

APPENDIX G

Percentages of Students with Achievement Too Low for Estimation

Appendix G.1: Percentages of Students with Mathematics Achievement Too Low for Estimation*

Country	eTIMSS		paperTIMSS		paperTIMSS Less Difficult Mathematics	
	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct
Albania	--	--	--	--	2 (0.3)	61 (0.8)
Armenia	--	--	4 (0.3)	42 (0.7)	--	--
Australia	--	--	4 (0.3)	48 (0.7)	--	--
Austria	1 (0.2)	50 (0.6)	--	--	--	--
Azerbaijan	--	--	4 (0.4)	48 (0.7)	--	--
Bahrain	--	--	9 (0.5)	39 (0.6)	--	--
Belgium (Flemish)	--	--	1 (0.2)	52 (0.5)	--	--
Bosnia and Herzegovina	--	--	--	--	2 (0.2)	49 (0.6)
Bulgaria	--	--	5 (0.8)	48 (1.0)	--	--
Canada	3 (0.2)	43 (0.5)	--	--	--	--
Chile	12 (0.7)	27 (0.5)	--	--	--	--
Chinese Taipei	0 (0.1)	67 (0.4)	--	--	--	--
Croatia	2 (0.3)	43 (0.5)	--	--	--	--
Cyprus	--	--	2 (0.3)	51 (0.7)	--	--
Czech Republic	2 (0.3)	49 (0.6)	--	--	--	--
Denmark	2 (0.3)	47 (0.5)	--	--	--	--
England	2 (0.3)	55 (0.8)	--	--	--	--
Finland	2 (0.2)	49 (0.5)	--	--	--	--
France	6 (0.6)	37 (0.7)	--	--	--	--
Georgia	7 (0.7)	36 (0.8)	--	--	--	--
Germany	2 (0.3)	46 (0.6)	--	--	--	--
Hong Kong SAR	0 (0.1)	67 (0.8)	--	--	--	--
Hungary	3 (0.4)	47 (0.7)	--	--	--	--
Iran, Islamic Rep. of	--	--	14 (0.9)	31 (0.7)	--	--
Ireland	--	--	2 (0.2)	56 (0.7)	--	--
Italy	2 (0.3)	44 (0.7)	--	--	--	--
Japan	--	--	0 (0.1)	68 (0.4)	--	--
Kazakhstan	--	--	2 (0.2)	45 (0.7)	--	--
Korea, Rep. of	0 (0.1)	67 (0.6)	--	--	--	--
Kosovo	--	--	--	--	2 (0.3)	49 (0.7)
Kuwait	--	--	--	--	8 (0.6)	39 (0.9)
Latvia	--	--	1 (0.3)	55 (0.7)	--	--
Lithuania	2 (0.2)	51 (0.7)	--	--	--	--
Malta	4 (0.3)	43 (0.3)	--	--	--	--
Montenegro	--	--	--	--	3 (0.3)	50 (0.4)
Morocco	--	--	--	--	6 (0.4)	38 (0.8)
Netherlands	1 (0.2)	50 (0.6)	--	--	--	--
New Zealand	--	--	6 (0.4)	40 (0.6)	--	--
North Macedonia	--	--	--	--	3 (0.5)	55 (1.1)
Northern Ireland	--	--	2 (0.3)	60 (0.7)	--	--
Norway (5)	2 (0.3)	52 (0.6)	--	--	--	--
Oman	--	--	14 (0.6)	30 (0.8)	--	--
Ψ Pakistan	--	--	--	--	16 (2.1)	28 (1.9)
Ψ Philippines	--	--	--	--	20 (1.2)	25 (0.8)
Poland	--	--	3 (0.3)	48 (0.7)	--	--
Portugal	2 (0.3)	47 (0.7)	--	--	--	--
Qatar	12 (0.8)	31 (0.7)	--	--	--	--
Russian Federation	1 (0.2)	58 (0.9)	--	--	--	--
Saudi Arabia	--	--	--	--	5 (0.6)	41 (0.7)
Serbia	--	--	5 (0.6)	45 (0.7)	--	--
Singapore	0 (0.1)	73 (0.9)	--	--	--	--
Slovak Republic	5 (0.7)	43 (0.8)	--	--	--	--
South Africa (5)	--	--	--	--	6 (0.4)	36 (0.6)
Spain	4 (0.4)	41 (0.4)	--	--	--	--
Sweden	3 (0.4)	46 (0.7)	--	--	--	--
Turkey (5)	5 (0.5)	48 (1.0)	--	--	--	--
United Arab Emirates	8 (0.3)	38 (0.3)	--	--	--	--
United States	3 (0.3)	50 (0.7)	--	--	--	--
Benchmarking Participants						
Ontario, Canada	3 (0.4)	44 (0.9)	--	--	--	--
Quebec, Canada	1 (0.2)	49 (0.6)	--	--	--	--
Moscow City, Russian Fed.	0 (0.1)	66 (0.6)	--	--	--	--
Madrid, Spain	2 (0.3)	45 (0.6)	--	--	--	--
Abu Dhabi, UAE	14 (0.5)	30 (0.4)	--	--	--	--
Dubai, UAE	2 (0.3)	52 (0.4)	--	--	--	--

