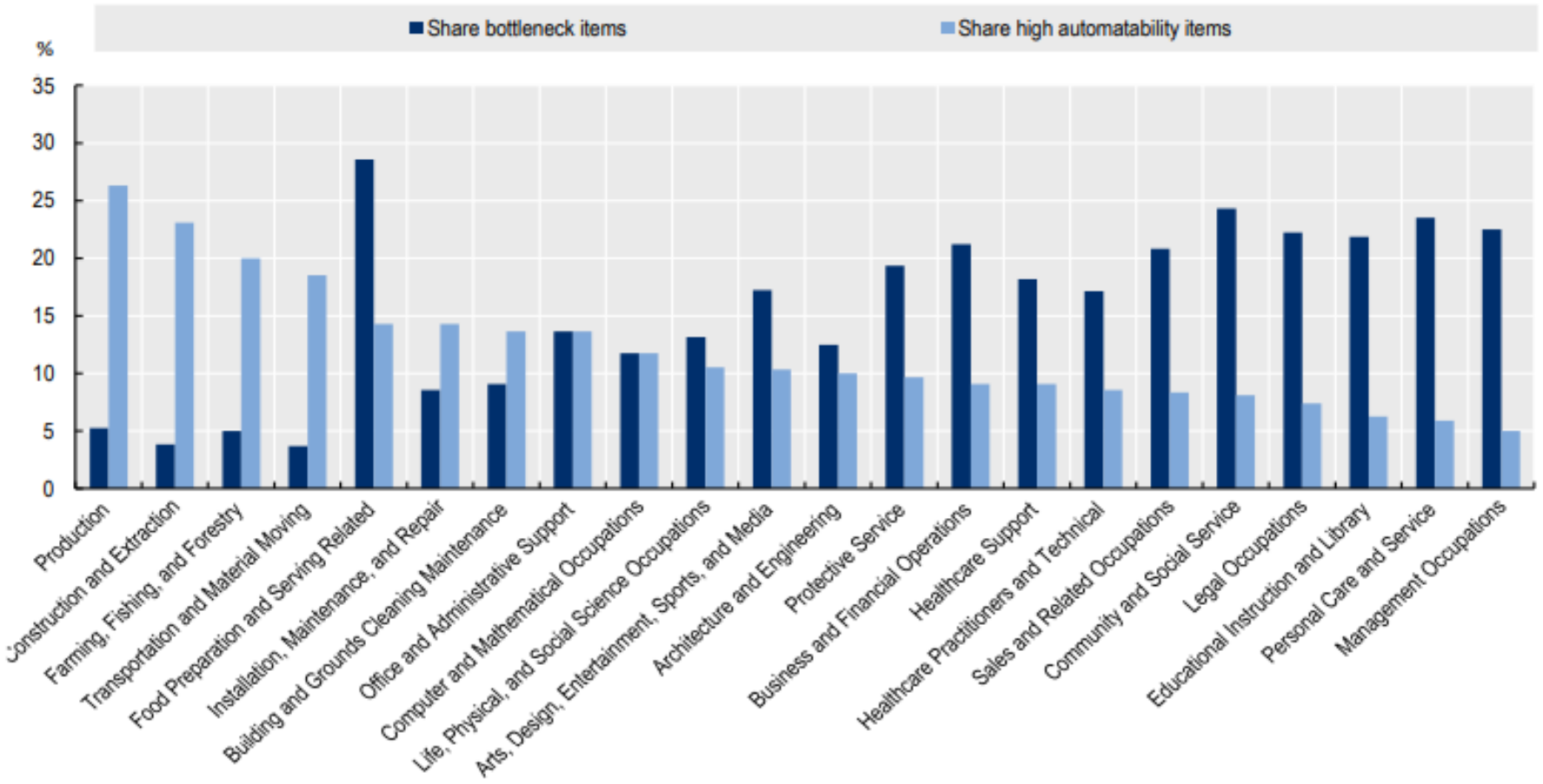
2018 estimates based on 2011/12 data (PIAAC)

The highest risk is concentrated in **routine jobs** with low skill requirements and often low wages WHILE the lowest risk applies to a broader range of jobs from **professionals to social workers.**

