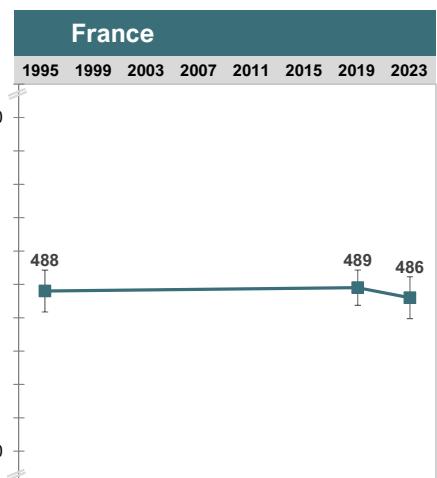
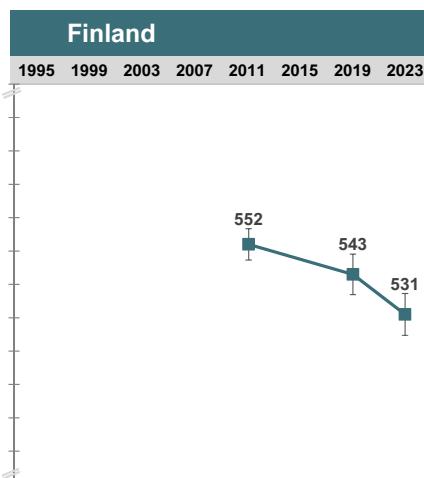
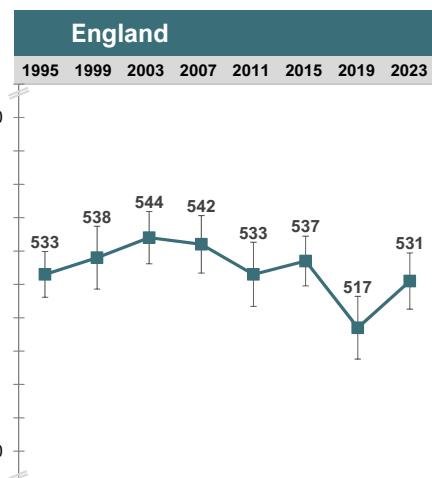
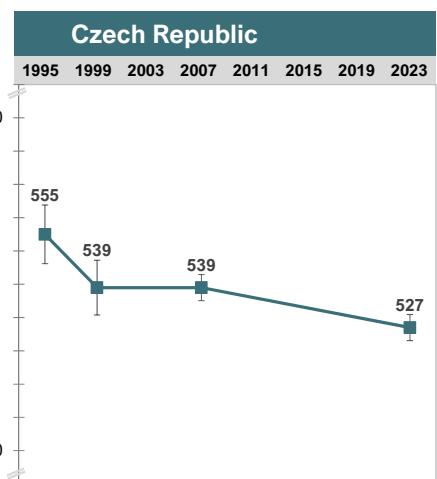
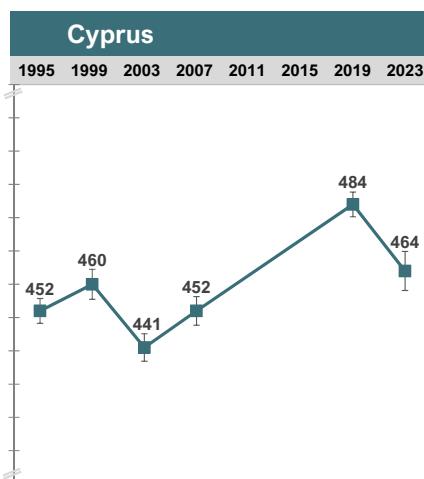
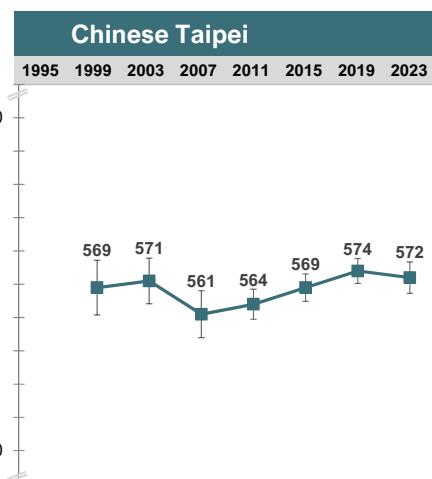
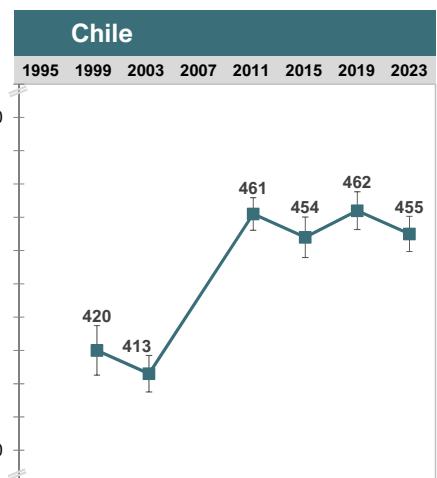
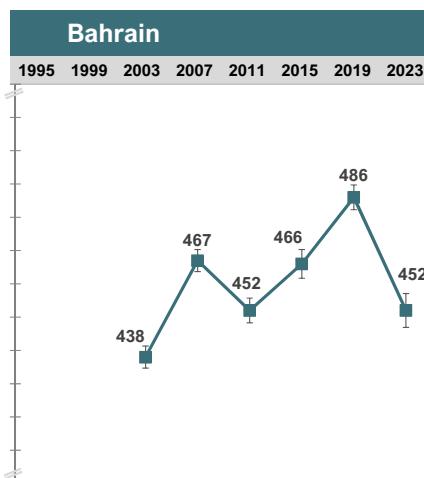
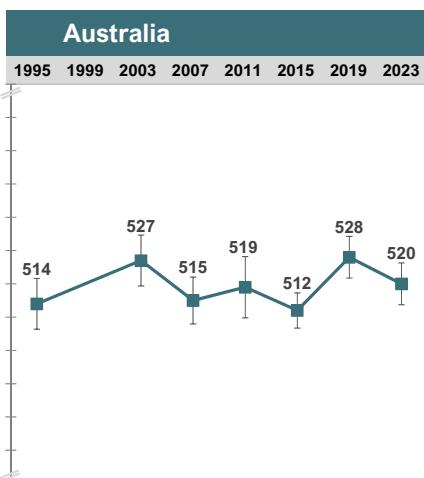


