資料４-３

OECDのレポートにおける
PISA2022の結果の取扱い

【出典】
OECD (2023), PISA 2022 Results (Volume I):The State of Learning and Equity in Education, PISA, OECD Publishing, Paris.

In mathematics, six East Asian education systems (Hong Kong [China]*, Japan, Korea, Macao [China], Singapore and Chinese Taipei) outperformed all other countries and economies (Table I.2.1). Another 17 countries also performed above the OECD average in mathematics, ranging from Estonia (mean score of 510 points) to New Zealand* (mean score of 479 points).

The gap in performance between the highest- and lowest-performing countries is 153 score points in mathematics among OECD countries and 238 points among all education systems that took part in PISA 2022.

Table I.2.1
Comparing countries' and economies' performance in mathematics

Statistically significantly above the OECD average

Not statistically significantly different from the OECD average

Statistically significantly below the OECD average

Mean score	Comparison country/economy	Countries and economies whose mean score is not statistically significantly different from the comparison country's/economy's score
575	Singapore	
552	*Macao (China)*	*Chinese Taipei*
547	*Chinese Taipei*	*Macao (China)* , *Hong Kong (China)**
540	*Hong Kong (China)**	*Chinese Taipei* , Japan
536	Japan	*Hong Kong (China)** , Korea
527	Korea	Japan
510	Estonia	Switzerland
508	Switzerland	Estonia
497	Canada*	Netherlands*
493	Netherlands*	Canada*, Ireland*, Belgium, Denmark*, United Kingdom*, Poland, Austria, Australia*, Czech Republic
492	Ireland*	Netherlands*, Belgium, Denmark*, United Kingdom*, Poland, Austria, Australia*, Czech Republic
489	Belgium	Netherlands*, Ireland*, Denmark*, United Kingdom*, Poland, Austria, Australia*, Czech Republic, Slovenia, Finland
489	Denmark*	Netherlands*, Ireland*, Belgium, United Kingdom*, Poland, Austria, Australia*, Czech Republic, Finland
489	United Kingdom*	Netherlands*, Ireland*, Belgium, Denmark*, Poland, Austria, Australia*, Czech Republic, Slovenia, Finland, Latvia*
489	Poland	Netherlands*, Ireland*, Belgium, Denmark*, United Kingdom*, Austria, Australia*, Czech Republic, Slovenia, Finland, Latvia*
487	Austria	Netherlands*, Ireland*, Belgium, Denmark*, United Kingdom*, Poland, Australia*, Czech Republic, Slovenia, Finland, Latvia*, Sweden
487	Australia*	Netherlands*, Ireland*, Belgium, Denmark*, United Kingdom*, Poland, Austria, Czech Republic, Slovenia, Finland, Latvia*, Sweden
487	Czech Republic	Netherlands*, Ireland*, Belgium, Denmark*, United Kingdom*, Poland, Austria, Australia*, Slovenia, Finland, Latvia*, Sweden
485	Slovenia	Belgium, United Kingdom*, Poland, Austria, Australia*, Czech Republic, Finland, Latvia*, Sweden
484	Finland	Belgium, Denmark*, United Kingdom*, Poland, Austria, Australia*, Czech Republic, Slovenia, Latvia*, Sweden, New Zealand*
483	Latvia*	United Kingdom*, Poland, Austria, Australia*, Czech Republic, Slovenia, Finland, Sweden, New Zealand*
482	Sweden	Austria, Australia*, Czech Republic, Slovenia, Finland, Latvia*, New Zealand*, Germany
479	New Zealand*	Finland, Latvia*, Sweden, Lithuania, Germany, France
475	Lithuania	New Zealand*, Germany, France, Spain, Hungary, Portugal, Italy, Viet Nam
475	Germany	Sweden, New Zealand*, Lithuania, France, Spain, Hungary, Portugal, Italy, Viet Nam, Norway
474	France	New Zealand*, Lithuania, Germany, Spain, Hungary, Portugal, Italy, Viet Nam, Norway, United States*
473	Spain	Lithuania, Germany, France, Hungary, Portugal, Italy, Viet Nam, Norway, United States*
473	Hungary	Lithuania, Germany, France, Spain, Portugal, Italy, Viet Nam, Norway, United States*
472	Portugal	Lithuania, Germany, France, Spain, Hungary, Italy, Viet Nam, Norway, United States*
471	Italy	Lithuania, Germany, France, Spain, Hungary, Portugal, Viet Nam, Norway, Malta, United States*, Slovak Republic
469	Viet Nam	Lithuania, Germany, France, Spain, Hungary, Portugal, Italy, Norway, Malta, United States*, Slovak Republic, Croatia
468	Norway	Germany, France, Spain, Hungary, Portugal, Italy, Viet Nam, Malta, United States*, Slovak Republic, Croatia
466	Malta	Italy, Viet Nam, Norway, United States*, Slovak Republic, Croatia
465	United States*	France, Spain, Hungary, Portugal, Italy, Viet Nam, Norway, Malta, Slovak Republic, Croatia, Iceland, Israel
464	Slovak Republic	Italy, Viet Nam, Norway, Malta, United States*, Croatia, Iceland, Israel
463	Croatia	Viet Nam, Norway, Malta, United States*, Slovak Republic, Iceland, Israel
459	Iceland	United States*, Slovak Republic, Croatia, Israel
458	Israel	United States*, Slovak Republic, Croatia, Iceland, Türkiye
453	Türkiye	Israel
442	Brunei Darussalam	*Ukrainian regions (18 of 27)* , Serbia
441	*Ukrainian regions (18 of 27)*	Brunei Darussalam, Serbia
440	Serbia	Brunei Darussalam, *Ukrainian regions (18 of 27)*
431	United Arab Emirates	Greece, Romania
430	Greece	United Arab Emirates, Romania, Kazakhstan, Mongolia
428	Romania	United Arab Emirates, Greece, Kazakhstan, Mongolia
425	Kazakhstan	Greece, Romania, Mongolia
425	Mongolia	Greece, Romania, Kazakhstan, Bulgaria
418	*Cyprus*	Bulgaria, Moldova
417	Bulgaria	Mongolia, *Cyprus* , Moldova, Qatar, Chile
414	Moldova	*Cyprus* , Bulgaria, Qatar, Chile, Uruguay, Malaysia
414	Qatar	Bulgaria, Moldova, Chile
412	Chile	Bulgaria, Moldova, Qatar, Uruguay, Malaysia
409	Uruguay	Moldova, Chile, Malaysia, Montenegro
409	Malaysia	Moldova, Chile, Uruguay, Montenegro
406	Montenegro	Uruguay, Malaysia
397	*Baku (Azerbaijan)*	Mexico, Thailand, Peru
395	Mexico	*Baku (Azerbaijan)* , Thailand, Peru, Georgia
394	Thailand	*Baku (Azerbaijan)* , Mexico, Peru, Georgia, Saudi Arabia, North Macedonia
391	Peru	*Baku (Azerbaijan)* , Mexico, Thailand, Georgia, Saudi Arabia, North Macedonia
390	Georgia	Mexico, Thailand, Peru, Saudi Arabia, North Macedonia, Costa Rica, Colombia
389	Saudi Arabia	Thailand, Peru, Georgia, North Macedonia, Costa Rica, Colombia
389	North Macedonia	Thailand, Peru, Georgia, Saudi Arabia, Costa Rica, Colombia
385	Costa Rica	Georgia, Saudi Arabia, North Macedonia, Colombia, Jamaica*
383	Colombia	Georgia, Saudi Arabia, North Macedonia, Costa Rica, Brazil, Argentina, Jamaica*
379	Brazil	Colombia, Argentina, Jamaica*
378	Argentina	Colombia, Brazil, Jamaica*
377	Jamaica*	Costa Rica, Colombia, Brazil, Argentina
368	Albania	*Palestinian Authority* , Indonesia, Morocco, Uzbekistan
366	*Palestinian Authority*	Albania, Indonesia, Morocco, Uzbekistan, Jordan
366	Indonesia	Albania, *Palestinian Authority* , Morocco, Uzbekistan, Jordan
365	Morocco	Albania, *Palestinian Authority* , Indonesia, Uzbekistan, Jordan, Panama*
364	Uzbekistan	Albania, *Palestinian Authority* , Indonesia, Morocco, Jordan
361	Jordan	*Palestinian Authority* , Indonesia, Morocco, Uzbekistan, Panama*
357	Panama*	Morocco, Jordan, *Kosovo* , Philippines
355	*Kosovo*	Panama*, Philippines
355	Philippines	Panama*, *Kosovo*
344	Guatemala	El Salvador, Dominican Republic
343	El Salvador	Guatemala, Dominican Republic
339	Dominican Republic	Guatemala, El Salvador, Paraguay, Cambodia
338	Paraguay	Dominican Republic, Cambodia
336	Cambodia	Dominican Republic, Paraguay

