

# Attitudes to learning – questioning the PISA data



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Tom Benton  
Principal Research Officer  
Cambridge Assessment



UNIVERSITY of CAMBRIDGE  
Local Examinations Syndicate

# Outline of presentation



- Review of OECD's report

*The ABC of Gender Equality in Education:  
Aptitude, Behaviour, Confidence*



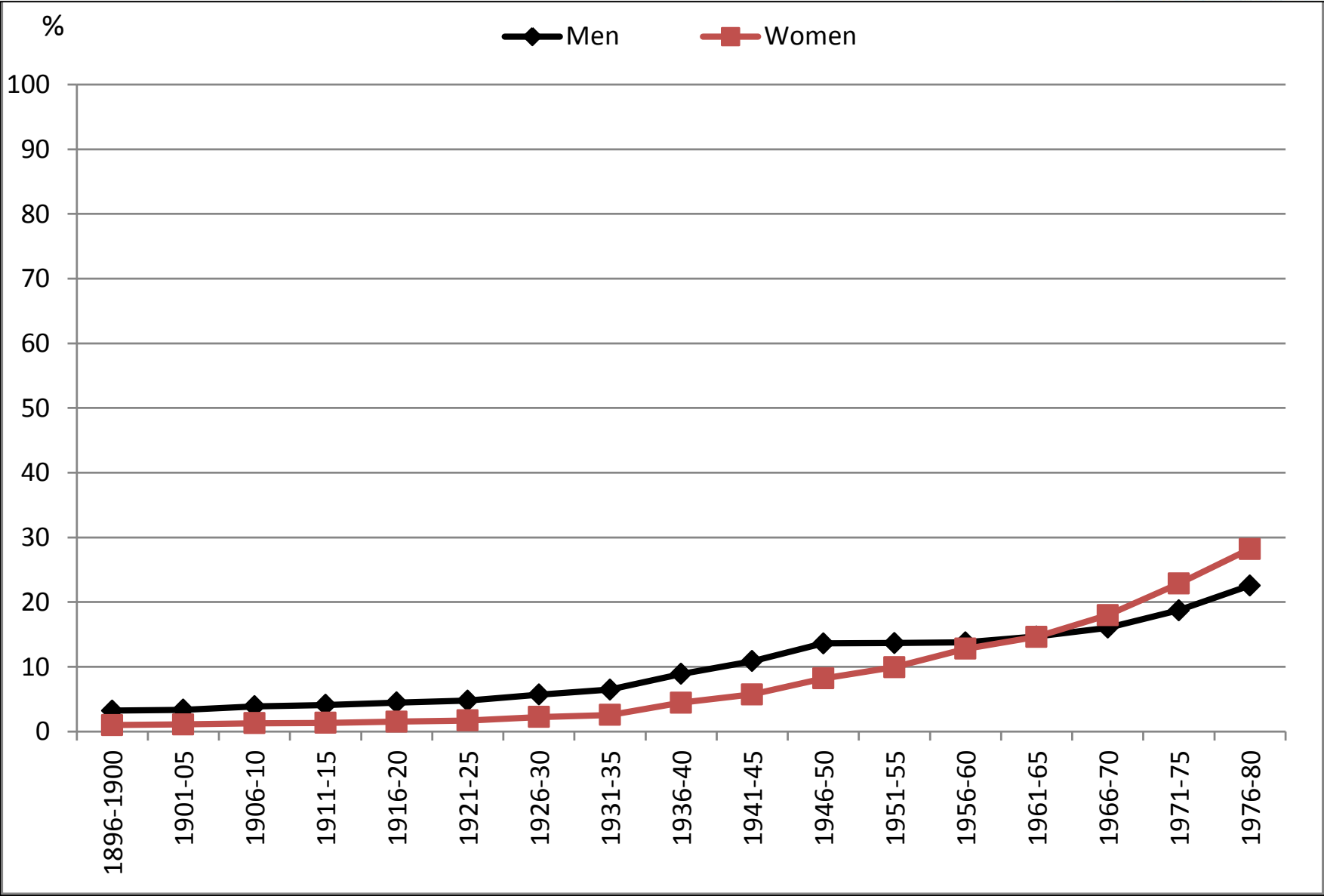
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*“new gender gaps in education  
are opening” (page 13)*

# % earning a tertiary degree (OECD average)



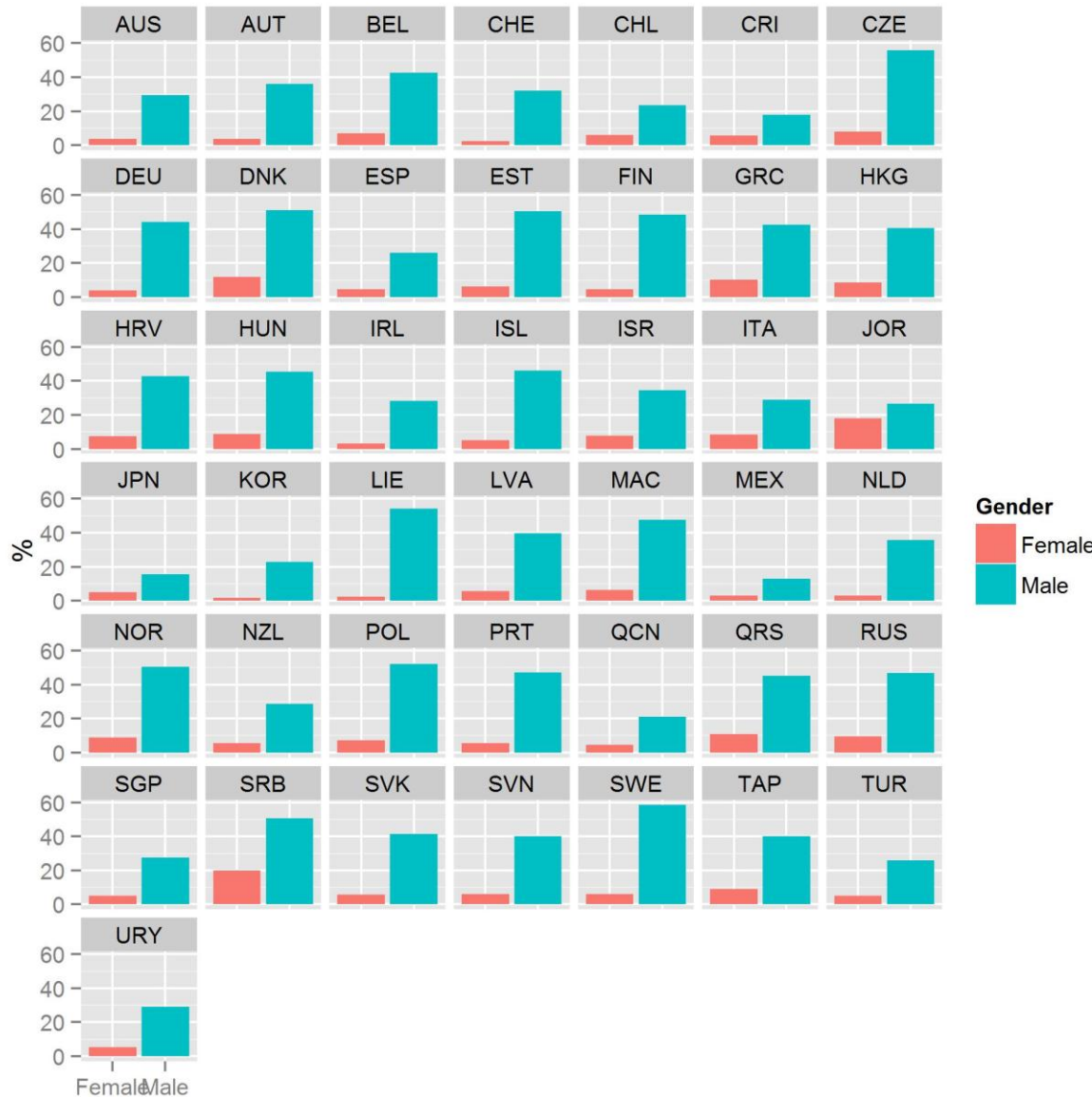
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# PISA 2012 - % playing online collaborative games almost every day (or more)