## Exhibit 2.2.9: Trend Plots of Average Science Achievement

This exhibit displays changes in achievement across assessment years for the countries and benchmarking participants that have comparable data from previous TIMSS assessments. The accompanying table (Exhibit 2.2.10) provides details. The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement. See Appendix A for country participation in previous assessments.



See Appendix A for country participation in previous TIMSS assessments.

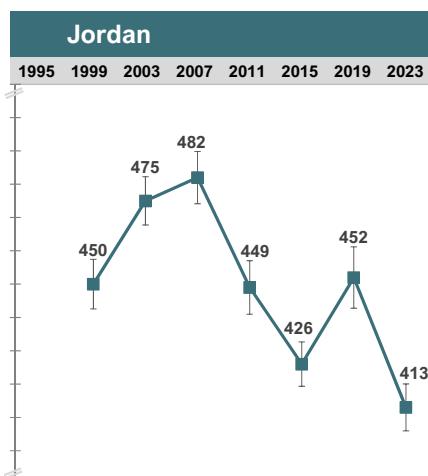
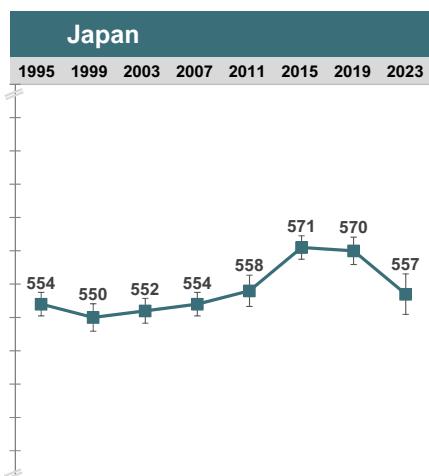
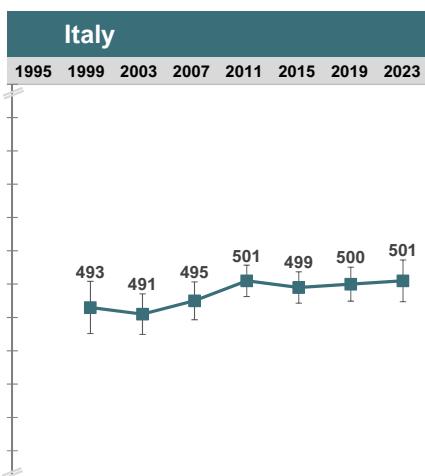
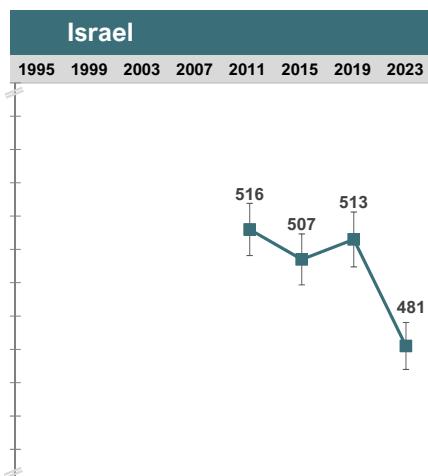
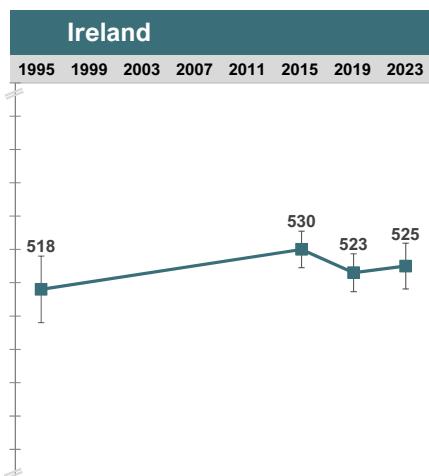
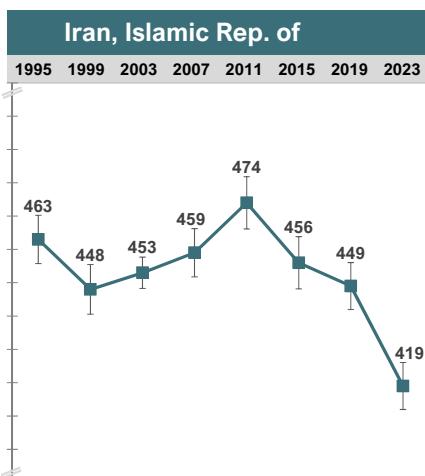
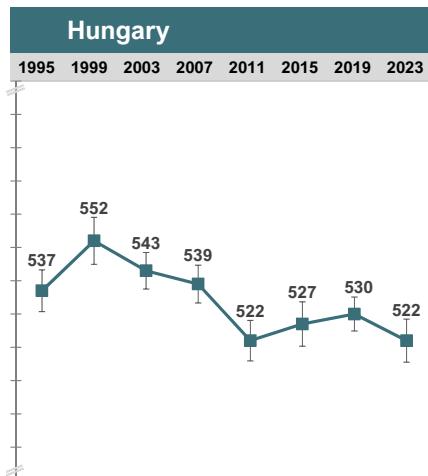
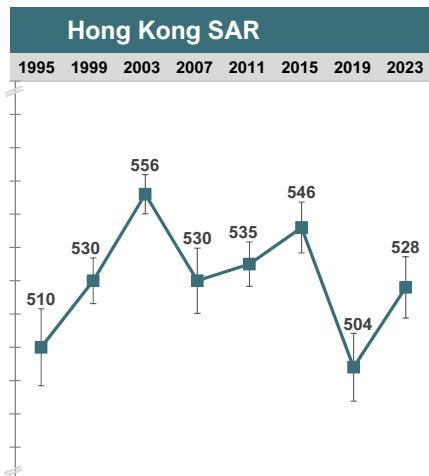
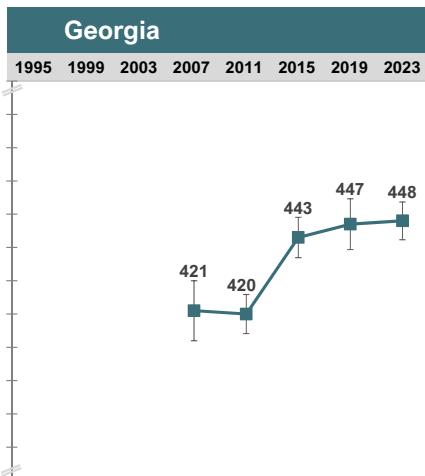
The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement.

