PISA

Seeing US education through the prism of international comparisons

The OECD Programme for International Student Assessment (PISA)

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OECD

BETTER POLICIES FOR BETTER LIVES

PISA in brief

Every three years since 2000, over half a million students…

- representing 15-year-olds in now over 80 countries

… take an internationally agreed 2-hour test…

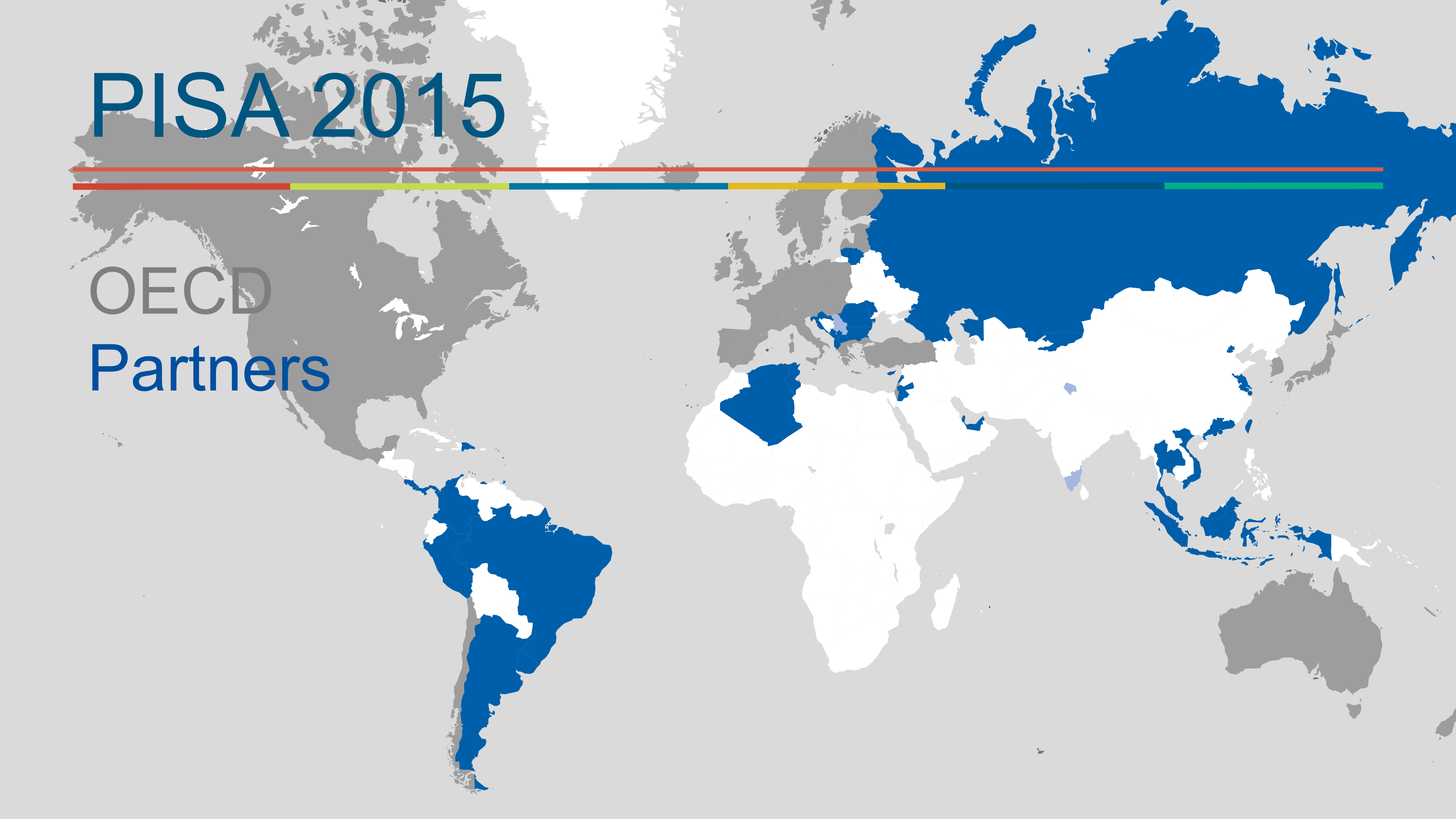
- that goes beyond whether students can reproduce what they were taught to assess students' capacity to extrapolate from what they know and creatively use and apply their knowledge
- Focus on mathematics, science and reading
- Problem-solving, collaborative problem-solving, creative thinking, financial literacy

… and respond to questions on…

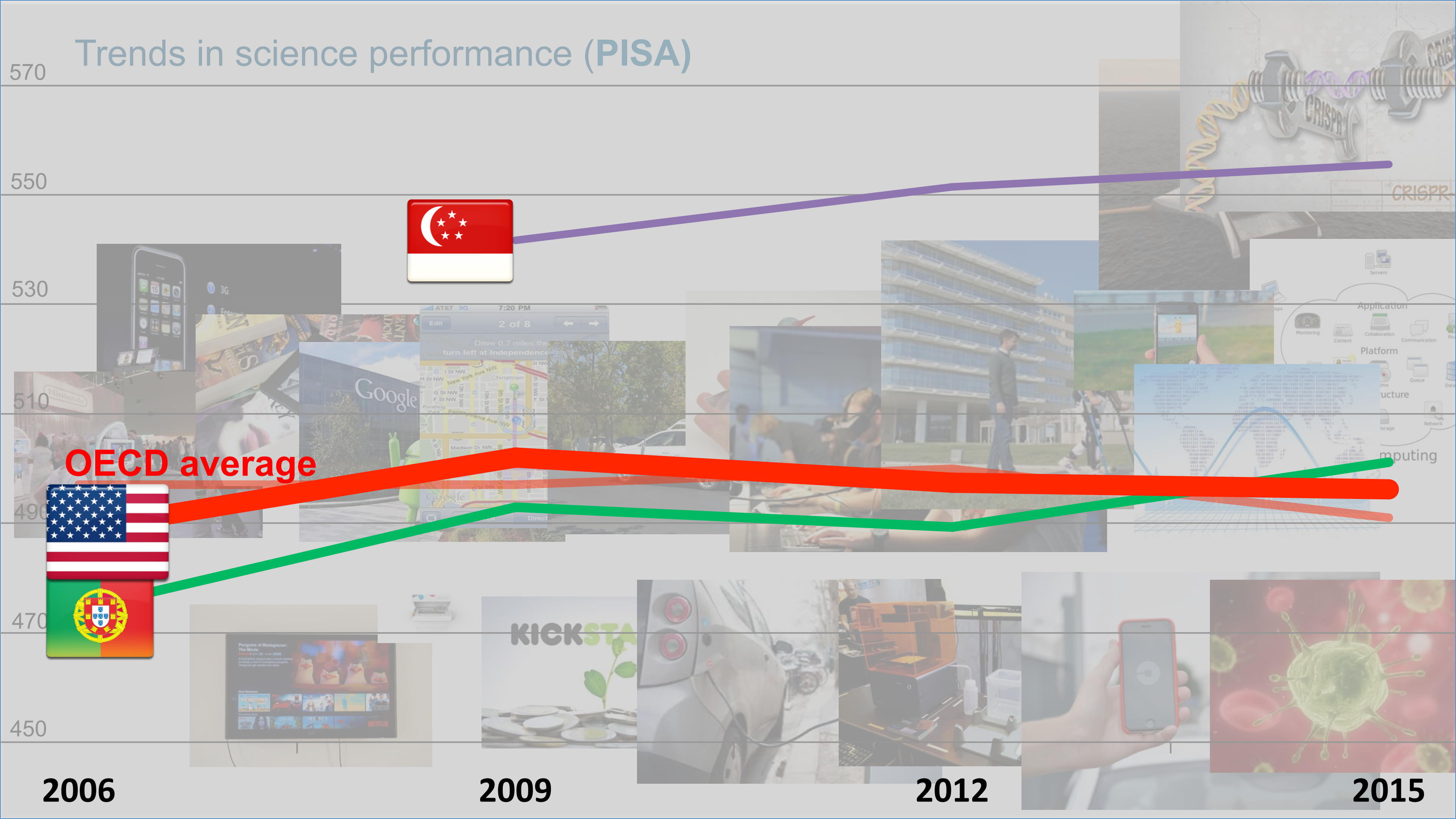
- their personal background, their schools, their well-being and their motivation

Teachers, principals, parents and system leaders provide data on:

- school policies, practices, resources and institutional factors that help explain performance differences

