

# THE CHANGING NATURE OF WORK

AND SKILLS IN THE DIGITAL AGE



## DIGITALISATION, AUTOMATION AND TECHNOLOGY

**Leaders Discussion**  
*European Challenges and Election  
Programs of Slovak political parties,  
Bratislava  
13 November, 2019*

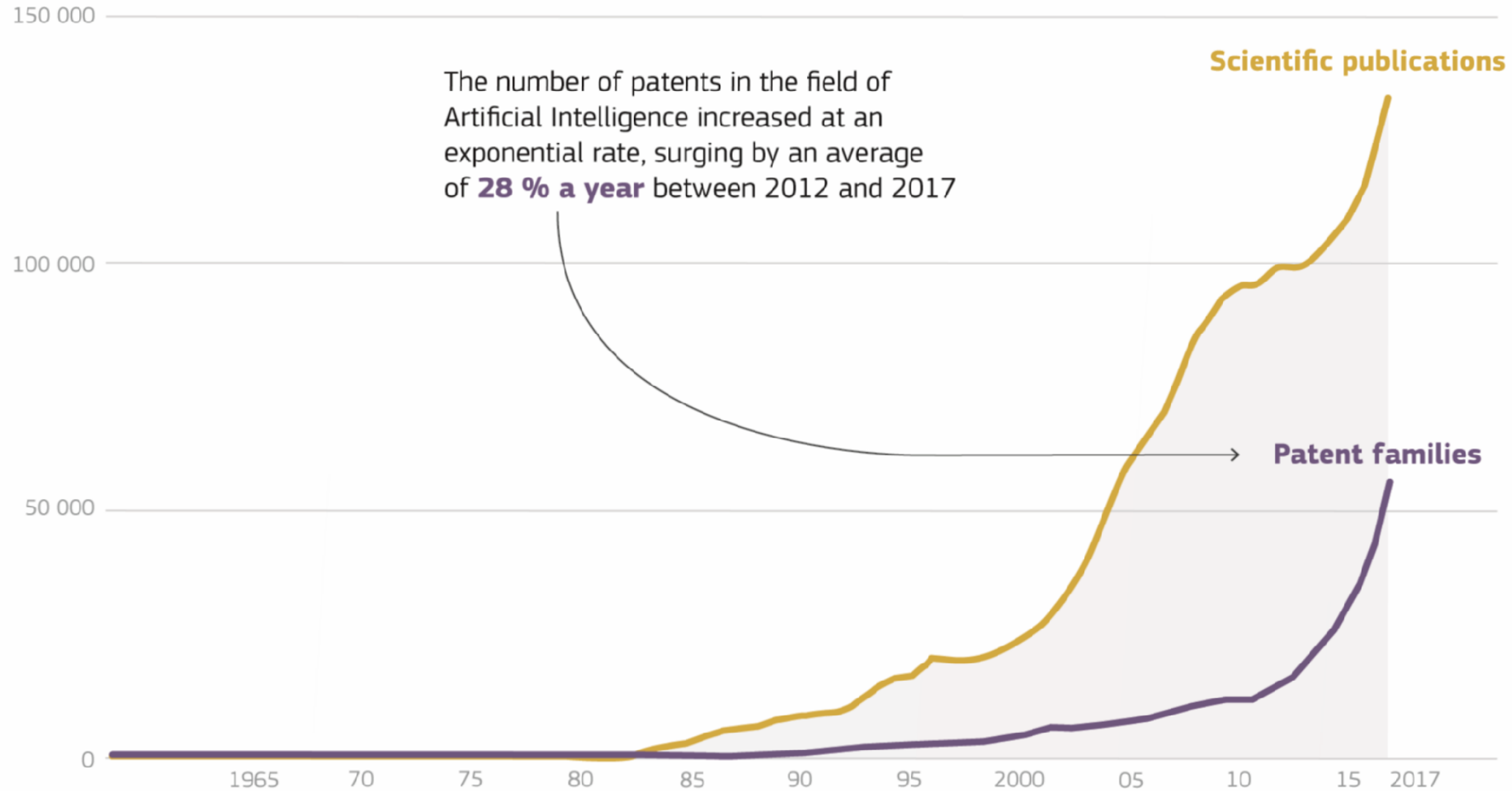
Santo Milasi  
*Unit B.7 Knowledge for Finance,  
Innovation and Growth*

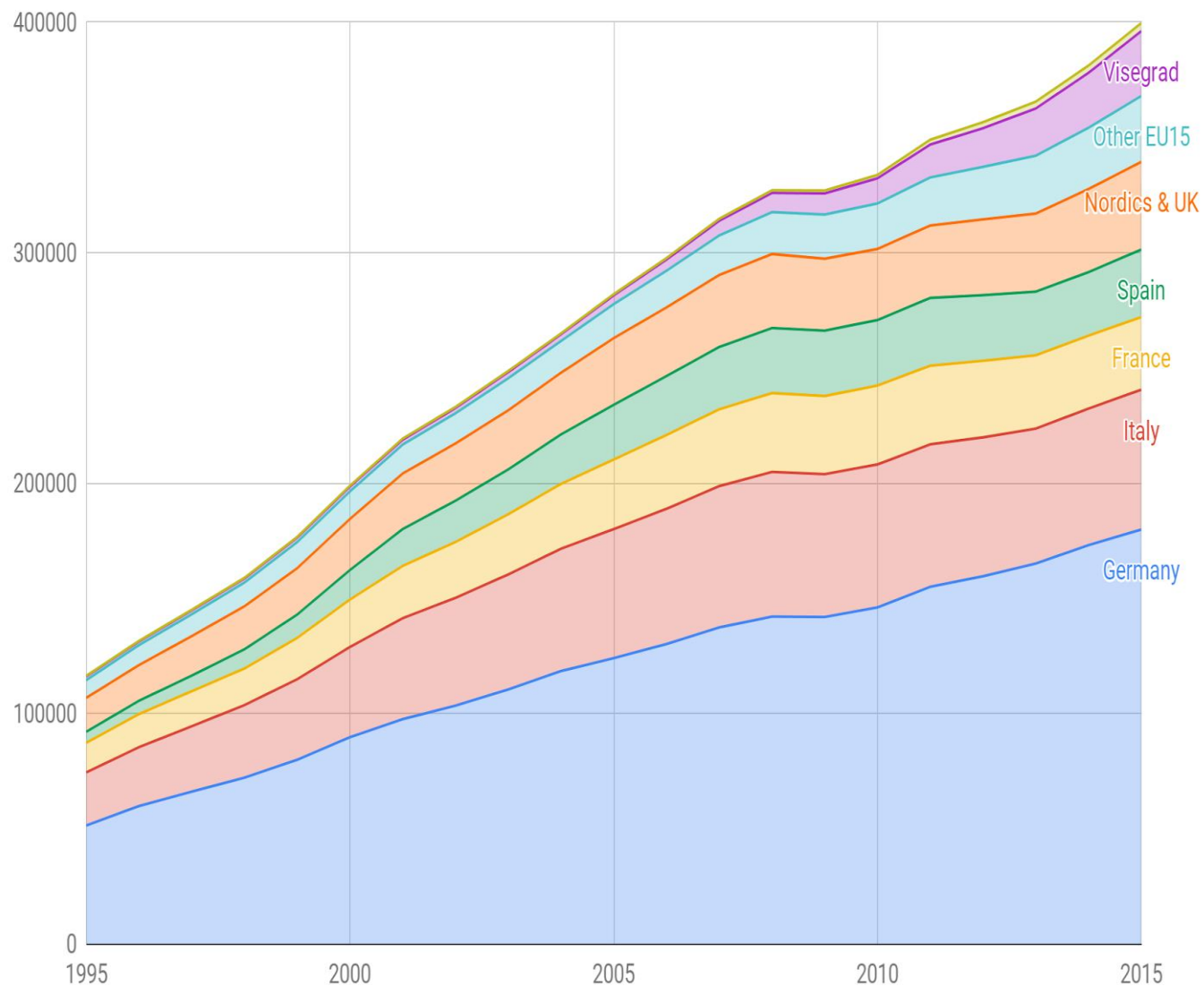
Joint Research Centre  
The European Commission's  
in-house science service