I The black bars represent the 95% confidence interval.

## Exhibit 2.2.9: Trend Plots of Average Science Achievement

(Continued)

This exhibit displays changes in achievement across assessment years for the countries and benchmarking participants that have comparable data from previous TIMSS assessments. The accompanying table (Exhibit 2.2.10) provides details. The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement. See Appendix A for country participation in previous assessments.



See Appendix A for country participation in previous TIMSS assessments.

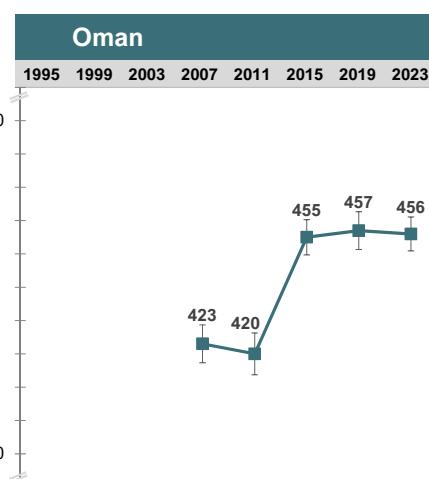
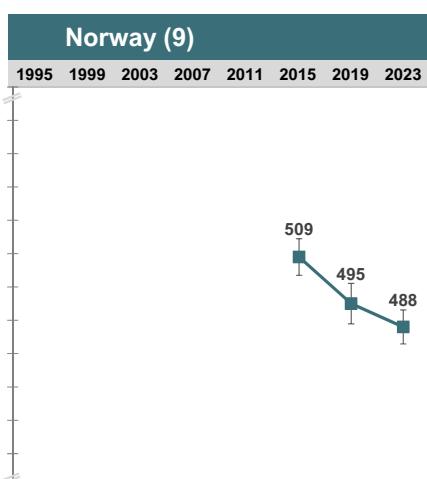
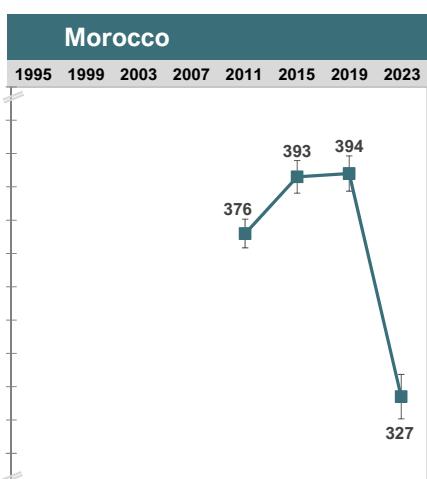
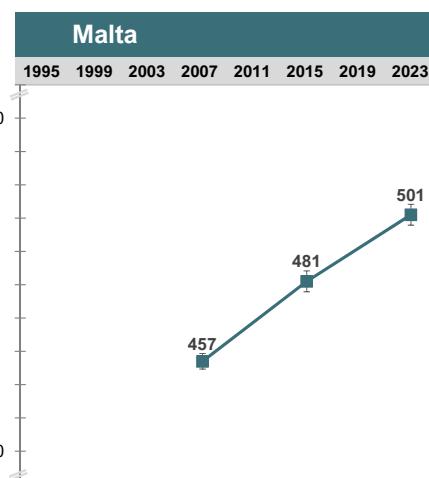
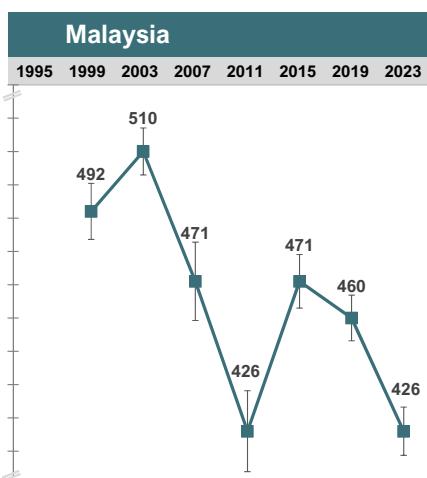
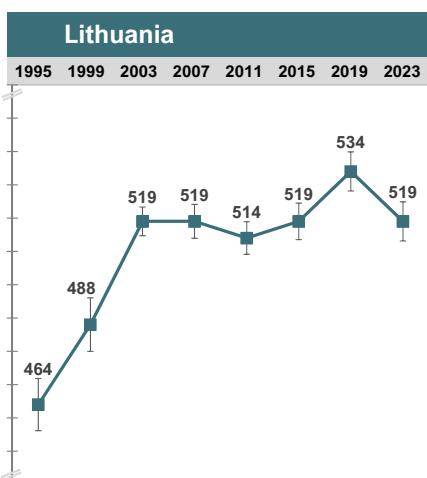
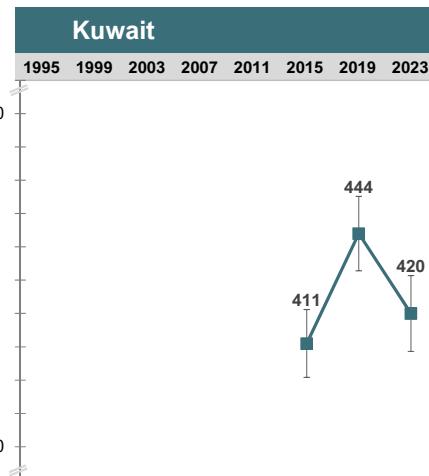
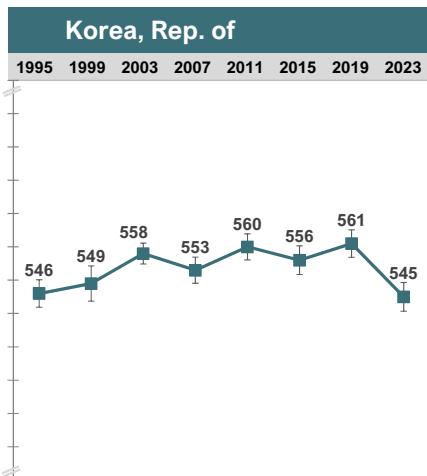
The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement.

