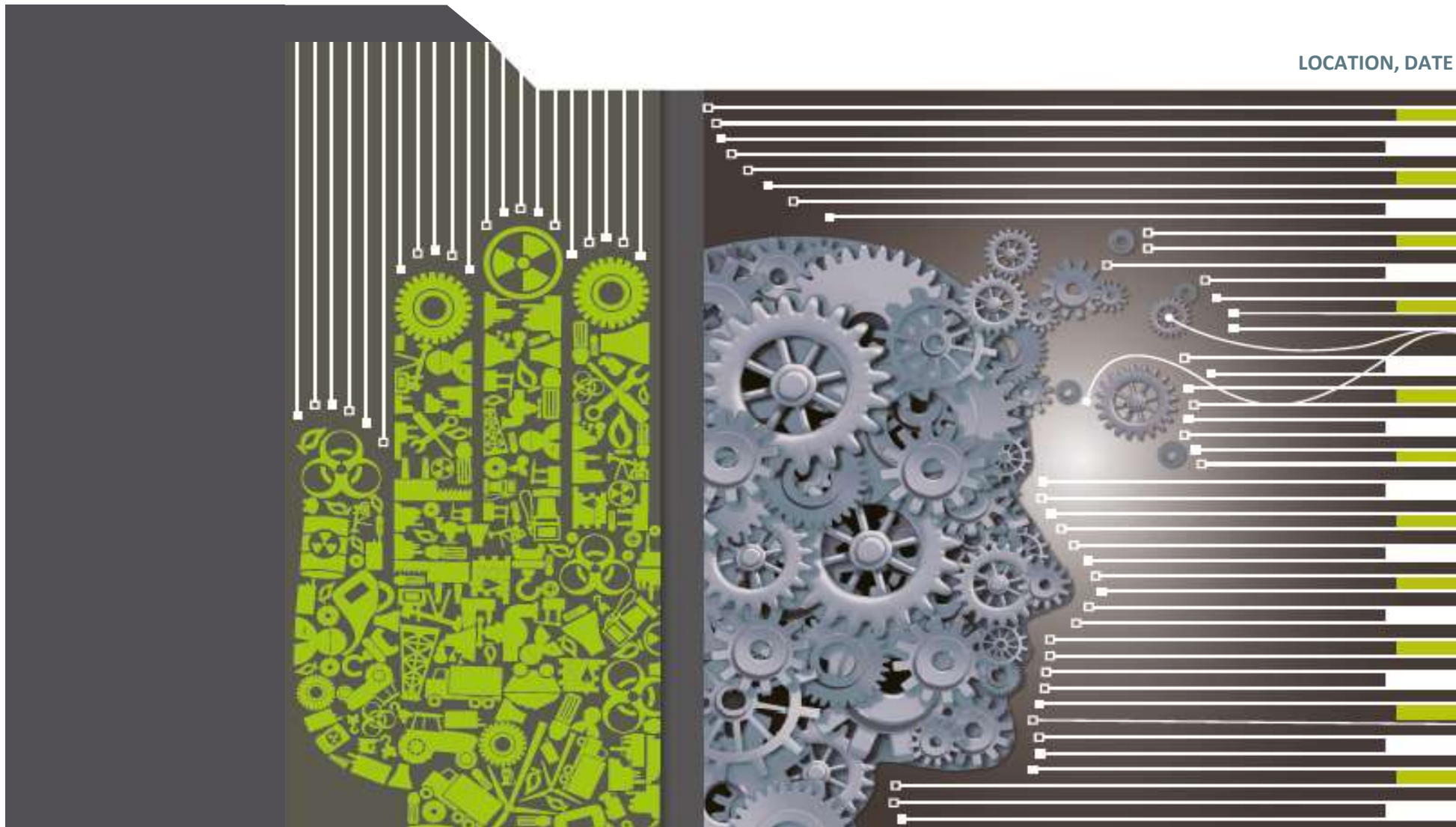




# Skills matter

## ADDITIONAL RESULTS FROM THE SURVEY OF ADULT SKILLS



# Survey of Adult Skills in brief



245 thousand adults...

Representing 1.15 billion 16-65 year-olds in 39 countries/economies

Took an internationally agreed assessment...



in literacy, numeracy and problem solving in technology-rich environments.



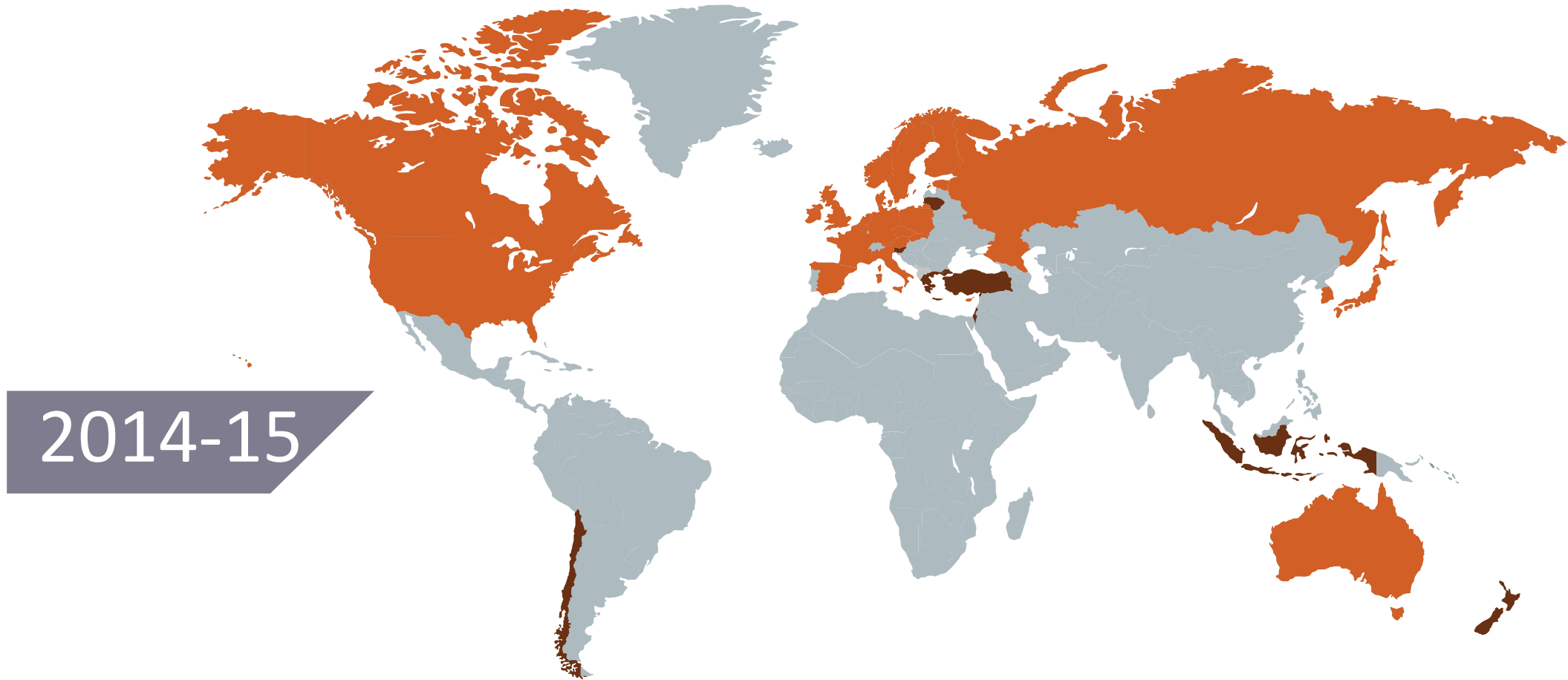
The assessment was administered either in computer-based or paper-based versions.





# Survey of Adult Skills

## Participating countries

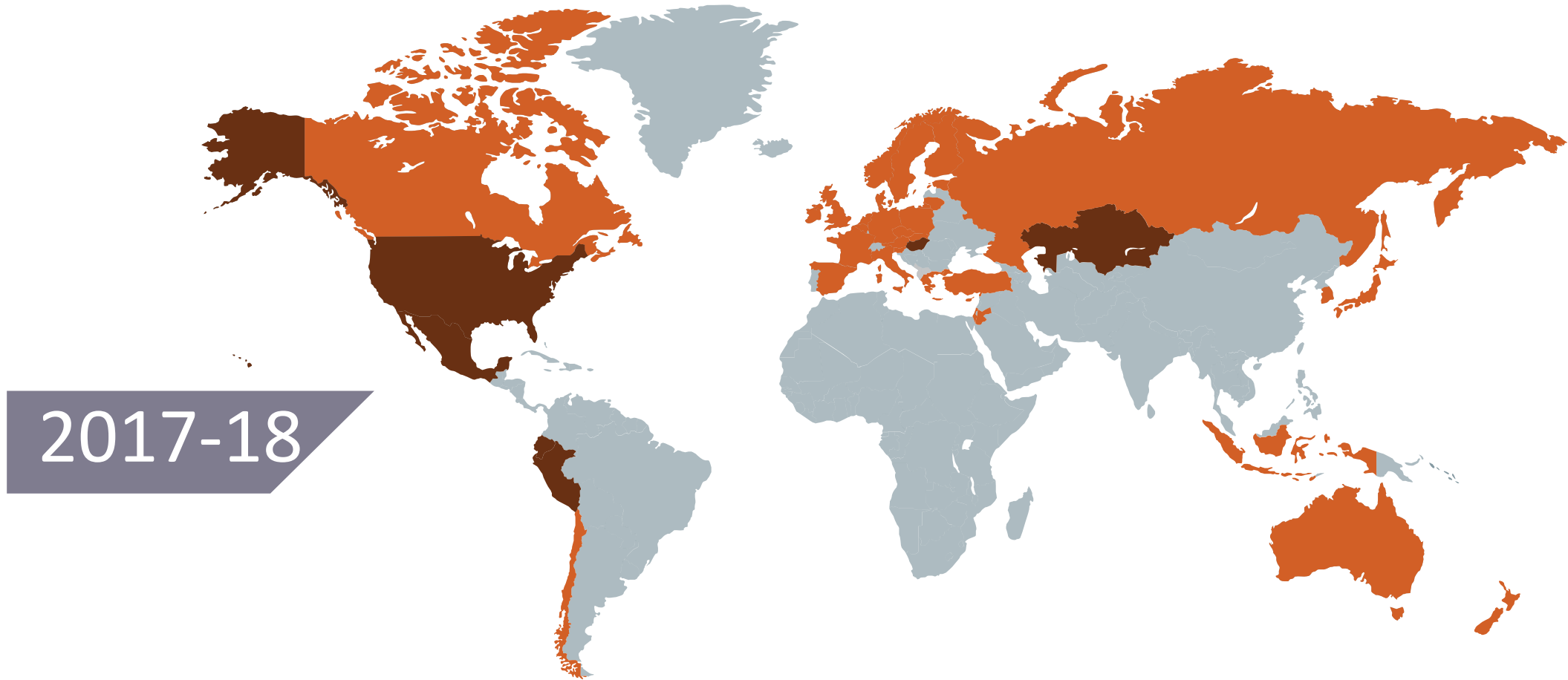


2014-15

(\*\*see notes A and B in the Reader's Guide).

# Survey of Adult Skills

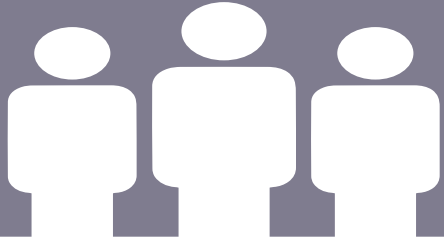
## Participating countries



2017-18

(\*\*see notes A and B in the Reader's Guide).

# Survey of Adult Skills in brief



Sample sizes ranged from..  
a minimum of approximately 4 500 to a  
maximum of nearly 27 300.

The survey collected background  
information of adults for about 40 minutes.



Respondents with very low literacy  
skills were directed to a test of  
basic “reading component” skills.



The survey also collects a range of generic skills  
such as collaborating with others and organising  
one’s time, required of individuals in their work.



# Survey of Adult Skills Skills assessed

## “Key information-processing skills”

### Literacy

#### The ability to...

**Understand, evaluate, use and engage with written texts.**

#### In order to..

Achieve one’s goals, and to develop one’s knowledge and potential.

Literacy encompasses a range of skills from..

The decoding of written words and sentences

The comprehension, interpretation and evaluation of complex texts.

### Numeracy

#### The ability to...

**Access, use, interpret and communicate mathematical information and ideas**

#### In order to..

Engage in and manage the mathematical demands of a range of situations in adults.

Numeracy involves

Managing a situation or solving a problem in a real context, by responding to mathematical content/information/ideas represented in multiple ways.

### Problem Solving In Technology-rich Environments

#### The ability to...

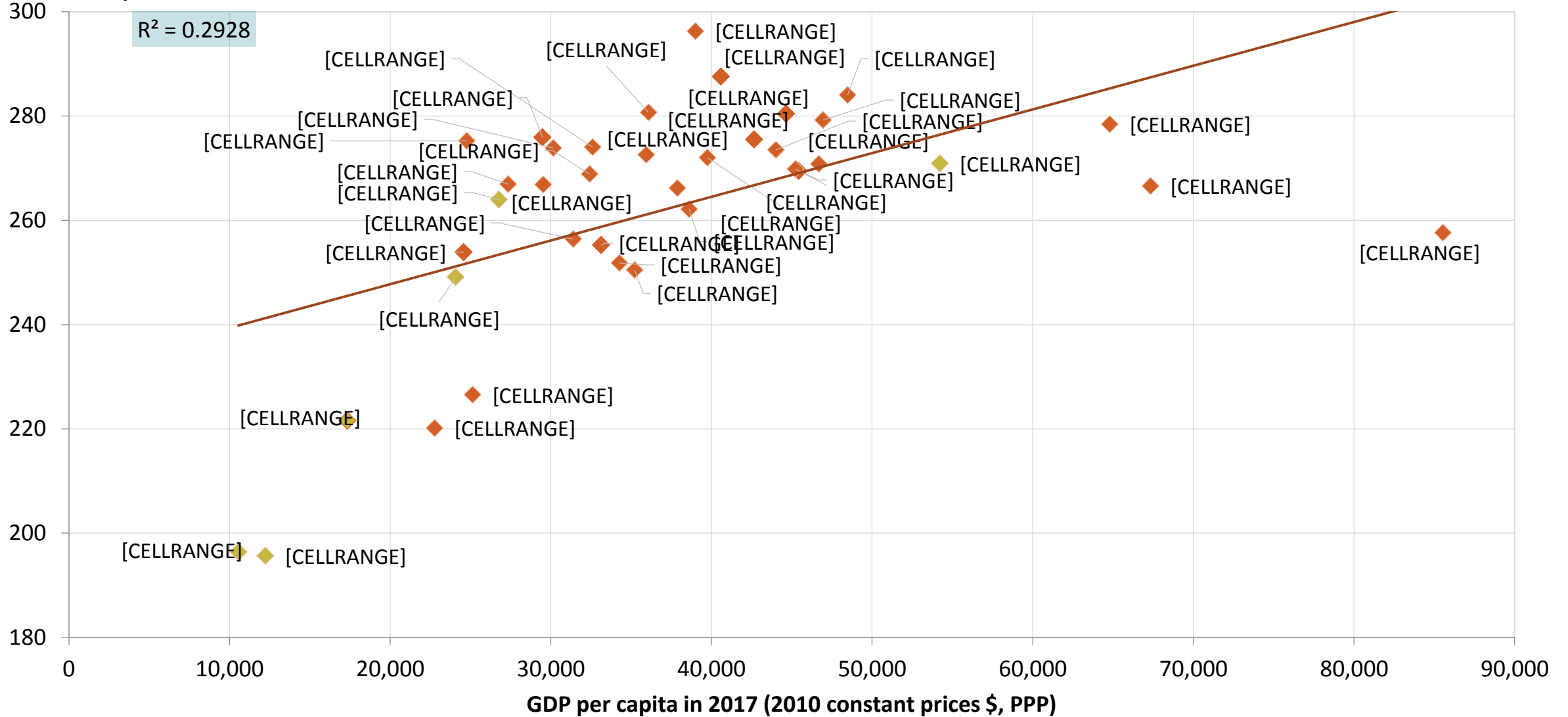
**Use digital technology communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks.**

#### The assessment focuses on the abilities to...

Solve problems for personal, work and civic purposes by setting up appropriate goals and plans, and accessing and making use of information through computers and computer networks.