Some jobs are more automatable than others, but bottlenecks remain

Shares of bottleneck and highly automatable skills and abilities, by occupation

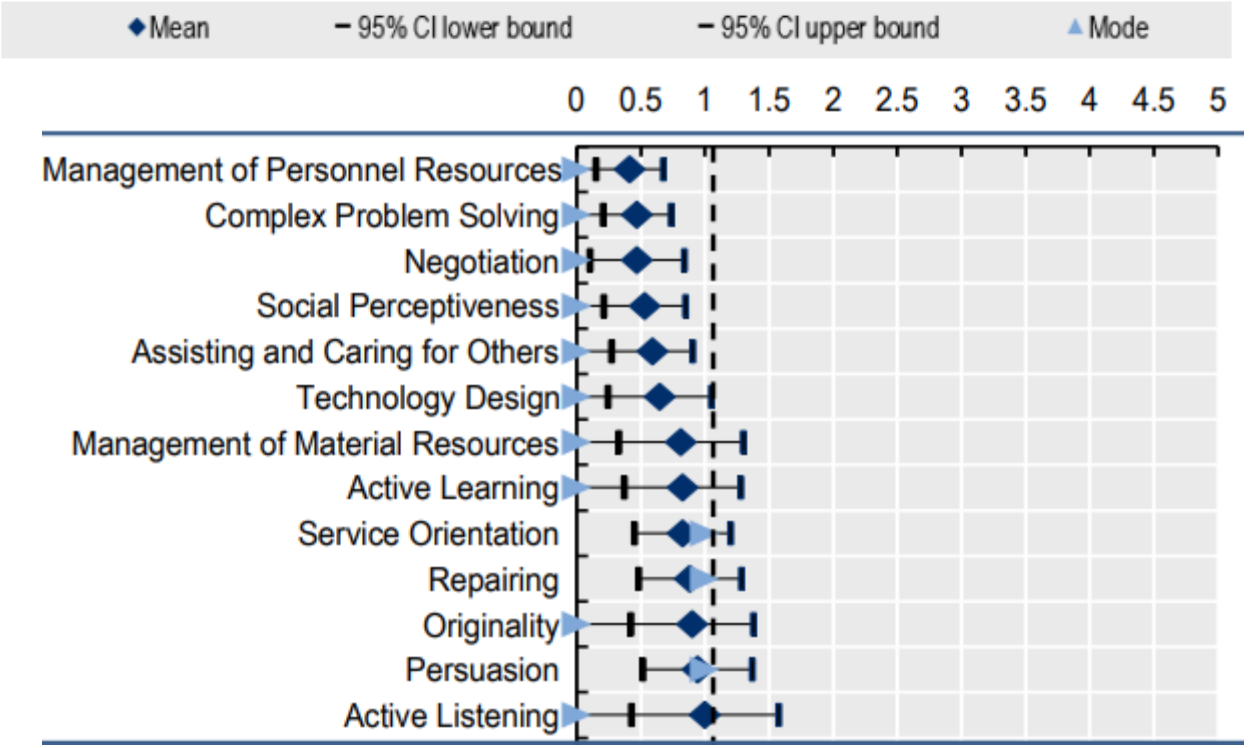
Percentage of the most important skills and abilities, by occupation



Note: Share of bottleneck and highly automatable items among important items by occupation (SOC 2 digits), where important items are skills and abilities with importance values strictly higher than three. Source: Lassébie and Quintini (2022[5]), What skills and abilities can automation technologies replicate and what does it mean for workers?: New evidence; https://doi.org/10.1787/646aad77-en

Some skills remain hard to automate

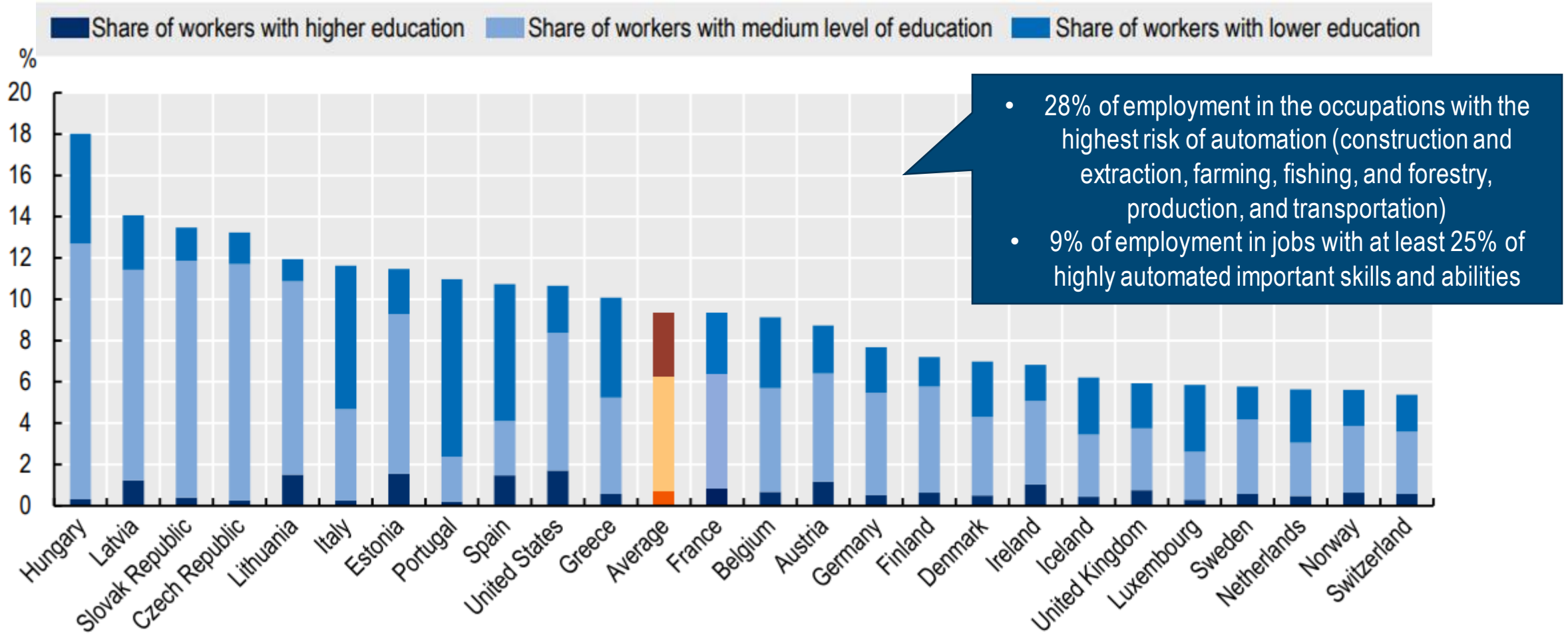
Skills and abilities with the lowest degree of automatability