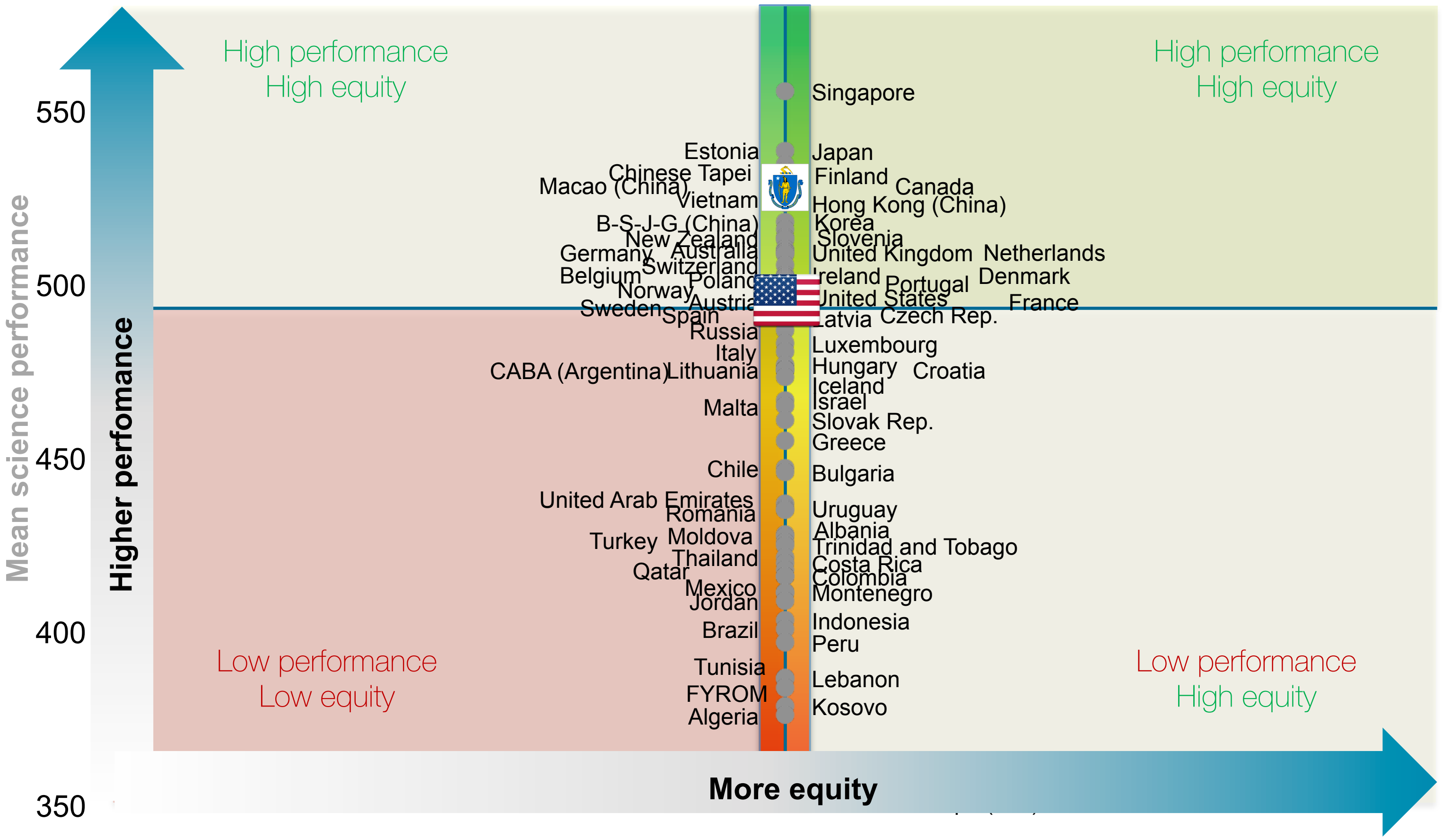

PISA 2015
OECD
Partners

Trends in science performance **(PISA)**

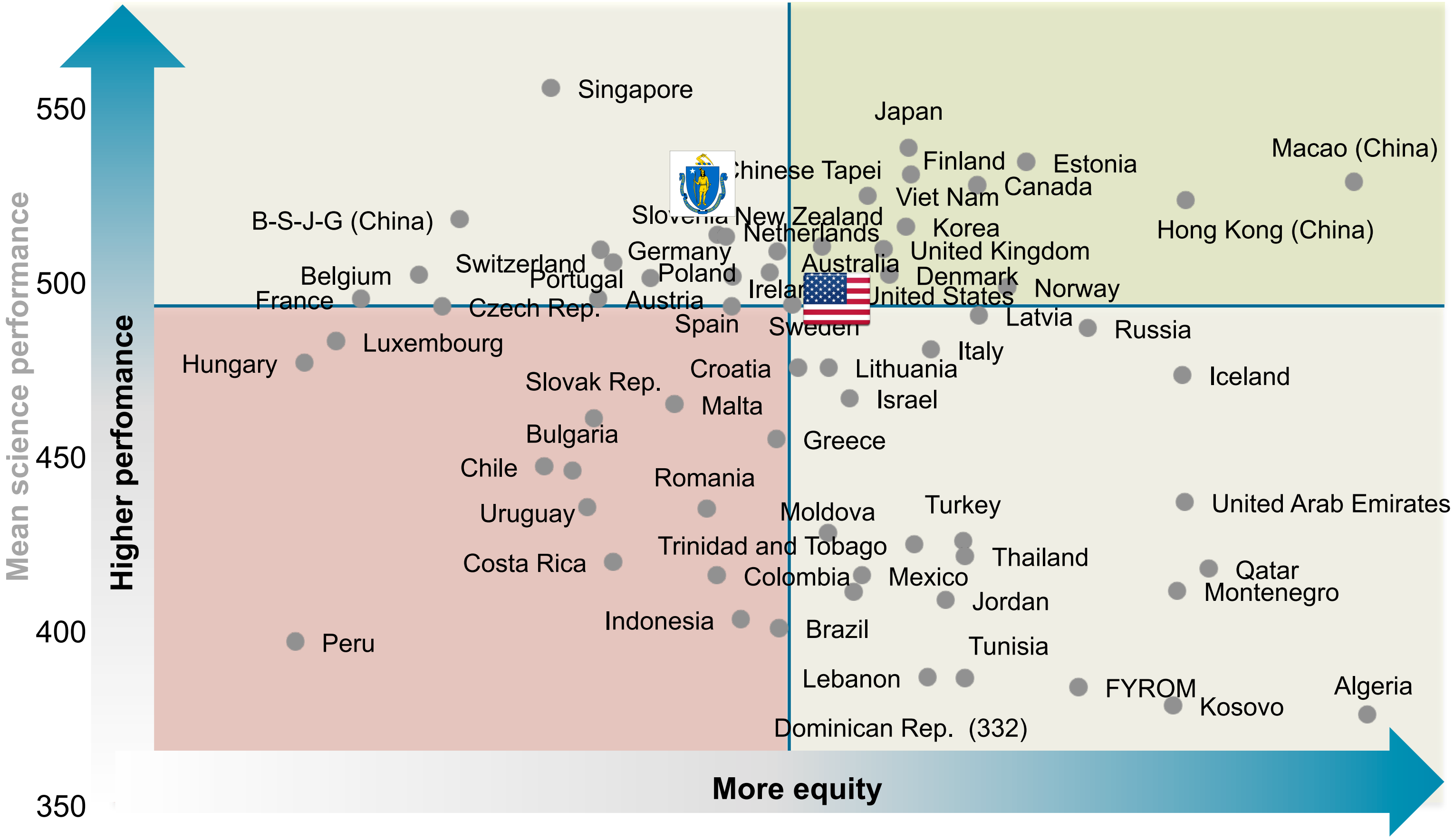


Trends in science performance (PISA)
570
550
530
510
490
470
450
OECD average
2006
2009
2012
2015

Science performance in PISA (2015)



Science performance and equity in PISA (2015)