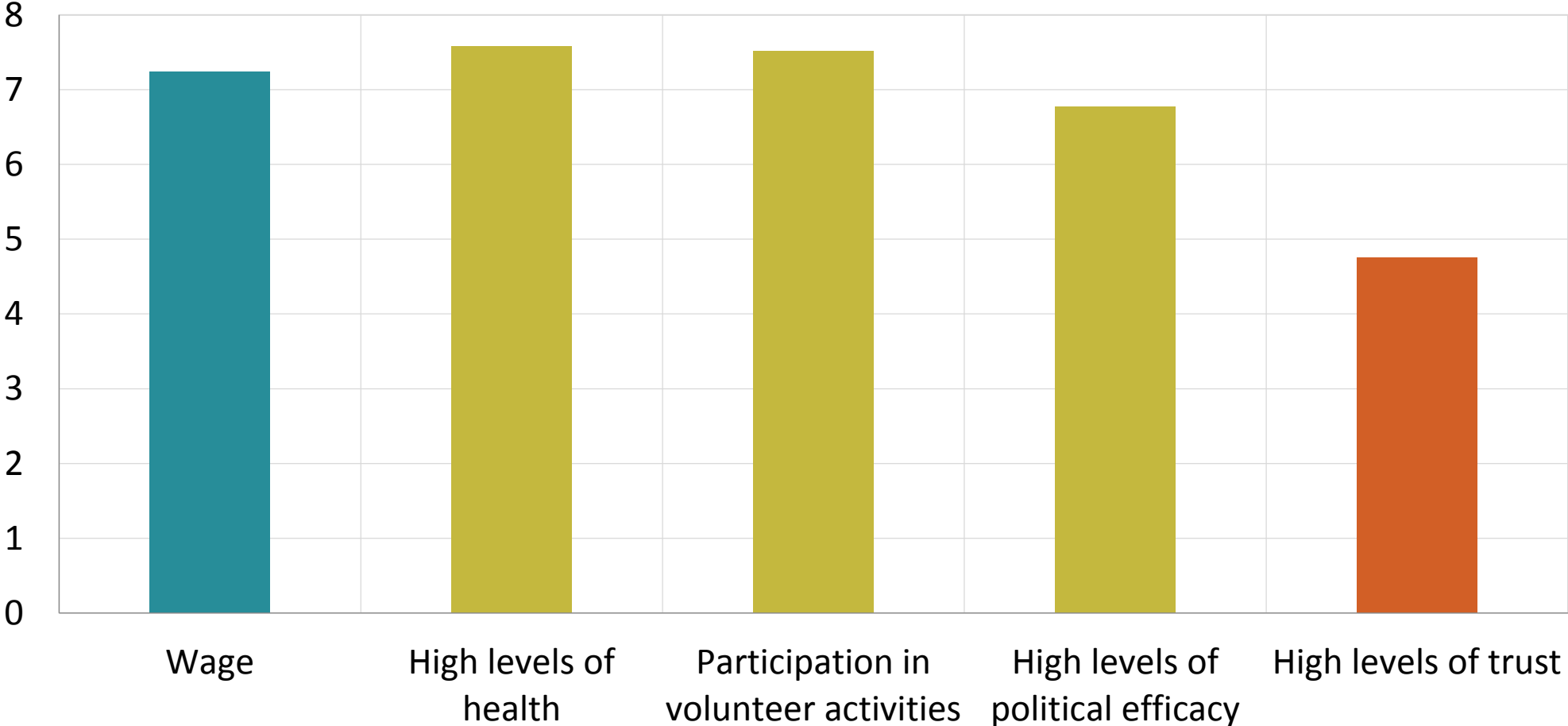
# Literacy proficiency and GDP per capita

PIAAC literacy score



# Numeracy and positive outcomes

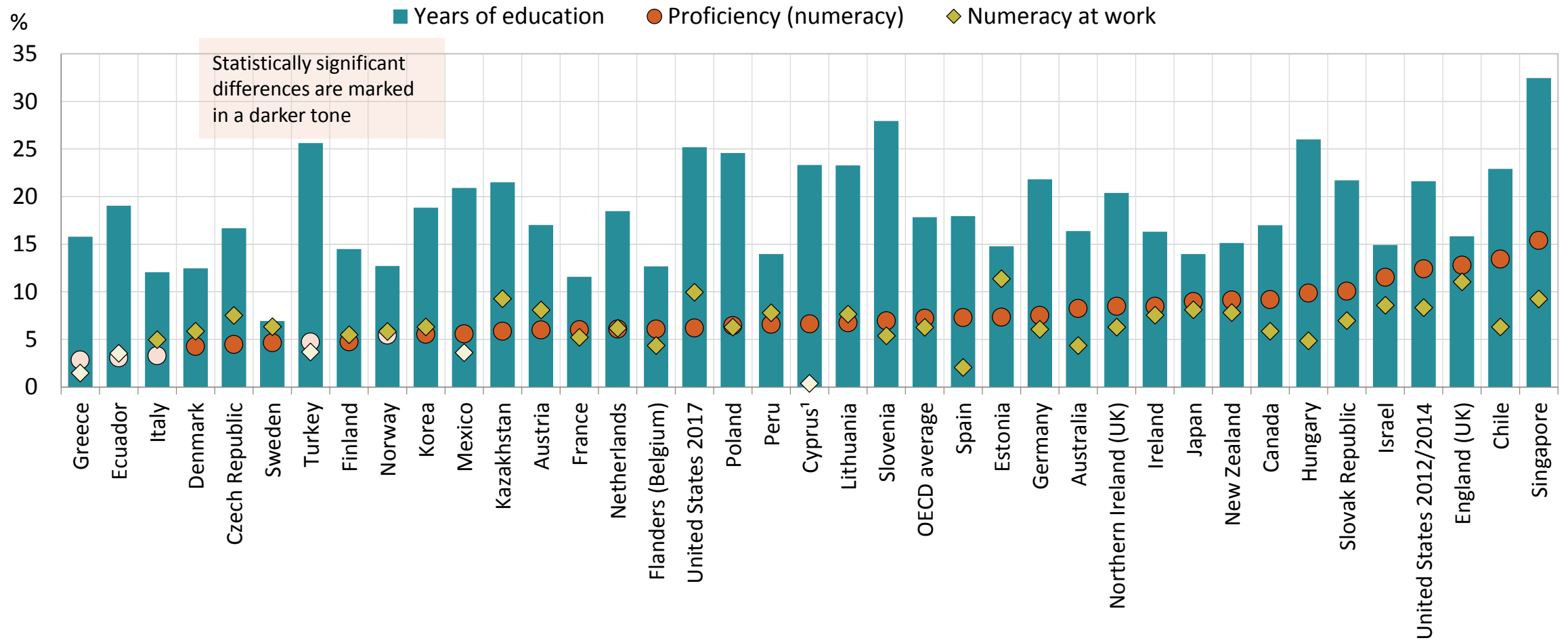
Percentage-point change associated with a change of one standard deviation in proficiency in numeracy (OECD average)



# Effect of education, numeracy

## proficiency and numeracy **use** at work on wages

Percentage change in wages associated with a one standard deviation increase in years of education, proficiency in numeracy and numeracy use at work



**What can adults do?**

# Description of proficiency levels:

## Literacy

### Adults at Level 1 can

- Read relatively short digital or print continuous, non-continuous, or mixed texts to locate a single piece of information.
- Complete simple forms, understand basic vocabulary, determine the meaning of sentences, and read continuous texts with a degree of fluency.

### Adults at Level 2 can

- Integrate two or more pieces of information based on criteria
- Compare and contrast or reason about information and make low-level inferences.
- Read relatively short digital or print continuous, non-continuous, or mixed texts to locate a single piece of information.

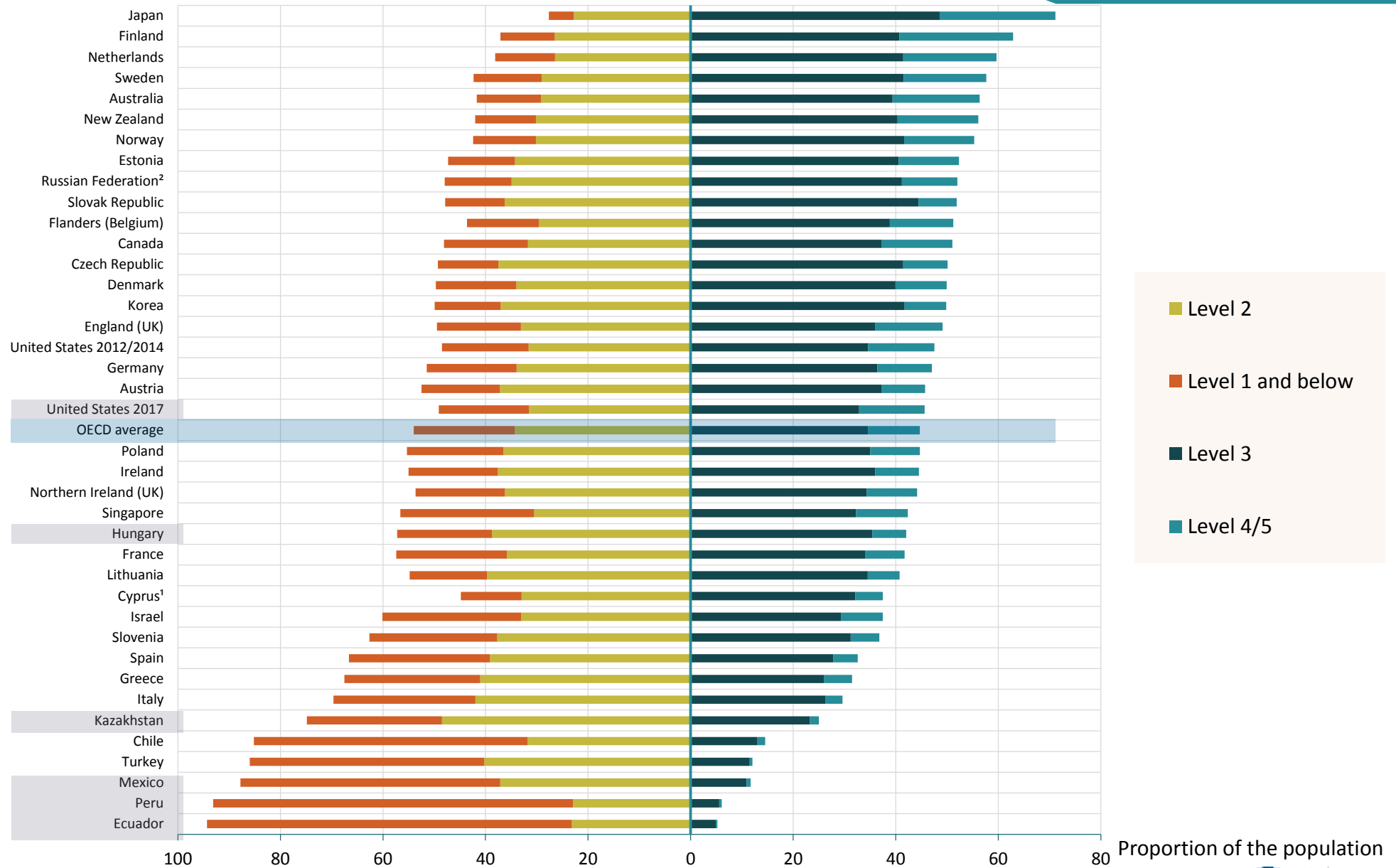
### Adults at Level 3 can

- Understand and respond appropriately to dense or lengthy texts.
- Understand text structures and rhetorical devices.
  - Identify, interpret, or evaluate one or more pieces of information and make appropriate inferences.

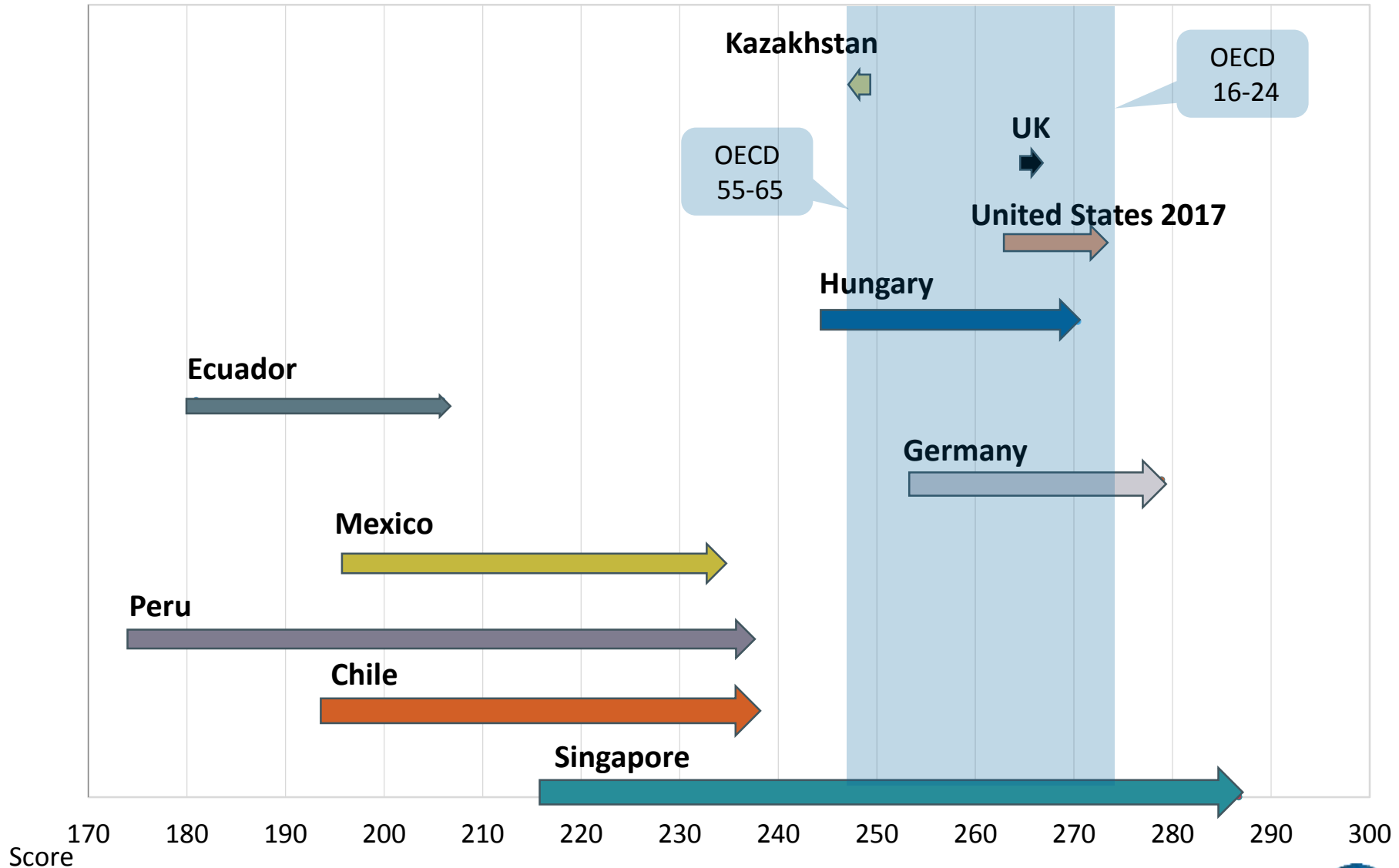
### Adults at Level 4/5 can

- Make complex inferences and appropriately apply background knowledge as well as interpret or evaluate subtle truth claims or arguments.
- Perform multiple-step operations to integrate, interpret, or synthesise information from complex or lengthy texts that involve conditional and/or competing information.