Source: Lassébie and Quintini (2022[5]), What skills and abilities can automation technologies replicate and what does it mean for workers?: New evidence; https://doi.org/10.1787/646aad77-en

The jobs most exposed to automation typically require medium or low levels of education

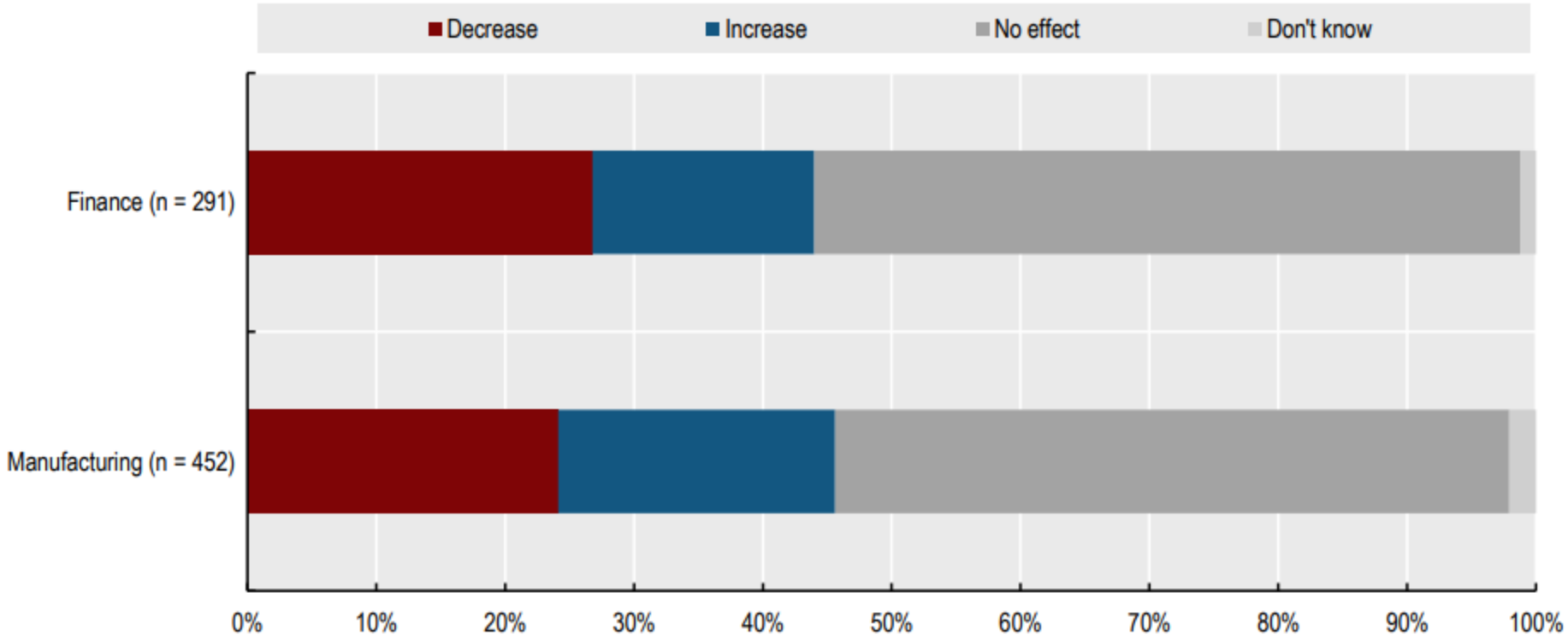
Share of employment in occupations at high risk of automation, by country and education level



Note: Occupations at high risk of automation are those with more than 25% of highly automatable important skills and abilities.
Source: Lassébie and Quintini (2022), What skills and abilities can automation technologies replicate and what does it mean for workers? New evidence

To date, most employers report no effect of AI on employment

Probability of AI having increased, decreased or had no effect on overall employment in companies that adopted AI