* Students were considered to have achievement too low for estimation if their performance on the assessment was no better than could be achieved by simply guessing on the multiple-choice assessment items. However, such students were assigned scale scores (plausible values) by the achievement scaling procedure, despite concerns about their reliability.

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

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

A dash (-) indicates comparable data not available.

Appendix G.2: Percentages of Students with Science Achievement Too Low for Estimation*

Country	eTIMSS		paperTIMSS	
	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct
Albania	--	--	3 (0.5)	47 (0.7)
Armenia	--	--	4 (0.4)	41 (0.6)
Australia	--	--	2 (0.3)	55 (0.5)
Austria	1 (0.2)	51 (0.5)	--	--
Azerbaijan	--	--	8 (0.6)	36 (0.5)
Bahrain	--	--	4 (0.4)	48 (0.6)
Belgium (Flemish)	--	--	2 (0.2)	48 (0.4)
Bosnia and Herzegovina	--	--	5 (0.4)	40 (0.5)
Bulgaria	--	--	4 (0.6)	54 (1.0)
Canada	2 (0.2)	52 (0.3)	--	--
Chile	5 (0.5)	40 (0.5)	--	--
Chinese Taipei	0 (0.1)	60 (0.3)	--	--
Croatia	1 (0.2)	51 (0.4)	--	--
Cyprus	--	--	2 (0.3)	50 (0.6)
Czech Republic	1 (0.2)	54 (0.4)	--	--
Denmark	1 (0.3)	51 (0.4)	--	--
England	1 (0.2)	55 (0.5)	--	--
Finland	1 (0.2)	59 (0.5)	--	--
France	4 (0.4)	45 (0.6)	--	--
Georgia	6 (0.7)	38 (0.6)	--	--
Germany	2 (0.3)	51 (0.5)	--	--
Hong Kong SAR	1 (0.2)	54 (0.6)	--	--
Hungary	1 (0.3)	53 (0.5)	--	--
Iran, Islamic Rep. of	--	--	9 (0.7)	38 (0.7)
Ireland	--	--	2 (0.4)	54 (0.7)
Italy	2 (0.2)	49 (0.6)	--	--
Japan	--	--	1 (0.1)	61 (0.4)
Kazakhstan	--	--	2 (0.3)	47 (0.6)
Korea, Rep. of	0 (0.1)	66 (0.4)	--	--
Kosovo	--	--	9 (0.7)	33 (0.5)
Kuwait	--	--	14 (0.9)	33 (0.9)
Latvia	--	--	0 (0.2)	57 (0.5)
Lithuania	1 (0.2)	55 (0.5)	--	--
Malta	3 (0.3)	47 (0.3)	--	--
Montenegro	--	--	8 (0.4)	39 (0.4)
Ψ Morocco	--	--	17 (0.9)	30 (0.8)
Netherlands	2 (0.3)	50 (0.6)	--	--
New Zealand	--	--	3 (0.3)	49 (0.4)
North Macedonia	--	--	11 (0.9)	36 (1.0)
Northern Ireland	--	--	2 (0.3)	52 (0.4)
Norway (5)	1 (0.2)	55 (0.5)	--	--
Oman	--	--	10 (0.6)	39 (0.7)
* Pakistan	--	--	31 (3.5)	21 (1.1)
* Philippines	--	--	34 (1.4)	20 (0.5)
Poland	--	--	1 (0.2)	55 (0.5)
Portugal	2 (0.2)	47 (0.4)	--	--
Qatar	8 (0.8)	39 (0.7)	--	--
Russian Federation	0 (0.1)	62 (0.7)	--	--
Saudi Arabia	--	--	12 (0.7)	34 (0.5)
Serbia	--	--	3 (0.6)	52 (0.7)
Singapore	1 (0.1)	68 (0.7)	--	--
Slovak Republic	2 (0.4)	52 (0.7)	--	--
* South Africa (5)	--	--	28 (1.0)	25 (0.6)
Spain	1 (0.2)	49 (0.4)	--	--
Sweden	1 (0.2)	55 (0.7)	--	--
Turkey (5)	3 (0.4)	54 (0.8)	--	--
United Arab Emirates	7 (0.2)	44 (0.3)	--	--
United States	2 (0.2)	55 (0.5)	--	--
Benchmarking Participants				
Ontario, Canada	2 (0.3)	52 (0.6)	--	--
Quebec, Canada	1 (0.2)	51 (0.5)	--	--
Moscow City, Russian Fed.	0 (0.1)	68 (0.5)	--	--
Madrid, Spain	1 (0.2)	51 (0.4)	--	--
Abu Dhabi, UAE	14 (0.5)	35 (0.4)	--	--
Dubai, UAE	1 (0.1)	57 (0.3)	--	--

