Learning can't wait

Lessons for Latin America and the Caribbean from PISA 2022

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Joint Report by the **Inter-American Development Bank** and **The World Bank**

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Preface

Education is key to developing human capital, and when students' access to education is hindered, so too is their progress in acquiring essential skills. Before the COVID-19 pandemic we knew that education systems in the Latin America and Caribbean region (LAC) were characterized by low performance and high inequalities. The 2022 round of the OECD Programme for International Student Assessment, or PISA, is the first international learning assessment after the pandemic, which demonstrates the scale of the learning crisis after the unprecedented disruption of COVID-19 and offers us a glimpse into how students were learning while schools were closed.

Assessing student performance over time and on a global scale can improve education policies and practices. Governments in LAC are strengthening their ability to produce and analyze data and make decisions based on evidence. LAC's record participation in PISA 2022 offers a striking example of how a culture of evaluation is gradually taking root in the region. As more countries and students are evaluated by PISA, the region's debate on policy design will be better informed and more relevant. PISA's greatest contribution is its focus on results, the learning outcomes of students, but also its insights into the performance differences between and within countries.

This report examines PISA outcomes and education trajectories in the LAC region in a global perspective. By observing and interpreting the performance of LAC countries in the most recent PISA round, including examining differences in results related to student, school and system characteristics, and by analyzing the long-term trends that have shaped the education landscape over the years, this report offers a nuanced perspective on the region's academic achievements and challenges. In doing so, it provides stakeholders, policymakers, and educators in the LAC region with actionable information to ensure the continued growth and development of students in the region.

In exploring the short-term trends, this report also seeks to understand the potential impact of the COVID-19 pandemic on education outcomes. The pandemic disrupted traditional learning environments and challenged the resilience of education systems around the world. By examining performance trends between 2018 and 2022, this report aims to understand how the COVID-19 crisis could have contributed to the observed performance trends, and which countries and students appeared to be most affected by the disruption. Comparing the experiences among LAC countries and with others outside the region can help identify what the region got wrong or right, which systems were more resilient and why, and perhaps also offer lessons for other regions. These types of analyses can contribute valuable insights that can be used to inform targeted interventions and policy design or adjustments that support recovery, accelerate learning, and prepare education systems for the future.

While the COVID-19 pandemic highlighted the region's persistent inequalities, systemic performance challenges, and structural problems, it also showcased the region's creativity, and strengths when faced with a crisis. Learning from what worked and what didn't, can help governments and stakeholders in the region reignite efforts to transform education systems and address the region's persistent structural obstacles to prosperity and development. The road ahead to improving learning for all is still long, but Latin America and the Caribbean can be a source of solutions to global problems if we invest in the talent of its people.

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Executive summary

This report explores the results of the most recent round of PISA for countries in Latin America and the Caribbean (LAC). It highlights the results for the region, differences within the region, and differences between the region and the rest of the world. Fourteen LAC countries participated in this round of PISA – the largest number of LAC countries that participated in the assessment since its inception in 2000. Among the most important takeaways from the evidence documented in this report: far too many students in LAC do not acquire baseline proficiency in foundational skills; educational opportunities are highly unequal; learning trends are not moving in the right direction; and countries in the region need to address disparities in performance and equity, and also devote more resources to using technology as an educational tool.

Performance and equity in learning: There is a deep learning crisis for adolescents in LAC, as the majority of students have not acquired the foundational skills they need to participate fully in society

Average performance in math, reading and science, PISA 2022
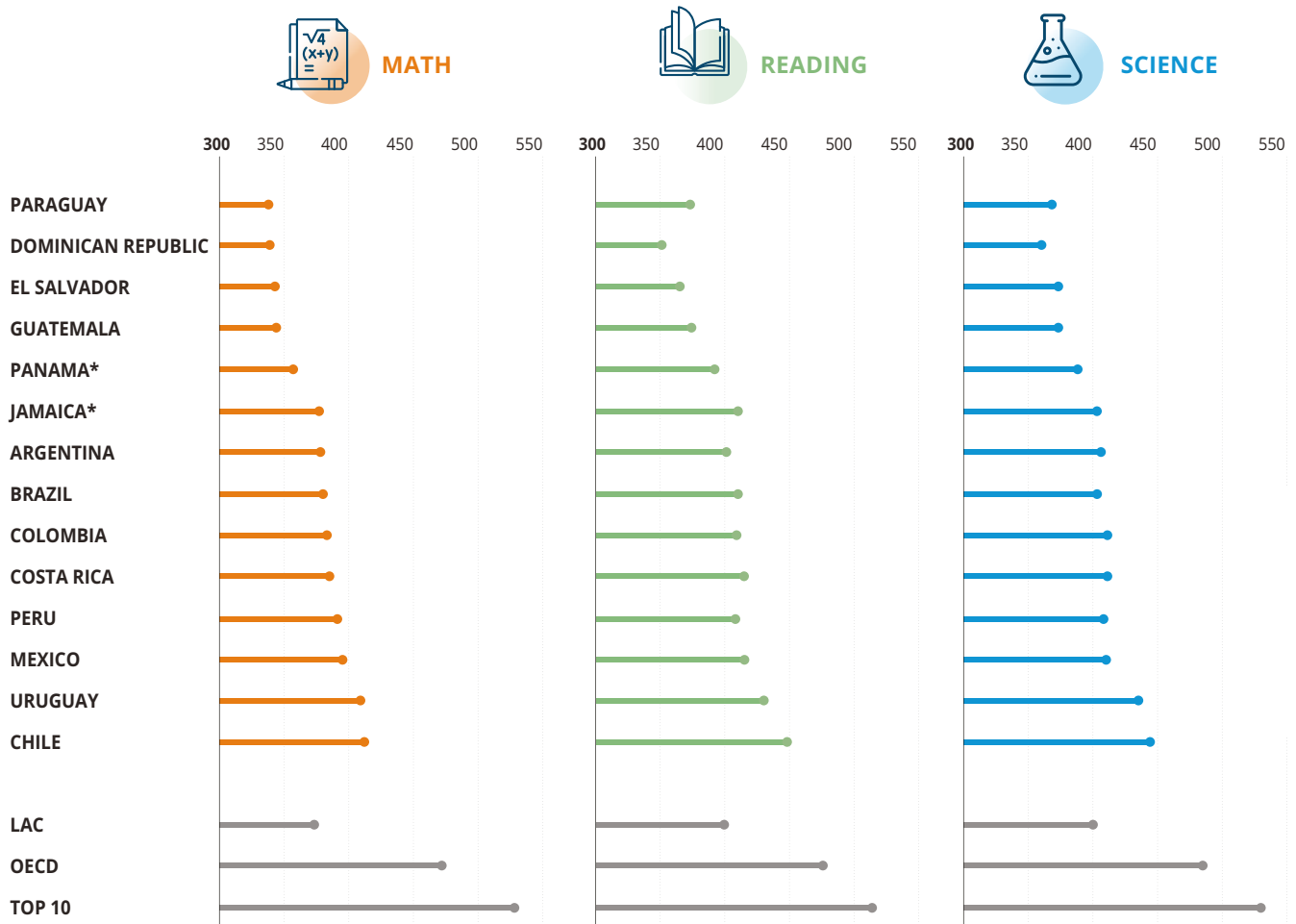
Source: OECD, PISA 2022 Database, Tables I.B1.2.1, I.B1.2.2, and I.B1.2.3. ***Note:*** *the results for Panama and Jamaica should be interpreted with caution given the low student response rate in these countries; the results are marked with* throughout the report.*

Performance

- Students in LAC scored 373 points in math, on average, while students in OECD countries scored 475 points – a difference that is the equivalent of five years of schooling.
- LAC sits at the lower end of the ranking of participating countries in math, reading, and science.

Equity

- No education system in LAC is considered highly equitable. An equitable education system is defined as one that provides all students with the opportunity to realize their full learning potential, regardless of their background [fairness], and provides access to quality education for all students [inclusion].
- Most students in LAC scored within the lowest proficiency levels while performance at the highest proficiency levels was exceedingly rare. Only 25 % of students in LAC, on average, achieved basic proficiency in math compared to 69 % of students across OECD countries.
- In LAC, poorer students were more likely than richer students to be low performers, but the incidence of low performance among richer students was also high.
- Richer students in LAC were more likely than their counterparts in OECD countries to attend school with other richer students, and high-performing students were more likely to attend schools with other high-performing students.
- Richer students in LAC are also much more likely to attend private schools, which tend to exhibit higher performance on PISA. However, after considering the socioeconomic profile of the students, the private-public school performance gap dissipates for half of the countries in the region.
- Boys performed better than girls in math in most LAC countries, but gender gaps in the share of low performers were relatively small. Girls outperformed boys in reading.

Trends in performance and support to learning during the pandemic: Learning outcomes have not improved over time, and the COVID-19 crisis delivered setbacks and valuable lessons

- The COVID-19 pandemic shocked education systems around the world, and LAC was no exception. Schools in the region were closed for an extended time and most were not ready for the switch to remote instruction.
- During school closures, students in LAC struggled with learning more than those in OECD countries, but schools took actions to improve remote learning.

Trends in average performance

- Between 2018 and 2022, performance trends represented either an exacerbation of the previous negative trend or a slowdown in improving performance. This dynamic is more pronounced in math, which is worrisome given the low baseline levels. Average performance in math either deteriorated or stagnated in the majority of LAC countries.
- Between 2012 and 2022, few LAC countries achieved strong growth in math, reading, or science scores, which could contribute to closing the performance gap between LAC and OECD students. For most of the region, average performance in math deteriorated but performance in reading and science remained largely unchanged.
- Stable or negative trends in average performance since 2012 may be related to the expansion of access to education to more disadvantaged 15-year-olds. Increased PISA coverage in the region is positive and demonstrates improved access to secondary education. However, this dynamic complicates the interpretation of performance trends as newly-included students

are more likely to come from disadvantaged backgrounds and perform worse than more advantaged peers.

Trends in share of low performers

- The share of students in LAC who are able to demonstrate basic proficiency in foundational skills assessed in PISA is not moving in the right direction, particularly in recent years. Between 2018 and 2022, the prevalence of low performers in math increased in 7 out of 12 countries, while in reading and science, the share of low performers remained largely unchanged.
- The short-term trend in low performance was generally a continuation of the long-term trend. The proportion of low performers in math increased in many LAC countries since 2012, while the share of low performers in reading and science remained stable, but large.

Changes in the share of low performers, PISA 2018 to 2022
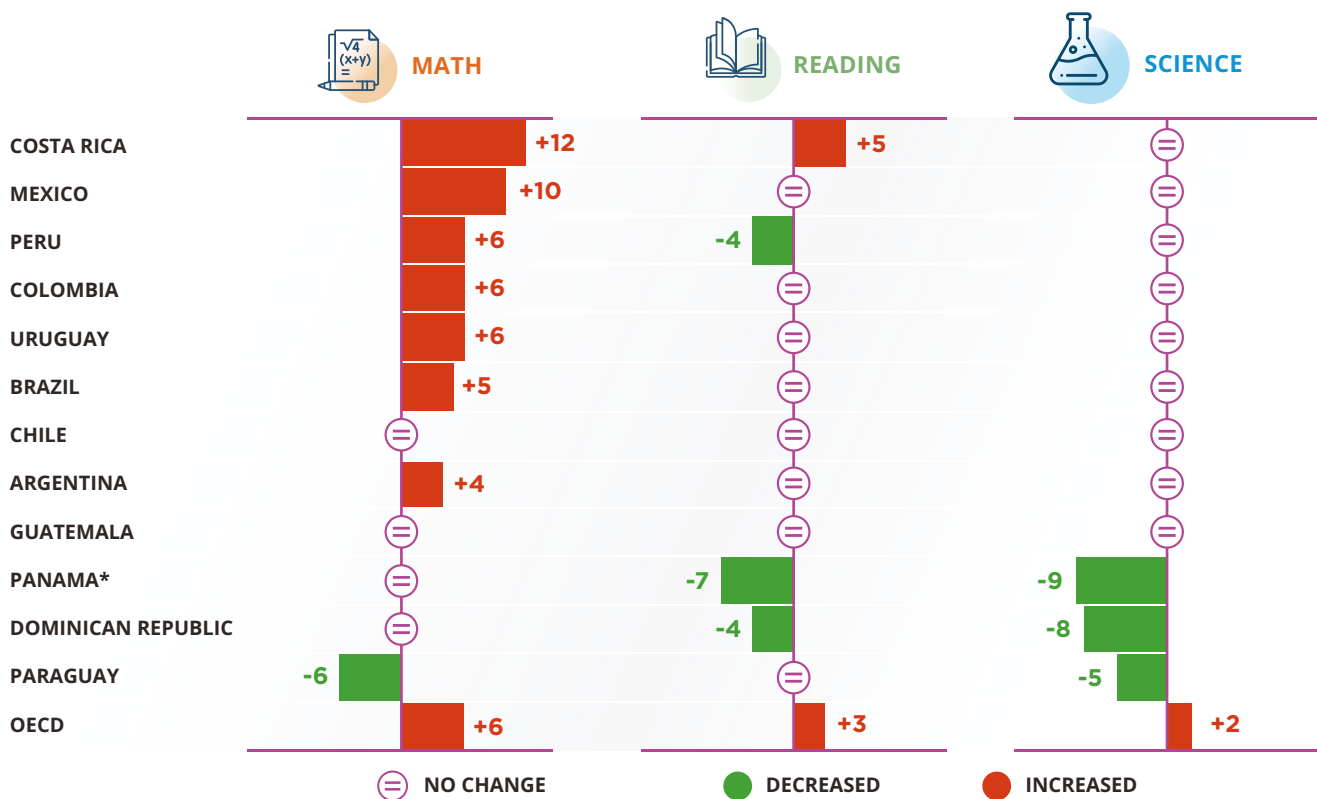
	MATH	READING	SCIENCE
COSTA RICA	+12	+5	(no change)
MEXICO	+10	(no change)	(no change)
PERU	+6	-4	(no change)
COLOMBIA	+6	(no change)	(no change)
URUGUAY	+6	(no change)	(no change)
BRAZIL	+5	(no change)	(no change)
CHILE	(no change)	(no change)	(no change)
ARGENTINA	+4	(no change)	(no change)
GUATEMALA	(no change)	(no change)	(no change)
PANAMA*	(no change)	-7	-9
DOMINICAN REPUBLIC	(no change)	-4	-8
PARAGUAY	-6	(no change)	-5
OECD	+6	+3	+2

(=) NO CHANGE   ● DECREASED   ● INCREASED

Note: Only countries and economies with available data are shown. *Source:* OECD, PISA 2022 Database, Table I.B1.5.1 and Table I.B1.5.2

Trends related to socio-economic status

- Since 2018, the share of low performers among poor students either remained constant or increased for math, while it remained constant for reading in all countries except Peru. The gap in average performance in math, reading, and science between poorer and richer students remained largely unchanged.
- The share of low performers in math remained constant or increased over the past decade in almost all LAC countries, and the difference in average math performance between poorer and richer students did not change between 2012 and 2022.

Trends related to gender

- In five LAC countries, the share of girls who were low performers in math grew between 2018 and 2022.
- Since 2012, more LAC countries saw increases in the share of low-performing boys than in the share of low-performing girls. During the same period, the gender gap, as measured by shares of low performers among boys and girls, narrowed in math and reading in many LAC countries. But this reduction in the gender gap was the result of an increase in the share of low-performing boys, rather than an improvement among girls. In contrast, the gender gap in low performance in reading that had previously favored girls narrowed both due to increases in low performance among girls and declines in low performance among boys

### *Support to students at school and at home during the pandemic*

- According to principals, the duration of pandemic-related school closures in LAC countries was twice as long as that in OECD countries, on average. Countries with longer school closures, like countries in LAC, also had lower average performance and larger shares of low performers in math than other countries.
- School closures in private schools in LAC were of similar or shorter duration than school closures in public schools, according to principals' reports. Private schools tended to better support learning continuity during school closures through remote instruction. Similarly, students in private schools tended to be more engaged during remote learning, as measured by their attendance in distance learning activities.
- Students in LAC were more likely than students in OECD countries to report having problems with remote learning. Self-motivation was the most frequently cited challenge, but many also struggled to understand their school assignments and to find someone who could help them with their schoolwork. Many also reported limited internet access at home. Within LAC, girls and poorer students were more likely than boys and richer students to report problems with remote learning.
- At the beginning of the COVID-19 pandemic, schools in most LAC countries were less prepared to provide remote instruction than schools in OECD countries; however, schools in the region took specific actions in response to the pandemic, including adapting existing curriculum plans for remote instruction, preparing digital materials to evaluate student learning via online assessment, and preparing digital material for remote instruction. Still, many principals are concerned about their schools' capacity to provide remote instruction in the event of future school closures.

Digital learning in LAC schools: More can be done to reduce disparities in access to digital devices and ensure that technology is used effectively to improve learning outcomes

Access to digital devices

- There were fewer digital devices (desktop and laptop computers) per student in LAC schools than in OECD schools, and students' access to computers remained mostly unchanged between 2018 and 2022.
- Around 55 % of principals across LAC (as compared to 24 % of principals across OECD countries) reported that the lack of access to or poor quality of digital resources (including desktop or laptop computers, connectivity, learning management systems or school learning platforms) affects their school's capacity to provide instruction. And this is more prevalent among principals from schools with poorer students and public schools.

Lack of access to digital resources for learning, as reported by principals, PISA 2022

Legend: TOTAL, POORER SCHOOLS, RICHER SCHOOLS
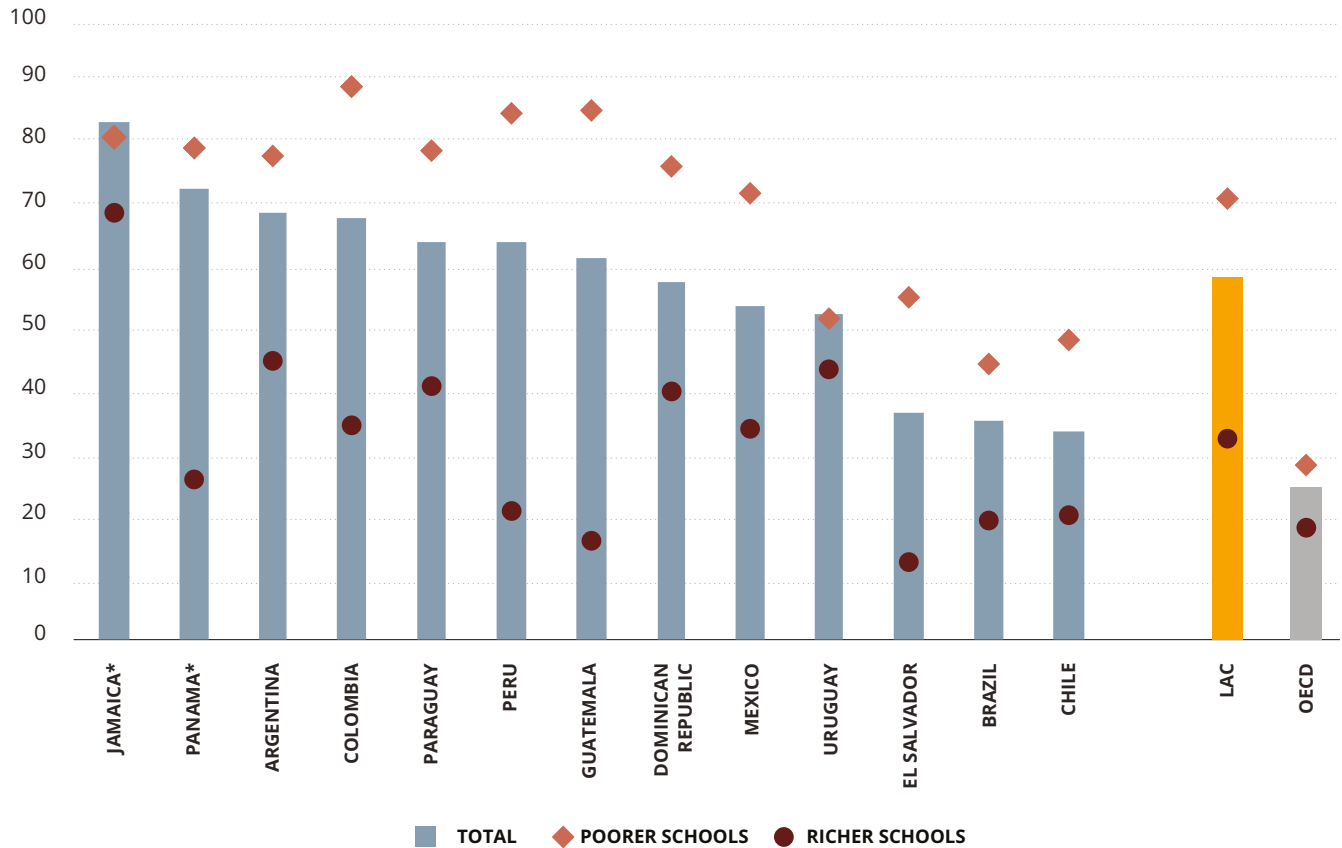
Source: OECD PISA Results 2022. Volume II. Table II. B1.5.19

Guidelines for digital learning

- Principals in LAC were less likely than their counterparts in OECD countries to report that the school has formal guidelines for digital learning (e.g., written statements, programs or policies) or specific practices (e.g., regularly scheduled meetings) that focus on how to use digital devices effectively in the classroom.
- Some 93 % of principals in LAC reported that their school has adopted the policy that "Teachers establish rules for when students may use digital devices during lessons".
- Some 37 % of principals in LAC, and 34 % of principals across OECD countries, reported that their school bans cell phones on school premises.
- Most schools in LAC tend to have written statements about the general use of digital devices but fewer schools have formal guidelines for the use of devices for teaching and learning in specific subjects.

Preparedness for digital learning

- Some 86 % of students in LAC countries, and 88 % of students in OECD countries, attended a school whose principal reported that teachers have the necessary technical and pedagogical skills to integrate digital devices into instruction. But only 30 % of students in LAC (half the average across OECD countries) attended a school whose principals reported that teachers are offered incentives to integrate digital devices into their teaching.

- School preparedness for digital learning improved in the region between 2018 and 2022, particularly in the availability of an effective online learning-support platform, teachers with technical and pedagogical skills, and the resources available to teachers on how to use digital devices.

Time spent using digital devices

- Students in LAC reported spending 2.7 hours per day on digital devices, with 1.6 hours spent on learning activities and 1.1 hours on leisure activities, during school time. Across OECD countries, students reported spending the same amount of time on digital devices for leisure, but more time per day (2 hours) on digital devices for learning.
- Students in LAC reported spending 6.1 hours per day (3.4 hours outside of school and 2.7 hours at school) on digital devices, on average, for both learning and leisure, before, during and after school. Students in OECD countries reported spending an average of 7.2 hours per day on digital devices, including 4.1 hours before and after school.

Conclusions and policy agenda

- The findings from PISA 2022 suggest several policy priorities for ensuring better and more equitable education outcomes for adolescents in the LAC region.

    1. Immediate action is required to ensure that all students acquire at least basic proficiency in foundational skills.

    2. Certain groups of students need targeted support to improve performance.

    3. Investment in learning recovery in reading and math for primary school pupils is essential.

    4. Reductions in dropout rates and grade repetition should be encouraged.

    5. Gaps in access to digital devices and resources, and in teachers' preparedness to integrate technology effectively into their teaching need to be closed.

    6. Sufficient resources need to be allocated and spent wisely.

What is PISA?

The OECD Programme for International Student Assessment, or PISA, measures what 15-year-old students around the world know and can do. The triennial test, which was launched in 2000, measures not just whether students can reproduce what they have learned but also how well students can apply their knowledge in unfamiliar settings, inside and outside of school. PISA assesses students aged between 15 years and 3 months and 16 years and 2 months, and who are enrolled in an educational institution at grade 7 or higher. The most recent assessment was conducted in 2022 after a delay of one year because of disruptions due to the COVID-19 pandemic. Future rounds of PISA will be held every four years instead of every three years.
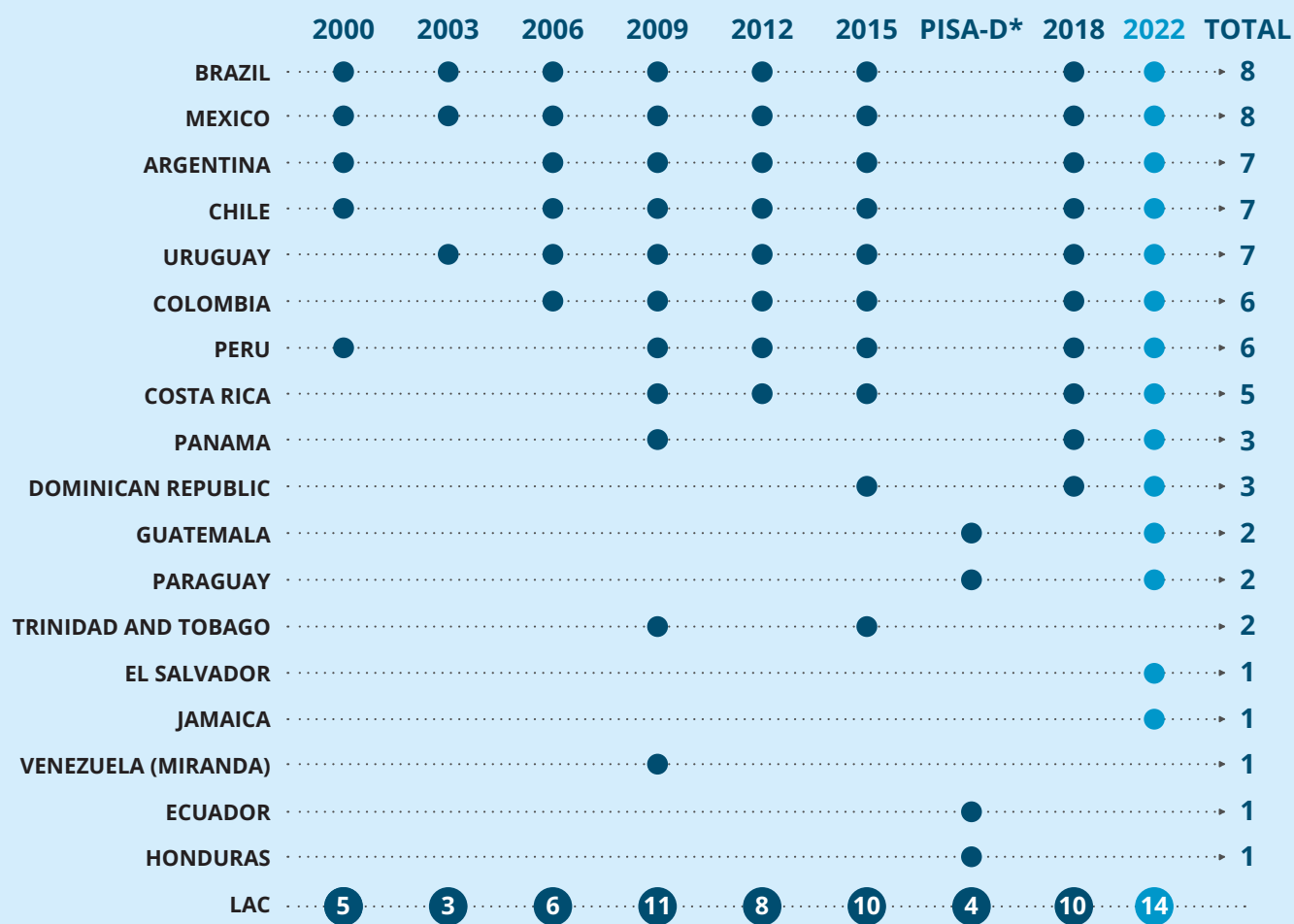
In each round of PISA, one of three core subjects (math, reading, science) is tested in depth; PISA 2022 focused on math. Math was also the main domain tested in PISA 2003 and 2012. In addition, PISA assesses students' skills in more innovative subjects, such as collaborative problem-solving (PISA 2015) or global competence (PISA 2018). In 2022, the innovative subject was creative thinking. With the disruptions in education and virtually all aspects of life caused by the COVID-19 crisis, PISA 2022 also included an optional questionnaire, addressed to both students and school administrators, that sought to gather information on how schools and students coped during the pandemic.

More countries in Latin America and the Caribbean (LAC) than ever before participated in PISA in 2022. Mexico; four Central American countries (Costa Rica, El Salvador, Guatemala, and Panama); seven South American countries (Argentina, Brazil, Chile, Colombia, Paraguay, Peru, and Uruguay); and two Caribbean countries (the Dominican Republic and Jamaica) all participated. El Salvador and Jamaica participated in PISA for the first time in 2022. Brazil and Mexico have participated in all eight rounds of PISA, followed by Argentina, Chile, Colombia, Costa Rica, Peru, and Uruguay, which participated in between five and seven rounds.