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Boys 43..Girls 0

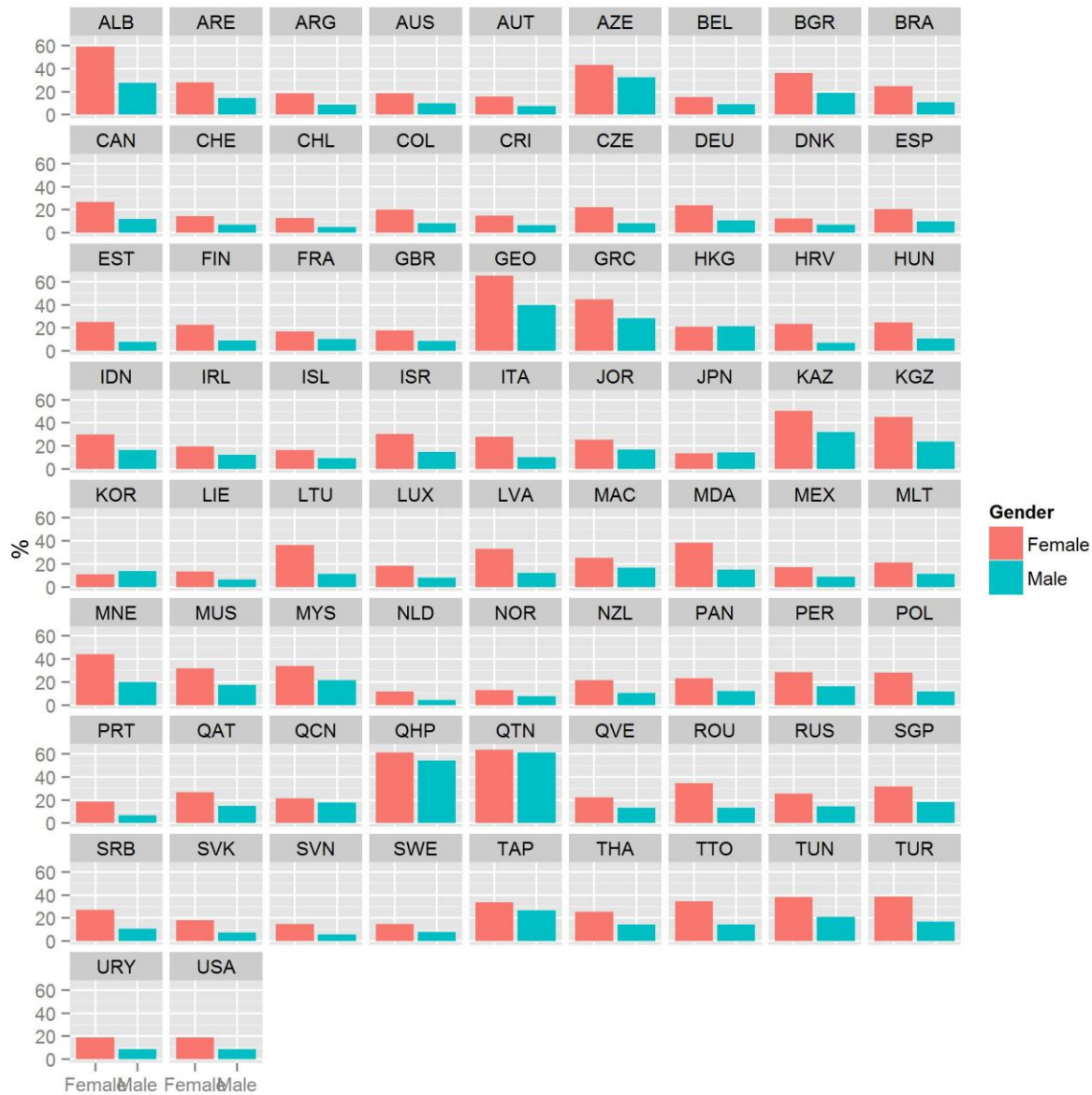
	% (OECD average)
Boys	38%
Girls	6%

# PISA 2009 - % reading for an hour a day (or more) because they want to



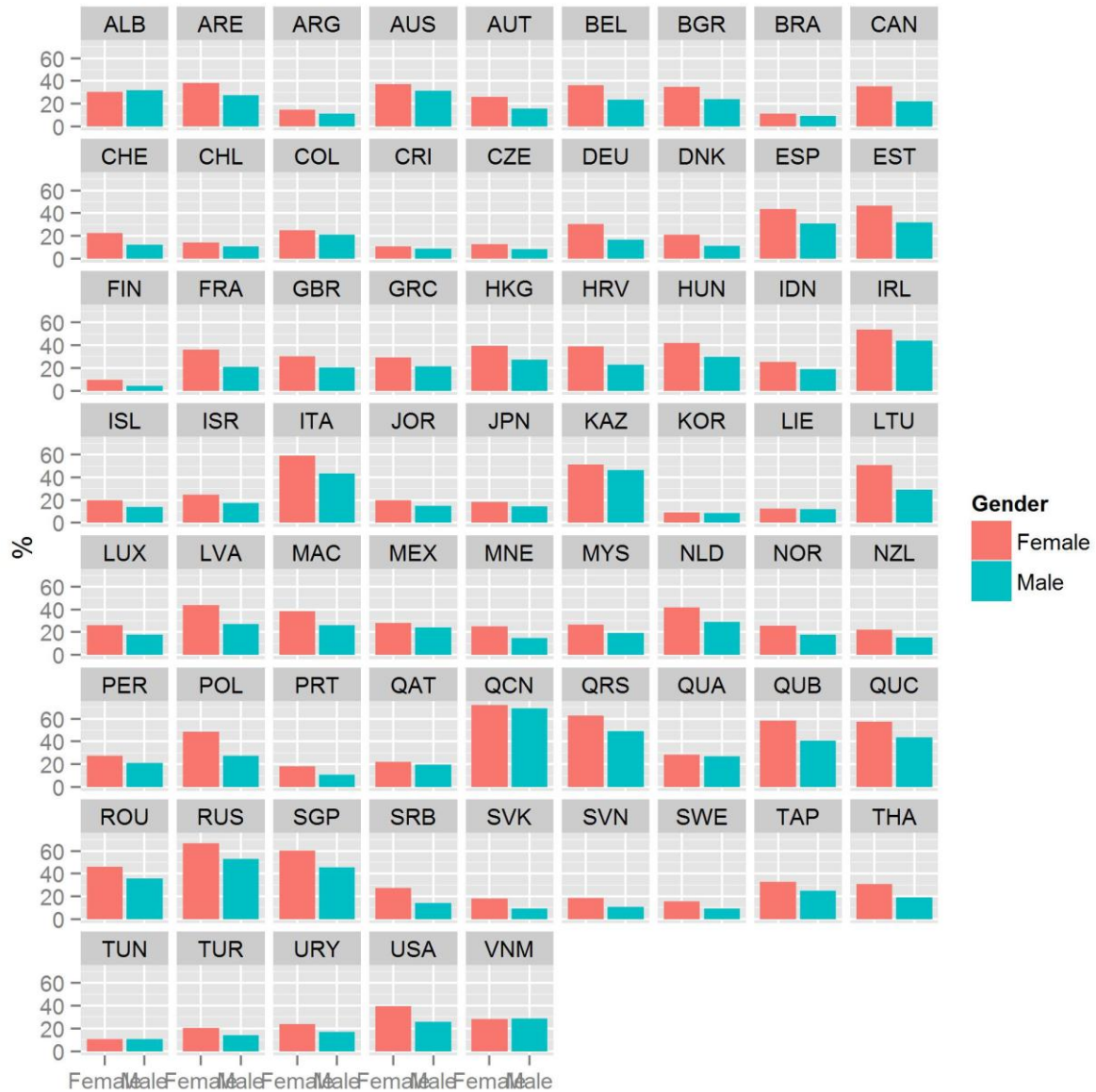
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Boys 3..Girls 71