I The black bars represent the 95% confidence interval.

(Continued)

**Exhibit 2.2.9: Trend Plots of Average Science Achievement**

This exhibit displays changes in achievement across assessment years for the countries and benchmarking participants that have comparable data from previous TIMSS assessments. The accompanying table (Exhibit 2.2.10) provides details. The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement. See Appendix A for country participation in previous assessments.



See Appendix A for country participation in previous TIMSS assessments.

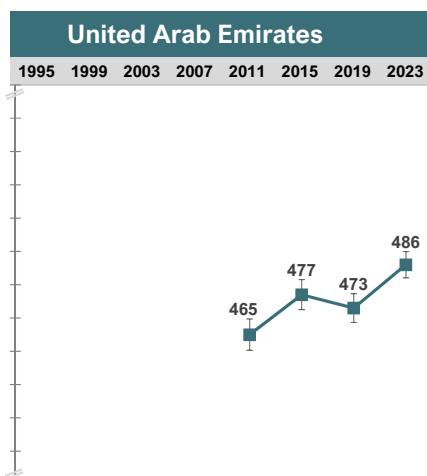
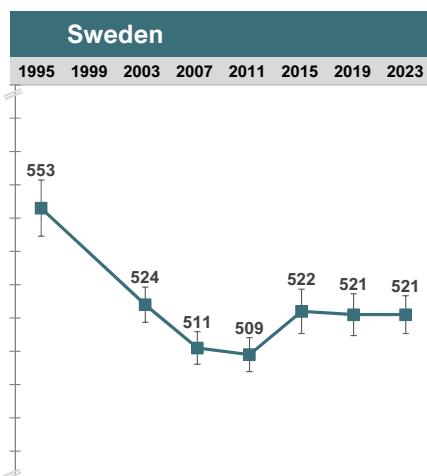
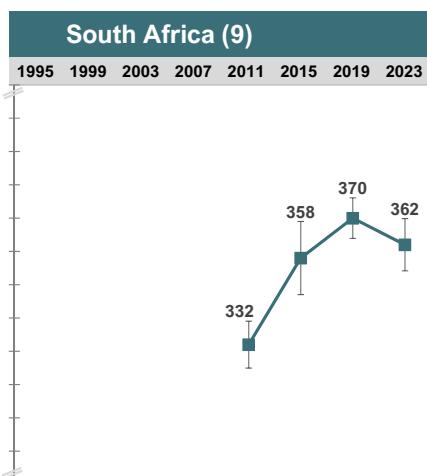
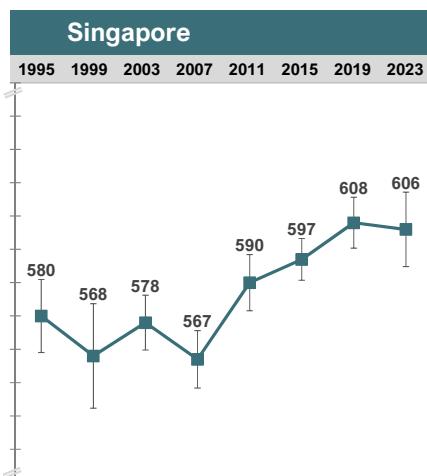
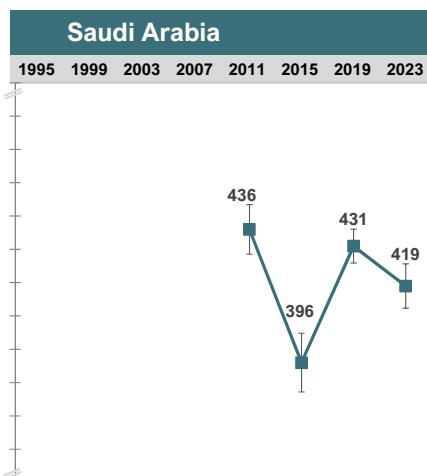
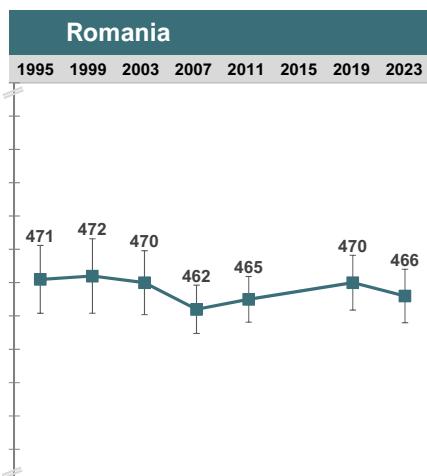
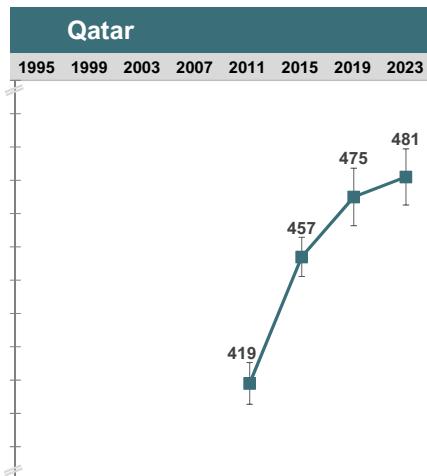
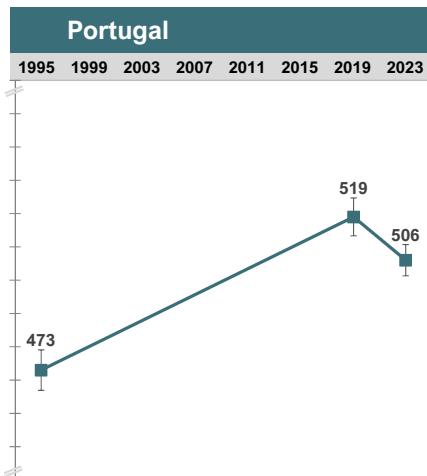
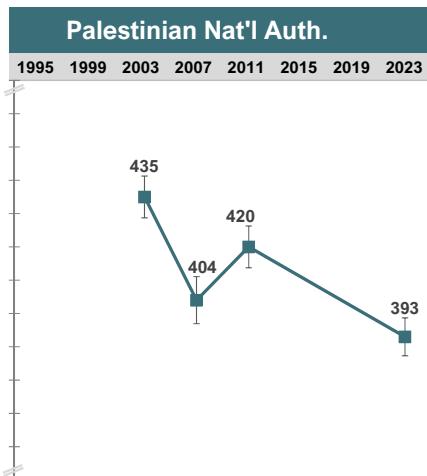
The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement.