In LAC, around 100,000 students in 14 countries participated in PISA 2022. These students represented about 6 million 15-year-old students, or about 85 % of 15-year-old students in the region. Some 700,000 students in 81 countries/education systems around the globe, representing around 29 million 15-year-olds, took the 2022 test.

Figure 1.1. Participation of LAC countries in PISA 2000-2022
A record number of LAC countries participated in PISA 2022.

	2000	2003	2006	2009	2012	2015	PISA-D*	2018	2022	TOTAL
BRAZIL	●	●	●	●	●	●		●	●	8
MEXICO	●	●	●	●	●	●		●	●	8
ARGENTINA	●		●	●	●	●		●	●	7
CHILE	●		●	●	●	●		●	●	7
URUGUAY		●	●	●	●	●		●	●	7
COLOMBIA			●	●	●	●		●	●	6
PERU	●			●	●	●		●	●	6
COSTA RICA				●	●	●		●	●	5
PANAMA				●				●	●	3
DOMINICAN REPUBLIC						●		●	●	3
GUATEMALA							●		●	2
PARAGUAY							●		●	2
TRINIDAD AND TOBAGO				●		●				2
EL SALVADOR									●	1
JAMAICA									●	1
VENEZUELA (MIRANDA)				●						1
ECUADOR							●			1
HONDURAS							●			1
LAC	5	3	6	11	8	10	4	10	14	

Note: *PISA for Development (PISA-D) was conducted in 2017 with the participation of seven countries from Africa, Latin America (Ecuador, Guatemala, Honduras, Paraguay) and Asia.*

1.

Performance and equity in education

Performance

Students in LAC underperformed in 2022 compared with students in OECD countries. The average score in math among LAC students was 373 points compared to 475 points among students in OECD countries. This difference in scores is equivalent to five years of schooling (in PISA assessments, 20 score points is considered equivalent to the learning achieved in one year of schooling). Within the region, average performance ranged from 412 points in Chile, or the equivalent of three years behind students in OECD countries, to 339 points in the Dominican Republic and Paraguay, or the equivalent of seven years behind. The average score in reading and science among LAC students was 400 points; by comparison the average OECD student scored 477 points in reading and 487 points in science.

*Figure 1.2. Average performance in math, reading and science, PISA 2022*
In math, the average LAC student scored the equivalent of five years of schooling behind the average OECD student.
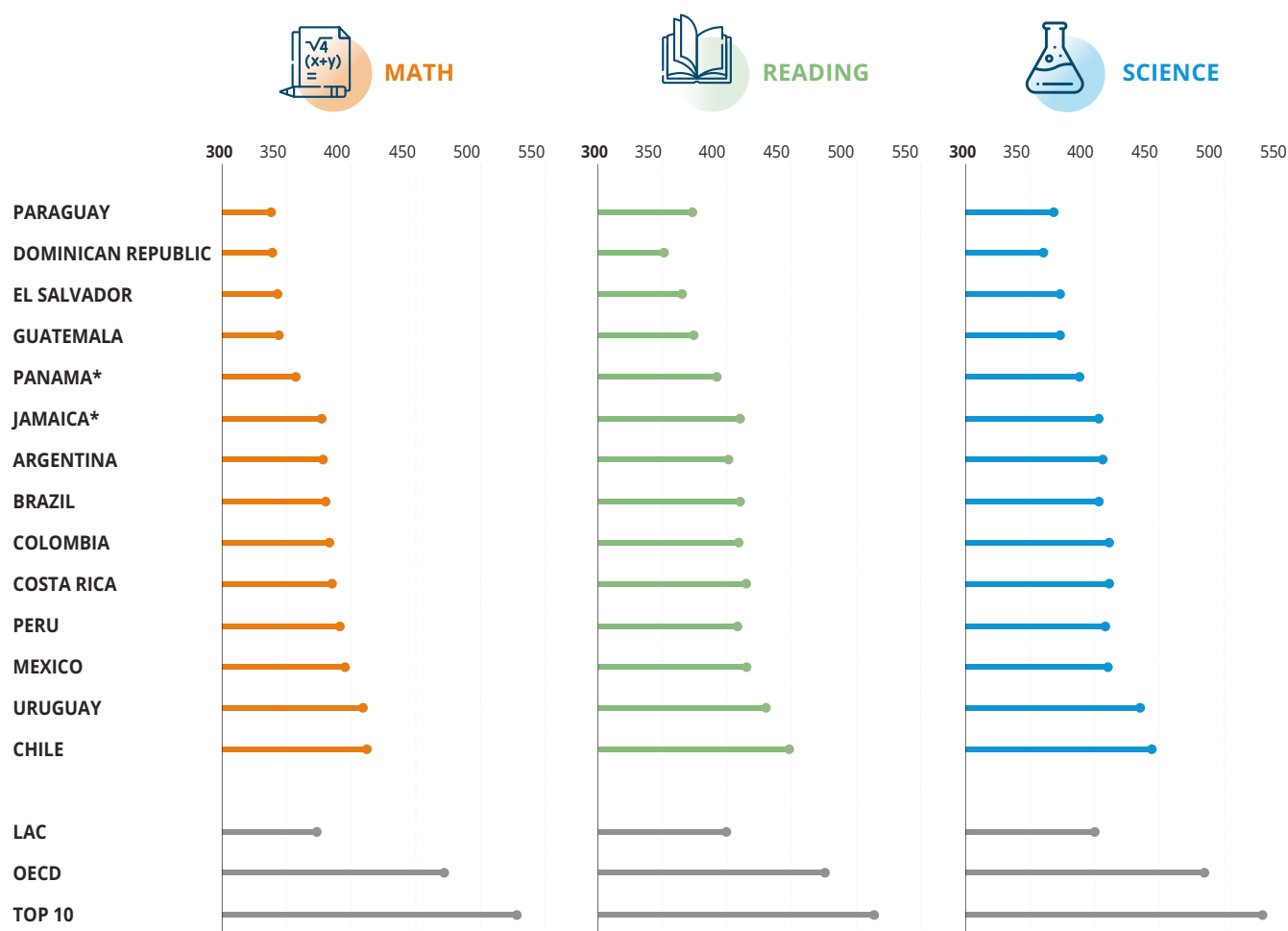
*Source: OECD, PISA 2022 Database, Tables I.B1.2.1, I.B1.2.2, and I.B1.2.3. **Note:** the results for Panama and Jamaica[1] should be interpreted with caution given the low student response rate in these countries; the results are marked with* throughout the report.*

[1] Non-response is correlated with grade level and special needs status in Panama and with rural schools in Jamaica. For both countries, the low student response rate implies that measured student outcomes are likely to be biased upwards (i.e., outcomes of students who participated in PISA may be higher than average student outcomes). In addition, Panama's student response rate decreased markedly from 90% in the 2018 assessment, limiting comparability between 2018 and 2022 outcomes.

Figure 1.3.A. Ranking in math, PISA 2022
LAC sits toward the bottom of the ranking.
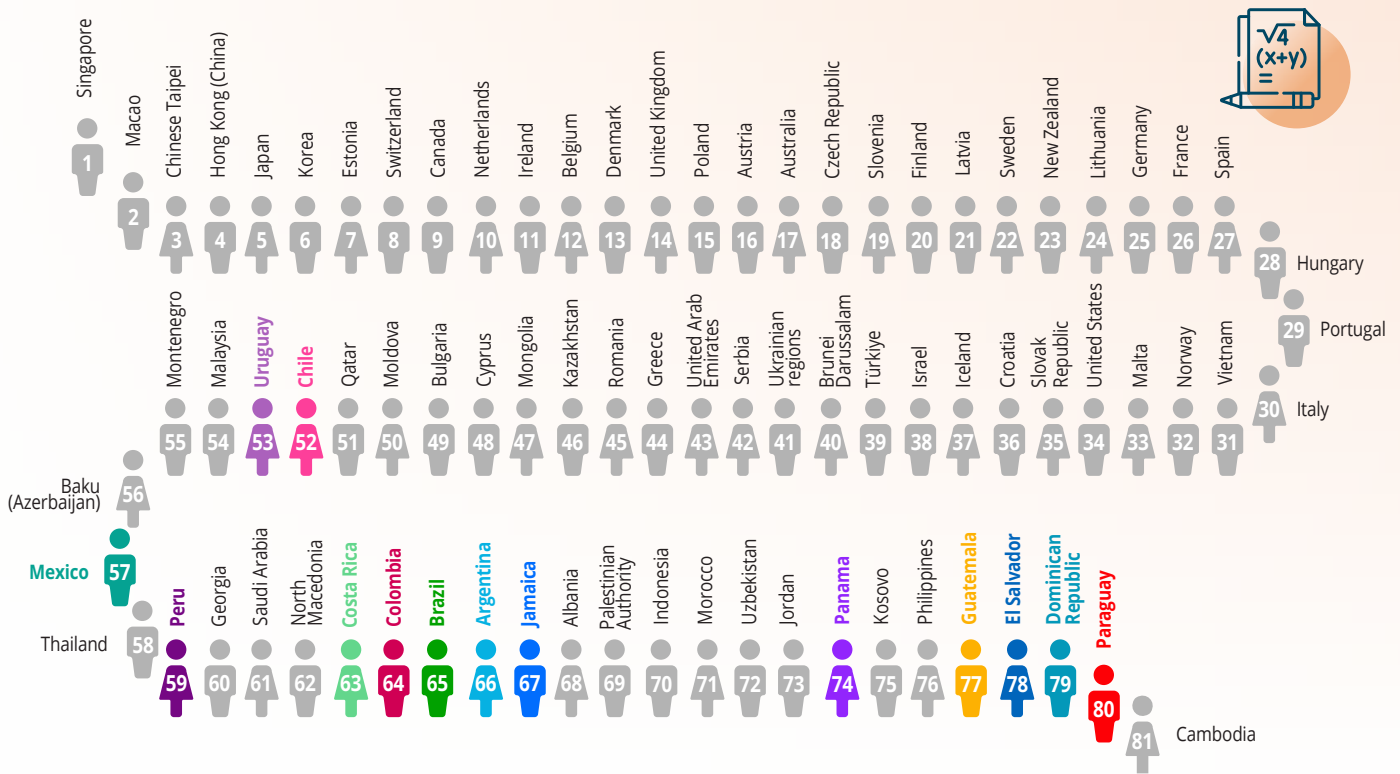
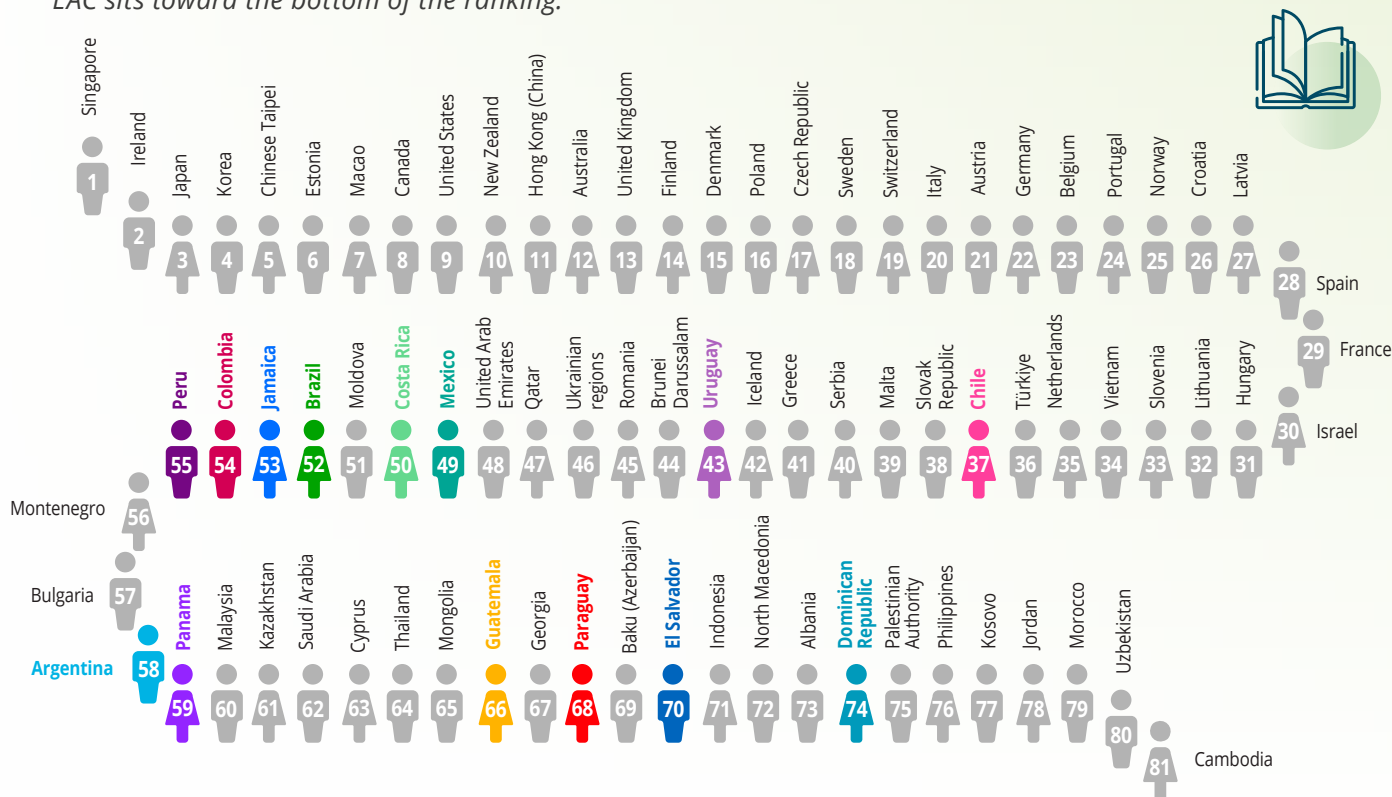*Source:* OECD (2023), PISA 2022, Vol. I, Table I.B1.2.1.

LAC sits at the lower end of the ranking of participating countries in math, reading and science.
In math, LAC countries ranked between 52nd (Chile) and 80th (Paraguay) of the 81 participating countries/education systems. In reading, except for Chile, which ranked 37th, all LAC countries ranked in the bottom half of participating countries; the Dominican Republic ranked 74th out of all countries/education systems. In science, the region ranked between 43rd (Chile) and 77th (the Dominican Republic) of the 81 participating countries/education systems. Of the three main subjects PISA assesses, LAC countries ranked relatively higher in reading and lower in math.

Box 1.1. OECD averages used in this report

This report uses the average of all OECD countries for the analyses and comparisons of PISA 2022, except for long-term trends analyses where the average of only 23 OECD countries that have participated since the start of PISA is used to ensure comparability through time.

OECD-23 countries are: Australia, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Latvia, Mexico, New Zealand, Norway, Poland, Portugal, Sweden, and Switzerland. The grouping excludes Austria, Chile, Colombia, Costa Rica, Estonia, Israel, Lithuania, Luxembourg, the Netherlands, the Slovak Republic, Slovenia, Spain, Türkiye, the United Kingdom and the United States.

Figure 1.3.B. Ranking in reading, PISA 2022
LAC sits toward the bottom of the ranking.

*Source: OECD (2023), PISA 2022, Vol. I, Table I.B1.2.2*

Figure 1.3.C. Ranking in science, PISA 2022
LAC sits toward the bottom of the ranking.
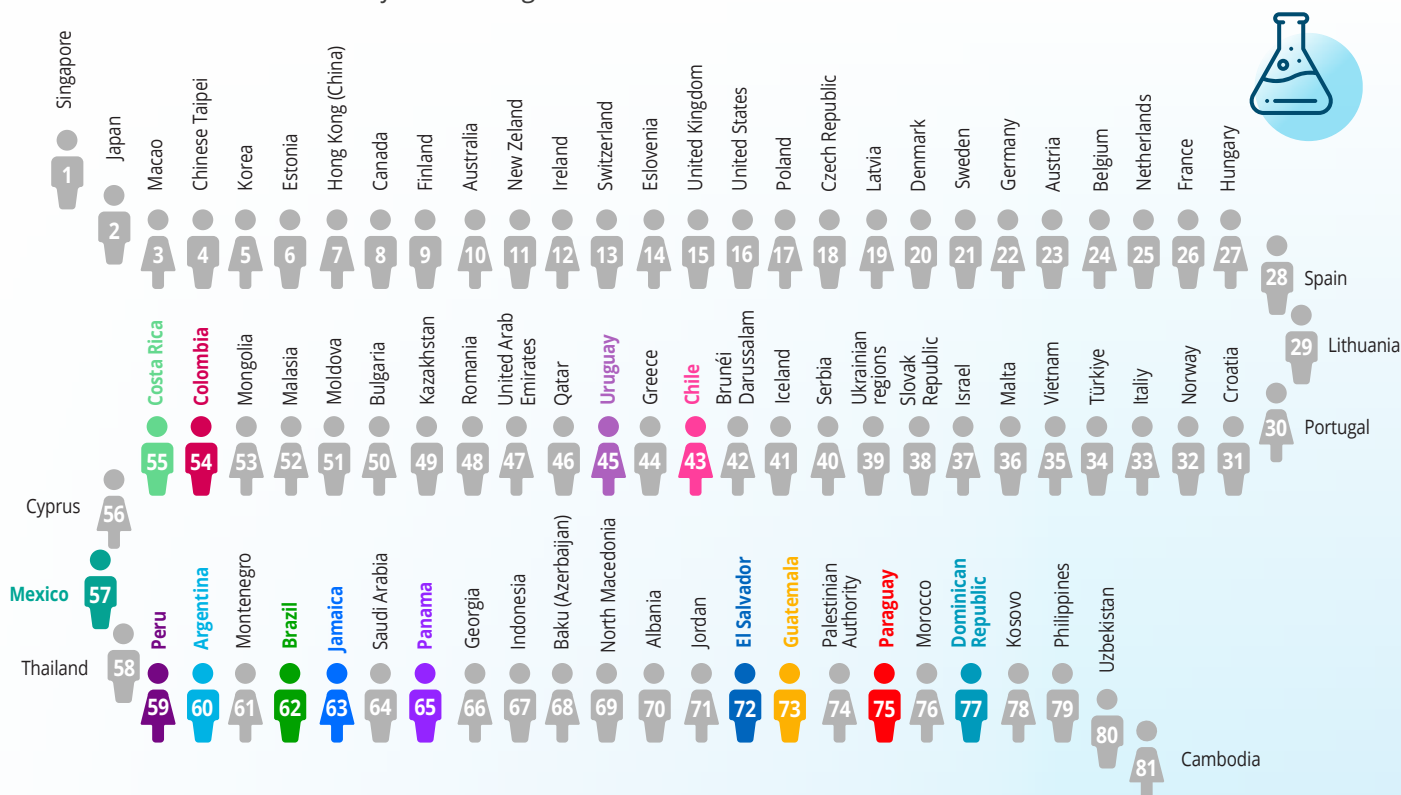
Source: OECD (2023), PISA 2022, Vol. I, Table I.B1.2.3.

Most students in LAC scored at the lowest PISA proficiency levels; performance at the highest proficiency levels was exceedingly rare. Students who score at PISA proficiency Level 2 or above have achieved basic proficiency; those who score below Level 2 are considered low performers, and those who score at Level 5 or 6 are considered high performers. On average across LAC, only 25 % of students attained basic proficiency in math compared to 69 % of students in OECD countries. Only 10 % of students in the Dominican Republic achieved basic proficiency compared with 40 % of students in Chile. Only 0.3 % of students in LAC, on average, can be considered high performers compared to 9 % of students in OECD countries, and compared to 23 % of students in the top 10 highest-performing countries.[2] Chile and Uruguay showed the largest share of top performers in LAC: 0.6 % and 1 % of students, respectively.

Figure 1.4. Percentage of students by proficiency levels in math, PISA 2022

Students in LAC scored mostly at the lowest performance levels.
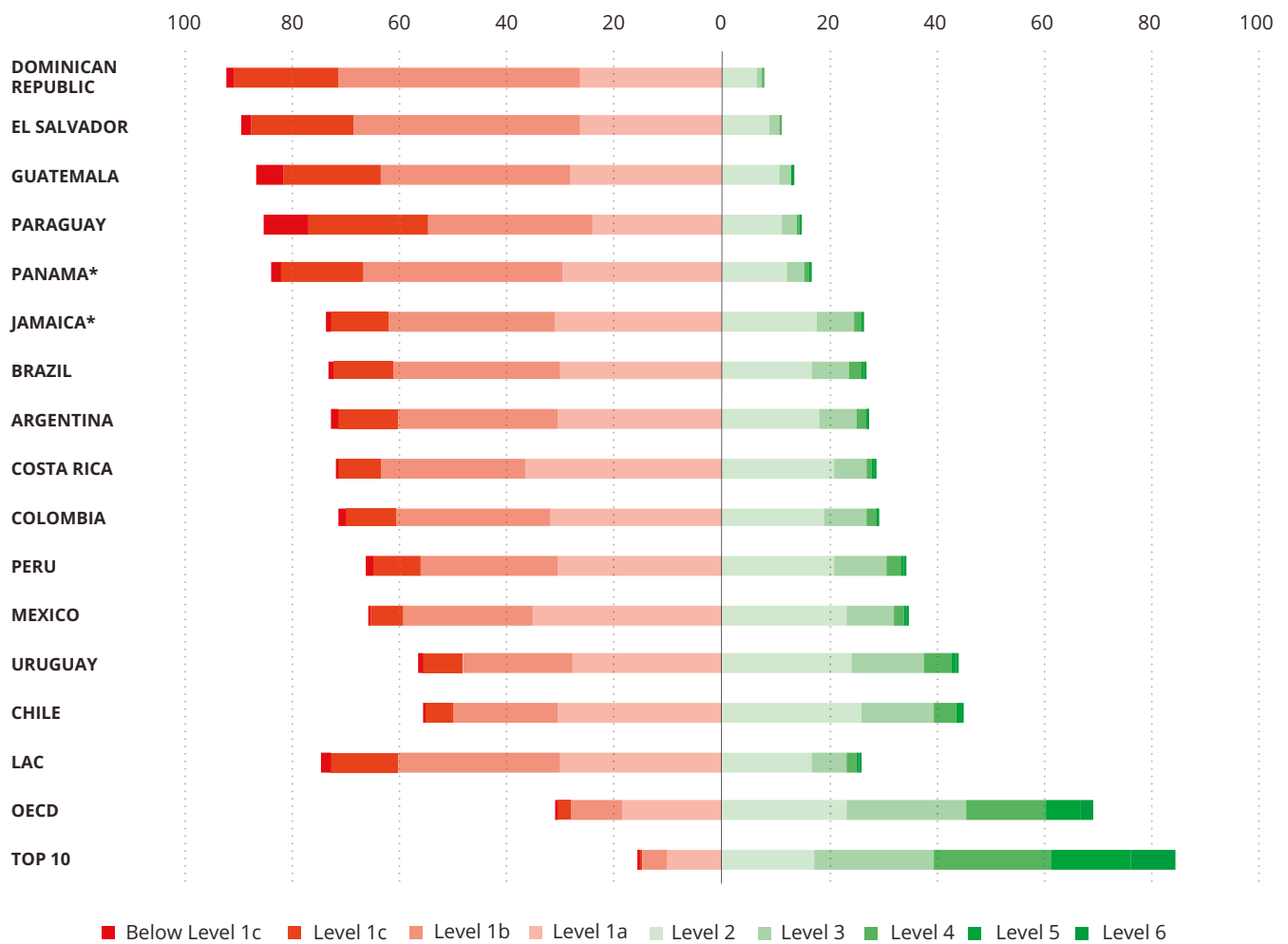
Source: OECD, PISA 2022 Database, Table I.B1.3.1

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[2] The top 10 performers in math in PISA 2022 were Singapore, Macao (China), Chinese Taipei, Hong Kong (China), Japan, Korea, Estonia, Switzerland, Canada, and the Netherlands.

Box 1.2. How does PISA measure performance?

Mean/Average score in PISA. PISA scores do not have a fixed, substantive meaning; instead, they are set in relation to the variation in measured results across all test participants. For each subject, results are scaled so that the average score for a typical student in an OECD country would represent 500 score points, and two-thirds of test participants in OECD countries would score between 400 and 600 points, or 100 score points above and below the average.

Levels of performance in PISA. PISA scales are divided into proficiency levels ranging from Level 1 (least proficient) to Level 6 (most proficient). Questions or "items" in the PISA test become more difficult at each successive level, representing increasingly advanced skills and knowledge. In other words, students who are likely to answer problems at Level 2 correctly are also likely to be able to complete Level 1 items successfully but may be unable to answer items at Levels 3 and above correctly. Proficiency levels correspond to a range of about 60-75 score points for each subject.

Low performers in PISA. Level 2 is considered the baseline level of proficiency that students need in order to participate fully in society. Around one in five students, on average, across OECD countries scores below Level 2. PISA describes these students as "low performers".

Differences in scores should be interpreted in terms of statistical significance. Differences in PISA scores, particularly small differences, should be interpreted as differences in skills and knowledge only when those differences are statistically significant. In this report, differences that are not statistically significant are considered as zero or not different.

Differences of about 20 points can be interpreted in terms of learning gains over a year of schooling. A useful way to interpret differences in PISA results is in terms of student progress from one grade to the next. Twenty points represents that average pace of learning over one year of schooling in participating PISA countries.

For more information see PISA 2022 Technical Report: https://www.oecd.org/pisa/data/pisa2022technicalreport/

Equity

Equity in education means that each student has access to quality education and can develop their full potential regardless of who they are, where they come from, or which school they attend. This report, aligned with the OECD's analysis of PISA results, considers two dimensions of equity in education: inclusion and fairness. Only education systems that combine high levels of inclusion and fairness are considered highly equitable. No country in LAC achieved above average levels of inclusion in 2022; therefore no country in the region is considered highly equitable.

Inclusion refers to the goal of providing access to quality education for all students. PISA considers two measures of inclusion: coverage, which indicates the proportion of 15-year-olds who meet the criteria to be included in the assessment (i.e., who attend secondary education), and baseline proficiency, which indicates the proportion of 15-year-old students who reach PISA Level 2 performance in math[3] (e.g., for reading, being able to read to learn, as opposed to learning to read).

....

[3] This report considers only math when measuring inclusion; the OECD considers all three core subjects.

Fairness is the goal of providing all students with the opportunity to realize their full learning potential, regardless of their background. PISA analyzes fairness by studying the socio-economic and gender disparities in student performance, then analyzing how these characteristics are related to learning outcomes. Education systems that can disassociate these personal circumstances from learning outcomes have smaller performance gaps and therefore higher levels of fairness. PISA measures socio-economic fairness by focusing on one particular index: the percentage of variation in performance that is accounted for by an individual's socio-economic status.

Box 1.3. What is socio-economic status in PISA?

In PISA, a student's socio-economic status is measured by the index of economic, social and cultural status (ESCS). The higher the value of ESCS, the more advantageous the socio-economic circumstances of the student and her family. The ESCS index comprises three components: parents' highest level of education, parents' highest occupational status, and home possessions. Home possessions vary by country, and include, for example, a washing machine, a quiet place to study or air conditioning. The data for each of these components are reported by students in the form of responses to the PISA student questionnaire. Students answer these questions after completing the PISA test.

Socio-economically advantaged students are those among the 25 % of students with highest value in the ESCS index in their own country. Socio-economically disadvantaged students are those among the 25 % of students with lowest value in the ESCS index in their own country. This report uses the terms "richer" and "poorer" students to refer to socio-economically advantaged and disadvantaged students, respectively.

