



# Discovering ICT careers: challenges and solutions

## European Digital Skills and Jobs Platform

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# Using PISA to understand interest in careers in computing

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## **International Standardised Classification of Occupations (ILO)**

### **Sub-Major Group 25 Information and Communications Technology Professionals**

#### **251 Software and Applications Developers and Analysts**

2511 Systems Analysts

2512 Software Developers

2513 Web and Multimedia Developers

2514 Applications Programmers

2519 Software and Applications Developers and Analysts Not Elsewhere Classified

#### **252 Database and Network Professionals**

2521 Database Designers and Administrators

2522 Systems Administrators

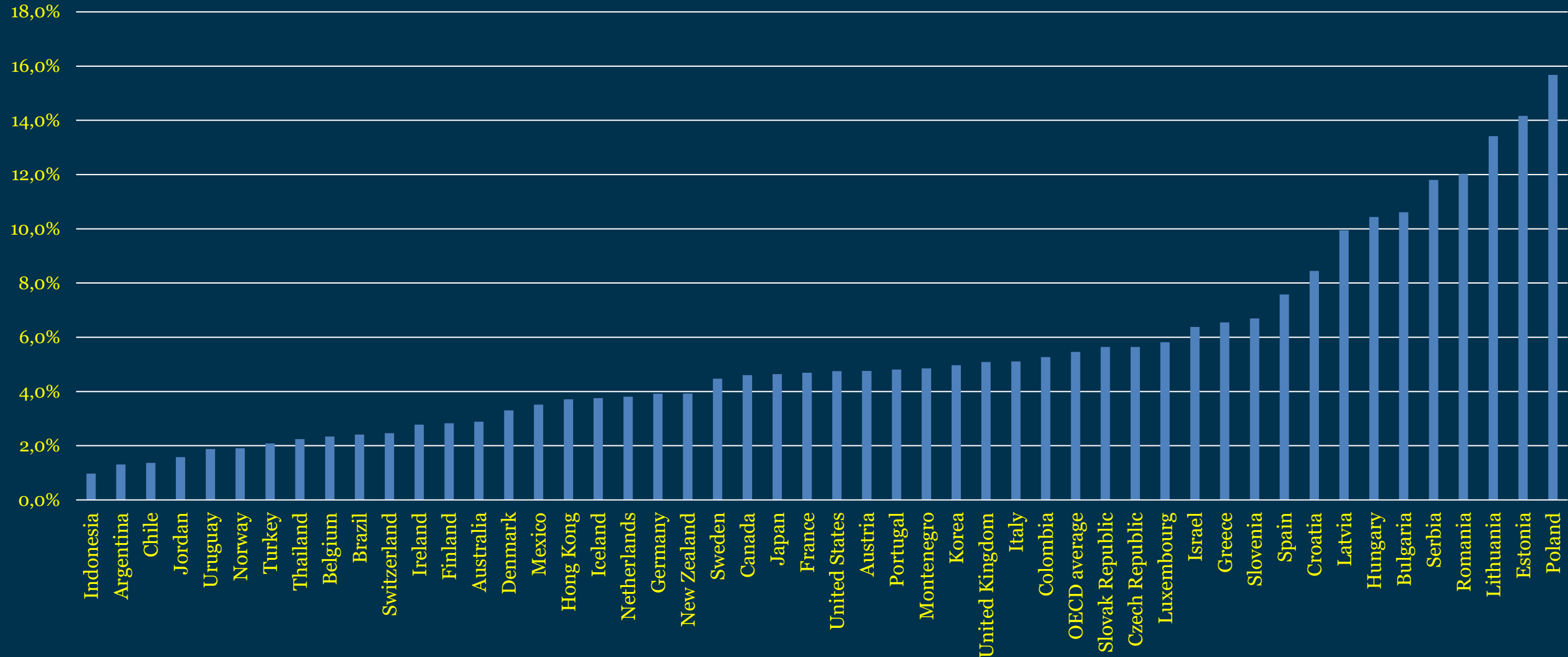
2523 Computer Network Professionals

2529 Database and Network Professionals Not Elsewhere Classified



# Who expects to work in computing?

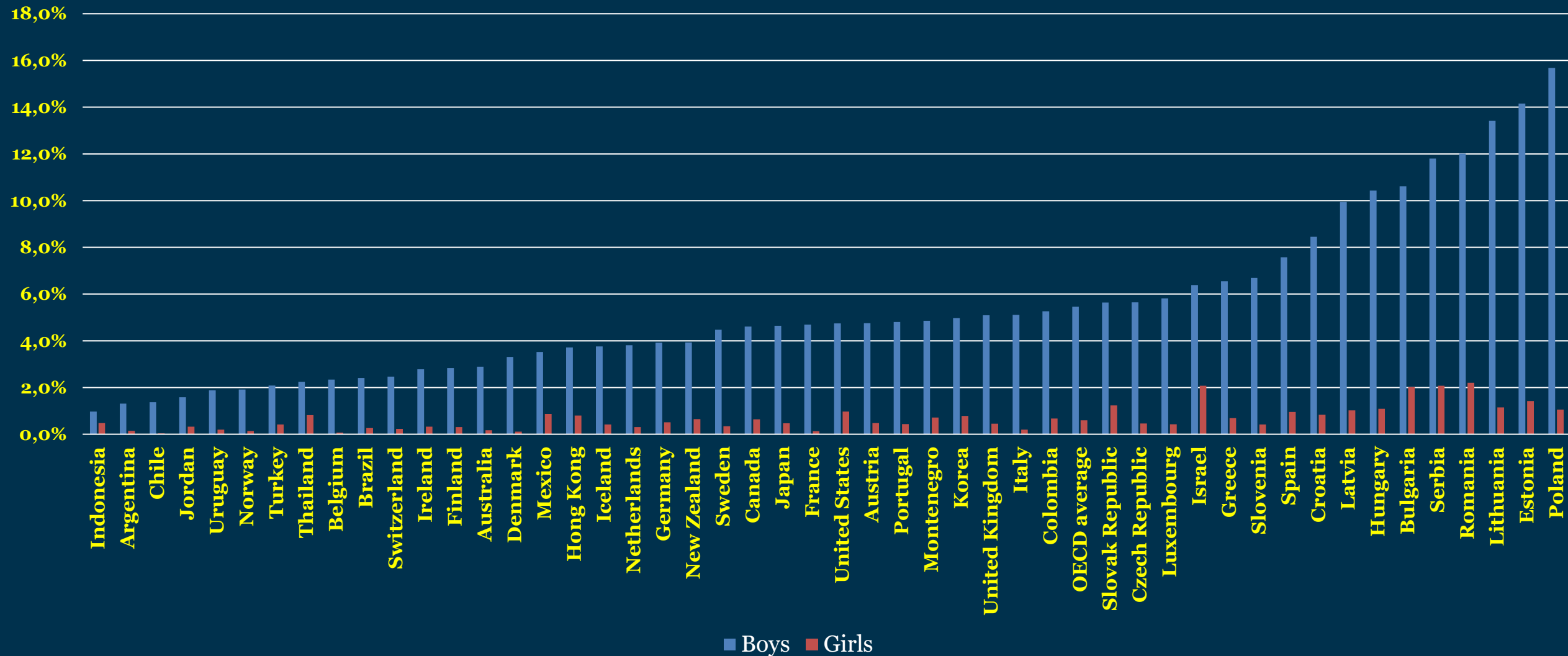
Occupational expectations: ISCO 25 (boys). PISA 2018.