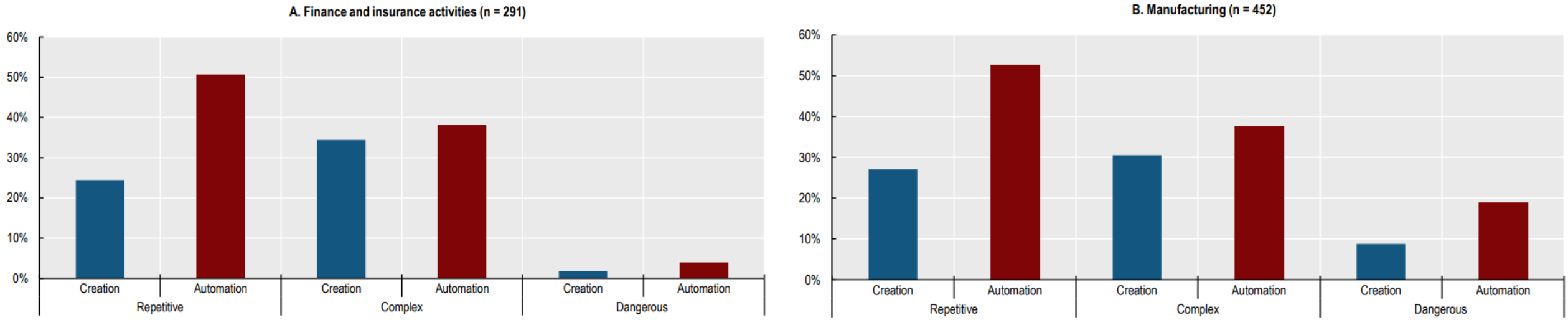


Source: OECD employer survey on the impact of AI on the workplace (2022).

AI is twice as likely to automate as to create repetitive and dangerous tasks

Share of employers reporting that AI automated and created certain tasks

% of employers that have adopted AI

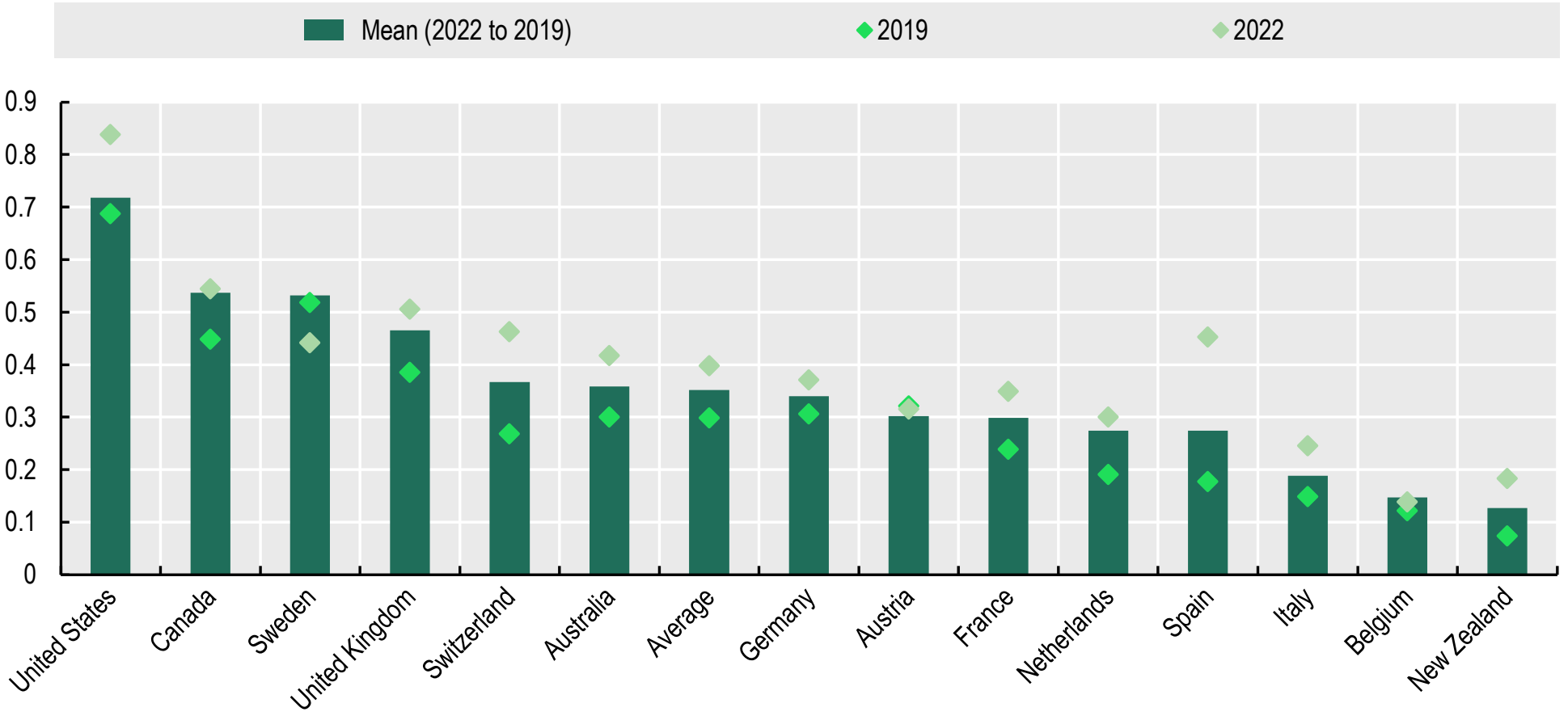


Source: OECD employer survey on the impact of AI on the workplace (2022).