	% (OECD average)
Boys	10%
Girls	20%

# PISA 2012 - % doing at least an hour a day of homework

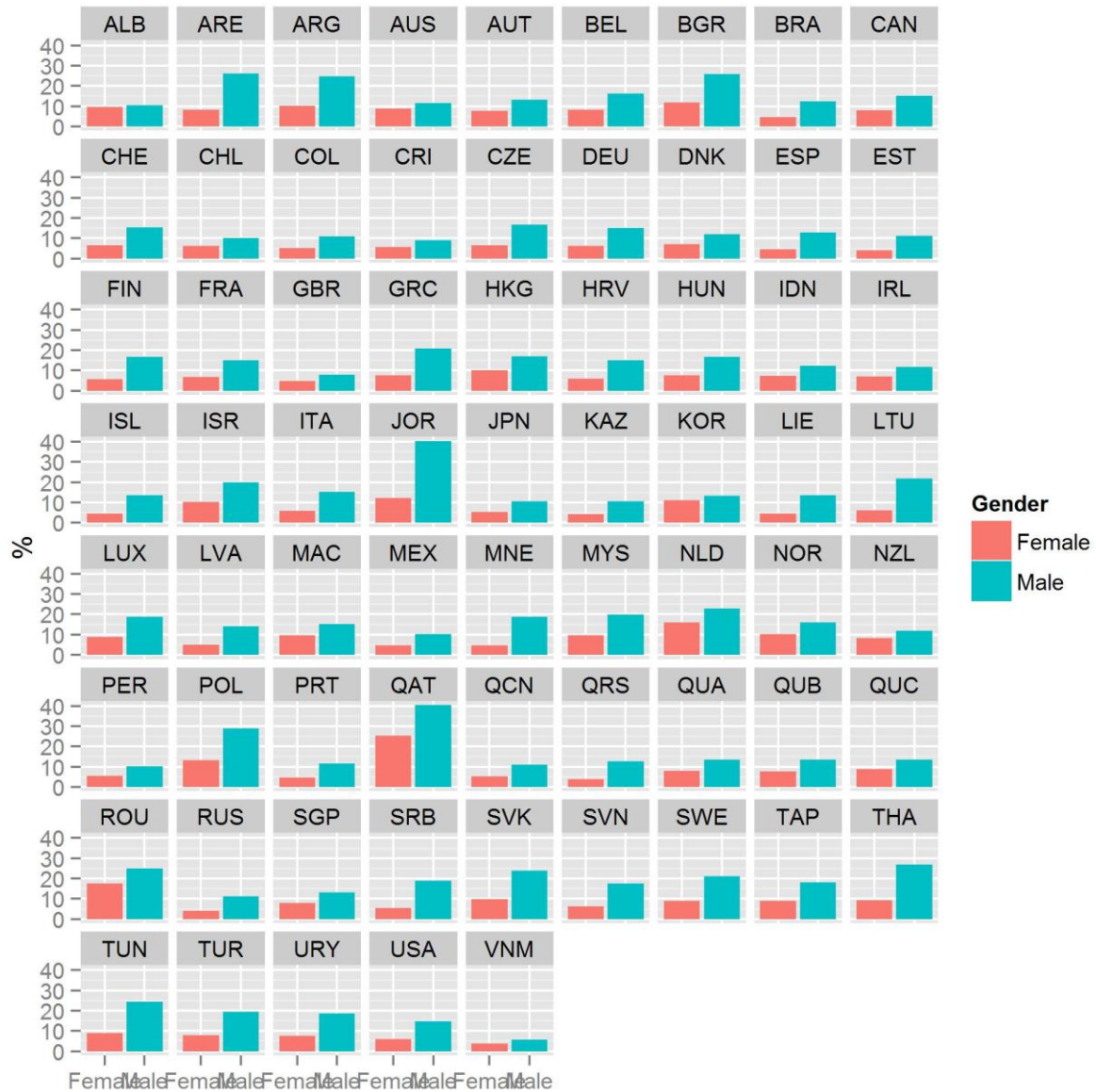


Boys 2..Girls 66

	% (OECD average)
Boys	20%
Girls	29%



# PISA 2012 - % agreeing "school has been a waste of time"

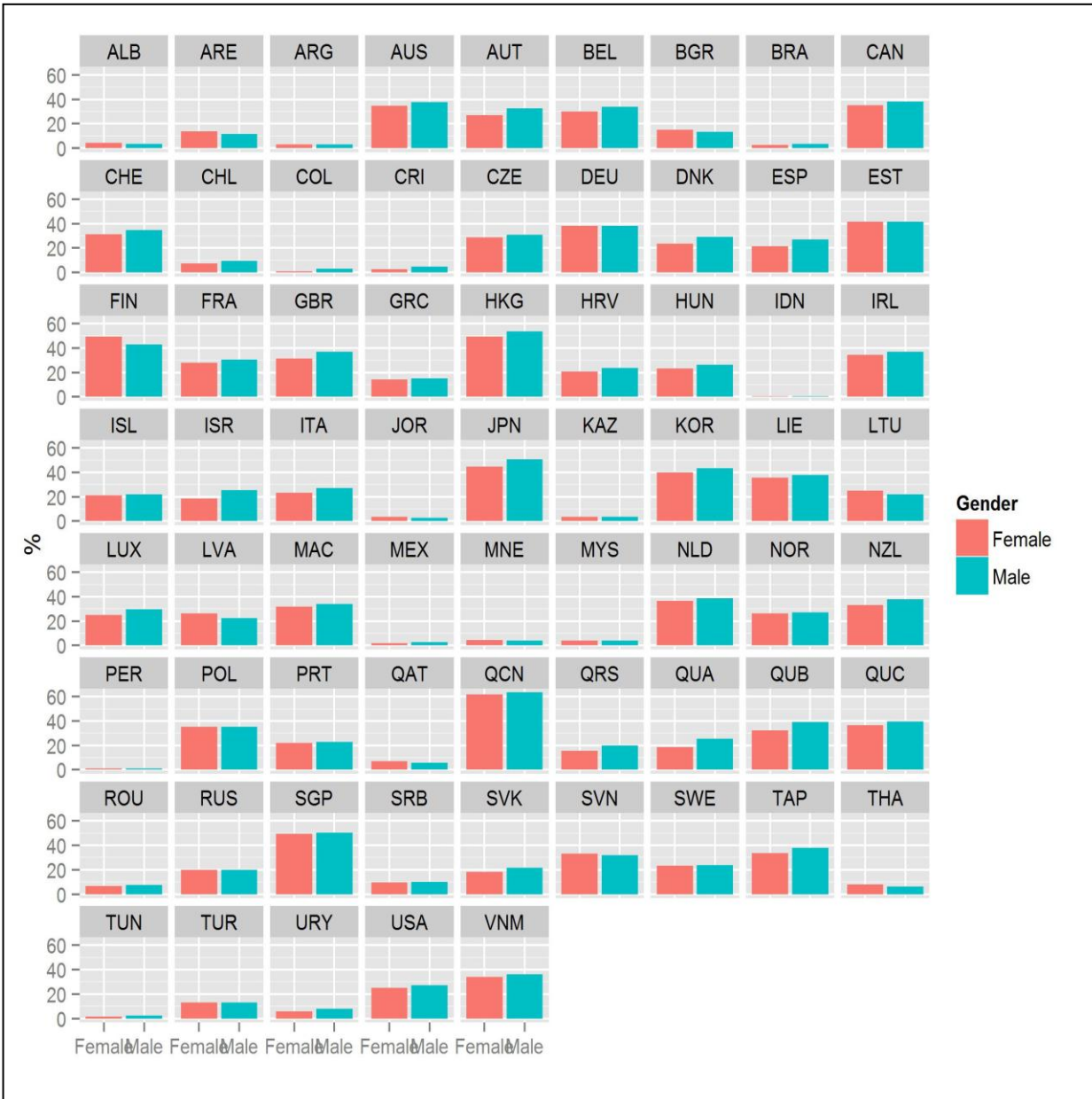


Boys 68..Girls 0

