

Exhibit 3.5: Differences in Achievement for Science Content Domains Across Assessment Years

Instructions: Read across the row to determine if the performance in the row year is significantly higher (▲) or significantly lower (▼) than the performance in the column year.

Country	Life Science Average Scale Score	Life Science		Physical Science Average Scale Score	Physical Science		Earth Science Average Scale Score	Earth Science	
		Differences Between Years			Differences Between Years			Differences Between Years	
		2011	2007		2011	2007		2011	2007
Australia									
2015	531 (3.0)	15 ▲	2	516 (2.7)	2	-5	520 (3.3)	0	-16 ▼
2011	516 (3.1)		-14 ▼	514 (3.1)		-7	520 (3.6)		-17 ▼
2007	529 (3.6)			521 (3.8)			536 (4.2)		
Bahrain									
² 2015	455 (2.9)	11 ▲		465 (3.2)	12 ▲		448 (3.2)	3	
2011	444 (4.2)			453 (4.6)			445 (3.7)		
Belgium (Flemish)									
[†] 2015	513 (2.4)	3		506 (3.2)	-1		513 (2.8)	8	
2011	510 (2.5)			507 (2.1)			505 (2.9)		
Chile									
2015	487 (2.6)	-2		466 (2.9)	-5		465 (3.4)	-10 ▼	
2011	490 (2.2)			471 (2.5)			475 (2.8)		
Chinese Taipei									
2015	545 (2.0)	7 ▲	-2	568 (2.0)	0	5	555 (2.5)	3	-8 ▼
2011	538 (2.5)		-9 ▼	569 (2.1)		5	553 (2.6)		-10 ▼
2007	547 (2.7)			564 (2.4)			563 (2.9)		
Croatia									
2015	531 (2.6)	6		535 (2.9)	33 ▲		535 (3.4)	14 ▲	
² 2011	525 (2.0)			502 (2.7)			521 (2.7)		
Czech Republic									
2015	538 (2.0)	-12 ▼	16 ▲	531 (2.4)	11 ▲	22 ▲	531 (3.0)	-6	18 ▲
2011	550 (3.0)		27 ▲	519 (3.1)		10 ▲	537 (3.2)		24 ▲
2007	522 (3.4)			509 (3.5)			514 (3.6)		
Denmark									
² [†] 2015	534 (2.4)	4	7	516 (2.7)	-10 ▼	14 ▲	531 (3.0)	4	12 ▲
² 2011	530 (2.7)		3	526 (2.4)		24 ▲	527 (3.0)		8
[†] 2007	527 (3.4)			502 (3.1)			519 (3.3)		
England									
2015	536 (2.5)	6	0	540 (2.7)	5	-6	527 (3.3)	5	-14 ▼
2011	530 (3.0)		-6	535 (3.4)		-10 ▼	522 (3.8)		-19 ▼
2007	536 (3.1)			546 (3.2)			542 (3.4)		
Finland									
2015	556 (2.6)	-18 ▼		547 (2.3)	-21 ▼		560 (2.6)	-5	
2011	574 (2.8)			568 (2.9)			566 (2.8)		
Georgia									
¹ 2015	459 (4.1)	-2	37 ▲	438 (4.7)	-2	35 ▲	441 (4.3)	-17 ▼	25 ▲
¹ 2011	461 (3.7)		39 ▲	440 (4.2)		37 ▲	458 (4.2)		42 ▲
¹ 2007	421 (4.2)			403 (4.9)			416 (5.6)		
Germany									
2015	528 (2.0)	3	-3	532 (2.5)	-3	6	519 (4.0)	-1	-5
2011	525 (2.7)		-6	535 (3.1)		8	520 (3.8)		-4
2007	531 (2.2)			527 (3.2)			524 (2.8)		
Hong Kong SAR									
[†] 2015	550 (3.7)	26 ▲	10	555 (3.5)	16 ▲	-7	574 (3.1)	26 ▲	6
² 2011	524 (3.9)		-16 ▼	539 (4.5)		-23 ▼	548 (3.4)		-20 ▼
2007	540 (3.8)			562 (3.9)			568 (4.2)		
Hungary									
2015	550 (3.4)	-1	-2	534 (3.5)	13 ▲	5	535 (4.0)	11	18 ▲
2011	552 (3.4)		-1	520 (3.7)		-8	524 (4.4)		7
2007	553 (3.3)			529 (3.7)			517 (4.4)		

▲ More recent year significantly higher
▼ More recent year significantly lower

Trend results for Kuwait do not include private schools. Trend results for Lithuania do not include students taught in Polish or in Russian.

* Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 25%. Such annotations in exhibits with trend data began in 2011, so data from assessments prior to 2011 are not annotated for reservations.

ψ Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 15% but does not exceed 25%. Such annotations in exhibits with trend data began in 2011, so data from assessments prior to 2011 are not annotated for reservations.

See Appendix C.1 for target population coverage notes 1, 2, and 3. See Appendix C.7 for sampling guidelines and sampling participation notes †, ‡, and §.