* Students were considered to have achievement too low for estimation if their performance on the assessment was no better than could be achieved by simply guessing on the multiple-choice assessment items. However, such students were assigned scale scores (plausible values) by the achievement scaling procedure, despite concerns about their reliability.

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

* Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 25%.

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

A dash (-) indicates comparable data not available.

Appendix G.3: Percentages of Students with Mathematics Achievement Too Low for Estimation*

Country	eTIMSS		paperTIMSS	
	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct
Australia	--	--	5 (0.4)	45 (1.0)
Bahrain	--	--	9 (0.4)	38 (0.4)
Ψ Chile	16 (0.8)	25 (0.5)	--	--
Chinese Taipei	2 (0.2)	66 (0.6)	--	--
Cyprus	--	--	5 (0.4)	41 (0.4)
Ψ Egypt	--	--	20 (1.1)	25 (0.9)
England	7 (0.8)	42 (1.3)	--	--
Finland	5 (0.5)	39 (0.6)	--	--
France	8 (0.5)	33 (0.5)	--	--
Georgia	13 (1.0)	30 (0.9)	--	--
Hong Kong SAR	3 (0.5)	58 (1.0)	--	--
Hungary	6 (0.6)	42 (0.7)	--	--
Iran, Islamic Rep. of	--	--	14 (0.5)	30 (0.8)
Ireland	--	--	3 (0.4)	47 (0.7)
Israel	6 (0.5)	44 (1.1)	--	--
Italy	6 (0.5)	37 (0.6)	--	--
Japan	--	--	1 (0.1)	65 (0.6)
Ψ Jordan	--	--	17 (1.2)	25 (0.7)
Kazakhstan	--	--	7 (0.5)	38 (0.9)
Korea, Rep. of	2 (0.3)	65 (0.6)	--	--
Ψ Kuwait	--	--	21 (1.2)	23 (0.8)
Lebanon	--	--	14 (0.8)	26 (0.5)
Lithuania	5 (0.5)	43 (0.7)	--	--
Malaysia	14 (0.8)	30 (0.6)	--	--
Ψ Morocco	--	--	25 (0.9)	19 (0.4)
New Zealand	--	--	9 (0.8)	37 (0.7)
Norway (9)	7 (0.5)	38 (0.5)	--	--
Ψ Oman	--	--	21 (0.8)	25 (0.4)
Portugal	5 (0.6)	37 (0.7)	--	--
Ψ Qatar	17 (0.8)	28 (0.8)	--	--
Romania	--	--	11 (0.9)	37 (1.0)
Russian Federation	3 (0.4)	49 (1.2)	--	--
Ψ Saudi Arabia	--	--	22 (0.8)	21 (0.3)
Singapore	1 (0.2)	68 (1.1)	--	--
Ⓜ South Africa (9)	--	--	26 (0.7)	19 (0.3)
Sweden	6 (0.4)	38 (0.6)	--	--
Turkey	10 (0.7)	39 (0.9)	--	--
United Arab Emirates	13 (0.4)	34 (0.4)	--	--
United States	7 (0.6)	43 (1.1)	--	--
Benchmarking Participants				
Ontario, Canada	4 (0.4)	45 (1.2)	--	--
Quebec, Canada	1 (0.3)	48 (1.0)	--	--
Moscow City, Russian Fed.	1 (0.2)	57 (1.1)	--	--
Ψ Gauteng, RSA (9)	--	--	18 (0.8)	24 (0.6)
Ψ Western Cape, RSA (9)	--	--	16 (0.8)	28 (1.0)
Ψ Abu Dhabi, UAE	18 (0.7)	27 (0.5)	--	--
Dubai, UAE	5 (0.4)	48 (0.5)	--	--

* Students were considered to have achievement too low for estimation if their performance on the assessment was no better than could be achieved by simply guessing on the multiple-choice assessment items. However, such students were assigned scale scores (plausible values) by the achievement scaling procedure, despite concerns about their reliability.