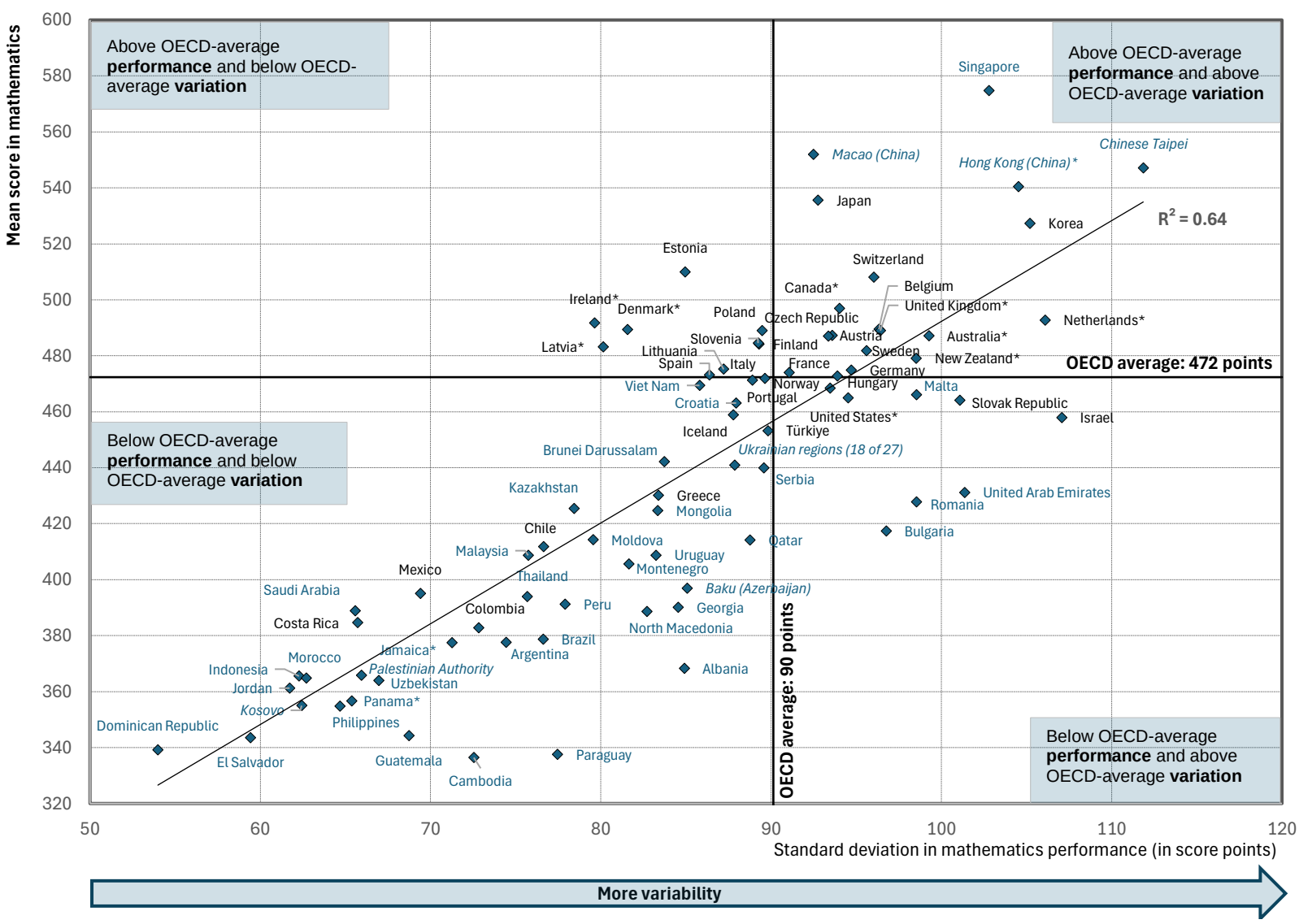
Table I.B1.2.1

Mean score and variation in mathematics performance

	Mean score		Standard deviation		Percentiles									
					10th		25th		Median (50th)		75th		90th		Difference (90th - 10th)	
	Mean score	S.E.	S.D.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score dif.	S.E.
OECD																
Australia*	487	(1.8)	99	(1.0)	358	(2.0)	416	(2.1)	485	(2.0)	556	(2.7)	619	(3.3)	**261**	(3.4)
Austria	487	(2.3)	94	(1.2)	362	(3.7)	420	(3.6)	489	(2.7)	554	(2.7)	608	(2.7)	**246**	(4.1)
Belgium	489	(2.2)	96	(1.1)	359	(3.0)	420	(3.0)	492	(3.0)	559	(2.9)	614	(2.7)	**254**	(3.6)
Canada*	497	(1.6)	94	(0.8)	375	(2.3)	430	(1.7)	496	(1.8)	562	(2.2)	619	(2.2)	**244**	(2.7)
Chile	412	(2.1)	77	(1.1)	315	(2.9)	358	(2.5)	409	(2.6)	464	(2.4)	514	(2.8)	**198**	(3.3)
Colombia	383	(3.0)	73	(1.5)	293	(3.1)	332	(3.2)	378	(3.5)	429	(3.7)	481	(4.4)	**187**	(4.2)
Costa Rica	385	(1.9)	66	(1.4)	302	(2.3)	339	(2.1)	382	(2.2)	427	(2.5)	470	(3.1)	**168**	(3.4)
Czech Republic	487	(2.1)	93	(1.2)	365	(2.7)	418	(3.0)	486	(2.8)	553	(2.7)	610	(2.9)	**245**	(3.8)
Denmark*	489	(1.9)	82	(1.1)	383	(2.5)	433	(2.4)	489	(2.5)	545	(2.5)	595	(3.0)	**213**	(3.5)
Estonia	510	(2.0)	85	(1.1)	401	(2.5)	450	(2.5)	509	(2.4)	569	(2.5)	620	(3.0)	**219**	(3.1)
Finland	484	(1.9)	89	(0.9)	366	(2.5)	420	(2.2)	486	(2.3)	547	(2.4)	600	(2.7)	**234**	(3.1)
France	474	(2.5)	91	(1.1)	353	(3.0)	408	(3.3)	475	(2.9)	539	(3.1)	593	(3.1)	**239**	(3.6)
Germany	475	(3.1)	95	(1.3)	351	(4.2)	407	(3.9)	474	(3.8)	541	(3.4)	599	(3.7)	**248**	(4.5)
Greece	430	(2.3)	83	(1.3)	326	(3.0)	370	(2.8)	426	(2.7)	487	(2.6)	542	(3.2)	**216**	(3.5)
Hungary	473	(2.5)	94	(1.7)	348	(3.2)	406	(3.3)	474	(3.3)	538	(3.4)	595	(4.2)	**247**	(5.1)
Iceland	459	(1.6)	88	(1.2)	344	(2.9)	396	(2.5)	458	(2.2)	520	(2.6)	574	(3.3)	**230**	(4.2)
Ireland*	492	(2.0)	80	(0.9)	387	(2.8)	437	(2.9)	493	(2.3)	547	(2.1)	594	(2.7)	**207**	(3.2)
Israel	458	(3.3)	107	(1.9)	317	(4.3)	380	(3.9)	458	(4.1)	534	(3.8)	597	(4.6)	**280**	(5.9)
Italy	471	(3.1)	89	(1.6)	357	(3.0)	408	(3.0)	469	(3.5)	533	(4.4)	589	(5.1)	**232**	(5.1)
Japan	536	(2.9)	93	(1.9)	410	(4.9)	473	(4.2)	540	(3.2)	601	(3.3)	652	(4.3)	**243**	(6.1)
Korea	527	(3.9)	105	(2.6)	388	(6.4)	456	(5.1)	531	(4.3)	600	(4.2)	660	(5.0)	**272**	(7.7)
Latvia*	483	(2.0)	80	(1.2)	381	(3.4)	428	(2.5)	481	(2.4)	537	(2.6)	587	(3.0)	**207**	(4.0)
Lithuania	475	(1.8)	87	(1.3)	364	(2.9)	413	(2.4)	473	(2.3)	535	(2.5)	591	(3.0)	**227**	(4.0)
Mexico	395	(2.3)	69	(1.4)	310	(2.8)	347	(2.3)	391	(2.6)	440	(2.9)	487	(3.8)	**178**	(4.2)
Netherlands*	493	(3.8)	106	(2.1)	348	(5.7)	411	(6.6)	497	(4.9)	574	(3.4)	630	(2.8)	**282**	(5.8)
New Zealand*	479	(2.0)	99	(1.4)	350	(3.2)	408	(3.2)	478	(2.7)	547	(2.9)	609	(3.7)	**258**	(5.0)
Norway	468	(2.1)	93	(0.9)	345	(2.6)	401	(2.5)	469	(2.8)	535	(2.6)	589	(2.6)	**244**	(3.2)
Poland	489	(2.3)	89	(1.4)	370	(3.1)	426	(3.2)	490	(2.9)	552	(2.6)	604	(3.1)	**234**	(4.2)
Portugal	472	(2.4)	90	(1.5)	356	(4.1)	408	(3.0)	471	(2.8)	536	(2.7)	589	(2.2)	**233**	(4.3)
Slovak Republic	464	(2.9)	101	(1.8)	327	(5.2)	392	(4.4)	468	(3.6)	536	(3.0)	591	(3.6)	**263**	(5.9)
Slovenia	485	(1.2)	89	(1.0)	369	(2.7)	421	(1.9)	482	(1.9)	546	(2.3)	604	(2.6)	**234**	(3.7)
Spain	473	(1.5)	86	(0.8)	359	(2.2)	414	(1.9)	474	(1.8)	533	(1.6)	584	(1.8)	**225**	(2.5)
Sweden	482	(2.1)	96	(1.1)	356	(2.9)	413	(2.9)	483	(2.7)	550	(2.8)	607	(2.8)	**251**	(3.6)
Switzerland	508	(2.1)	96	(1.2)	379	(3.0)	439	(3.1)	509	(2.8)	578	(2.6)	632	(2.7)	**253**	(3.8)
Türkiye	453	(1.6)	90	(1.0)	341	(2.3)	387	(2.4)	447	(2.4)	515	(2.2)	576	(2.6)	**236**	(3.4)
United Kingdom*	489	(2.2)	96	(1.3)	363	(3.1)	422	(2.8)	489	(2.7)	555	(2.9)	614	(4.1)	**251**	(4.7)
United States*	465	(4.0)	95	(1.8)	345	(4.0)	396	(4.2)	462	(4.7)	531	(4.5)	590	(5.9)	**246**	(5.6)
OECD average	472	(0.4)	90	(0.2)	355	(0.6)	408	(0.5)	472	(0.5)	535	(0.5)	590	(0.6)	**235**	(0.7)
Partners																
Albania	368	(2.1)	85	(1.3)	266	(2.5)	308	(2.2)	361	(2.6)	423	(2.9)	481	(3.5)	**216**	(3.8)
Argentina	378	(2.3)	74	(1.1)	287	(2.8)	325	(2.3)	372	(2.5)	425	(2.8)	477	(3.3)	**190**	(3.5)
Baku (Azerbaijan)	397	(2.4)	85	(1.1)	290	(2.5)	336	(2.7)	393	(2.7)	455	(3.0)	511	(3.6)	**221**	(3.4)
Brazil	379	(1.6)	77	(1.2)	288	(1.6)	325	(1.2)	370	(1.7)	425	(2.4)	482	(3.1)	**194**	(3.2)
Brunei Darussalam	442	(0.9)	84	(0.7)	337	(2.0)	383	(1.2)	437	(1.5)	499	(1.6)	556	(2.3)	**219**	(3.3)
Bulgaria	417	(3.3)	97	(2.1)	298	(3.5)	346	(3.2)	411	(3.8)	483	(4.9)	549	(6.5)	**251**	(6.8)
Cambodia	336	(2.7)	73	(1.6)	244	(3.1)	288	(3.0)	336	(2.7)	383	(3.4)	428	(4.5)	**184**	(4.6)
Croatia	463	(2.4)	88	(1.4)	352	(3.2)	400	(2.9)	459	(2.9)	524	(3.5)	582	(3.7)	**230**	(4.5)
Cyprus	418	(1.2)	101	(0.9)	294	(2.0)	343	(1.9)	411	(1.8)	487	(2.1)	556	(2.8)	**262**	(3.3)
Dominican Republic	339	(1.6)	54	(1.3)	273	(2.1)	302	(1.8)	335	(1.5)	373	(2.3)	410	(2.9)	**137**	(3.3)
El Salvador	343	(2.0)	59	(1.1)	272	(2.3)	303	(1.9)	338	(2.0)	380	(2.7)	423	(3.9)	**151**	(3.9)
Georgia	390	(2.4)	85	(2.2)	288	(2.7)	330	(2.1)	383	(2.2)	444	(3.2)	502	(4.9)	**214**	(5.3)
Guatemala	344	(2.2)	69	(1.7)	256	(3.1)	299	(2.4)	343	(2.1)	389	(2.5)	432	(4.3)	**176**	(5.0)
Hong Kong (China)*	540	(3.0)	105	(1.7)	398	(5.2)	469	(4.4)	545	(3.2)	614	(3.0)	672	(4.1)	**274**	(5.7)
Indonesia	366	(2.4)	62	(1.3)	290	(2.4)	323	(2.1)	361	(2.5)	404	(3.3)	448	(3.8)	**158**	(3.6)
Jamaica*	377	(3.1)	71	(1.4)	291	(2.8)	326	(3.1)	371	(3.6)	423	(4.9)	475	(5.0)	**185**	(4.9)
Jordan	361	(2.0)	62	(1.0)	284	(2.0)	318	(2.1)	358	(2.2)	402	(2.7)	442	(3.1)	**158**	(3.2)
Kazakhstan	425	(1.7)	78	(1.0)	329	(1.9)	371	(1.8)	421	(1.9)	477	(2.1)	529	(2.6)	**201**	(2.7)
Kosovo	355	(1.0)	62	(0.7)	280	(1.7)	311	(1.4)	349	(1.3)	394	(1.8)	438	(2.6)	**159**	(2.8)
Macao (China)	552	(1.1)	92	(1.0)	429	(2.7)	489	(2.1)	554	(1.8)	616	(1.8)	670	(2.6)	**241**	(3.7)
Malaysia	409	(2.4)	76	(2.4)	317	(2.3)	355	(2.1)	403	(2.4)	456	(3.0)	509	(5.1)	**193**	(5.4)
Malta	466	(1.6)	99	(1.4)	333	(3.4)	395	(2.9)	469	(2.2)	537	(2.5)	592	(3.7)	**259**	(5.3)
Moldova	414	(2.3)	80	(1.3)	317	(2.5)	359	(1.9)	408	(2.4)	465	(3.4)	521	(4.3)	**205**	(4.1)
Mongolia	425	(2.6)	83	(1.6)	323	(2.9)	366	(2.2)	418	(2.5)	479	(3.3)	537	(4.5)	**214**	(4.6)
Montenegro	406	(1.1)	82	(0.9)	306	(1.7)	346	(1.7)	399	(1.8)	460	(2.1)	517	(2.4)	**211**	(3.1)
Morocco	365	(3.4)	63	(2.1)	289	(2.6)	321	(2.6)	359	(3.3)	404	(4.2)	449	(6.3)	**160**	(5.9)
North Macedonia	389	(0.9)	83	(0.9)	287	(1.9)	329	(1.4)	382	(1.7)	444	(1.8)	500	(2.2)	**213**	(3.0)
Palestinian Authority	366	(1.8)	66	(1.1)	285	(2.2)	319	(1.9)	361	(2.0)	408	(2.5)	452	(3.1)	**167**	(3.1)
Panama*	357	(2.8)	65	(2.1)	278	(2.5)	311	(2.4)	351	(2.8)	396	(3.8)	443	(6.7)	**165**	(6.6)
Paraguay	338	(2.2)	77	(1.1)	241	(2.9)	283	(2.6)	335	(2.8)	389	(2.8)	439	(3.4)	**199**	(3.9)
Peru	391	(2.3)	78	(1.2)	295	(2.6)	335	(2.3)	386	(2.6)	442	(2.9)	497	(3.6)	**201**	(3.6)
Philippines	355	(2.6)	65	(1.8)	279	(2.2)	308	(2.1)	347	(2.7)	395	(3.5)	443	(4.8)	**164**	(4.8)
Qatar	414	(1.1)	89	(1.0)	307	(2.0)	350	(1.6)	405	(1.7)	469	(2.0)	536	(2.7)	**229**	(3.5)
Romania	428	(4.0)	99	(2.0)	303	(3.8)	356	(4.1)	424	(4.9)	495	(5.6)	559	(6.1)	**257**	(6.3)
Saudi Arabia	389	(1.8)	66	(1.0)	308	(2.1)	343	(2.0)	385	(1.9)	431	(2.3)	474	(2.8)	**166**	(3.0)
Serbia	440	(3.0)	90	(2.7)	329	(3.6)	377	(2.7)	436	(2.9)	499	(3.6)	558	(5.8)	**229**	(6.4)
Singapore	575	(1.2)	103	(0.9)	433	(2.8)	505	(2.3)	582	(1.7)	649	(2.0)	702	(2.3)	**268**	(3.6)
Chinese Taipei	547	(3.8)	112	(2.3)	393	(5.1)	470	(4.6)	554	(4.5)	628	(4.5)	687	(5.5)	**294**	(6.8)
Thailand	394	(2.7)	76	(2.0)	306	(2.3)	342	(2.2)	385	(2.4)	437	(3.9)	495	(6.5)	**189**	(6.2)
Ukrainian regions (18 of 27)	441	(4.1)	88	(2.1)	329	(5.4)	378	(5.2)	438	(4.8)	501	(4.7)	557	(5.3)	**228**	(6.4)
United Arab Emirates	431	(0.9)	101	(0.6)	306	(1.5)	356	(1.4)	423	(1.3)	500	(1.6)	570	(1.4)	**264**	(1.7)
Uruguay	409	(2.0)	83	(1.3)	303	(2.6)	349	(2.7)	405	(2.7)	466	(2.7)	520	(3.2)	**217**	(3.8)
Uzbekistan	364	(2.0)	67	(1.0)	283	(2.2)	318	(1.9)	360	(2.1)	406	(2.8)	453	(3.6)	**170**	(3.3)
Viet Nam	469	(3.9)	86	(2.3)	360	(5.5)	412	(4.3)	469	(4.0)	527	(4.6)	580	(4.8)	**220**	(6.2)