# Literacy proficiency levels

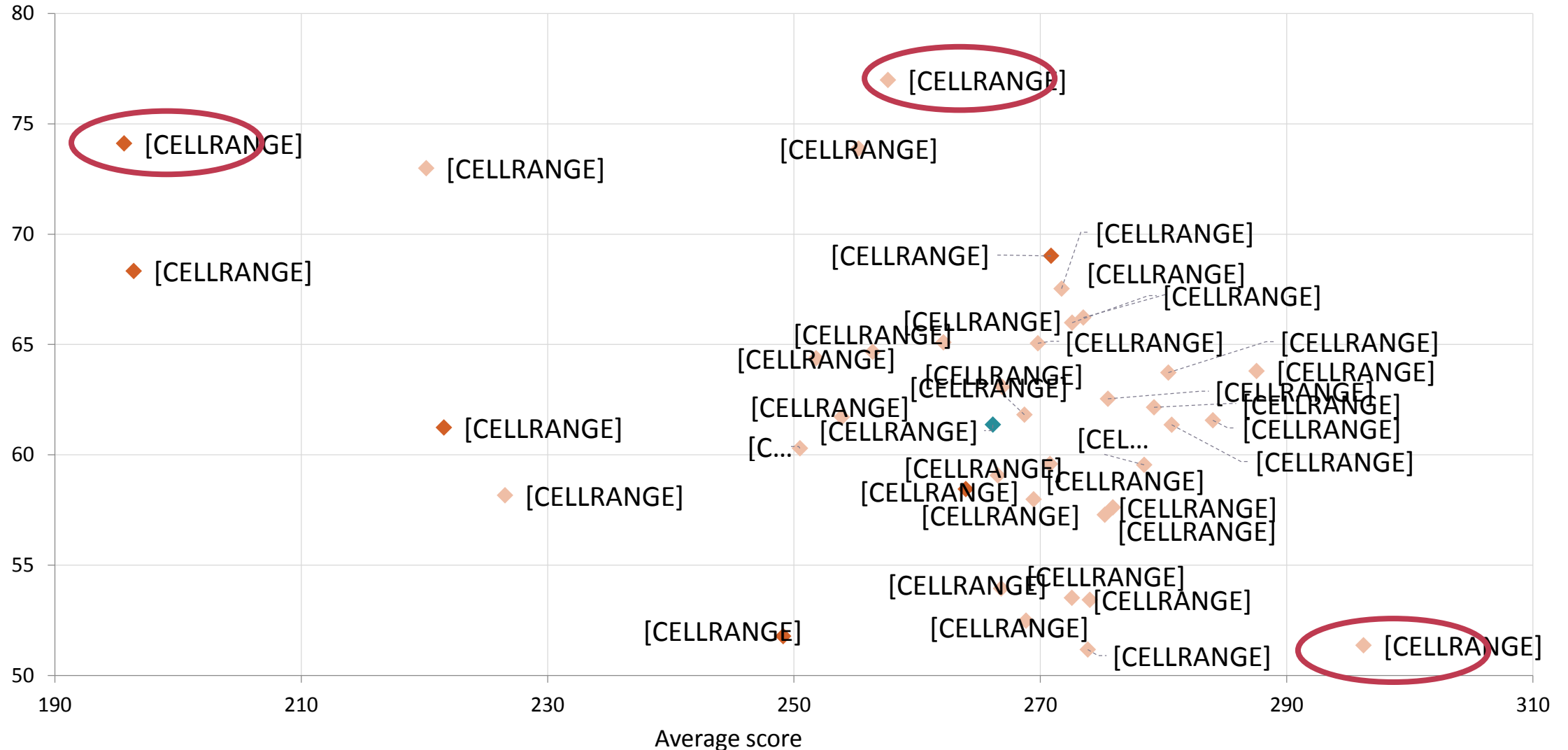


# Literacy skills in younger and older generations 55-65 to 16-24 years old



# Literacy proficiency: country average and variation

Interquartile range



# Description of proficiency levels:

## Numeracy

### Adults at Level 1 can

- Complete tasks involving basic mathematical processes in common, concrete contexts where the mathematical content is explicit with little text and minimal distractors.
- Perform simple processes involving counting, sorting, basic arithmetic operations, understanding simple percent, and locating elements of simple or common graphical or spatial representations.

### Adults at Level 2 can

- Perform tasks that require identifying and acting upon mathematical information and ideas embedded in a range of common contexts where the mathematical content is fairly explicit or visual with relatively few distractors.
- Interpret relatively simple data and statistics in texts, tables and graphs.

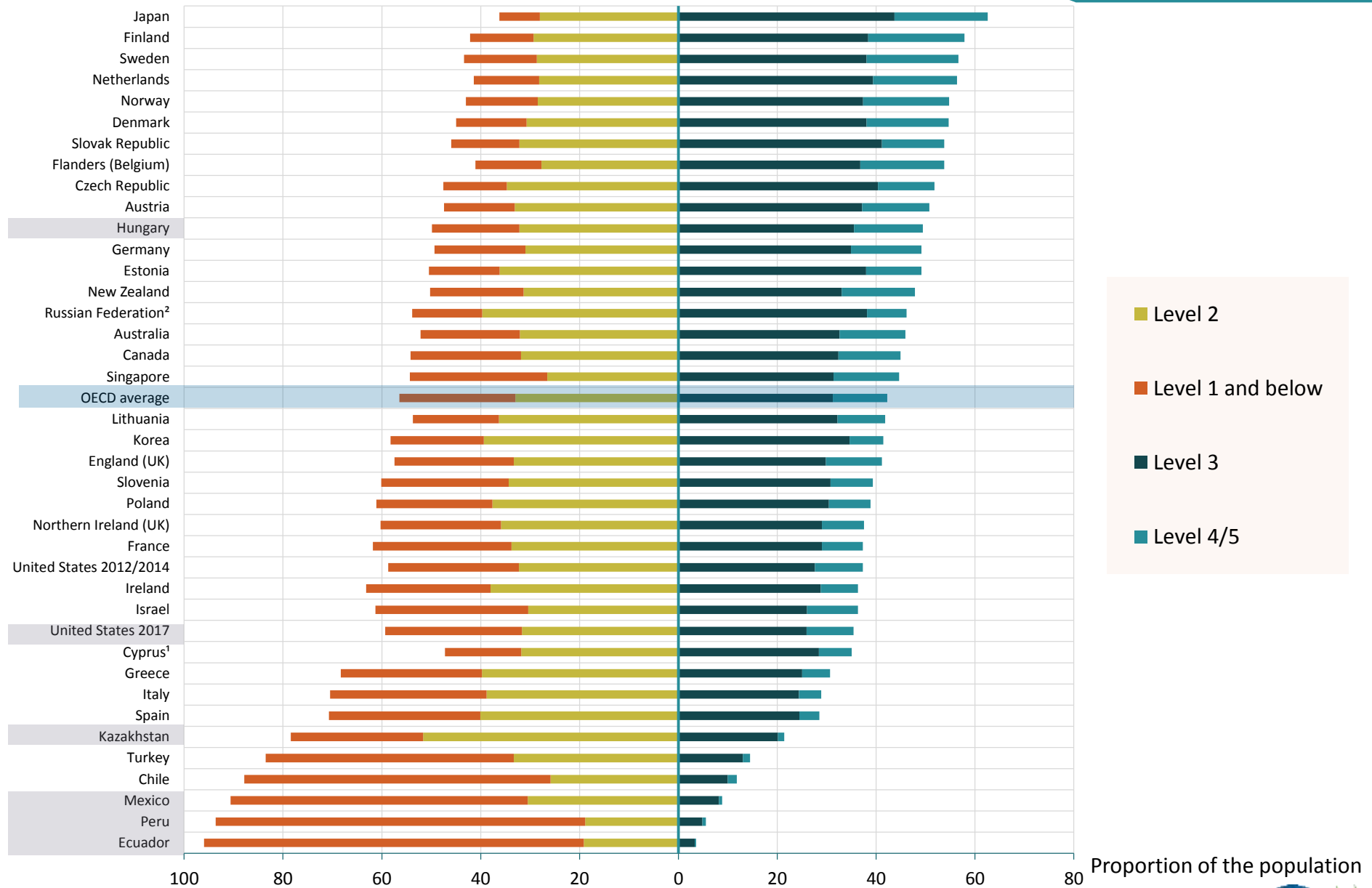
### Adults at Level 3 can

- Complete tasks that require an understanding of mathematical information that may be less explicit, embedded in contexts that are not always familiar, and represented in more complex ways.
- Perform tasks requiring several steps and that may involve a choice of problem-solving strategies and relevant processes.

### Adults at Level 4/5 can

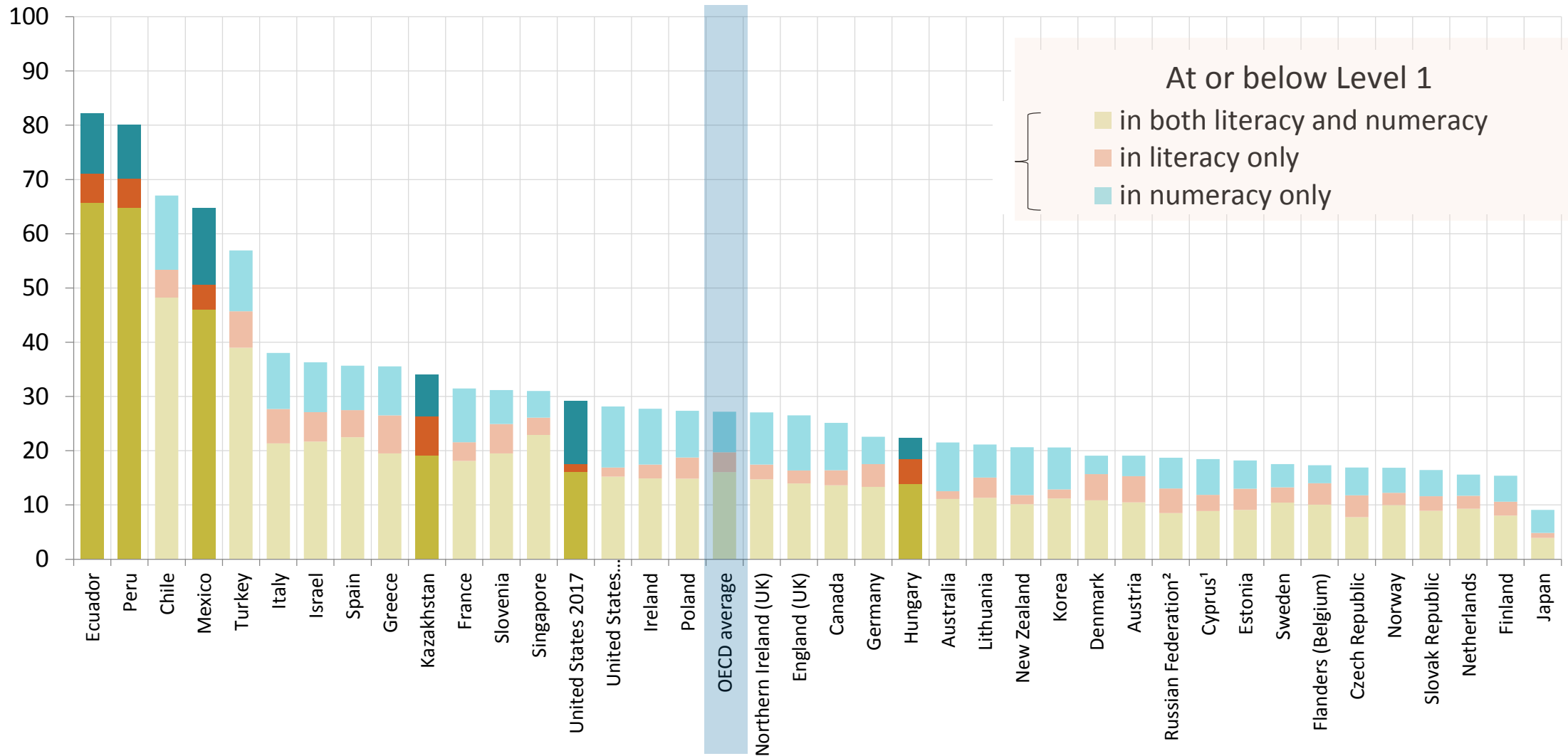
- Understand a broad range of mathematical information that may be complex, abstract or embedded in unfamiliar contexts.
- Understand arguments and communicate well-reasoned explanations for answers or choices.

# Numeracy proficiency levels



# Low performers in literacy and/or numeracy

Proportion of the population



# Description of proficiency levels: Problem Solving in Technology-rich environment

## Adults who did not pass the test

- Adults who either failed ICT core test or had no prior computer experience took the paper-based version of the assessment.
- Adults who “opted out” of taking computer-based assessment opted to take the paper-based assessment without first taking the ICT core assessment, even if they reported some prior experience with computers.

## Adults at Level 1 can

- Complete tasks in which the goal is explicitly stated and for which the necessary operations are performed in a single and familiar environment.
- Solve problems in the context of technology-rich environments whose solutions involve a relatively small number of steps, and a limited amount of monitoring across a large number of actions

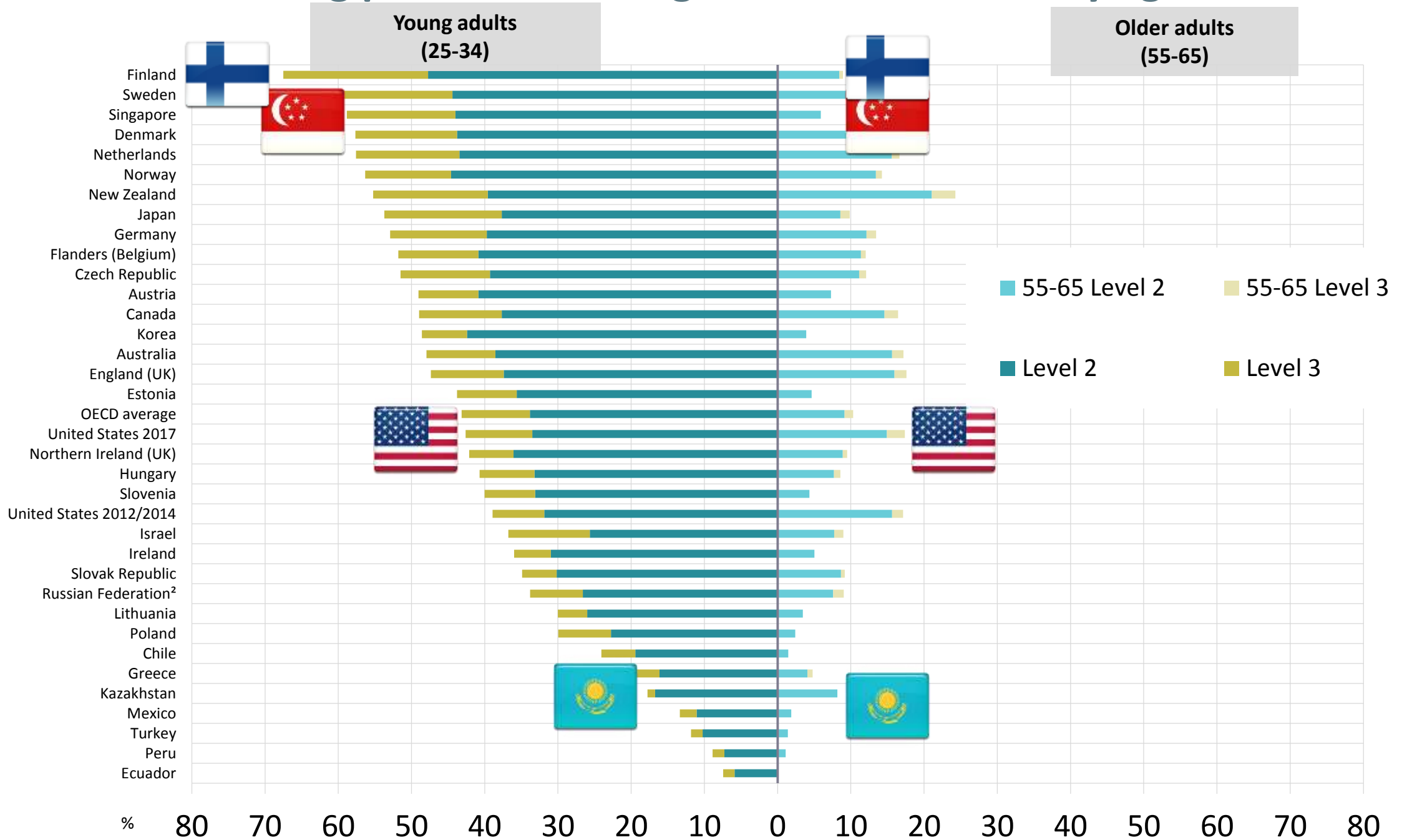
## Adults at Level 2 can

- Complete problems that have explicit criteria for success, a small number of applications, and several steps and operators.
- Can monitor progress towards a solution and handle unexpected outcomes or impasses.

