3. Learning and its outcomes

Ensuring that everyone takes part in education is only the beginning. Students also need access to *quality* education, where they are able to learn and develop knowledge and skills of value for the labour market and in their wider lives. However, for many Brazilian students that is not the case. Many leave school without the most basic skills. Drawing on PISA and national assessment results, this chapter looks at the outcomes of Brazil's education system and how they compare to benchmark countries. The analysis focuses on students' learning outcomes and what they mean for individuals' careers and life chances.

Introduction: ensuring education leads to learning

This chapter looks at the outcomes of Brazil's education system to assess the extent to which young Brazilians develop the skills and knowledge to progress successfully into higher levels of education and succeed in life and work. This analysis draws on evidence from the OECD Programme for International Student Assessment (PISA) on the knowledge and skills of 15-year-olds in Brazil, and explores how they compare with peers across the world and changes over time. This evidence is augmented by national sources, which provide fine-grained evidence on student and school performance across the country. The chapter also looks at the implications of learning outcomes and educational attainment for students' later employment and earnings.

Taking part in education does not always lead to real learning

Ensuring that everyone takes part in education — the topic of the previous chapter — is only half the battle. Students also need to profit from the experience, acquiring knowledge and skills of value both in the labour market and in other aspects of their lives. However, according to a recent World Bank report, too frequently participation fails to translate into learning. This report reveals that many emerging countries – including Brazil – are facing a challenge whereby, despite increased participation in schooling, many young people do not acquire basic numeracy and literacy skills. Moreover, as part of this pattern, learning outcomes tend to be highly unequal, with the most disadvantaged students being most likely to leave school without gaining basic skills. Schooling in the context of large variations in access and quality magnifies rather than reduces initial learning inequalities and therefore also amplifies socio-economic divides (World Bank, 2018[1]). This hampers both the lives of individuals and the efforts of governments to reduce poverty and spur growth (Hanushek and Woessmann, 2015[2]).

While Brazil has made good progress in universalising access to education in recent decades (documented in Chapter 2), a weakening economy combined with the COVID-19 crisis means that the necessary next step, that of ensuring access to *quality* education *for all students*, is particularly challenging. A successful outcome will depend on many factors, including the flow of financial and material resources to schools and families which will be discussed in Chapter 4, high-quality schools and teachers examined in Chapter 5 and the effective involvement of parents as described in Chapter 6.

Sources of data

PISA is the largest internationally comparable data source on education performance

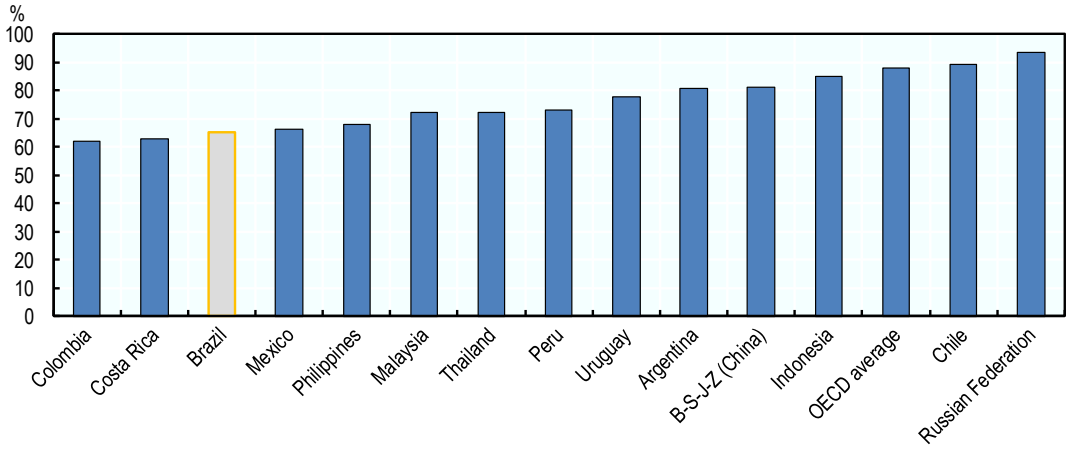
While the Brazilian government has announced it will be taking part in the next cycles of the Progress in International Reading Literacy Study (PIRLS) and the Trends in International Mathematics and Science Study (TIMSS)[1], these assessments will not be carried out until 2022 and 2023. Other regional assessments Brazil takes part in have not taken place since 2013. It follows that international comparisons of learning outcomes are, for the present, heavily dependent on PISA results. This is a triennial survey of 15-year-old students, focusing on proficiency in reading, mathematics and science. Brazil has taken part in all PISA cycles, beginning in 2000. PISA has been influential in Brazil (INEP, 2019[3]), and has, for example, been used to benchmark national targets in the National Education Plan (*Plano Nacional de Educação*, PNE) (see below and Chapter 1).

In PISA 2018, 10 691 students in 638 schools completed the assessment in Brazil. The student sample represents only two-thirds (65%) of Brazil's 15-year-olds[2] (OECD, 2019[4]). The other one-third are not represented, mainly because they were not in school at the time when PISA 2018 was carried out. The coverage rate is much lower than in OECD countries, where only 12% of the 15-year-old cohort are not

covered (see Figure 3.1). However, it has improved in recent PISA cycles – it was only around 55% in 2003 (OECD, 2019[4]) – as a result of growing rates of educational participation in Brazil (see Chapter 2). The coverage rate has important implications for the analysis of PISA results. First, international comparisons can often conceal varying levels of coverage across PISA-participating economies. More importantly, increases in coverage make it more difficult to interpret how mean scores in PISA have changed over time. Expanding participation in schooling often implies that a larger proportion of disadvantaged low-performing students come to be included in PISA samples (Avvisati, 2017[5]). This will be discussed in detail below.