As shown in Figure I.2.3, there is a strong correlation between average performance in mathematics and variation in performance in mathematics.
However, among countries that performed above the OECD average, Ireland*, Latvia* and Denmark* stand out for their relatively small variation in performance (standard deviation around 80 score points) (Figure I.2.3).

Figure I.2.3
Average performance in mathematics and variation in performance



Source: OECD, PISA 2022 Database, Table I.B1.2.1.

Another measure of variation in performance within countries is the score gap that separates the highest- and lowest-performing students within a country (i.e. inter-decile range). In mathematics, the difference between the 90th percentile of performance (the score above which only 10% of students scored) and the 10th percentile of performance (the score below which only 10% of students scored) is more than 135 score points in all countries and economies; on average across OECD countries, 235 score points separate these extremes (Figure I.2.4).

The largest differences between top-performing and low-achieving students in mathematics are found in Israel, the Netherlands* and Chinese Taipei (Figure I.2.4). In these countries, the inter-decile range is 280 score points or more, which means that student performance in mathematics is highly unequal across 15-year-olds.

Figure I.2.4

Mean score in mathematics at 10th, 50th and 90th percentile of performance distribution

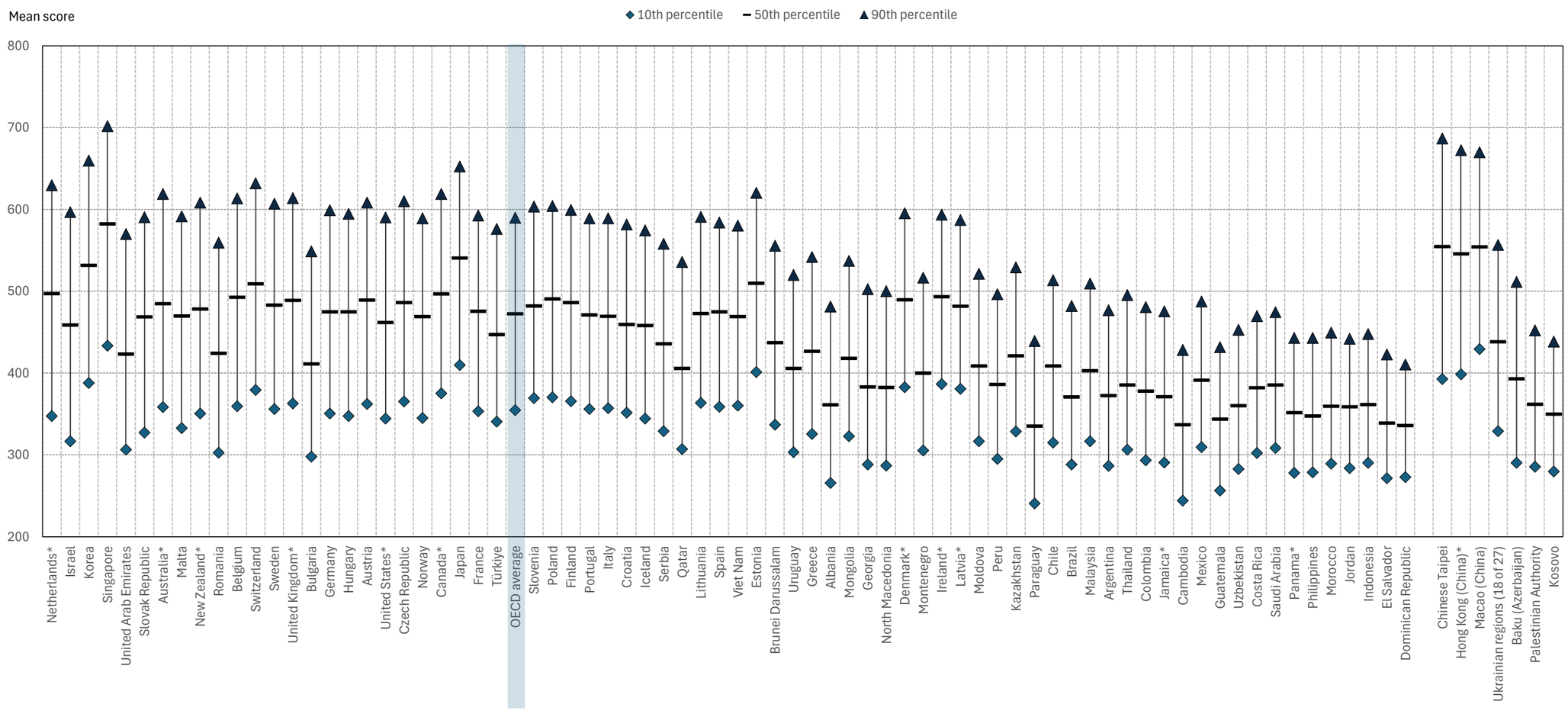


Table I.B1.3.1

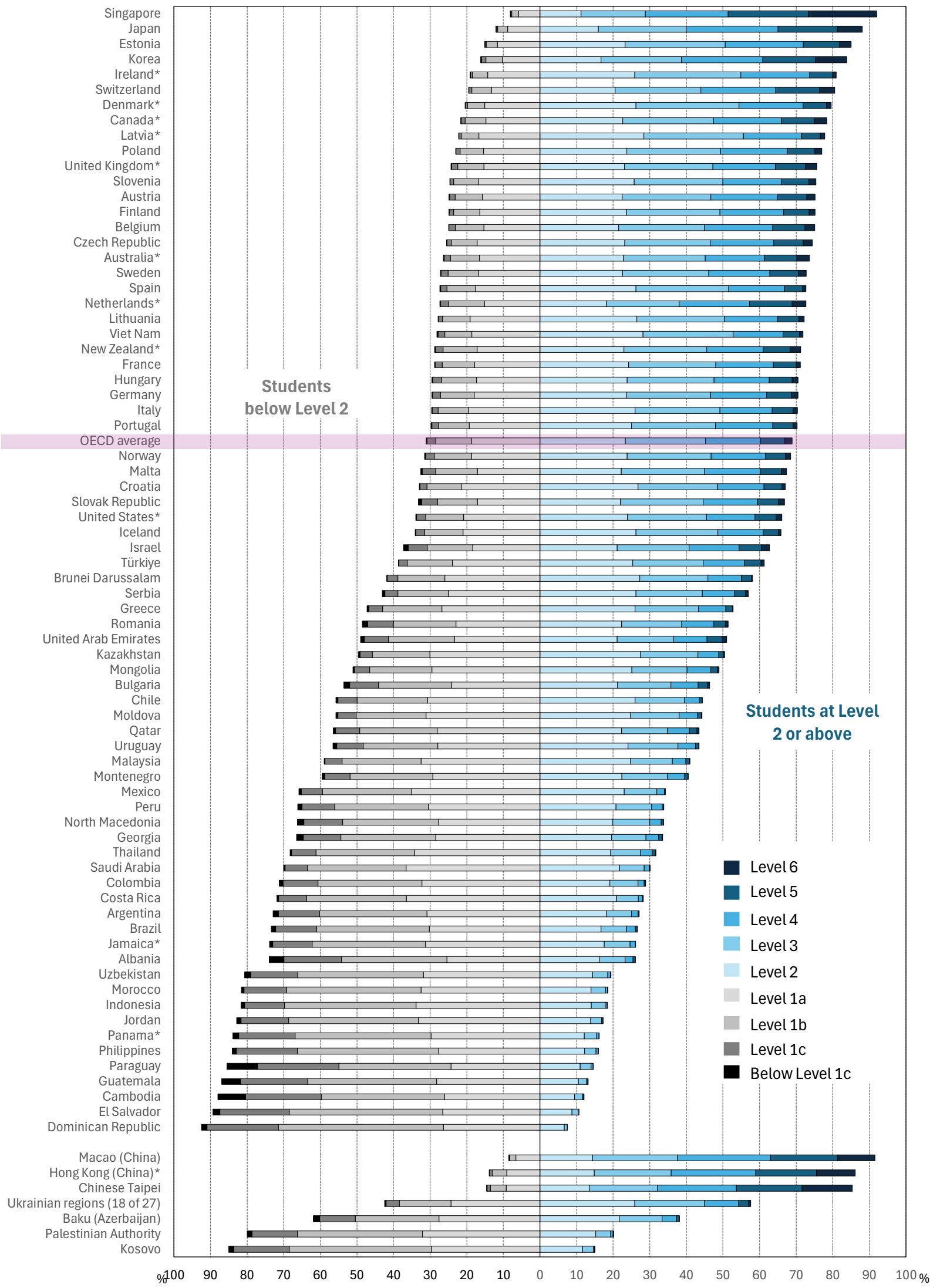
Percentage of students at each proficiency level in mathematics