- AI users were more than four times as likely to say that AI had improved working conditions as to say that AI had worsened them (job satisfaction, physical health, mental health, fairness in management).
- Three-quarters of AI users said that AI had increased the pace at which they perform their tasks. While this could be related to increased worker productivity, it could also indicate increased work intensity

The demand for AI skills is on the rise

Share of online vacancies requiring AI skills in selected countries, 2019 and 2022



Note: The figure shows the percentage of online vacancies advertising positions requiring AI skills by country. This corresponds to the total number of online vacancies requiring AI skills relative to all vacancies advertised in a country. Vacancies requiring AI skills are vacancies in which at least two generic AI skills or at least one AI-specific skill were required (see Borgonovi et al. (Forthcoming$_{[26]}$) on generic and specific skills).. Countries are sorted in descending order by the highest average share across 2019 to 2022 of vacancies requiring AI skills. Average refers to the average across countries with available data.
Source: OECD 2023 Skills Outlook (forthcoming) based on Lightcast™ (December 2022).

What are the implications for VET and apprenticeship?

- Need to adapt the content of existing programmes to more digitalised work processes and environments
- Possibility to expand to emerging digital sectors and occupations (e.g. cyber security)
- Opportunity to use digital technologies in the design and delivery of programmes

Smart technologies can contribute to the effectiveness, equity and cost-efficiency of education systems

Education's next big step: data revolution and a radical reimagining of teaching and learning

Collaborative tools and data-enriched technologies such as classroom analytics, robots, AI-powered assessments, blockchain-based credentialing, and early warning systems for at-risk students can help teachers to teach more effectively, and education systems to run more effectively and equitably.

Machines working hand-in-hand with humans in the classroom

Hybrid human-machine systems don't replace teachers, they support teachers in reinventing themselves as mentors, coaches, tutors, peers and designers of learning experiences. But humans must keep their hands on the AI steering wheel to make this happen.

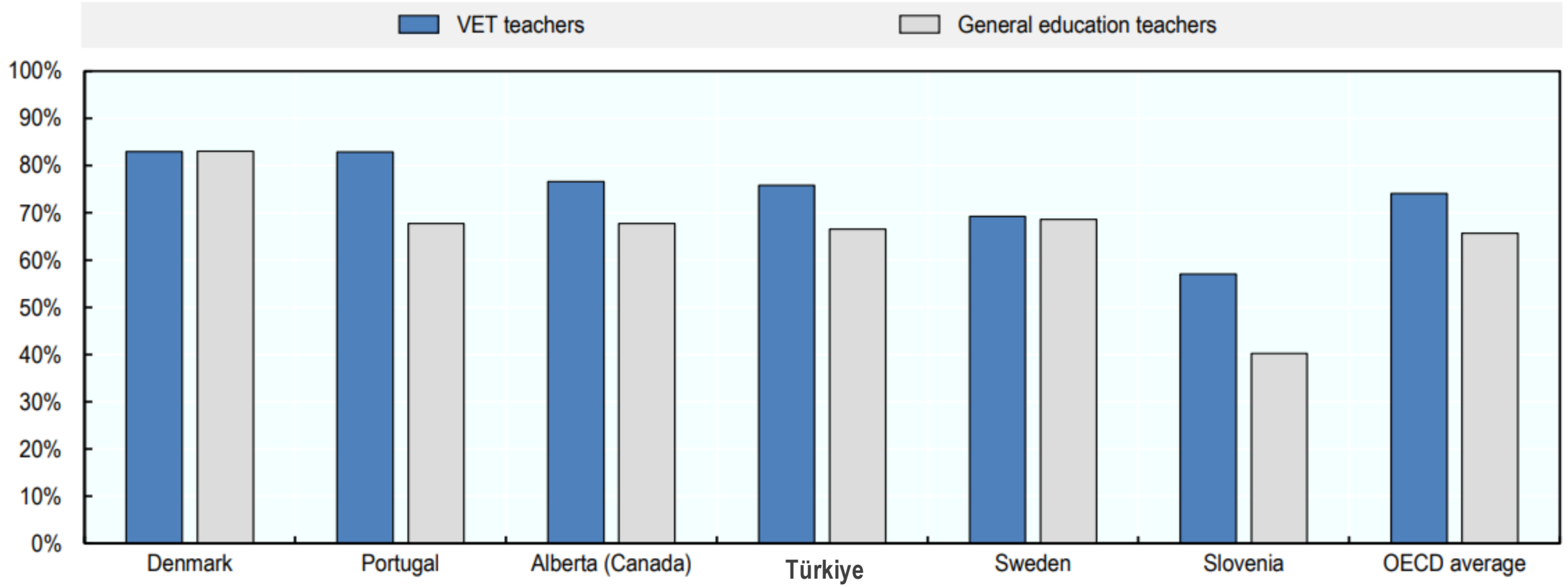
An innovation eco-system can turn the promise of EdTech into reality

Governments can cultivate an ecosystem that promotes innovation by strategically allocating funds, boosting the capacity of systems and schools, and allowing teachers and students to co-create smart, user-friendly, affordable, open, and interoperable EdTech tools with the private sector.