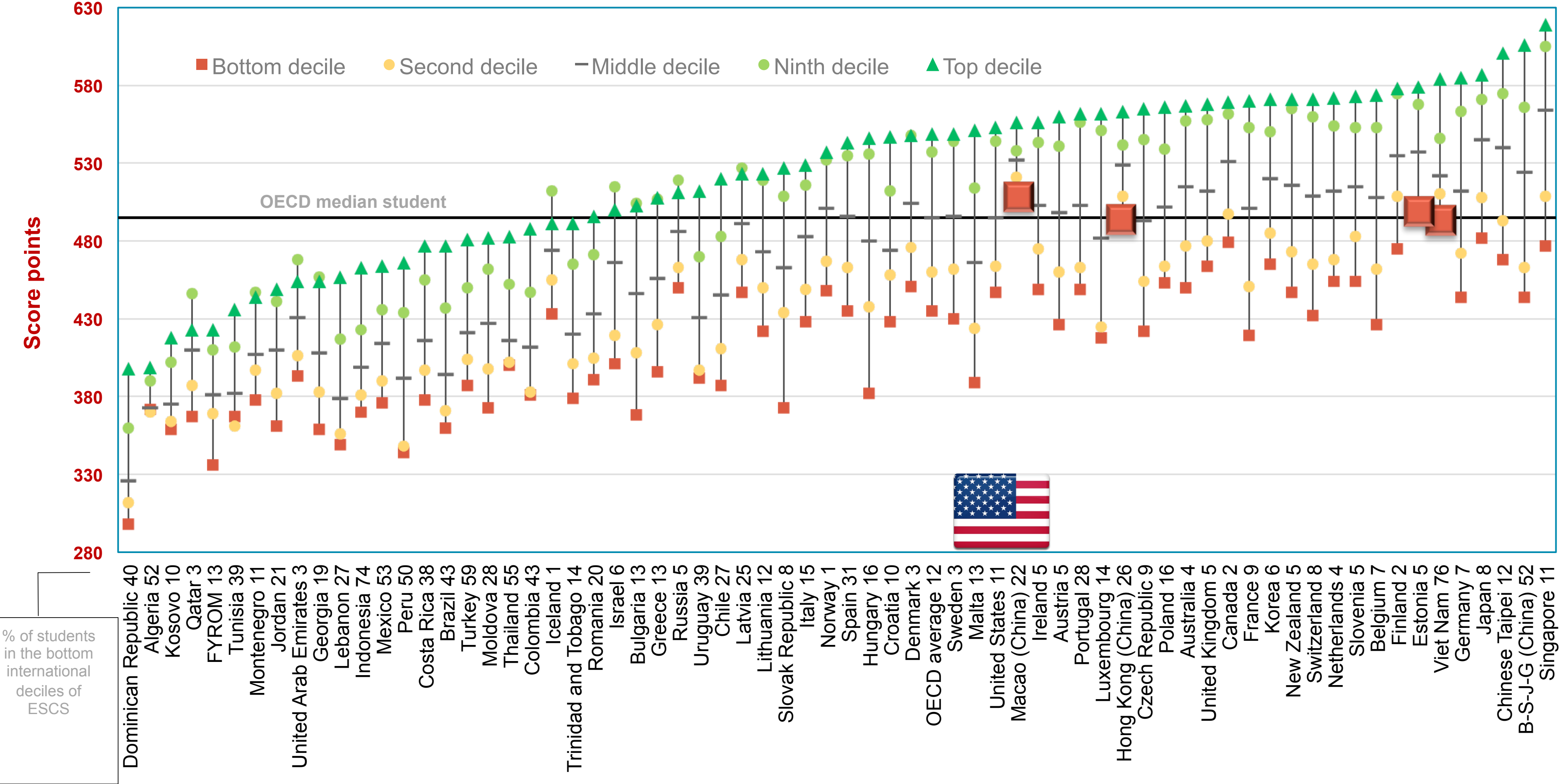


Some countries combine excellence with equity

Poverty is not destiny – Learning outcomes

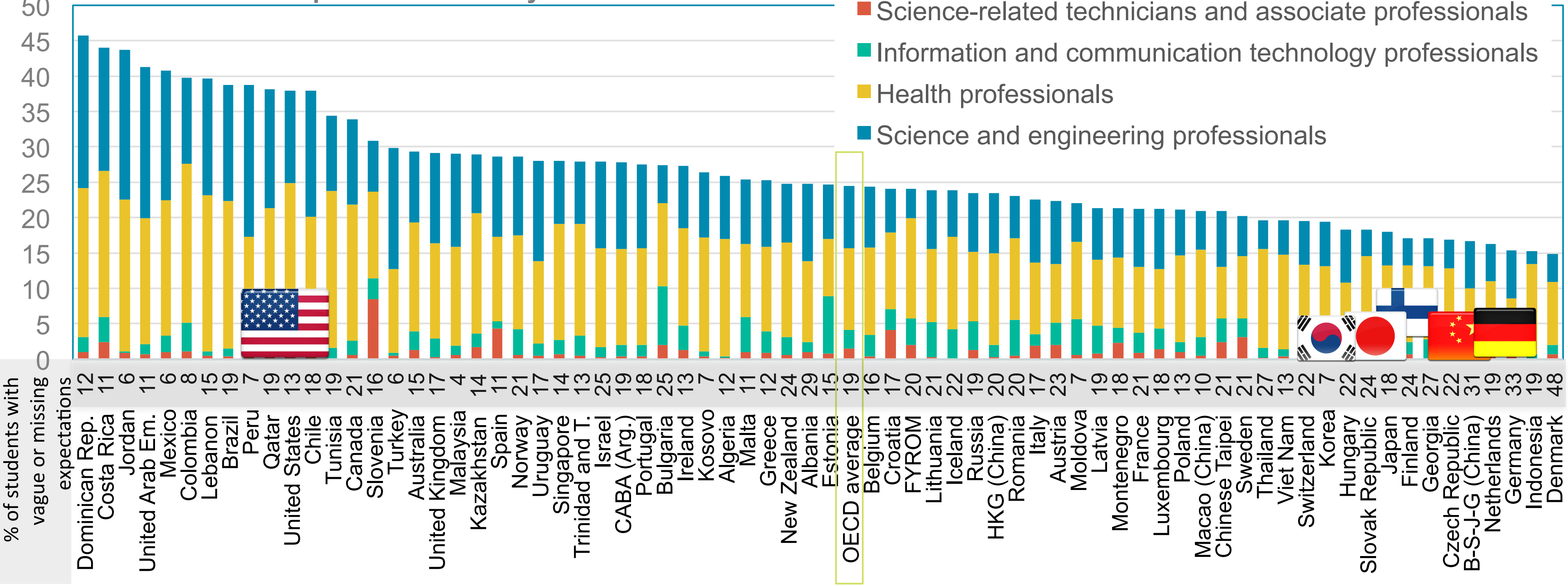
by international deciles of the PISA index of economic, social and cultural status (ESCS)

Figure I.6.7

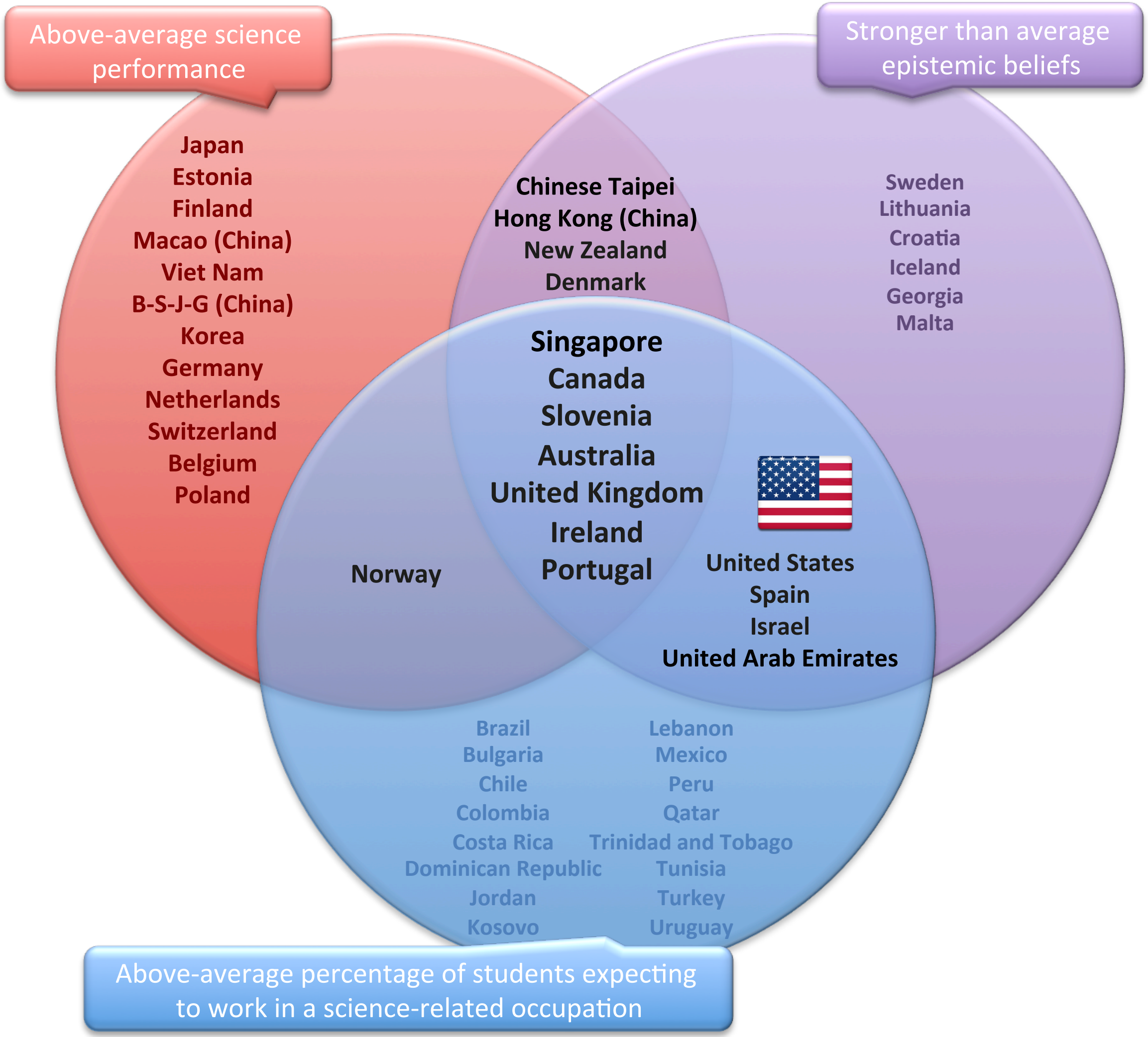


Students expecting a career in science

Percentage of students who expect to work in science-related professional and technical occupations when they are 30