	All students																	
	Below Level 1c (below 233.17 score points)		Level 1c (from 233.17 to less than 295.47 score points)		Level 1b (from 295.47 to less than 357.77 score points)		Level 1a (from 357.77 to less than 420.07 score points)		Level 2 (from 420.07 to less than 482.38 score points)		Level 3 (from 482.38 to less than 544.68 score points)		Level 4 (from 544.68 to less than 606.99 score points)		Level 5 (from 606.99 to less than 669.30 score points)		Level 6 (above 669.30 score points)	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
OECD																		
Australia*	0.2	(0.1)	1.7	(0.2)	7.9	(0.4)	16.5	(0.5)	22.8	(0.6)	22.3	(0.7)	16.2	(0.5)	8.8	(0.4)	3.5	(0.3)
Austria	0.1	(0.1)	1.5	(0.3)	7.5	(0.5)	15.7	(0.7)	22.5	(0.7)	24.2	(0.7)	18.1	(0.7)	8.1	(0.5)	2.2	(0.2)
Belgium	0.1	(0.1)	1.7	(0.2)	7.8	(0.5)	15.3	(0.6)	21.5	(0.7)	23.5	(0.8)	18.6	(0.7)	8.9	(0.5)	2.6	(0.2)
Canada*	0.1	(0.0)	1.0	(0.1)	5.7	(0.3)	14.7	(0.4)	22.7	(0.5)	24.8	(0.5)	18.5	(0.5)	9.1	(0.4)	3.3	(0.2)
Chile	0.5	(0.2)	5.2	(0.6)	19.3	(0.9)	30.7	(0.8)	26.0	(0.8)	13.5	(0.6)	4.1	(0.4)	0.6	(0.1)	0.0	(0.0)
Colombia	1.1	(0.3)	9.6	(0.8)	28.4	(1.4)	32.3	(1.0)	19.1	(1.0)	7.7	(0.6)	1.7	(0.3)	0.3	(0.1)	0.0	(0.0)
Costa Rica	0.5	(0.1)	7.6	(0.6)	27.3	(1.0)	36.5	(1.1)	20.9	(0.9)	6.0	(0.5)	1.1	(0.2)	0.2	(0.1)	0.0	(0.0)
Czech Republic	0.1	(0.1)	1.2	(0.2)	7.1	(0.5)	17.1	(0.7)	23.2	(0.7)	23.4	(0.8)	17.3	(0.7)	8.1	(0.5)	2.5	(0.3)
Denmark*	0.0	(0.0)	0.6	(0.2)	4.7	(0.4)	15.1	(0.7)	26.3	(0.9)	28.1	(0.8)	17.5	(0.8)	6.5	(0.5)	1.3	(0.2)
Estonia	0.0	(0.0)	0.3	(0.1)	3.0	(0.3)	11.6	(0.6)	23.3	(0.8)	27.3	(1.0)	21.3	(0.9)	9.9	(0.6)	3.2	(0.3)
Finland	0.1	(0.0)	1.2	(0.2)	7.1	(0.4)	16.4	(0.6)	23.7	(0.7)	25.5	(0.7)	17.4	(0.6)	7.0	(0.5)	1.5	(0.2)
France	0.2	(0.1)	1.9	(0.2)	8.9	(0.6)	17.8	(0.7)	24.2	(0.7)	23.9	(0.7)	15.7	(0.7)	6.2	(0.5)	1.1	(0.2)
Germany	0.2	(0.1)	2.2	(0.4)	9.2	(0.7)	18.0	(0.8)	23.6	(0.9)	23.0	(0.9)	15.3	(0.8)	6.7	(0.5)	1.9	(0.2)
Greece	0.5	(0.2)	3.8	(0.4)	16.2	(0.8)	26.8	(0.8)	26.0	(0.8)	17.3	(0.7)	7.5	(0.5)	1.8	(0.3)	0.1	(0.1)
Hungary	0.2	(0.1)	2.4	(0.3)	9.6	(0.6)	17.3	(0.9)	23.8	(0.9)	23.8	(0.9)	15.1	(0.7)	6.3	(0.5)	1.6	(0.3)
Iceland	0.2	(0.1)	2.4	(0.4)	10.5	(0.7)	21.0	(0.8)	26.2	(0.8)	22.4	(0.8)	12.4	(0.8)	4.2	(0.5)	0.7	(0.2)
Ireland*	0.0	(0.0)	0.5	(0.1)	4.2	(0.4)	14.2	(0.7)	25.9	(0.8)	29.0	(0.9)	18.8	(0.7)	6.2	(0.5)	1.0	(0.2)
Israel	1.2	(0.2)	5.2	(0.5)	12.4	(0.7)	18.4	(0.8)	21.1	(0.8)	19.7	(0.8)	13.6	(0.8)	6.2	(0.5)	2.2	(0.4)
Italy	0.2	(0.1)	1.6	(0.3)	8.3	(0.6)	19.5	(0.9)	26.0	(0.9)	23.2	(0.8)	14.2	(0.9)	5.7	(0.6)	1.2	(0.2)
Japan	0.0	(0.0)	0.4	(0.1)	2.7	(0.4)	8.8	(0.7)	16.0	(0.8)	24.0	(0.9)	25.1	(1.0)	16.2	(0.8)	6.8	(0.7)
Korea	0.3	(0.1)	1.2	(0.3)	4.5	(0.6)	10.2	(0.8)	16.7	(0.8)	22.0	(0.9)	22.2	(1.0)	14.4	(0.9)	8.5	(0.8)
Latvia*	0.0	(0.0)	0.6	(0.1)	4.8	(0.5)	16.7	(0.7)	28.4	(0.9)	27.2	(0.9)	15.8	(0.8)	5.2	(0.4)	1.2	(0.2)
Lithuania	0.1	(0.1)	1.1	(0.2)	7.5	(0.6)	19.1	(0.8)	26.5	(0.7)	24.0	(0.8)	14.5	(0.6)	5.8	(0.5)	1.4	(0.2)
Mexico	0.6	(0.2)	5.8	(0.6)	24.3	(1.0)	35.1	(1.1)	23.0	(0.9)	9.0	(0.7)	2.0	(0.3)	0.2	(0.1)	0.0	(0.0)
Netherlands*	0.2	(0.1)	2.2	(0.4)	9.8	(1.0)	15.2	(0.9)	18.2	(0.8)	19.8	(1.0)	19.2	(0.9)	11.7	(0.7)	3.7	(0.4)
New Zealand*	0.2	(0.1)	2.1	(0.3)	9.3	(0.6)	17.2	(0.8)	22.9	(0.7)	22.6	(0.8)	15.4	(0.7)	7.4	(0.6)	2.9	(0.3)
Norway	0.3	(0.1)	2.4	(0.3)	10.1	(0.5)	18.7	(0.7)	23.8	(0.7)	23.0	(0.8)	14.9	(0.6)	5.5	(0.4)	1.4	(0.2)
Poland	0.1	(0.1)	1.1	(0.2)	6.4	(0.5)	15.4	(0.8)	23.8	(0.9)	25.6	(0.9)	18.2	(0.7)	7.5	(0.5)	1.9	(0.3)
Portugal	0.2	(0.1)	1.9	(0.4)	8.3	(0.6)	19.3	(0.7)	25.0	(0.8)	23.0	(0.8)	15.6	(0.7)	5.5	(0.4)	1.1	(0.2)
Slovak Republic	0.9	(0.2)	4.4	(0.5)	10.9	(0.8)	17.1	(0.9)	22.0	(1.0)	22.6	(0.8)	14.9	(0.7)	5.7	(0.4)	1.6	(0.2)
Slovenia	0.1	(0.0)	1.0	(0.2)	6.7	(0.6)	16.9	(0.7)	25.7	(0.9)	24.2	(0.9)	16.1	(0.7)	7.5	(0.4)	1.9	(0.3)
Spain	0.2	(0.1)	1.7	(0.2)	7.8	(0.4)	17.6	(0.5)	26.2	(0.5)	25.4	(0.5)	15.2	(0.4)	5.0	(0.3)	0.9	(0.1)
Sweden	0.2	(0.1)	1.9	(0.2)	8.3	(0.5)	16.8	(0.6)	22.6	(0.7)	23.5	(0.8)	16.7	(0.8)	7.8	(0.5)	2.1	(0.3)
Switzerland	0.0	(0.0)	0.8	(0.1)	5.4	(0.4)	13.2	(0.7)	20.5	(0.7)	23.5	(0.8)	20.4	(0.8)	11.9	(0.7)	4.2	(0.4)
Türkiye	0.1	(0.1)	2.3	(0.2)	12.3	(0.6)	23.9	(0.7)	25.3	(0.7)	19.2	(0.7)	11.3	(0.6)	4.6	(0.4)	0.9	(0.2)
United Kingdom*	0.2	(0.1)	1.7	(0.3)	7.2	(0.5)	15.3	(0.7)	23.1	(0.7)	24.2	(0.8)	17.1	(0.7)	8.2	(0.6)	3.1	(0.4)
United States*	0.2	(0.1)	2.5	(0.4)	10.4	(0.8)	20.8	(1.0)	23.9	(0.8)	21.5	(0.9)	13.3	(0.8)	5.7	(0.7)	1.6	(0.3)
OECD average	0.3	(0.0)	2.3	(0.1)	9.8	(0.1)	18.7	(0.1)	23.3	(0.1)	22.0	(0.1)	14.9	(0.1)	6.7	(0.1)	2.0	(0.0)
Partners																		