Figure 3.1. PISA 2018 coverage rate

Percentage coverage of the total population of 15-year-olds in the PISA 2018 sample (PISA Coverage Index 3)



Notes: Full details of how these statistics are calculated are given in (OECD, 2019[6]), Chapter 3.
B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang.
Source: (OECD, 2019[6]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.

StatLink https://stat.link/hrb12c

SAEB is the main national assessment instrument and source of performance data

Brazil was one of the first emerging economies to introduce standardised student assessments. Since the early 1990s, Brazil's Basic Education System (*Sistema de Avaliação da Educação Básica*, SAEB) has been used to assess and monitor the quality of Brazil's basic education (Bruns, Evans and Luque, 2012[7]), and to inform policymaking (Table 3.1). It is widely accepted as a reference point for researchers and policymakers across the country. However, some critics have pointed out that most assessment items fail to capture higher-order skills (Mol, 2019[8]). The SAEB has undergone regular adaptations over the years and, more recently, given the need to align the new assessments to the National Common Curricular Base (*Base Nacional Comum Curricular*, BNCC). Extensive reforms of the SAEB are being discussed seeking to adapt the instrument to better support teaching and learning[3]. This includes, for example, gradually increasing the coverage and scope of the assessments, and piloting a digital application.

Table 3.1. The current design of the SAEB and potential direction of change

	Current SAEB (2019)*	Potential reforms under discussion
Frequency	Biannual	-
Grades	Grades 2 and 5 of primary education, Grade 9 of lower secondary education, and last Year of upper secondary education	Covering all years
Coverage	Public schools: all students (census) with the exception of Grade 2 (primary education) which in 2019 was assessed based on a sample. Private schools: a sample of students was assessed in all the Years /Grades mentioned above.	Covering private schools
Subjects	Portuguese and Mathematics In 2019, a sample of students from Year 9 from public and private schools was also assessed in Human and Natural Sciences	Covering Human and Natural Sciences
Application	On paper	Computer-based assessment
Document(s) guiding items formulation	BNCC for: Grade 2 students and Grade 9 students assessed on Human and Natural Sciences SAEB Reference Matrices: used for the Portuguese and Mathematics items for students in Grade 5 of primary education, Grade 9 of lower secondary education and last Year of upper secondary education	BNCC
Admission into tertiary education	Scores in the National Upper Secondary Exam (*Exame Nacional do Ensino Médio*, ENEM) are used for tertiary education admission. SAEB is not used.	Allowing students' scores in the SAEB in the three years of upper secondary education to be used for tertiary education admission. ENEM scores would still be used.
Alignment and comparability	Structure, methods, items, scores and scale cannot be compared with international students assessments.	Strengthening alignment with international students assessments.
Use of the assessment	Policy analyses Accountability (National Education Quality index [*Índice de Desenvolvimento da Educação Básica*, IDEB])	Policy analyses Accountability (National Education Quality index [*Índice de Desenvolvimento da Educação Básica*, IDEB]) Pedagogical feedback

* Since 2013, the National Assessment of Literacy (Avaliação Nacional da Alfabetização, ANA) assessment is brought under the SAEB umbrella. In 2019, all three assessments – ANA, National Assessment of Basic Education (Avaliação Nacional da Educação Básica, ANEB) and National Assessment of School Performance (Avaliação Nacional do Rendimento Escolar, ANRESC) – cease to exist and are identified simply as SAEB and its equivalent education level.

Source: (INEP, 2020[9]), *Inep se prepara para implantação do Novo Saeb em 2021,* http://inep.gov.br/artigo2/-/asset_publisher/GngVoM7TApe5/content/inep-se-prepara-para-implantacao-do-novo-saeb-em-2021/21206?inheritRedirect=false, (accessed on 20 May 2020).

In higher education, Brazil uses the National Examination of Student Performance (*Exame Nacional de Desempenho dos Estudantes*, ENADE) to assess students' acquisition of knowledge and skills as well as graduates' assumed learning gains in relation to their entry level. Education experts, as well as the OECD *Review of Quality Assurance in Higher Education in Brazil*, have highlighted some of its design and implementation weaknesses (see Box 3.1).

Box 3.1. ENADE, a national test in higher education

Brazil has a unique approach to testing in higher education. Each year, students completing undergraduate programmes take a mandatory competency assessment, ENADE. Its objective is to assess students' acquisition of knowledge and skills specified in National Curriculum Guidelines (*Diretrizes Curriculares Nacionais*, DCNs) as well as their understanding of some broader social issues. The results of ENADE feed into a composite indicator of quality for each programme: the Preliminary Course Score (*Conceito Preliminar de Curso*, CPC). This also includes scores for the profile of the teaching staff, student feedback and an indicator of assumed learning gain (*Indicador de Diferença entre os Desempenhos Observado e Esperado*, IDD).

While this approach is innovative, with few international parallels, there are technical difficulties in the design and implementation of ENADE. The general knowledge component of the tests is unrelated to the content of the programmes it is supposed to evaluate. Test items are not standardised, so they are not of equivalent difficulty between years and subjects and there are no explicit quality thresholds for "good" performance. Results for students in each programme are standardised to generate a score on a scale of one to five, but this is a relative measure of average student performance, not an indication of the level of their knowledge and skills. Finally, the IDD, while conceptually interesting, is based on questionable assumptions about the influence of programmes on student performance.

In response, the OECD *Review of Quality Assurance in Higher Education in Brazil* recommends that the objectives, costs and benefits of large-scale student testing be reviewed, with the objective of making ENADE a more useful tool for teachers and institutions. Programme quality might also be assessed using an "indicator dashboard", with a broader range of disaggregated indicators, including measures of student dropout and graduate employment outcomes.