# Industrial applications of AI are growing at a fast pace

**What is AI?**  
Machines that can reason, learn, and act intelligently.

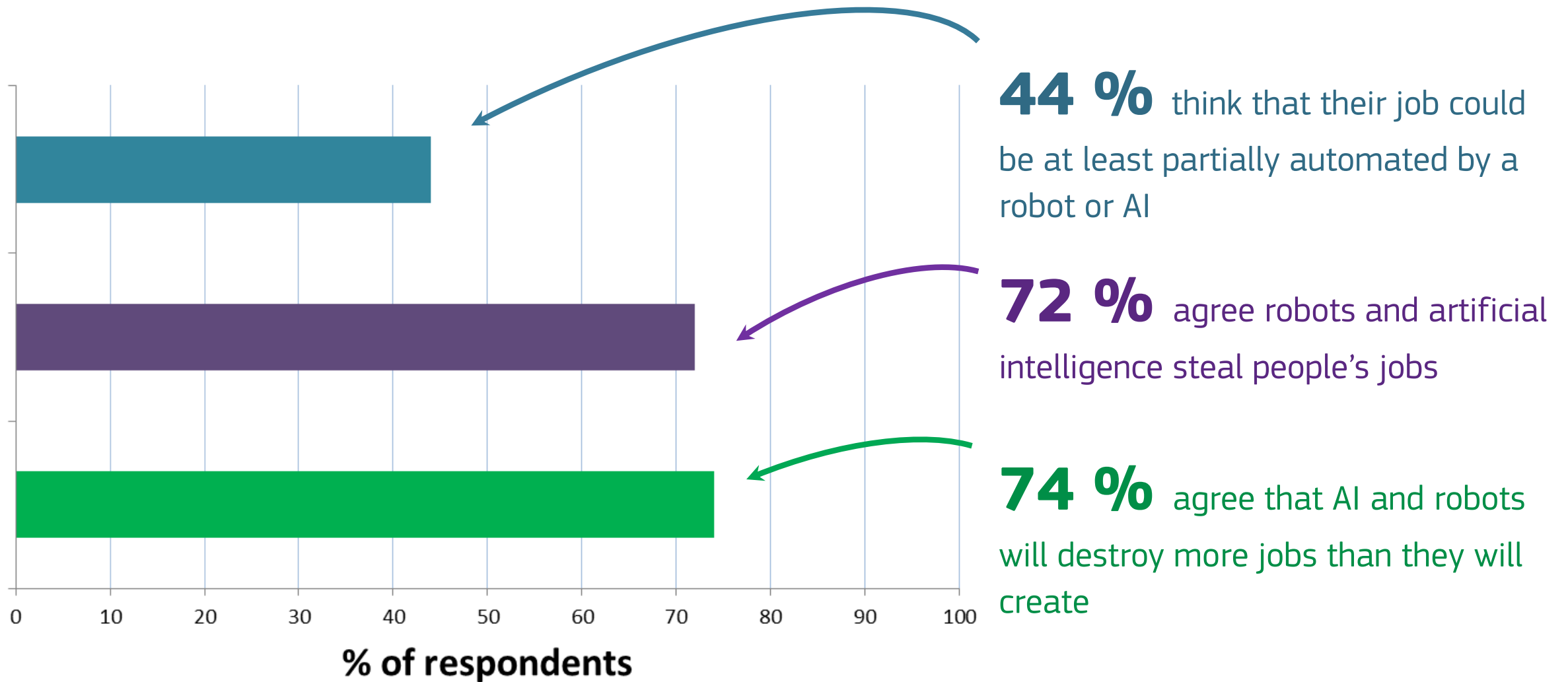




The number of industrial robots in the Visegrad countries shows a **17-fold increase** between 1995 and 2015.

May this pave the way for **further automation** in manufacturing?