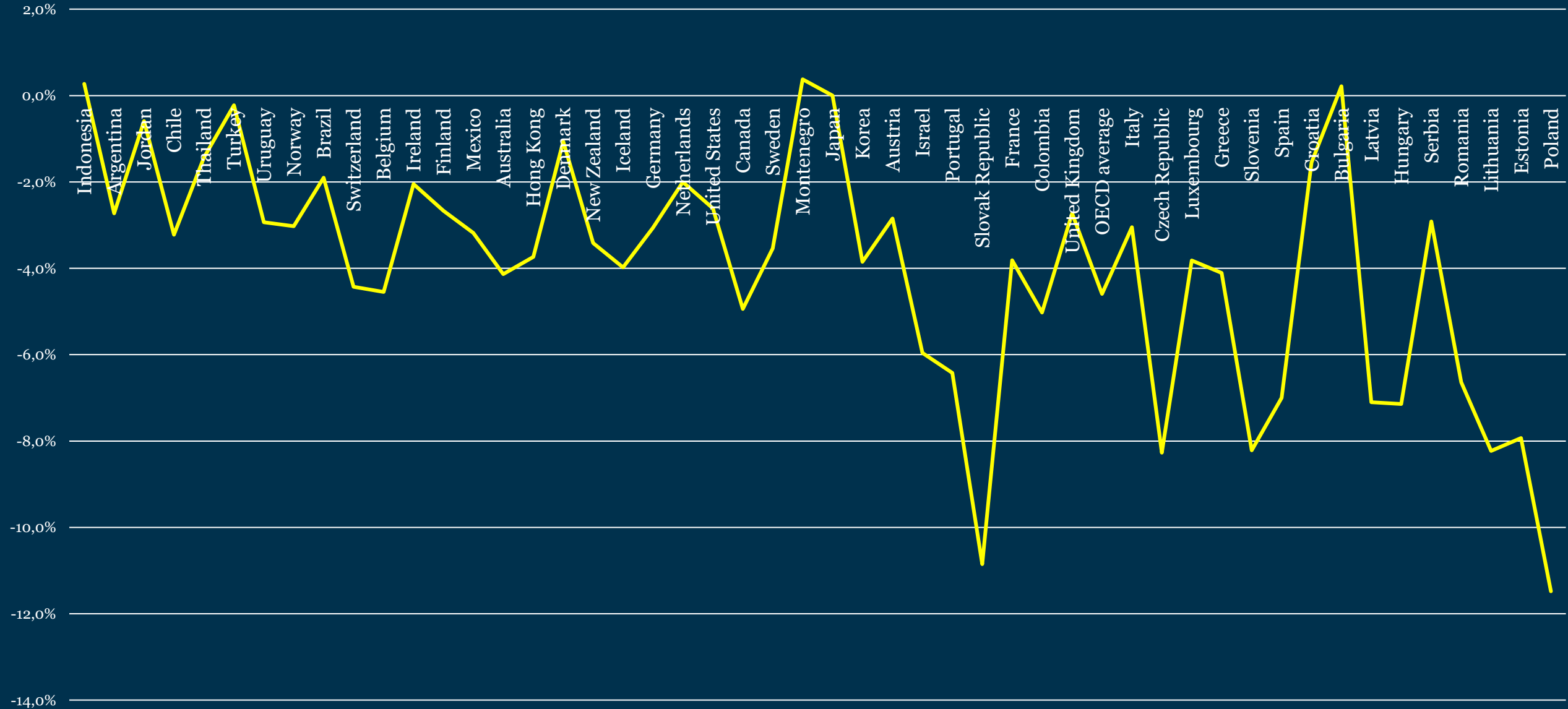
# Who expects to work in computing?