Source: (OECD, 2018[10]), *Rethinking Quality Assurance for Higher Education in Brazil, Reviews of National Policies for Education*, https://doi.org/10.1787/9789264309050-en.

Results from SAEB are used to calculate IDEB, an index of education quality

Since 2007, SAEB results have been used, alongside a measure of school performance based on the flow of students through schools (i.e. based on repetition and approval rates), to calculate the national education quality index (*Índice de Desenvolvimento da Educação Básica, IDEB*). This biannual index provides performance averages on a ten-point scale at the school, municipality, state and national level for each cycle of education: initial years (Years 1-5), final years (Years 6-9) and upper secondary education (Grades 1-3/4). Since 2005, Brazil has used IDEB to set targets for actors across the system, from the school to the national level. Target 7 of the PNE sets the following national targets for the 2021 cycle of IDEB: 6.0 for the initial years; 5.5 for the final years; 5.2 for Grades 3 or 4 of upper secondary education (Ministério da Educação, 2014[11]). These targets were calculated based on the quality of education systems in OECD countries benchmarked through a comparison between PISA and SAEB scores (INEP, 2019[3]). IDEB is widely acknowledged as having increased public awareness of school quality issues, encouraged improvement efforts, supported greater transparency and accountability, and informed the design and implementation of education policies, as well as the allocation of resources at the national and sub-national levels (OECD, 2014[12]). However, its design and use have raised some concerns, first and foremost, because the index is overly simplified. For example, IDEB does not take into account socio-economic differences across schools and school networks nor factors that influence learning outcomes outside the formal education system. Another concern is that despite these limitations, IDEB has increasingly high-stakes consequences for stakeholders, especially with regard to funding allocations. Efforts to develop a

more comprehensive and balanced set of indicators to address such criticisms have stalled. Other concerns that have been voiced in Brazil relate to the use of IDEB to produce rankings, or for political and electoral purposes

Sub-national standardised student assessments aim to inform policies and classroom practices

In recent years, most states and several municipalities have developed their own standardised student assessments. These assessments vary according to their primary purpose, subjects, testing population (i.e. sample or census), grade levels, and other design features (Grupo de Trabalho de Avaliação do CONSED, 2018[13]). In many cases, however, these sub-national instruments replicate SAEB, often with the aim of providing information on students' performace more quickly that can be used by policymakers and school leaders for planning purposes and by teachers in the classroom to monitor and support the learning progress of individual students. The duplication of effort is potentially very wasteful.

Policies to improve outcomes

Efforts at the federal level to raise student outcomes: setting the direction and offering support

Target 7 of the PNE is to "promote the quality of Brazil's basic education at all stages and modalities, with better progression rates and learning outcomes" and it sets targets for learning outcomes in the schooling system in terms of the IDEB, explained above (Ministério da Educação, 2014[11]). The PNE sets – mostly in broad terms – approaches and initiatives for how these targets are to be achieved (see Table 3.2).

Table 3.2. Selection of strategies supporting Target 7 of the PNE (2014-2024) and São Paulo's State-level Education Plan (PEE) (2016-2026)

Target 7 PNE		Target 7 PEE of the state of São Paulo	
Strategy 7.1	"Establish and implement, by means of an inter-federative agreement, pedagogical guidelines for basic education and the national common curricular base with rights and objectives for the learning and development of students for each year of primary, lower secondary and upper secondary, respecting regional, state and local diversity."	Strategy 7.2	"Ensure the articulation between curriculum and assessment, and the use of results in reorienting pedagogical practice."
Strategy 7.2.b	"Ensure that in the last year of this PNE, all primary, lower secondary and upper secondary students have achieved a sufficient level of learning in relation to the rights and objectives of learning and development established to their year of study, and at least 80% reach the desirable level."	Strategy 7.10.b	"In the last year of the PEE, all primary, lower secondary and upper secondary school students have achieved a sufficient level of learning in relation to the rights and objectives of learning and development of their year of study and at least 80% (eighty percent) of the desirable level".
Strategy 7.3	"To establish, in collaboration between the Union, the States, the Federal District and the Municipalities, a national set of institutional assessment indicators on the infrastructure conditions of schools, the pedagogical resources available, the management characteristics and other relevant dimensions, considering the specificities of the different education modalities. All of this based on the profile of students and the body of education professionals."	Strategy 7.11	"To establish, in collaboration between the Union, the States, the Federal District and the Municipalities, a national set of institutional assessment indicators on the infrastructure conditions of schools, the pedagogical resources available, the management characteristics and other relevant dimensions, considering the specificities of the different education modalities".
Strategy 7.4	"Induce a continuous self-assessment process in basic education schools through the establishment of assessment instruments that guide the dimensions to be strengthened, with emphasis on the preparation of	Strategy 7.7	"Induce a continuous self-assessment process in basic education schools through the establishment of assessment instruments that guide the dimensions to be strengthened, with emphasis on the preparation of

	strategic planning, the continuous improvement of educational quality, the continuous development of education professionals and the improvement of democratic management."		strategic planning, the continuous improvement of educational quality, the continuous development of education professionals and the improvement of democratic management."

Note: There are 36 strategies set under Target 7 but only a few of them are presented in the table above.
Source: (Ministério da Educação, 2014[11]); *Plano Nacional de Educação - Lei N° 13.005/2014 [National Education Plan - Law No. 13.005/2014],* http://pne.mec.gov.br/18-planos-subnacionais-de-educacao/543-plano-nacional-de-educacao-lei-n-13-005-2014 (accessed on 24 August 2020).