*Figure 1.5. Equity in education encompasses fairness and inclusion*
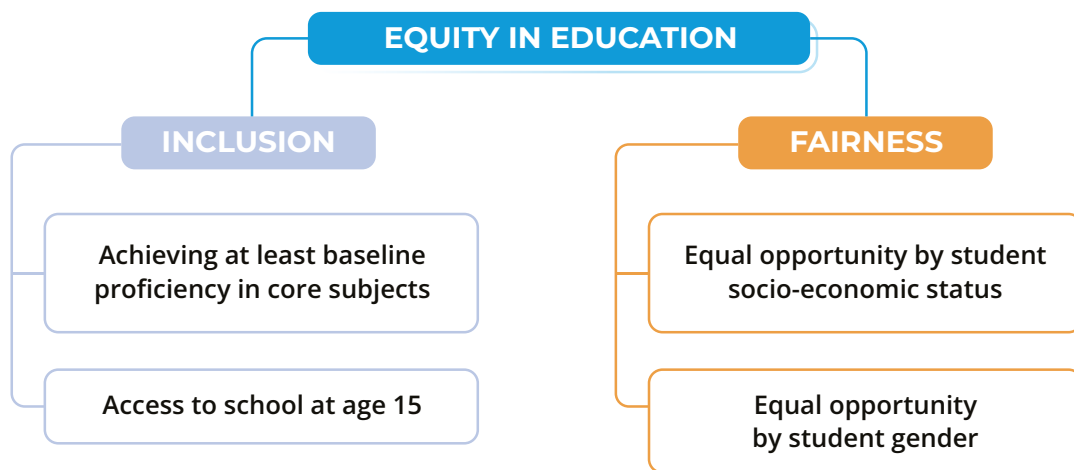
No LAC country was shown to have a highly equitable education system in 2022. This is because, while PISA results find that most LAC education systems are as socio-economically fair as, or even more fair than, OECD countries, none is sufficiently inclusive. Chile, the Dominican Republic, Jamaica*, Mexico, and Paraguay show above-average socio-economic fairness, while the rest of the PISA-participating countries in the region show similar degrees of fairness as OECD countries (i.e., their results are not

statistically different from those across OECD countries). At the same time, all of the countries in the region show below-average inclusion in math, as seen in the high percentage of low performers in the subject. By comparison, top-performing education systems Hong Kong (China), Japan, and Macao (China) are considered to be highly equitable, with both greater fairness and inclusion. Bear in mind, however, that equity in education does not imply equality in outcomes: students are not expected to perform at the same level. What's important is that all students have access to quality education and equal opportunities to achieve their potential, regardless of their school or background.

Caution is also advised when interpreting PISA data on equity. The above-average socio-economic fairness shown in some LAC countries could be related to relatively small overall variations in performance and/or large socio-economic disparities.[4] By focusing solely on individual socio-economic status, fairness results for LAC countries might overestimate the degree of equity in the region.

Figure 1.6. Equity in education as defined by inclusion and socio-economic fairness, PISA 2022
No education system in the region could have been characterized as highly equitable in 2022.
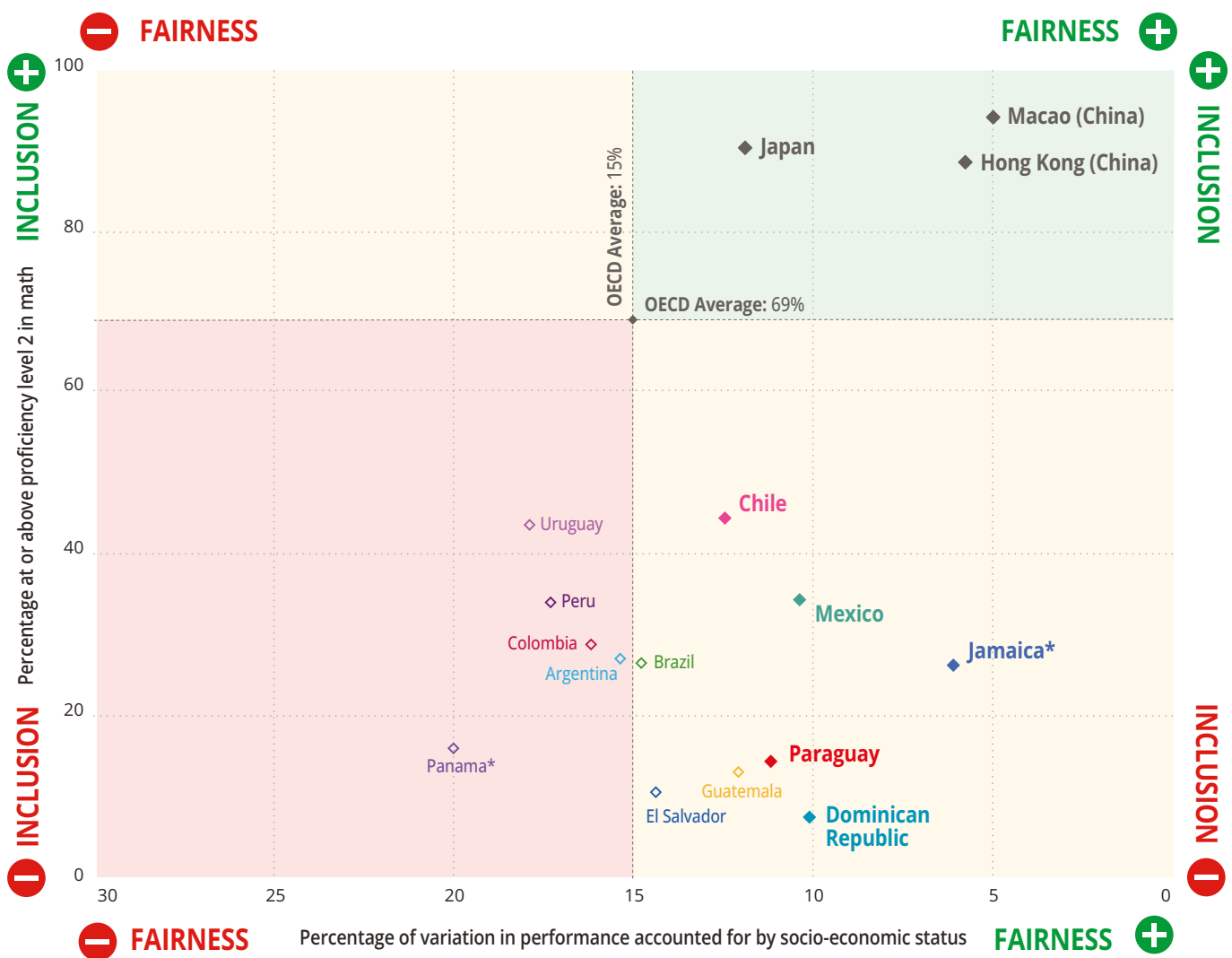
Notes: *Only countries with available data are shown. Countries in bold and ◆ are statistically different from the OECD in terms of socio-economic fairness.* **Source:** *OECD, PISA 2022 Database, Tables I.B1.3.1 and I.B1.4.3*

[4] Both these facts are observable with OECD PISA data.
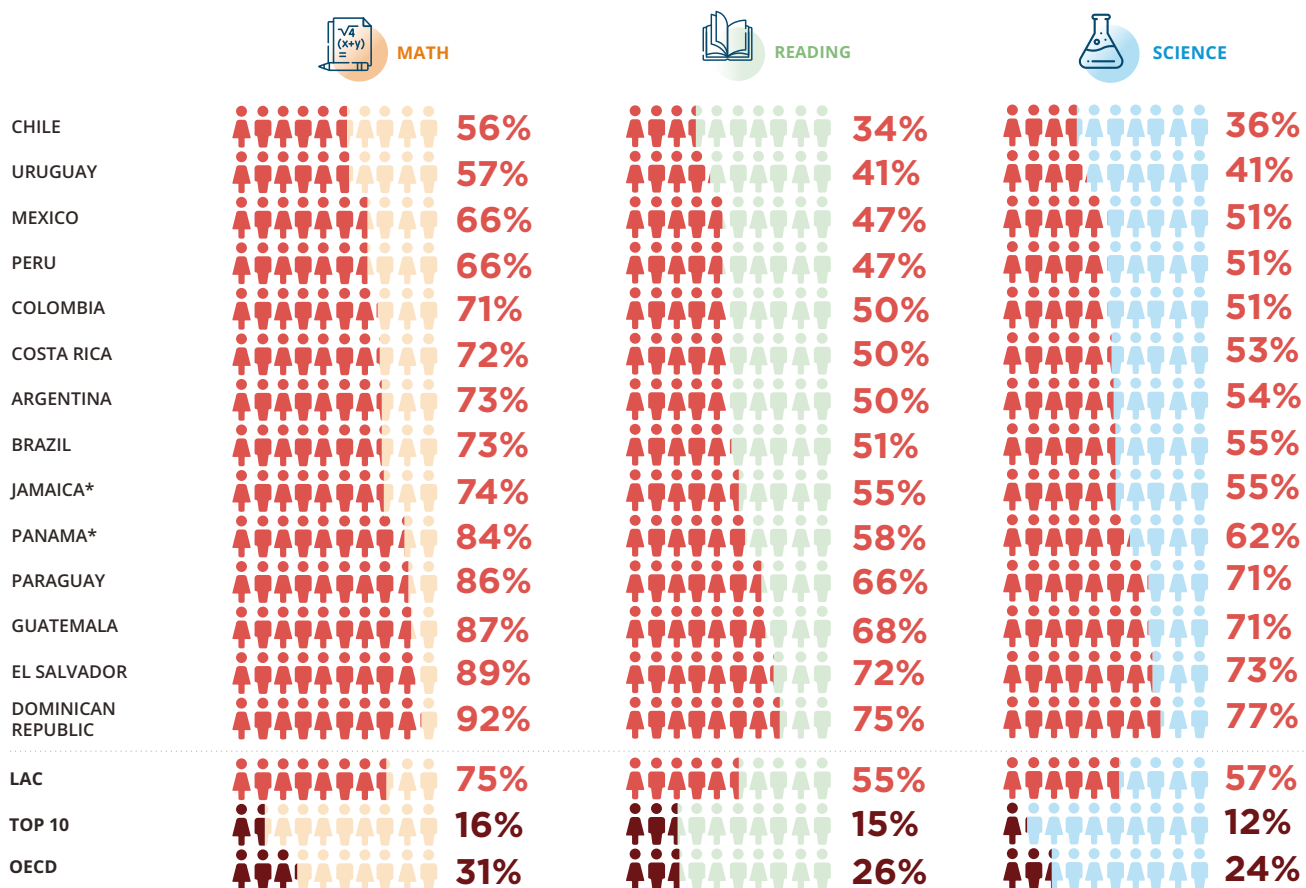
Inclusion: Access to quality education

PISA defines inclusion as the extent to which 15-year-olds have access to quality education through which they can acquire at least a baseline level of knowledge and skills that will enable them to realize their potential and participate fully in society. Those 15-year-olds who have either dropped out of school or have not yet reached at least grade 7 are also considered when determining a school system's level of inclusion.

Proportion of low performers

In LAC countries, most 15-year-olds did not demonstrate a baseline level of skills in math. Three out of four students in LAC were low performers in math in 2022, meaning that they scored below PISA Level 2 proficiency and have not acquired the foundational knowledge and skills to participate fully in society. There were large differences across the region in the percentage of low performers in math. While in Chile and Uruguay 50 % of students were low performers, in the Dominican Republic and El Salvador, 90 % of students fell into this category. Students in the region showed somewhat higher proficiency in reading and science, but more than half of students in the region were low performers in these subjects as well. Specifically, 55 % of students in LAC were low performers in reading and 57 % were low performers in science. By contrast, across OECD countries, only 31 % of students were low performers in math, 26 % were low performers in reading, and 24 % were low performers in science.

Figure 1.7. Percentage of low performers un math, reading and science, PISA 2022
Low performance was observed across the region.

	MATH	READING	SCIENCE
CHILE	56%	34%	36%
URUGUAY	57%	41%	41%
MEXICO	66%	47%	51%
PERU	66%	47%	51%
COLOMBIA	71%	50%	51%
COSTA RICA	72%	50%	53%
ARGENTINA	73%	50%	54%
BRAZIL	73%	51%	55%
JAMAICA*	74%	55%	55%
PANAMA*	84%	58%	62%
PARAGUAY	86%	66%	71%
GUATEMALA	87%	68%	71%
EL SALVADOR	89%	72%	73%
DOMINICAN REPUBLIC	92%	75%	77%
LAC	75%	55%	57%
TOP 10	16%	15%	12%
OECD	31%	26%	24%

Source: OECD, PISA 2022 Database, Table I.B1.3.1. **Notes:** *Only countries with available data are shown and considered for the averages.*

Low performers and socio-economic status

Low performance was common – and widespread – among both richer and poorer students. On average across LAC, 88 % of poorer students and 55 % of richer students were low performers in 2022. Across OECD countries, 47 % of poorer students but only 14 % of richer students were low performers in math. The fact that there are more lower performers among relatively richer students in LAC (81 %) than among poorer students in OECD (47 %) suggests that socioeconomic status is not an antidote to low performance in LAC. Both richer and poor students in LAC have large share of low performers.

Figure 1.8. Low performers in math among richer and poor students, PISA 2022
Low performance was prevalent among both richer and poorer LAC students.
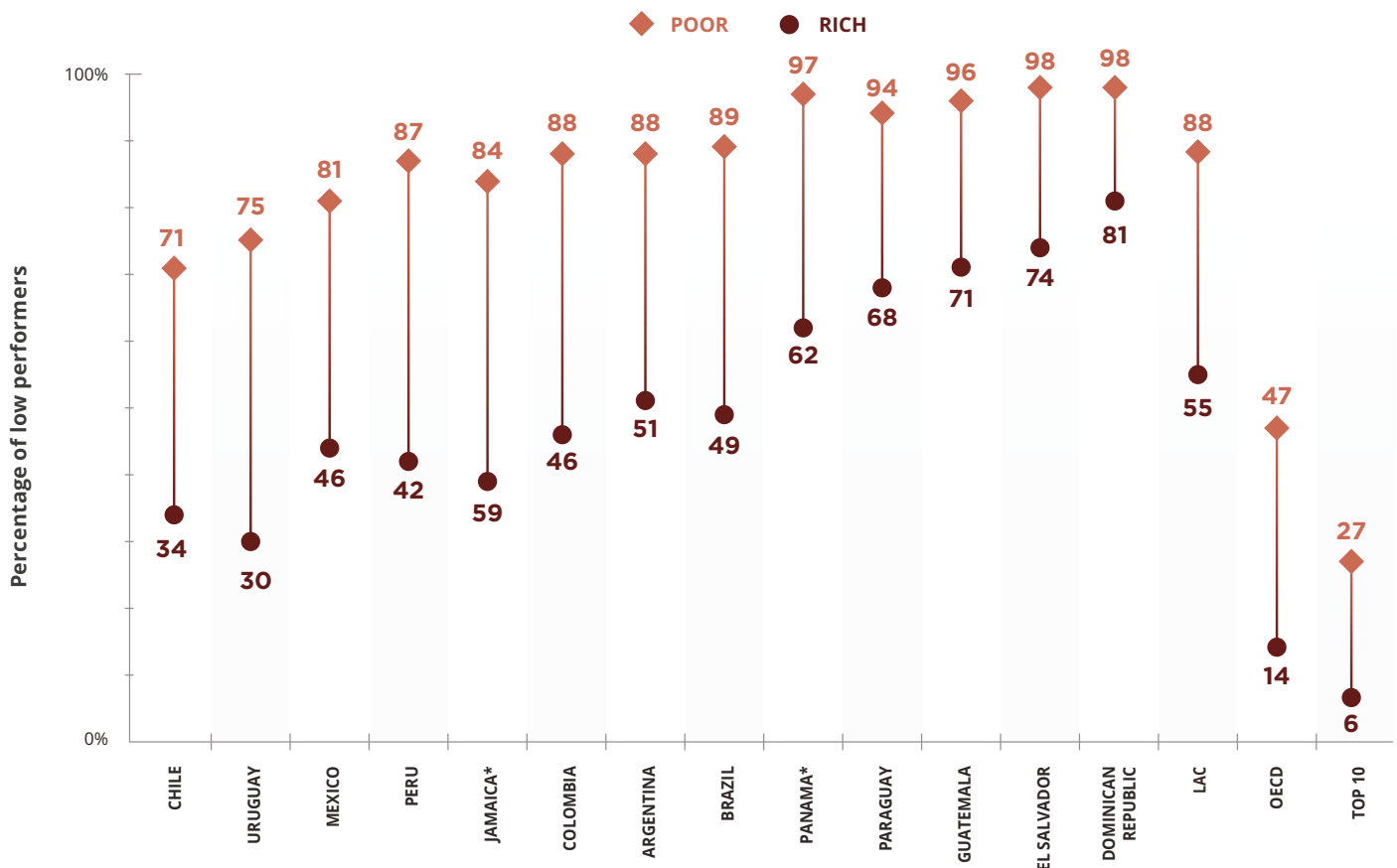
Source: OECD, PISA 2022 Database, Table I.B1.4.14. *Notes: Only countries with available data are shown.*
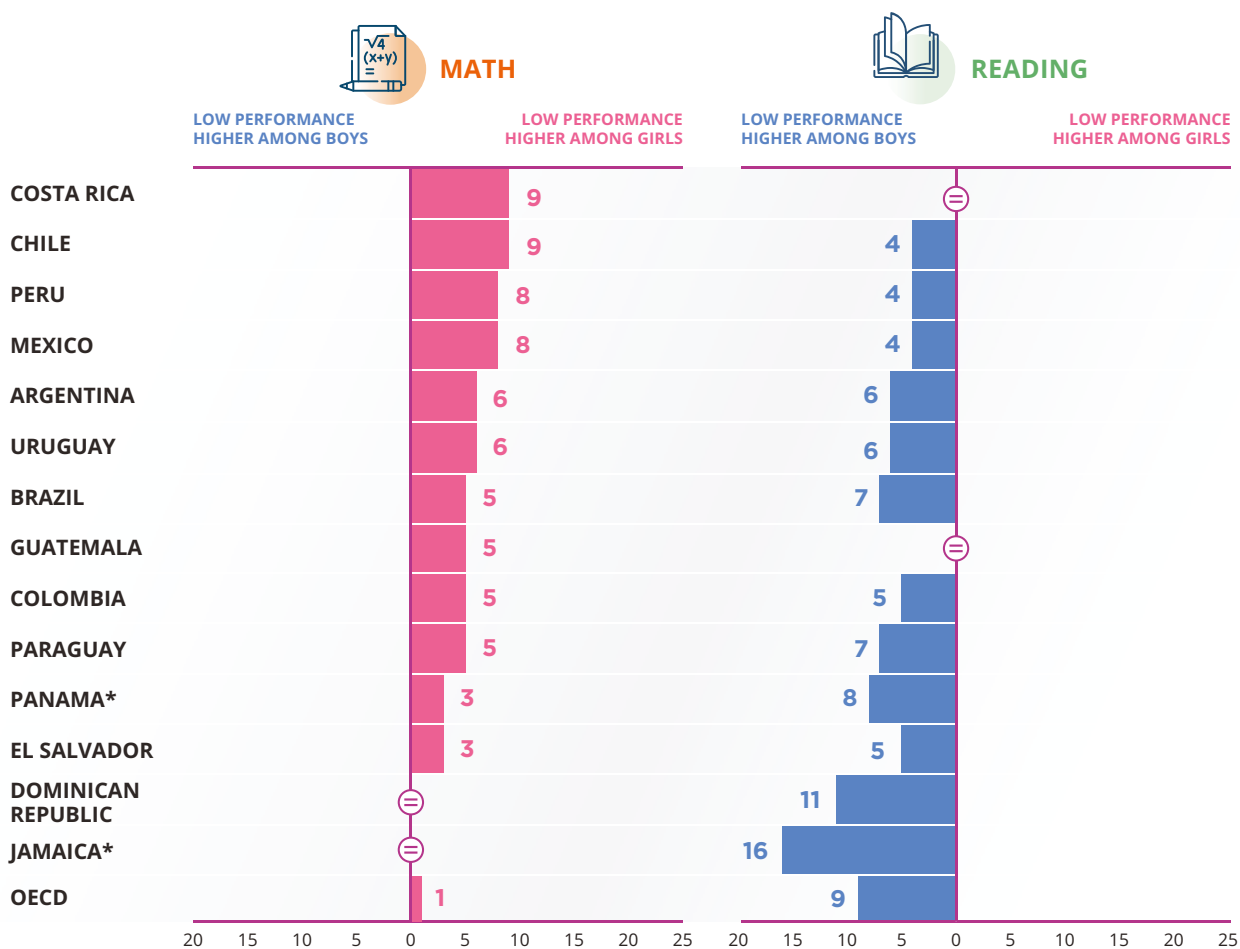
Low performers and gender

Among low performers, more girls than boys were low performers in math, however the differences in math performance related to gender were relatively small. On average, across in LAC, 72 % of boys and 77 % of girls were low performers in math; by comparison, across OECD countries, 31 % of boys and 32 % of girls were low performers in math. In all LAC countries except Jamaica* and Dominican Republic, more girls than boys were low performers in math. Chile, Costa Rica, Chile, Perú and Mexico, and Peru showed the largest gender gaps among low performers in math, not only in LAC but also among all countries/education systems that participated in PISA 2022 with around 9 points difference in the percentage of low performance between girls and boys.

In reading, the difference reverses and more boys were low performer than girls. Fewer girls than boys were low performers in reading. On average across LAC countries, 58 % of boys and 52 % of girls were low performers in reading. By comparison, across OECD countries 31 % of boys and 22 % of girls were low performers in reading, on average. In Costa Rica and Guatemala, boys and girls were similarly represented among low performers in reading. Jamaica* and Dominican Republic have the largest share of low performers among boys compared to girls in LAC, with 16 and 11 percentage points difference. In Costa Rica and Guatemala, boys and girls were similarly represented among low performers in reading.

Figure 1.9. Gender gaps among low performers in math and reading, PISA 2022
More girls than boys were low performers in math, but more boys than girls were low performers in reading.

Notes: *Countries are ranked in descending order of the gender gap (girls-boys) among low performers in math.*
**Source:** *OECD, PISA 2022 Database, Table I.B.4.31 & Table I.B1.4.32.*

Access to school at 15 years old

Education systems that have larger shares of school-aged children in school who are progressing through school on time are considered to be more inclusive. PISA measures this indicator, known as coverage, by determining how much of the population of 15-year-olds is enrolled in grade 7 or above.[5]

In LAC, a large proportion of 15-year-olds have either dropped out of school or have been held back in primary school. In 2022, coverage in the region ranged from 48 % in Guatemala to 86 % in Chile and Peru. Because the incidence of drop out and grade repetition is usually higher among poorer students, in countries with lower coverage, the students who took the PISA test might not be the poorest 15-year-olds in the population, as compared with those countries where coverage is higher and therefore more universal. Differences in coverage might thus muddle the analysis of the relationship between socio-economic status and student performance, particularly in countries with low coverage.

Figure 1.10. Percentage of the total population of 15-year-olds covered in PISA 2022
Coverage across LAC countries was 20 percentage points lower than across OECD countries
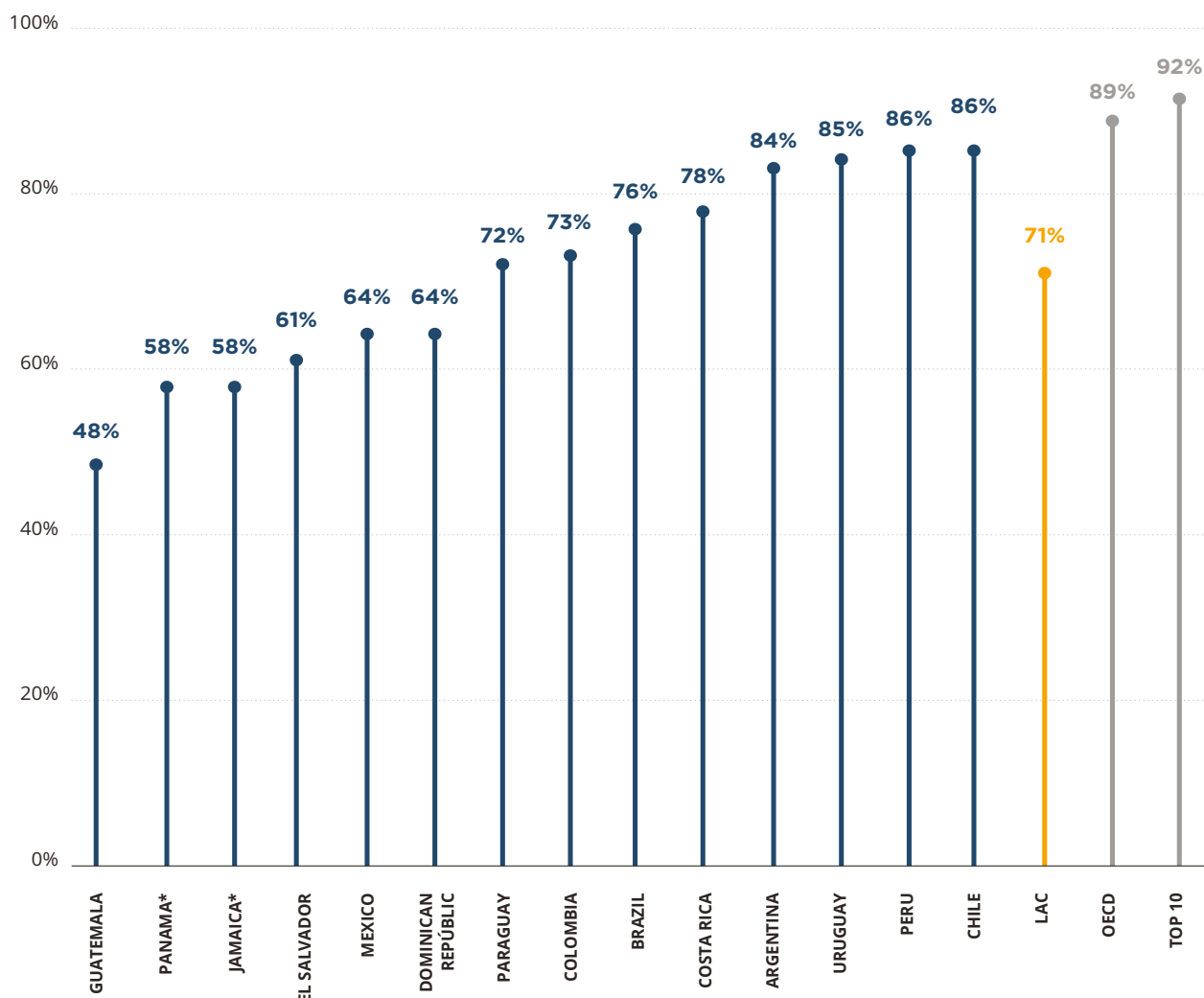
Source: OECD, PISA 2022, Table I.A2.2

[5] Low coverage may indicate that 15-year-olds have dropped out of school or have been held back in primary school. Sampling and non-response could also affect coverage rates.

## Fairness: How socio-economic status and gender are related to learning

Fairness refers to the extent to which students reach their potential regardless of their background. This report focuses on two student characteristics that are particularly relevant in LAC: socio-economic status (richer and poorer students) and gender (girls and boys). To determine socioeconomic fairness, PISA analyzes the difference in performance between richer and poorer students and the proportion of the variation in student performance that can be accounted for by individual socio-economic status. To determine gender fairness, PISA analyzes the difference in performance between boys and girls.

Differences in performance related to socio-economic status

While richer students outperformed poorer students in all LAC countries, these performance gaps were smaller than those observed across OECD countries. Richer students in the region scored 68 points higher in math than poorer students – the equivalent of three years of schooling. By comparison, in OECD countries, richer students outperformed poorer students by 93 score points – the equivalent of five years of schooling. Socio-economic fairness varied widely across countries in the region. The smallest performance difference (45 points) related to socio-economic status was observed in the Dominican Republic and Jamaica*; the largest difference (91 points) was observed in Uruguay.