	% (OECD average)
Boys	16%
Girls	8%



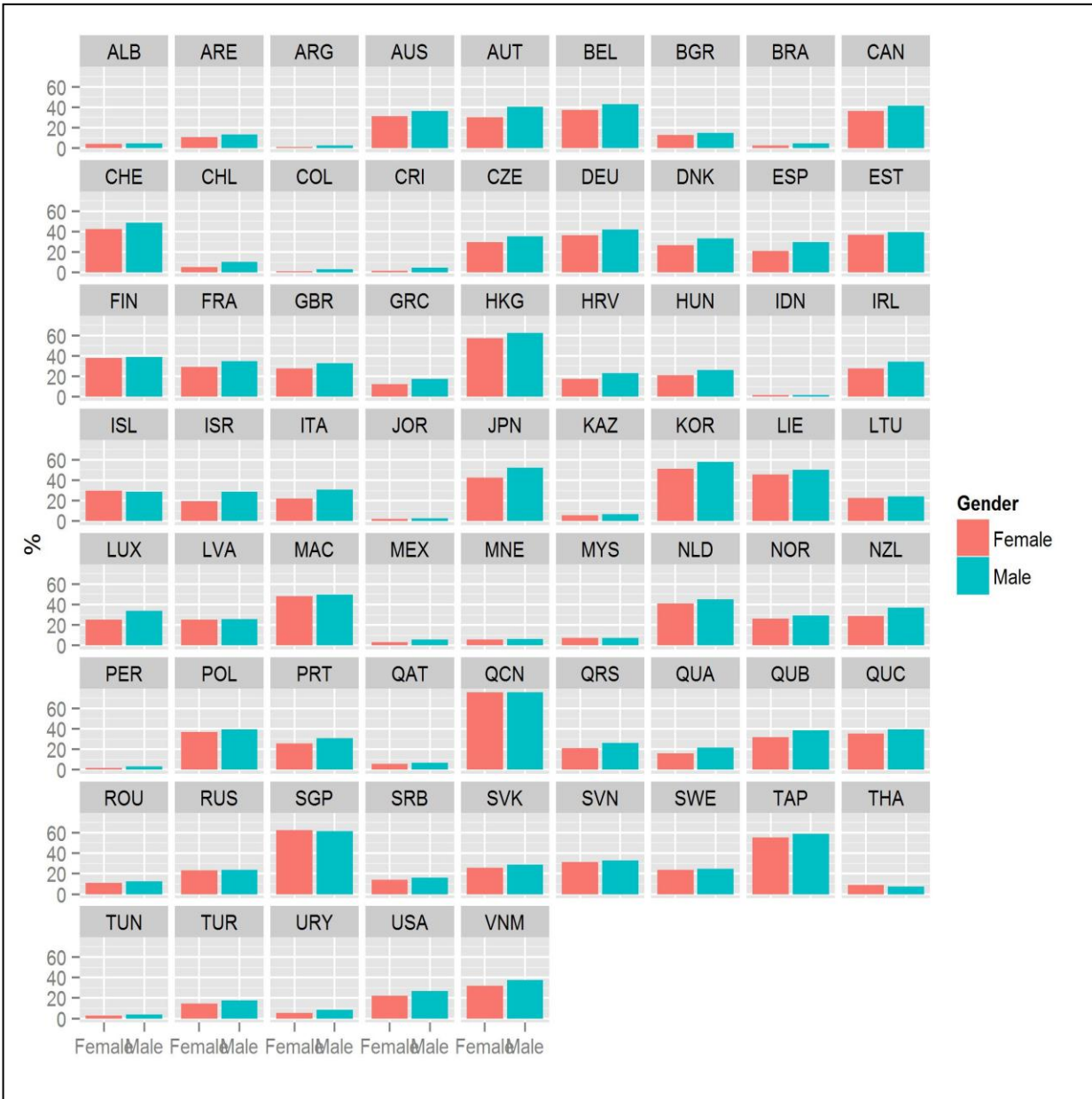
# PISA 2012 - % Level 4 in Science



Boys 54..Girls 14

	% (OECD average)
Boys	30%
Girls	28%

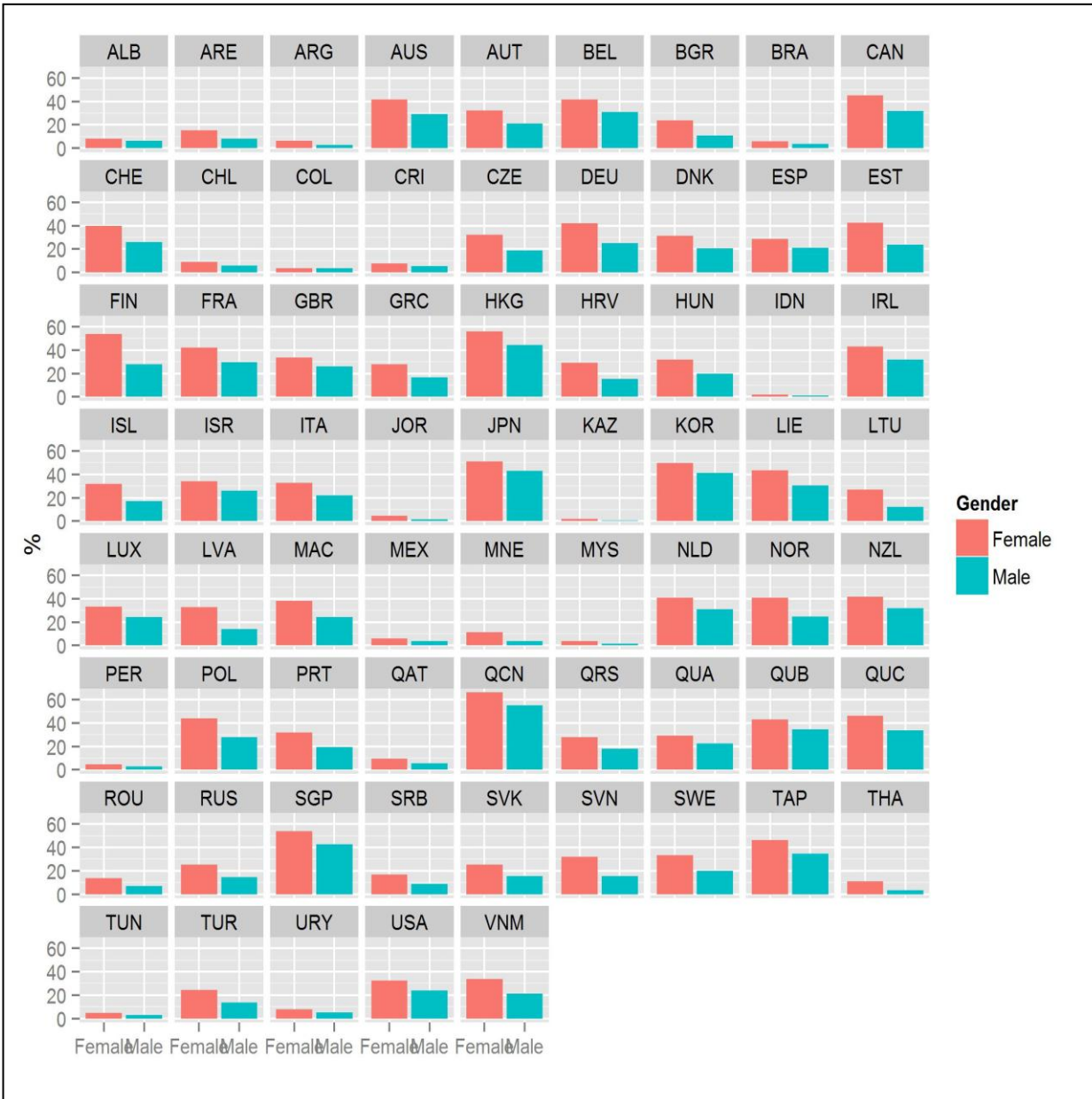
# PISA 2012 - % Level 4 in Maths



Boys 65..Girls 3

	% (OECD average)
Boys	33%
Girls	28%