Source: https://digital-education-outlook.oecd.org/

The teaching & training profession is hard to automate, but technology is changing their role

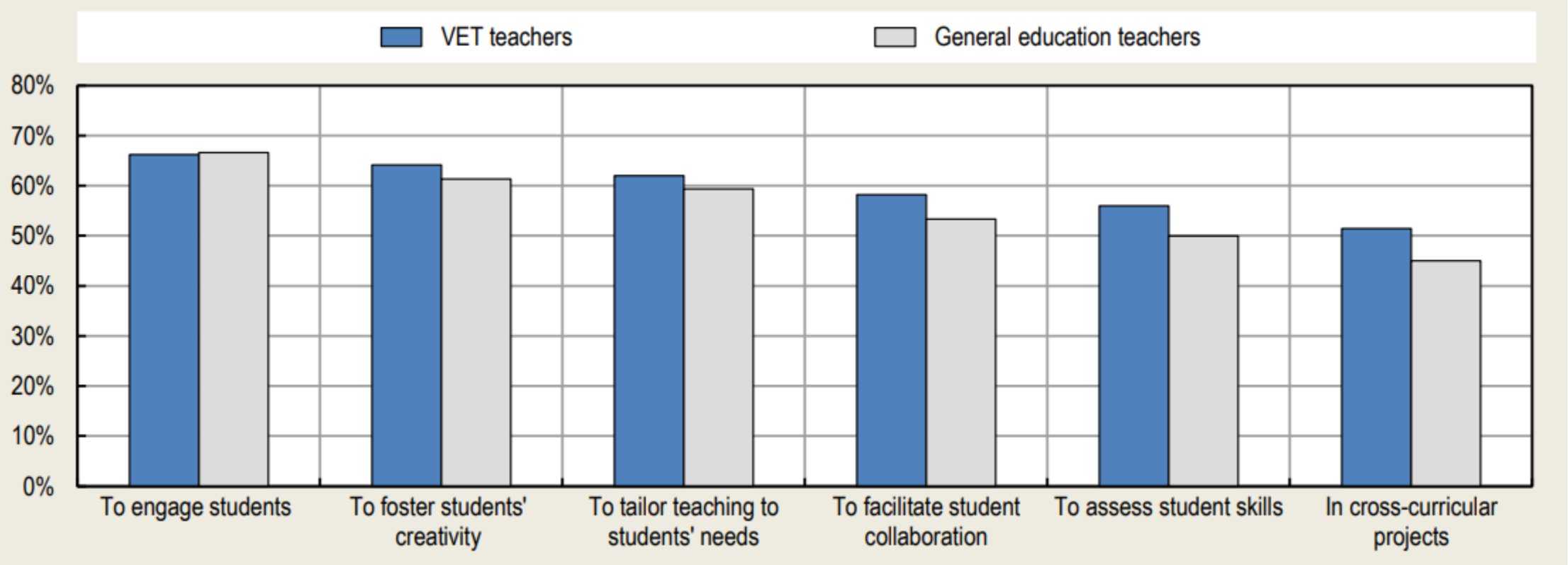
Percentage of teachers who let their students use ICT for projects and classwork "frequently" or "always"



Note: VET teachers are those who reported in TALIS that they were teaching practical and vocational skills in the survey year in upper secondary programmes (ISCED 3), regardless of the type of school where they teach. The reported average corresponds to the unweighted average for the six OECD member countries/regions in the sample.
Source: Elaboration based on OECD TALIS 2018 database, http://www.oecd.org/education/talis/talis-2018-data.htm

Many teachers use digital technologies

Proportion of upper secondary teachers who (strongly) agree to be using digital technologies in their teaching