The relatively small performance differences related to socio-economic status in LAC compared with those observed across OECD countries can partly be explained by the low performance of richer students in the region. LAC students considered to be "globally rich" (defined in PISA as those in the top 10 % of socio-economic status across all participating countries/education systems[6]) scored lower than globally rich students in OECD countries. Globally rich students in LAC achieved an average math

Figure 1.11. Difference in mean math score, by students' socio-economic status, PISA 2022
Performance differences related to socio-economic status were relatively small in LAC countries.
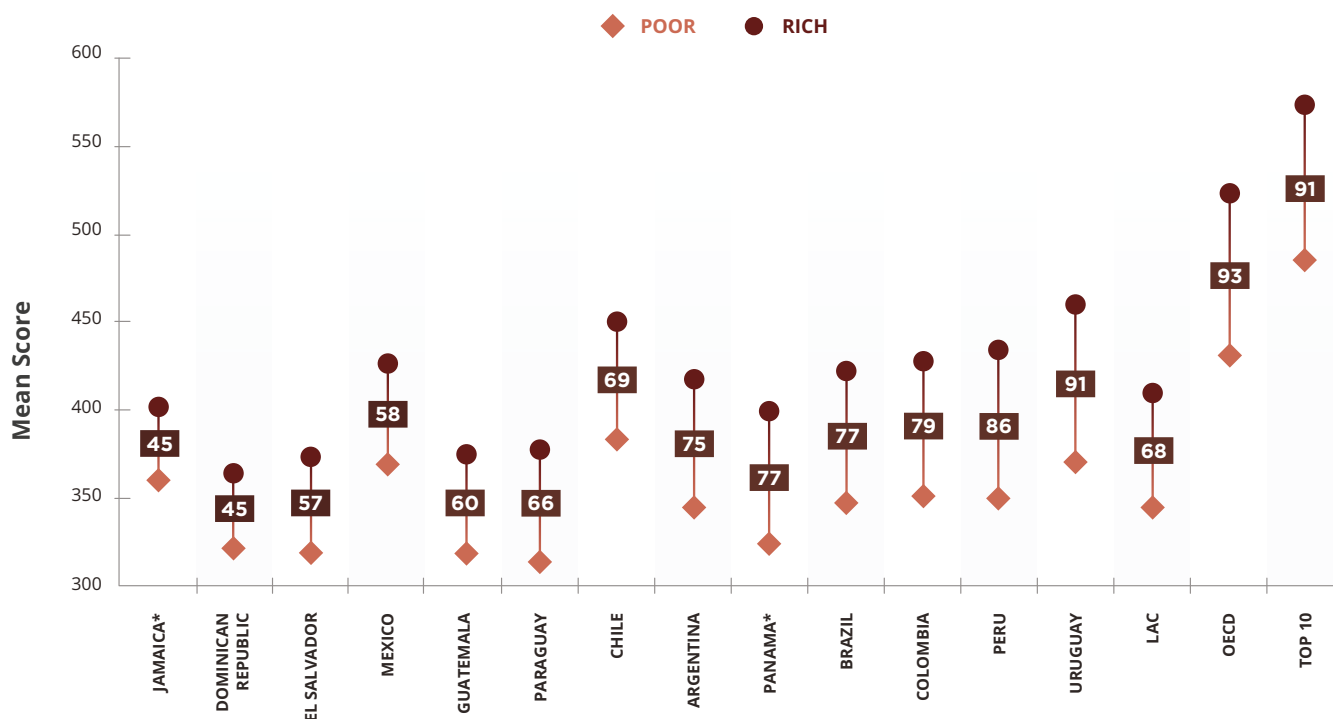
Notes: *Only countries with available data are shown.* **Source:** *OECD, PISA 2022 Database, Table I.B1.4.14.*

score of 444 points compared to a score of 531 points, on average, among globally rich students in OECD countries. This difference of 86 points represents the equivalent of four years of schooling. By comparison, globally poor students in the LAC region scored 336 points, on average, in math, compared to 381 points, on average, among globally poor students in OECD countries. This difference of 45 points represents the equivalent of two years of schooling.

The relationship between socio-economic status and performance

Socio-economic status was slightly less linked to student performance in LAC countries than in OECD countries.[7] PISA 2022 results showed that differences in students' socio-economic status accounted for 14 % of performance differences in LAC countries while they accounted for 16 % of performance differences in OECD countries. This finding implies that other school and individual factors had a greater influence on student performance in the LAC region than across OECD countries.

The combination of relatively large socio-economic differences between richer and poorer students, and relatively smaller differences in math performance, as compared with OECD averages, made it appear that LAC education systems were as fair as those across OECD countries. On the one hand, richer students in LAC were three times more advantaged than poorer students in the region (a difference of 3.1 standard deviations in socio-economic status), whereas across OECD countries, richer students were two times (2.4 standard deviations) more advantaged than poorer students. At the same time, the difference in math performance related to socio-economic status among LAC students was 62 % of the performance difference observed among OECD students.

Schools in LAC were less diverse than those in OECD countries. In LAC, there was little academic diversity within schools, i.e., students attended schools with other students who performed similarly. High-performing students attended schools with other high-performing students and low-performing students attended schools with other low-performing students.[8] Similarly, there was little social inclusion – the extent to which richer and poorer students attended the same school – in LAC countries. In short, students in LAC were more segregated across schools than were students in OECD countries. The lack of diversity in LAC education systems was also apparent in the relatively large variations in student performance between schools and relatively small variations in student performance within schools compared with those observed across OECD countries.[9]

Attending private school was no guarantee of better performance. Schooling mainly takes place in public institutions, both in LAC and across OECD countries. In LAC, about 78 % of 15-year-old students attended public schools in 2022, 6 % attended government-dependent private schools, and 15 % attended private independent schools. Across LAC, around 91 % of poorer students, but only 55 % of their richer peers, were enrolled in public schools. Public schools in the region showed large differences in enrolment between poorer and richer students, especially in Argentina, Brazil, Chile, Colombia, El Salvador, Guatemala, Panama*, Peru, and Uruguay. In Argentina, for instance, almost 90 % of poorer students but only 41 % of richer students were enrolled in public schools in 2022. On average across LAC, students in private schools (government-dependent and government-independent combined) scored higher in math than students in public schools. However, after accounting for students' and schools' socio-economic profile, the score differences shrank, disappeared or in some cases even reversed. After accounting for students' and schools' socio-economic status, math scores remained higher in private schools
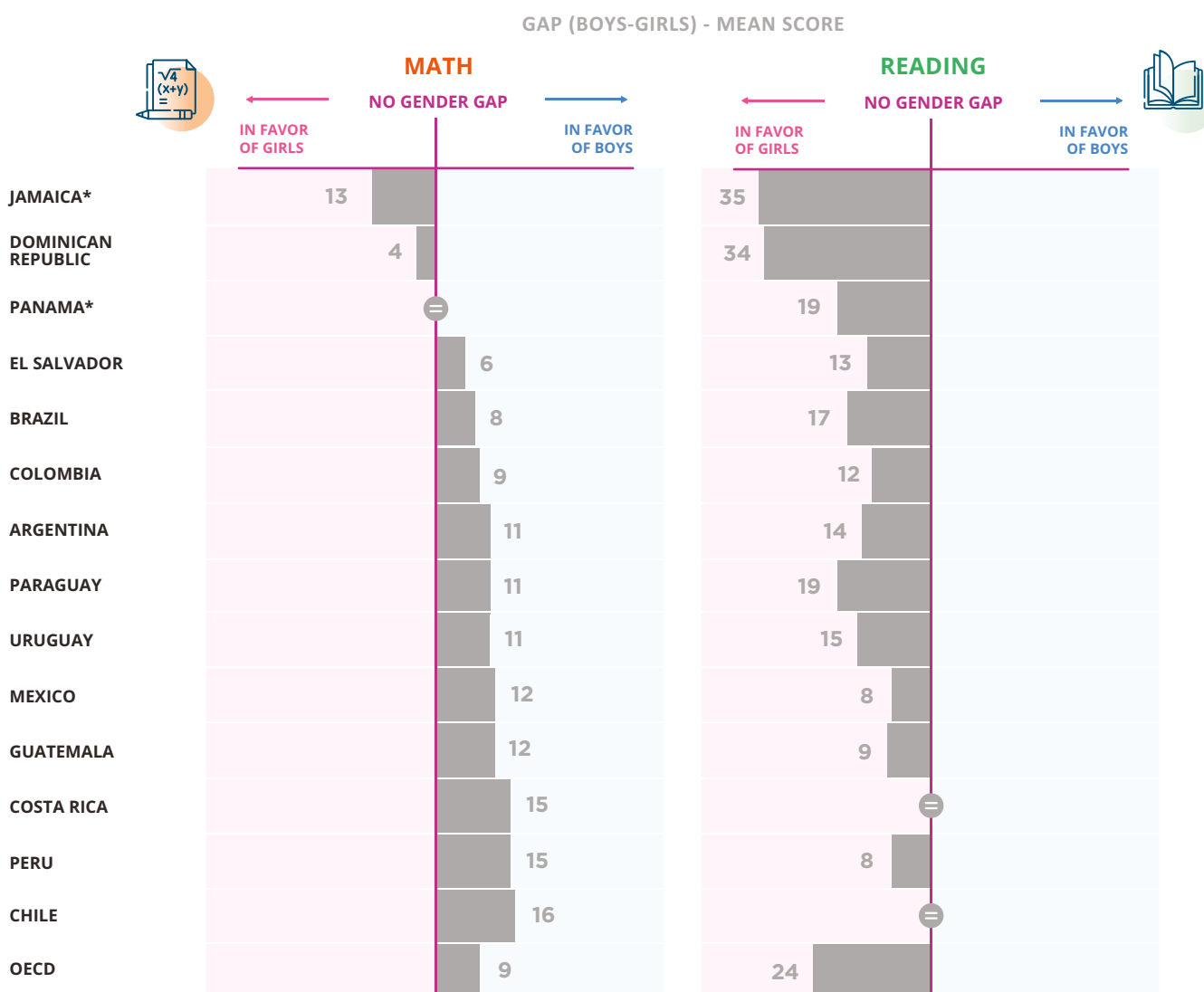
than in public schools in seven LAC countries (Brazil, the Dominican Republic, El Salvador, Guatemala, Panama*, Paraguay and Peru), the difference completely disappeared in four countries (Argentina, Chile, Colombia, and Mexico), and the difference reversed in favor of public schools in two countries (Jamaica* and Uruguay).

Fairness related to gender

In LAC, boys scored higher than girls in math, and this difference was similar to that observed across OECD countries. Gender gaps in favor of boys were observed in all LAC countries, except the Dominican Republic and Jamaica.* They varied from around 15 score points in Chile, Costa Rica, and Peru to six points in El Salvador (the OECD average gender gap in math performance, in favor of boys, was 9 points). In the Dominican Republic and Jamaica*, girls scored higher in math than boys, on average. Panama* was the only LAC country where boys and girls performed similarly in math, on average.

Figure 1.12. Gender differences in math and reading mean scores, PISA 2022
In nearly all LAC countries, boys outperformed girls in math

GAP (BOYS-GIRLS) - MEAN SCORE

	MATH	READING
	NO GENDER GAP	NO GENDER GAP
	IN FAVOR OF GIRLS — IN FAVOR OF BOYS	IN FAVOR OF GIRLS — IN FAVOR OF BOYS
JAMAICA*	13	35
DOMINICAN REPUBLIC	4	34
PANAMA*	=	19
EL SALVADOR	6	13
BRAZIL	8	17
COLOMBIA	9	12
ARGENTINA	11	14
PARAGUAY	11	19
URUGUAY	11	15
MEXICO	12	8
GUATEMALA	12	9
COSTA RICA	15	=
PERU	15	8
CHILE	16	=
OECD	9	24

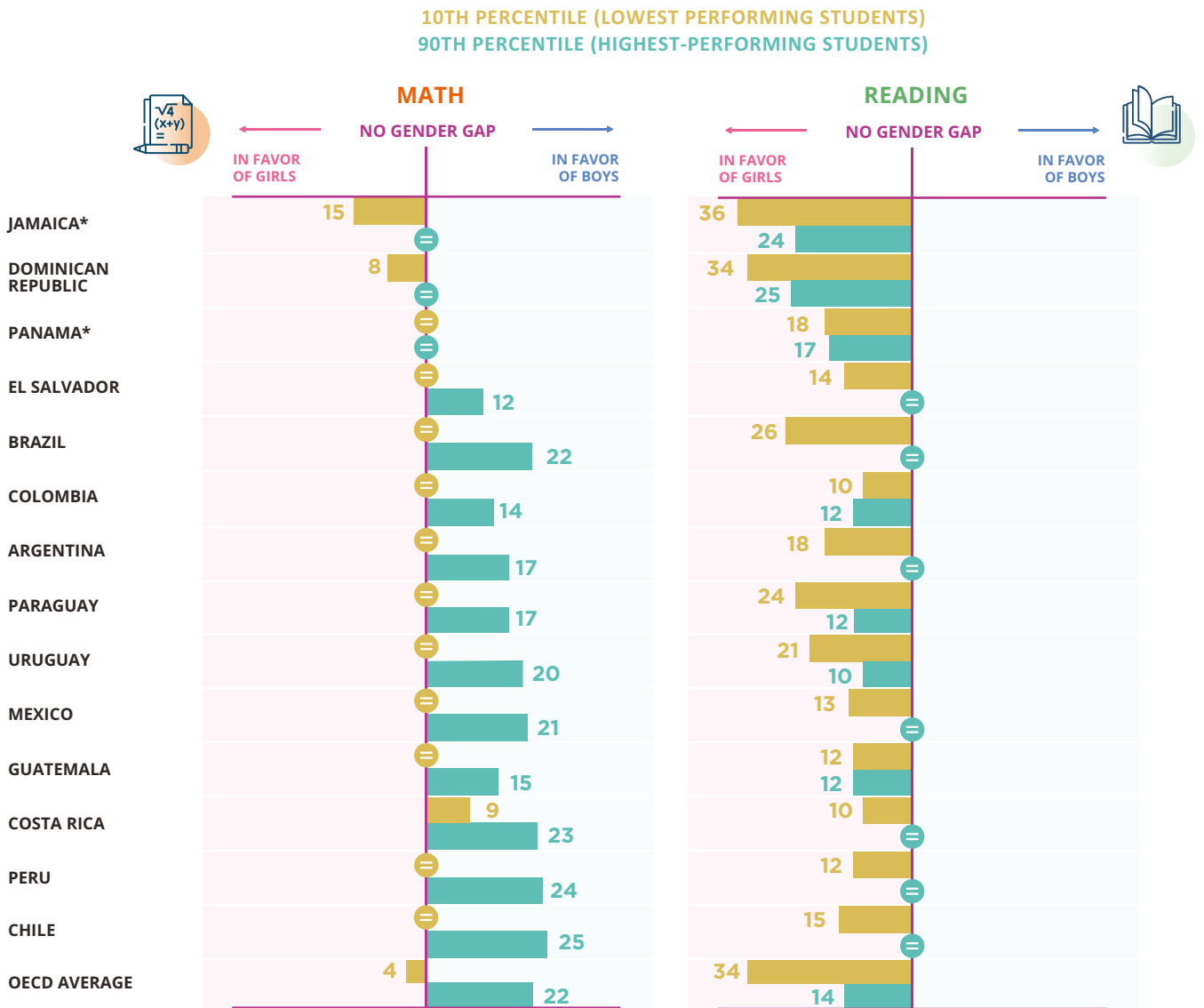*Notes:* Only countries with available data are shown.
Source: OECD, PISA 2022 Database, Tables I.B1.2.1, I.B1.2.2, I.B1.4.17 and I.B1.4.18.

Even among the highest-performing students[10] in LAC, boys outperformed girls in math. Among the highest-performing students (the top 10 % of performance), boys scored higher than girls. Across OECD countries, this difference amounted to 22 points; in LAC, the difference ranged from 12 to 25 points. Among the lowest-performing students (the bottom 10 % of performance) boys and girls in LAC scored similarly, while across OECD countries, girls tended to outperform boys. Costa Rica was the only country among all PISA-participating countries where boys performed better than girls even among the lowest-performing students. In the Dominican Republic and Jamaica*, where girls scored higher than boys in math, on average, this difference was larger among the lowest-performing students.

In LAC, as across OECD countries, girls scored higher than boys in reading. This difference amounted to between 8 and 35 points in LAC countries, compared to an average of 24 points across OECD countries. Among the lowest-performing students, girls outperformed boys by 10 to 36 points in LAC countries compared with an average of 34 points across OECD countries. Among the highest-performing students, girls also outperformed boys by 10 to 25 points in LAC countries, and by an average of 14 points across OECD countries. Chile and Costa Rica were the only countries among all PISA-participating countries/ education systems where boys and girls performed equally well in reading, except among the lowest-performing students, where girls outperformed boys. In Argentina, Brazil, Chile, Costa Rica, El Salvador, Mexico, and Peru, the highest-performing boys and girls performed equally well in reading. In the Dominican Republic and Jamaica*, girls outperformed boys in reading by a much wider margin than in other countries in the region.

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[10] The highest-performing students are those in the top 10 % of the performance distribution in each country; the lowest-performing students are those in the bottom 10 %.

Figure 1.13. Gender differences in math and reading for lowest and highest performing students, PISA 2022

In all LAC countries, girls outperformed boys in reading

10TH PERCENTILE (LOWEST PERFORMING STUDENTS)
90TH PERCENTILE (HIGHEST-PERFORMING STUDENTS)

	MATH	READING
	← NO GENERAL GAP →	← NO GENDER GAP →
	IN FAVOR OF GIRLS / IN FAVOR OF BOYS	IN FAVOR OF GIRLS / IN FAVOR OF BOYS
JAMAICA*	15	36 / 24
DOMINICAN REPUBLIC	8	34 / 25
PANAMA*		18 / 17
EL SALVADOR	12	14
BRAZIL	22	26
COLOMBIA	14	10 / 12
ARGENTINA	17	18
PARAGUAY	17	24 / 12
URUGUAY	20	21 / 10
MEXICO	21	13
GUATEMALA	15	12 / 12
COSTA RICA	9 / 23	10
PERU	24	12
CHILE	25	15
OECD AVERAGE	4 / 22	34 / 14

Notes: Only countries with available data are shown.
Source: OECD, PISA 2022 Database, Tables I.B1.2.1, I.B1.2.2, I.B1.4.17 and I.B1.4.18.

2.

Trends in performance and support to learning during the pandemic

In addition to providing a snapshot of current performance and equity across countries, PISA is also designed to allow for comparisons through time. Understanding trends within countries can provide insights into how education systems are evolving in performance and equity, and how these changes compare with trends in other countries. This section analyzes the changes in both performance and equity between the two most recent rounds of PISA (2018 to 2022) and within the context of longer-term trends (2012 to 2022).

Over the past decade, the expansion in secondary enrollment among LAC countries has been larger than in any other region. This growth in PISA coverage of the 15-year-old population is an extremely positive development for the region as it represents expansion in access to secondary education at the appropriate grade level. At the same time, this dynamic makes the interpretation of performance trends more difficult, as newly included students are more likely to come from poorer backgrounds and to score lower in PISA compared to richer students.

PISA was the first international learning assessment conducted after the COVID-19 pandemic; as such, its data provide the best-available indication of changes in student learning before and after the pandemic. However, the time period between the two most recent rounds of PISA was not exactly aligned with school closures due to COVID-19. It includes at least one full academic year before the start of the pandemic (and in the case of Paraguay, two years since PISA for Development was conducted in 2017), as well as one year after most countries in LAC reopened schools. Thus, caution is advised when attributing the observed changes in performance to pandemic-related policies and practices.

Students and school principals reported on their education experiences during the pandemic by answering an optional questionnaire in PISA. Through their responses, they provided information on school closures, the problems students encountered in switching to remote learning, and schools' preparedness for remote instruction.
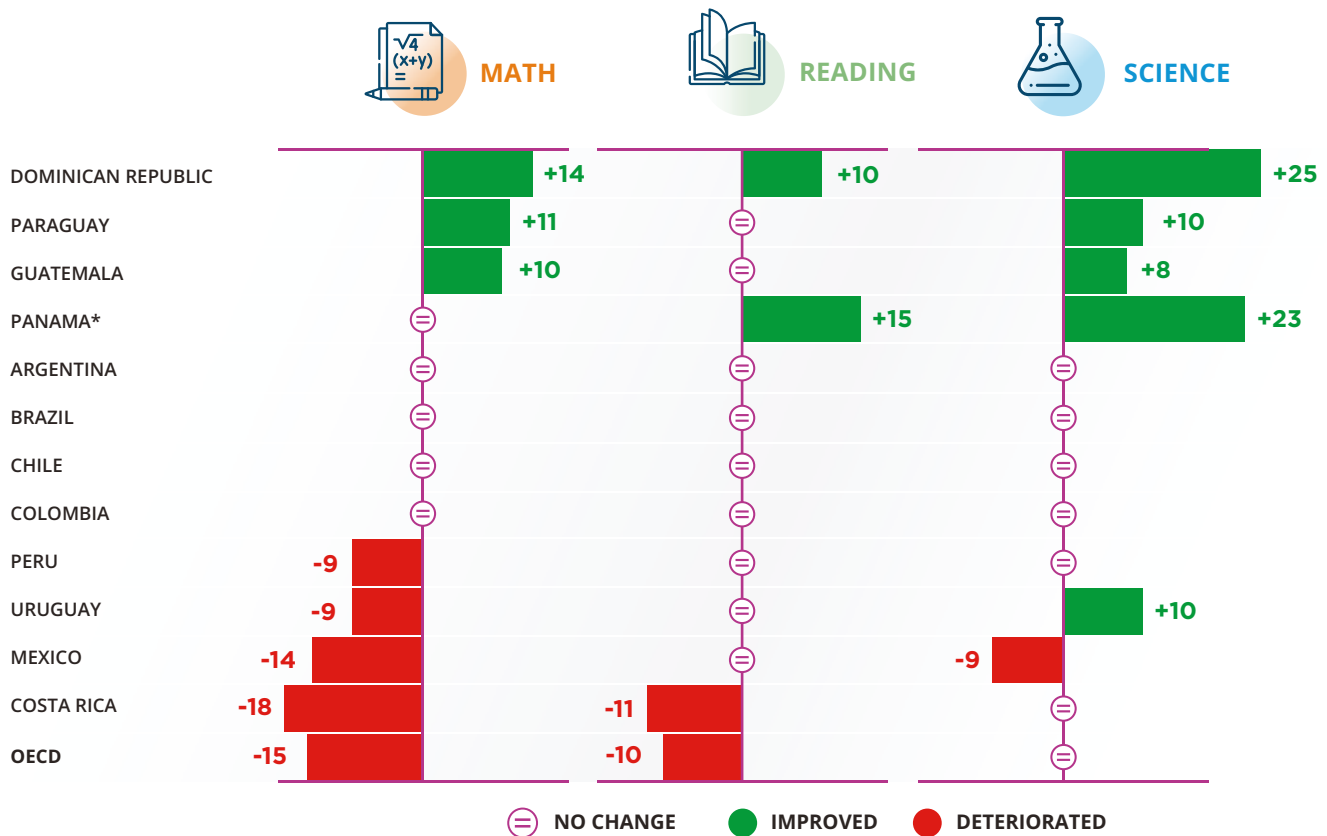
Trends in average performance

Between 2018 and 2022, performance either continued to deteriorate from 2015 or lost momentum from an improving trajectory, especially in math. Six out of nine LAC countries that participated in PISA in 2015, 2018, and 2022 showed a decline in math performance. In Mexico and Peru, math performance changed from a positive trajectory between 2015 and 2018 to a negative trajectory between 2018 and 2022. In Costa Rica and Uruguay, a stable trend between 2015 and 2018 deteriorated between 2018 and 2022. Brazil and Colombia, which had seen improvements in math scores between 2015 and 2018, lost this positive momentum by 2022. In reading, four countries either lost momentum from their improving performance or deteriorated even further from an already negative trend. Costa Rica's deteriorating trend was exacerbated over the most recent period, while Chile, Colombia, and Peru saw improving trends flatten.

Average performance between the two most recent rounds of PISA deteriorated more in math than in reading and science. Four LAC countries saw a deterioration in their average performance in math, while only one country's performance in reading declined. No LAC country saw a deterioration in average science scores. Average math performance in Costa Rica, Mexico, Peru, and Uruguay declined by 9-18 percentage points, representing a decrease of 2-5 % from the 2018 baseline. Given the relatively low baseline performance, these decreases are comparable to the magnitude of the deterioration in average math performance across OECD countries, which is close to 15 percentage points, or 3 %. Costa Rica was the only LAC country to deteriorate significantly in average reading performance, with a drop of 10 percentage points, or 3 %, from the 2018 baseline.

Figure 2.1. Changes in mean scores between 2018 and 2022

In most LAC countries, performance between 2018 and 2022 either deteriorated or stagnated.

	MATH	READING	SCIENCE
DOMINICAN REPUBLIC	+14	+10	+25
PARAGUAY	+11	=	+10
GUATEMALA	+10	=	+8
PANAMA*	=	+15	+23
ARGENTINA	=	=	=
BRAZIL	=	=	=
CHILE	=	=	=
COLOMBIA	=	=	=
PERU	-9	=	=
URUGUAY	-9	=	+10
MEXICO	-14	=	-9
COSTA RICA	-18	-11	=
OECD	-15	-10	=

= NO CHANGE   ● IMPROVED   ● DETERIORATED

*Note: Only countries and economies with available data are shown. **Source:** OECD, PISA 2022 Database, Tables I.B1.5.4, I.B1.5.5 and I.B1.5.6.*

The Dominican Republic was the only LAC country to show significantly improved average performance in math, reading, and science between 2018 and 2022, albeit from a very low baseline. The average scores in the Dominican Republic increased by 14 percentage points (4 %) in math, 15 percentage points (4 %) in reading, and 25 percentage points (7 %) in science. Guatemala, Panama*, and Paraguay were the only other countries to show improved average performance in at least two PISA subjects. Paraguay and Guatemala saw an improvement in math performance of 11 points (3 %) and 10 points (4 %), respectively, and in science, of 10 points (3 %) and 8 points (2 %), respectively. Panama* saw an improvement in average reading performance of 15 points (4 %) and in science of 23 points (6 %).

The latest setbacks make it all the more difficult for LAC countries to converge in performance to OECD countries. Achieving a strong positive trajectory in performance over time could help close the performance gap between LAC and OECD[11] students, but few LAC countries have achieved long-term positive growth. For countries that participated in at least five rounds of PISA, the OECD analyzed long-term growth trajectories from each country's earliest PISA round. Based on this analysis, average performance in math in most LAC countries has either not improved (Argentina, Chile, and Mexico) or has significantly deteriorated (Costa Rica and Uruguay) since each country's first assessment. The exceptions are Brazil,

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[11] This section of trends uses the OECD average for the 23 OECD countries that have participated in PISA since 2000, making the data comparable across time. All other sections that analyze only PISA 2022 results include the data of all countries that are currently members of the OECD for the average.

Colombia, and Peru whose first assessments were in 2003, 2006, and 2009, respectively, and which have seen improvements in average math performance of between 13 and 26 points (3-7 %). However, even in these three countries, the pace of growth has decelerated.

Figure 2.2. Long-term trends in math performance, PISA 2000-2022

Long-term trends in math performance in LAC are mostly stagnant, negative, or flattening.
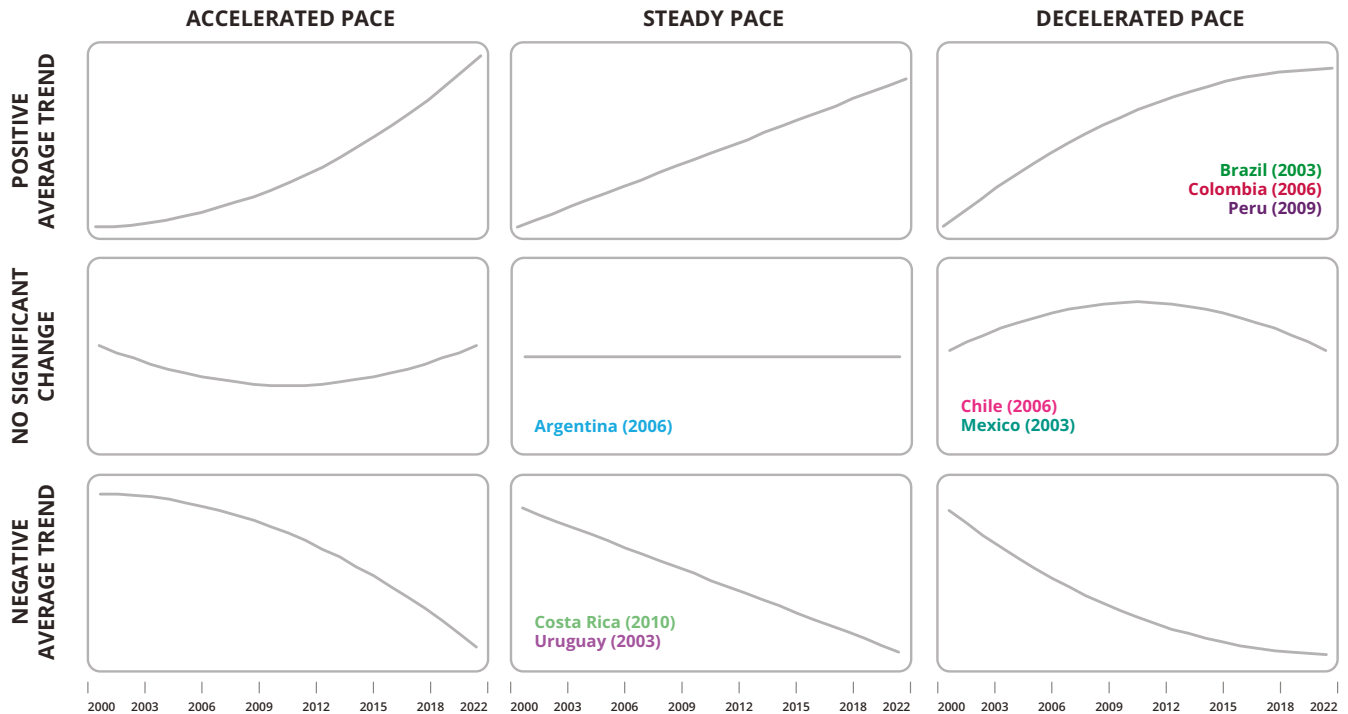
Source: OECD, PISA 2022 Database, Figure I.6.2

Between 2012 and 2022, performance either deteriorated or remained fairly constant in all LAC countries, except Peru and Uruguay. In math, average scores decreased in five of the eight LAC countries that participated in both PISA 2012 and 2022, when math was the main subject assessed. Argentina, Brazil, Chile, Costa Rica, and Mexico saw a deterioration in performance of between 10 and 22 points, representing a 3-6 % decline. Over this same period, average math performance did not change in Colombia or Uruguay. Average performance in reading and science neither deteriorated nor improved over the past decade. In five of eight LAC countries (Argentina, Brazil, Chile, Colombia, and Mexico), average performance in reading and science did not change significantly between 2012 and 2022. Costa Rica was the only LAC country that saw a decline in average performance in these subjects: by 25 points (6 %) in reading and by 18 points (4 %) in science.