‡ Tested the same cohort of students as other countries, but later in the assessment year at the beginning of the next school year.

() Standard errors appear in parentheses. Because of rounding some results may appear inconsistent.

SOURCE: IEA's Trends in International Mathematics and Science Study – TIMSS 2015

Exhibit 3.5: Differences in Achievement for Science Content Domains Across Assessment Years (Continued)

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Country	Life Science Average Scale Score	Life Science		Physical Science Average Scale Score	Physical Science		Earth Science Average Scale Score	Earth Science	
		Differences Between Years			Differences Between Years			Differences Between Years	
		2011	2007		2011	2007		2011	2007
Iran, Islamic Rep. of									
2015	417 (4.5)	-31 ▼	-20 ▼	423 (5.0)	-30 ▼	-16 ▼	408 (4.8)	-49 ▼	-8
2011	449 (4.0)		11	453 (3.9)		13 ▲	457 (3.6)		40 ▲
2007	437 (5.1)			440 (4.8)			416 (5.0)		
Ireland									
2015	531 (2.4)	18 ▲		524 (2.8)	7		535 (3.0)	15 ▲	
2011	513 (3.5)			517 (3.0)			520 (3.8)		
Italy									
² 2015	519 (2.7)	-16 ▼	-36 ▼	513 (2.9)	4	-7	510 (3.5)	-13 ▼	-16 ▼
2011	535 (2.8)		-20 ▼	509 (3.1)		-11 ▼	523 (3.7)		-3
2007	555 (3.7)			520 (3.6)			527 (4.2)		
Japan									
2015	556 (2.2)	16 ▲	20 ▲	587 (2.6)	-2	16 ▲	563 (2.5)	12 ▲	31 ▲
2011	540 (1.9)		4	589 (2.0)		18 ▲	551 (1.8)		20 ▲
2007	536 (2.3)			571 (2.8)			532 (3.5)		
Kazakhstan									
2015	545 (4.1)	45 ▲		559 (5.0)	73 ▲		542 (5.4)	51 ▲	
² 2011	500 (5.2)			486 (5.3)			491 (5.9)		
Korea, Rep. of									
2015	581 (1.9)	11 ▲		597 (2.0)	1		591 (4.1)	-12 ▼	
2011	571 (2.2)			597 (2.6)			603 (2.0)		
Kuwait									
^ψ 2015	310 (5.6)	-12		303 (5.3)	-46 ▼		312 (5.9)	-40 ▼	
^{1 ψ} 2011	323 (4.9)			348 (4.6)			352 (4.8)		
Lithuania									
² 2015	529 (3.1)	9 ▲	11 ▲	538 (2.8)	24 ▲	26 ▲	517 (3.9)	17 ▲	9
^{1 2} 2011	520 (3.0)		2	514 (3.1)		3	501 (3.0)		-8
¹ 2007	518 (2.2)			511 (2.1)			508 (2.8)		
Morocco									
^ψ 2015	350 (4.3)	106 ▲		357 (5.9)	101 ▲		289 (6.6)	81 ▲	
^Ж 2011	245 (4.6)			256 (5.4)			208 (4.9)		
Netherlands									
[†] 2015	525 (2.7)	-11 ▼	-14 ▼	504 (2.6)	-22 ▼	0	520 (3.0)	-5	-4
[†] 2011	537 (1.9)		-3	526 (2.0)		22 ▲	525 (2.8)		1
[‡] 2007	539 (2.6)			503 (3.2)			524 (3.5)		
New Zealand									
2015	511 (2.7)	14 ▲	5	497 (2.5)	4	3	506 (3.4)	7	-7
2011	497 (2.5)		-8 ▼	493 (2.7)		-1	499 (3.1)		-14 ▼
2007	506 (2.7)			494 (3.3)			513 (3.5)		
Northern Ireland									
[‡] 2015	521 (2.7)	3		514 (2.6)	-6		522 (3.0)	15 ▲	
[†] 2011	519 (2.9)			520 (3.2)			507 (2.7)		
Norway (4)									
2015	502 (2.4)	6	20 ▲	475 (2.8)	-8	14 ▲	498 (3.7)	-8	8
[‡] 2011	496 (3.1)		13 ▲	482 (3.4)		21 ▲	506 (3.3)		17 ▲
2007	482 (2.8)			461 (3.5)			490 (3.7)		
Oman									
2015	426 (3.2)	56 ▲		435 (3.4)	65 ▲		423 (3.5)	53 ▲	
2011	370 (3.9)			370 (4.8)			371 (4.7)		
Portugal									
² 2015	508 (2.1)	-13 ▼		502 (2.9)	-15 ▼		513 (2.5)	-18 ▼	
2011	520 (4.2)			517 (4.1)			531 (4.3)		
Qatar									
2015	436 (4.4)	53 ▲		435 (4.7)	39 ▲		427 (5.0)	26 ▲	
² 2011	383 (5.1)			397 (5.0)			401 (4.7)		