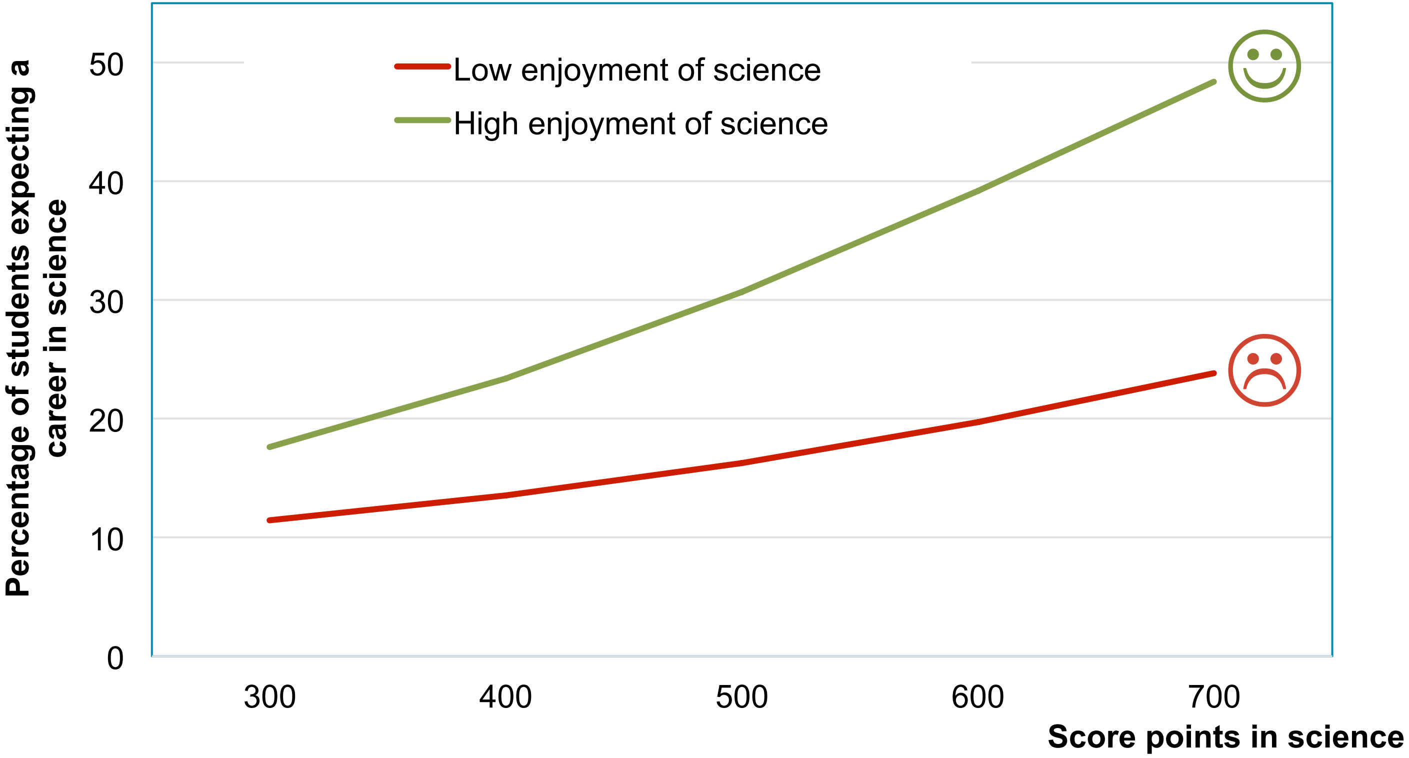


Multiple outcomes

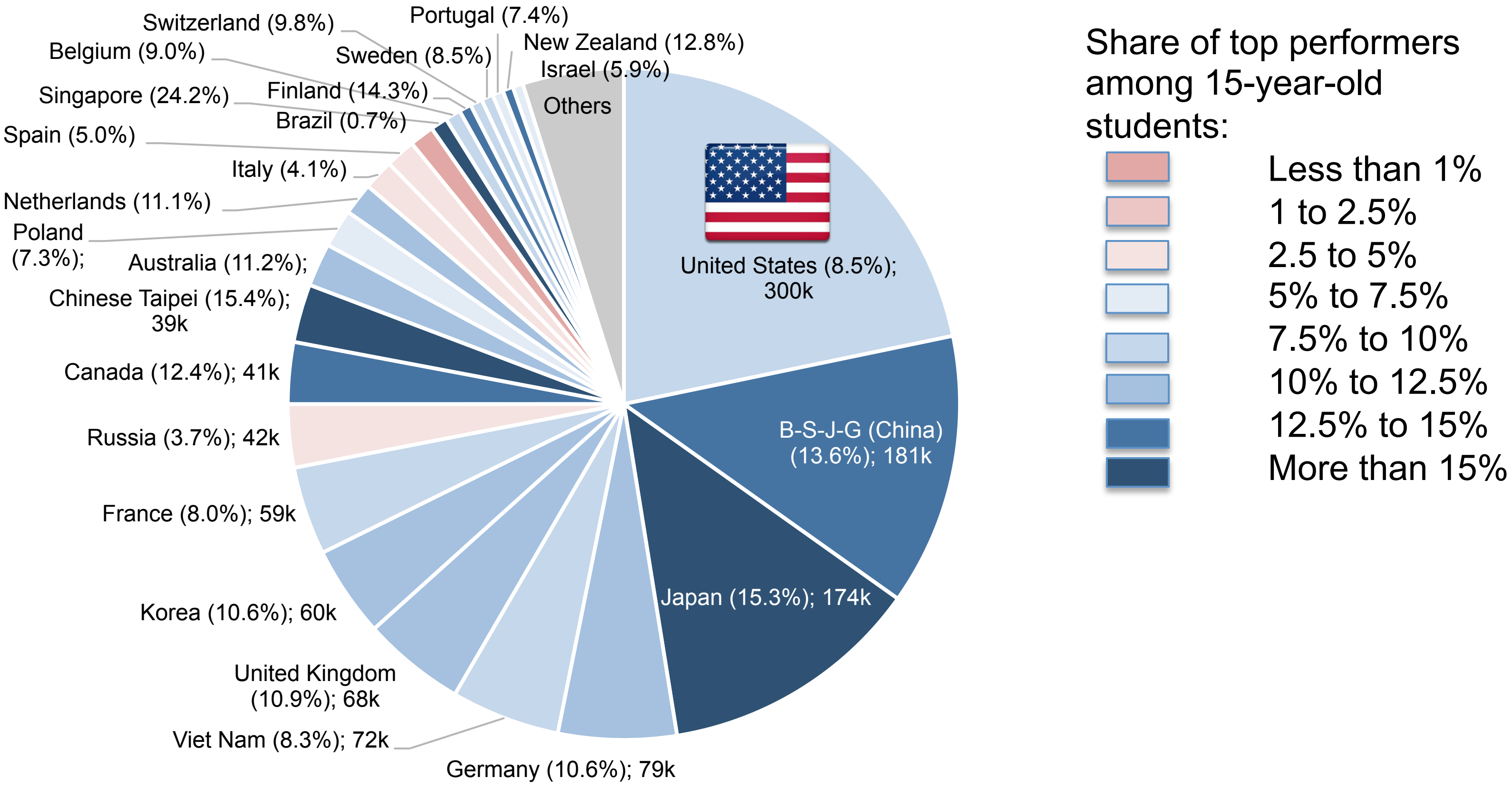


Students expecting a career in science

by performance and enjoyment of learning



The global pool of top performers: A PISA perspective

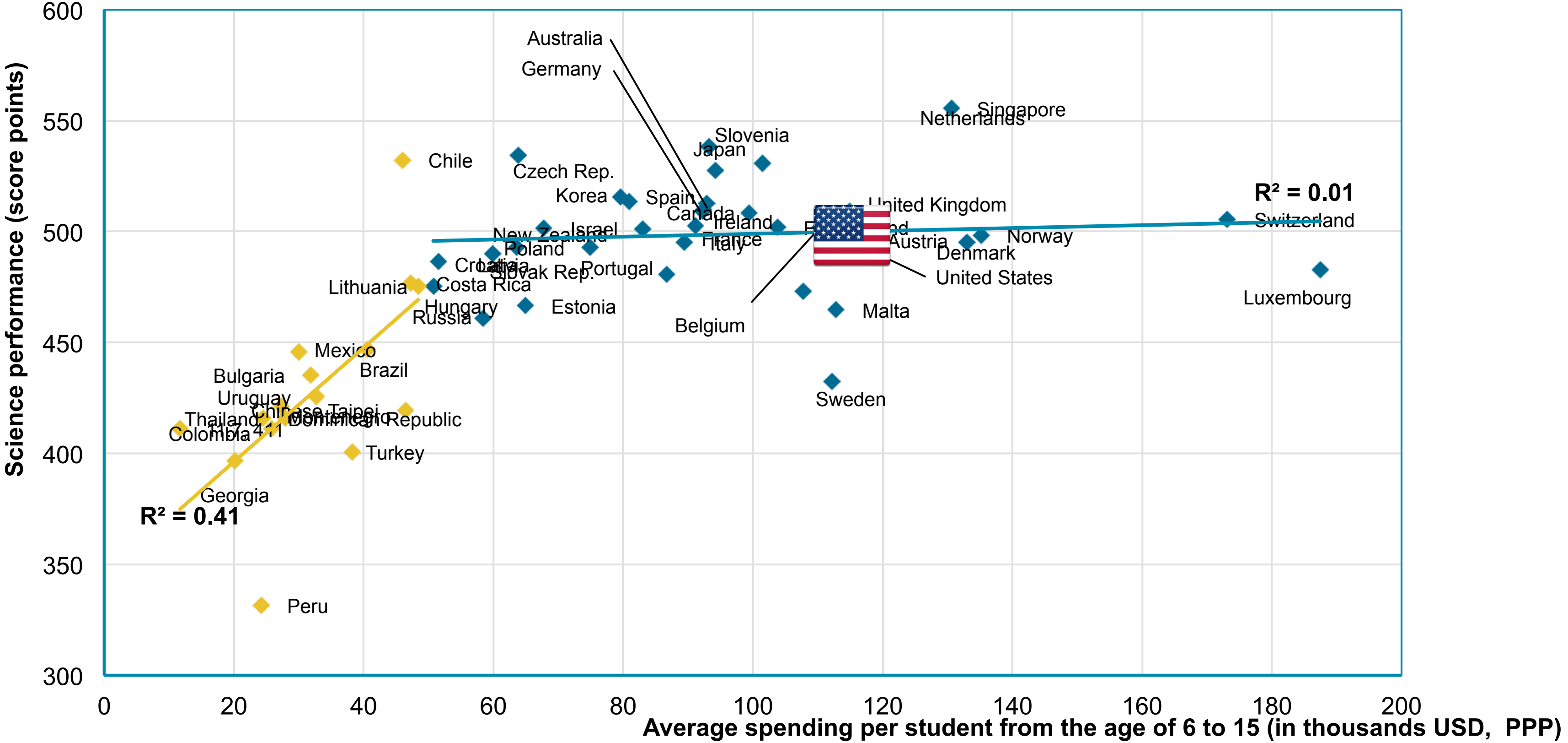


Understanding performance differences