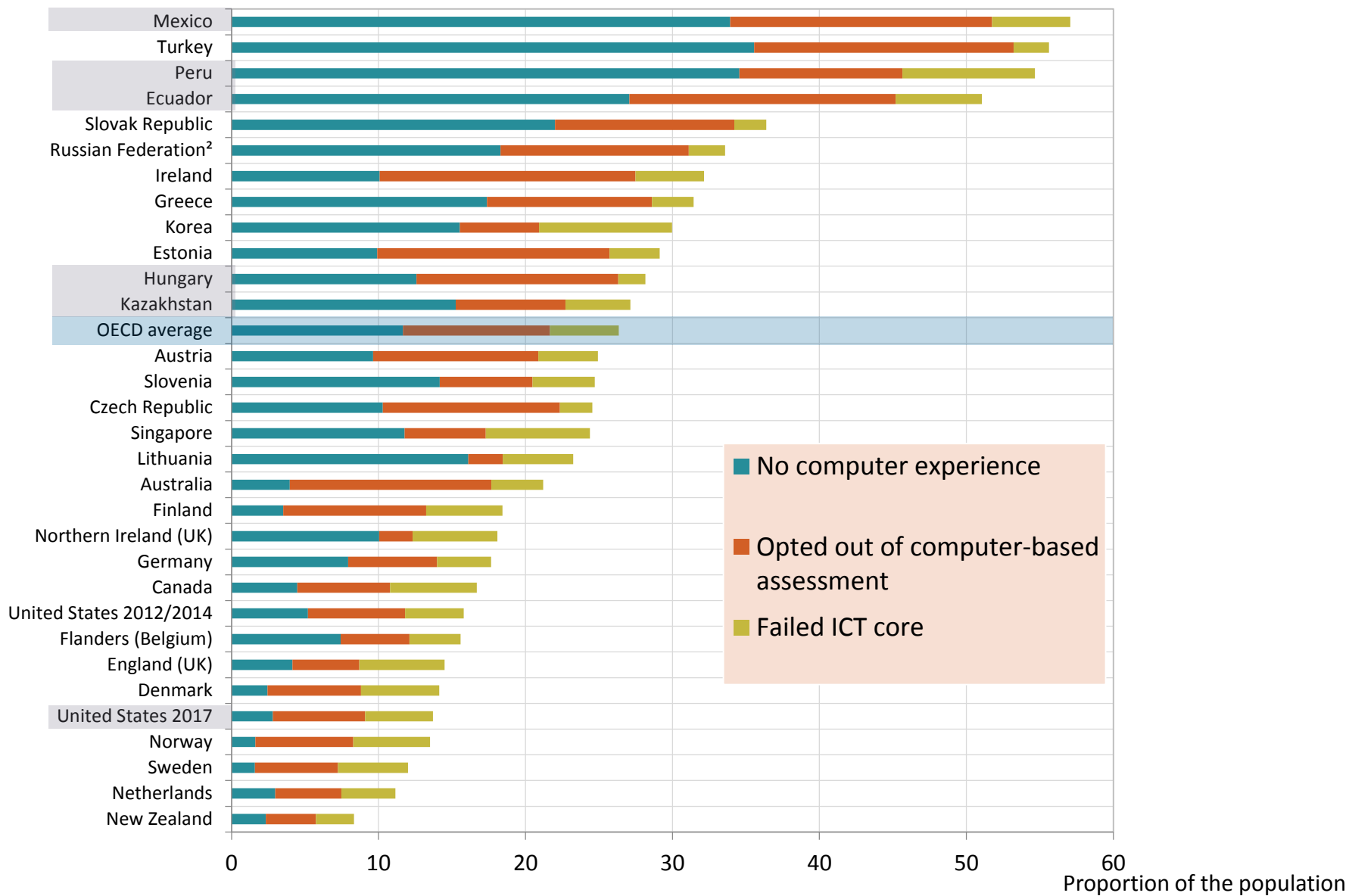
## Adults at Level 3 can

- Complete tasks involving multiple applications, a large number of steps, impasses, and the discovery and use of ad hoc commands in a novel environment.
- Establish a plan to arrive at a solution and monitor its implementation as they deal with unexpected outcomes and impasses.

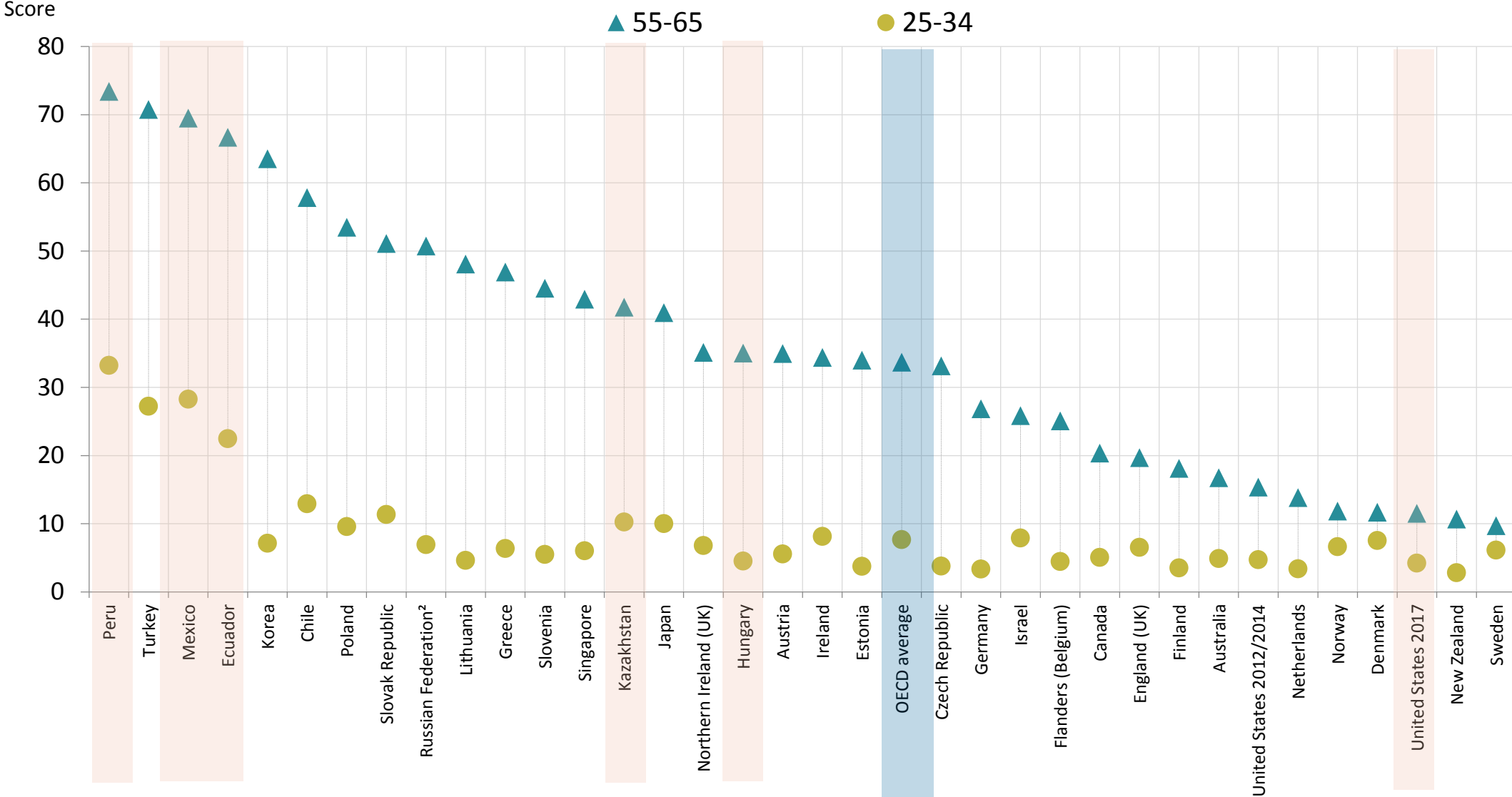
# Proficient in solving problems in a digital environment – by age



# Problem solving assessment: Not tried or failed



# Proficiency in PSTRE by age: Failed ICT core or no computer experience



# PROFICIENCY IN INFORMATION PROCESSING SKILLS AND SOCIO-DEMOGRAPHIC CHARACTERISTICS

**Information processing skills are closely related to socio-demographic characteristics such as:**

- educational attainment
- age
- parental education
- Immigrant background
- and gender

# Literacy and socio-demographic characteristics: a summary – OECD average

## Differences in literacy score

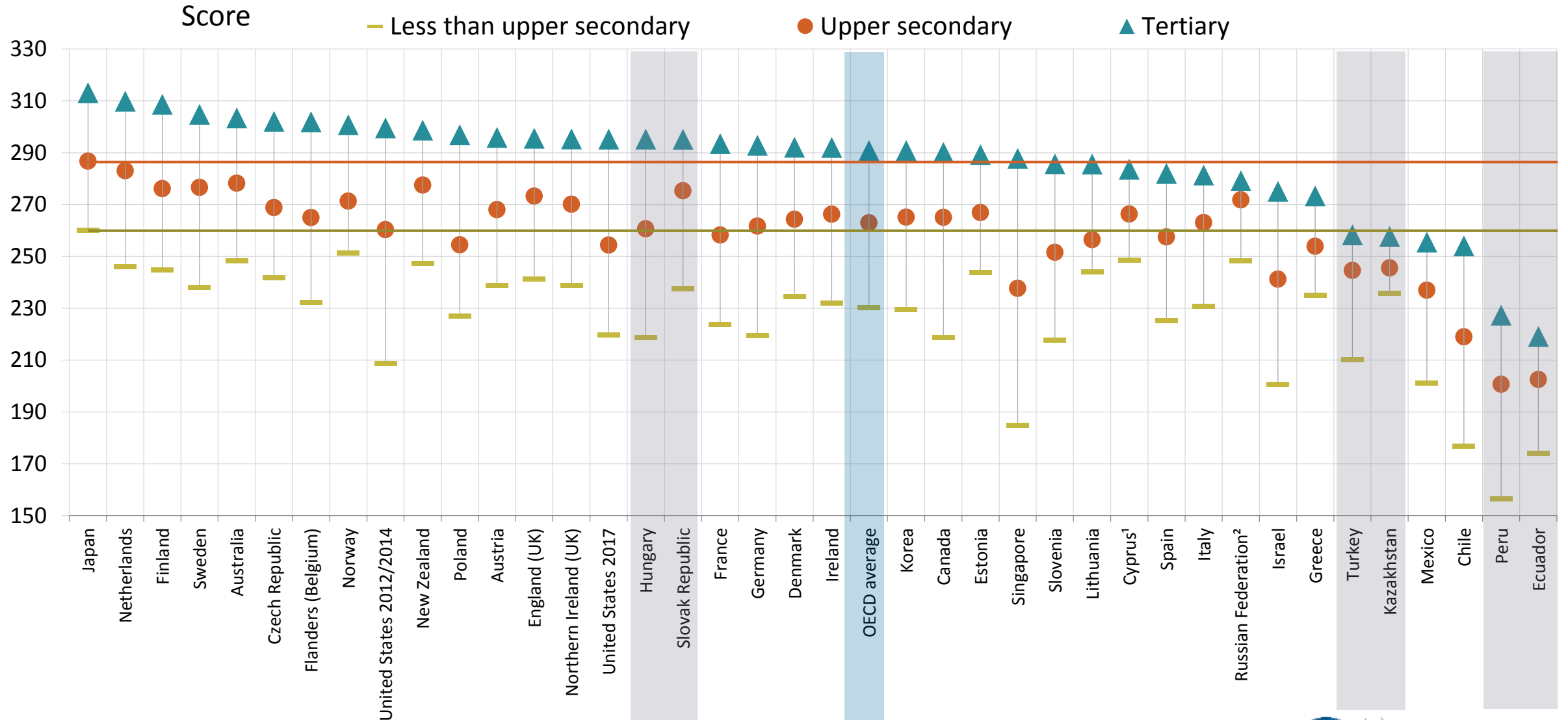


# EDUCATIONAL ATTAINMENT AND PROFICIENCY

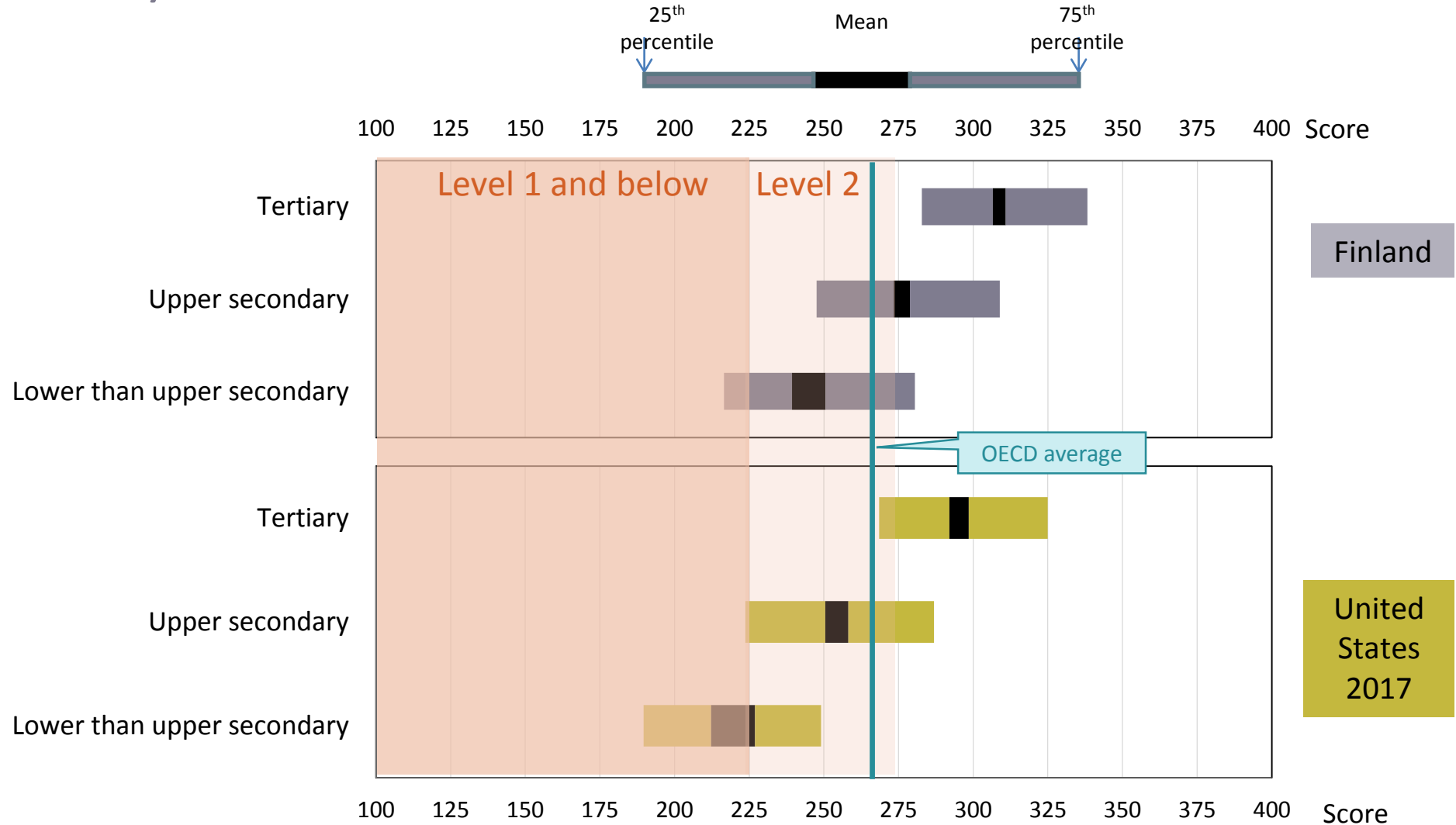
**Literacy proficiency is strongly related to educational attainment.**