# PISA 2012 - % Level 4 in Reading



Boys 0..Girls 68

	% (OECD average)
Boys	24%
Girls	35%



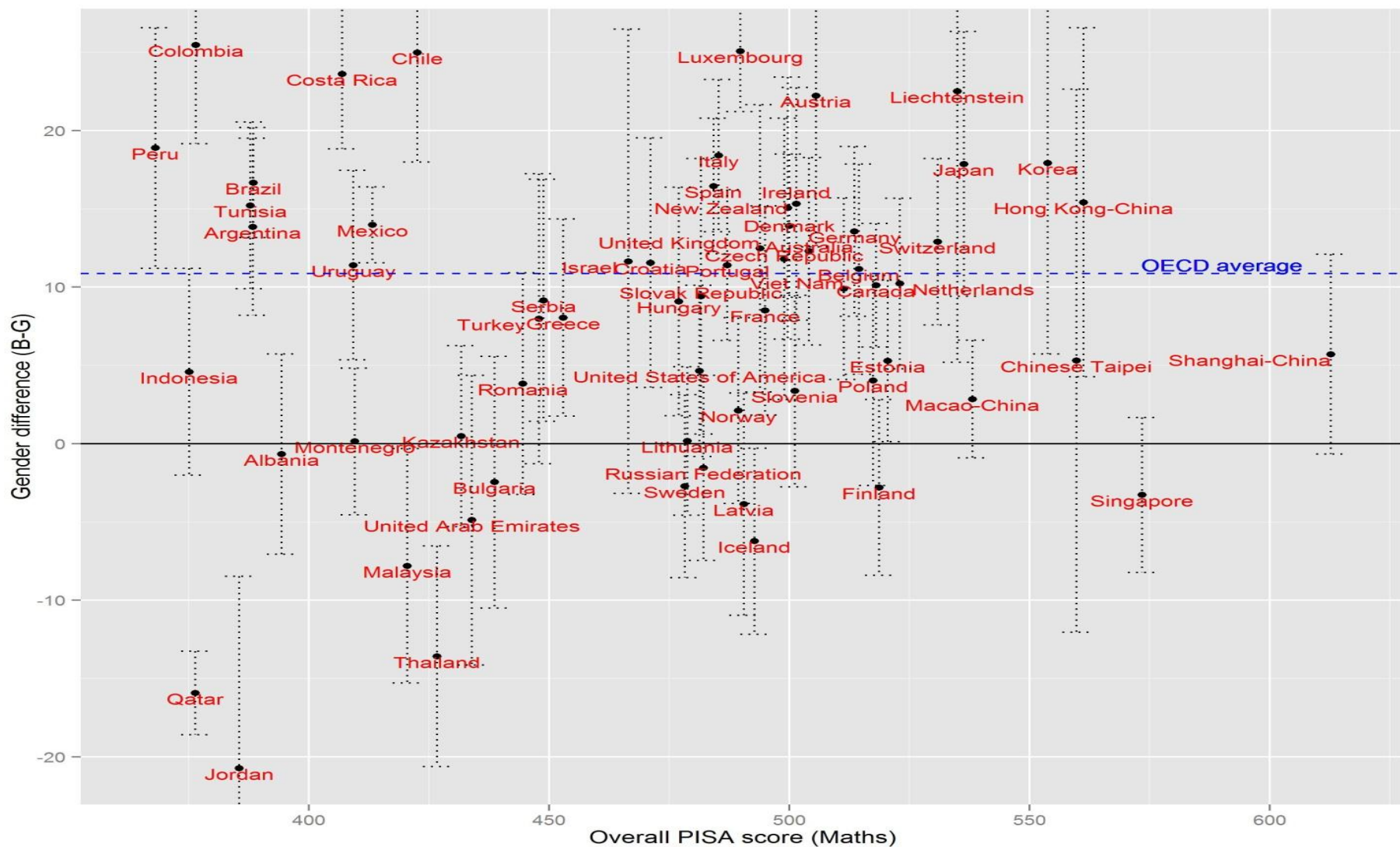
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*“in the top performing countries  
...girls perform on a par with their  
male classmates in mathematics”  
(page 3)*