Albania	4.0	(0.4)	15.7	(0.7)	28.8	(0.9)	25.4	(0.7)	16.2	(0.7)	7.1	(0.4)	2.1	(0.3)	0.6	(0.2)	0.1	(0.1)
Argentina	1.4	(0.3)	11.3	(0.8)	29.4	(1.0)	30.8	(0.8)	18.1	(0.8)	6.9	(0.5)	1.7	(0.2)	0.3	(0.1)	0.0	(0.0)
Baku (Azerbaijan)	1.8	(0.2)	9.7	(0.6)	22.9	(0.7)	27.6	(0.8)	21.7	(0.8)	11.7	(0.6)	3.9	(0.4)	0.7	(0.2)	0.1	(0.0)
Brazil	1.2	(0.2)	11.2	(0.5)	30.7	(0.8)	30.3	(0.7)	16.7	(0.6)	7.0	(0.4)	2.4	(0.3)	0.5	(0.1)	0.1	(0.0)
Brunei Darussalam	0.2	(0.1)	2.8	(0.3)	12.9	(0.5)	26.0	(0.7)	27.3	(0.6)	18.6	(0.6)	9.2	(0.5)	2.8	(0.3)	0.3	(0.1)
Bulgaria	1.6	(0.3)	7.9	(0.6)	20.0	(0.9)	24.2	(0.9)	21.2	(0.9)	14.5	(0.8)	7.5	(0.7)	2.5	(0.4)	0.6	(0.2)
Cambodia	7.6	(0.6)	20.6	(1.0)	33.7	(1.0)	26.1	(1.1)	9.5	(0.9)	2.2	(0.5)	0.3	(0.2)	0.0	(0.0)	0.0	(0.0)
Croatia	0.2	(0.1)	1.9	(0.3)	9.3	(0.6)	21.5	(0.8)	26.8	(0.8)	21.7	(0.9)	12.7	(0.7)	4.9	(0.5)	1.0	(0.2)
Cyprus	1.7	(0.3)	8.6	(0.4)	20.2	(0.6)	22.7	(0.7)	20.5	(0.7)	14.5	(0.5)	8.0	(0.5)	3.1	(0.3)	0.8	(0.1)
Dominican Republic	1.5	(0.3)	19.5	(1.0)	45.1	(1.4)	26.4	(1.0)	6.7	(0.6)	0.8	(0.2)	0.1	(0.1)	0.0	c	0.0	c
El Salvador	1.9	(0.3)	19.0	(0.9)	42.0	(1.1)	26.5	(1.0)	8.8	(0.7)	1.7	(0.3)	0.2	(0.1)	0.0	c	0.0	c
Georgia	1.8	(0.2)	10.3	(0.7)	25.9	(0.9)	28.4	(0.8)	19.6	(0.7)	9.4	(0.5)	3.4	(0.4)	1.0	(0.3)	0.2	(0.1)
Guatemala	5.1	(0.6)	18.3	(1.0)	35.2	(1.2)	28.2	(1.0)	10.5	(0.8)	2.3	(0.5)	0.3	(0.2)	0.0	(0.0)	0.0	(0.0)
Hong Kong (China)*	0.1	(0.0)	0.9	(0.2)	3.8	(0.4)	9.1	(0.6)	14.8	(0.8)	21.0	(0.8)	23.1	(0.9)	16.7	(0.7)	10.6	(0.8)
Indonesia	1.0	(0.2)	10.9	(0.8)	36.0	(1.2)	33.8	(1.2)	14.1	(0.9)	3.8	(0.5)	0.5	(0.1)	0.0	(0.0)	0.0	(0.0)
Jamaica*	0.9	(0.2)	10.7	(0.9)	30.9	(1.5)	31.3	(1.3)	17.5	(1.2)	7.1	(0.7)	1.4	(0.3)	0.1	(0.1)	0.0	c
Jordan	1.2	(0.2)	13.0	(0.8)	35.4	(1.1)	33.2	(1.0)	13.9	(0.9)	3.0	(0.4)	0.3	(0.1)	0.0	(0.0)	0.0	c
Kazakhstan	0.4	(0.1)	3.4	(0.3)	15.7	(0.5)	30.1	(0.6)	27.5	(0.7)	15.6	(0.5)	5.7	(0.3)	1.4	(0.2)	0.2	(0.1)
Kosovo	1.4	(0.3)	15.1	(0.7)	38.9	(0.9)	29.6	(0.9)	11.7	(0.6)	2.9	(0.3)	0.3	(0.1)	0.0	(0.0)	0.0	c
Macao (China)	0.0	(0.0)	0.2	(0.1)	1.7	(0.3)	6.5	(0.5)	14.4	(0.7)	23.2	(0.8)	25.4	(1.1)	18.4	(0.8)	10.2	(0.5)
Malaysia	0.2	(0.1)	4.7	(0.4)	21.6	(0.9)	32.5	(0.9)	24.8	(0.9)	11.4	(0.6)	3.7	(0.4)	0.9	(0.3)	0.2	(0.2)
Malta	0.5	(0.2)	3.6	(0.4)	11.4	(0.7)	17.0	(0.8)	22.3	(1.1)	22.7	(0.9)	15.2	(1.0)	5.7	(0.6)	1.5	(0.2)
Moldova	0.5	(0.2)	5.0	(0.4)	19.1	(0.8)	31.1	(0.9)	24.8	(0.7)	13.3	(0.8)	4.9	(0.5)	1.1	(0.2)	0.1	(0.1)
Mongolia	0.4	(0.1)	4.2	(0.4)	17.0	(0.7)	29.5	(0.8)	25.1	(0.7)	15.1	(0.7)	6.4	(0.5)	1.9	(0.4)	0.3	(0.1)
Montenegro	0.7	(0.1)	6.9	(0.4)	22.6	(0.8)	29.3	(0.8)	22.4	(0.8)	12.5	(0.5)	4.7	(0.3)	0.9	(0.1)	0.1	(0.1)
Morocco	0.7	(0.2)	11.7	(0.9)	36.7	(1.6)	32.5	(1.2)	14.0	(1.1)	3.9	(0.7)	0.6	(0.3)	0.0	(0.0)	0.0	c
North Macedonia	1.7	(0.3)	10.6	(0.5)	26.2	(0.8)	27.7	(0.8)	19.9	(0.6)	10.1	(0.4)	3.1	(0.3)	0.6	(0.1)	0.1	(0.0)
Palestinian Authority	1.3	(0.2)	12.4	(0.7)	34.1	(0.9)	32.1	(0.9)	15.2	(0.7)	4.1	(0.4)	0.7	(0.2)	0.1	(0.0)	0.0	(0.0)
Panama*	1.6	(0.3)	15.4	(0.9)	37.1	(1.3)	29.7	(1.3)	12.1	(1.0)	3.3	(0.7)	0.7	(0.3)	0.0	(0.0)	0.0	c
Paraguay	8.3	(0.7)	22.2	(0.9)	30.7	(1.0)	24.3	(1.0)	11.0	(0.7)	3.0	(0.4)	0.6	(0.2)	0.0	(0.0)	0.0	c
Peru	1.1	(0.3)	9.0	(0.6)	25.6	(0.9)	30.5	(0.7)	20.8	(0.8)	9.7	(0.6)	2.8	(0.3)	0.5	(0.1)	0.0	(0.0)
Philippines	1.1	(0.2)	16.7	(1.0)	38.6	(1.3)	27.7	(0.9)	12.2	(0.9)	3.2	(0.4)	0.5	(0.2)	0.1	(0.1)	0.0	c
Qatar	0.6	(0.2)	6.6	(0.5)	21.2	(0.6)	28.0	(1.0)	22.3	(0.7)	12.5	(0.6)	6.0	(0.4)	2.1	(0.2)	0.6	(0.1)
Romania	1.5	(0.3)	7.0	(0.6)	17.1	(1.0)	22.9	(1.0)	22.3	(0.9)	16.4	(0.9)	8.7	(0.7)	3.2	(0.5)	0.8	(0.2)
Saudi Arabia	0.4	(0.1)	6.1	(0.4)	26.9	(0.8)	36.6	(0.9)	21.7	(0.8)	6.7	(0.5)	1.3	(0.2)	0.2	(0.1)	0.0	(0.0)
Serbia	0.7	(0.2)	3.6	(0.5)	13.8	(0.8)	25.0	(0.8)	26.3	(0.9)	18.1	(0.8)	8.8	(0.5)	3.0	(0.5)	0.8	(0.4)
Singapore	0.0	(0.0)	0.3	(0.1)	1.9	(0.2)	5.9	(0.4)	11.2	(0.6)	17.6	(0.6)	22.6	(0.7)	22.0	(0.7)	18.6	(0.5)
Chinese Taipei	0.2	(0.1)	0.9	(0.2)	4.3	(0.4)	9.2	(0.6)	13.5	(0.8)	18.7	(0.9)	21.5	(0.8)	18.0	(0.9)	13.7	(1.2)
Thailand	0.5	(0.1)	6.6	(0.6)	27.0	(1.0)	34.2	(1.0)	19.4	(0.8)	8.1	(0.7)	3.2	(0.4)	0.8	(0.2)	0.2	(0.1)
Ukrainian regions (18 of 27)	0.4	(0.2)	3.6	(0.6)	14.2	(1.3)	24.3	(1.3)	25.9	(1.2)	19.2	(1.2)	9.3	(0.8)	2.7	(0.4)	0.6	(0.2)
United Arab Emirates	1.0	(0.1)	6.6	(0.3)	18.0	(0.4)	23.3	(0.4)	21.1	(0.4)	15.3	(0.4)	9.2	(0.3)	4.0	(0.2)	1.3	(0.1)
Uruguay	1.0	(0.2)	7.3	(0.5)	20.4	(0.8)	27.9	(0.8)	24.1	(0.7)	13.6	(0.6)	4.9	(0.4)	0.9	(0.2)	0.1	(0.0)
Uzbekistan	1.7	(0.3)	12.8	(0.7)	34.4	(0.9)	31.8	(0.8)	14.4	(0.8)	4.2	(0.5)	0.7	(0.2)	0.0	(0.0)	0.0	(0.0)
Viet Nam	0.3	(0.1)	1.9	(0.4)	7.3	(0.8)	18.6	(1.1)	28.1	(1.2)	24.7	(1.0)	13.6	(0.9)	4.5	(0.6)	0.9	(0.3)