Peru was the only LAC country to show a significant improvement in average performance across all three subjects since 2012. Average math performance improved by 23 points (6 %), reading performance improved by 24 points (6 %) and science scores improved by 35 points (9 %). These gains are equivalent to the learning that is expected to happen in an additional year of schooling in math and reading, and almost two years of schooling in science. Uruguay also showed an improvement in average reading and science performance by about 20 points, or 5 % of their 2012 average.

Expansion of access to education may be contributing to the stable or negative trends in average performance. Over the past decade, PISA coverage expanded in LAC countries, suggesting increased

access to education for relatively poorer students. The countries that saw increases in coverage by 10 percentage points or more since 2012 varied widely in their baseline coverage. Colombia, Costa Rica, Peru, and Uruguay increased their coverage by between 10 and 28 percentage points, or 15-60 %. Notably, Costa Rica had the lowest coverage rate (50 %) in 2012 but saw the largest increase in coverage (28 percentage points or 60 %) since then. At the same time, the country also saw the largest deterioration in average math performance (22 score points or 6 %) and the largest drop in average reading scores (25 points or 6 %).Since 2018, seven out of ten LAC countries (Argentina, Brazil, Colombia, Costa Rica, Panama*, Peru, and Uruguay) increased coverage of their population of 15-year-olds by 3 to 15 percentage points (or 4-24 %), while Mexico and the Dominican Republic saw decreases in coverage of 3 percentage points (-4 %) and 9 percentage points (-12 %), respectively.

Trends in share of low performers

The learning crisis of adolescents deepened in many LAC countries, as the share of low performers in math increased between 2018 and 2022. Of the 12 LAC countries that participated in the 2018 and 2022 assessments, a significantly greater number of students in Argentina, Brazil, Colombia, Costa Rica, Mexico, Peru, and Uruguay scored below basic proficiency Level 2 in math, with the increase in the percentage of low performers between the two most recent rounds of PISA ranging from 4 to 12 percentage points, or 6-20 %. Chile, the Dominican Republic, Guatemala, and Panama* did not show any significant changes in the share of this group of students. Only Paraguay saw a drop in the percentage of low performers in math – of 6 percentage points, or 7 %.

Figure 2.3. Change in the share of low performers, PISA 2018 to 2022
Most countries showed increases in the percentage of low performers in math and no change in the percentage of low performers in reading, and science.
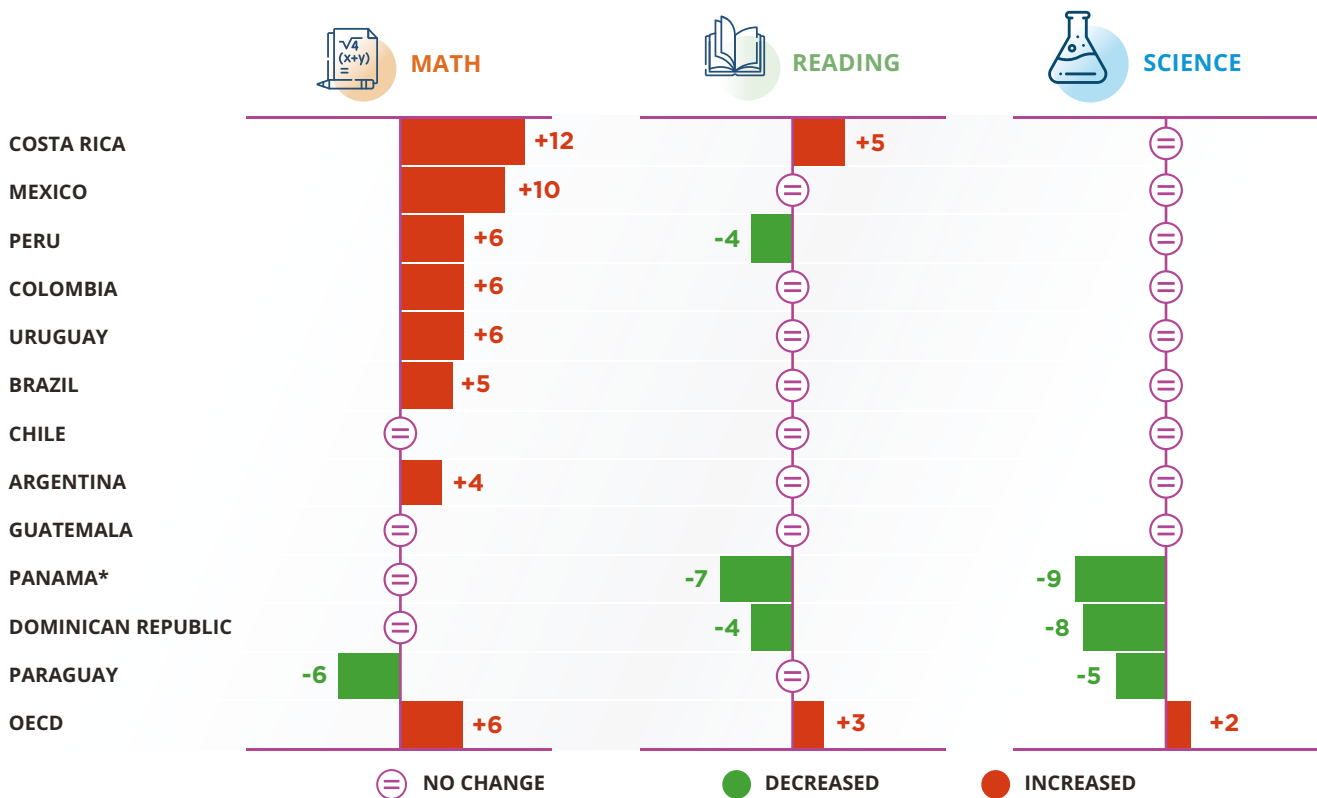
Note: Only countries with available data are shown. Only statistically significant changes are shown.
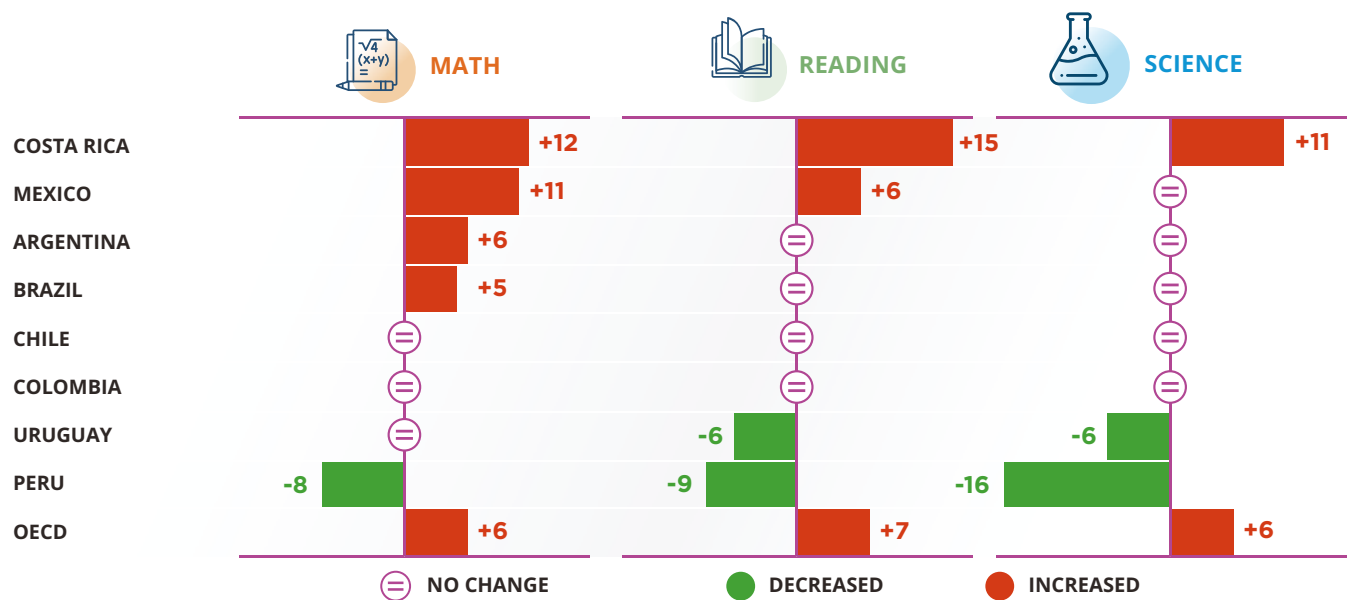*Source:* OECD, PISA 2022 Database, Table I.B1.5.1 and Table I.B1.5.3

Short-term trends showed little change in the share of low performers in reading and science.
Between 2018 and 2022, the share of students who demonstrated at least basic proficiency in reading did
not change in Argentina, Brazil, Chile, Colombia, Guatemala, Mexico, Paraguay, and Uruguay. Only Costa
Rica saw a significant increase – by 5 percentage points, or 12 % — in the share of low performers in reading
during the period. The Dominican Republic, Panama*, and Peru, on the other hand, saw a decrease in the
shares of students scoring below Level 2 in reading, with changes of between 4 and 7 percentage points, or
5-10 %, from PISA 2018. In science, the Dominican Republic, Panama*, and Paraguay also saw reductions in
the share of low-performing students, ranging from 5 to 9 percentage points, or 7-13 %, during the period.
The share of low-performing students in science remained unchanged in all other LAC countries.

**The Dominican Republic, Panama*, and Paraguay —three countries with some of the highest baseline
shares of low performers in LAC—significantly reduced the share of low-performing students in at least
two subjects.** In 2018, the Dominican Republic had the largest shares of low performers in reading (79 % of
students) and science (85 % of students) of all LAC countries. Panama* had the fourth largest share of low
performers in reading (64 %) and in science (71 %). Paraguay had the largest share of low performers in math (92
%) and the third largest share of low performers in science (76 %). In 2022, these three countries made important
strides towards inclusion by reducing the share of low performers by 5 to 10 percentage points (or 4-13 %
relative to 2018). In other words, they produced more, although still relatively few, learners who had achieved
basic proficiency in these subjects. At the same time, the Dominican Republic saw a 12 percentage-point drop in
PISA coverage of 15-year-olds between 2018 (73 %) and 2022 (64 %), the largest reduction in coverage in the LAC
region. This could mean that some of the reduction in the share of low performers in the Dominican Republic
may reflect the exclusion of a greater number of poorer students from the PISA 2022 population.

**In most LAC countries, the long-term trend in the share of low performers is not moving in the
right direction.** Of the eight LAC countries that participated in both PISA 2012 and 2022, the share of low
performers in math increased in half of them (Argentina, Brazil, Costa Rica, and Mexico), with the magnitude
of the increase varying from 5 to 12 percentage points, or 7-20 %, from the 2012 share. Although the share
of this group of students did not grow in Chile, Colombia, and Uruguay, it did not shrink, either, meaning
that far more students in LAC countries than across OECD countries did not acquire basic math skills.

Figure 2.4. Change in the share of low performers in math, PISA 2012-2022
Only Peru was able to reduce the share of low performers in all three subjects over the past decade.

Note: *Only countries with available data are shown. Only statistically significant changes are shown.* **Source:** *OECD, PISA 2022 Database, Table I.B1.5.1, Table I.B1.5.2, and Table I.B1.5.3*

The share of low performers in reading and science remained largely unchanged in most LAC countries over the past decade. Only two countries saw a significant increase in the share of low performers in reading between 2012 and 2022: Costa Rica, with a 15 percentage-point (45 %) increase, and Mexico, with a 6 percentage-point (14 %) increase. Costa Rica was the only country in the region that saw a significant increase in low performers in science (by 11 percentage points, or 29 %) over the same period. This lack of positive change in the share of low performers in all three core PISA subjects means not only do many students in the region continue to lag behind students in OECD countries, but also far too many LAC students have not acquired basic proficiency in fundamental skills.

Peru was the only LAC country that managed to reduce the share of low performers in all three subjects. Between 2012 and 2022, Peru reduced its share of low performers in math (by 8 percentage points or 11 %), reading (by 10 percentage points or 16 %), and science (by 16 percentage points or 23 %). Uruguay reduced its share of low performers in reading and science by around 6 percentage points, or 13 %.

Trends in equity related to socio-economic status

Since 2018, access to quality education for poorer students in LAC either deteriorated or stagnated. Between 2018 and 2022, the share of low performers in math among poorer students increased by about 3 to 8 percentage points (or 3-12 %) in Brazil, Colombia, Mexico, and Panama*. In all other LAC countries, the share of low performers among poorer students remained unchanged during the period. No LAC country saw a change in the share of low performers in reading among poorer students during this period except Peru, where this share shrank by 5 percentage points or 6 %.[12]

Figure 2.5. Change in low performance in math, and reading among poorer students, PISA 2018-2022
Low performance in math among poorer students became more prevalent in six LAC countries.
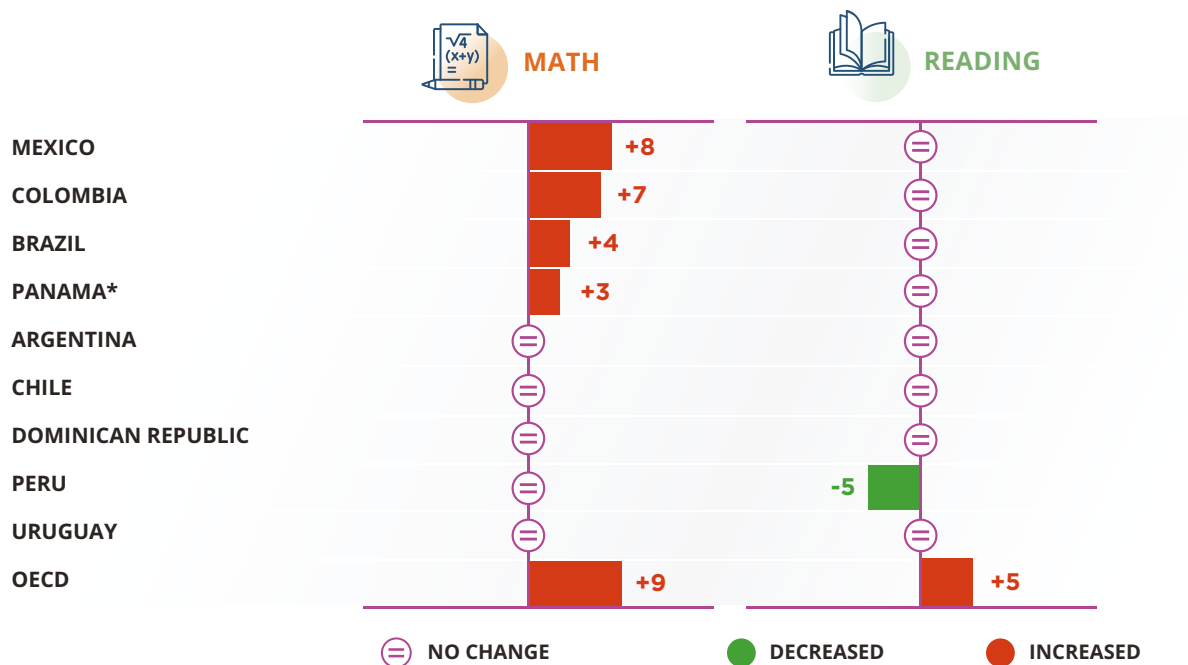
Note: Only countries with available data are shown. Only statistically significant changes are shown.
Source: OECD, PISA 2022 Database, Table I.B1.5.25 and Table I.B1.5.26.

[12] Disaggregated data by socio-economic status for low performance in science are not publicly available.

Over the past decade, the share of low performers among poorer students either increased or remained unchanged in almost all LAC countries. Between 2012 and 2022, low performance in math became more prevalent among poorer students in Argentina, Brazil, and Mexico by 3 to 10 percentage points, or 4-14 %. In Chile, Colombia, and Uruguay, low performance among poorer students did not change significantly. The share of low performers in reading among poorer students remained stable over the past decade in Argentina, Brazil, Chile, and Colombia.[13] Mexico was the only country that saw an increase (by 7.5 percentage points, or 13 %) in the share of poorer students who scored below basic proficiency Level 2 in reading. Peru saw a reduction in the share of low-performing poorer students in both math (by 7 percentage points, or 8 %) and reading (by 11 percentage points, or 13 %). Uruguay reduced the incidence of low performance in reading among poorer students by 8 percentage points, or 12 %.

Between 2018 and 2022, the difference in math performance between poorer and richer students remained largely unchanged. In seven out of nine LAC countries there was no major change in the average difference in math performance between richer and poorer students between 2018 and 2022 – even though some countries saw a deterioration in the performance of richer students (Brazil, Mexico, and Peru) or improvements in the performance of poorer students (the Dominican Republic). The gap in scores between richer and poorer students narrowed in two countries for different reasons: in Chile, because the performance among richer students deteriorated while poorer students' performance did not change; in Argentina, because poorer students' performance improved while richer students' performance remained unchanged.

Over the longer term, the average difference in math performance between poorer and richer students either remained unchanged or decreased. Between 2012 and 2022, the average difference in math performance between richer and poorer students was reduced in Chile, Peru, and Uruguay by 20-30 score points, or 19-32 %. In Chile and Uruguay, the change reflected a deterioration of performance among richer students. In Peru, students from all socio-economic backgrounds improved their performance, although the improvement was greatest among poorer students. While the score gap between richer and poorer students did not change in Argentina, Brazil, Colombia, the Dominican Republic, or Mexico, the underlying trends varied. In Brazil and Colombia, average performance did not change for either group. In Argentina and Mexico, performance deteriorated among both richer and poorer students. In the Dominican Republic, although poorer students improved their math performance, the overall performance gap with richer students remained unchanged.

The average difference in reading and science performance between poorer and richer students was largely unchanged over the past decade. Between 2018 and 2022, Argentina was the only country where the difference in performance between poorer and richer students decreased in both reading (by 16 points, or 16 %) and science (by 23 points or 23 %). Since 2012, Colombia and Peru were the only countries in the region to see a change in the performance gap between richer and poorer students. In Colombia, the gap in science widened by about 20 points (or 29 %), the equivalent of one year of schooling. Richer students improved their average performance by 28 points (or 36 %), while the average performance among poorer students remained the same. In Peru, the gap in reading narrowed by 22 points or 19 %. Over this period, poorer students improved their performance by an impressive 33 score points, or 10 %, while the performance among richer students remained largely unchanged.

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[13] Disaggregated data by socio-economic status for low performance in science are not publicly available.

Trends in equity related to gender

In five LAC countries, the share of girls who were low performers in math grew between 2018 and 2022. In Peru and Uruguay, the share of low-performing girls increased by about 7 percentage points in both countries (or 10 % in Peru and 13 % in Uruguay), while the share of low-performing boys remained unchanged during the period. In Brazil and Mexico, while the share of low performers in math among both girls and boys grew, the increase among girls was greater, although perhaps not statistically significant. In Guatemala, the share of low-performing boys shrank by 4 percentage points, or 4 %, while the share of low-performing girls remained unchanged. Paraguay was the only country that reduced the share of low performers in math among both boys and girls – and by around 6 percentage points, or 7 %, for both genders – between 2018 and 2022.

The short-term trend in math stands in contrast to the long-term trend of increased prevalence of low performers in math among boys (vis-à-vis girls). Argentina, Brazil, Chile, Costa Rica, and Mexico all saw an increase in low performance in math among boys over the past decade. These countries, with the exception of Chile, also saw an increase in the incidence of low performance among girls. Colombia reduced the incidence of low performance among girls by 6 percentage points (8 %) during the period, while the share of low-performing boys remained unchanged. Peru was the only country that reduced the prevalence of low performance in math among both boys and girls over the past decade.

Over the past decade, the gender gap in low performance in reading shrank in half of LAC countries. In Costa Rica, the share of girls who were low performers in reading increased by 21 percentage points (79 %), while the share of low-performing boys increased by 8 percentage points (20 %) during the period. In Mexico, a significant increase in the share of low-performing girls (by 10 percentage points or 29 %) combined with the relatively unchanged share of low-performing boys also resulted in a narrower gender gap in reading performance. By contrast, the narrowing of this gender gap in Peru and Uruguay was achieved by reductions in the share of low performers among boys by 12 and 11 percentage points (20 %), respectively.

The gender gap in math performance remained largely unchanged since 2018, except in Chile and Colombia. In Chile, the gender gap in math performance widened by 9 score points (or 118 %) largely because of a deterioration in average performance among girls. In Colombia, this gender gap narrowed by 11 score points (or 54 %), largely because of a deterioration in performance among boys. In the rest of the region, where the gender gap remained unchanged, the underlying trends varied. In Costa Rica and Mexico, declines in average performance were similar among boys and girls. In Argentina, Brazil, Panama*, and Peru, average performance remained unchanged among both boys and girls. In the Dominican Republic and Paraguay, boys and girls achieved higher average performance.

Between 2012 and 2022, the gender gap in average math performance narrowed in half of the participating LAC countries and remained unchanged in the other half. The difference in average math performance between boys and girls decreased in Brazil, Chile, Colombia, and Costa Rica by 8 to 17 score points. In Brazil, Chile, and Costa Rica, the narrowing of the gap was due to a relatively smaller deterioration in girls' performance, compared with boys' performance. In Colombia, girls improved their scores by around 14 points while boys' scores remained relatively stable. The gender gap was largely unchanged in Argentina, Mexico, Peru, and Uruguay over the period. In Argentina and Mexico, boys' and girls' performance deteriorated to a similar degree, while in Peru, boys and girls improved their performance by a similar degree. In Uruguay, girls' and boys' math performance remained largely unchanged over the period.

Figure 2.6. Change in shares of low performers in reading, by gender, between 2012 and 2022

The gender gap among low performers in reading narrowed in four LAC countries.
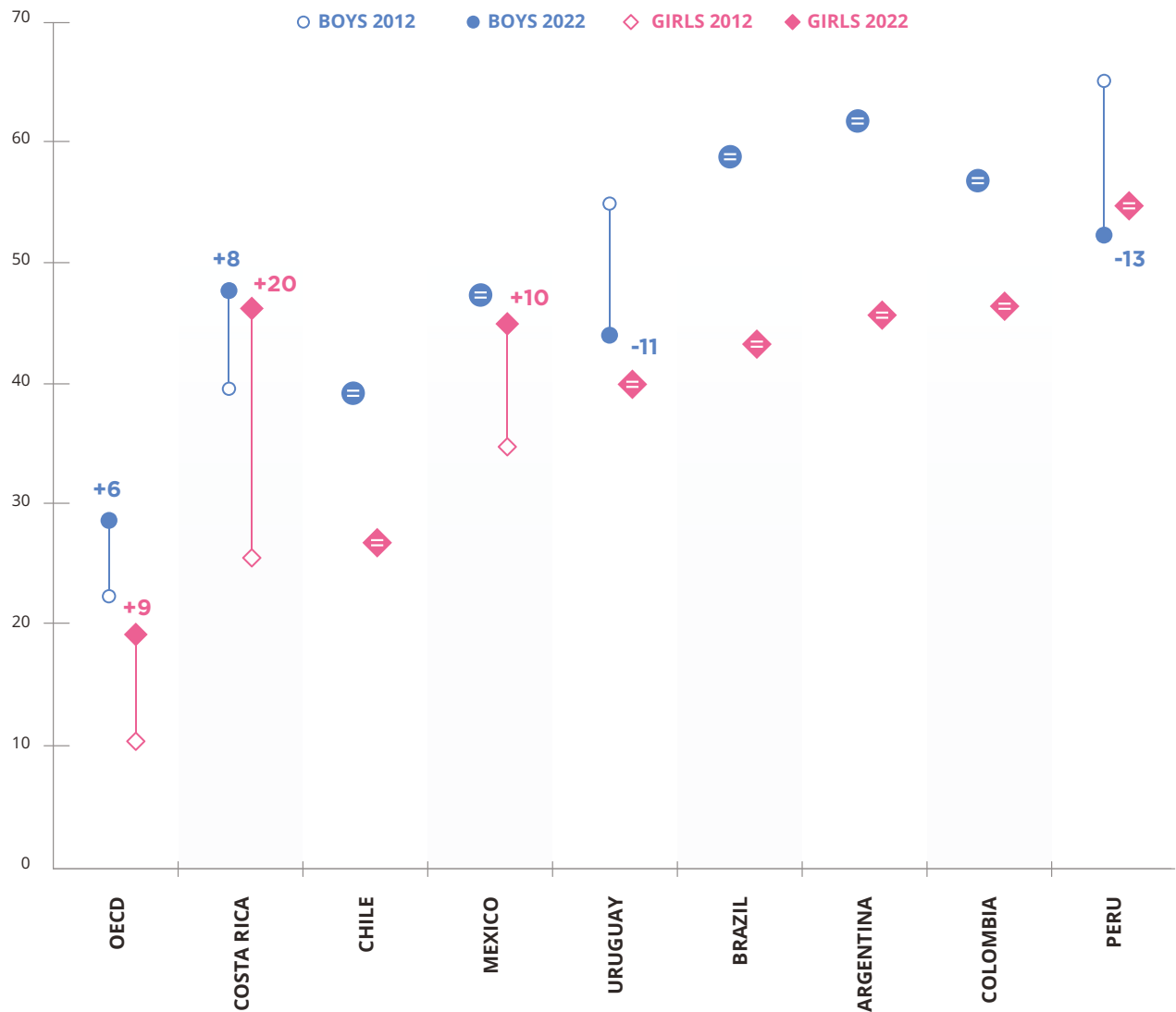
Note: Only countries with available data are shown. Countries and systems are sorted by low performance among girls in 2012 from smallest to largest. Statistically significant changes are marked with lines. ***Source:*** *OECD, PISA 2022 Database, Table I.B1.5.48*

Support to students at school and at home during the pandemic

The COVID-19 pandemic caused unprecedented disruptions to education systems and learning around the world. To understand how education systems responded to the pandemic and how students learned during this time, PISA developed and distributed an optional questionnaire for students and school principals that focused on students' experiences during school closures (addressed to students), teaching practices and learning opportunities (addressed to students and principals), school practices, policies and infrastructure (addressed to students and principals), and system-level policies and practices (addressed to principals). As there was a large share of non-responses to this questionnaire, results should be interpreted with caution.

School closures during COVID-19

According to principals, schools in LAC countries were closed for twice as long as schools in OECD countries during the pandemic. Principals in participating LAC countries reported that their schools were closed an average of 219 days, while principals in OECD countries reported that their schools were closed an average of 101 days. Principals in Uruguay reported the shortest pandemic-related school closures in the region: 99 days. Principals in Mexico, by contrast, reported that their schools were closed for an average of 320 days – the longest pandemic-related school closures of all countries/education systems that participated in PISA 2022. Principals' reports on school closures varied from the UNESCO Global Monitoring of School Closures data, collected during the pandemic. The differences could be due to the sources of data (principals' self-reports[14] versus more objective and standardized monitoring) and/or can reflect partial closures by level of education (with UNESCO aggregating information from pre-primary to upper-secondary educational institutions and PISA focusing only on secondary schools). Still, even with UNESCO data, school closures across OECD countries were almost half the duration (126 days), on average, of those in LAC countries (209 days).

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[14] In many countries, in LAC and around the world, this question also had a particularly high share of non-response; in LAC, non-response was over 20 % in Brazil, Costa Rica, the Dominican Republic, and Panama*.