Triangulating data from students, parents, teachers, schools and systems

Spending per student from the age of 6 to 15 and science performance

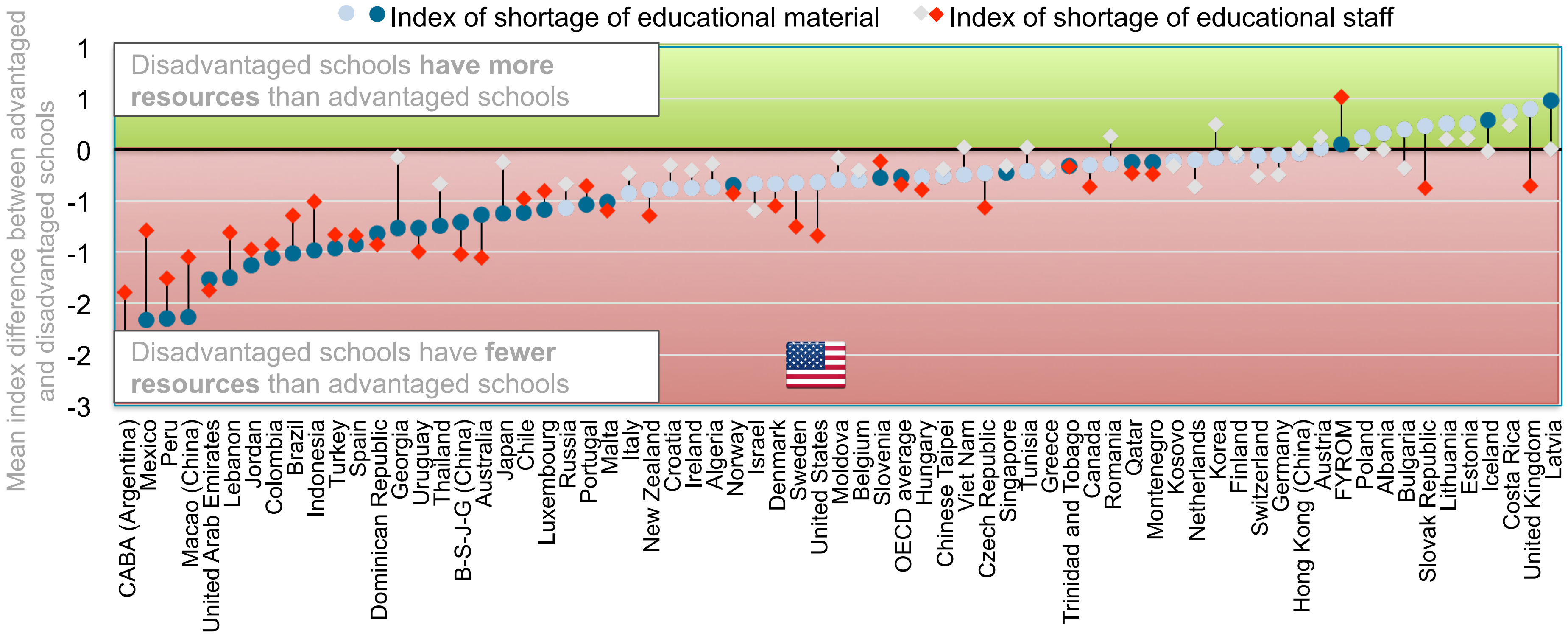
Figure II.6.2



Differences in educational resources

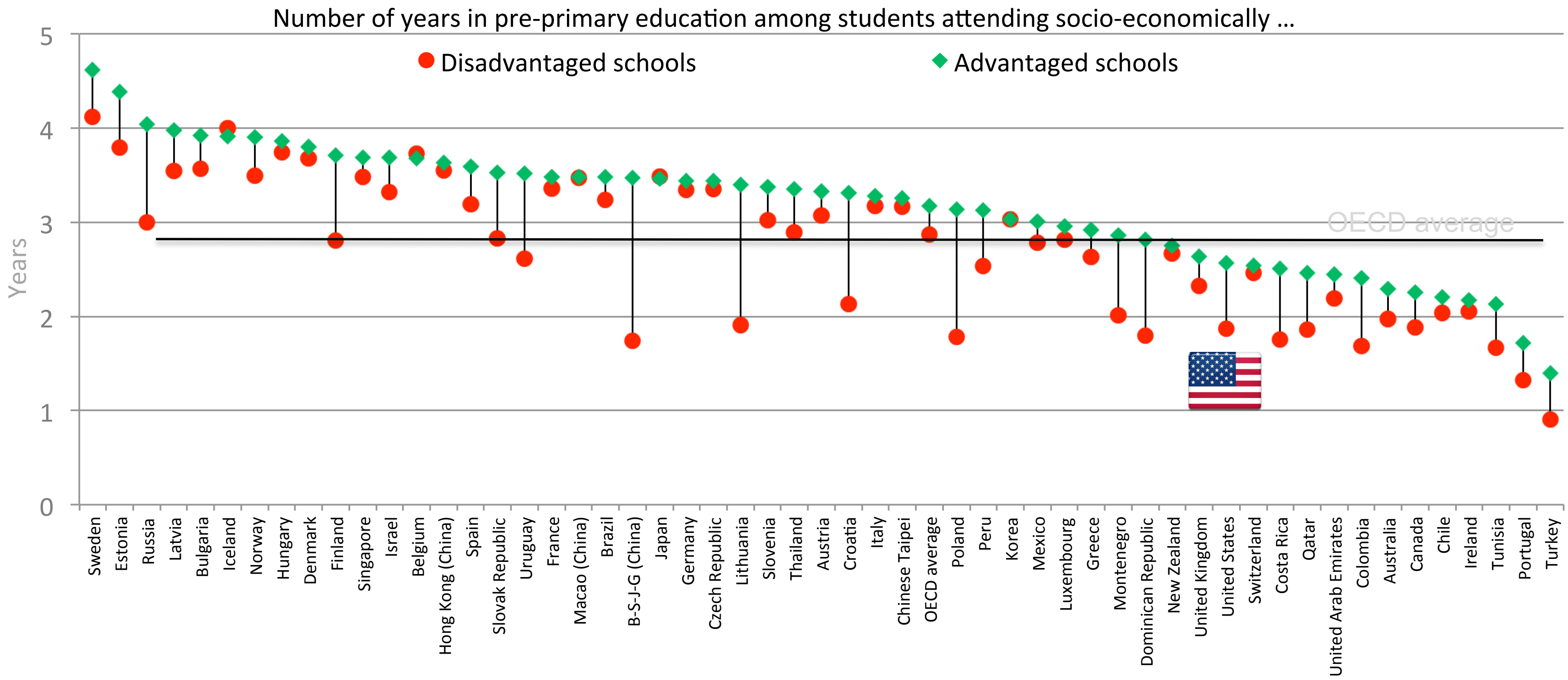
between advantaged and disadvantaged schools

Figure I.6.14



Attendance at pre-primary school