## Occupational expectations: ISCO 25 (boys and girls). PISA 2018



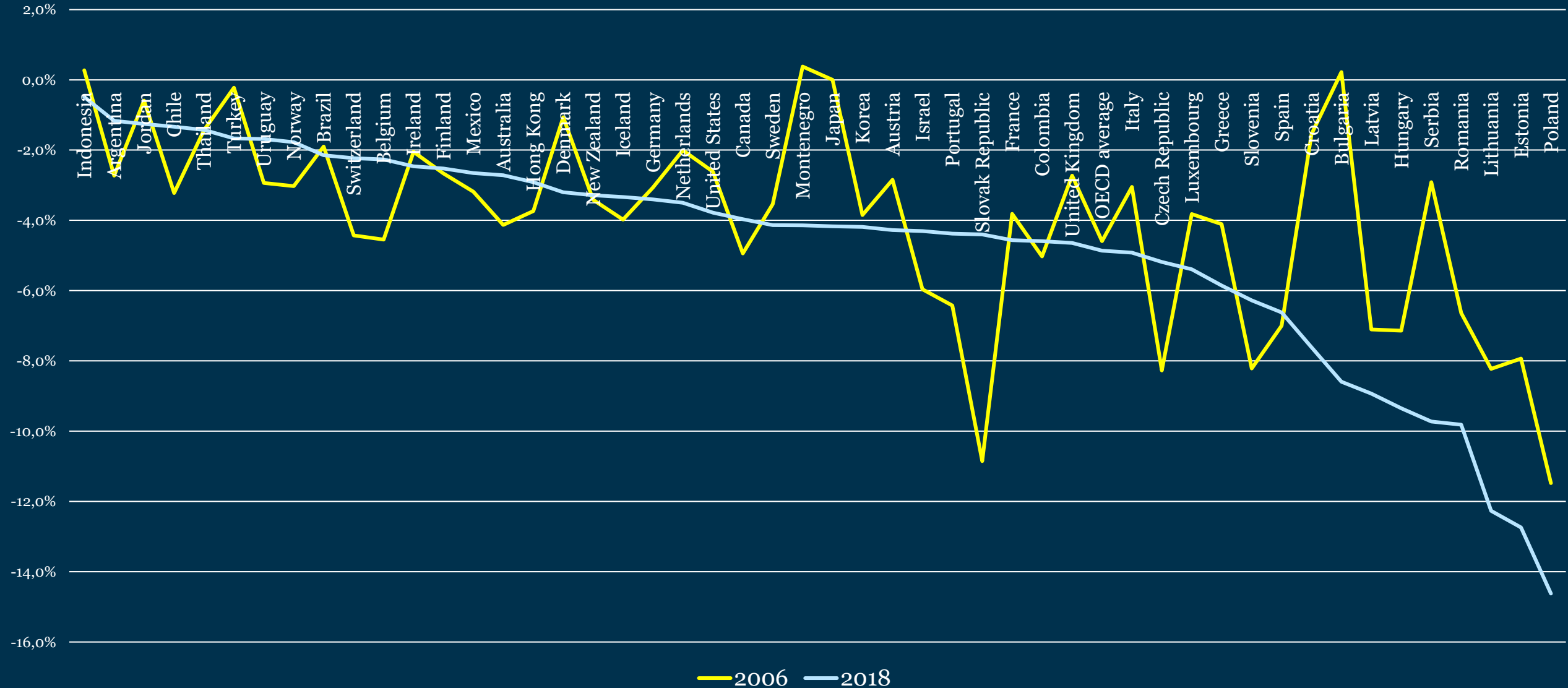