Figure 2.7. Average duration of school closure due to COVID-19, as reported by principals, PISA 2022
According to principals, school closures in the LAC region were twice as long as those across OECD countries.
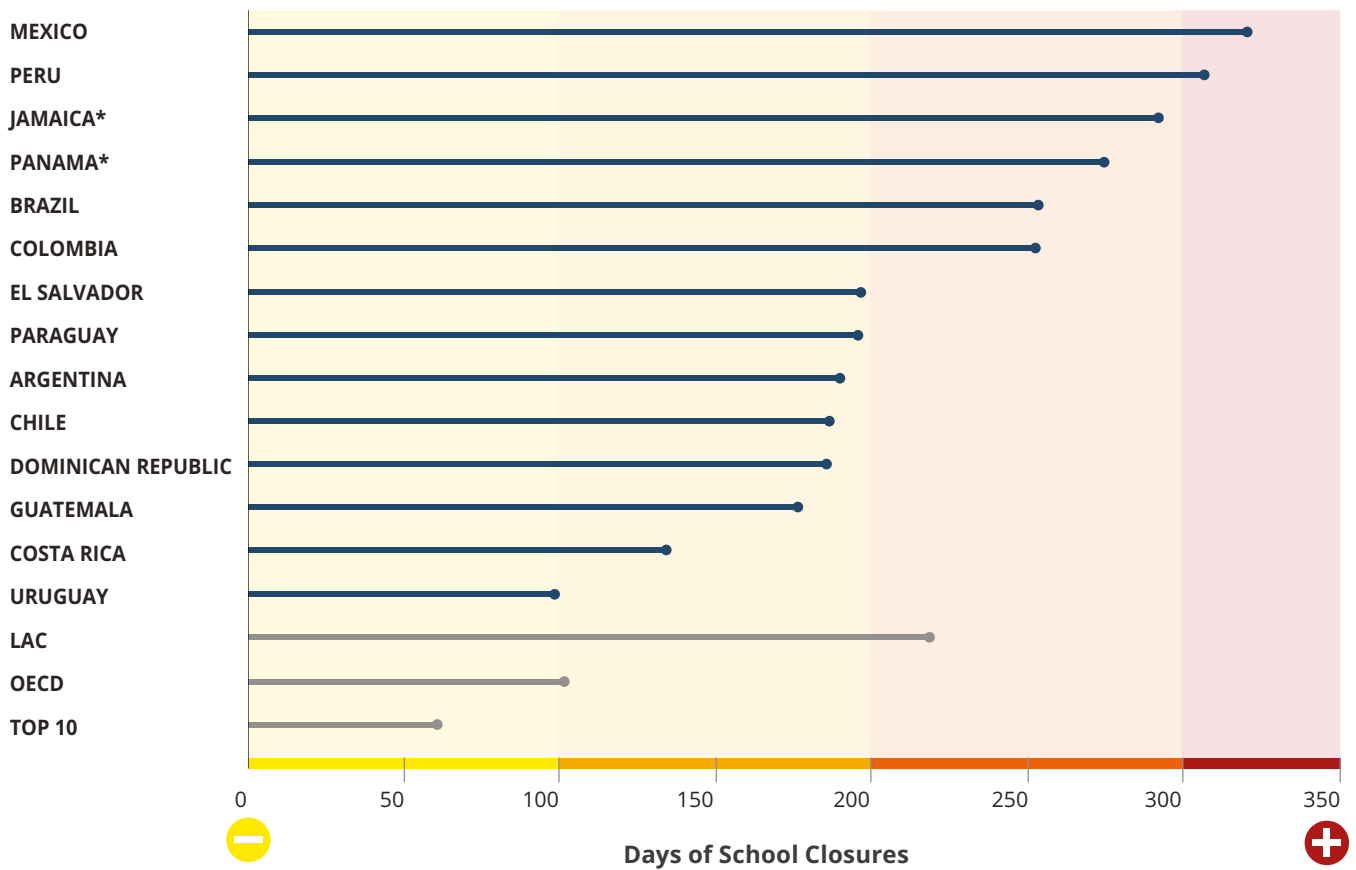
Those countries where schools were closed longer also showed lower average performance and larger shares of low performers in math. The OECD analyzed the relationship between student-reported school closures and average performance in math and found that education systems that spared students from school closures longer than three months also showed higher average performance in math. A similar analysis using principal-reported duration of school closures and the share of low performers produced a similar result, as all LAC countries endured longer school closures than the OECD average and showed larger shares of low performers in math than OECD countries in 2022. The two countries with the longest reported school closures, Mexico and Peru, saw some of the most significant increases in the share of low performers in math and significant drops in average math performance between 2018 and 2022. By contrast, in the country with the most negative short-term trend in math performance, Costa Rica, schools were closed for a relatively short amount of time, according to principals in the country.

Private schools were closed either as long as or for a shorter period than public schools. In half of LAC countries (El Salvador, Guatemala, Jamaica*, Mexico, Panama*, Peru, and Uruguay), principals of public and private schools reported similar durations of school closures. In the other half (Argentina, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, and Paraguay), private schools were open 30-130 days longer than public schools. During school closures, private schools were more likely than public schools to use digital devices for teaching and were more likely to offer remote instruction when classes were cancelled. By contrast, public schools were more likely to ask students to complete classes on their own

based on materials distributed to them. In all LAC countries, during school closures, private school students were more likely than public school students to participate in distance learning activities in a typical week. The public-private gap in this participation was smallest in Guatemala, with a 9-percentage point difference, and largest – a 33 percentage-point difference – in Uruguay.

Figure 2.8. Duration of school closure and share of low performers in math, PISA 2022
Countries where schools were closed for longer due to COVID-19 were also those with larger shares of low performers in math.
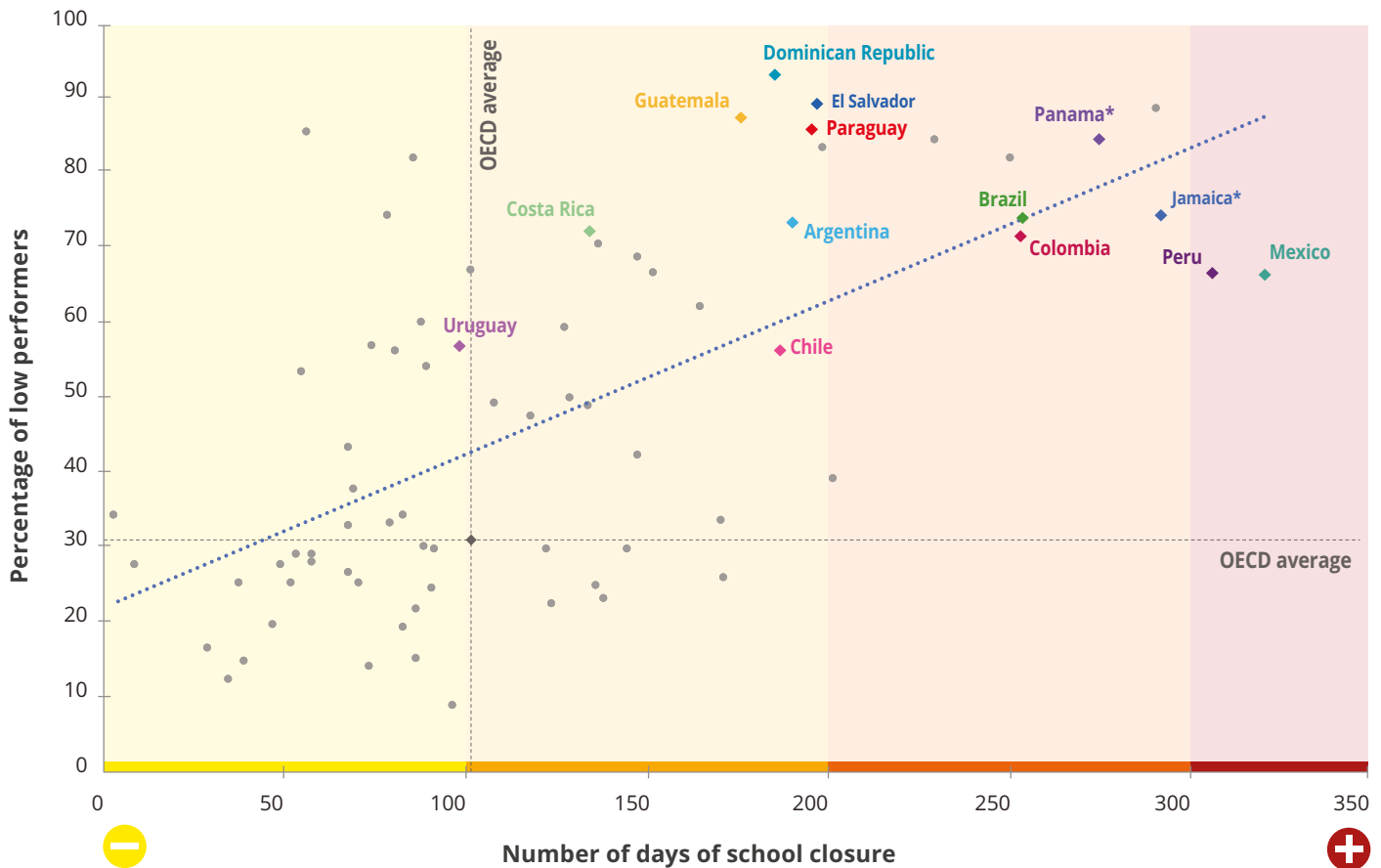
*Note: LAC countries shown in color. **Source:** OECD, PISA 2022 Database, Table II.B1.2.1 & Table I.B1.5.1*

Student experiences during school closures

Of those students who responded to the questionnaire on COVID-19, students in LAC were more likely than their peers across OECD countries to report that they struggled daily with remote learning during school closures. Lack of self-motivation to complete school assignments was the most commonly cited problem, with about one in five students in LAC countries reporting experiencing it daily. Interestingly, this problem was reported more frequently by students in OECD countries with about one in four students facing it every day. About one in seven students in LAC reported that they struggled daily to understand their school assignments or to find someone who could help them with their schoolwork; by comparison, one in ten students in OECD countries reported these problems. A larger proportion of LAC students (one in ten) than students in OECD countries (one in 20) reported that they struggled daily to access the internet at home.

Girls and poorer students were more likely than boys and richer students to report that they had problems with remote learning. In eight of 14 LAC countries (Argentina, Chile, Costa Rica, Guatemala, Mexico,

Paraguay, Peru, and Uruguay), girls were more likely than boys to report that they had problems with remote learning. The Dominican Republic and El Salvador were the only countries where boys reported struggling more with remote learning than girls. In nine countries (Argentina, Chile, Colombia, the Dominican Republic, Guatemala, Jamaica*, Mexico, Peru, and Uruguay) richer students were less likely than poorer students to report that they encountered problems with remote learning. In Brazil, El Salvador, Panama*, and Paraguay, there was no difference between richer and poorer students in reports of problems with remote learning. Immigrant students reported similar degrees of problems with remote learning as non-immigrant student in all countries except Costa Rica, the Dominican Republic, and Uruguay, where immigrant students were more likely than non-immigrant students to report that they had problems with remote learning.

Figure 2.9. Problems with remote learning and low performers in math, PISA 2022
Education systems where students reported more problems with remote learning also showed larger shares of low performers in math.
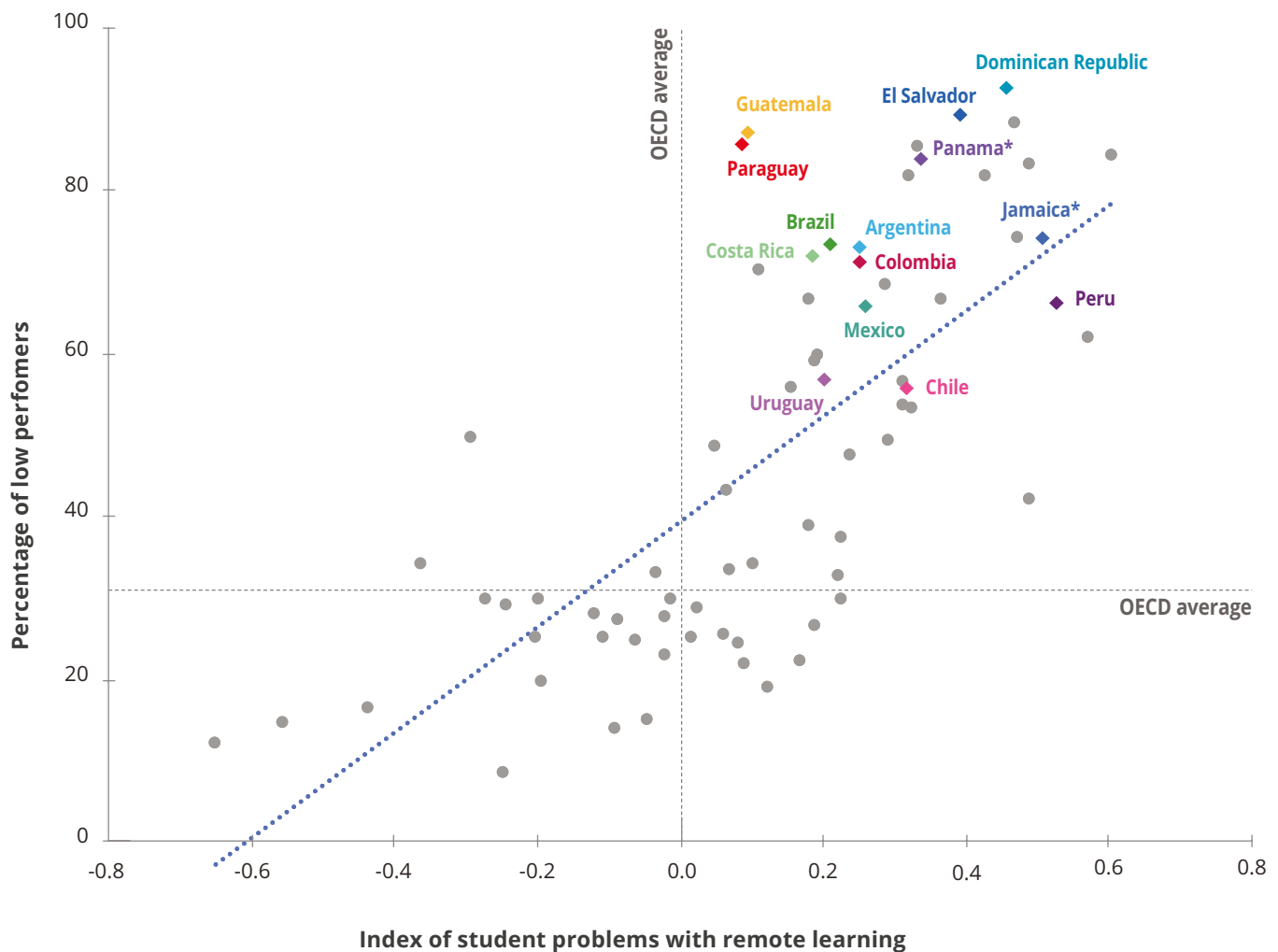
*Note: LAC countries shown in color. **Source:** OECD, PISA 2022 Database, Table II.B1.2.1 & Table I.B1.5.1*

LAC had some of the highest rates of student problems during remote learning and the largest shares of low performers of all countries/education systems that participated in PISA 2022. The OECD constructed an index of student problems with remote learning, which combined student responses to several questions about the frequency of encountering various problems during school closures. All LAC

countries showed higher values in this index, compared to the OECD average. Students in Paraguay reported having problems with remote learning the least frequently while students in Peru encountered problems the most frequently. Those countries whose students reported encountering problems with remote learning more frequently were also those that had larger shares of low performers in math in PISA 2022.

Schools' preparedness for remote instruction: Actions and perceptions

Some countries and schools were better prepared to ensure that learning continued when schools were closed. The questionnaire about learning when schools were closed due to the pandemic included several questions, aimed at principals, about schools' preparedness for remote instruction before and after the crisis.

Box 2.2. Schools' preparedness for remote instruction

The OECD measured how prepared for remote instruction education systems were before the pandemic and in response to the crisis. It included two measures based on principals' responses: one related to specific actions taken by education systems to prepare for remote instruction, and a second related to principals' assessment of preparedness if their school has to close again in the future.

Specific actions taken for remote instruction. This question captured the extent to which schools took *specific actions* to prepare for remote instruction. Principals were provided with a set of ten specific actions and were asked to respond whether their school performed those actions as standard practice before the pandemic, in response to the pandemic, or not at all. Examples of specific actions to prepare for remote instruction included:

- adapting existing curriculum plans for remote instruction
- ensuring that students have access to digital devices for remote instruction
- compiling instructional resources for parents or guardians to support their child's learning outside the school.

Assessment of preparedness for future school closures. This question captured principals' *perceptions* of their school's ability to provide remote instruction in the event of extended school closures in the future. Principals could choose one of four responses reflecting their feelings of whether their school was prepared to provide remote instruction: not prepared at all, not very prepared, well prepared, or very well prepared.

Standard practices in most LAC countries had not prepared schools to provide remote instruction before the COVID-19 pandemic. At the start of the pandemic, schools in most LAC countries were less likely to have taken specific actions to prepare for remote instruction, compared to schools in OECD countries. Principals in all LAC countries except the Dominican Republic, Guatemala, Mexico, and Panama* were less likely than their counterparts in OECD countries, on average, to report that their schools had taken such actions. For example, across OECD countries, 32 % of students, on average, attended a school whose principal ensured that teaching staff had access to digital resources for remote instruction; across LAC countries, only 16 % of students attended such schools.

In response to the pandemic, schools in the LAC region took specific actions to improve their preparedness for remote instruction. Improvements in schools' preparedness for remote learning were largest in Brazil, Chile, and Peru. However, in some LAC countries, namely Argentina, Colombia, Costa Rica, and Uruguay, many students

attended schools where certain actions to prepare for remote instruction had not been taken. The actions that affected the largest share of students in the region – between 76 % and 80 % of students – were: adapting existing curriculum plans for remote instruction; preparing digital materials for assessing student learning via online assessments; and preparing digital material for remote instruction. By the end of the pandemic, the key areas of preparedness for remote instruction where the LAC region differed from OECD countries were related to the adaptation of existing curriculum plans for remote instruction, the preparation of paper-based materials for remote instruction, and the compilation of instructional resources for parents or guardians to support their child's learning outside the school. A larger share of students in LAC countries than in OECD countries (a difference of between 11 and 18 percentage points) attended a school whose principal reported that they performed these actions as a standard practice before the pandemic or in response to the pandemic. The difference was greatest when considering the preparation of paper-based materials for remote instruction, which suggests a greater reliance in LAC countries on traditional paper-based methods of education than on digital methods.

Figure 2.10. Schools' preparedness for remote instruction before and after the COVID-19 pandemic
Most LAC countries became more prepared for remote instruction after the pandemic.
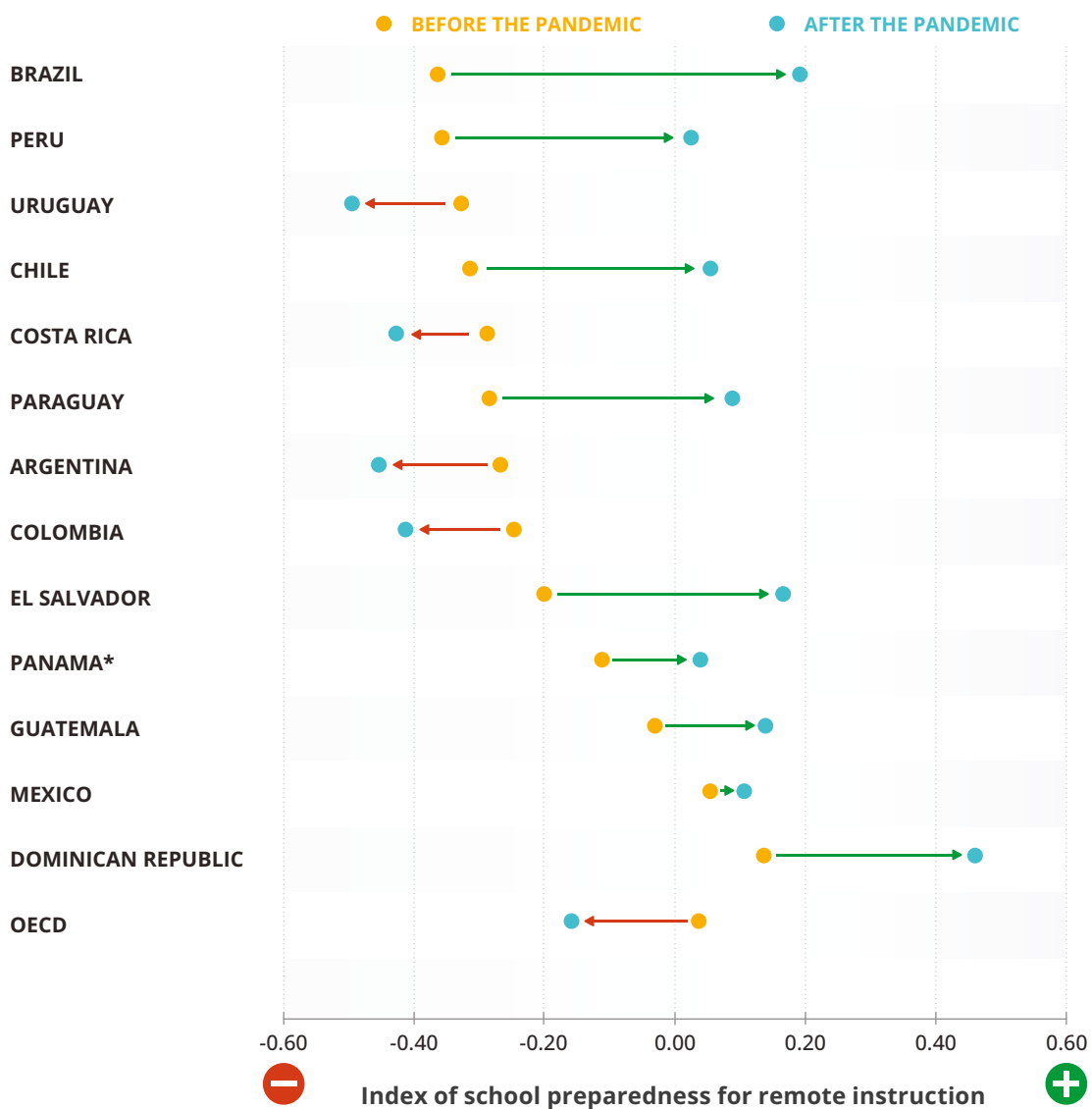
Note: Increasing values signify a greater degree of preparation for remote instruction. Countries are sorted from least to most prepared before the pandemic. Source: OECD, PISA 2022 Database, Table II.B1.2.22

Before the pandemic, private and public schools in most LAC countries were similarly prepared for remote instruction; but private schools took more actions after the pandemic struck. Before the COVID-19 crisis, private schools in only four LAC countries (Brazil, Colombia, El Salvador, and Guatemala) were better prepared than public schools for remote instruction. However, private schools appeared to have done more in reaction to the pandemic compared to public schools. In response to COVID-19, private schools in eight LAC countries (the four countries that showed the initial private school advantage, and the Dominican Republic, Mexico, Panama*, and Peru) did more to prepare for remote instruction than public schools.

Despite their actions to prepare schools for remote instruction, principals in LAC countries were still more concerned than their counterparts in OECD countries about their school's capacity to provide remote instruction in the event of future school closures. In OECD countries, about 90 % of students attended a school whose principal reported feeling well-prepared or very well-prepared to provide remote instruction in the case of future school closures. By contrast, less than 63 % of students in LAC countries attended a school whose principal reported a similar sentiment. Chile, the Dominican Republic, and Mexico had the largest shares of students who attended a school whose principal reported feeling prepared to provide remote instruction in the event of extended school closures, ranging from 73 % to 83 %. By contrast, only 40 % to 52 % of students in Colombia, Paraguay, and Peru attended a school whose principal reported feeling well-prepared for future school closures.

Figure 2.11. Students in schools that are prepared to provide remote instruction in the future, according to principals, PISA 2022
Fewer students in LAC countries than in OECD countries attended a school whose principal reported feeling that the school is prepared to provide remote instruction in the event of future school closures.
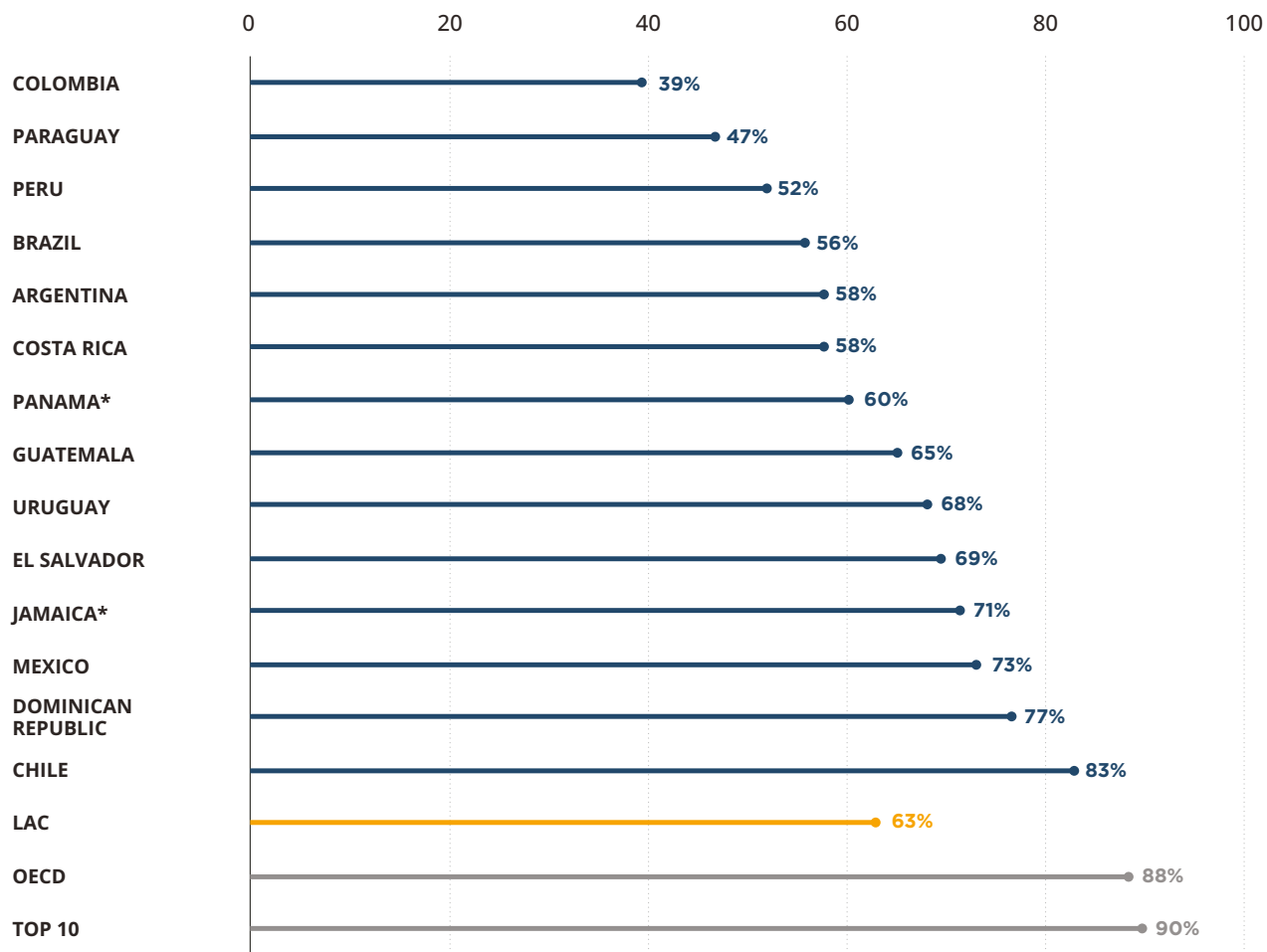
Source: OECD, PISA 2022 Database, Table II.B1.2.23

Pandemic-related disruptions to education may have contributed to stagnating or deteriorating average performance, and to the growing shares of low performers in math. School closures were longer in most LAC countries than on average across OECD countries, and schools in LAC were comparatively less prepared to provide remote instruction going into the pandemic. Although many LAC countries took significant actions to prepare for remote instruction in response to the pandemic, principals in the region reported feeling less prepared to provide remote instruction in the case of future school closures than principals in OECD countries did. Students across LAC countries also appear to have struggled with remote learning more than students across OECD countries did. Many of the difficulties LAC schools and students encountered during the pandemic stemmed from the over-reliance on traditional, paper-based instructional materials and limited access to quality digital resources. Supporting the digital transformation of education in LAC is important not just to ensure that learning continues if schools must be closed again, but to attain the more comprehensive goal of providing high-quality and inclusive education.

3.

Digital learning in Latin American and Caribbean schools

Supporting the digital transformation of education in LAC is crucial for fostering inclusive, accessible, and high-quality learning environments. Digital technologies can bridge gaps in access to quality education regardless of a student's geographical location or economic background. It can also offer diverse learning opportunities, accommodating different learning styles and facilitating personalized education. In addition, integrating technology into teaching and the management of schools can ensure that instruction and learning can continue if – and when – schools have to be closed again. But providing access to technology is not (and should not be) a goal in itself: teachers and students need to learn how to use digital resources effectively.