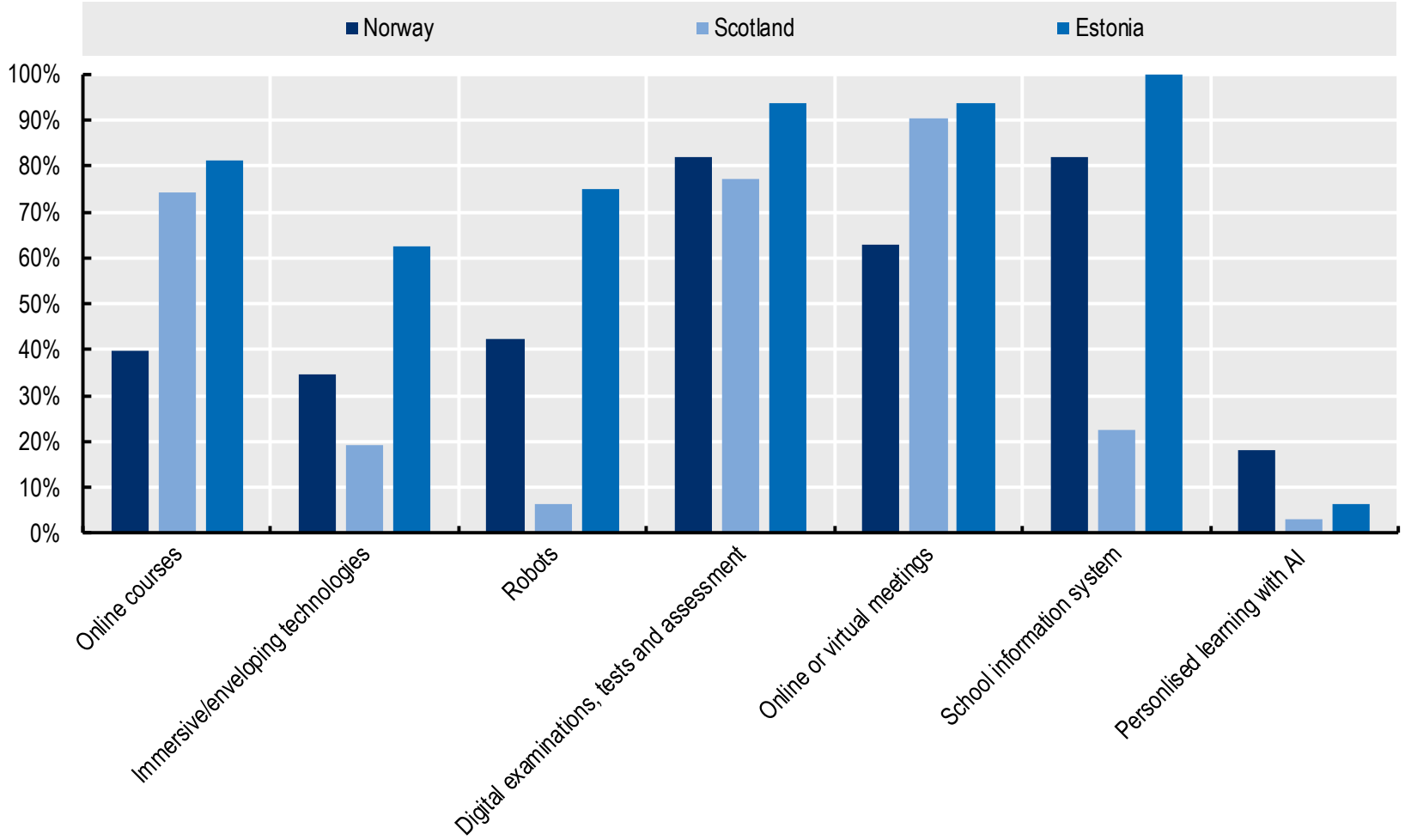


Note: All percentages refer to the share of high responses (i.e., 4 and 5 on a 5-point-scale). Participation in SELFIE is anonymous and voluntary, thus the data are not representative. Not all OECD countries are available and included in the dataset. This aggregated and anonymised data is extracted by the European Commission from SELFIE and does not necessarily reflect an official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this document. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.
Source: SELFIE database (extraction October 2018-December 2020)

Some technologies are used more often than others in VET institutions

Use of technologies in VET institutions in Estonia, Norway and Scotland

Share of respondents reporting using the specific technology



Note: Number of observations by country: Norway – 77 responses from 51 VET institutions, Scotland – 31 responses from 29 VET institutions, Estonia – 16 responses from 15 VET institutions. Results need to be interpreted with caution due to small sample sizes.

Source: OECD Survey on the use technologies in VET.

The potential of digital technology in apprenticeship

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

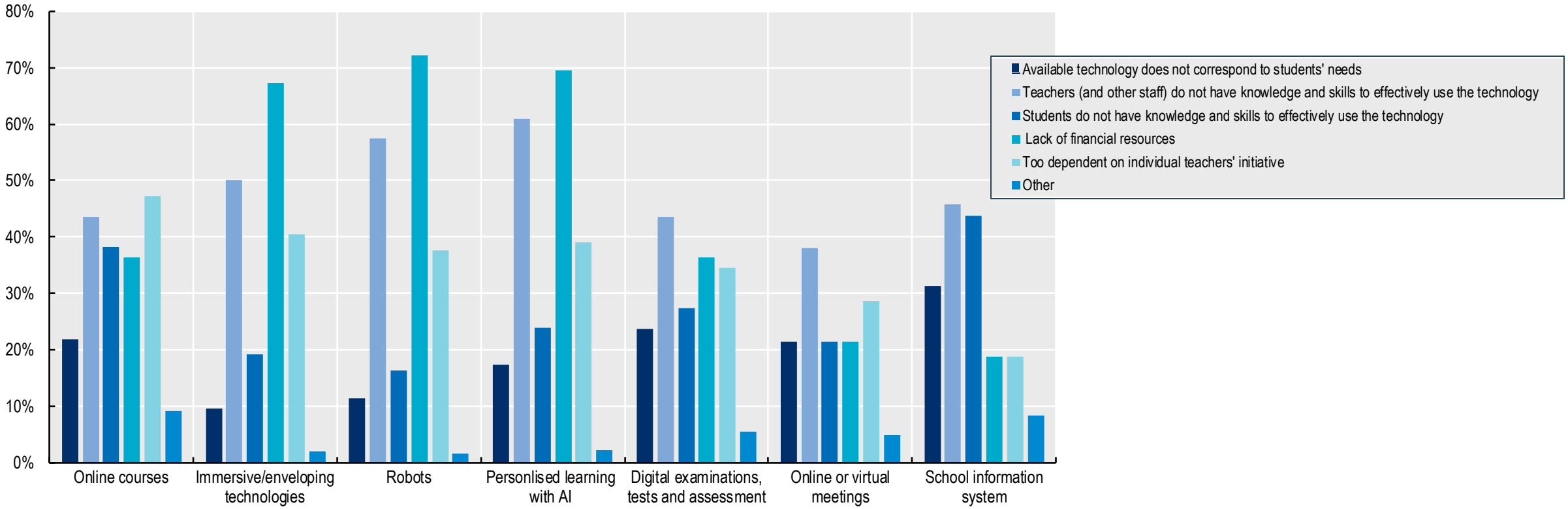
Assess and evaluate

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

Obstacles to effective technology use remain

Obstacles to technology adoption and use in VET institutions in Estonia and Norway