- Adults with higher **levels of education tend to have higher proficiency**
- There are considerable **differences between countries** in the average literacy proficiency of adults with educational qualifications at similar levels

# Literacy proficiency by level of educational attainment (25-65 year olds):



# Mean literacy proficiency and distribution of literacy scores, by educational attainment (25-65 year-olds)

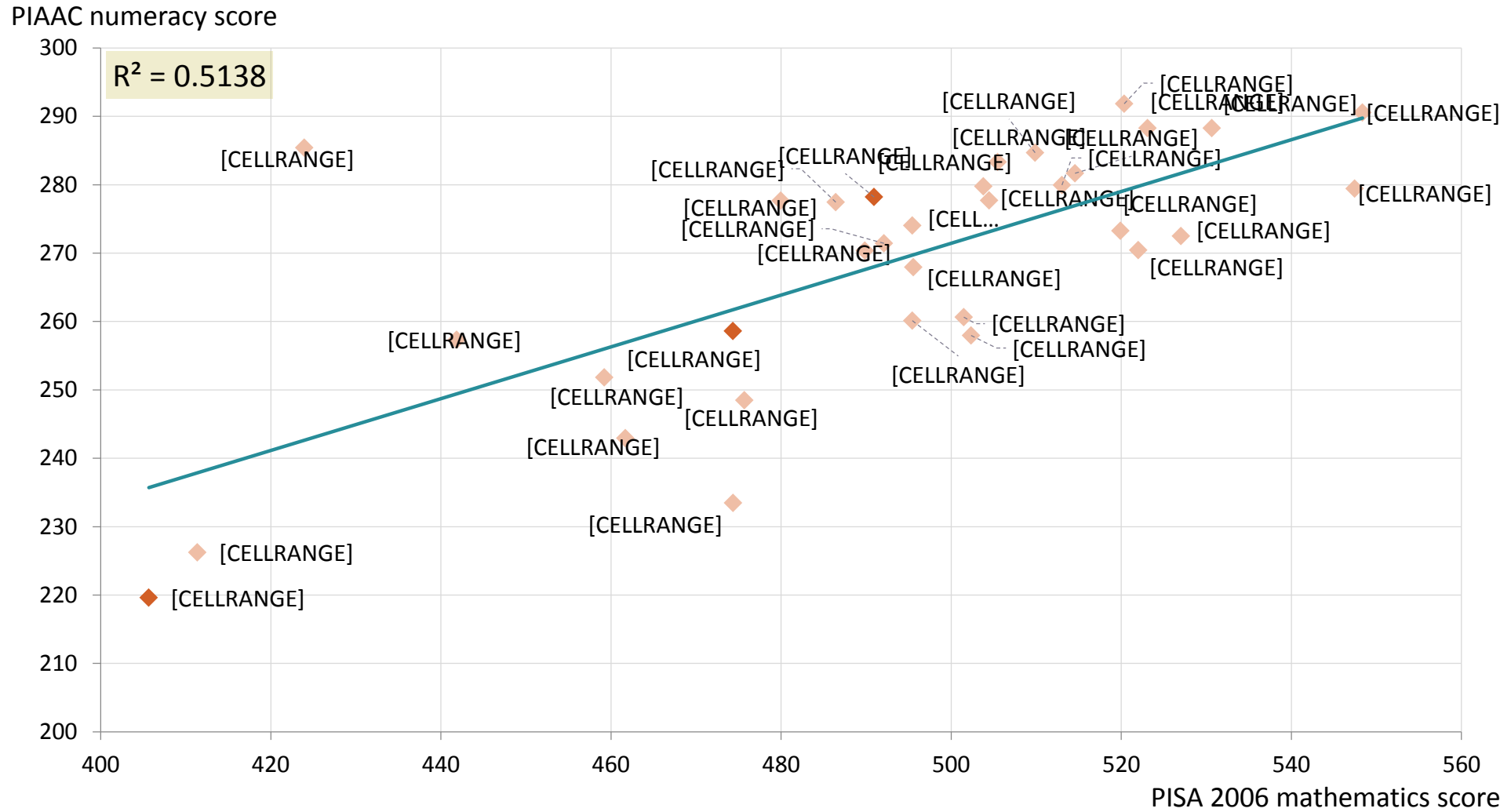


## FROM PISA TO PIAAC

The cohorts participating in PISA in 2000-2009 form part of the PIAAC sample.

- A positive relationship exists between countries' performance in a given round of PISA and the proficiency of the corresponding age cohort in PIAAC some years later.
- This emphasises the importance of good quality schooling in improving the overall skill level of the population in the long-run.

# Mean numeracy proficiency in PISA and in the Survey of Adult Skills: PIAAC (PISA 2006 cohorts) and PISA 2006

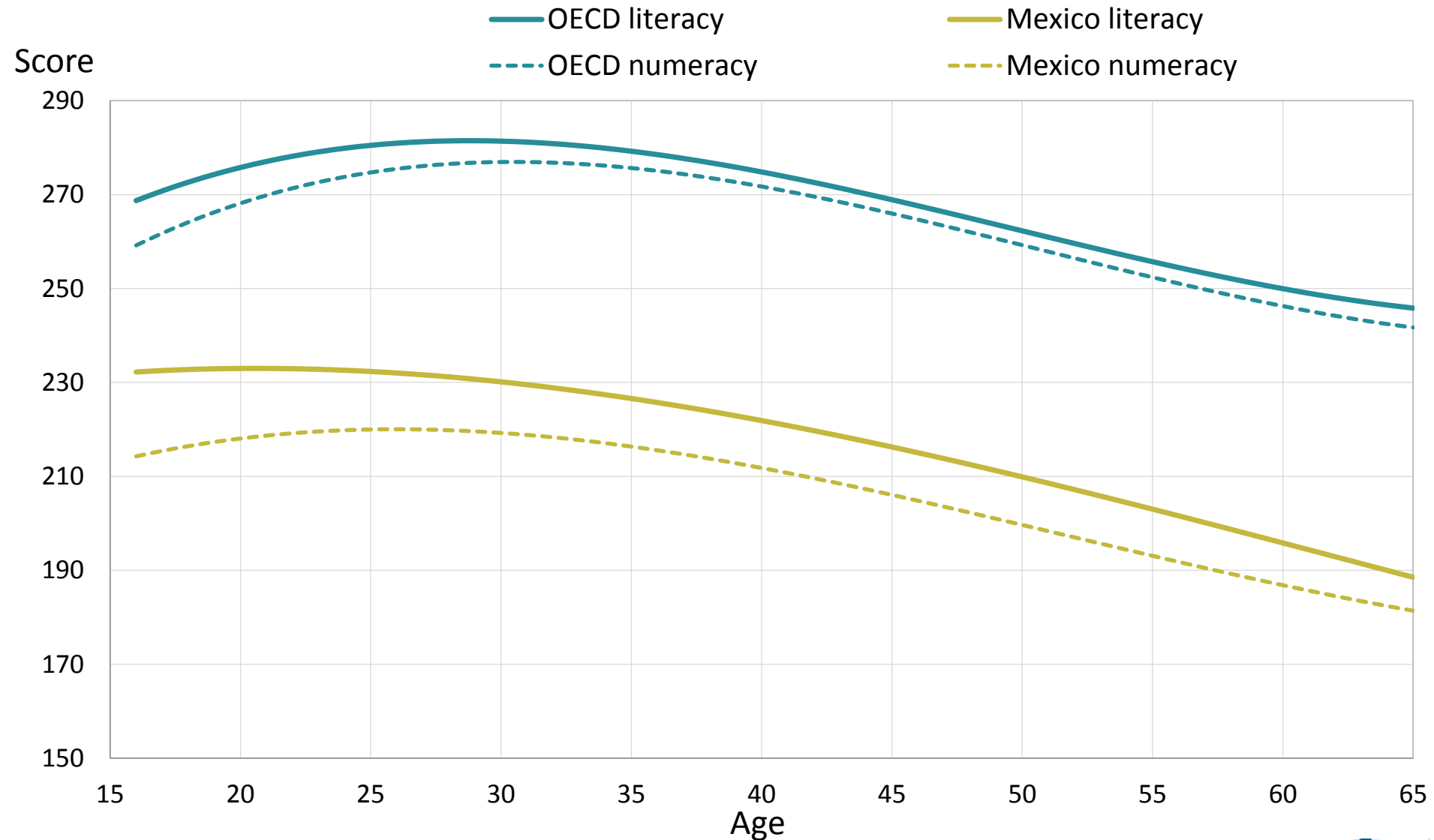


# PROFICIENCY AND AGE

## Proficiency is closely related to age

- On average, proficiency is **highest among adults aged around 30 years** and is lowest among adults aged 60-65.
- Proficiency tends to **increase with age between the ages of 16 and 30-34 years**
- There are considerable variations in the age proficiency profiles between **countries**. These are likely to reflect the different historical patterns of educational expansion over time as well as changes in educational policies and quality between and within countries
- The observed age-proficiency profiles are consistent with evidence regarding loss of cognitive ability with increasing age.