# Workers' concerns have also grown

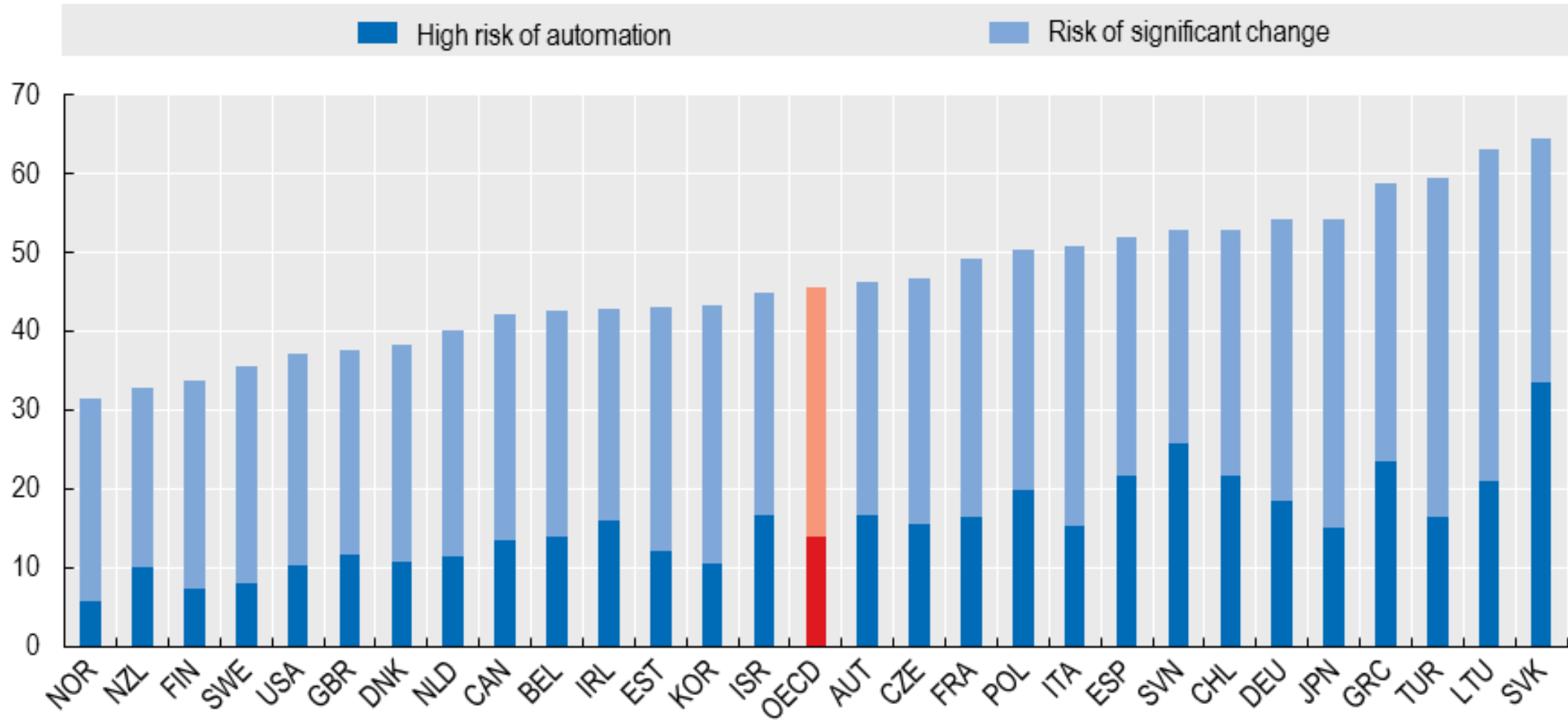


**44 %** think that their job could be at least partially automated by a robot or AI

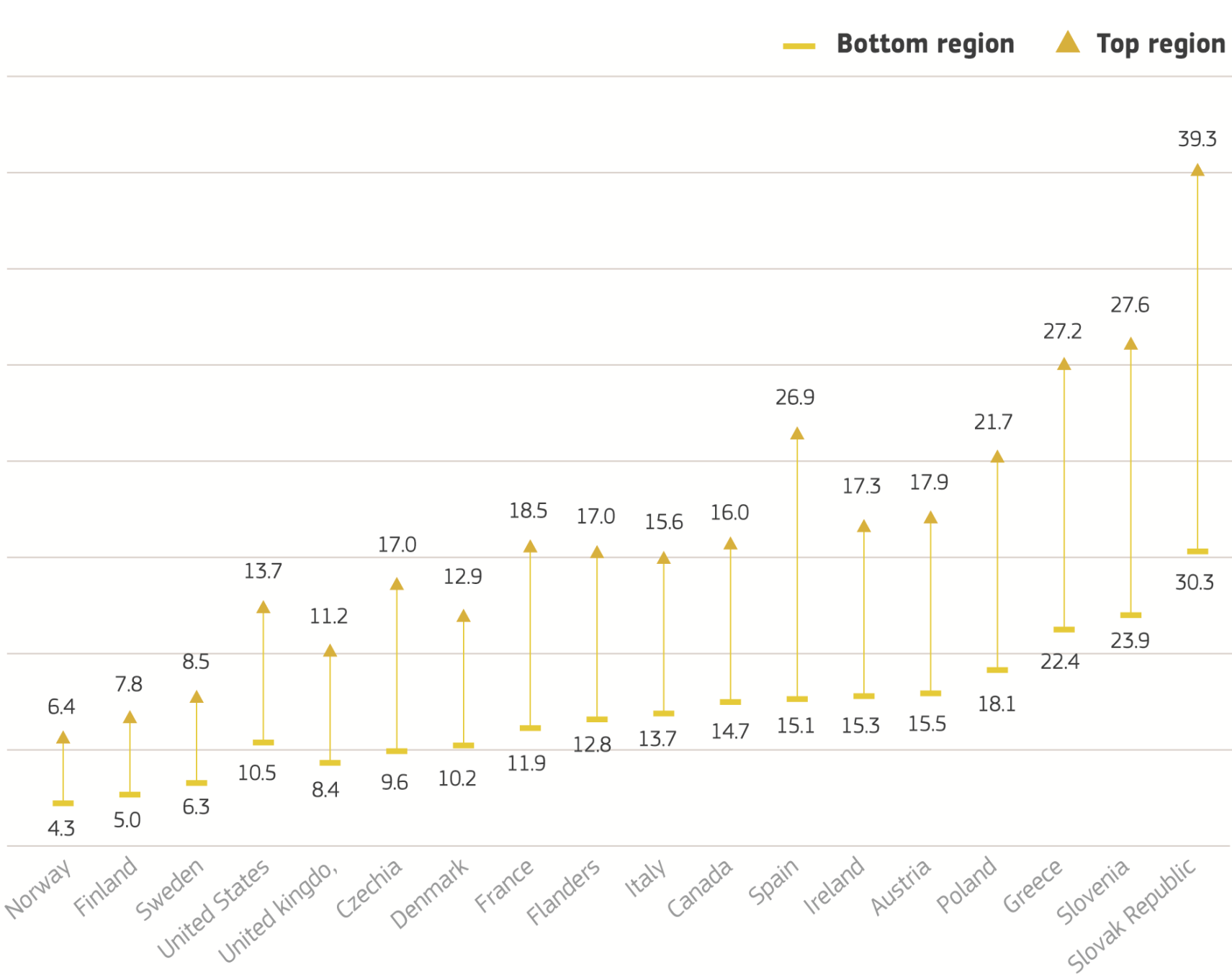
**72 %** agree robots and artificial intelligence steal people's jobs

**74 %** agree that AI and robots will destroy more jobs than they will create

# The risk of job automation is **higher in Central and Eastern Europe**



Source: OECD Employment Outlook (2019)



The share of jobs at high risks of automation varies significantly between regions of the same countries.