Although their implementation has been largely decentralised to states and municipalities, several federal programmes aim to support learning, including:

- The National Literacy Policy (*Política Nacional de Alfabetização*, PNA), established in 2019, aims to support early literacy by developing high-quality pedagogical resources, offering specific training on literacy development to teachers as part of their initial teacher education, developing diagnostic and assessment instruments and encouraging family-based reading habits (Presidência da República, Secretaria-Geral, 2019[14]). Two connected family literacy initiatives *Conta pra mim,* and *Tempo de Aprender* have been described in Chapter 2.
- A federal Technical Assistance Network (*Rede de Assistência Técnica*) helps states and municipalities develop, monitor and assess their education plans, in line with the PNE (MEC, n.d.[15]).
- The Support Programme for the New Upper Secondary Education (*Programa de Apoio ao Novo Ensino Médio*, ProNem) offers technical and financial support to states to implement the new upper secondary education model and curriculum standards (MEC, n.d.[16]) discussed in Chapter 2.
- The Support Programme for the Implementation of the New Curricular Standards (*Programa de Apoio à Implementação da Base Nacional Comum Curricular*, ProBNCC) offers technical support to states and municipalities to develop, revise and implement their curricula in line with the new national curricular standards (MEC, n.d.[16]).
- The Interactive PDDE (Direct Money to School Programme) Platform (*Plataforma PDDE Interativo*) is an online tool that supports school planning and management. Schools can develop an action plan for improvement based on an initial diagnosis of its strengths and weaknesses (MEC, n.d.[16]).
- The National Programme of Educational Material and Books (*Programa Nacional do Livro e do Material Didático*, PNLD) involves distribution of pedagogical, literary and other materials to support the work of public school teachers (FNDE, 2017[17]).
- The Full-Time Upper Secondary Education (*Ensino Médio em Tempo Integral*. EMTI) offers financial support to states that provide full-time school days (FNDE, 2017[18]). This programme has been associated with a decline in grade repetition, as discussed in Chapter 2.

States and municipalities not only implement policies to improve learning, but set their own agenda and strategic orientation

As in many other large federal countries, in Brazil, states, municipalities and the Federal District can take the initiative to shape and define education policy and lead improvement efforts. First, following the national framework determined in the PNE, states, municipalities and other sub-national entities establish or adapt their own strategic plans for how they intend to achieve the set targets (see Table 3.2). State- and municipal-level governments often establish their own strategies (e.g. the Strategic Plan 2019-22 for the State of São Paulo, *Plano Estratégico 2019-22*), laying out medium-term objectives and policy plans (Secretária de Educação, 2019[19]).

Box 3.2. State-level initiatives to improve outcomes in Brazil and comparable initiatives in other federal countries

Some noteworthy examples of decentralised initiatives to raise outcomes in Brazil include:

- The state of Ceará and several of its municipalities have significantly improved students' learning outcomes in the last decade, and currently have among the strongest SAEB and IDEB results in the country. Among the factors behind Ceará's success are financial and non-financial incentives for municipalities and schools that achieve improvements; technical support to schools and education networks in need; a robust evaluation and assessment system; and support and training for school staff on a range of different areas. For example, Ceará's Secretary of Education worked with municipalities to strengthen early-grade literacy teaching and provide training for teachers, including in how to conduct periodic formative assessments of reading progress. Other state initiatives include a revamped curriculum, reading materials and lesson plans, multi-grade teaching, support for school development planning and selection of school principals.
- The state of Pernambuco put in place a successful initiative in 2008 – the Full-time Education Programme – which later inspired a federal initiative, as discussed below. Under this programme, the state funds full-time upper secondary schools in the public sector. Moreover, the programme also adjusted the curricula to be more aligned to students' needs and interests, and introduced student and family support mechanisms, such as tutorship. Schools under this model have showed significant improvements in learning outcomes and in student retention and completion. In addition, bonus payments to teachers to encourage them to spend more time on instruction in their classrooms have been shown to lead to stronger learning outcomes.
- The state of Goiás, in the Centre-West of the county, has seen remarkable progress, in particular in upper secondary education. Reviews have suggested that improvement was the result of a series of policies, including a revamped curricula aligned with the assessment system; tutorship programmes to support teacher and education managers; the professional development of education staff; ensuring teachers in state schools hold a licentiate's degree (ISCED 6); progressive salary improvements; optional structured didactic material to be used in classrooms; a more democratic management of schools with the participation of students; the implementation of full-time upper secondary schools.

Source: (Bruns, Evans and Luque, 2012[7]), *Achieving World-Class Education in Brazil: The Next Agenda*, https://doi.org/10.1596/978-0-8213-8854-9; (Aragon and Workman, 2018[20]), *Emerging state turnaround strategies,* https://www.ecs.org/wp-content/uploads/12139.pdf (accessed on 10 September 2020); (Centre for Public Impact, 2020[21]), *A política de Educação em Tempo Integral no Estado Brasileiro de Pernambuco [The policy of Full-time Education in the Brazilian State of Pernambuco]*, https://www.institutonatura.org/wp-content/uploads/2020/08/A-poli%CC%81tica-de-Educac%CC%A7a%CC%83o-em-Tempo-Integral-no-Estado-brasileiro-de-Pernambuco..pdf (accessed on 19 November 2020); (Rosa et al., 2020[22]), *The effects of public high school subsidies on student test scores*, https://www.sonhogrande.org/storage/the-effects-of-public-high-school-subsidies-on-student-test-scores-the-case-of-a-full-day-high-school-program-in-pernambuco-brazil.pdf (accessed on 19 November 2020); (Loureiro et al., 2020[23]), *The State of Ceara in Brazil is a Role Model for Reducing Learning Poverty (English),* http://documents.worldbank.org/curated/en/281071593675958517/The-State-of-Ceara-in-Brazil-is-a-Role-Model-for-Reducing-Learning-Poverty (accessed on 19 November 2020); (Loureiro, Di Gropello and Arias, 2020[24]), *There is no magic: The formula for Brazil's Ceará and Sobral success to reduce learning poverty*, https://blogs.worldbank.org/education/there-no-magic-formula-brazils-ceara-and-sobral-success-reduce-learning-poverty?token=53176c4095d917916aa31ea735b5ceaa (accessed on 19 November 2020); (Secretária de Estado da Educação de Goiás, 2018[25]), *Educação: Investimentos fazem de Goiás o 1º lugar na Educação pública do País [Education: Investments make Goiás the 1st place in public education in the country]*, https://site.educacao.go.gov.br/educacao-investimentos-fazem-de-goias-o-1o-lugar-na-educacao-