I The black bars represent the 95% confidence interval.

(Continued)

**Exhibit 2.2.9: Trend Plots of Average Science Achievement**

This exhibit displays changes in achievement across assessment years for the countries and benchmarking participants that have comparable data from previous TIMSS assessments. The accompanying table (Exhibit 2.2.10) provides details. The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement. See Appendix A for country participation in previous assessments.



See Appendix A for country participation in previous TIMSS assessments.

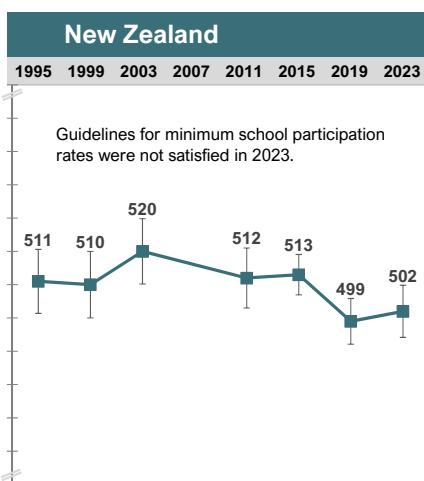
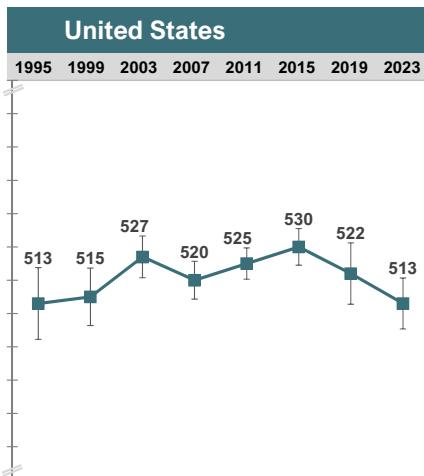
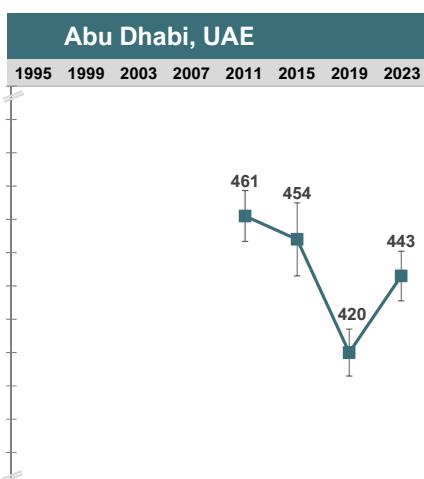
The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement.

I The black bars represent the 95% confidence interval.

(Continued)

**Exhibit 2.2.9: Trend Plots of Average Science Achievement**

This exhibit displays changes in achievement across assessment years for the countries and benchmarking participants that have comparable data from previous TIMSS assessments. The accompanying table (Exhibit 2.2.10) provides details. The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement. See Appendix A for country participation in previous assessments.