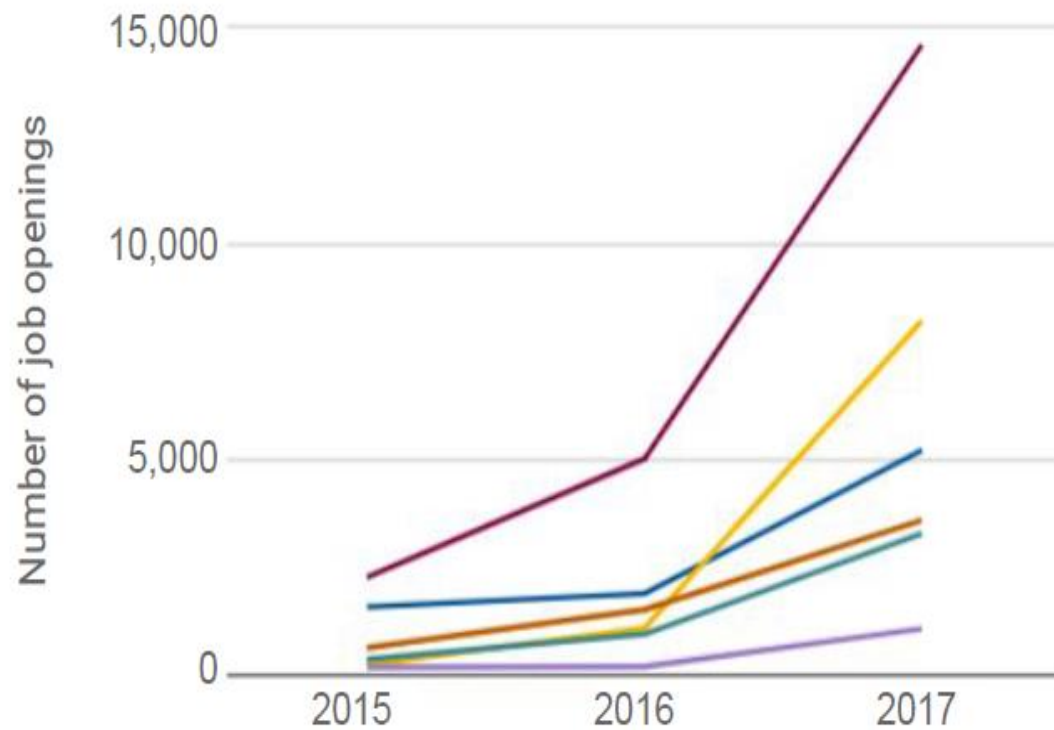
Regional differences are the widest in Slovakia, ranging from 30.3 % (Bratislava region) to over 39 % (West Slovakia).



# But new technologies also create jobs

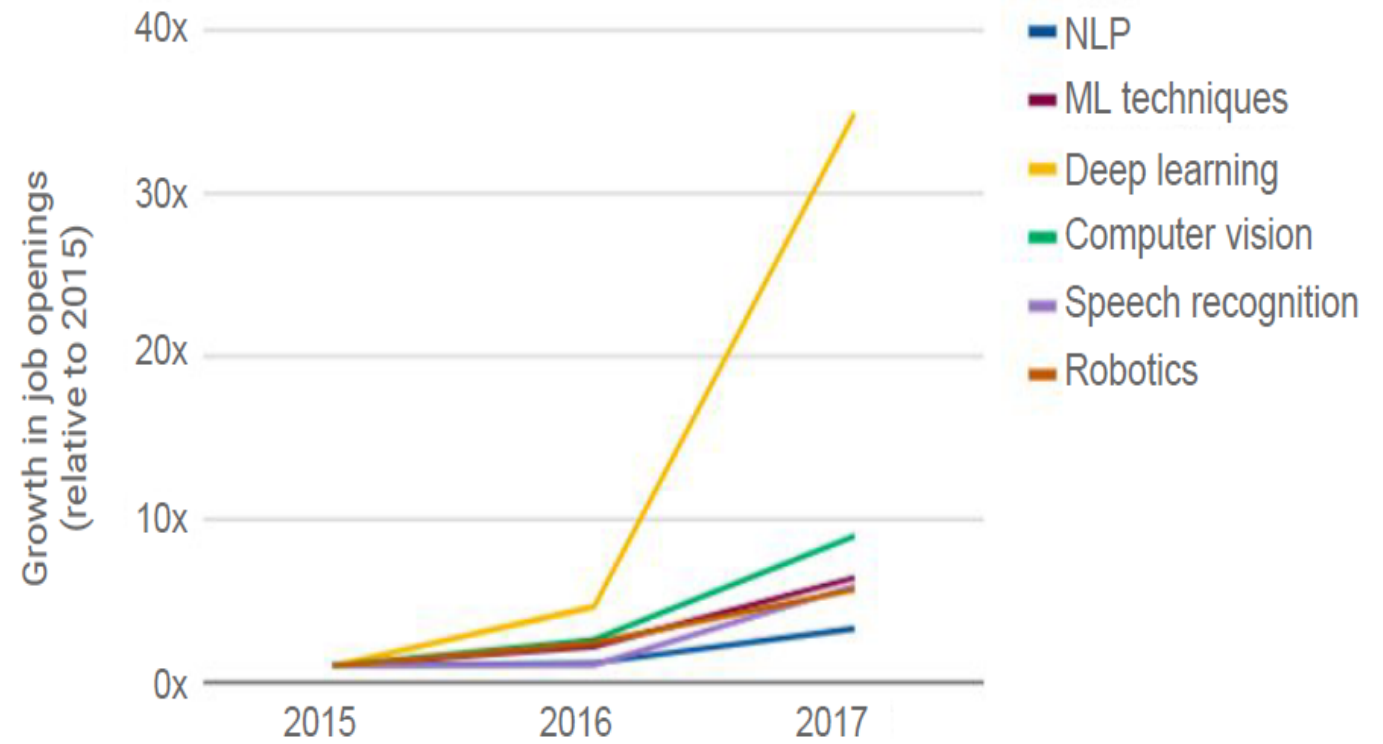
Job openings by AI skills required (2015 – 2017)