# Is the gender gap narrowing? The gap in 2006. PISA.



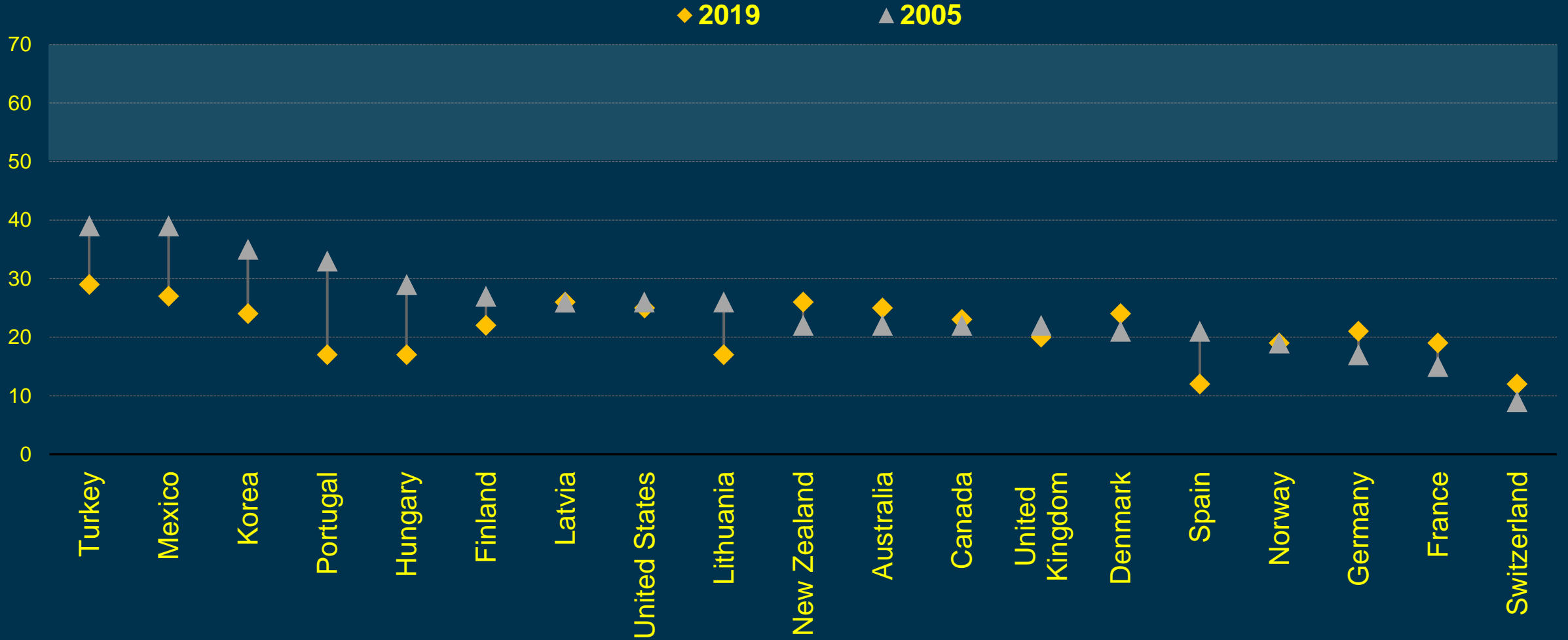


# Is the gender gap narrowing? The