**Benchmarking Participants**

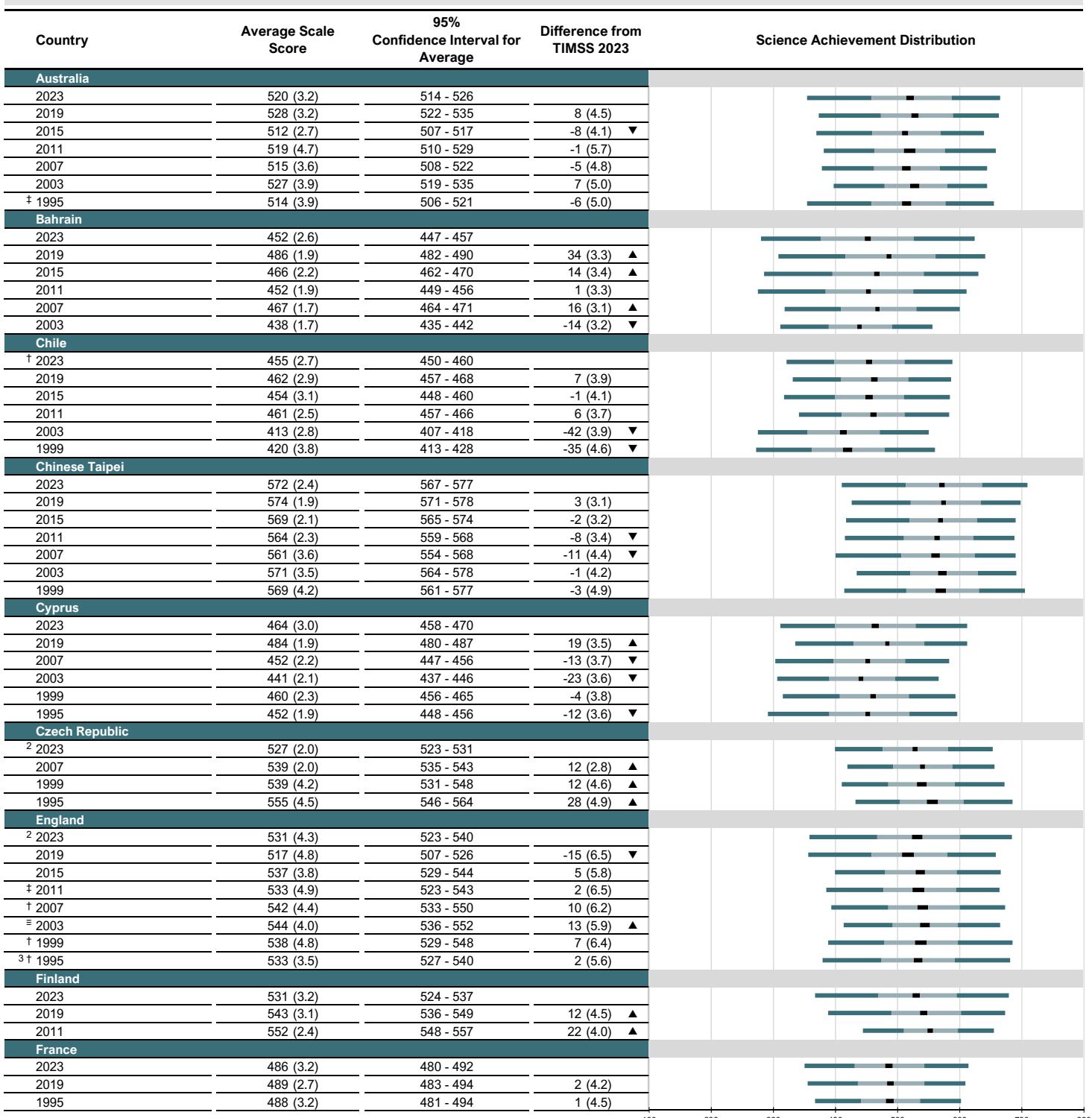
See Appendix A for country participation in previous TIMSS assessments.

The scale interval is 10 points for each country, but a different part of the scale is shown according to each country's average achievement.

I The black bars represent the 95% confidence interval.

## Exhibit 2.2.10: Trends in Average Science Achievement and Scale Score Distributions

This exhibit reports differences in achievement across assessment years for the countries and benchmarking participants that have comparable data from previous TIMSS assessments. Symbols indicate if the row year is significantly higher ( $\blacktriangle$ ) or significantly lower ( $\blacktriangledown$ ) than the performance in TIMSS 2023. See Appendix A for country participation in previous TIMSS assessments.