Source: Monster.com

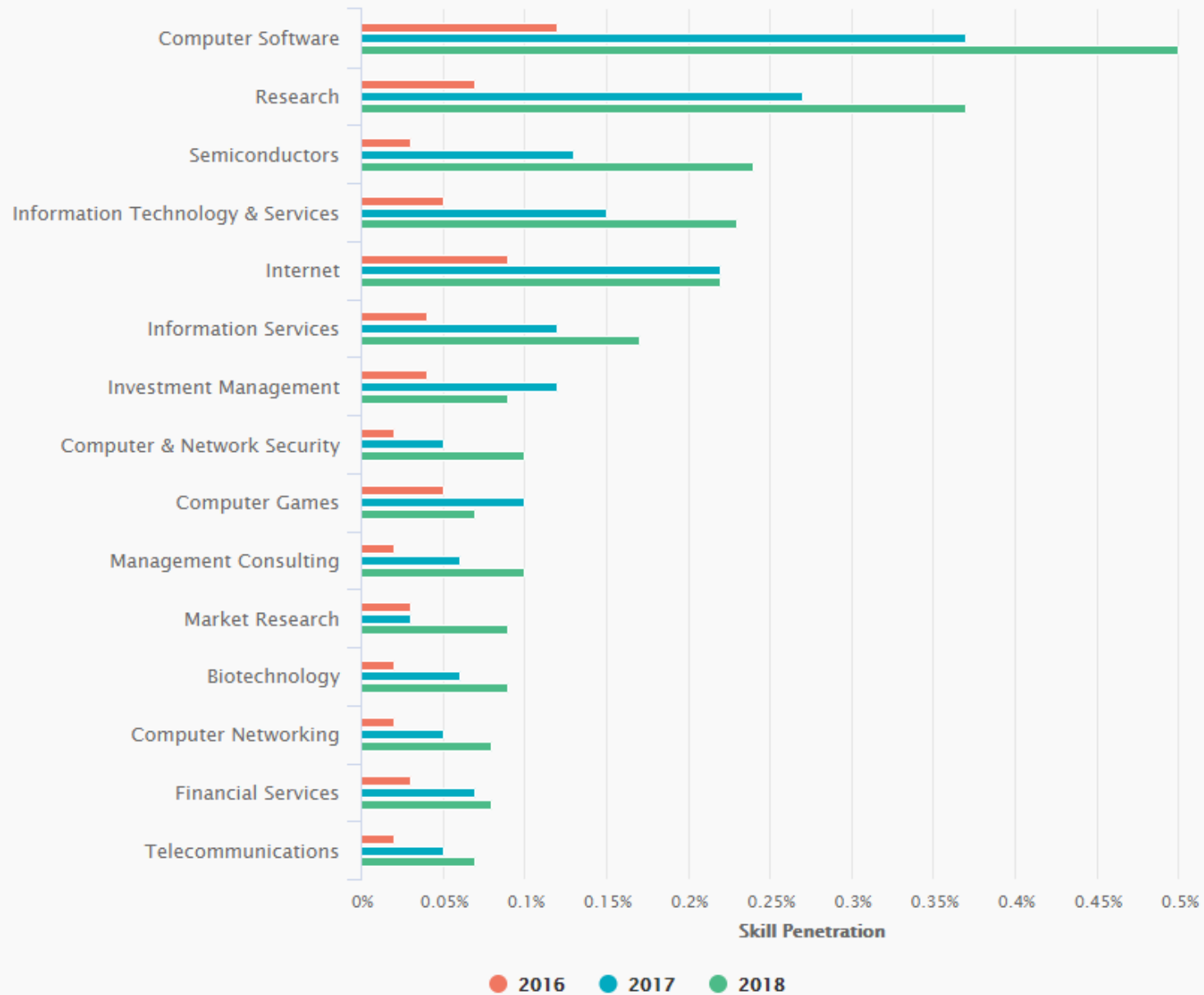


Growth of job openings by AI skills required (2015 – 2017)

Source: Monster.com



## Skill Penetration by Industry



AI-related skills are spreading fast in a wide range of industries



# EU labour markets demand **more non-cognitive and ICT skills**

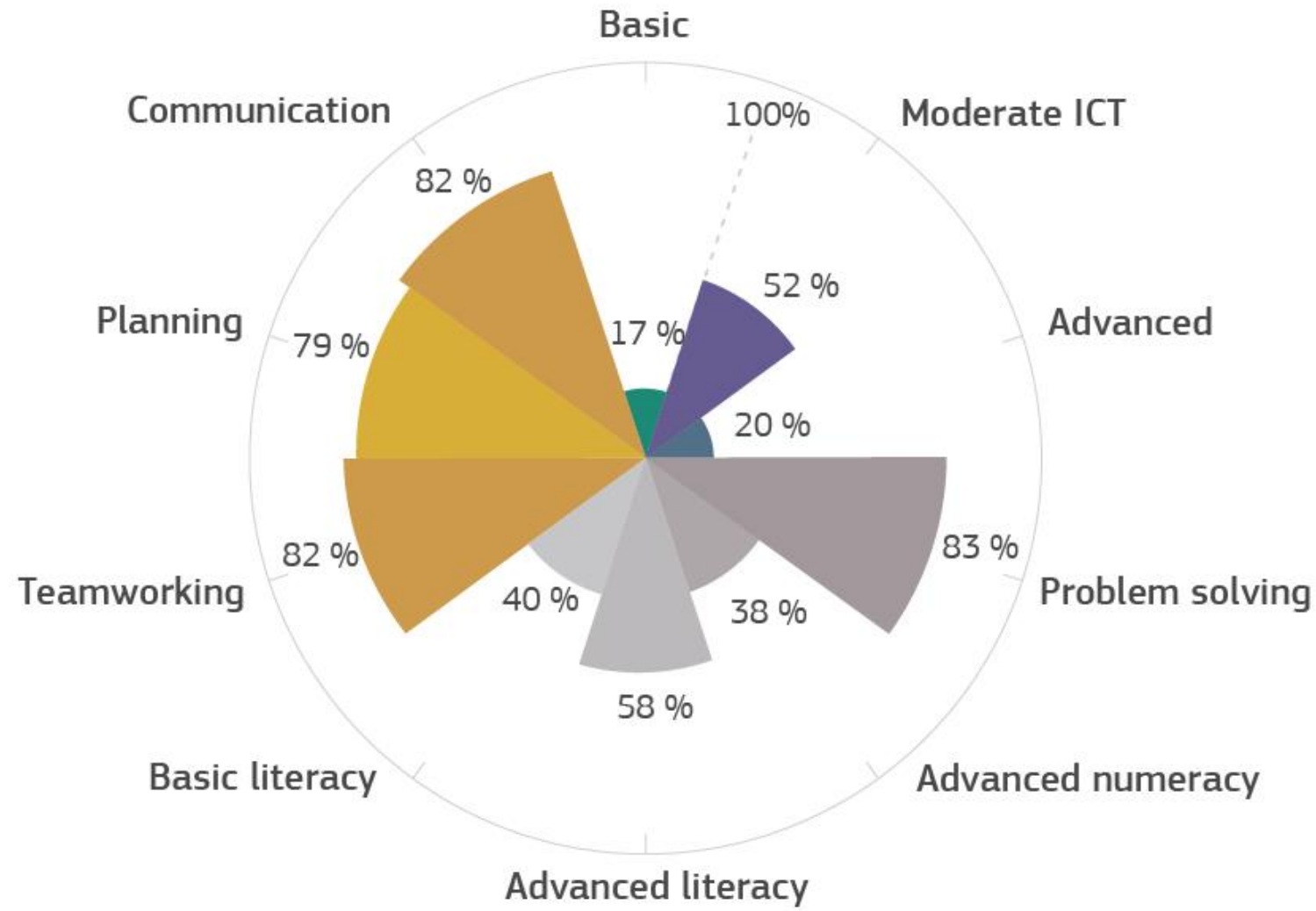


Almost all occupations that have expanded since 2011 required **above-average social interactions and use of computers at work**