In PISA 2022, the mathematics scale is divided into eight proficiency levels1. Figure I.3.1 shows how students are distributed across the eight levels of mathematics proficiency. In PISA, proficiency Level 2 is considered the baseline level of proficiency students need to participate fully in society.

Some educational systems have few low performers in mathematics. In six countries and economies, 15% or less of students performed below Level 2 in mathematics (Estonia, Chinese Taipei, Hong Kong [China]*, Japan, Macao [China] and Singapore, in descending order of the percentage of low performers). This means that these systems are close to achieving universal basic proficiency in mathematics.

Figure I.3.1
Students' proficiency in mathematics



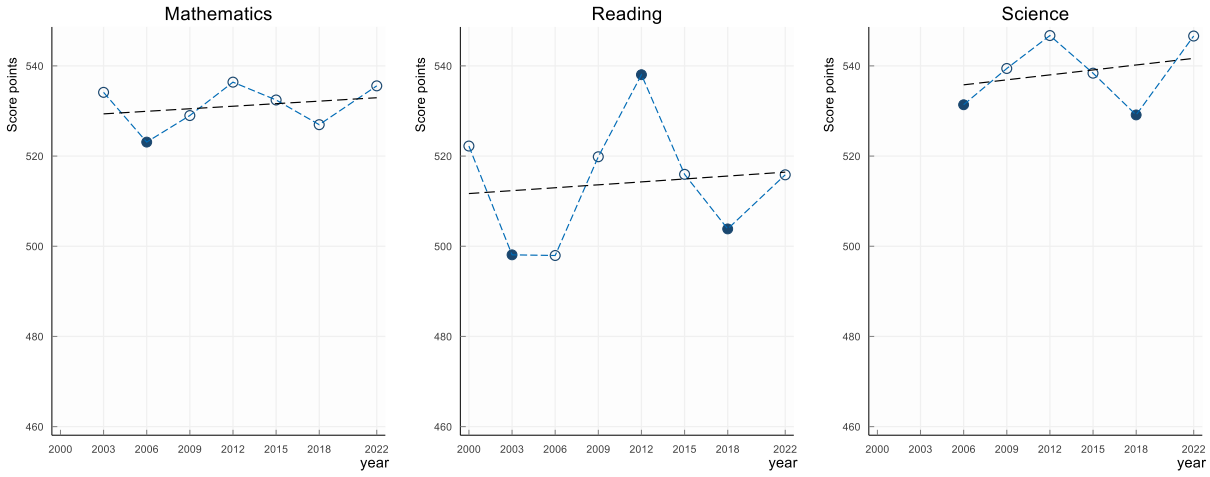
Japan

The Programme for International Student Assessment (PISA) assesses the knowledge and skills of 15-year-old students in mathematics, reading and science. The tests explore how well students can solve complex problems, think critically and communicate effectively. This gives insights into how well education systems are preparing students for real life challenges and future success. Japan participated for the first time in PISA in 2000. By comparing results internationally, policy makers and educators in Japan can learn from other countries' policies and practices.

How well did 15-year-old students in Japan do on the test?

Trends in mathematics, reading and science performance

Figure 1. Trends in performance in mathematics, reading and science



Note: White dots indicate mean-performance estimates that are not statistically significantly above/below PISA 2022 estimates. Black lines indicate the best-fitting trend. An interactive version of this figure is available at https://oecdch.art/a40de1dbaf/C202.
Source: OECD, PISA 2022 Database, Tables I.B1.5.4, I.B1.5.5 and I.B1.5.6.

- Average 2022 results were about the same as in 2018 in mathematics, and up compared to 2018 in reading and science.
- When considering all results observed in PISA over more than two decades, results fluctuated somewhat (in particular, in reading), with no clear direction. PISA 2022 results are among the highest ever measured by PISA in mathematics and science.
- Over the most recent period (2018 to 2022), the gap between the highest-scoring students (10% with the highest scores) and the weakest students (10% with the lowest scores) widened in

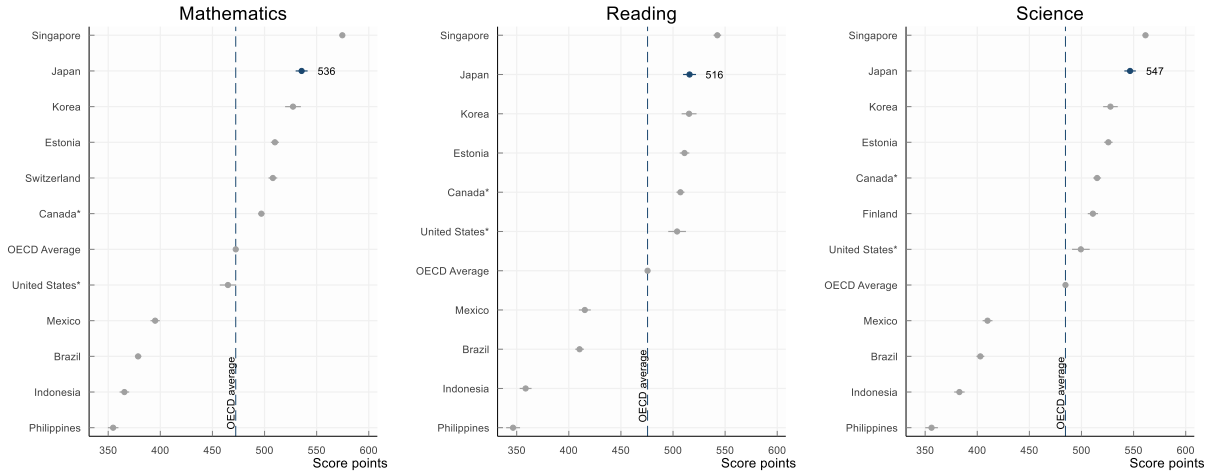
mathematics, while it did not change significantly in reading and science. In mathematics, high-achievers became stronger, while performance did not change significantly amongst low-achievers.