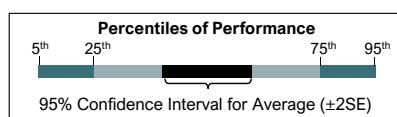
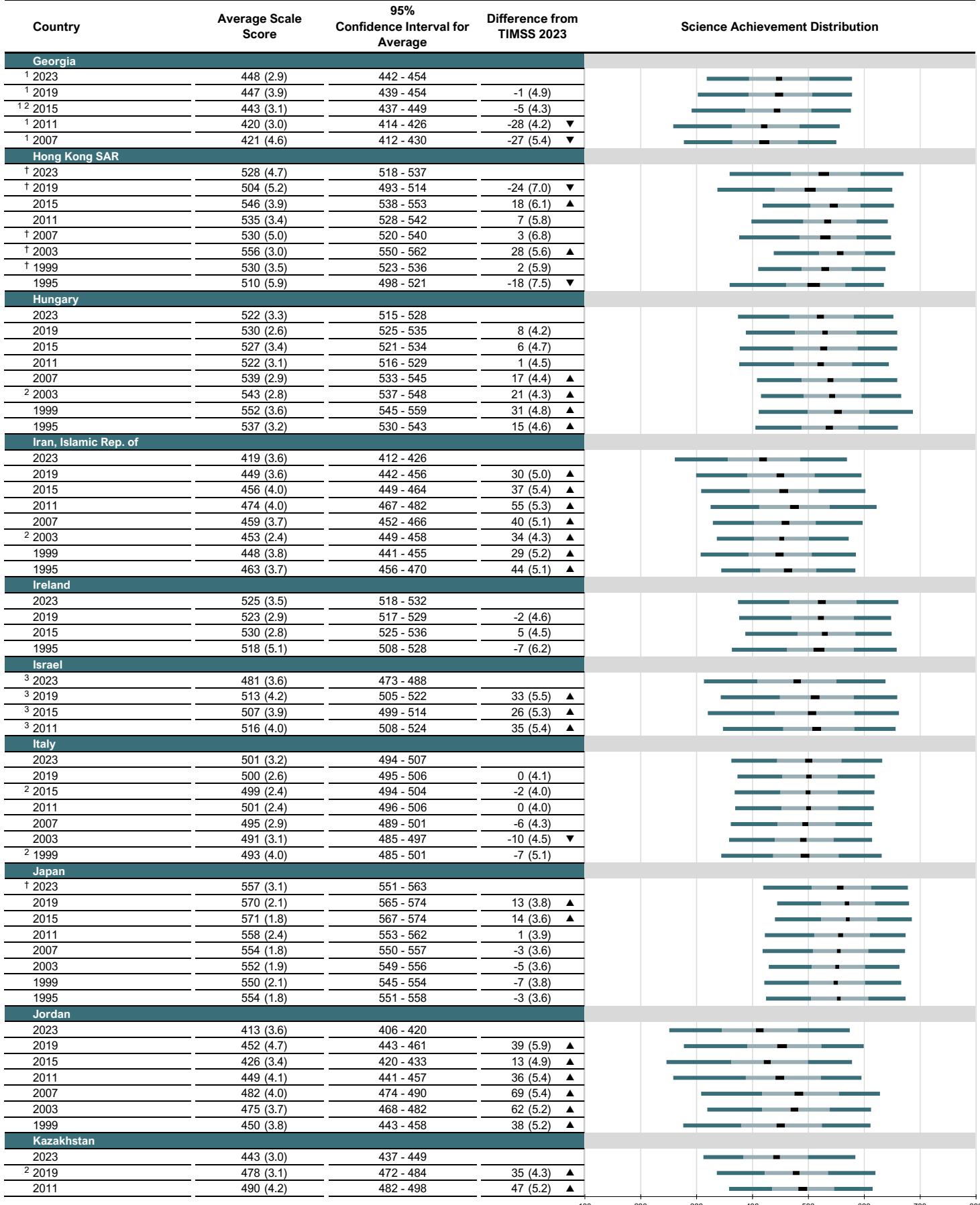
See Appendix A for country participation in previous TIMSS assessments.

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

See Appendix B.7 for population coverage notes 1, 2, and 3. See Appendix B.10 for sampling guidelines and sampling participation notes †, ‡, and ≡.

(Continued)

## Exhibit 2.2.10: Trends in Average Science Achievement and Scale Score Distributions

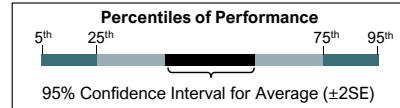


(Continued)