● ICT KNOWLEDGE

● COGNITIVE SKILLS

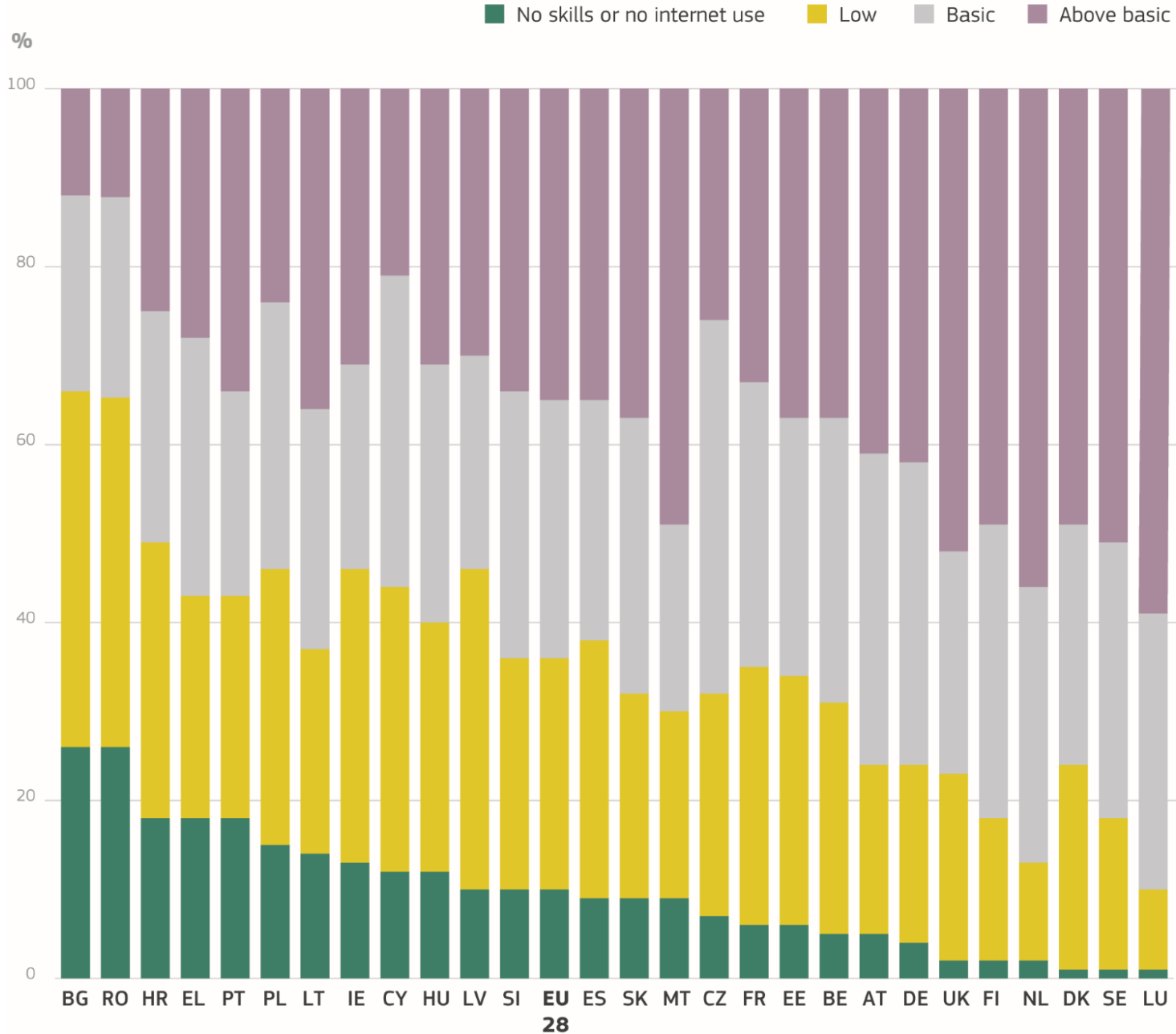
● NON-COGNITIVE SKILLS



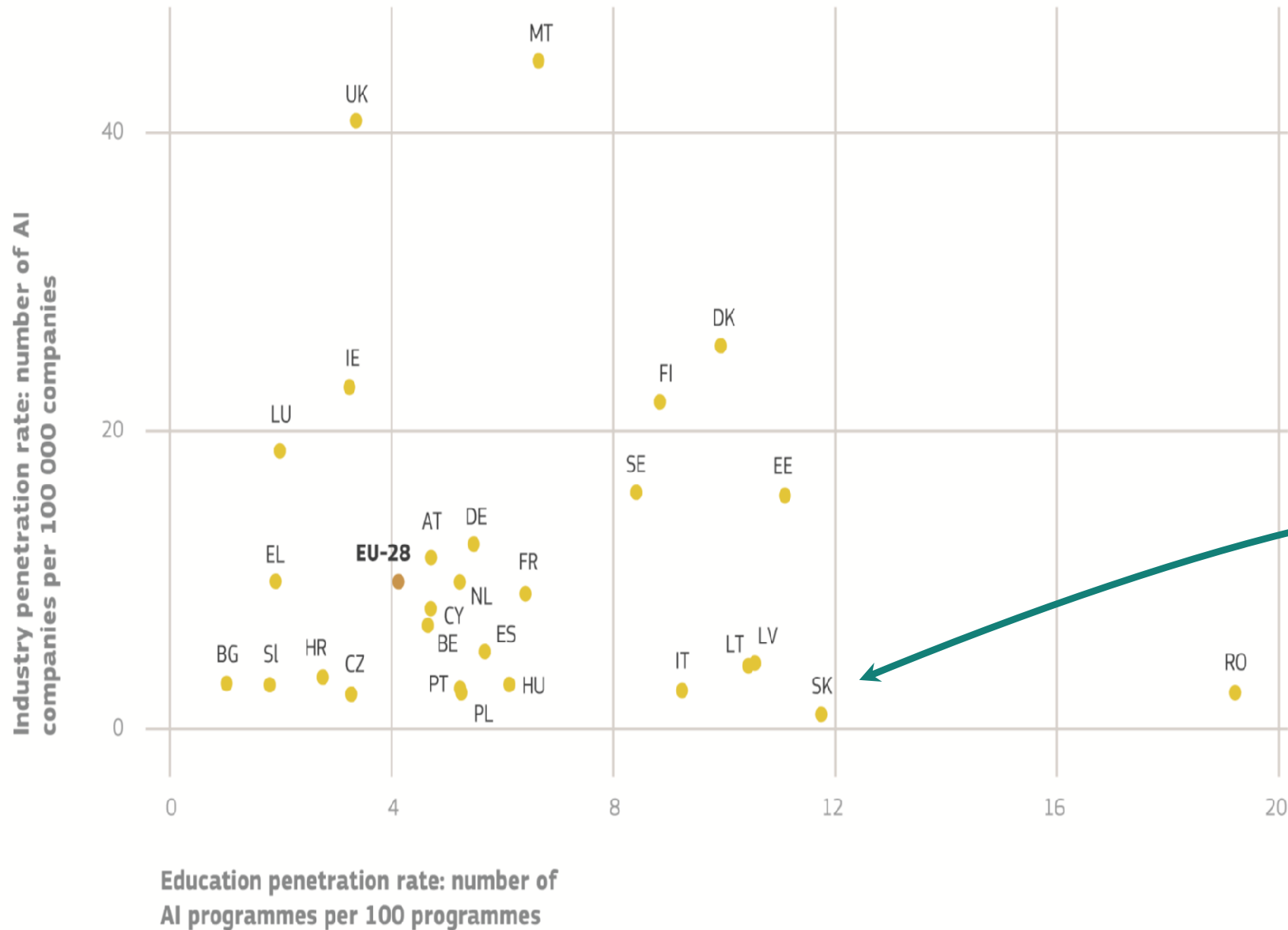
Demand for **complex skills sets** is expected to rise, requiring **problem solving** abilities, strong **non-cognitive skills**, and at least **moderate knowledge of ICT**