- Compared to 2012 the proportion of students scoring below a baseline level of proficiency (Level 2) did not change significantly in mathematics; increased by three percentage points in reading; and did not change significantly in science.

How does Japan compare?

Figure 2. Mean performance in mathematics, reading and science in PISA 2022

Japan, OECD average and selected comparison countries



Notes: Comparison countries include the six highest-performing countries in each subject and the five countries with the largest population of 15-year-old students.
Horizontal lines that extend beyond the markers represent a measure of uncertainty associated with mean estimates (the 95% confidence interval).
Source: OECD, PISA 2022 Database, Tables I.B1.2.1, I.B1.2.2 and I.B1.2.3.

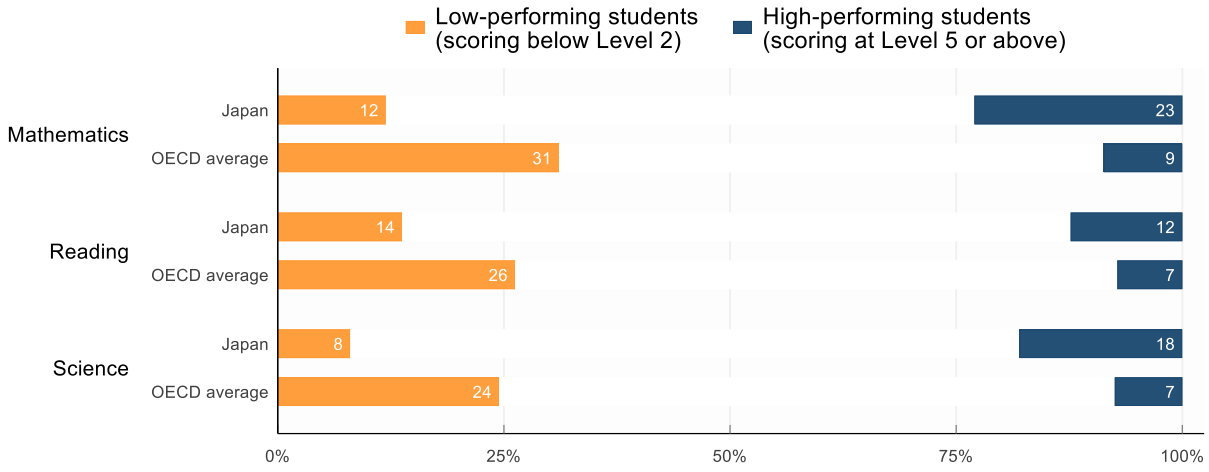
- Students in Japan scored higher than the OECD average in mathematics, reading and science.
- More students in Japan, than on average across OECD countries, were top performers (Level 5 or 6) in at least one subject. At the same time a larger proportion of students than on average across OECD countries achieved a minimum level of proficiency (Level 2 or higher) in all three subjects.

What students know and can do in mathematics

- In Japan, 88% of students attained at least Level 2 proficiency in mathematics, significantly more than on average across OECD countries (OECD average: 69%). At a minimum, these students can interpret and recognize, without direct instructions, how a simple situation can be represented mathematically (e.g. comparing the total distance across two alternative routes, or converting prices into a different currency).
- Some 23% of students in Japan were top performers in mathematics, meaning that they attained Level 5 or 6 in the PISA mathematics test (OECD average: 9%). Six Asian countries and economies had the largest shares of students who did so: Singapore (41%), Chinese Taipei (32%), Macao (China) (29%), Hong Kong (China)* (27%), Japan (23%) and Korea (23%). At these levels,

students can model complex situations mathematically, and can select, compare and evaluate appropriate problem-solving strategies for dealing with them. Only in 16 out of 81 countries and economies participating in PISA 2022 did more than 10% of students attain Level 5 or 6 proficiency.

Figure 3. Top performers and low-performing students in mathematics, reading and science



Note: Numbers inside the figure correspond to percentages.
Source: OECD, PISA 2022 Database, Tables I.B1.3.1, I.B1.3.2 and I.B1.3.3.

What students know and can do in reading

- Some 86% of students in Japan attained Level 2 or higher in reading (OECD average: 74%). At a minimum, these students can identify the main idea in a text of moderate length, find information based on explicit, though sometimes complex criteria, and can reflect on the purpose and form of texts when explicitly directed to do so. The share of 15-year-old students who attained minimum levels of proficiency in reading (Level 2 or higher) varied from 89% in Singapore to 8% in Cambodia.
- In Japan, 12% of students scored at Level 5 or higher in reading (OECD average: 7%). These students can comprehend lengthy texts, deal with concepts that are abstract or counterintuitive, and establish distinctions between fact and opinion, based on implicit cues pertaining to the content or source of the information.

What students know and can do in science

- Some 92% of students in Japan attained Level 2 or higher in science (OECD average: 76%). At a minimum, these students can recognize the correct explanation for familiar scientific phenomena and can use such knowledge to identify, in simple cases, whether a conclusion is valid based on the data provided.
- In Japan, 18% of students were top performers in science, meaning that they were proficient at Level 5 or 6 (OECD average: 7%). These students can creatively and autonomously apply their knowledge of and about science to a wide variety of situations, including unfamiliar ones.

A special edition of PISA

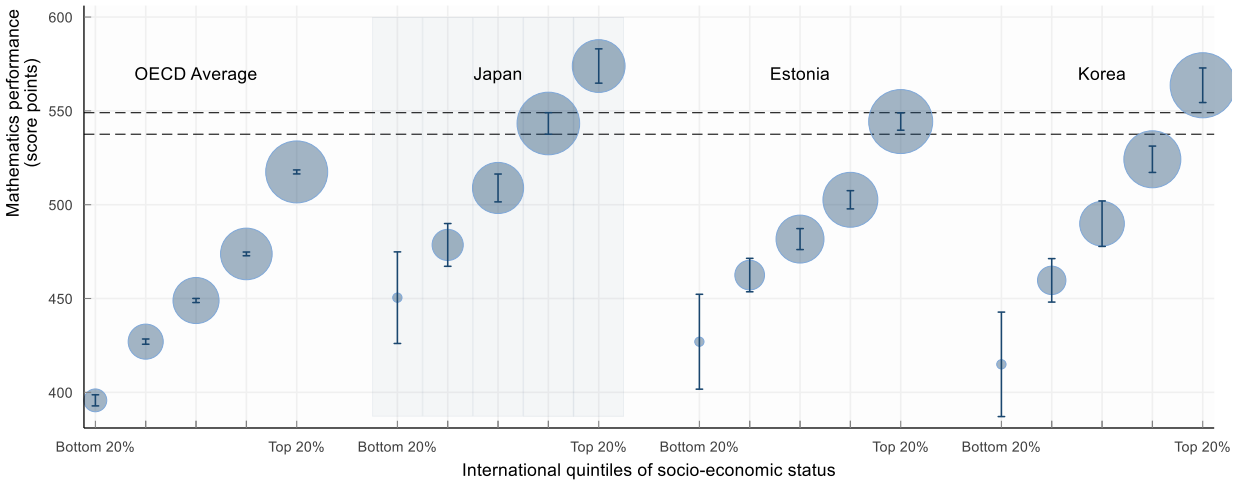
This PISA test was originally due to be conducted in 2021 but was delayed by one year because of the COVID-19 pandemic. The exceptional circumstances throughout this period, including lockdowns and school closures in many countries, led to occasional difficulties in collecting some data. While the vast majority of countries and economies met PISA's technical standards, a small number did not. A country or economy in this note with an asterisk (*) next to its name means that caution is required when interpreting estimates because one or more PISA sampling standards were not reached. Further information can be found in the Reader's Guide and in Annexes A2 and A4 of the main report.

In Japan, all data met the quality standards set by PISA and were considered fit for reporting.

Performance gaps within Japan

Socio-economic divides

Figure 4. Mean performance in mathematics, by international quintiles of socio-economic status



Note: The size of markers is proportional to the share of the student population within each quintile of socio-economic status (as determined by the PISA index of economic, social and cultural status, ESCS). Quintiles are defined at the international level, to include 20% of PISA participants in each quintile; within each national sample, the proportion can therefore differ from 20%.
Vertical bars that extend beyond the markers represent a measure of uncertainty associated with each estimate (the 95% confidence interval).
Horizontal, dashed lines represent the uncertainty associated with the mean score of the largest group of students (as defined by international quintiles) within Japan.
Source: OECD, PISA 2022 Database, Tables I.B1.4.6 and I.B1.4.8.

- The PISA index of economic, social and cultural status is computed in such a way that all students taking the PISA test, regardless of the country where they live, can be placed on the same socio-economic scale. This means that it is possible to use this index to compare the performance of students of similar socio-economic background in different countries. In Japan, 38% of students (the largest share) were in the 4th international quintile of the socio-economic scale, meaning that they were neither among the most disadvantaged, nor among the most advantaged students who

took the PISA test in 2022. Their average score in mathematics was 543 score points; one of the highest for students of similar socio-economic background.

- The PISA index of economic, social and cultural status can also be used to order students from the most disadvantaged to the most advantaged within each country and economy, and to create four groups of students of equal size (each comprising 25% of the population of 15-year-old students in each country/economy). In Japan socio-economically advantaged students (the top 25% in terms of socio-economic status) outperformed disadvantaged students (the bottom 25%) by 81 score points in mathematics. This is similar to the average difference between the two groups (93 score points) across OECD countries.
- Between 2012 and 2022, the gap in mathematics performance between the top and the bottom 25% of students in terms of socio-economic status remained stable in Japan, as well as across OECD countries on average.
- Socio-economic status was a predictor of performance in mathematics in all PISA participating countries and economies. It accounted for 12% of the variation in mathematics performance in PISA 2022 in Japan (compared to 15% on average across OECD countries).
- Some 12% of disadvantaged students in Japan were able to score in the top quarter of mathematics performance. These students can be considered academically resilient because, despite their socio-economic disadvantage, they have attained educational excellence by comparison with students in their own country. On average across OECD countries, 10% of disadvantaged students scored in the top quarter of mathematics performance in their own countries.