# Performance and gender differences in Maths



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*“in virtually all countries boys and girls use their free time in different ways;*

*...these differences have a significant impact”*

(page 37)

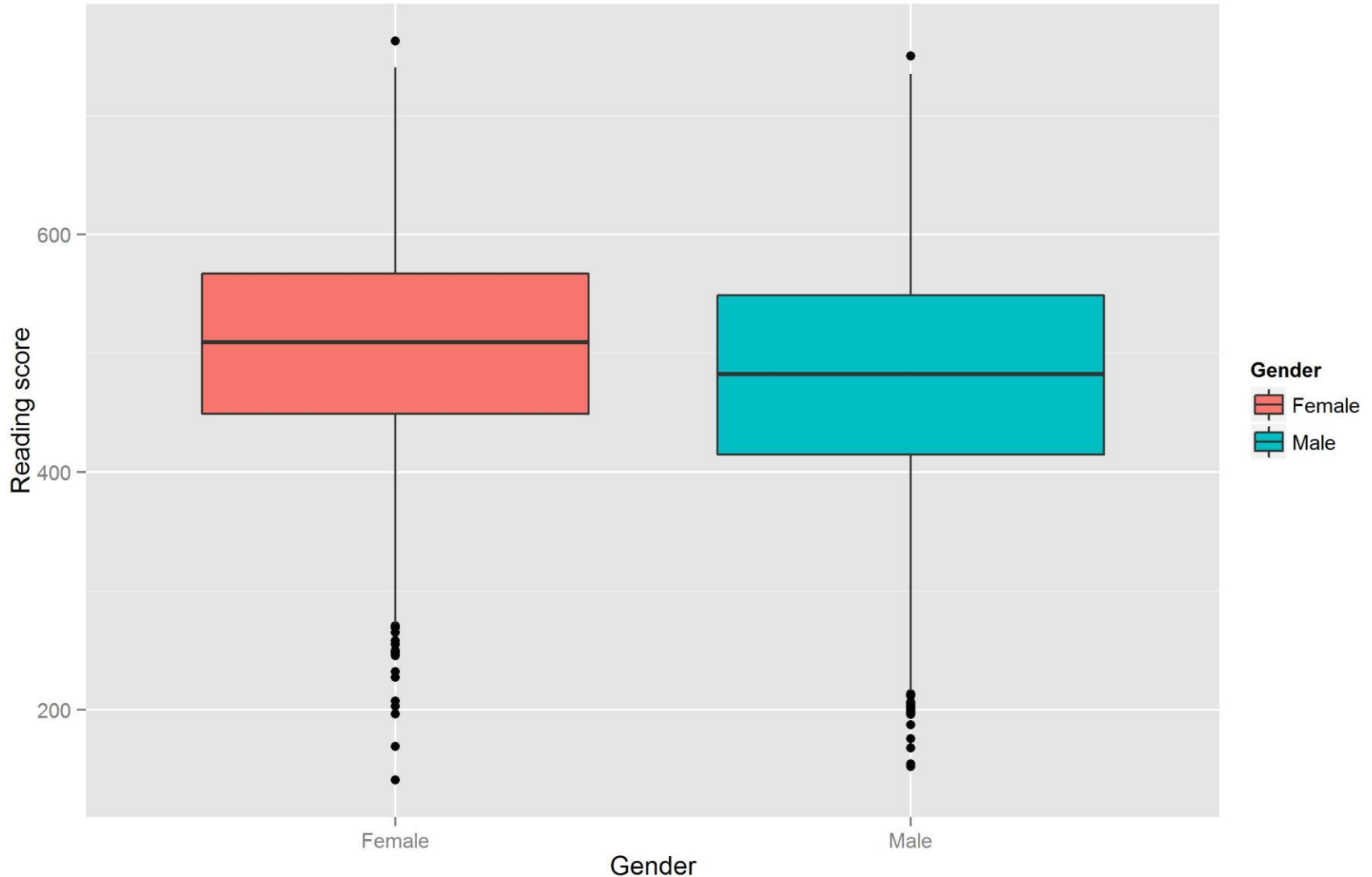
# Explanations for the reading gender gap (PISA 2009)