Source: JRC based on Cedefop European skills and job survey, and Cedefop European skills survey

# Digital skills of the EU labour force, 2017 (% individuals, by skills level)



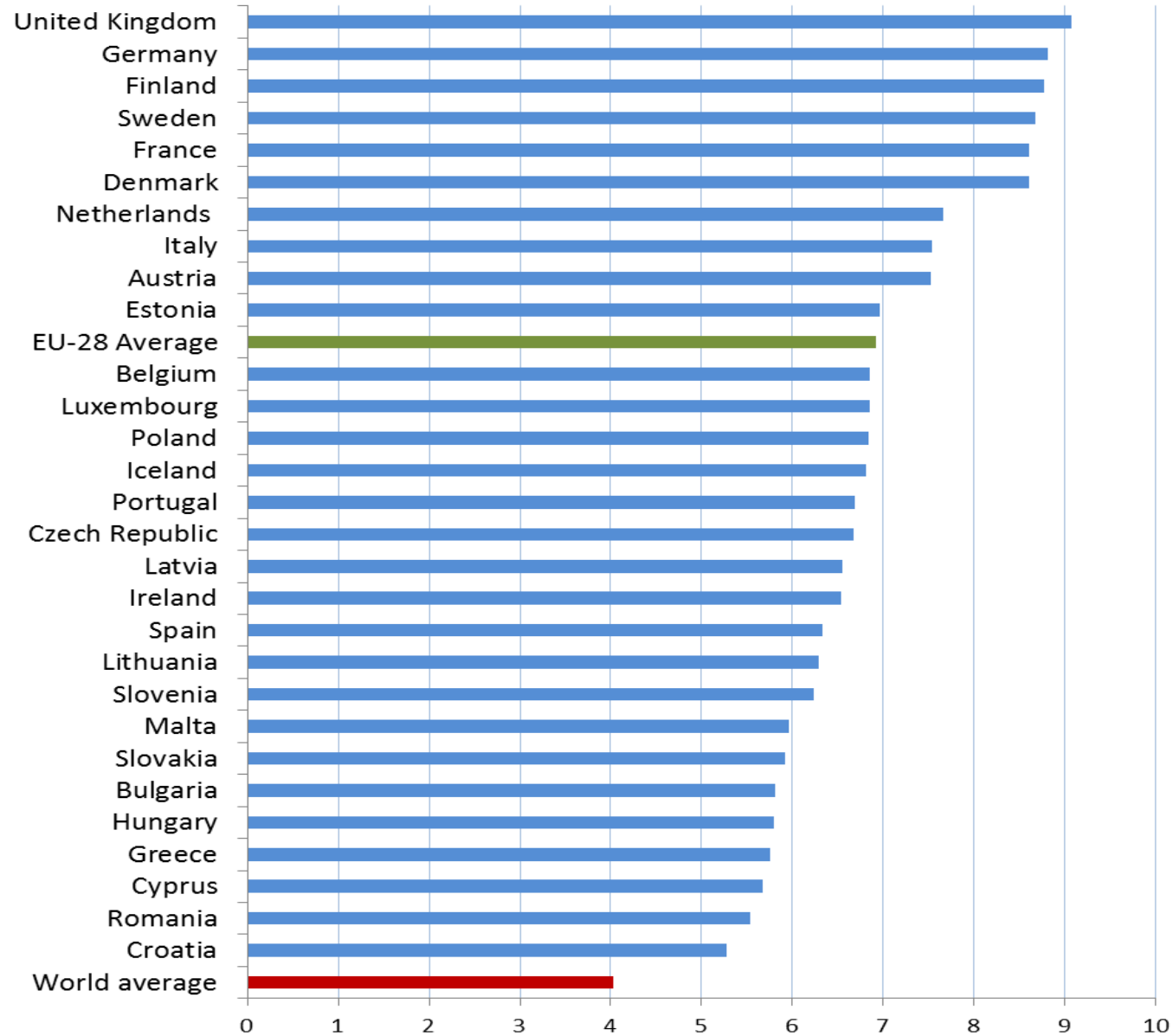
In 2017  
 an important share of  
 the EU labour force had  
 low or no digital skills



The limited education offer in AI-related subjects in the EU could constrain AI penetration

In Slovakia, the issues is more the low penetration rate of AI among companies

# Government AI-Readiness Index, 2019



The pace of AI-related development across the EU is uneven

Slovakia ranks 45<sup>th</sup> worldwide in terms of government AI readiness, and 22<sup>nd</sup> in the EU