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Ⓜ Reservations about reliability because the percentage of students with achievement too low for estimation exceeds 25%.

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

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SOURCE: IEA's Trends in International Mathematics and Science Study TIMSS 2019
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Appendix G.4: Percentages of Students with Science Achievement Too Low for Estimation*

Country	eTIMSS		paperTIMSS	
	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct	Percentage of Students with Achievement Too Low for Estimation	Average Percent Correct
Australia	--	--	2 (0.3)	50 (0.7)
Bahrain	--	--	5 (0.3)	43 (0.3)
Chile	4 (0.4)	36 (0.5)	--	--
Chinese Taipei	1 (0.1)	59 (0.4)	--	--
Cyprus	--	--	3 (0.3)	41 (0.4)
Egypt	--	--	14 (1.0)	28 (0.7)
England	3 (0.5)	47 (0.9)	--	--
Finland	2 (0.3)	52 (0.6)	--	--
France	3 (0.4)	40 (0.5)	--	--
Georgia	6 (0.6)	33 (0.6)	--	--
Hong Kong SAR	4 (0.7)	45 (1.0)	--	--
Hungary	1 (0.3)	49 (0.5)	--	--
Iran, Islamic Rep. of	--	--	5 (0.4)	35 (0.6)
Ireland	--	--	2 (0.3)	49 (0.5)
Israel	3 (0.4)	46 (0.8)	--	--
Italy	2 (0.3)	43 (0.5)	--	--
Japan	--	--	1 (0.1)	59 (0.5)
Jordan	--	--	7 (0.5)	37 (0.7)
Kazakhstan	--	--	3 (0.3)	40 (0.6)
Korea, Rep. of	1 (0.2)	55 (0.5)	--	--
Kuwait	--	--	7 (0.8)	35 (0.9)
Lebanon	--	--	15 (0.9)	26 (0.5)
Lithuania	1 (0.1)	50 (0.6)	--	--
Malaysia	6 (0.5)	37 (0.5)	--	--
Morocco	--	--	11 (0.6)	26 (0.3)
New Zealand	--	--	3 (0.4)	44 (0.7)
Norway (9)	4 (0.4)	43 (0.5)	--	--
Oman	--	--	7 (0.4)	38 (0.4)
Portugal	1 (0.3)	47 (0.6)	--	--
Qatar	5 (0.5)	40 (0.8)	--	--
Romania	--	--	5 (0.5)	39 (0.8)
Russian Federation	1 (0.2)	52 (0.9)	--	--
Saudi Arabia	--	--	7 (0.5)	32 (0.4)
Singapore	1 (0.1)	66 (0.8)	--	--
ψ South Africa (9)	--	--	17 (0.5)	25 (0.3)
Sweden	3 (0.4)	48 (0.6)	--	--
Turkey	3 (0.4)	47 (0.7)	--	--
United Arab Emirates	7 (0.3)	41 (0.4)	--	--
United States	3 (0.4)	48 (0.9)	--	--
Benchmarking Participants				
Ontario, Canada	1 (0.2)	47 (0.6)	--	--
Quebec, Canada	1 (0.3)	50 (0.8)	--	--
Moscow City, Russian Fed.	0 (0.1)	57 (0.6)	--	--
Gauteng, RSA (9)	--	--	9 (0.5)	31 (0.6)
Western Cape, RSA (9)	--	--	7 (0.4)	34 (0.9)
Abu Dhabi, UAE	14 (0.6)	34 (0.5)	--	--
Dubai, UAE	2 (0.2)	54 (0.4)	--	--

* Students were considered to have achievement too low for estimation if their performance on the assessment was no better than could be achieved by simply guessing on the multiple-choice assessment items. However, such students were assigned scale scores (plausible values) by the achievement scaling procedure, despite concerns about their reliability.

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