by schools' socio-economic profile



Countries spend their money differently

Contribution of various factors to salary cost of teachers per student in public institutions, lower secondary education (2015)

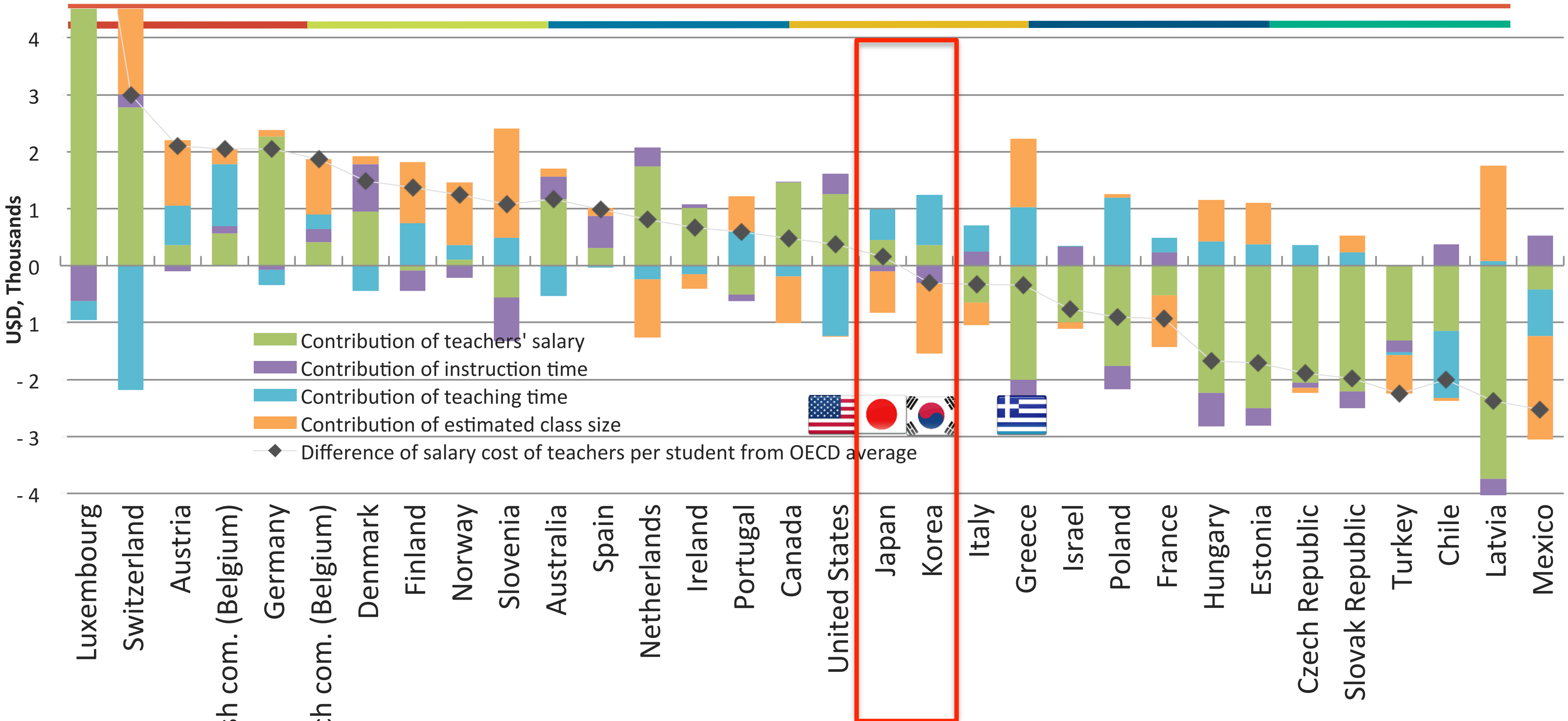
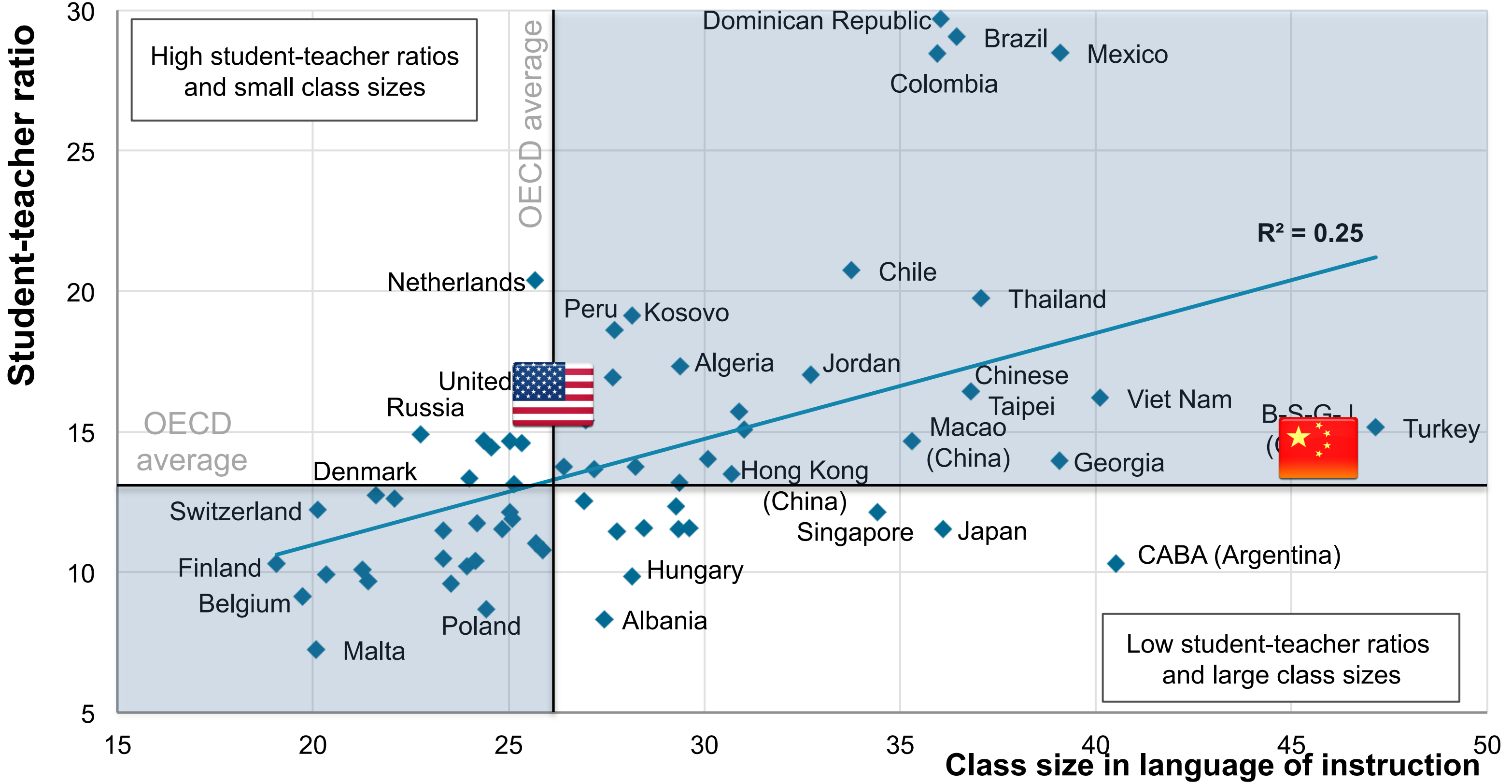
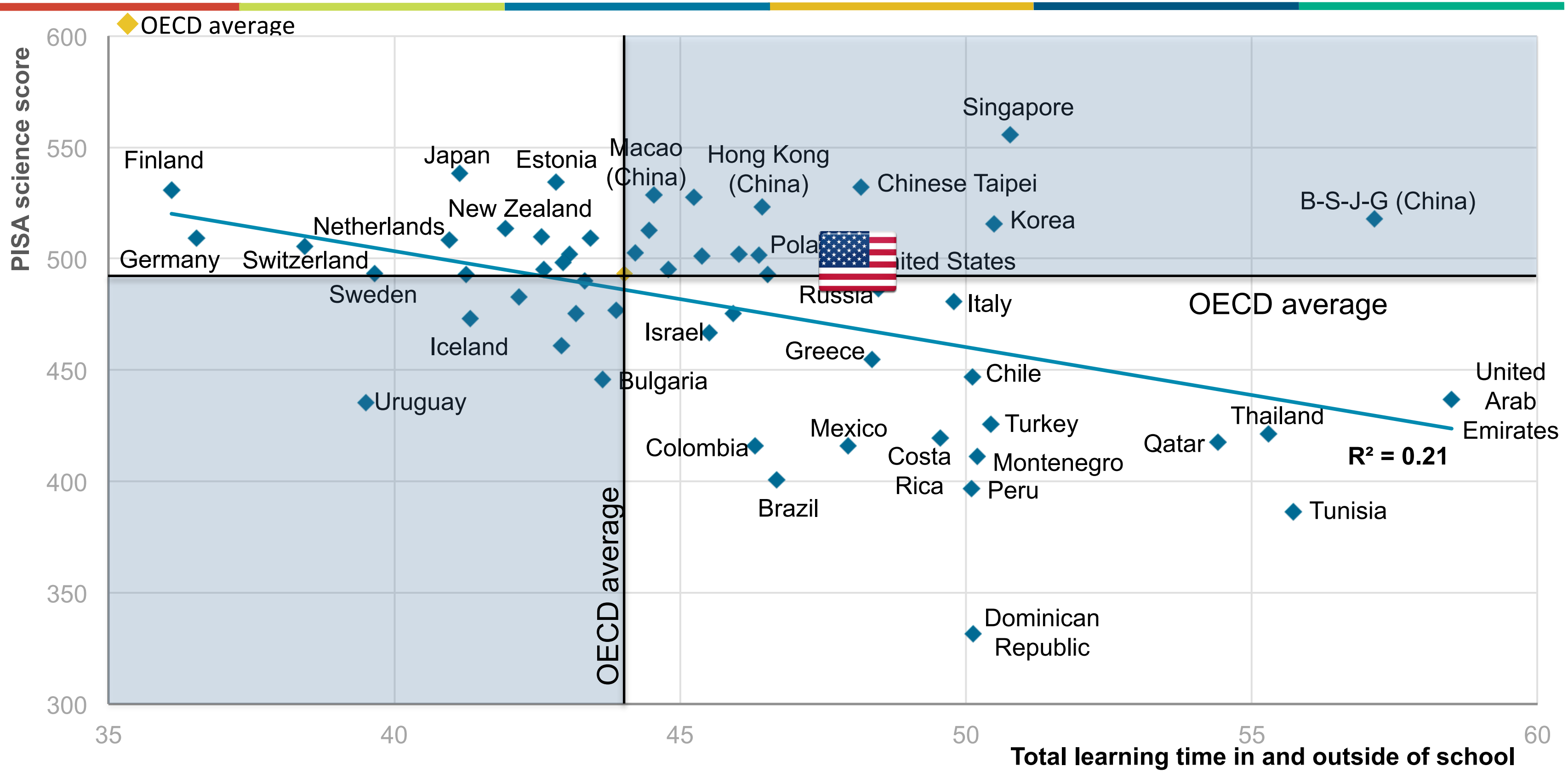