publica-do-pais/ (accessed on 19 November 2020); (Candido, 2020[26]), *Qual o segredo de Goiás para liderar o melhor ensino público do país? [What is Goiás' to lead the best public education in the country?],* https://www.uol.com.br/ecoa/ultimas-noticias/2020/09/18/qual-o-segredo-de-goias-para-liderar-melhor-ensino-publico-do-pais.htm (accessed on 19 November 2020); (Instituto Unibanco, 2019[27]), *Como Goiás Superou Meta do Ideb no Ensino Médio [How Goiás Overcame Ideb's Goal in High School]*, https://www.institutounibanco.org.br/aprendizagem-em-foco/45/ (accessed on 19 November 2020).

In recent years, some states and municipalites have recorded impressive progress in terms of learning outcomes, partly as a result of decentralised initiatives, but also more equitable funding allocations (see Chapters 1 and 4). Studies suggest that many of the states making the greatest progress in improving education results are those that work most closely with their municipal school systems (Bruns, Evans and Luque, 2012[7]). Box 3.2 offers some noteworthy examples of state-level initiatives from Brazil and other federal countries.

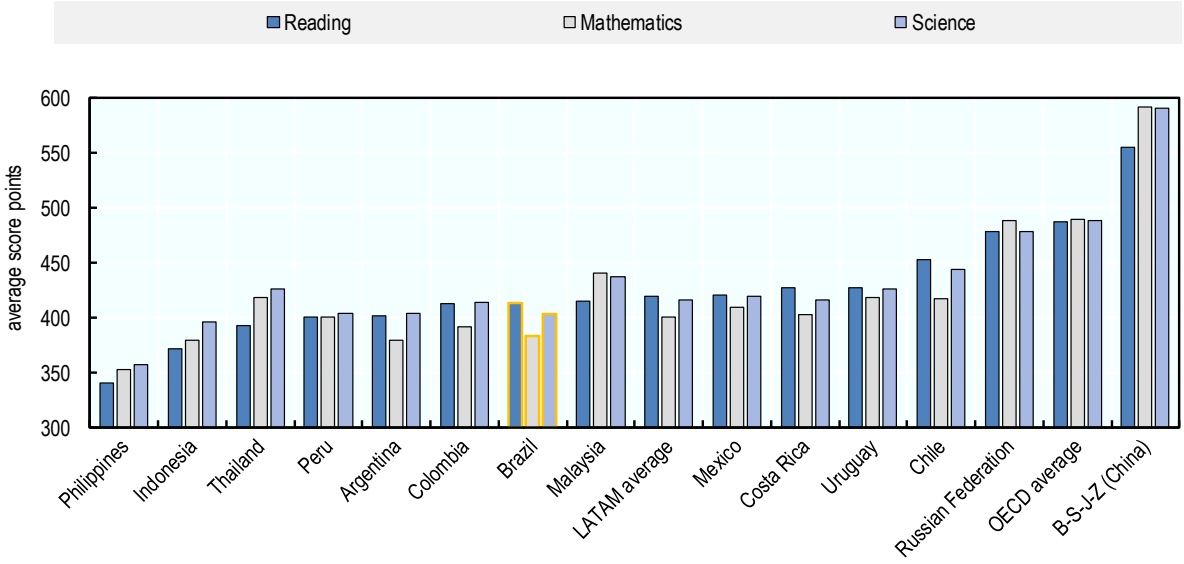
Learning outcomes: how Brazil compares

The overall performance in Brazilian schools is well below the OECD average

In PISA 2018, Brazil's outcomes remain quite a long way behind the OECD average and most benchmark countries across all subjects (see Figure 3.2). Students in Brazil scored on average 413 points in reading, 384 points in mathematics and 404 points in science (OECD, 2019[6]). The OECD averages in these three domains were 487, 489 and 489 score points, respectively. Brazil is well behind high-performing emerging economies, such as the Russian Federation and B-S-J-Z (China). Brazil's performance is quite similar to that of its Latin American (LATAM) neighbours, although weaker than that of Chile, Costa Rica, Mexico and Uruguay.

Figure 3.2. Performance of 15-year-olds in reading, mathematics and science, PISA 2018

Score points



Notes: As per Brazil's PISA scores compared to LATAM countries, in Reading: the Brazil-Colombia score difference is not statistically significant; in Mathematics: the Brazil-Argentina score difference is not statistically significant; in Science: the Argentina-Brazil and Peru-Brazil score difference is not statistically significant.
B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang.
Countries are presented in ascending order from the lowest reading mean score average to the highest.
Source: (OECD, 2019[6]), *PISA 2018 Results (Volume I): What Students Know and Can Do,* https://doi.org/10.1787/5f07c754-en.