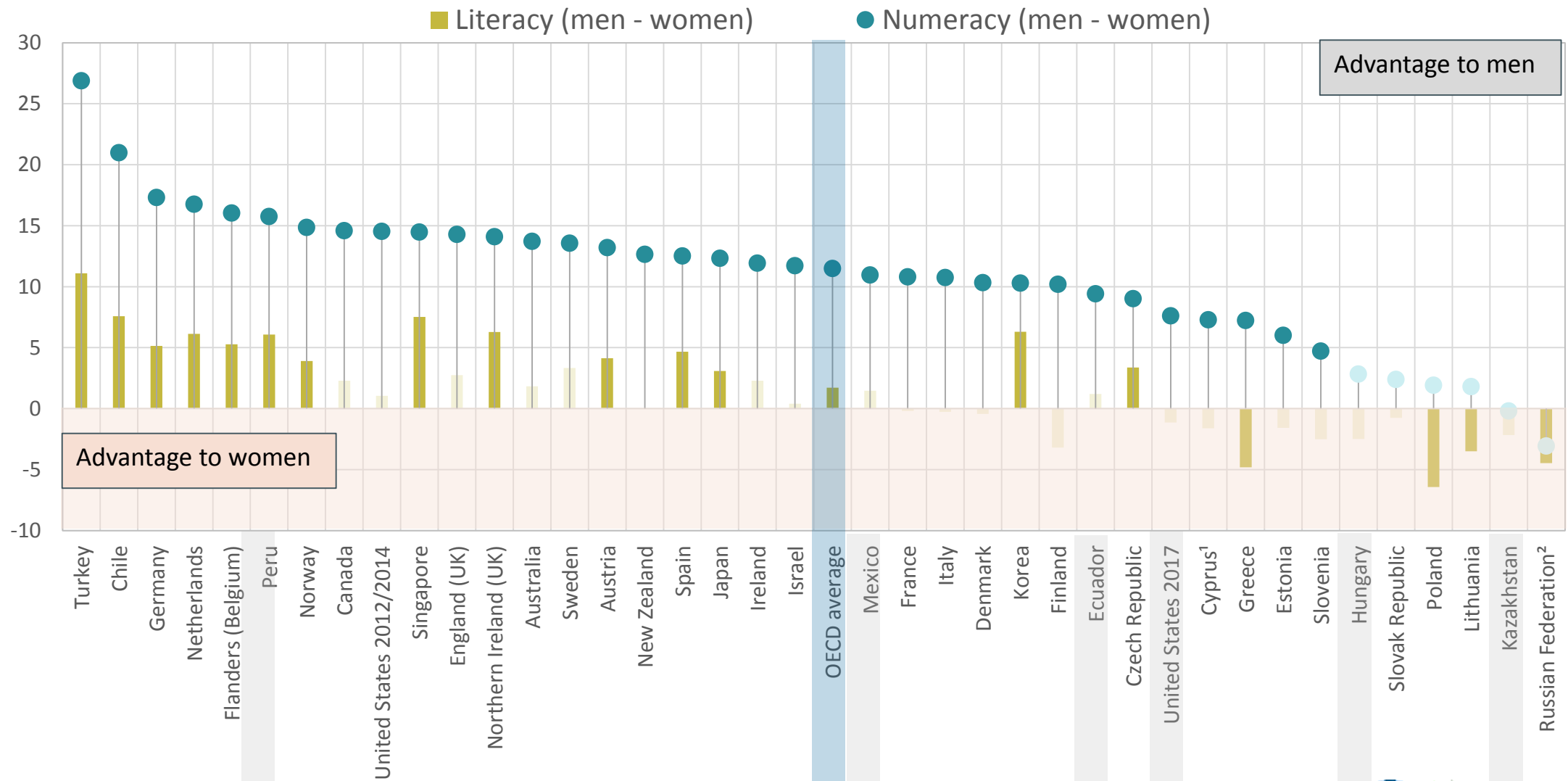
# Skill proficiency and age: Mexico



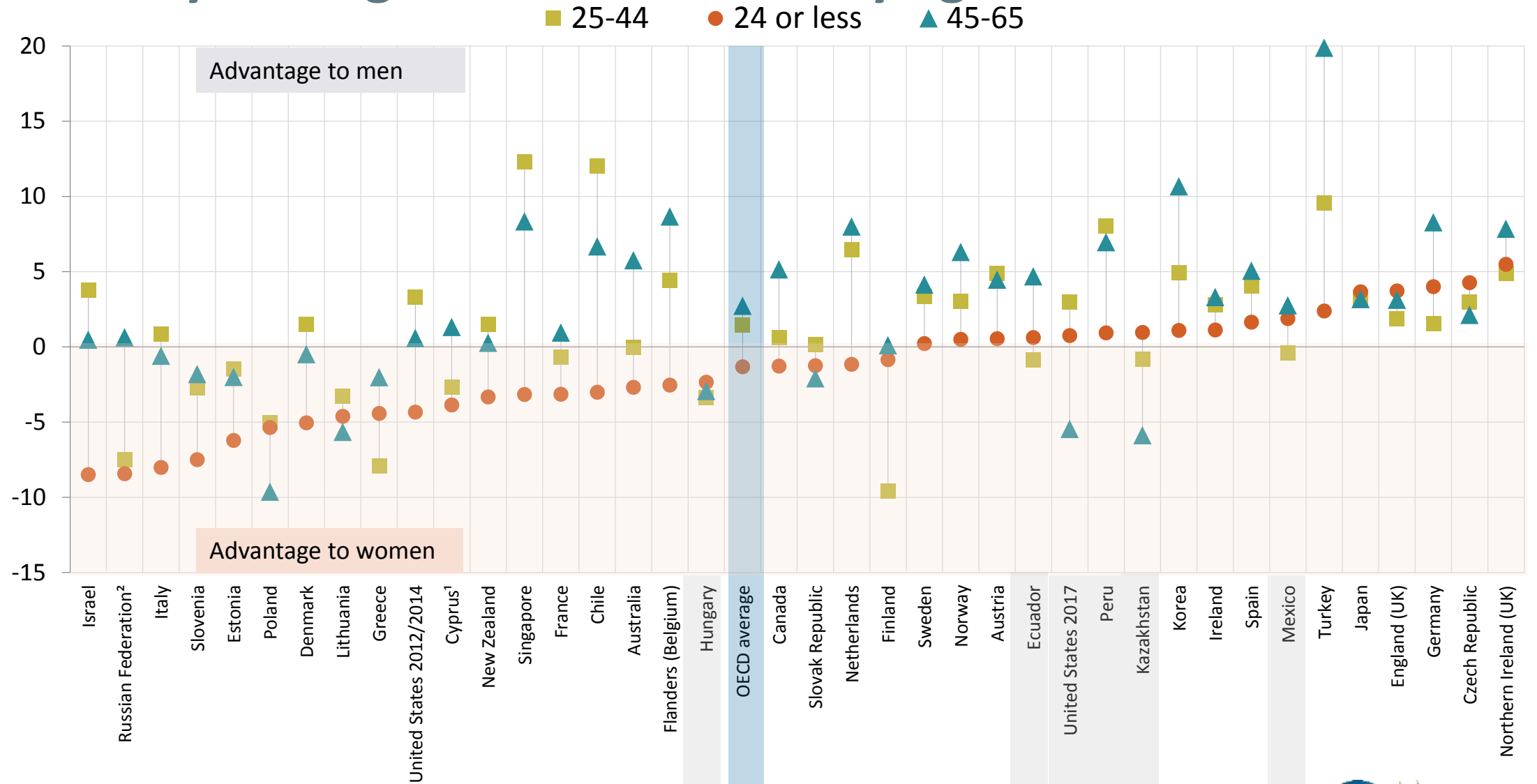
# GENDER AND PROFICIENCY

- In most countries, the **difference** between the **literacy** proficiency of men and women is **negligible** with a slight advantage for men.
- In **numeracy**, the **advantage for men** over women is more marked.
- In **problem solving in TRE**, differences between men and women are **negligible** with a slight advantage for men in some countries
- Men's advantage tends to **increase with age**.

# Literacy score differences between men and women



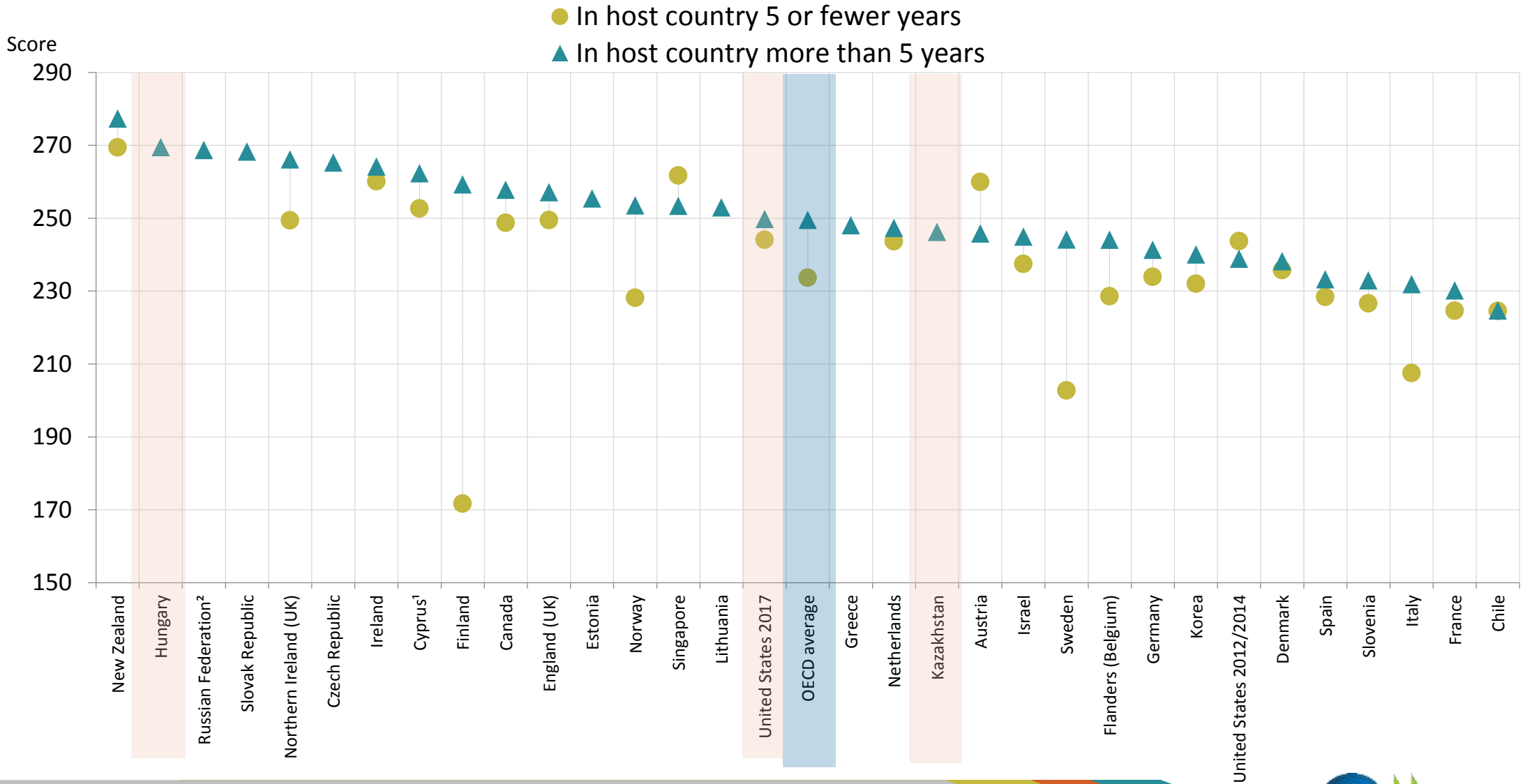
# Difference in literacy proficiency among men and women by age



# PROFICIENCY AND IMMIGRATION BACKGROUND

- In most, though not all, countries, native born adults tend to score higher in all the domains assessed than adults born in a country other than their country of residence.
- With a few exceptions, immigrants who have lived in their country of residence for 5 years or more tend to score better than recent immigrants.

# Literacy proficiency among immigrants: length of stay in the country

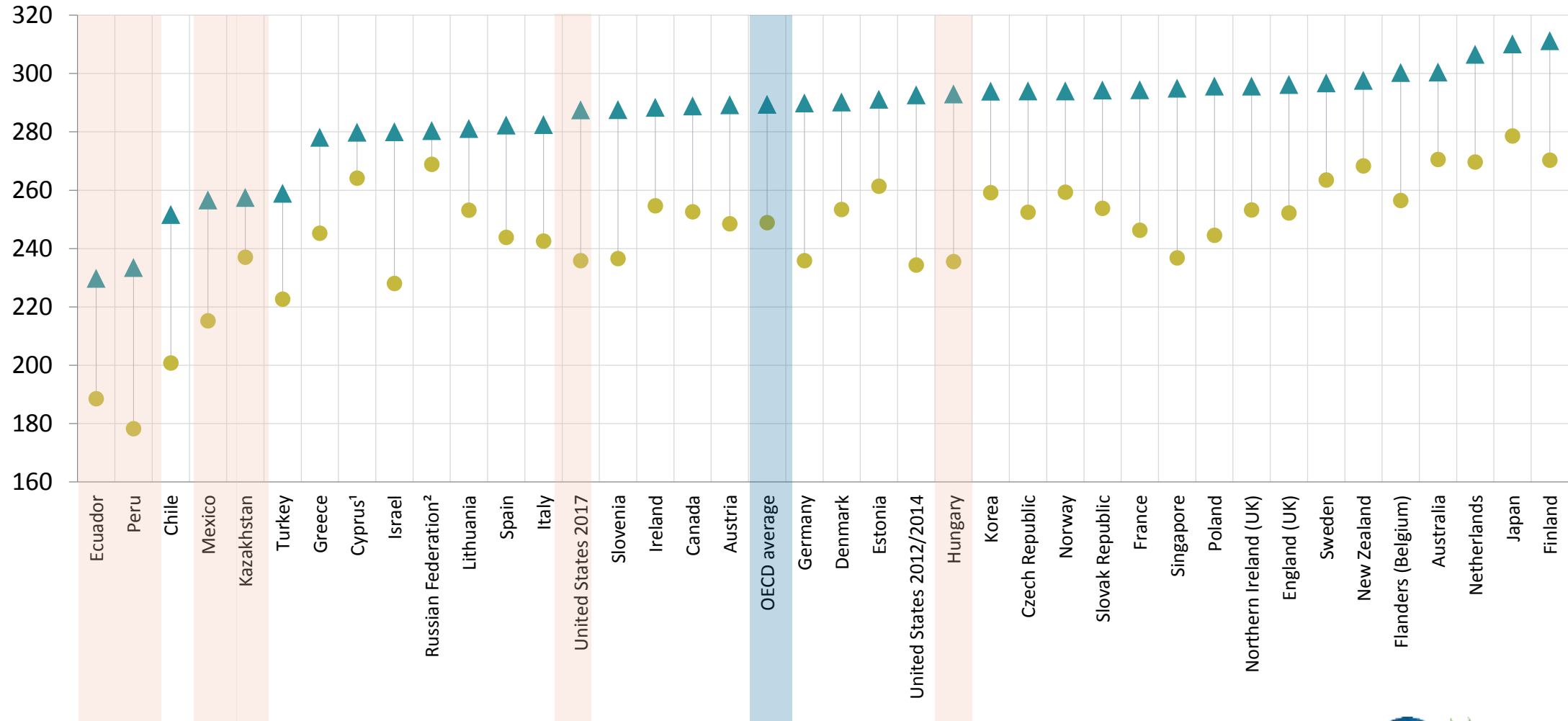


# PARENTAL EDUCATION AND PROFICIENCY

- In all countries, there is a positive relationship between proficiency in literacy and numeracy and the educational attainment of parents
- The strength of the relationship varies considerably between countries

# Literacy proficiency by parental education

● Neither parent has attained upper secondary ▲ At least one parent has attained tertiary

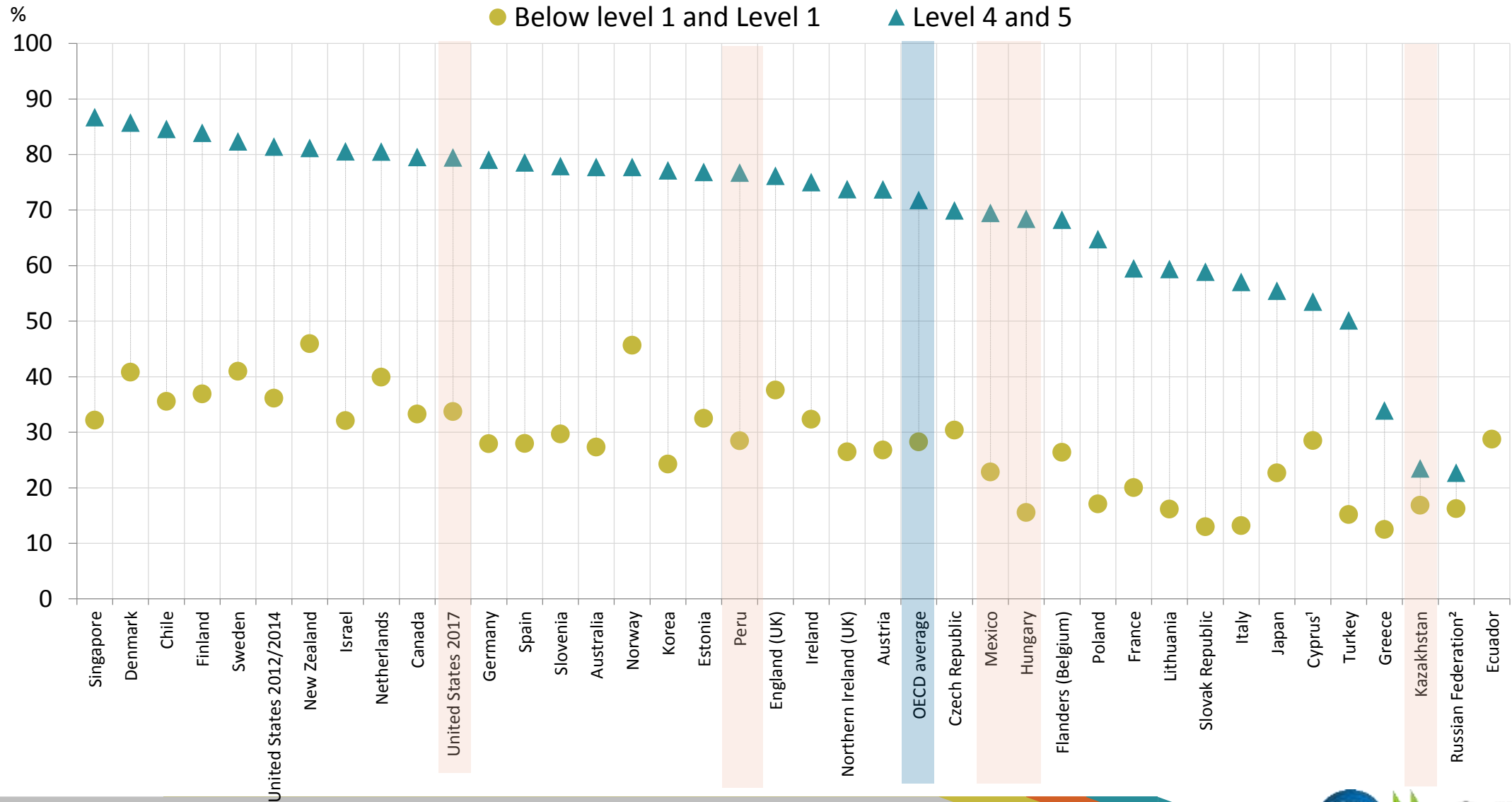


# Training

Access to education and training, both general and job-related is positively related to literacy proficiency

- Adults with higher levels of literacy tend to have higher participation rates
- Norway and New Zealand stand out as countries in which access by adults with low levels of literacy is highest