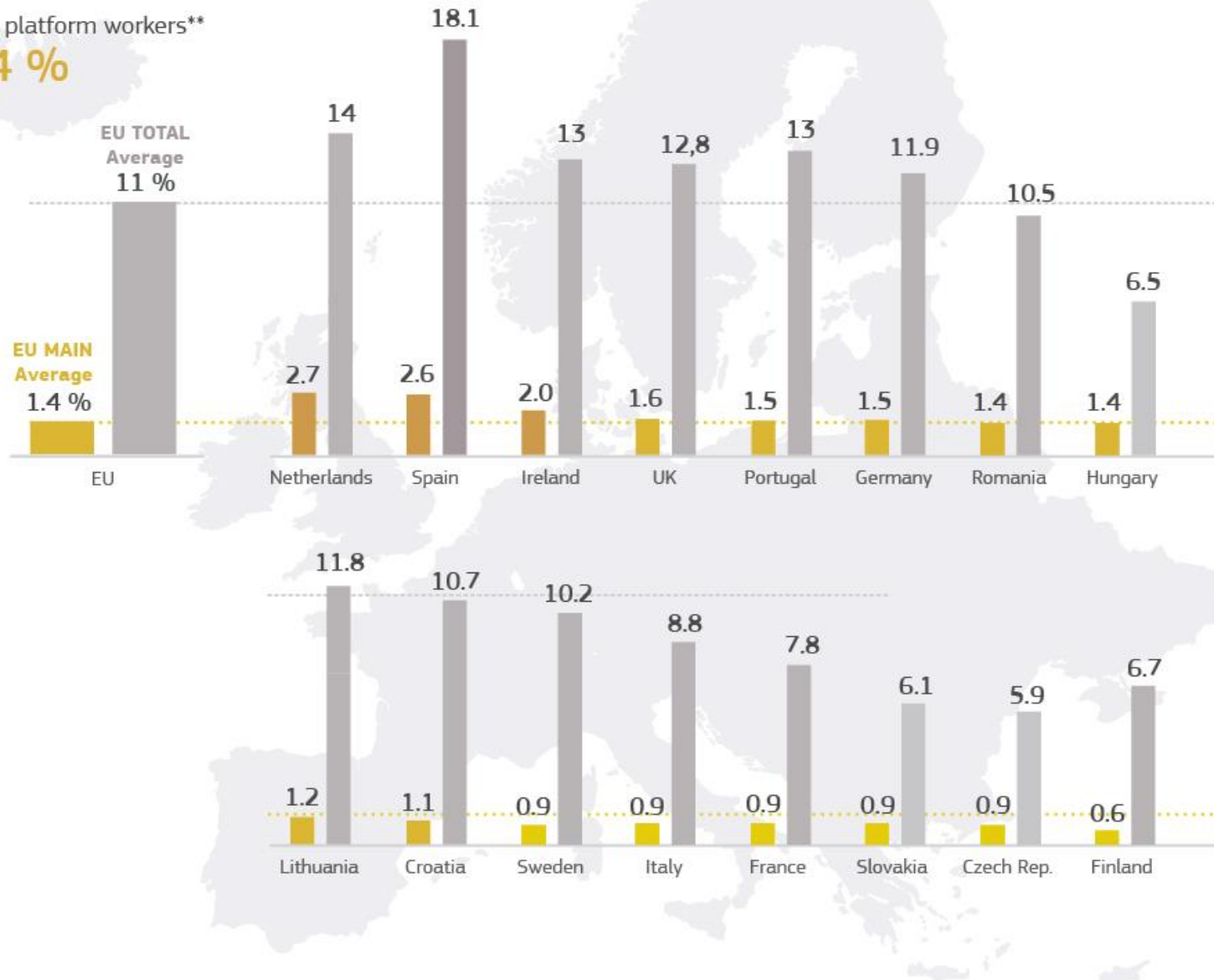
EU AVERAGE\*

● Total platform workers

11 %

● Main platform workers\*\*

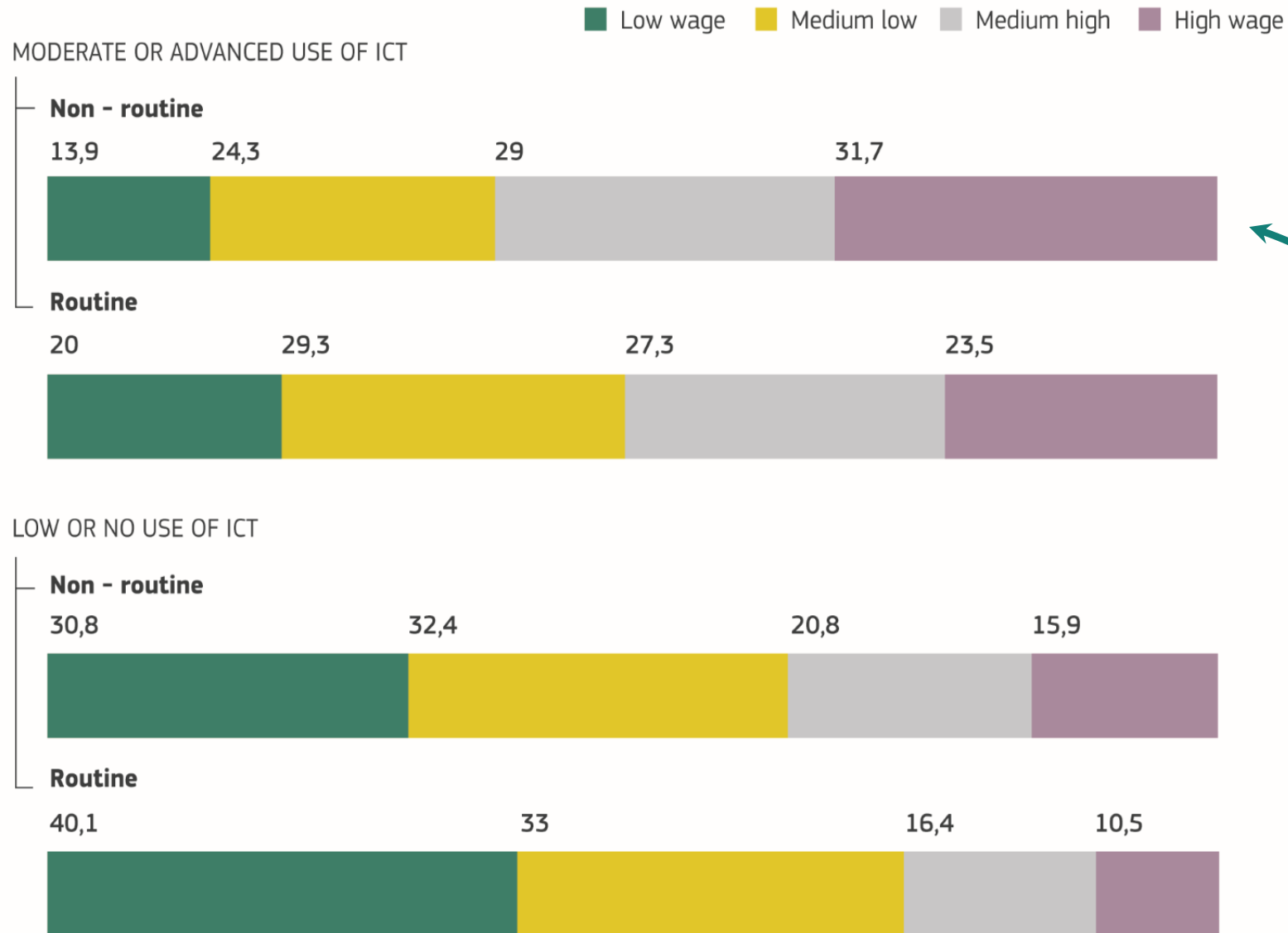
1.4 %



11 % of adults in the EU worked through online platforms at least once

For 1.4% of adults platform work is the main activity

## Distribution of workers by wage quartile, type of tasks and ICT use intensity, 2016



One of the greatest **risks** coming from new technologies is that of **rising inequalities**

Jobs **combining non-routine tasks with ICT use** are the most likely to be **high-paid**





# Thank you

**Website:** <https://ec.europa.eu/jrc/en/facts4eufuture/changing-nature-work-skills-digital-age>

**JRC working paper series on Labour, Education and Technology:**  
<https://www.econstor.eu/handle/10419/202101>