StatLink https://stat.link/uwq5cz

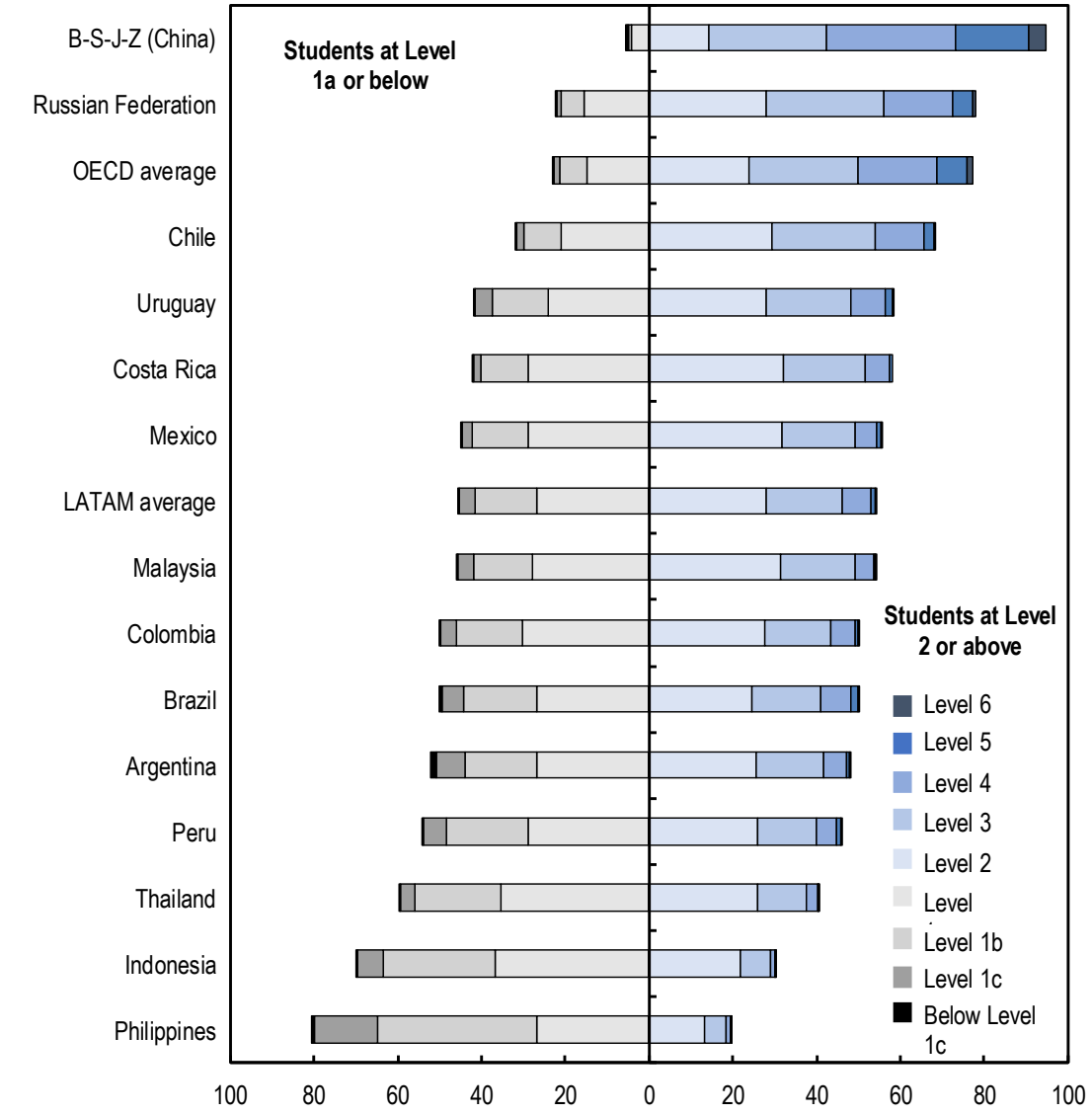
In Brazil, half of students fail to obtain a baseline level of proficiency

In addition to presenting student results as score points, PISA 2018 also classifies student performance across proficiency levels. Each proficiency level is associated with what students at that level are expected to know and be able to do. According to PISA, in reading, students need to master the skills associated with Level 2 performance (equivalent to scoring at least 407 points) in order to be successful in further studies or the workplace. Students below Level 2 are classified as low performers and can only complete basic tasks (e.g. evaluating the literal meaning of simple sentences). At the other end of the spectrum, students who perform at Levels 5 and 6 (equivalent to scoring 626 and 698 points, respectively) are classified as top performers and are able to complete difficult tasks (e.g. inferring neutrality or bias in a text) (OECD, 2019[6]).

Results from the latest PISA cycle reveal that half of Brazilian students failed to reach the minimum threshold of performance in reading (50%) (see Figure 3.3). The share of students who do not demonstrate basic proficiency levels is even higher in mathematics and science (68% and 55%, respectively). In comparison, high-performing countries and economies — such as some parts of China — have well under 10% of their students classified as low performers in reading (B-S-J-Z (China): 5.2%). On average, OECD countries have just over one in five (22%) of 15-year-olds below Level 2.