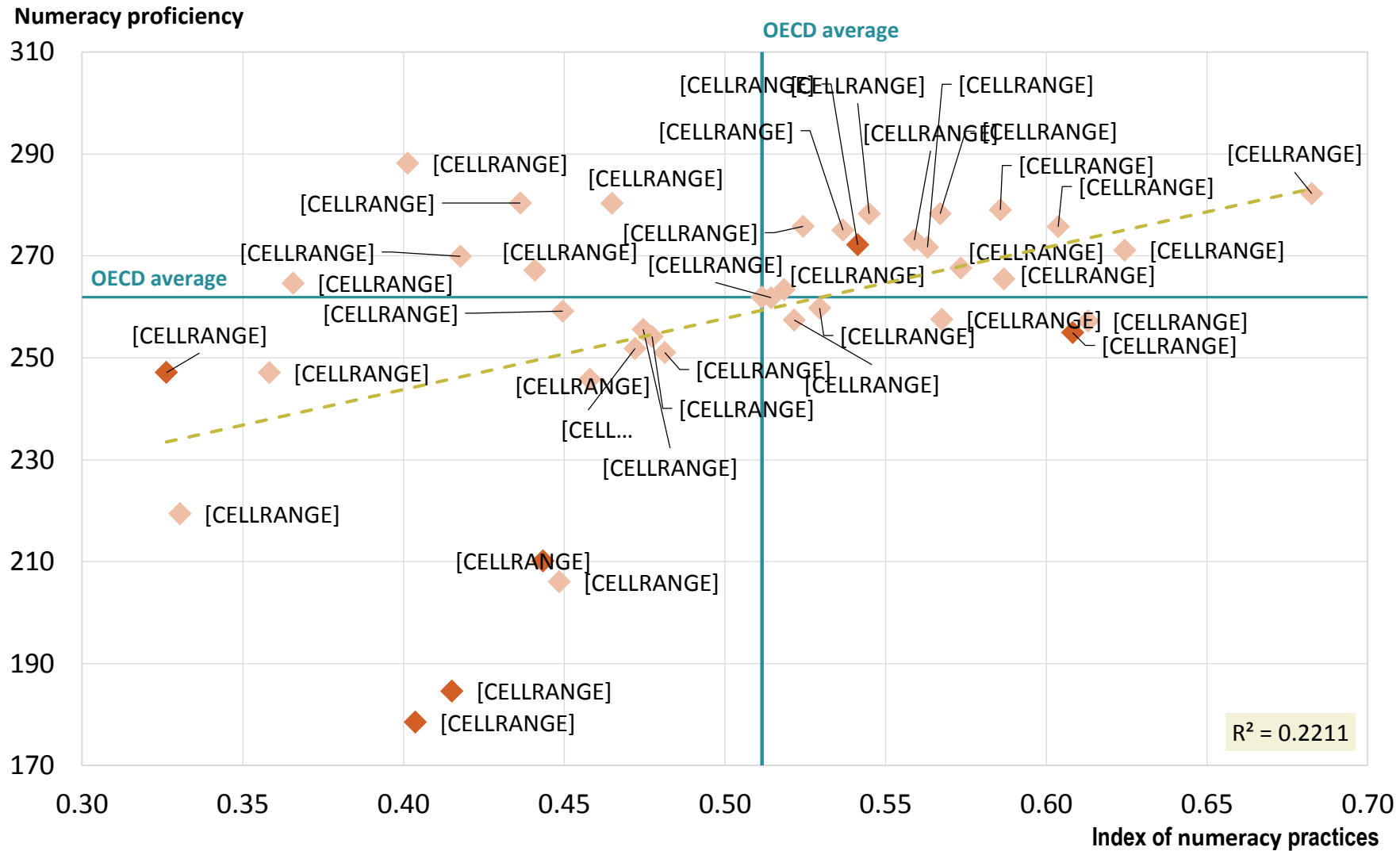
# Participation in all education and training, by literacy level (Adults aged 25-65 years)



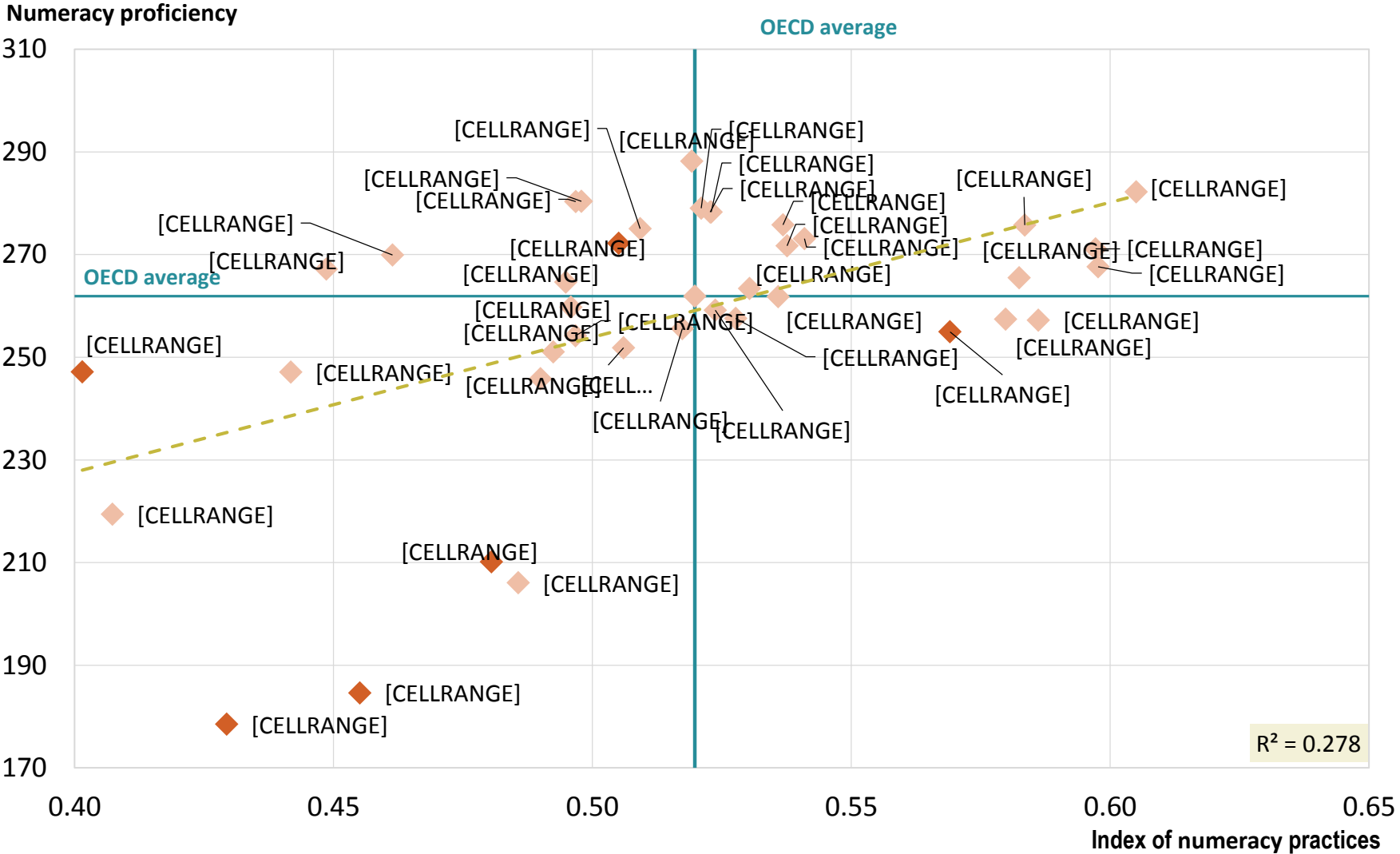
# The intensity of use of information processing skills

- The intensity of use of information-processing skills varies between countries
- The intensity of the use of information processing skills is related to individual characteristics such as proficiency in literacy and numeracy, age, and educational attainment
- Countries rank differently on the two dimensions of skills proficiency and skills use.
- The intensity of numeracy at work is closely related to labour market outcomes (employment, wages etc)