Gender differences in performance

- Boys outperformed girls in mathematics by 9 score points; girls outperformed boys in reading by 17 score points in Japan. Globally, in mathematics, boys outperformed girls in 40 countries and economies, girls outperformed boys in another 17 countries or economies, and no significant difference was found in the remaining 24. In reading, girls, on average, scored above boys in all but two countries and economies that participated in PISA 2022 (79 out of 81).
- In Japan, the share of low performers is similar among boys (13%) and girls (11%) in mathematics; in reading, however, the share is larger among boys (11% of girls and 17% of boys scored below Level 2 in reading). When it comes to top performers, the share is larger among boys (27%) than among girls (19%) in mathematics; in reading, however, the share is similar among girls (13% of girls and 12% of boys scored at Level 5 or 6 in reading).
- Between 2012 and 2022, performance in mathematics remained stable both among boys and girls in Japan.

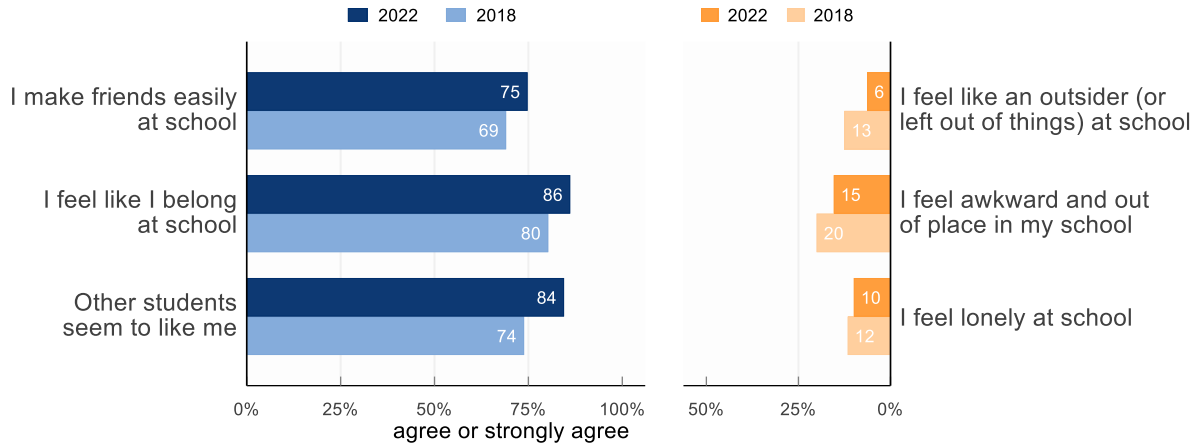
How is school life in Japan?

Students' sense of belonging at school and satisfaction with life

- In 2022, 75% of students in Japan reported that they make friends easily at school (OECD average: 76%) and 86% felt that they belong at school (OECD average: 75%). Meanwhile, 10% reported feeling lonely at school, and 6% like an outsider or left out of things at school (OECD average: 16% and 17%). Compared to 2018, students' sense of belonging at school improved in Japan.
- Students' satisfaction with life, more generally, declined in many countries and economies over recent years. In 2022, 18% of students in Japan reported that they were not satisfied with their lives: they rated their satisfaction with life between 0 and 4 on a scale ranging from 0 to 10. In 2018,

more students were not satisfied with life (25%). On average across OECD countries, the proportion of students who are not satisfied with life increased from 11% in 2015 to 16% in 2018 and 18% in 2022.

Figure 5. Students' sense of belonging at school



Note: Numbers inside the figure correspond to percentages.
Source: OECD, PISA 2022 Database, Table II.B1.1.4.

Support and discipline in mathematics lessons

- In Japan, 74% of students reported that, in most mathematics lessons, the teacher shows an interest in every student's learning (OECD average: 63%), and 84% that the teacher gives extra help when students need it (OECD average: 70%). In 2012, the corresponding shares were 66% and 75%. Mathematics results in 2022 tended to decline less, on average, in education systems where more students reported that teachers give extra help when students need it, compared to ten years earlier.
- Some students study mathematics in a disciplinary climate that is not favourable to learning: in 2022, about 12% of students in Japan reported that they cannot work well in most or all lessons (OECD average: 23%); 6% of students do not listen to what the teacher says (OECD average: 30%); 5% of students get distracted using digital devices (OECD average: 30%); and 4% get distracted by other students who are using digital devices (OECD average: 25%). On average across OECD countries, students were less likely to report getting distracted using digital devices when the use of cell phones on school premises is banned.

Feeling safe at and around school

- PISA 2022 data show that in education systems where performance remained high and students' sense of belonging improved, students tended to feel safer and less exposed to bullying and other risks at their school.
- Some 10% of girls and 17% of boys reported being the victim of bullying acts at least a few times a month (OECD average: 20% of girls and 21% of boys). On average across OECD countries, fewer students were exposed to bullying in 2022 compared to 2018: for example, only 7% of students reported that other students spread nasty rumours about them in 2022, compared to 11% in 2018. In Japan, too, the corresponding proportions shrank (3% in 2022 compared to 5% in 2018).

Parental involvement in learning

- PISA data collected from school principals show that the percentage of parents who were involved in school and learning decreased substantially between 2018 and 2022 in many countries/economies. This was not the case in Japan. In 2022, 16% of students in Japan were in schools whose principal reported that during the previous academic year at least half of all families discussed their child's progress with a teacher on their own initiative (and 77% on the teacher's initiative). In 2018, the corresponding number was 10% (and 82%). Systems that had more positive trends in parental involvement between 2018 and 2022 (i.e. systems in which the share of parents who discussed their child's progress with a teacher on their own initiative shrank less) tended to show more stable or improved performance in mathematics.

Learning during COVID-related school closures

- In Japan, 16% of students reported that their school building was closed for more than three months due to COVID-19. On average across OECD countries, 51% of students experienced similarly long school closures. In education systems where performance remained high and students' sense of belonging improved, fewer students experienced longer school closures.
- During remote learning, 27% of students in Japan had problems at least once a week with understanding school assignments and 20% of students with finding someone who could help them with schoolwork (OECD averages: 34% and 24%). In education systems where performance remained high and students' sense of belonging improved, fewer students encountered problems during remote learning.
- Support for students' well-being was often limited when their schools were closed. In Japan, 28% of students reported that they were supported daily through live virtual classes on a video communication program. Only 28% of students reported that they were asked daily, by someone from the school, how they were feeling (OECD averages: 51% and 13%).
- If school buildings have to close again in the future, many students across the OECD feel confident about using digital technology for learning remotely but fewer students feel confident about taking responsibility for their own learning. Some 57% of students in Japan feel confident or very confident about using a video communication program and 34% of students feel confident or very confident about motivating themselves to do school work (OECD averages: 77% and 58%).

What else does PISA tell us?

Resources invested in education

- Expenditure on education is related to student performance only to a certain extent. Among the countries/economies whose cumulative expenditure per student, over all primary and secondary school years between the ages of 6 and 15, was under USD 75 000 (PPP) in 2019, higher expenditure on education was associated with higher scores in the PISA mathematics test. But this was not the case among countries/economies whose cumulative expenditure was greater than USD 75 000 (PPP). For this latter group of countries/economies, the ways in which financial resources are used seems to matter more for student performance than the level of investment in education. In Japan, the cumulative expenditure per student, over ten years of age between 6 and 15, was equivalent to about USD 101 400 (PPP).
- In about half of all countries/economies with comparable data, school principals in 2022 were more likely than their counterparts in 2018 to report a shortage of teaching staff. This was also the case in Japan. In 2022, 64% of students in Japan were in schools whose principal reported that the

school's capacity to provide instruction is hindered by a lack of teaching staff (and 43%, by inadequate or poorly qualified teaching staff). In 2018, the corresponding proportions were 53% and 40%. In most countries/economies, students attending schools whose principal reported shortages of teaching staff scored lower in mathematics than students in schools whose principal reported fewer or no shortages of teaching staff.

How students progress through schooling

- When they sat the PISA test in 2022, 100% of 15-year-old students in Japan were enrolled in 10th grade.
- In Japan, 100% reported that they had attended pre-primary education for one year or more (OECD average: 94%). On average across OECD countries, students who had attended pre-primary education for one year or more scored higher in mathematics at the age of 15 than students who never attended or who had attended for less than one year, even after accounting for socio-economic factors.

School autonomy

- In Japan, 23% of students attended a school where principals had the main responsibility for hiring teachers (OECD average: 60%), and 52% were enrolled in a school where teachers had the main responsibility for choosing which learning materials are used (OECD average: 76%). Many high-performing school systems tend to entrust principals and teachers with these responsibilities.

Key features of PISA 2022

The content

- The PISA 2022 survey focused on mathematics, with reading and science as minor areas and creative thinking as the innovative area of assessment; Japan did not participate in the assessment of creative thinking. PISA 2022 also included an assessment of young people's financial literacy, which was optional for countries and economies. Results for mathematics, reading and science are released on 5 December 2023 and results for creative thinking and financial literacy in 2024.

The students

- Some 690 000 students took the assessment in 2022, representing about 29 million 15-year-olds in the schools of the 81 participating countries and economies.
- In Japan, 5760 students, in 182 schools, completed the assessment in mathematics, reading or science, representing about 1021 400 15-year-old students (an estimated 92% of the total population of 15-year-olds).

The assessment

- Students took two hour-long tests, each devoted to one subject. Different students were given different test questions and different combinations of subjects (e.g. mathematics followed by reading, or science followed by mathematics, etc.). Test items were a mixture of multiple-choice questions and questions requiring students to construct their own responses.
- Students also answered a background questionnaire, which took about 35 minutes to complete. The questionnaire sought information about the students themselves, their attitudes, dispositions

and beliefs, their homes, and their school and learning experiences. School principals completed a questionnaire about school management, organisation, and the learning environment.

- Some countries/economies also distributed additional questionnaires, to students, parents and/or teachers, to elicit more information. The findings from these optional questionnaires are not covered by this note.

References

OECD (2023), PISA 2022 Results (Volume I): The State of Learning and Equity in Education, PISA, OECD Publishing, Paris, https://doi.org/10.1787/53f23881-en

OECD (2023), PISA 2022 Results (Volume II): Learning During – and From – Disruption, PISA, OECD Publishing, Paris, https://doi.org/10.1787/a97db61c-en

For more information about PISA 2022 visit www.oecd.org/pisa

Explore, compare and visualise more data and analysis using http://gpseducation.oecd.org.

Questions can be directed to the PISA team at the Directorate for Education and Skills: edu.pisa@oecd.org.

This note was written by Francesco Avvisati and Rodolfo Ilizaliturri, Directorate for Education and Skills.