gap 2006-18. PISA.





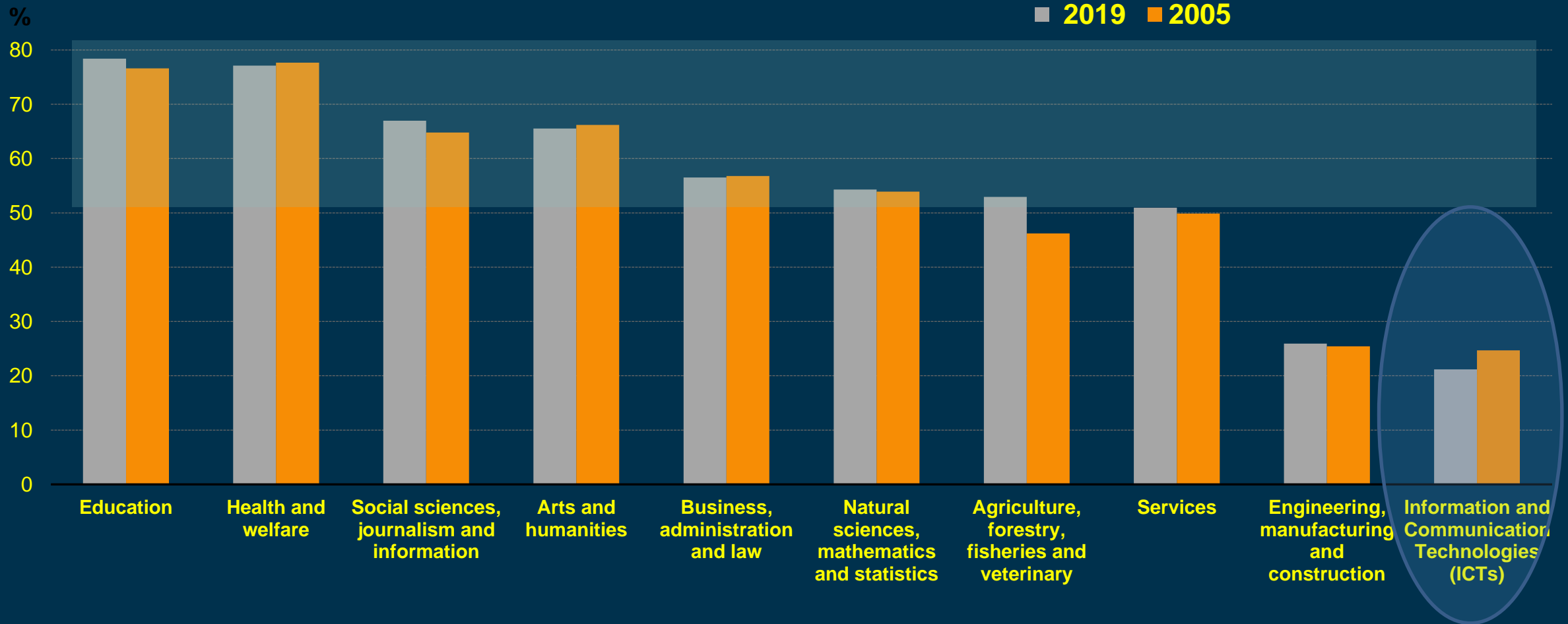
# Female enrolments in ICT tertiary programmes (%)