# Engagement in numeracy practices in **everyday life** and numeracy score



# Engagement in numeracy practices at work and numeracy score

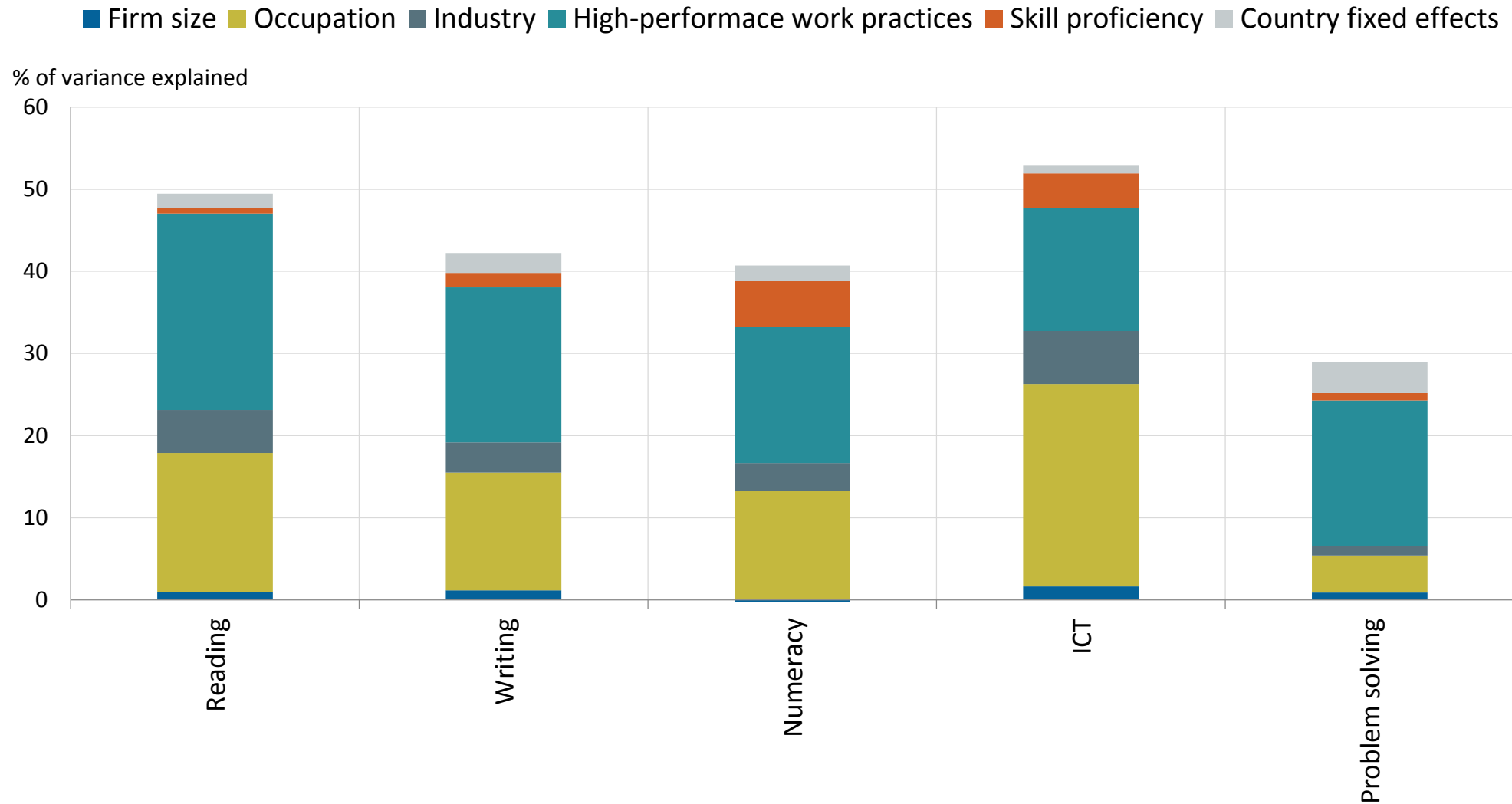


# Determinants of engagement in numeracy practices in everyday life: OECD

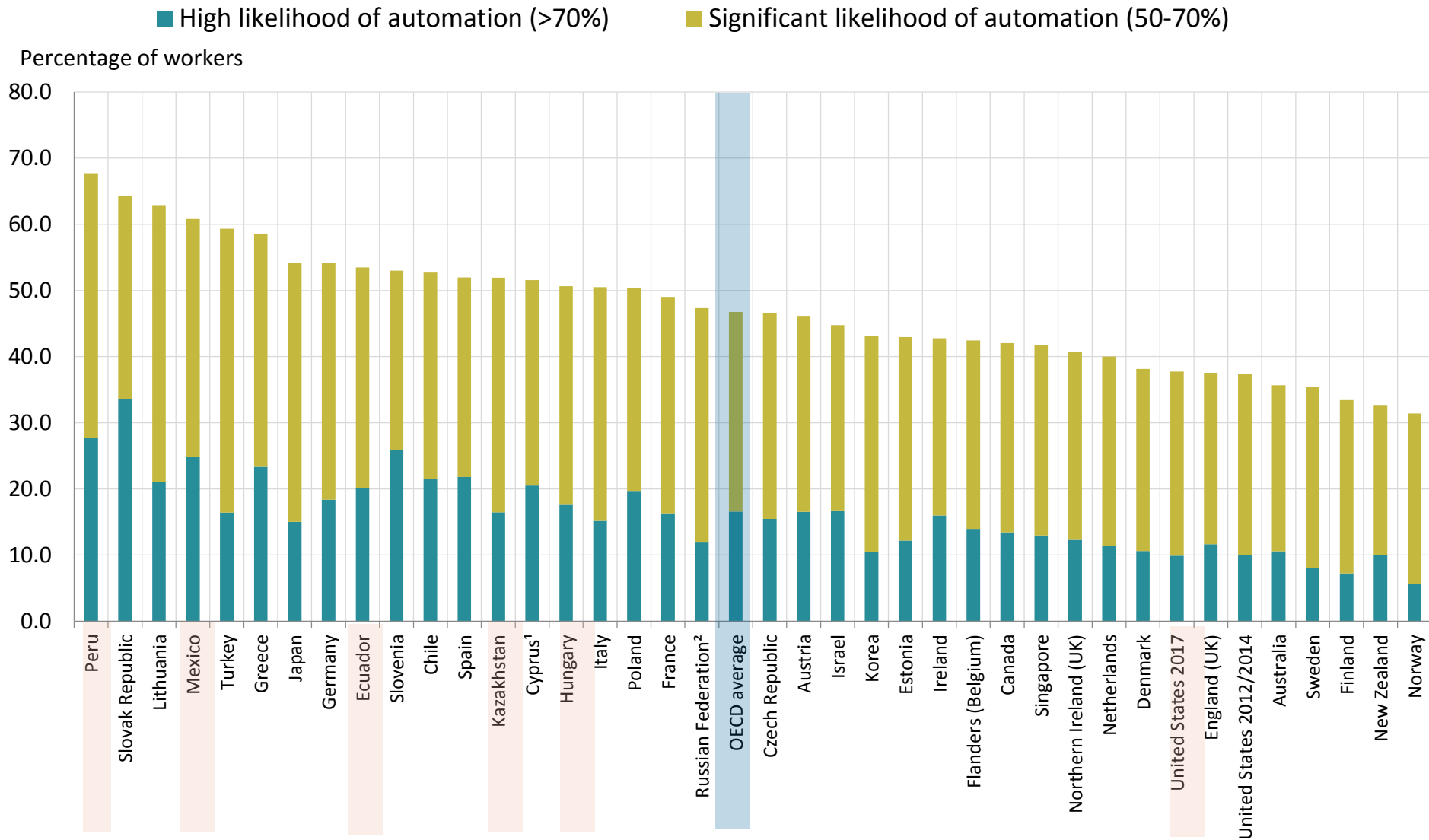
*OLS coefficients*



# Explaining information-processing skills used at work



# Likelihood of automation or significant change to jobs

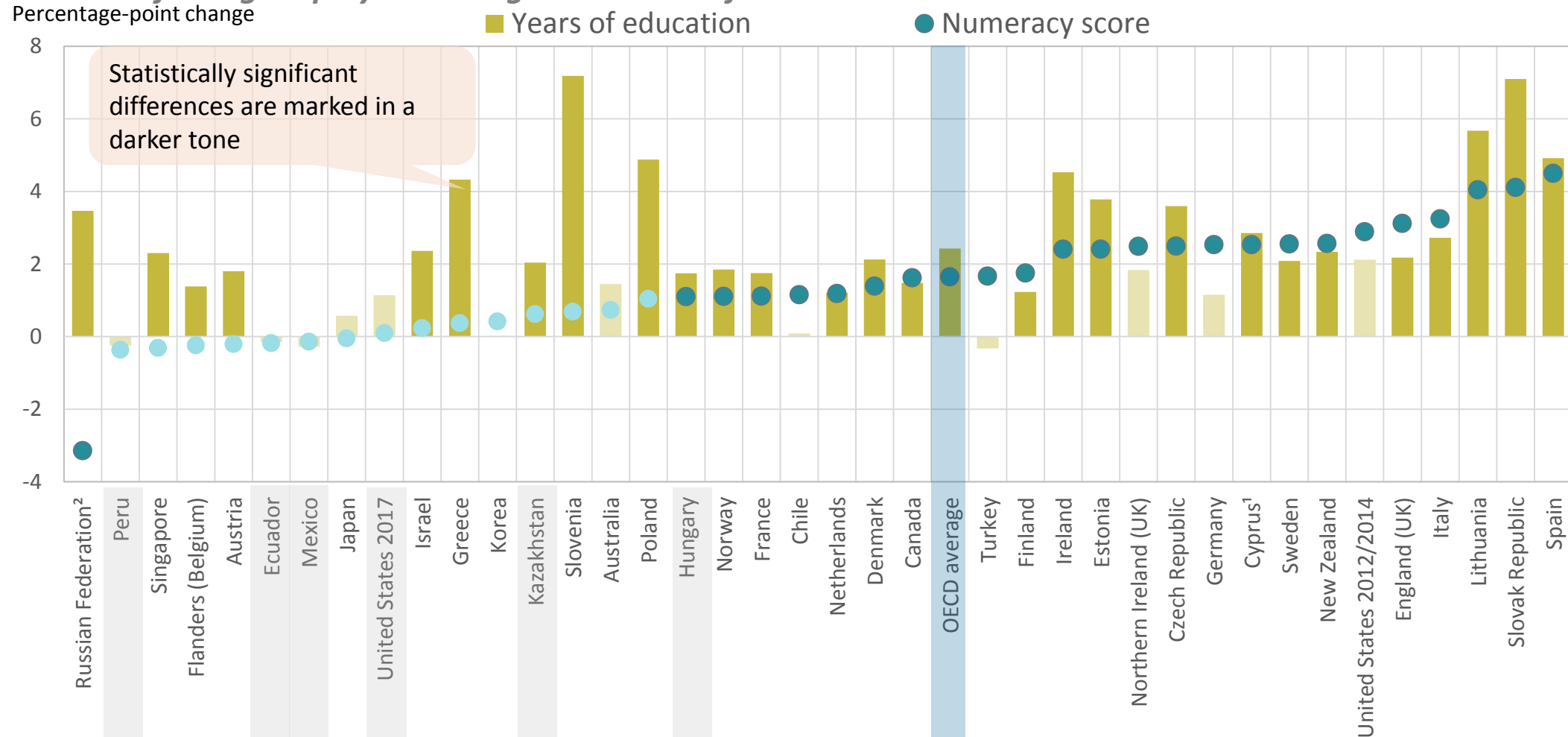


# Labour market and social outcomes

- Better skilled workers are **more likely to be employed** (in some countries), **earn higher wages** (in most countries) and have **better social outcomes** (in most countries).
- Workers who use their skills more frequently are also more likely to earn higher wages
- Workers are mismatched if their skills do not match the job's requirements
- A large **share of workers is mismatched** by qualifications, by literacy proficiency or by field-of-study
- Only workers mismatched by qualifications suffer a wage penalty

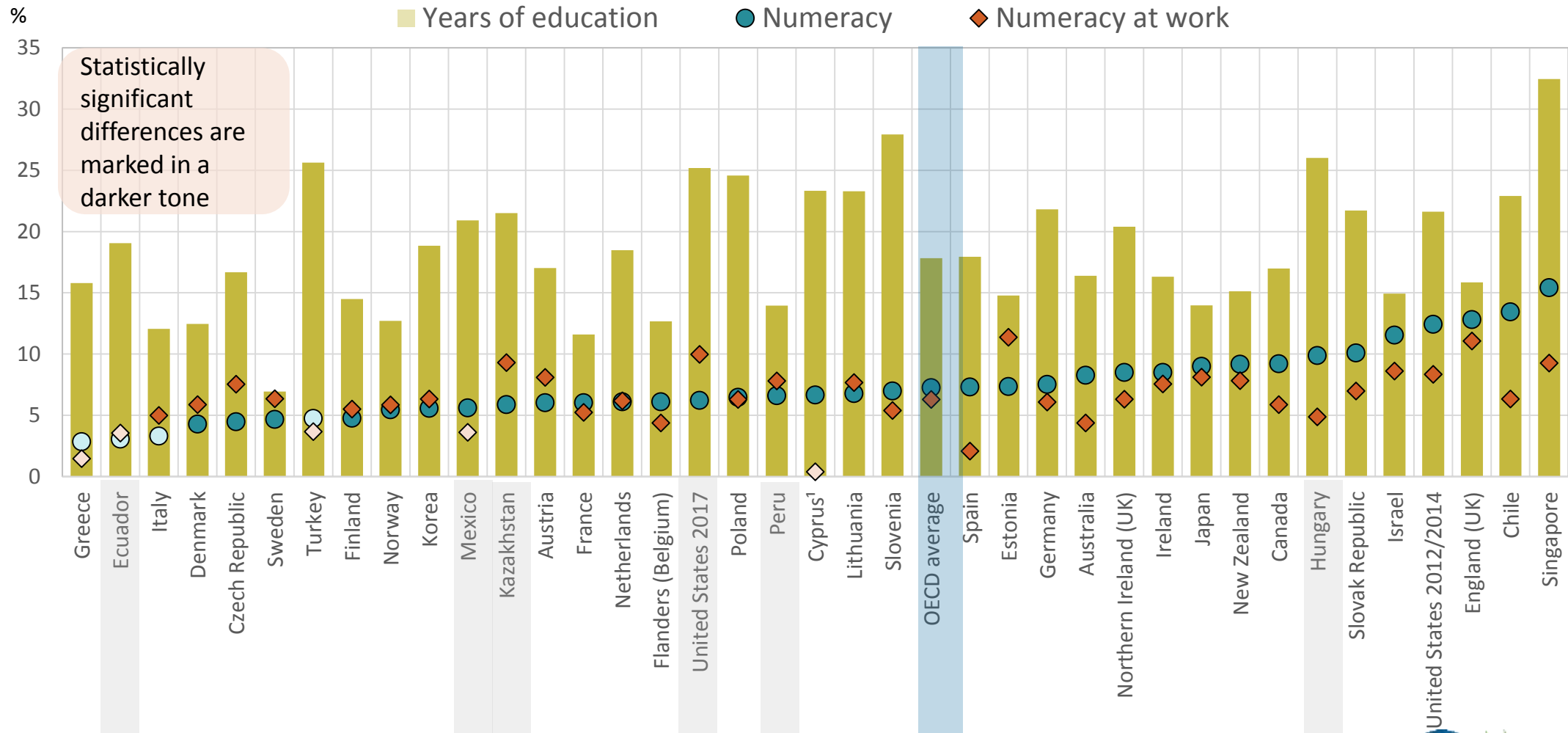
# Effect of education and numeracy proficiency on the likelihood of **being employed**

*Marginal effects of a one standard deviation increase in years education and numeracy on the likelihood of being employed among adults not in formal education*

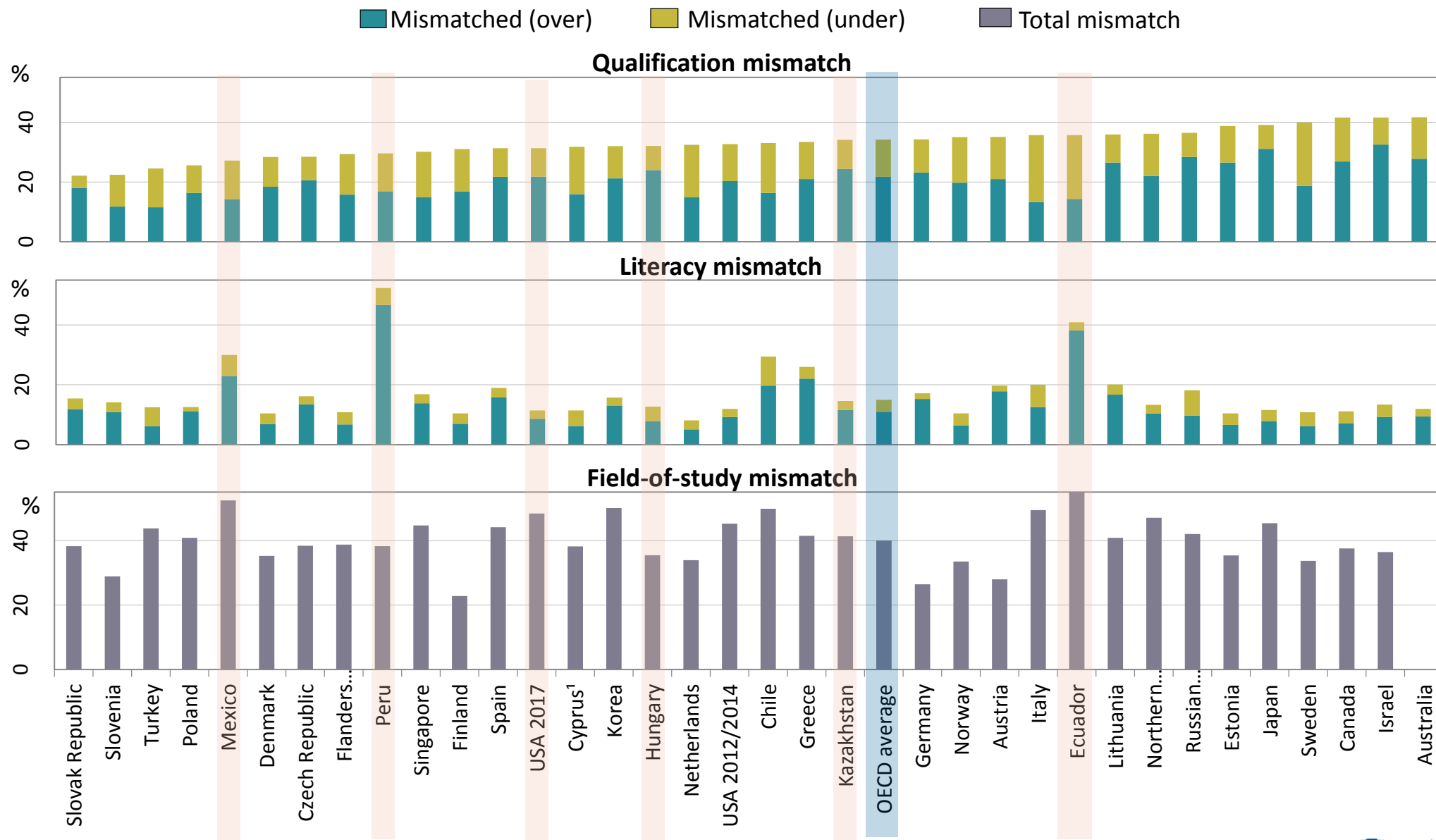


# Effect of education, numeracy proficiency and numeracy use at work on **wages**

Percentage change in wages associated with a one standard deviation increase in years of education, proficiency in numeracy and numeracy use at work

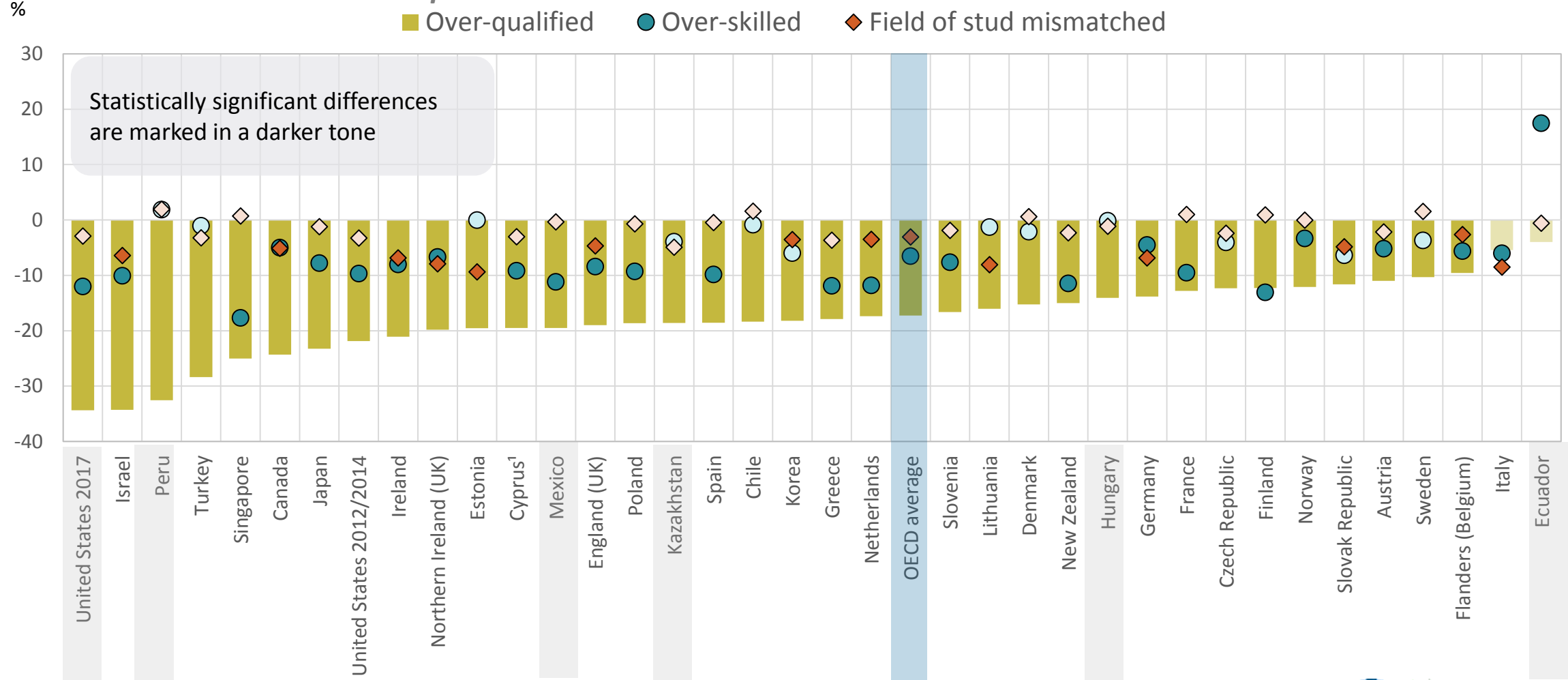


# Mismatch (percent of workers)



# Effect of qualification, numeracy and field-of-study mismatch on wages

Percentage difference in wages between overqualified, overskilled or field-of-study mismatched workers and their well-matched counterparts



# Data products

Data Explorer

Public Use Files (all countries except Australia)

Background Questionnaire

Codebook

SAS and STATA tools

IEA Data Analyser

Technical Report

Education and Skills On-line

# Find Out More About PIAAC at:



[www.oecd.org/site/piaac](http://www.oecd.org/site/piaac)

All national and international  
publications

The complete micro-level database



Email

[edu.piaac@oecd.org](mailto:edu.piaac@oecd.org)

## Thank you