▲ More recent year significantly higher
▼ More recent year significantly lower

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Country	Life Science Average Scale Score	Life Science		Physical Science Average Scale Score	Physical Science		Earth Science Average Scale Score	Earth Science	
		Differences Between Years			Differences Between Years			Differences Between Years	
		2011	2007		2011	2007		2011	2007
Russian Federation									
2015	569 (3.1)	13 ▲	24 ▲	567 (3.6)	19 ▲	15 ▲	562 (4.7)	10	21 ▲
2011	556 (3.7)		12	548 (4.0)		-4	552 (4.0)		11
2007	545 (4.7)			552 (5.6)			541 (5.6)		
Saudi Arabia									
2015	382 (4.9)	-33 ▼		390 (5.5)	-49 ▼		395 (4.8)	-37 ▼	
2011	415 (6.2)			439 (5.9)			432 (6.1)		
Serbia									
³ 2015	531 (3.8)	13 ▲		529 (3.8)	6		496 (4.8)	-1	
² 2011	518 (3.0)			523 (3.8)			497 (3.6)		
Singapore									
² 2015	607 (4.4)	9	12	603 (3.7)	5	6	546 (3.7)	5	-18 ▼
² 2011	597 (4.4)		3	598 (3.6)		2	541 (3.1)		-24 ▼
2007	595 (4.8)			597 (4.3)			565 (4.1)		
Slovak Republic									
2015	517 (2.9)	-16 ▼	-18 ▼	526 (3.4)	-2	14 ▲	514 (3.0)	-22 ▼	-18 ▼
2011	534 (3.7)		-1	527 (4.1)		15 ▲	535 (4.0)		3
2007	535 (4.7)			512 (4.9)			532 (6.5)		
Slovenia									
2015	545 (2.3)	21 ▲	34 ▲	546 (2.4)	23 ▲	18 ▲	531 (4.1)	25 ▲	15 ▲
2011	524 (2.7)		13 ▲	524 (3.1)		-5	506 (2.7)		-10 ▼
2007	511 (2.1)			528 (2.3)			516 (3.2)		
Spain									
² 2015	523 (2.6)	10 ▲		507 (2.9)	10 ▲		520 (3.0)	21 ▲	
2011	513 (3.0)			497 (2.9)			499 (3.7)		
Sweden									
² 2015	540 (3.3)	6	8	534 (3.6)	6	26 ▲	552 (4.1)	13 ▲	13 ▲
2011	534 (2.8)		2	528 (2.5)		19 ▲	538 (3.2)		-1
2007	532 (2.7)			509 (3.2)			539 (3.9)		
Turkey									
2015	472 (3.3)	12 ▲		496 (3.3)	29 ▲		480 (3.3)	24 ▲	
2011	460 (4.5)			466 (4.8)			456 (5.2)		
United Arab Emirates									
2015	449 (3.3)	29 ▲		453 (3.0)	25 ▲		448 (3.5)	13 ▲	
2011	420 (2.7)			429 (2.7)			435 (2.4)		
United States									
² † 2015	555 (2.3)	8 ▲	12 ▲	537 (2.6)	-6	3	539 (2.4)	0	2
² 2011	547 (2.0)		3	544 (2.0)		9 ▲	539 (2.2)		2
² † 2007	544 (2.8)			535 (3.1)			537 (3.2)		

▲ More recent year significantly higher
▼ More recent year significantly lower

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		Differences Between Years			Differences Between Years			Differences Between Years	
		2011	2007		2011	2007		2011	2007
Benchmarking Participants									
Ontario, Canada									
2015	544 (2.6)	9 ▲	5	522 (2.5)	-6	-13 ▼	515 (3.7)	1	-18 ▼
2011	535 (3.4)		-4	528 (3.2)		-7	514 (3.7)		-19 ▼
² 2007	539 (3.9)			535 (3.4)			533 (4.2)		
Quebec, Canada									
‡ 2015	533 (4.3)	9	9	519 (4.9)	12 ▲	10	515 (4.4)	-1	-7
2011	524 (2.6)		0	507 (3.3)		-2	516 (3.4)		-6
² 2007	524 (3.0)			509 (3.3)			522 (2.9)		
Abu Dhabi, UAE									
² 2015	413 (6.0)	10		413 (5.9)	-2		408 (6.9)	-10	
2011	403 (5.6)			415 (5.2)			418 (5.1)		
Dubai, UAE									
2015	518 (2.6)	62 ▲	62 ▲	521 (2.2)	61 ▲	64 ▲	510 (2.9)	41 ▲	49 ▲
2011	455 (3.0)		-1	460 (3.1)		4	469 (3.0)		8
‡‡ † 2007	456 (2.7)			456 (3.5)			461 (3.7)		
Florida, US									
¹ 2015	558 (5.1)	9		542 (5.2)	-1		539 (6.5)	2	
^{1 3} 2011	549 (4.1)			542 (3.9)			537 (4.5)		

▲ More recent year significantly higher
 ▼ More recent year significantly lower

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