Figure II.6.14

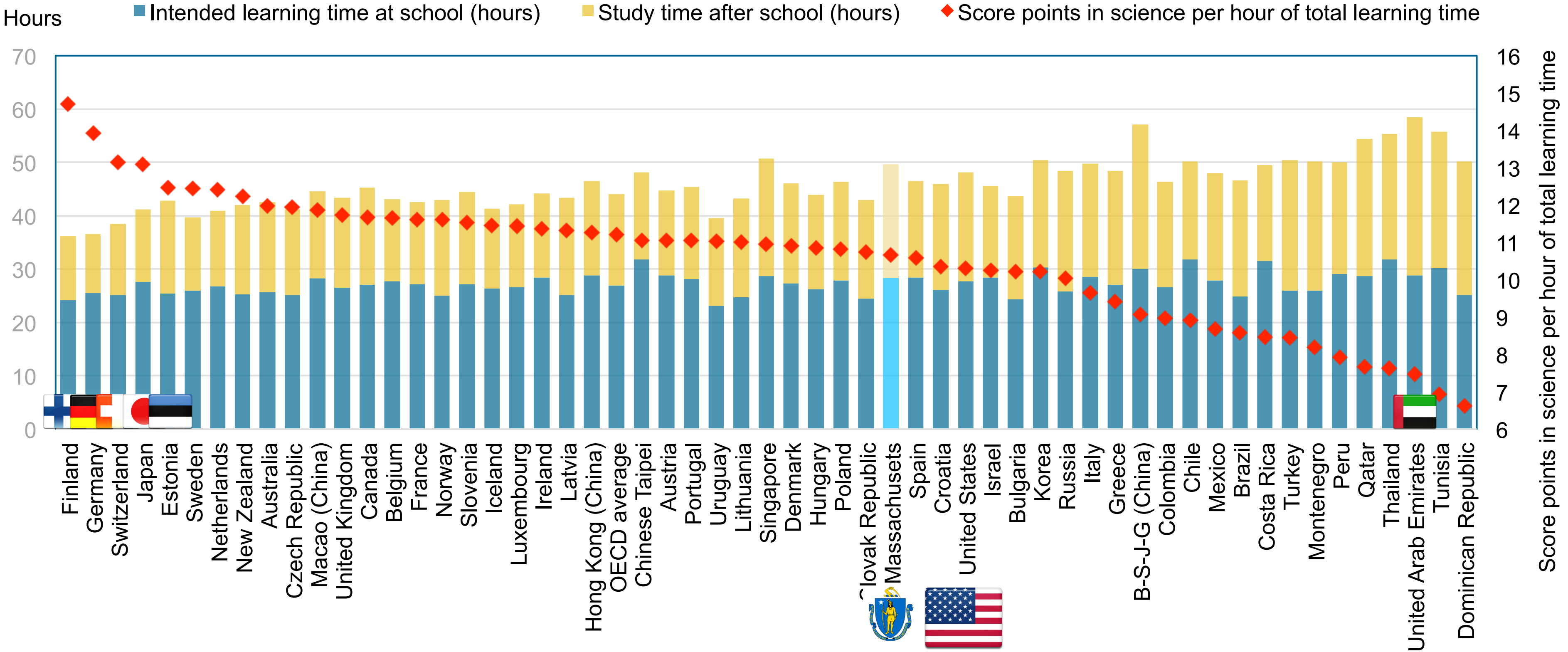
Student-teacher ratios and class size



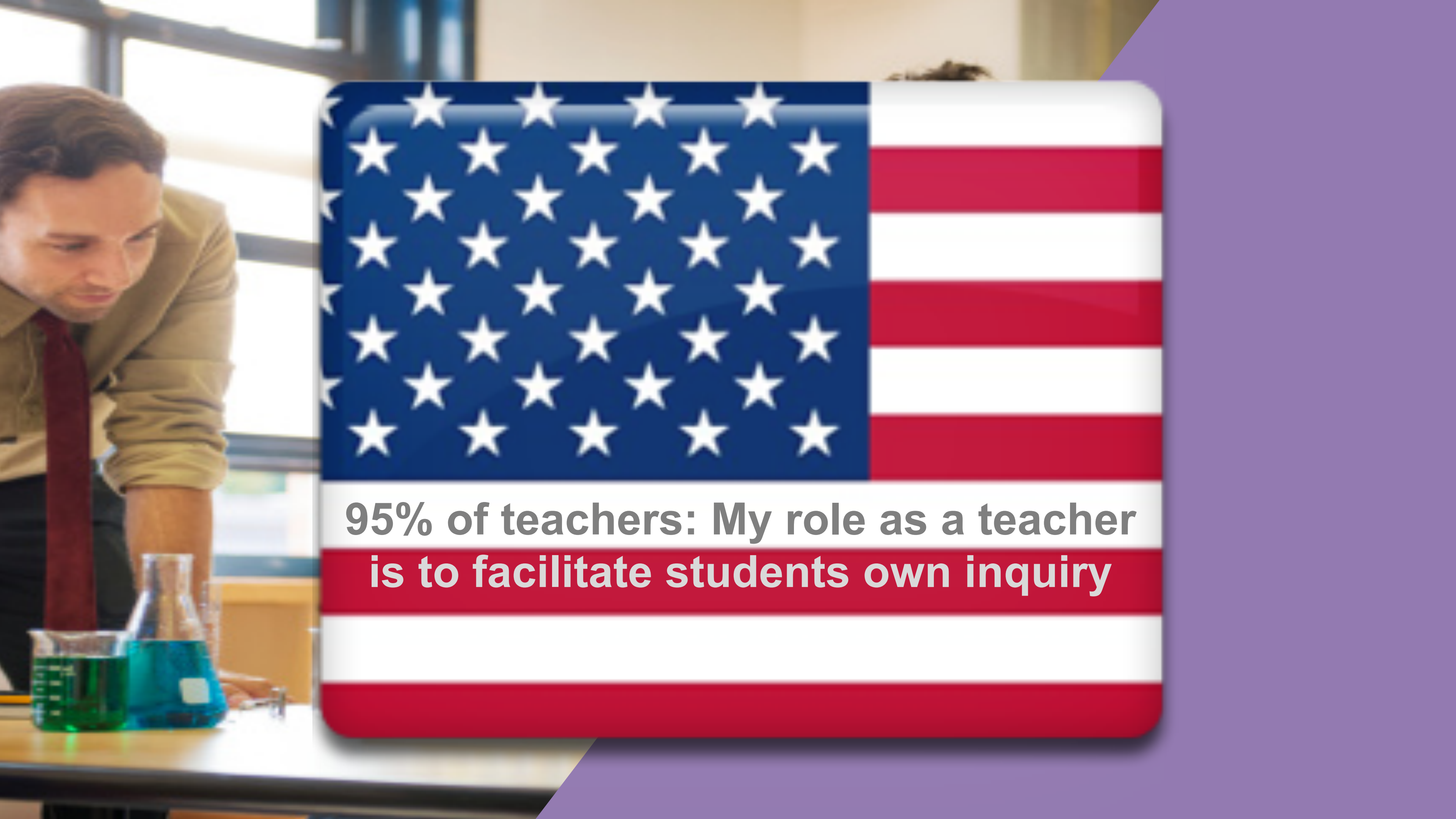
Learning time and science performance



Learning time and science performance

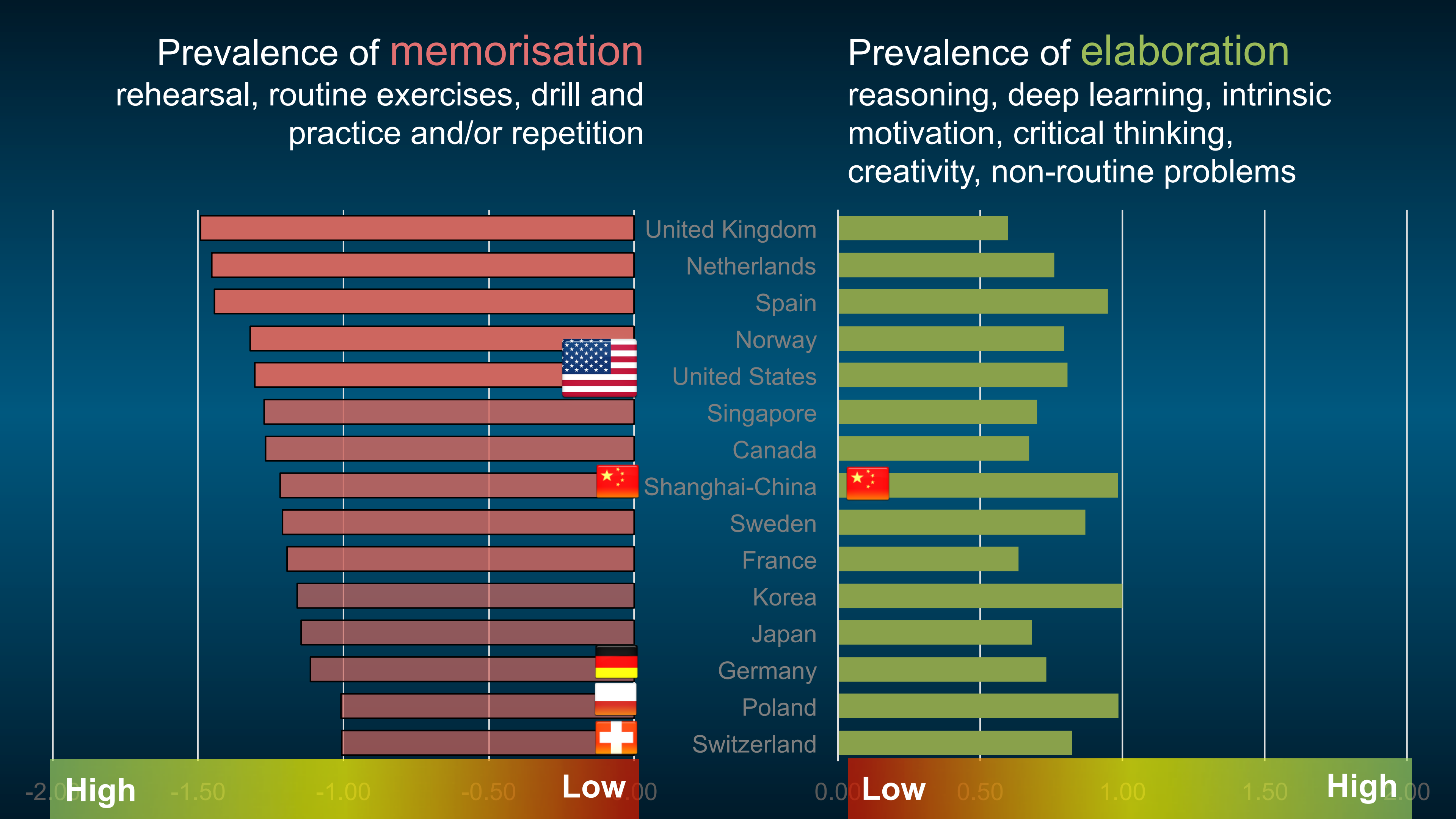


What teachers say and what teachers do

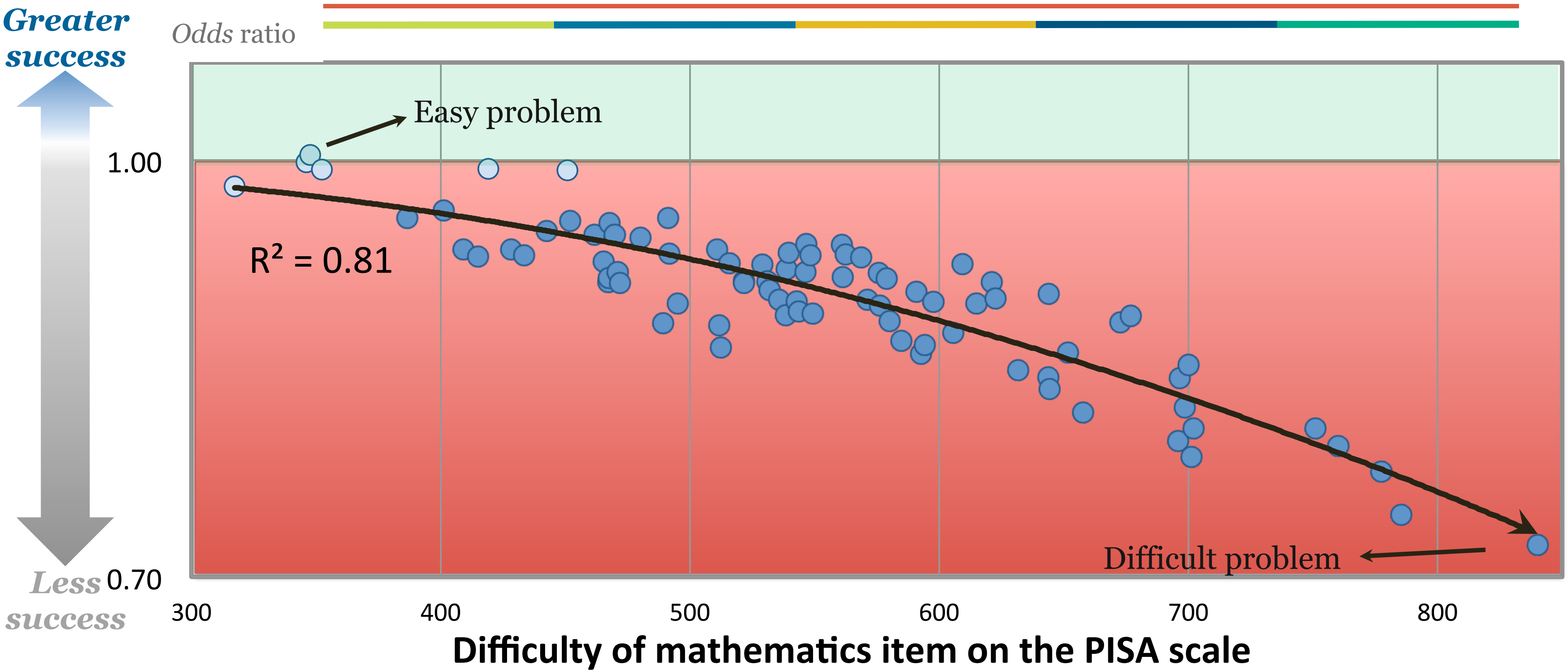

95% of teachers: My role as a teacher
is to facilitate students own inquiry


82%: Students learn best
by findings solutions on their own

85%: Thinking and reasoning is more important than curriculum content

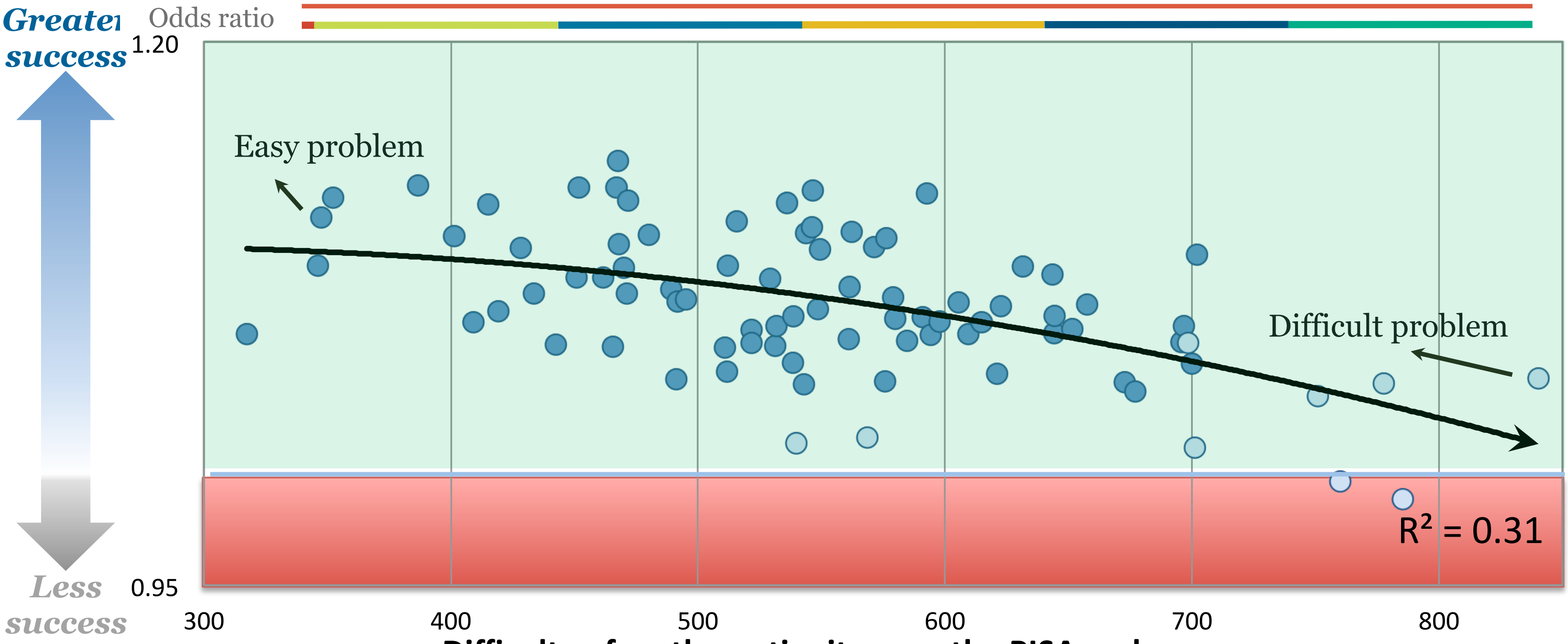

Prevalence of memorisation
rehearsal, routine exercises, drill and practice and/or repetition
Prevalence of elaboration
reasoning, deep learning, intrinsic motivation, critical thinking, creativity, non-routine problems
United Kingdom
Netherlands
Spain
Norway
United States
Singapore
Canada
Shanghai-China
Sweden
France
Korea
Japan
Germany
Poland
Switzerland
-2.00
-1.50
-1.00
-0.50
0.00
0.50
1.00
1.50
2.00
High
Low
Low
High

Memorisation is **less useful** as problems become **more difficult** *(OECD average)*



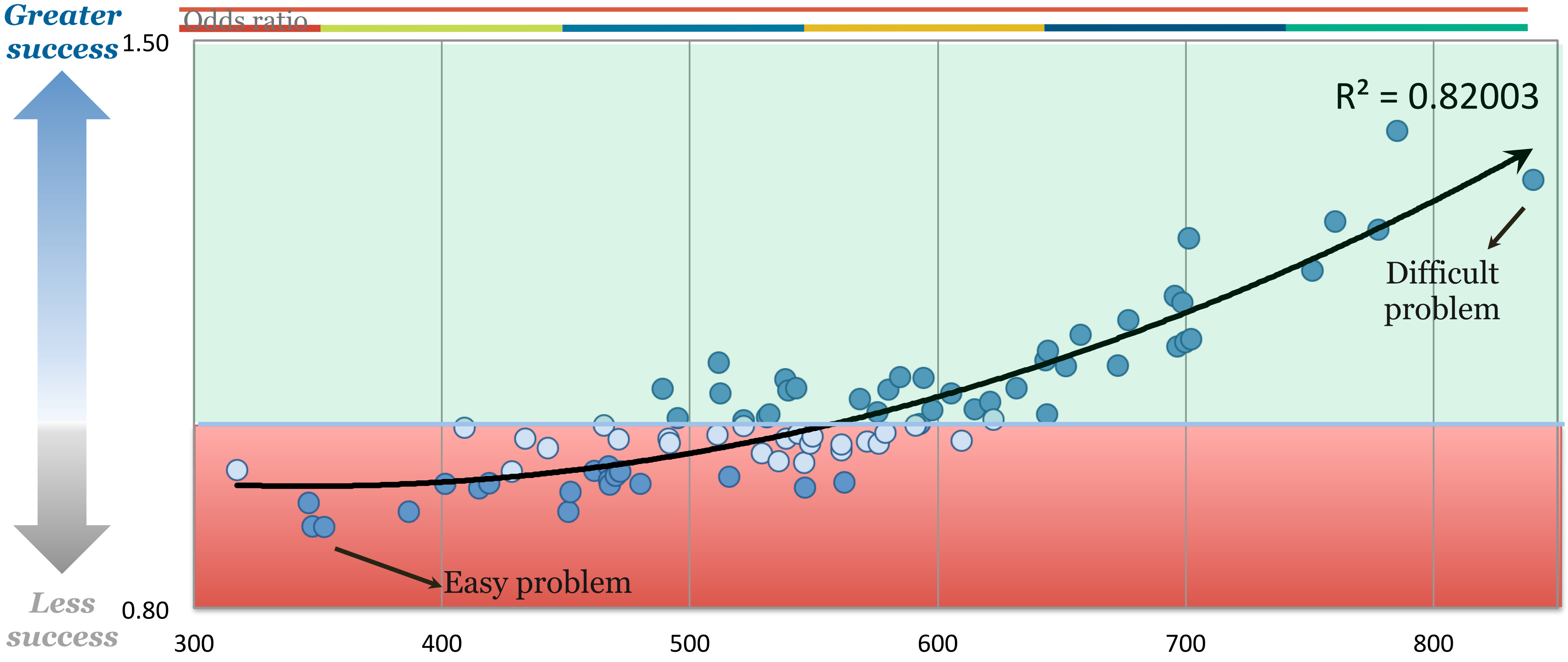
Source: Figure 4.3

Control strategies are **always helpful** but **less so** as problems become **more difficult** *(OECD average)*



Source: Figure 5.2

Elaboration strategies are **more useful** as problems become **more difficult** *(OECD average)*

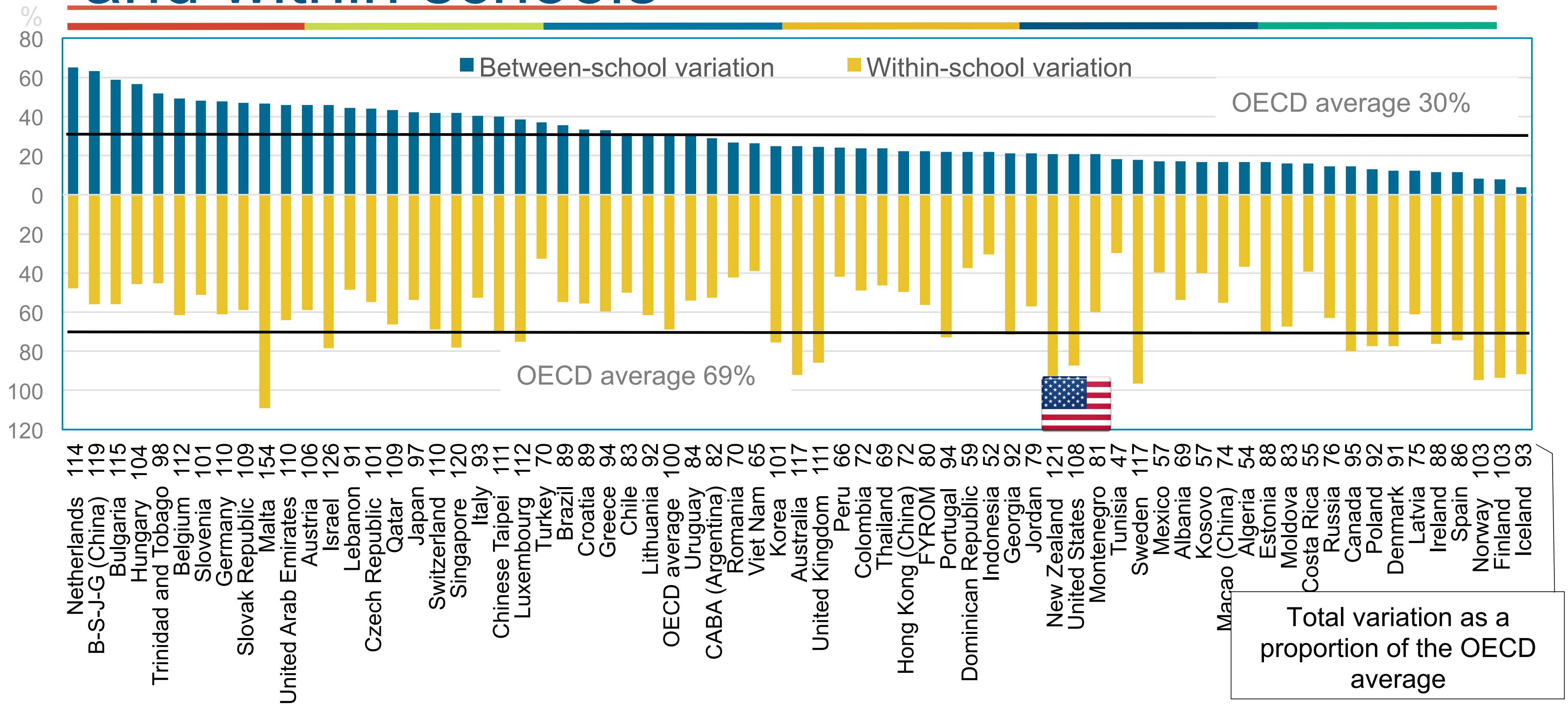


Difficulty of mathematics item on the PISA scale

Source: Figure 6.2

Variation in science performance between and within schools

Figure I.6.11



Some design choices and trade-offs

Design choices and trade-offs

- Balancing breadth and depth of framework coverage
  - **Core** assessments in reading, math and science every three years
    - With focus (increased sample) rotating
  - One **innovative** assessment area every three years
    - Digital literacy (2009)
    - Individual problem-solving (2012)
    - Collaborative problem-solving (2015)
    - Global competency (2018)
    - Creative thinking (2021)
  - **Optional** assessments
    - Financial literacy
  - Matrix sampling with adaptive assessment instruments

Design choices and trade-offs

- **Measuring change** while **changing the measures**
  - Every three years one of the frameworks is revised
    - Bridging studies for content and delivery
  - New measures are first explored through innovative assessment areas
- As **comparable** as possible and as specific as necessary
  - Adaptive assessment instruments
  - Modular context questionnaires
- Frameworks **informed** but not constrained by national standards and curricula
  - Curriculum validation studies

Thank you

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

- **All publications**
- **The complete micro-level database**

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