# Comparing ICT enrolments with other subjects at tertiary level

Percentage of girls in each field of tertiary education -average of participating countries

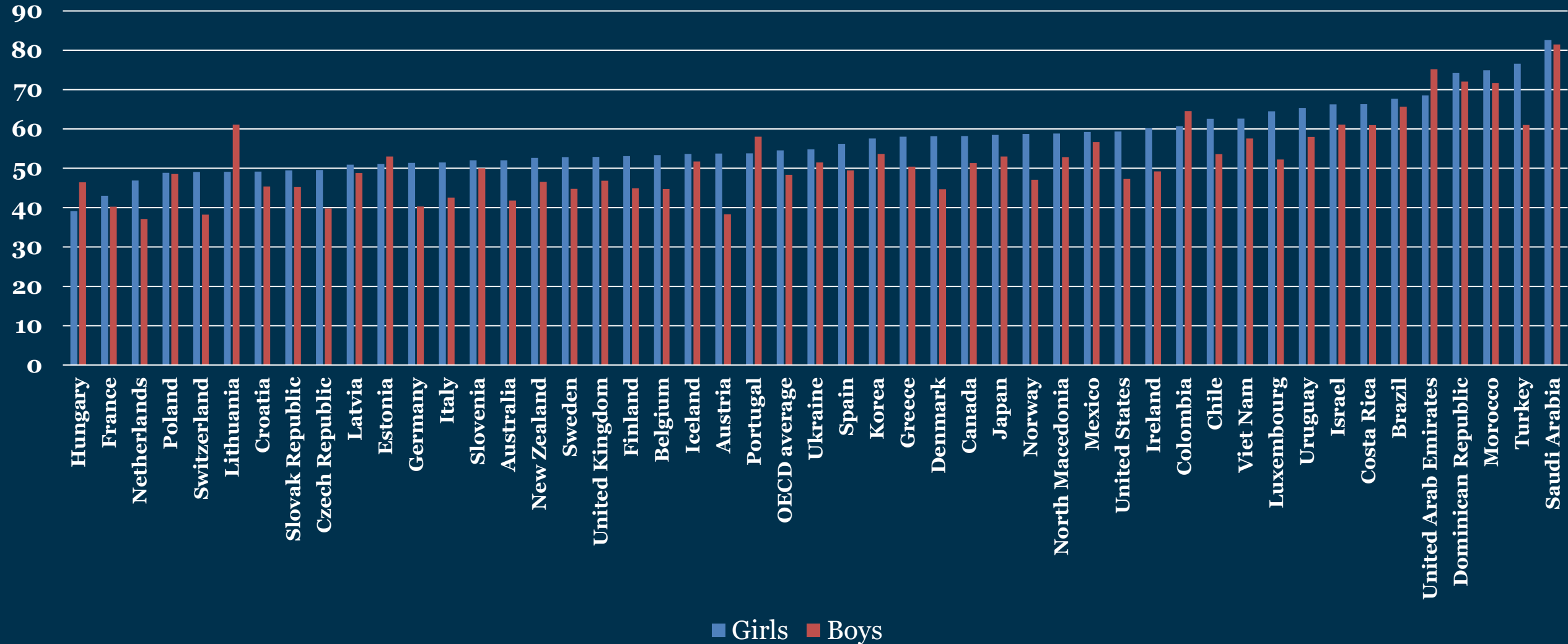






# Labour markets are not signalling well to young people

**Concentration:** percentage of girls and boys expecting to work in top ten jobs for their gender





# Can career guidance help? An historic problem.

The research literature over the last 20 years on the impact of careers education on student outcomes is largely considered weak and fragmented, due mainly to the complexity of differing elements being identified and reported in differing ways.

Overall, **there are significant shortages in quasi-experimental and experimental studies in the career development field.**

Hughes et al. (2016). *Career Education: international literature review*. UK: Education Endowment Foundation



While experimental analyses of guidance activities were missing, important related experimental studies did exist in relation to:

- Programmes of work-related learning (career pathways)
- Part-time working
- Career thinking (certainty, ambition, alignment)



## New longitudinal analysis: Career Readiness Indicators

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- First-of-its-kind analysis of national longitudinal datasets in 10 countries: Australia, Canada, China, Denmark, Germany, Korea, Switzerland, UK, US, Uruguay.
- Typically exploring relationships between career related activities, experiences and attitudes at age 15 and employment outcomes at age 25 (lower NEET rates, higher wages, greater job satisfaction)
- Controls including academic achievement, gender, SES, migrant status/ethnicity, geographic location, study route
- New findings integrated into existing literature



## Limitations

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- Data is necessarily old
- information on each indicator was only available in some of the longitudinal studies
- the study only focuses on those elements that were most comparable
- many datasets were analysed by different experts using different methodological approaches
- often little is known about the character of the delivery
- to integrate new findings, used a P value of 10% with indicators confirmed where majority of studies (in 3+ countries) are positive