Figure 3.3. Students' reading proficiency levels, PISA 2018

Percentage of students by proficiency level in reading



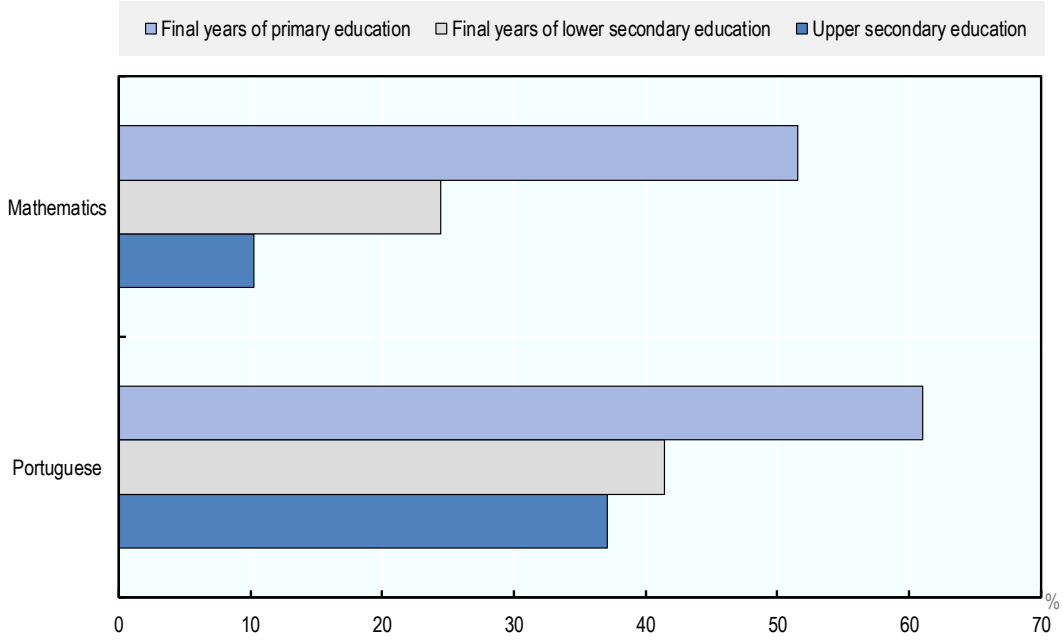
Note: B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang.
Source: Adapted from (OECD, 2019[6]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.

StatLink https://stat.link/k74m1e

National assessments indicate that underperformance at the age of 15 has its roots earlier in students' academic lives. In 2016[4], only around 45% of pupils in Year 3 had an adequate level of reading in the National Assessment of Literacy (*Avaliação Nacional da Alfabetização*, ANA – now under the SAEB umbrella)[5], and a similar proportion (45.5%) had an adequate level of mathematics (Todos Pela Educação, 2020[28]). This share gets progressively smaller after Year 5 as students advance in education, notably in mathematics Figure 3.4).

Figure 3.4. Percentage of students reaching adequate levels of learning according to SAEB latest results, 2019

Data refer to final years of primary education (Year 5, ISCED 1), final years of lower secondary education (Year 9, ISCED 2) and upper secondary education (Grade 3, ISCED 3)



Source: (MEC, 2020[29]), SAEB Resultados, https://www.gov.br/inep/pt-br/areas-de-atuacao/avaliacao-e-exames-educacionais/saeb/resultados (accessed on 22 November 2020); (Todos Pela Educação, 2020[30]), *Em 10 anos, aprendizado adequado no ensino médio segue estagnado, apesar dos avanços no 5° ano do fundamental [In 10 years, adequate learning in high school remains stagnant, despite advances in the 5th year of elementary school]*, https://todospelaeducacao.org.br/noticias/meta-3-em-10-anos-aprendizado-adequado-ensino-medio-segue-estagnado-avancos-5-ano-fundamental/, (accessed on 6 August 2020).

StatLink https://stat.link/d43mur

Few Brazilian students acquire higher-order skills

At the other end of the spectrum, very few 15-year-olds in Brazil demonstrate the highest levels of proficiency, as measured by PISA. In 2018, only 1.8% scored above Level 5 in reading, and less than 1% in mathematics and science. While these results are similar to other LATAM countries, in OECD countries, 9% of 15-year-olds scored above Level 5 in reading, 11% in mathematics and 7% in science.

The fact that Brazilian students struggle to tackle anything beyond the most basic tasks can be partly explained by the practices Brazilian teachers use in their classrooms. PISA results suggest that certain practices that research shows are more effective at supporting learning such as adaptive instruction are not as common in Brazil as in OECD countries (see Chapter 5 for a full discussion). These practices are particularly important for developing higher-order skills that students require to perform at the highest levels.

Strategies that students use to learn also matter. In PISA for example, students who often use memorisation techniques are more likely to correctly answer easy questions whereas those who use more elaborate strategies, such as trying to connect new concepts to what they already know, have a greater chance to correctly answer more difficult items. In Brazil however, students opt predominantly for

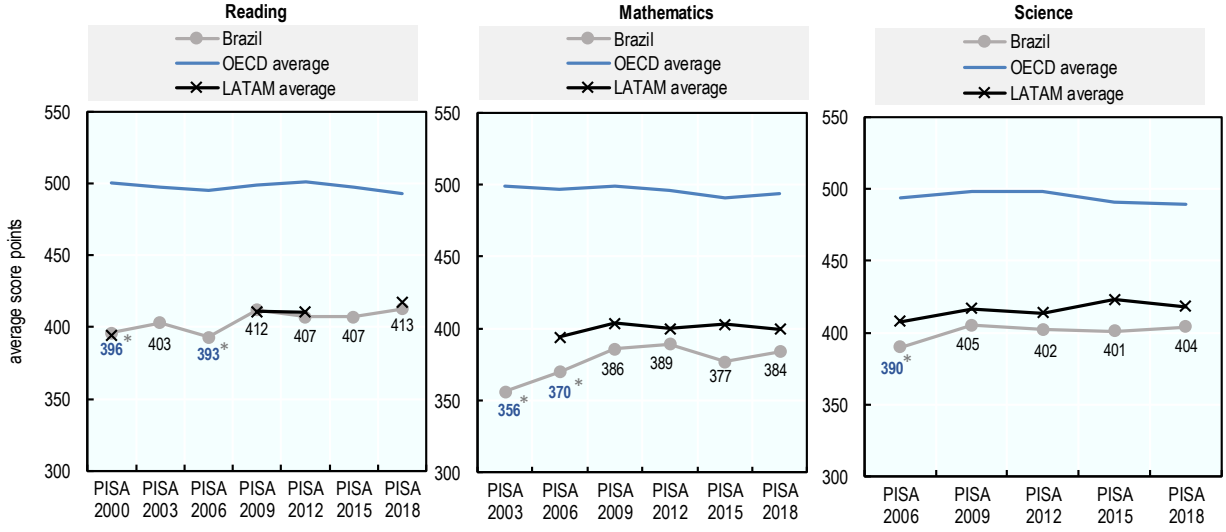
memorisation and drill strategies over more elaborate learning strategies, which are unlikely to help them with the more advanced tasks (OECD, 2016[31]).