Results from PISA 2022 allow for an analysis of the availability of digital resources, school policies on the use of digital devices, teachers' preparedness for using and integrating digital technologies into their teaching, and how much time is allocated to the use of digital devices at school. Most of the data on digital learning presented here are derived from the PISA questionnaire addressed to principals and, as such, are based on principals' perceptions.

Student access to high-quality digital devices and resources in schools

Access to digital infrastructure (both devices and connectivity) and digital resources (such as learning platforms or learning management systems) is a necessary condition, albeit not sufficient, for the digital transformation of education systems. This subsection reviews the level of access 15-year-old students have to digital devices (computers and tablets) and the perception of principals regarding whether instruction was hindered by a lack of digital resources.

Access to digital devices: computers and tablets

On average, the ratio of computers per student at school is lower in LAC countries than in OECD countries. In LAC, there was one computer (laptop or desktop) at school for educational purposes for every two students in 2022. By comparison, there was almost one computer per student, on average, across schools in OECD countries. Some countries in LAC were close to, or even higher than, the OCDE average. El Salvador, for example, had 1.2 computers per student while Chile, Colombia, and Guatemala had less than 2 students per computer. Brazil ranks as the country in the region with the lowest ratio of computers per student (0.18), which translates to more than 5 students per computer. The average tablet-to-student ratio in LAC countries was the same as the OECD average with 2.5 students per tablet (0.4).

Access to computers in school, including both laptops and desktops, remained mostly unchanged in LAC between PISA 2018 and 2022. In 7 out of 10 countries that participated in both rounds of PISA, no significant difference in the computer-to-student ratio was observed. Brazil was the only country in the region to report an increase in that ratio and was one of the only 19 countries/economies around the world where access to computers improved between 2018 and 2022. Conversely, Argentina and Peru showed a decrease in the availability of computers for students since the previous PISA assessment. But the variations – both positive and negative – observed in LAC are small: changes of fewer than one computer per ten students.

Figure 3.1. Ratio of computers per student in school, PISA 2022

In LAC there was one computer available for educational purposes at school for every two students, while in OECD countries, there was almost one computer per student (0.8).

Country	Ratio
BRAZIL	0.2
PARAGUAY	0.2
MEXICO	0.3
URUGUAY	0.3
JAMAICA*	0.3
ARGENTINA	0.3
PANAMA*	0.3
PERU	0.4
DOMINICAN REPUBLIC	0.5
COSTA RICA	0.5
CHILE	0.6
COLOMBIA	0.7
GUATEMALA	0.8
EL SALVADOR	1.2
LAC	0.5
OECD	0.8
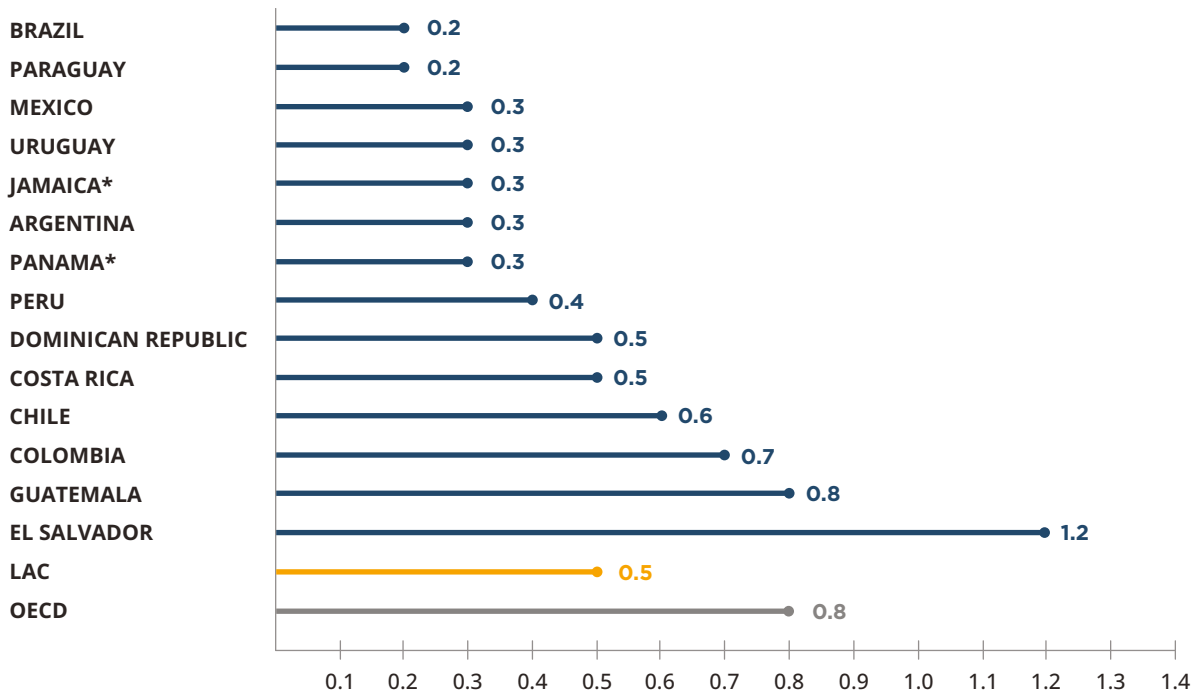
Source: OECD PISA Results 2022. Volume II. Table II. B1.5.24.

In LAC, schools with richer students showed a higher computer-to-student ratio than schools with poorer students. In 8 out of 13 participating countries in the region with available data,[15] significant gaps in favor of richer schools were observed in the ratio of computers per student; across OECD countries, no significant difference was observed. The biggest gap is observed in Guatemala, where students in richer schools had more than one computer available per student, while in poorer schools, there was only one computer for every three students. No significant differences between the two types of schools in access to tablets, except in the Dominican Republic and Paraguay, where there was a small difference in favor of richer schools, and in El Salvador and Peru, where poorer schools were shown to have more than one additional tablet for every two students, on average. The average difference in access to tablets across OECD countries also favored poorer schools but was much smaller.

[15] Costa Rica's data on the socio-economic profile of schools is not available.

Figure 3.2. Difference in ratio of computers per student between richer and poorer schools, PISA 2022

In most LAC countries, students in richer schools had greater access to computers
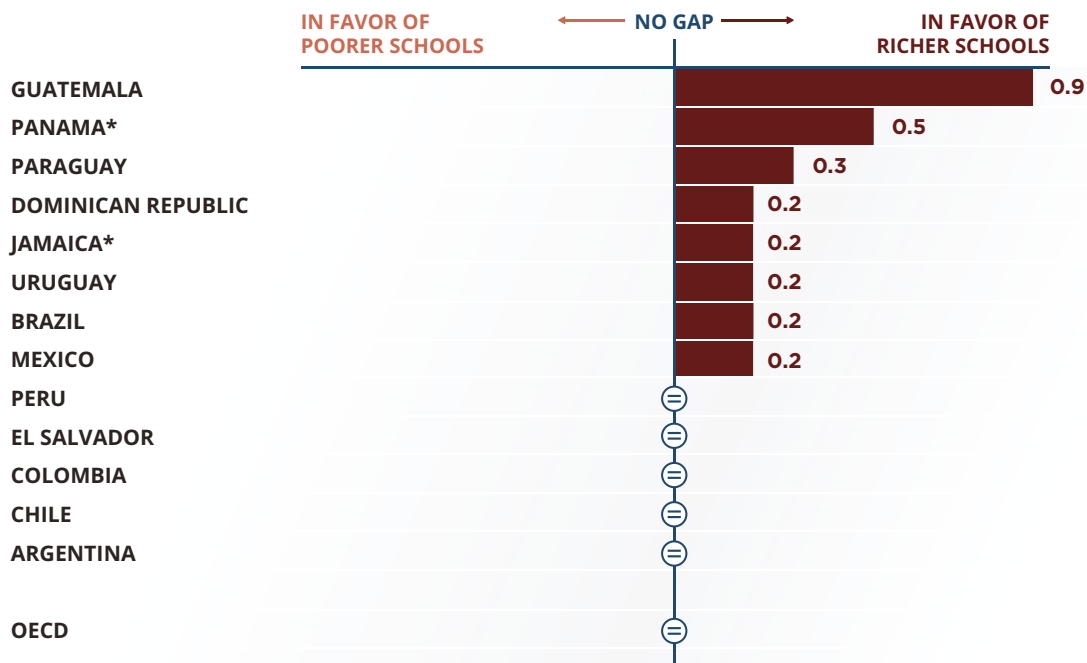
Source: OECD PISA Results 2022. Volume II. Table II.B1.5.24 **Note:** *Differences that are not statistically significant are marked as 0.*

Principals of private schools in LAC reported greater access to computers than did their counterparts in public schools. In 10 out of 14 countries in the region, the ratio of computers to students was higher in private schools than in public schools, and this difference was much wider than the average observed across OECD countries. The only exceptions were the Dominican Republic and Uruguay, where there was no difference in access between private and public schools, and Argentina and El Salvador, where principals of public schools reported higher ratios of computers per student than did their counterparts in private schools. Seven out of 14 countries showed no significant differences in access to tablets related to school type, similar to the OECD average. In Costa Rica, Guatemala, Mexico and Paraguay, private schools showed a higher tablet-to-student ratio, while in Colombia, El Salvador, and Peru, access to tablets was greater in public schools. El Salvador was the only country in the region where gaps in favor of public schools were observed for both types of digital devices considered. Since 2018, El Salvador has implemented several programs to distribute tablets and computers to all students in the public school system. In the most recent of these, in 2022, over 300,000 tablets were distributed.

Access to digital resources to support learning

Around 58 % of principals in LAC schools report that lack of access to digital resources hinders learning, a proportion much larger than principals in OECD schools (24 %). PISA 2022 asked principals how the lack of access or poor quality of digital resources (including desktop or laptop computers, connectivity, learning management systems or school learning platforms) affects their school's capacity to provide instruction. In countries like Chile and Brazil, around 30 % of schools' principals report having low access to digital resources to support learning, while in Jamaica* and Panama* this percentage reaches 80 % and 70 % respectively.

Figure 3.3. Lack of access to digital resources for learning, PISA 2022

Principals in LAC, and particularly principals from poorer schools, were more likely than their counterparts across OECD countries to report a lack of access to digital resources.

TOTAL ◆ **POORER SCHOOLS** ● **RICHER SCHOOLS**
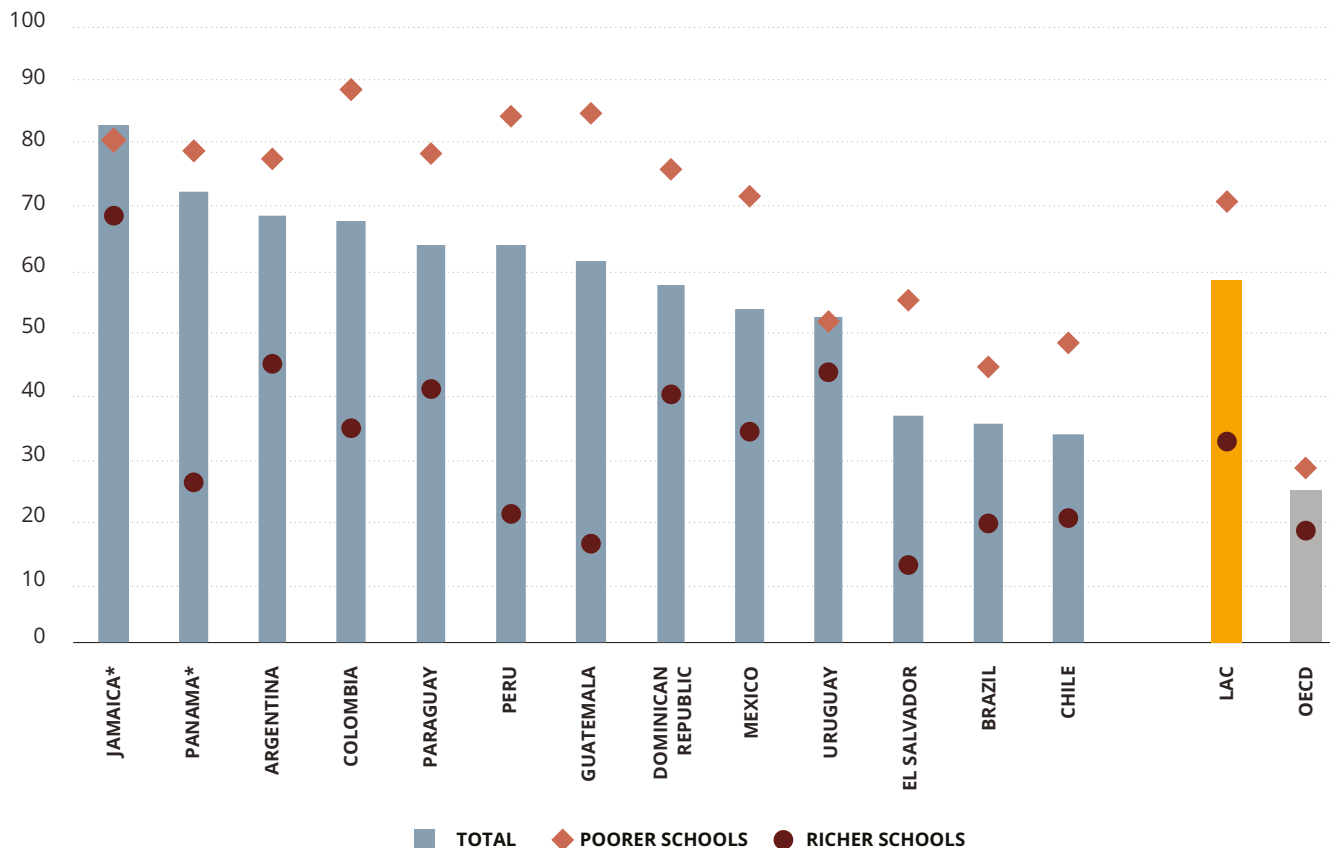
Source: OECD PISA Results 2022. Volume II. Table II. B1.5.19

Around 55 % of principals in LAC schools (more than double the share of principals across OECD countries) reported that a lack of access to digital resources hinders learning. PISA 2022 asked principals how the lack of access to digital resources (including desktop or laptop computers, connectivity, learning management systems or school learning platforms) affects their school's capacity to provide instruction. In Brazil and Chile, 33 % of principals reported insufficient access to digital resources to support learning; in Jamaica* and Panama*, 80 % and 70 % of principals, respectively.

Principals in LAC schools with poorer students were more likely than their counterparts in schools with richer students to report that the school's capacity to provide instruction is limited by a lack of access to digital resources. Around 70 % of principals of schools with poorer students, but only 32 % of principals in richer schools, reported a lack of access to digital resources. The results for the region were similar to those observed across OECD countries. However, the difference in access between richer and poorer schools was much larger in LAC countries (37 percentage points) than across OECD countries (9 percentage points).[16] Jamaica* and Uruguay showed the smallest differences between the two types of schools. The smallest shares of principals who reported a lack of digital resources were observed in Brazil and Chile, which also showed relatively small differences between richer and poorer schools.

[16] For most countries in the region and across OECD countries, there is no correlation between the lack of digital resources and performance, on average, after accounting for the socio-economic profile of the school (Source: OECD PISA Results 2022. Volume II. Table II. B1.5.19).

Public school principals were more likely than private school principals to cite a lack of access to digital resources. While private school principals in LAC and across OECD countries reported shortages of digital resources, public school principals were far more likely to do so. In LAC, the proportion of public school principals who reported a lack of access to digital resources (67 %) was 2.5 times larger than that across OECD countries (26 %). The differences in favor of private schools were observed in all countries in the region, although the size of the gaps varied widely. Colombia, Guatemala, and Panama* showed the largest differences between public and private schools in shortage of digital resources. Costa Rica showed the smallest differences between the two types of schools.

School guidelines and preparedness for digital learning

Digital transformation of education requires not only access to devices and digital resources but also an appropriate governance structure and guidelines to ensure schools and teachers are able to use these resources effectively to enhance learning and teaching (Burns and Gottschalk,2019). In this subsection we explore school principals' perceptions about the adoption of policies, guidelines, and programs to guide the use of technology in the classroom and the preparedness of the schools for digital learning.

School policies on the use of digital devices

On average, principals in LAC were less likely than their counterparts in OECD countries to report that specific policies are in place regarding the use of digital devices in school. PISA 2022 asked school principals whether they had formal guidelines (e.g., written statements, programs or policies) or specific practices (e.g. regularly scheduled meetings) that focus on how to use digital devices effectively in the classroom. Across almost all the policies analyzed, principals in LAC countries were less likely than principals in OECD countries to report that they have adopted policies for digital learning.

The practice of having teachers establish rules for when students may use digital devices during lessons has been adopted by 93 % of principals in LAC and 95 % of principals in OECD countries. This policy has been adopted in more than 80 % of schools in the LAC region, according to principals; in Brazil, the Dominican Republic, and Jamaica*, implementation of this policy is nearly universal. Principals in the region also report high levels of rules established in collaboration with students about their use of digital resources at school or in class: 76 % of LAC principals reported adopting this practice, while 73 % across OECD countries.

By contrast, only 37 % of principals in LAC reported that their school bans the use of cell phones, a similar level of adoption to that observed across OECD countries (34 %). At most 13% of principals in Costa Rica and 6% in Uruguay reported that the use of cell phones is not allowed on school premises. More than 60 % of principals in Guatemala and Peru, however, so reported. In 8 out of the 14 LAC countries analyzed, private schools were more likely than public schools to restrict the use of cell phones. These results are similar to those observed on average across OECD countries and in 19 other countries/ economies.[17] However, in the LAC region there were no significant differences between poorer and richer schools in the adoption of policies to ban cell phones in school while across OECD countries, poorer schools were more likely than richer schools to forbid the use of cell phones.

....

[17] Source: OECD PISA Results 2022. Volume II. Table II. B1.5.37.

Most schools in the region have written statements about the general use of digital devices; fewer have formal guidelines for using these devices for teaching and learning in specific subjects. In half of the countries of the region, around 70 % of students attended schools that have a written statement about the general use of devices. One interesting case is Uruguay, where the percentage of students in schools that adopt these guidelines was low (4 out of 10 schools), suggesting that perhaps in countries where there is a centralized agency specialized in the integration of technology for education—such as Ceibal in Uruguay— written statements and formal guidelines are not defined at the school level.

Policies and practices promoting student digital citizenship have low adoption rates across all countries in the LAC region. Only 44 % of students attended a school with a specific policy regarding the use of social networks in teaching and learning, slightly below the OECD average (51 %). Approximately

Figure 3.4. Percentage of students in schools whose principal reported policies and practices related to the use of digital devices, PISA 2022
Policies focused on when to use digital devices at school were more prevalent in LAC countries than courses about social media or internet behavior.

Panel A: *Policies and practices on when to use digital devices*
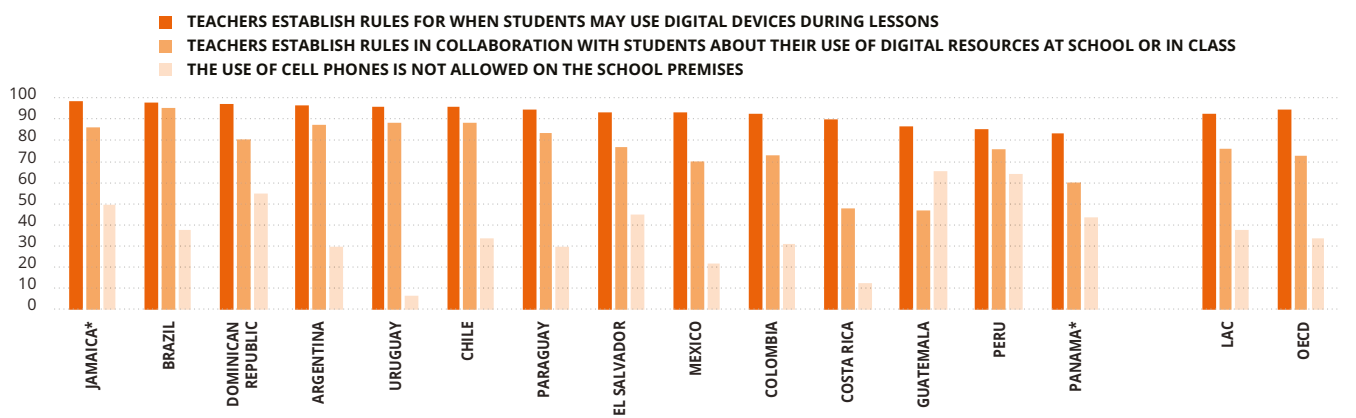
Panel B: *Policies and practices on how to use digital devices*
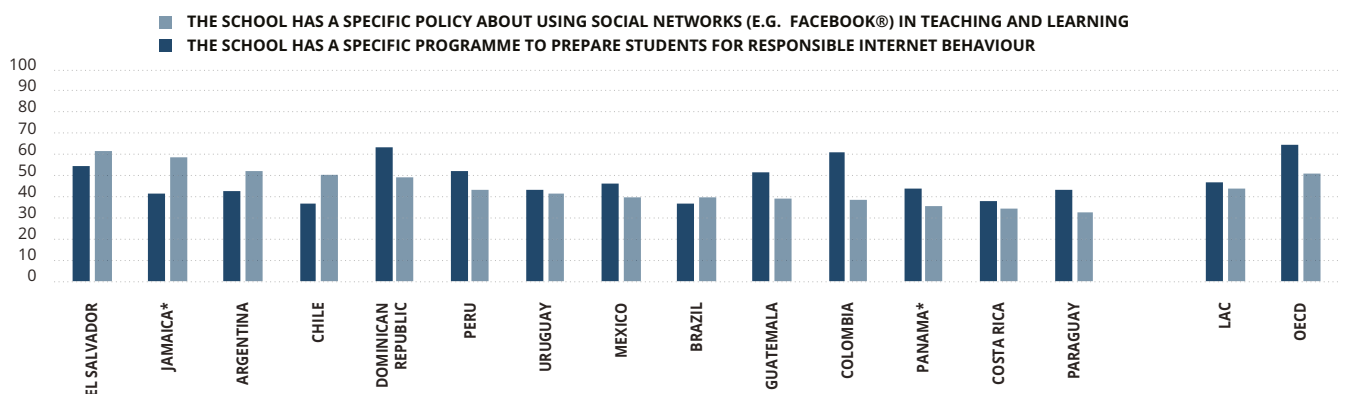
Panel C: *Policies and practices on digital citizenship*

▢ THE SCHOOL HAS FORMAL GUIDELINES FOR THE USE OF DIGITAL DEVICES FOR TEACHING AND LEARNING IN SPECIFIC SUBJECTS
▪ THE SCHOOL HAS A WRITTEN STATEMENT ABOUT THE GENERAL USE OF DIGITAL DEVICES ON THE SCHOOL PREMISES

Panel D: *Collaboration among teachers*

▢ THE SCHOOL HAS A SCHEDULED TIME FOR TEACHERS TO MEET TO SHARE, EVALUATE OR DEVELOP INSTRUCTIONAL MATERIALS AND APPROACHES THAT EMPLOY DIGITAL DEVICES
▪ THE SCHOOL HAS A SPECIFIC PROGRAMME TO PROMOTE COLLABORATION ON THE USE OF DIGITAL DEVICES AMONG TEACHERS
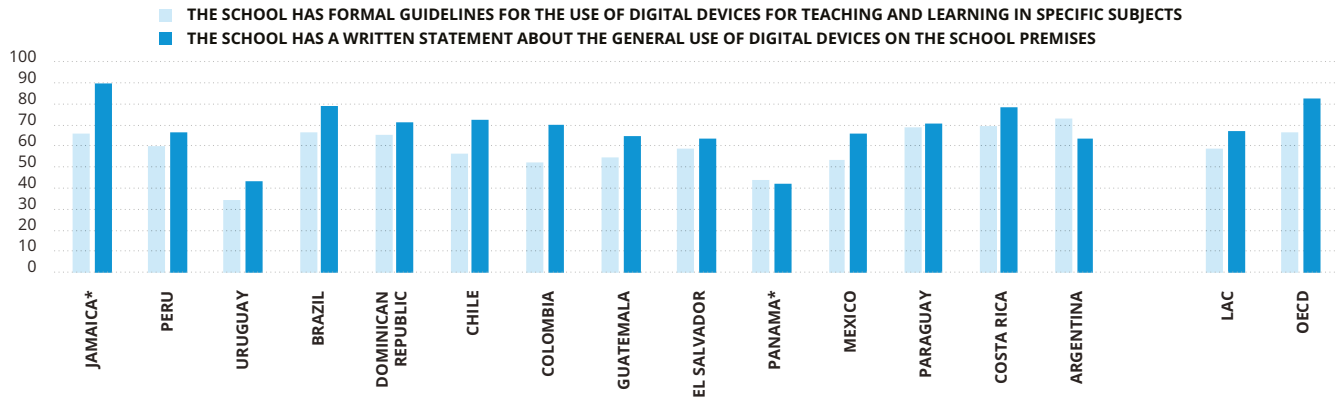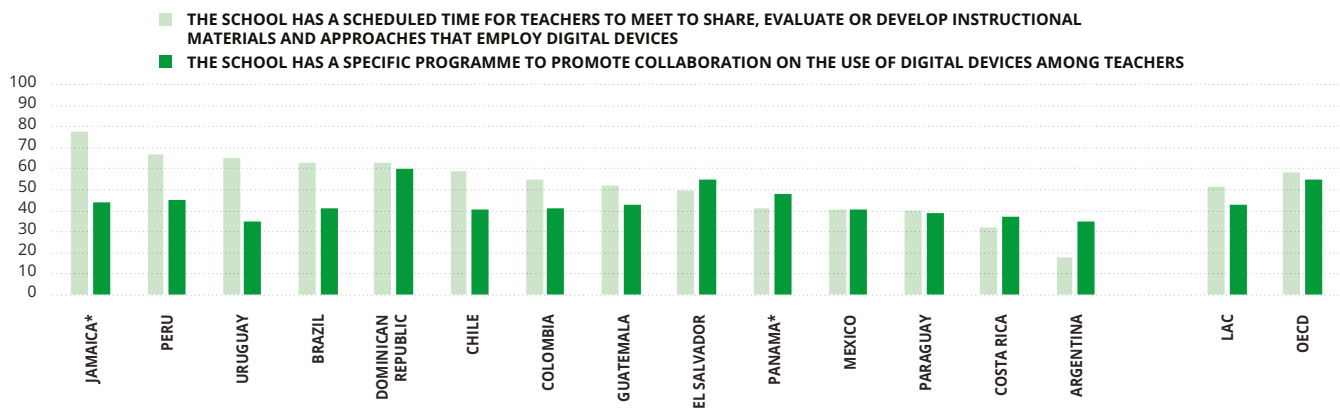
Source: OECD PISA Results 2022. Volume II. Table II. B1.5.35

60 % of students in El Salvador and Jamaica* attended schools with such policies, while in Costa Rica and Paraguay, only 30 % of students attended such schools. Similarly, students in the LAC region were unlikely to be exposed to specific programs addressing internet behavior, as only 47 % of students attended schools where such programs were available. It's important to note that although the average percentage of students attending schools with digital citizenship policies in the region is low, the percentage also remains low across OECD countries, indicating that these are relatively new policies that have not yet been widely implemented.

Schools in LAC have low adoption rates of policies and practices aimed at fostering exchanges and collaboration among teachers to enhance the use of digital resources. Only 52 % of students in LAC attended schools that provide scheduled time for teachers to exchange experiences regarding the use of digital resources, slightly below the OECD average (58 %). Jamaica*, Peru, and Uruguay exhibit the highest percentages of students in schools that allocate time for teachers to meet and share, evaluate, or develop instructional materials and approaches using digital devices. In contrast, only 18 % of students in Argentina attended schools that implement such practices. Specific programs intended to promote collaboration among teachers in the use of digital devices were even less prevalent in the region, as only 43 % of students attended schools that offered this type of program. The Dominican Republic and El Salvador exhibited the highest percentages of students in schools that offer specific programs aimed at fostering collaboration among teachers.

Among students in LAC, 34% reported that they become distracted in every or most math lessons by using digital devices in class. In Argentina, Chile, and Uruguay, over 50 % of students reported becoming

distracted in every or most math lessons due to the use of digital devices. Regulations and policies can play a significant role in minimizing the potential adverse effects of using digital devices, such as distraction: how students use digital resources, and the types of digital devices they rely on, shape the extent to which students might become distracted when using digital technologies. When analyzing the association between school policies and distraction while using digital devices, only cell phone bans seem to be effective in reducing distraction, both in LAC countries and across OECD countries. In five LAC countries, schools that adopted cell phone ban policies also reported less student distraction. For the eight other policies analyzed, none seemed to have an effect on distraction in class related to the use of digital devices.