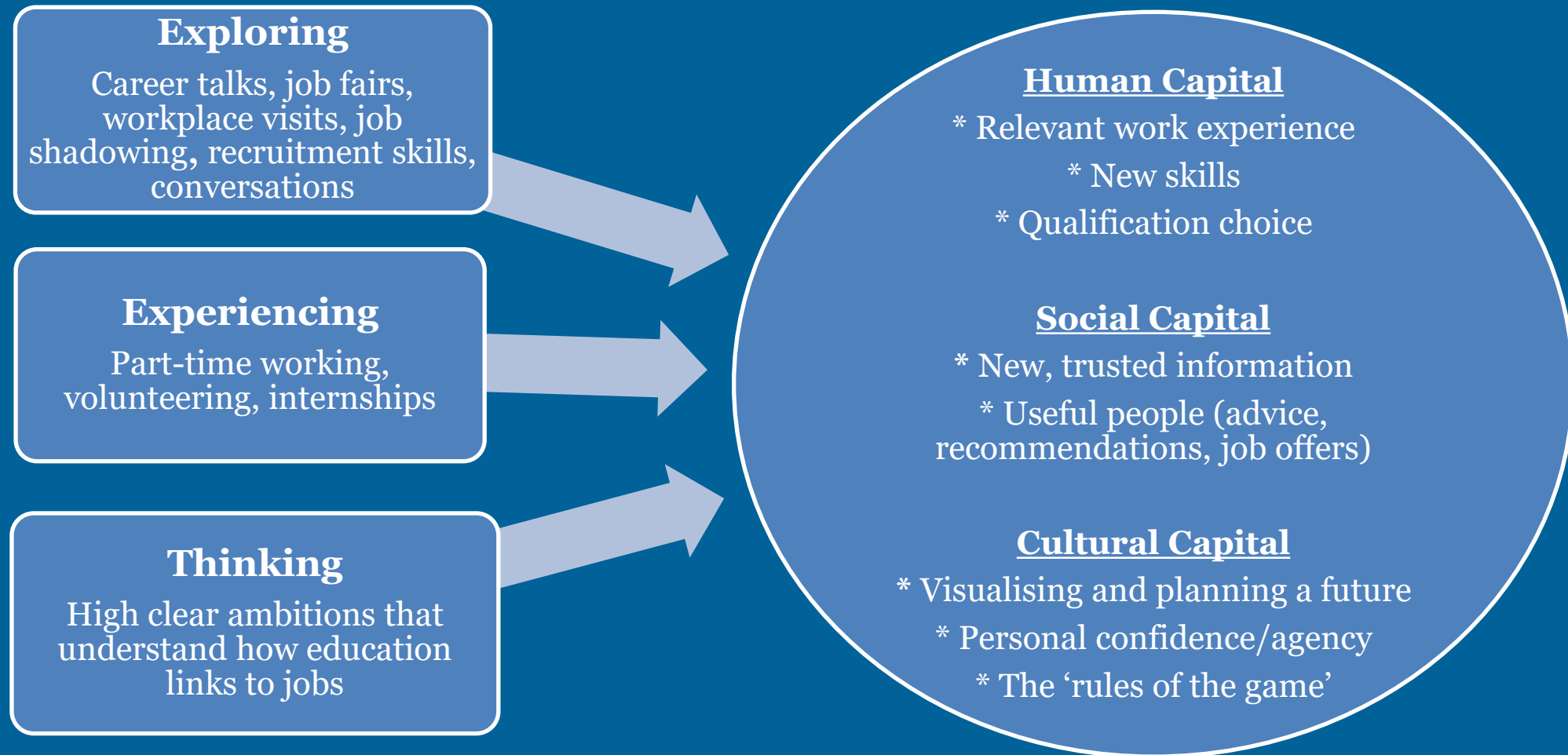
# What we found?

**Better employment outcomes around age 25 are associated with the following teenage activities, experiences and attitudes around the age of 15:**

<i>Exploring the future</i>	<i>Experiencing the future</i>	<i>Thinking about the future</i>
Engaging with people in work through career talks or job fairs	Part-time working	Career certainty
Workplace visits or job shadowing	Volunteering	Career ambition
Application and interview skills development activities		Career alignment
Occupationally-focused short programmes (Career pathways)		Instrumental motivation towards school
Career conversations – inc. with teachers		
...and probably	...and probably	...and probably
School-based career reflection activities, including career questionnaires & career classes	Work placements	Career originality



# Conceptualising career development





# Making careers in computing thinkable to girls because teenage occupational expectations have a predictive quality

Create a culture of continual investigation and reflection, enabling confident exploration through authentic engagements with the working world – by making easy and commonplace for schools to engage with employers

## **Primary futures (UK)**

Introducing primary school students to working people (esp. those under represented in their professions), challenging stereotyping.

## **Collegio Legamar (Spain)**

Providing opportunities for students to hear in detail about professions (from alumni working in fields where their gender is under represented) through career talks.

## **Girls' Day (Germany)**

Allowing students to job shadow for a day in a profession where their gender is under represented.



# OECD Career Readiness

A continuing Career Readiness project is

- Drilling into specific practice areas  
(eg, job shadowing, career pathways)
- Identifying international practice linked to the predictors
- Sharing the use of digital technologies in guidance for youth
- Investigating how guidance can enhance access to ‘green jobs’ and address inequalities, and
- Undertaking national reviews of career guidance

**Visit the project website:**

<https://www.oecd.org/education/career-readiness/>

**Sign up to our free monthly newsletter:** [career.readiness@oecd.org](mailto:career.readiness@oecd.org)

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