Share of respondents by reasons preventing them from using a specific technology more effectively



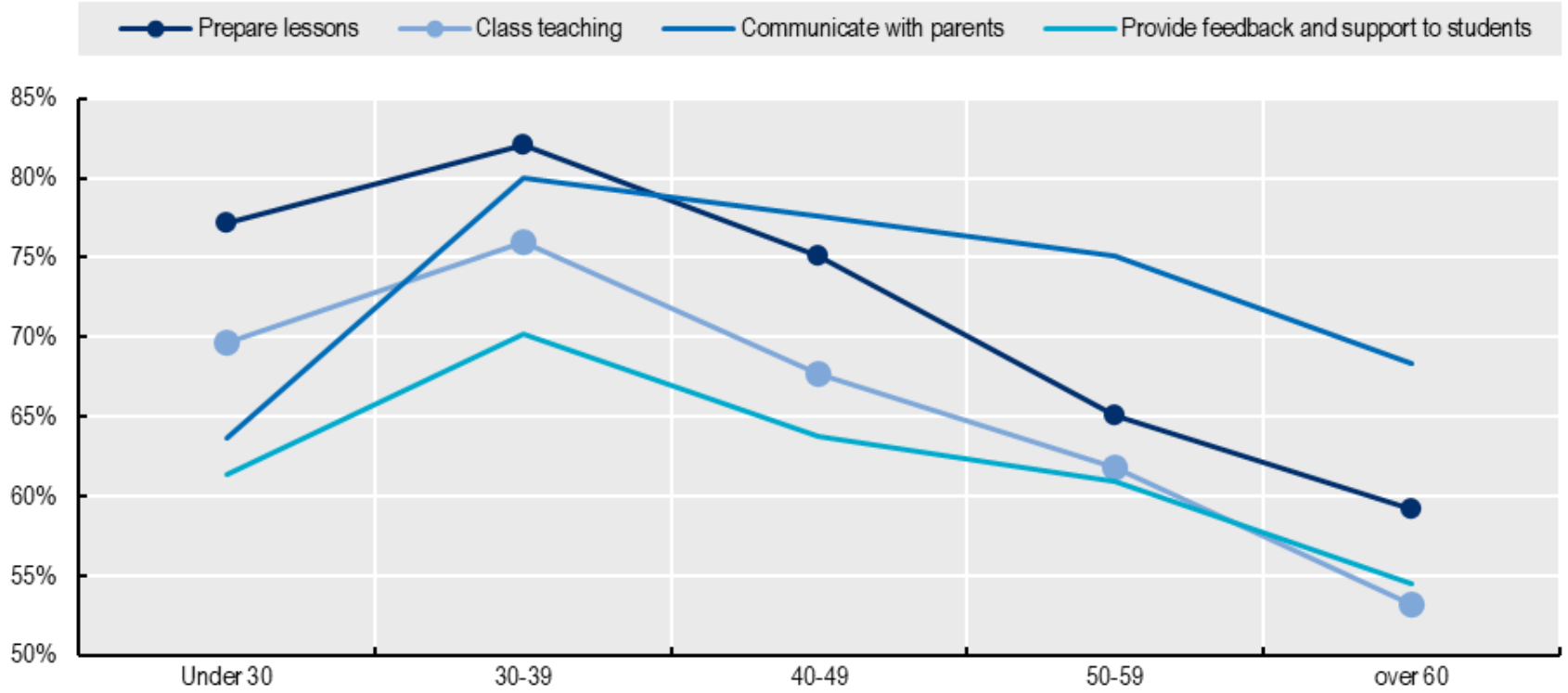
Note: More than one obstacle can prevent effective use the technology. The number of responses by technologies reflects to the number of respondents who use the specific technology: 52 respondents provided answer regarding online courses, 38 on immersive technologies, 49 on robotics and simulators, 18 on personalised tools, 75 on digital examination, 70 on online meetings and 80 on school information. Results need to be interpreted with caution due to small sample sizes.

Source: OECD Survey on the use of technologies in VET.

Not all VET teachers are confident in their ability to use digital technology

Confidence in the use of technologies among VET teachers

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



Note: All percentages refer to the share of high responses (i.e., 4 and 5 on a 5-point-scale). Participation in SELFIE is anonymous and voluntary, thus the data are not representative. Not all OECD countries are available and included in the dataset. Disclaimer: This aggregated and anonymised data is extracted by the European Commission from SELFIE and does not necessarily reflect an official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this document. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

Source: SELFIE database (extraction October 2018-December 2020); Hippe, R., Pokropek, A. and P. Costa (2021[308]), Cross-country validation of the SELFIE tool for digital capacity building of Vocational Education and Training schools, in preparation.; (OECD, 2021[95]),

More info

OECD Centre for Skills

OECD
BETTER POLICIES FOR BETTER LIVES

THE FUTURE OF WORK

OECD.AI Policy Observatory

https://www.oecd.org/skills/centre-for-skills/

https://www.oecd.org/future-of-work/

https://oecd.ai/en/