## Exhibit 2.2.10: Trends in Average Science Achievement and Scale Score Distributions

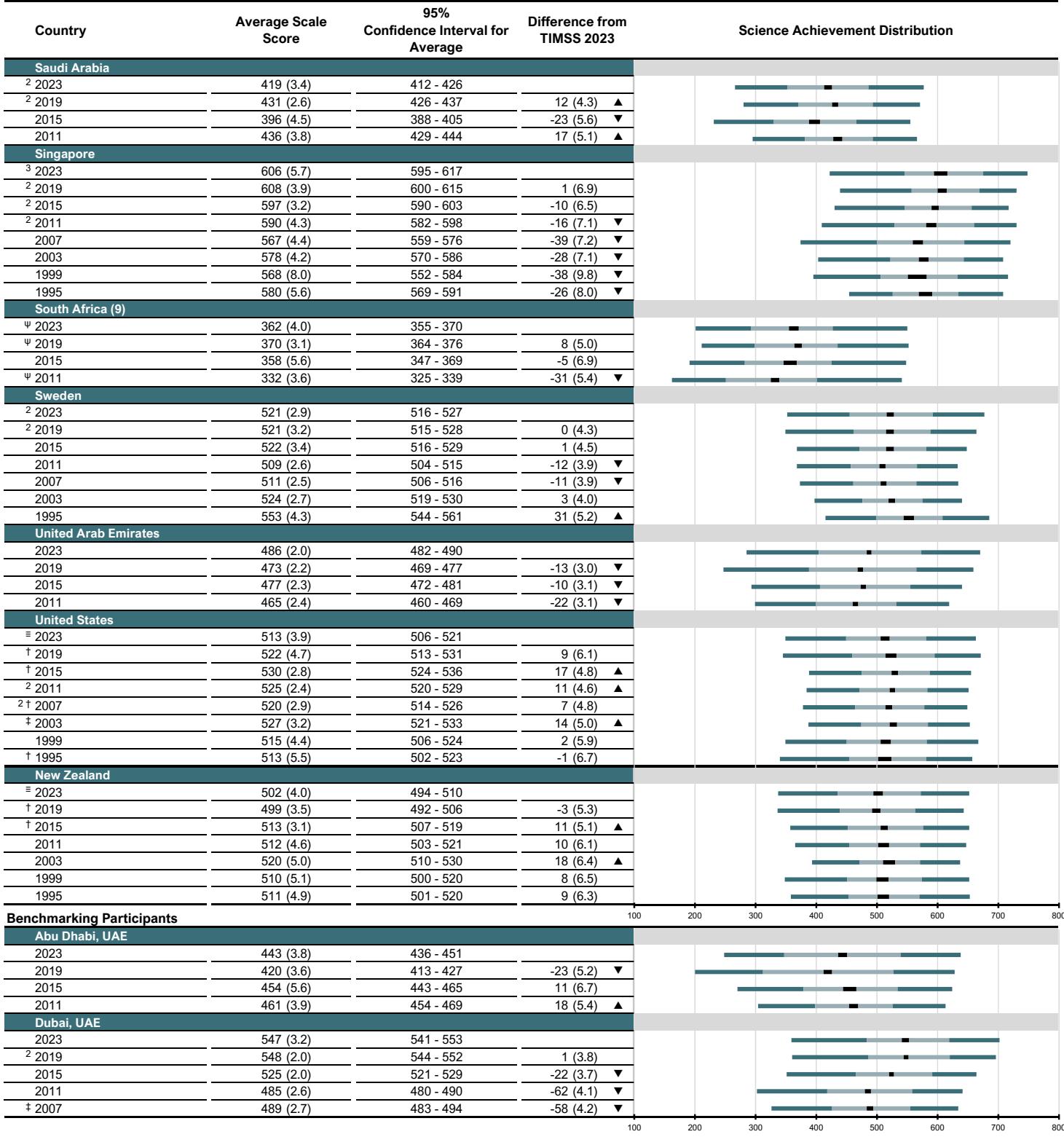
Country	Average Scale Score	95% Confidence Interval for Average	Difference from TIMSS 2023	Science Achievement Distribution
<b>Korea, Rep. of</b>				
2023	545 (2.2)	541 - 550		
2019	561 (2.1)	557 - 565	15 (3.1) ▲	
2015	556 (2.2)	551 - 560	10 (3.2) ▲	
2011	560 (2.0)	556 - 564	15 (3.0) ▲	
2007	553 (2.0)	549 - 557	8 (3.0) ▲	
2003	558 (1.6)	555 - 561	13 (2.7) ▲	
1999	549 (2.7)	543 - 554	3 (3.5)	
1995	546 (2.1)	542 - 550	0 (3.1)	
<b>Kuwait</b>				
2023	420 (5.8)	408 - 431		
2019	444 (5.7)	433 - 455	25 (8.1) ▲	
2015	411 (5.2)	401 - 421	-9 (7.8)	
<b>Lithuania</b>				
<sup>2</sup> 2023	519 (3.0)	513 - 525		
2019	534 (3.0)	528 - 540	15 (4.2) ▲	
<sup>2</sup> 2015	519 (2.8)	514 - 525	0 (4.1)	
<sup>1</sup> 2011	514 (2.5)	509 - 519	-5 (3.9)	
<sup>1</sup> 2007	519 (2.6)	514 - 524	-1 (3.9)	
<sup>1</sup> 2003	519 (2.2)	515 - 524	0 (3.7)	
<sup>1</sup> 1999	488 (4.1)	480 - 496	-31 (5.1) ▼	
<sup>1,2</sup> 1995	464 (4.0)	456 - 471	-56 (5.0) ▼	
<b>Malaysia</b>				
2023	426 (3.7)	419 - 434		
2019	460 (3.5)	453 - 467	34 (5.1) ▲	
2015	471 (4.1)	463 - 479	44 (5.5) ▲	
2011	426 (6.2)	414 - 439	0 (7.2)	
2007	471 (6.0)	459 - 483	44 (7.0) ▲	
2003	510 (3.6)	503 - 518	84 (5.2) ▲	
1999	492 (4.3)	484 - 501	66 (5.7) ▲	
<b>Malta</b>				
2023	501 (1.6)	498 - 504		
2015	481 (1.6)	478 - 485	-20 (2.3) ▼	
2007	457 (1.2)	455 - 460	-44 (2.0) ▼	
<b>Morocco</b>				
<sup>ψ</sup> 2023	327 (3.4)	320 - 334		
2019	394 (2.7)	389 - 399	67 (4.3) ▲	
2015	393 (2.5)	388 - 398	66 (4.2) ▲	
2011	376 (2.2)	372 - 380	49 (4.0) ▲	
<b>Norway (9)</b>				
<sup>2</sup> 2023	488 (2.6)	483 - 494		
<sup>†</sup> 2019	495 (3.1)	489 - 502	7 (4.1)	
2015	509 (2.8)	503 - 514	20 (3.8) ▲	
<b>Oman</b>				
2023	456 (2.6)	451 - 461		
2019	457 (2.9)	452 - 463	1 (3.9)	
2015	455 (2.7)	449 - 460	-1 (3.7)	
2011	420 (3.2)	414 - 426	-36 (4.1) ▼	
2007	423 (2.9)	417 - 428	-33 (3.9) ▼	
<b>Palestinian Nat'l Auth.</b>				
2023	393 (2.9)	387 - 399		
2011	420 (3.2)	414 - 427	28 (4.3) ▲	
2007	404 (3.6)	397 - 411	11 (4.6) ▲	
2003	435 (3.2)	429 - 442	43 (4.3) ▲	
<b>Portugal</b>				
2023	506 (2.4)	501 - 510		
2019	519 (2.9)	513 - 524	13 (3.7) ▲	
1995	473 (3.1)	467 - 479	-33 (3.9) ▼	
<b>Qatar</b>				
2023	481 (4.3)	473 - 489		
2019	475 (4.4)	466 - 483	-7 (6.1)	
2015	457 (3.0)	451 - 462	-25 (5.2) ▼	
2011	419 (3.2)	412 - 425	-62 (5.4) ▼	
<b>Romania</b>				
<sup>≡</sup> 2023	466 (4.1)	458 - 474		
2019	470 (4.2)	462 - 478	4 (5.8)	
2011	465 (3.5)	458 - 472	-1 (5.4)	
2007	462 (3.7)	455 - 469	-4 (5.5)	
2003	470 (4.9)	460 - 479	3 (6.4)	
1999	472 (5.7)	461 - 483	6 (7.0)	
1995	471 (5.2)	461 - 481	5 (6.6)	

<sup>Ψ</sup> Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 15% but does not exceed 25%.



## Exhibit 2.2.10: Trends in Average Science Achievement and Scale Score Distributions

(Continued)



New Zealand did not satisfy guidelines for minimum school participation rates in 2023.

<sup>ψ</sup> Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 15% but does not exceed 25%.