	OECD average gender gap (PISA points)
PISA reading	38

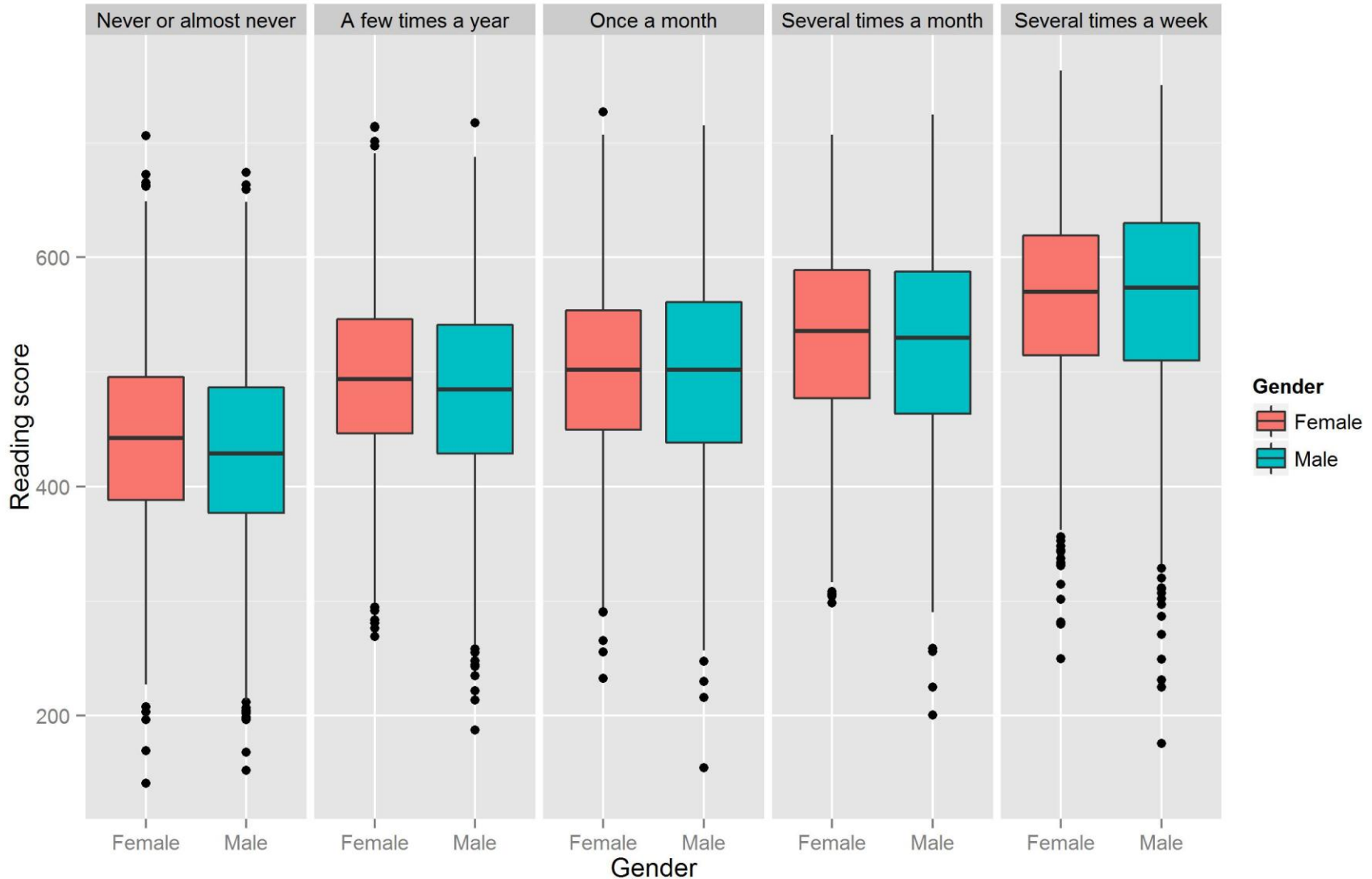
Factor	Extent of points difference explained ( <i>non-additive!</i> )
Attitude to school (“school has been a waste of time”)	4
Video games	5
Homework	8
Reading for pleasure	?



# Distribution of reading scores in the UK (PISA 2009)



# Distribution of scores split by how often read fiction (PISA 2009)



# Explanations for the reading gender gap (PISA 2009)

	OECD average gender gap (PISA points)
PISA reading	38

Factor	Extent of points difference explained ( <i>non-additive!</i> )
Reading <u>fiction</u> for pleasure	17
Reading enjoyment (factor score)	22

# Thoughts



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- Video games, homework and attitude to school may all partially explain gender differences
- Extent of reading for pleasure (particularly reading fiction) gives stronger link
  - But isn't this self-evident?
  - Doesn't explain gender gaps in countries like Korea and Japan.

*“Individuals who are organised and can understand, summarise and filter large amounts of written material may be at an advantage. In most societies, **these individuals are usually female**, though **why that is so remains a mystery**” (page 58)*



*“girls have less confidence than boys in their ability to solve mathematics...problems”*

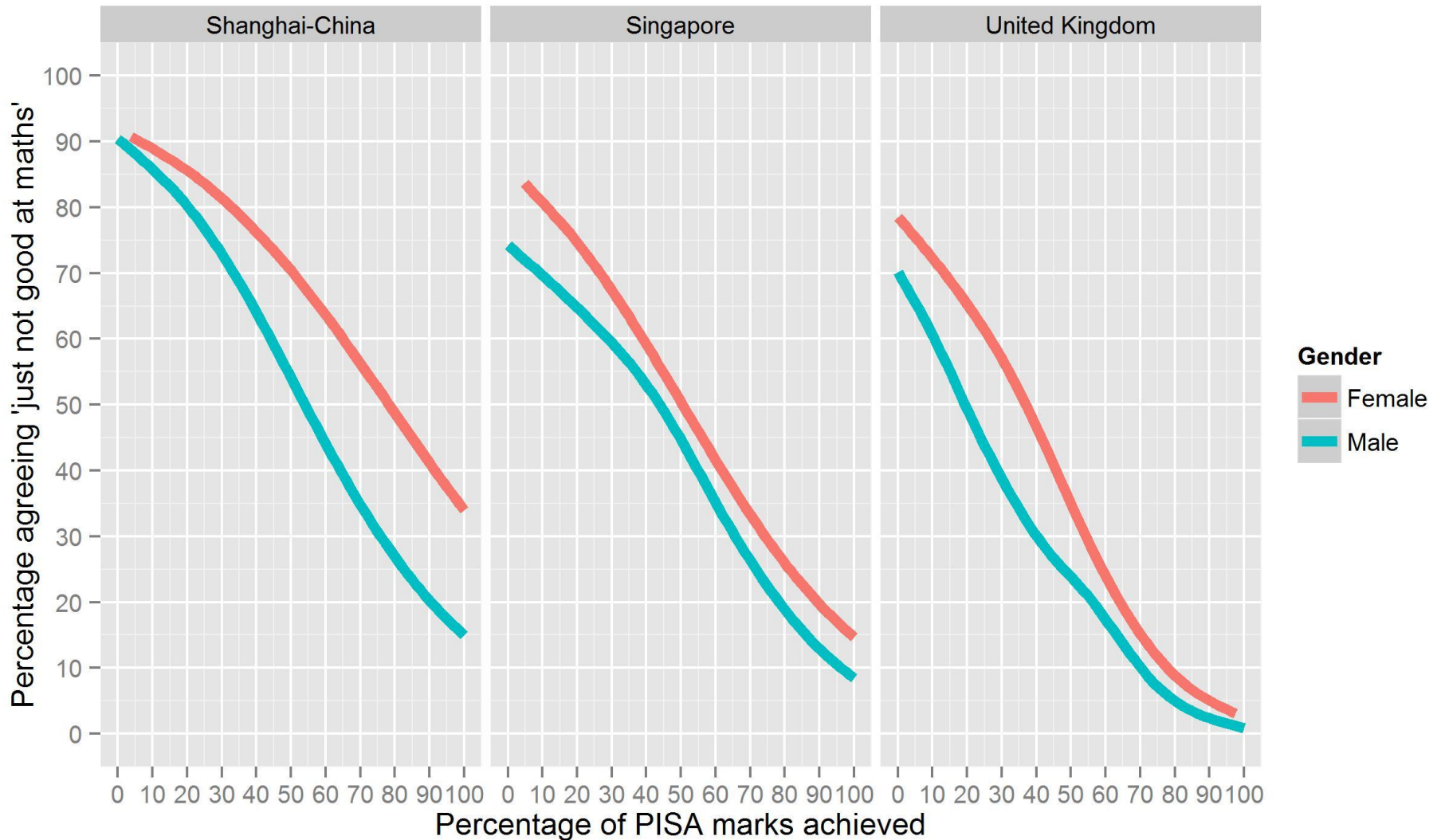
(page 14)