Preparedness for digital learning

Principals in LAC were more likely than their counterparts in OECD countries to report low levels of preparedness for digital learning. PISA inquired about a schools' preparedness for digital learning by asking the principals about the availability of professional and learning resources for teachers to learn how to use digital devices or about teachers' and the school's capacity to integrate digital devices into instruction (e.g. pedagogical and technical skills and technical assistance staff), the time available and the incentives available for teachers to integrate digital technologies into teaching practices. All these elements can also provide insights about how prepared schools can be for remote learning.
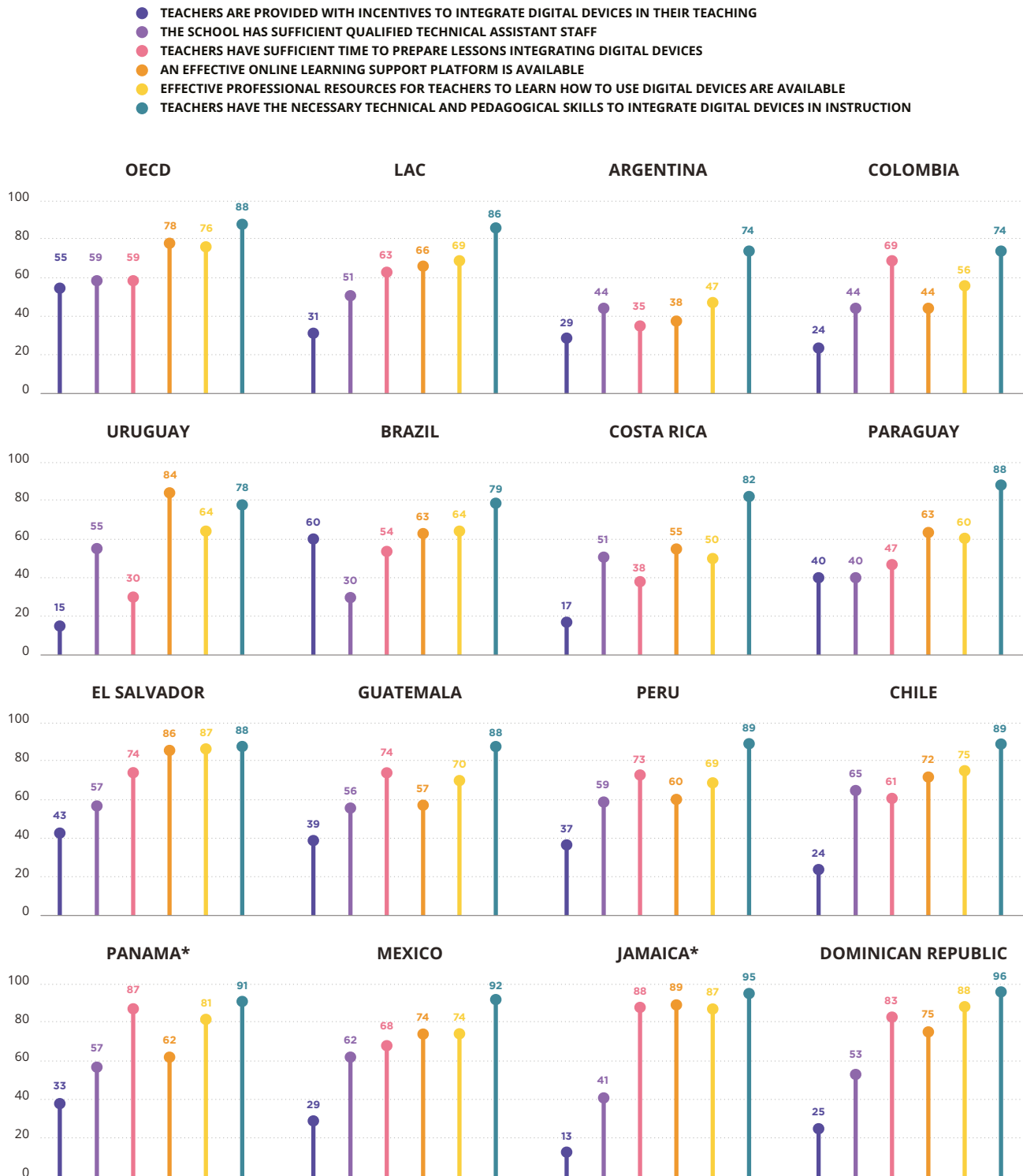
Only 3 out of 10 students in the LAC region attended a school whose principal reported that teachers have incentives to integrate digital devices – not even half the average across OECD countries. Less than 2 out of 10 students in Jamaica* (13 %), Uruguay (15 %), and Costa Rica (17 %) attended a school where teachers were provided with incentives to integrate digital devices in their teaching However, principals in the region reported that teachers have the necessary technical and pedagogical skills to integrate digital devices into instruction: on average, 86 % of students attended a school whose principal so reported, similar to the percentage observed across OECD countries (88 %).

Some 66 % of students in LAC attended a school where effective online learning support platforms are available. While these digital resources were less common in LAC countries than in OECD countries, on average, in a few LAC countries, a large majority of students had access to these tools: 84 % of students in Uruguay, 86 % of students in El Salvador and 89 % of students in Jamaica*. According to principals, teachers in LAC countries have sufficient time to integrate technology into their lessons: 63 % of students in LAC, but only 59 % of students in OECD countries, attended a school where teachers have sufficient time to prepare lessons integrating digital devices. However, these results varied widely across the region: Argentina, Costa Rica, and Uruguay showed the smallest shares of students (less than 40 %), while the Dominican Republic, Jamaica*, and Panama* show the largest shares of students (more than 80 %) who attended such a school.

LAC schools' preparedness for digital learning improved between 2018 and 2022. The most significant change observed during the period was related to the availability of an effective online learning-support platform. On average, LAC countries saw a 30 percentage-point increase in the proportion of students who attended a school with this tool. A similar positive trend was also observed across OECD countries. There was also a noticeable increase in the proportion of students who attended a school where teachers have the necessary technical and pedagogical skills to integrate digital devices into their instruction (a 23 percentage-point increase over 2018 shares), also similar to the trend observed across OECD countries. In addition, more professional resources for teachers to learn how to use digital devices were made available in 2022 than in 2018 (a 13 percentage-point increase during the period). However, no changes were observed in the time made available to teachers to prepare lessons, and a small decrease was shown in the incentives provided to teachers to integrate digital devices during the period. Both of these latter two results could signal limitations on the use of technology in the classroom in the medium term.

Figure 3.5. Percentage of students in schools whose principal agreed or strongly agreed with the following statements about preparedness for digital learning, PISA 2022

Most principals in LAC reported that teachers have the necessary skills to integrate devices into instruction, but they lack incentives to do so.

- TEACHERS ARE PROVIDED WITH INCENTIVES TO INTEGRATE DIGITAL DEVICES IN THEIR TEACHING
- THE SCHOOL HAS SUFFICIENT QUALIFIED TECHNICAL ASSISTANT STAFF
- TEACHERS HAVE SUFFICIENT TIME TO PREPARE LESSONS INTEGRATING DIGITAL DEVICES
- AN EFFECTIVE ONLINE LEARNING SUPPORT PLATFORM IS AVAILABLE
- EFFECTIVE PROFESSIONAL RESOURCES FOR TEACHERS TO LEARN HOW TO USE DIGITAL DEVICES ARE AVAILABLE
- TEACHERS HAVE THE NECESSARY TECHNICAL AND PEDAGOGICAL SKILLS TO INTEGRATE DIGITAL DEVICES IN INSTRUCTION

Source: OECD PISA Results 2022. Volume II. Table II. B1.5.29

Not all LAC schools were – and are – equally prepared for digital learning. Throughout the region, except in Chile, Paraguay, Uruguay, richer schools were more prepared for digital learning than poorer schools. These differences were even more pronounced when comparing public and private schools: private schools were better prepared than public schools in all countries except El Salvador, and the differences between public and private schools were larger than those between poorer and richer schools. Differences in preparedness for digital learning between public and private, and poorer and richer, schools were also evident across OECD countries, on average. No correlations were observed between preparedness for digital learning and changes in student performance, on average across both LAC and OECD countries.

The availability of computers does not, in itself, indicate a school's preparedness for digital learning; having guidelines for the use of digital devices is also important. The number of computers available per student at school was positively related to schools' preparedness for digital learning in Brazil, Chile, and Paraguay,[18] as well as on average across OECD countries and in 19 other countries/economies, after accounting for students' and schools' socio-economic profile. Moreover, in 6 of the 11 LAC countries analyzed – Argentina, Brazil, Colombia, Guatemala, Peru, and Uruguay – having formal guidelines for using digital devices for teaching and learning in specific subjects was positively related to the level of preparedness for digital learning, after accounting for the number of computers per student. These results were similar to those observed across OECD countries and in 32 other PISA-participating countries/economies.

Time spent on digital devices and types of use

In 2022, LAC students reported spending 6.1 hours per day on digital devices, on average, for both learning and leisure. This includes time spent before, during, and after school. On average, students in the region spent one hour less per day on digital devices than did students across OECD countries, who spent around 7.2 hours per day, on average. Students in Argentina, Brazil, and Uruguay reported spending the most time on digital devices – largely on leisure activities outside of school.
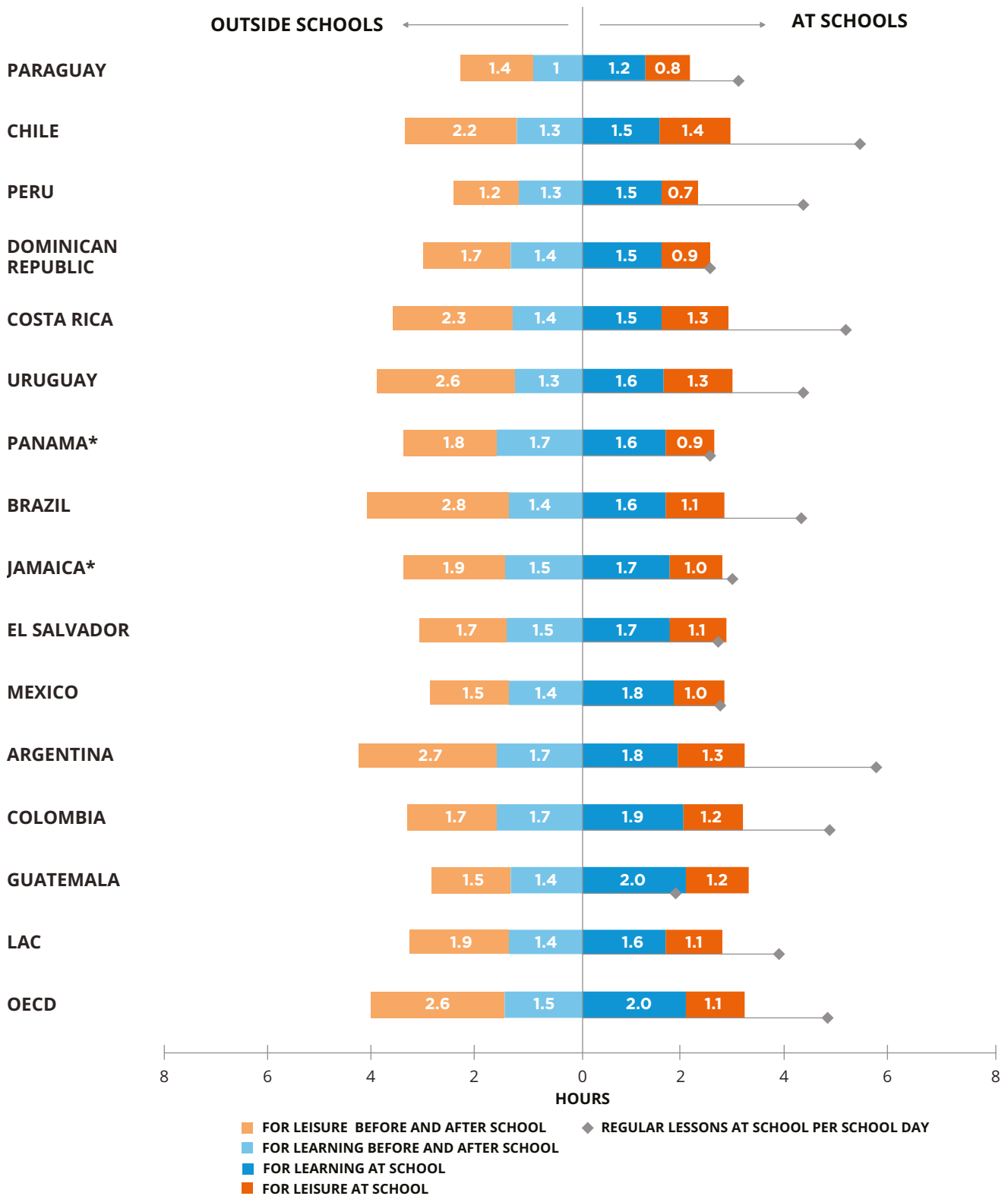
Students in LAC reported spending 2.7 hours per day on digital devices at school. On average across LAC countries, students reported spending 1.6 hours per day on digital devices for learning activities and 1.1 hours per day on digital devices for leisure activities at school. Across OECD countries, students spent the same amount of time on digital devices for leisure, but more time per day (two hours) on digital devices for learning. Students in Chile, Costa Rica, the Dominican Republic, Panama*, Paraguay, and Peru reported spending the least amount of time using digital devices for learning at school (1.5 hours or less per day), while students in Colombia and Guatemala reported spending almost two hours per day using digital devices for learning while at school.

Students in all countries in the LAC region spent more time on digital devices for learning than for leisure in school. In Mexico and Peru, students spent twice as many hours using their digital devices for learning as they did for leisure. In Chile, students reported using digital devices at school for roughly the same amount of time per day for learning (1.5 hours) as for leisure (1.4 hours). It is important to keep in mind that students may use digital devices at school but outside of regular lessons. Thus, the total number of hours students reported using digital devices at school can be equal to or greater than the total number of hours student are in class. In Dominican Republic, El Salvador, Jamaica*, Mexico, and Panama*, students spent approximately the same number of hours in regular lessons as they did using digital devices (for both learning and leisure activities) at school, while in Guatemala the hours of digital device use for learning in school exceed the number of hours in regular lessons.

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[18] Data were not available for Costa Rica, Jamaica, and Panama.

Figure 3.6. Hours per day spent on digital devices, in and out of school, PISA 2022

Students in LAC reported spending more time on digital devices for learning than for leisure activities at school, as did students across OECD countries.

	OUTSIDE SCHOOLS		AT SCHOOLS	
PARAGUAY	1.4	1	1.2	0.8
CHILE	2.2	1.3	1.5	1.4
PERU	1.2	1.3	1.5	0.7
DOMINICAN REPUBLIC	1.7	1.4	1.5	0.9
COSTA RICA	2.3	1.4	1.5	1.3
URUGUAY	2.6	1.3	1.6	1.3
PANAMA*	1.8	1.7	1.6	0.9
BRAZIL	2.8	1.4	1.6	1.1
JAMAICA*	1.9	1.5	1.7	1.0
EL SALVADOR	1.7	1.5	1.7	1.1
MEXICO	1.5	1.4	1.8	1.0
ARGENTINA	2.7	1.7	1.8	1.3
COLOMBIA	1.7	1.7	1.9	1.2
GUATEMALA	1.5	1.4	2.0	1.2
LAC	1.9	1.4	1.6	1.1
OECD	2.6	1.5	2.0	1.1

HOURS

- FOR LEISURE BEFORE AND AFTER SCHOOL
- REGULAR LESSONS AT SCHOOL PER SCHOOL DAY
- FOR LEARNING BEFORE AND AFTER SCHOOL
- FOR LEARNING AT SCHOOL
- FOR LEISURE AT SCHOOL

Source: *OECD PISA Results 2022. Volume II. Table II. B1.5.62*

Students in LAC spent 3.4 hours per day on digital devices for learning or leisure activities, on average, before and/or after school. Students across OECD countries reported spending an average of 4.1 hours on digital devices for learning or leisure activities before and/or after school. Students in Argentina, Brazil, Costa Rica, and Uruguay reported spending more than 3.5 hours per day, before and/or after school, on digital devices while students in Paraguay and Peru reported spending around 2.5 hours per day. In all countries in the region, students spent most of their time on digital devices outside of school for leisure activities. Out of an average of 3.4 hours using a digital device outside of school, 2 hours were dedicated to leisure activities, and 1.4 hours were devoted to learning activities. Students in Argentina, Colombia, and Panama* reported spending the most time (2.7 hours on average) outside of school on digital devices for learning activities.

In LAC, richer students spent a little more time per day on digital devices for learning at school than did poorer students. The difference in the amount of time spent using digital devices for learning at school between richer and poorer students in the region (0.5 hour) was slightly larger than that observed across OECD countries (0.2 hour). The largest differences, in favor of richer students, were observed in Guatemala (more than one hour per day), and Argentina and Colombia (0.8 hour). In Panama* this difference amounted to 0.7 hour, while in El Salvador, Mexico, and Peru it was 0.6 hour. In Chile, Paraguay, and Uruguay, there were no significant differences in the use of digital devices for learning at school related to students' socio-economic status.

Girls and boys used digital devices for learning in school to a similar extent. Girls and boys in both LAC and across OECD countries reported spending the same number of hours per day on digital devices at school, on average. The exceptions were students in Chile and Paraguay, where girls spent more time than boys, and students in the Dominican Republic, where boys spent more time than girls on digital devices for learning at school.

Countries in LAC should focus on addressing disparities among schools and ensuring the effective use of technology to enhance learning outcomes. Principals in LAC report improvements in student access to devices and teachers' competencies since PISA 2018. However, there remains significant room for enhancement in addressing disparities among schools and ensuring the effective use of technology to enhance learning outcomes. Education systems in the region must focus on providing essential resources, such as digital infrastructure, materials, teachers with the appropriate digital and pedagogical skills, and proper governance, particularly for students in poorer, public, and rural schools. Failing to do so may put these students at a disadvantage during the implementation of technology-based recovery programs or in future crises requiring remote learning. In addition, there is no consistent link observed between average student performance in math and the availability of devices in schools, the existence of school level policies or even the hours of use. Thus, how all these inputs are used in the classroom is key. LAC countries should establish clear guidelines for the classroom's technology use, along with offering teachers the necessary incentives, support, and training to integrate these tools effectively, leading to improved learning outcomes. Current literature underscores the effectiveness of programs that view technology as a complement rather than a substitute for instruction, provide specific guidelines on its usage, duration, and applicable subjects or competencies, and foster collaboration and coaching among teachers.[19]

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[19] Rodriguez-Segura, 2022; Cristia and Arias Ortiz, 2014.

4.

Conclusions and policy agenda

The most recent round of PISA, with record high participation of LAC countries, showed the depth of the learning crisis for adolescents in the region. With three-quarters of 15-year-olds in LAC unable to demonstrate baseline level math skills, and more than half unable to show basic proficiency in reading, this cohort will find it difficult to succeed in the labor market, which increasingly requires more advanced skills of its workers. In addition, a fairly large percentage of 15-year-olds in LAC are either not enrolled in school at all or are still completing primary education. The significant socio-economic and gender disparities in performance, while smaller than those observed across OECD countries, suggest priority target groups for immediate support, including poorer students who are much less likely to attain basic proficiency levels, girls who increasingly struggle with math, and boys who continue to fall behind in reading.

Recent performance trends in LAC are not moving in the right direction to converge with performance of OECD countries. PISA 2022 results showed a slowing of positive trends or an exacerbation of negative trends compared to previous rounds, particularly in math performance. While changes observed between 2018 and 2022 were not perfectly aligned with the COVID-19 pandemic and the associated school closures, they complement the evidence about learning losses in primary education observed in countries that conducted national large-scale assessments.[20] While the changes in PISA performance in LAC were not as severe as those in OECD countries, LAC countries started from a much lower baseline level of performance, implying that even small setbacks for LAC countries can result in further divergence from OECD averages.

The good news was that most LAC countries increased the number of students eligible to take the PISA test; the bad news was the share of low performers among poorer students remained large or even increased since 2018. The expansion of PISA coverage, which means that more 15-year-olds were enrolled in school at an appropriate grade, is a positive step forward for the region, as it suggests more equitable access to education. Since these newly included students are more likely to come from poorer backgrounds and be low performers in PISA, the expansion of coverage could have contributed to the stable or negative trends in learning outcomes in the region. At the same time, the persistent challenge for the region is to improve performance among poorer students and ensure that they acquire at least basic proficiency in foundational skills so that they can participate productively in society.

The COVID-19 pandemic caused massive disruptions to education but also taught valuable lessons about how to prepare for future crises. As revealed through principals' responses to the COVID-19 questionnaire, schools in the LAC region were closed for much longer than those in OECD countries during the pandemic. At the same time, the capacity to provide quality remote instruction at the beginning of the pandemic was limited, and many students struggled daily to understand their assignments and find someone to help them learn. In response to the pandemic, principals in the region took a variety of actions to ensure that teaching and learning continued during the crisis; but many do not feel that their school is adequately prepared to switch to remote instruction should it be required in the future.

Greater access to digital devices, and using technology as an educational tool, can accelerate improvements in learning outcomes and help prepare students and schools for learning during disruption. Although preparedness for digital learning improved since 2018, likely due to actions adopted during the COVID-19 pandemic, education systems in LAC need to ensure that teachers are incentivized and equipped with the necessary tools to integrate digital devices into their teaching. School administrators should consider implementing robust policies and guidelines to steer the use of digital devices, ensuring that they enhance the learning experience and not become distractions.

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[20] These include Argentina (APRENDER, 2018, 2021, 2022); Brazil (SAEB, 2019, 2021); Chile (SIMCE, 2018, 2022); Ecuador (Ser Estudiante, 2021, 2022); Peru (EM, 2019, 2022); Uruguay (Aristas, 2017, 2018, 2020, 2022); and Mexico, Guanajuato (RIMA 2020, 2021).

The findings from PISA 2022 suggest several policy priorities for ensuring better and more equitable education outcomes for adolescents in the LAC region.

1. **Immediate action is required to ensure that all students acquire at least basic proficiency in foundational skills.** As the UN Sustainable Development Goal 4.1 is to "ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes," governments of LAC countries should focus on reducing the prevalence of low performance in math, reading, and science. Given the large shares of low performers in math, and the recent negative trends in performance, particularly among girls, interventions at the secondary level need to prioritize recovery of learning losses and accelerated acquisition of foundational math skills. Evidence suggests that teaching at the right level and tutoring interventions, possibly using EdTech tools, can help.[21] Learning outcomes in other subjects need to be strengthened as well. While PISA 2022 results for reading and science in LAC countries were somewhat better than those for math, half of the students in LAC countries continued to lag behind in these subjects as well. They may need tailored support to catch up so that they can acquire the skills needed to participate fully in society.

2. **Certain groups of students need targeted support to improve performance.** In most LAC countries, poorer students are more likely to be low performers, and that share has remained unchanged or, in some cases, grown over the past decade. Providing poorer students with more flexible learning opportunities, access to the internet and to digital devices to accelerate their learning, and psychosocial support can help.[21] Similarly, results showing the relative underperformance of girls in math and of boys in reading highlight a need for tailored support to close these gender gaps in performance. Actions to address these disparities could include removing gender stereotypes from curricular materials, providing ample educational materials that engage boys and girls, and offering gender-informed teacher training and role-model interventions to avoid reproducing rigid social norms and reinforcing stereotype threat.[22]

3. **Investment in learning recovery in reading and math for primary school pupils is essential.** Primary school pupils were among the most severely affected by the disruption of education related to the COVID-19 pandemic. These children were acquiring core pre-literacy and literacy skills when schools were closed and they were less able than older students to learn independently or to use digital tools, compared to the students assessed in PISA 2022, who were already 13 years old at the peak of the pandemic. Thus, interventions to recover learning losses and accelerate the learning trajectory of primary school pupils will be crucial if the region is to see better performance and equity results in the next round of PISA.[23]

4. **Reductions in dropout rates and grade repetition should be encouraged.** LAC countries have achieved commendable progress in expanding PISA coverage of 15-year-olds by reducing early dropout and supporting grade progression; however, coverage in many countries remains significantly below OECD levels. The goal should be to ensure that all 15-year-olds are represented by PISA, which means that they attend school at the appropriate grade level. Policies in LAC should target boys, who are more likely to leave school early or not be promoted to the next grade. Use of early warning systems, which showed positive results in

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[21] For examples of interventions, see Evans & Popova 2016, Araya et al. 2019, Zoido et al. 2023. [22] Relevant interventions to improve boys' learning outcomes are reviewed in Welmond & Gregory, 2022; effective practices to reduce stereotype threat can be found in Walton et al. 2012. [23] World Bank et al. 2022 presents the RAPID framework for addressing learning losses and accelerating learning recovery, particularly in primary education.

some contexts in the region could help identify at-risk students and support them with tailored interventions.[24]

5. **Gaps in access to digital devices and resources, and in teachers' preparedness to integrate technology effectively into their teaching need to be closed.** Doing so will mean that all students in the region can benefit from these tools for learning inside and outside of school. Principals in poorer and in public schools in the region were at least twice as likely to report a lack of access to digital resources and devices than principals in private, richer schools.

6. **Sufficient resources need to be allocated and spent wisely.** On average, OECD countries invest about three times as much per student as LAC countries over their learning trajectory: $102,612 versus $36,972. But it's not just the amount of the investment that counts; it's how the money is spent. In all LAC countries with available data, math performance is lower than what the given level of investment predicts. Efficiency gains can be found in getting more value from spending on teachers and reforms that strengthen management capacity.[25]

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[24] Experience from Guatemala and Honduras, described in Adelman et al. 2018 and Haimovich et al. 2021, can be instructive in this regard. [25] These strategies to improve adequacy and efficiency of education spending are elaborated further in World Bank 2023.

References

Adelman, M., Haimovich, F., Ham, A., and Vazquez, E. (2018), "Predicting school dropout with administrative data: New evidence from Guatemala and Honduras", *Education Economics*, 26(4), 356-372.

Araya, R., Arias Ortiz, E., Bottan, N. L., and Cristia, J. (2019), "Does gamification in education work? Experimental evidence from Chile", IDB Working Paper Series, no. IDB-WP-982, Washington, D.C.

Angel-Urdinola, D. Avitabile, C. and Chinen, M. H., (2023), "Can digital personalized learning for mathematics remediation level the playing field in higher education? Experimental evidence from Ecuador," Policy Research Working Paper Series, no. 10483, The World Bank, Washington D.C.

Cristia, J. P. and Ortiz, E. A. (2014). The IDB and technology in education: How to promote effective programs?.

Evans, D. K., and Popova, A. (2016), "What really works to improve learning in developing countries? An analysis of divergent findings in systematic reviews." *The World Bank Research Observer, 31*(2), 242-270.

Haimovich, F., Vazquez, E., and Adelman, M., (2021), "Scalable early warning systems for school dropout prevention: Evidence from a 4,000-school randomized controlled trial," Policy Research Working Paper Series, no. 9685, The World Bank, Washington, D.C.

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.

OECD (2023), PISA 2022 Technical Report.
https://www.oecd.org/pisa/data/pisa2022technicalreport/

Rodriguez-Segura, D. (2022). EdTech in developing countries: A review of the evidence. The World Bank Research Observer, 37(2), 171-203.

Walton, G., Cohen, G. and Steele, C.M., (2012), "Empirically validated strategies to reduce stereotype threat", https://ed.stanford.edu/sites/default/files/interventionshandout.pdf

Welmond, M.J., and Gregory, L. (2022), "Educational underachievement among boys and men" (English), World Bank Group, Washington, D.C., http://documents.worldbank.org/curated/en/111041644611110155/Educational-Underachievement-Among-Boys-and-Men

World Bank, the, Bill and Melinda Gates Foundation, Foreign, Commonwealth & Development Office (FCDO), UNESCO, UNICEF, and USAID, (2022), *Guide for Learning Recovery and Acceleration: Using the RAPID Framework to Address COVID-19 Learning Losses and Build Forward Better*, The World Bank, Washington, D.C.

World Bank. (2023). The Adequacy of Public Expenditure on Education and the Needs Post-COVID-19: April 2023. https://openknowledge.worldbank.org/handle/10986/40619

Zoido, P., Albornoz, F., Prieto, A., Almeyda, G., Cardozo, J. C. H., Oubiña, V., and Calderón, M., (2023), "Multiplying learning: Remote tutoring to enhance schooling", http://dx.doi.org/10.18235/0005309.

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