# Confidence and anxiety in Maths

Percentage of students agreeing that...	OECD average	
	Boys	Girls
I learn mathematics quickly	59	45
I am just not good at mathematics	37	48
I feel helpless when doing a mathematics problem	25	35

- Further analysis shows that, with equal levels of confidence, girls perform at least as well as boys

# Relationship between performance and lack of confidence







“Girls appear to underperform considerably when they are required to ‘think like scientists’”  
(page 64)

# Performance of boys and girls in science subscales (PISA 2006)



	Identifying scientific issues	Explaining phenomena scientifically	Using scientific evidence
Mean PISA score (OECD boys)	489	506	496
Mean PISA score (OECD girls)	506	491	499
Difference (B-G)	-17	15	-3
Number of released items	8	11	4
Number of released items where boys outperform girls (OECD)	0	6	2
Number of released items where girls outperform boys (OECD)	8	5	2

# “Identifying scientific issues” – Example

A team of British scientists is developing “intelligent” clothes that will give disabled children the power of “speech”. Children wearing waistcoats made of a unique electrotextile, linked

## Percentage of pupils answering correctly in OECD

girls (50.7%)



boys (45.1%)



# “Explaining phenomena scientifically” – Example

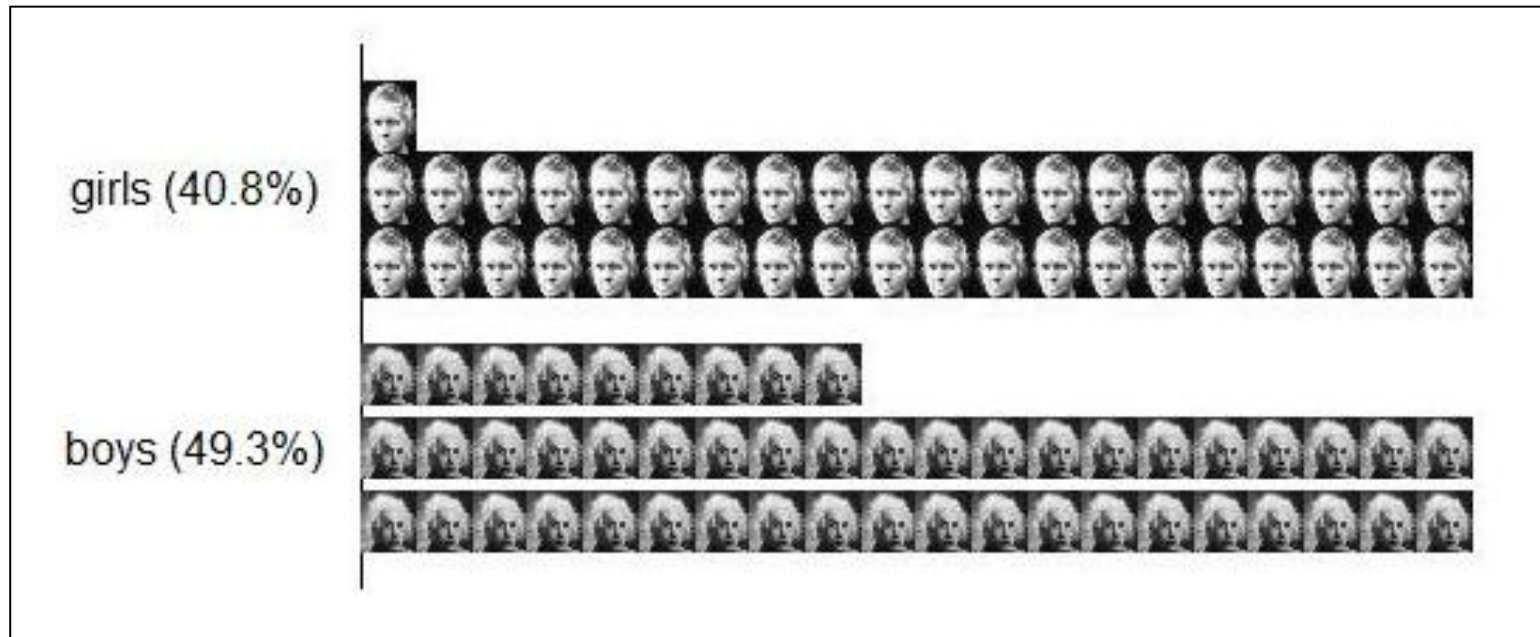
## QUESTION 11.3

Why do you have to breathe more heavily when you're doing physical exercise than when your body is resting?

.....

.....

.....



# Thoughts



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Is it fair to say that girls are worse at “thinking like scientists”?

Specifics of what’s being tested are quite important.

# Summary



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- PISA shows plenty of gender differences
- Equality different to overall performance
- Explanations of differences in performance incomplete
  - Direction of causality uncertain
  - Unknown real impact of policy responses
  - Lead to more questions to explain the causes
- Danger of sweeping statements missing some of the subtleties of gender differences