Change in learning outcomes: evidence from PISA and other sources

PISA results suggest improvements in learning outcomes, once accounting for expansion in participation

Modest improvements have been realised in Brazil's PISA scores since 2003, mostly in mathematics[6] (see Figure 3.5). However, Brazil's average scores may mask a more positive trend. As discussed in Chapter 2, higher enrolment rates in Brazil have meant that the proportion of 15-year-olds covered by the PISA sample increased from about 55% in 2003 to 65% in 2018 (OECD, 2019[6]). A slight improvement in average performance in the context of a rapid expansion in access represents a considerable achievement. An estimation by the OECD, which focused on the 25% of better performers who are unlikely to be affected by changes in participation rates, suggested that Brazil's performance in PISA has been improving by roughly ten score points every three years in the case of mathematics, and slightly less in the case of science. The results of this estimation for reading skills were not statistically significant (Figure 3.5) (OECD, 2019[6]).

Figure 3.5. Trends in PISA performance in reading, mathematics and science, PISA 2000-2018



Notes: Values in blue and with an asterisk indicate mean-performance estimates that are statistically significantly above or below PISA 2018 estimates for Brazil. Comparisons between PISA 2018 scores and previous assessments can only be made to when the subject first became a major domain or later assessment cycles. As a result, comparisons of mathematics and science performance between PISA 2000 and PISA 2018, for example, are not possible

The blue line indicates the average mean performance across OECD countries with valid data in all PISA assessments. The black line indicates the average mean performance across LATAM countries with valid data in all PISA assessments (respecting the threshold of at least five countries with data available). The grey line indicates mean performance in Brazil.

Source: (OECD, 2019[4]), *Programme for International Student Assessment: Results from PISA 2018: Brazil*, https://www.oecd.org/pisa/publications/PISA2018_CN_BRA.pdf (accessed on 24 August 2020).

StatLink https://stat.link/k3rq0z

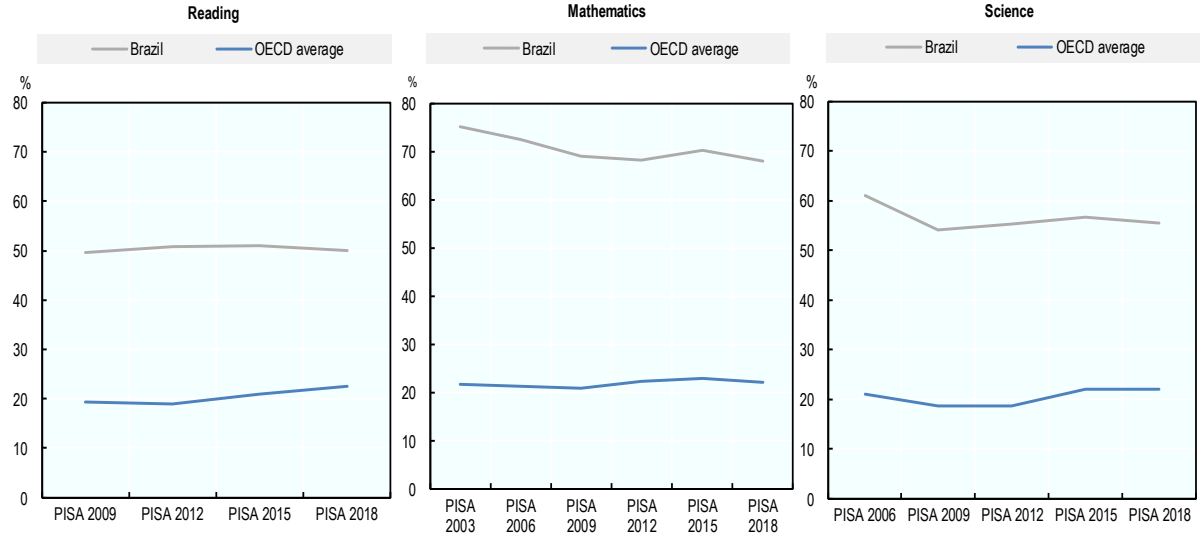
Disaggregated results show that the country's improvement in mathematics is mostly attributed to improvements in performance at the bottom of the distribution (below Level 2)[7]. The share of low-

performers in mathematics declined by 7 percentage points between 2003 and 2018, and in science by 5.6 percentage points between 2006 and 2018 (see Figure 3.6). This not only means that a larger share of 15-year-olds are acquiring the basic skills and knowledge needed in life and work, but that performance gaps among students have reduced.

Moreover, while Brazil did not report state-level scores in 2018[8], results from previous cycles seem to suggest that much of Brazil's improvement has been localised in a few states in the North and Northeast regions, notably Amazonas, Ceará, Maranhão and Pernambuco (see Annex 1). These states have managed to improve their results from a very low base and are increasingly closing the gap with the national average.

Figure 3.6. Trend in the share of low performers in PISA major domains, PISA 2003-2018

Share of 15-year-old students performing below Level 2 in reading, mathematics and science



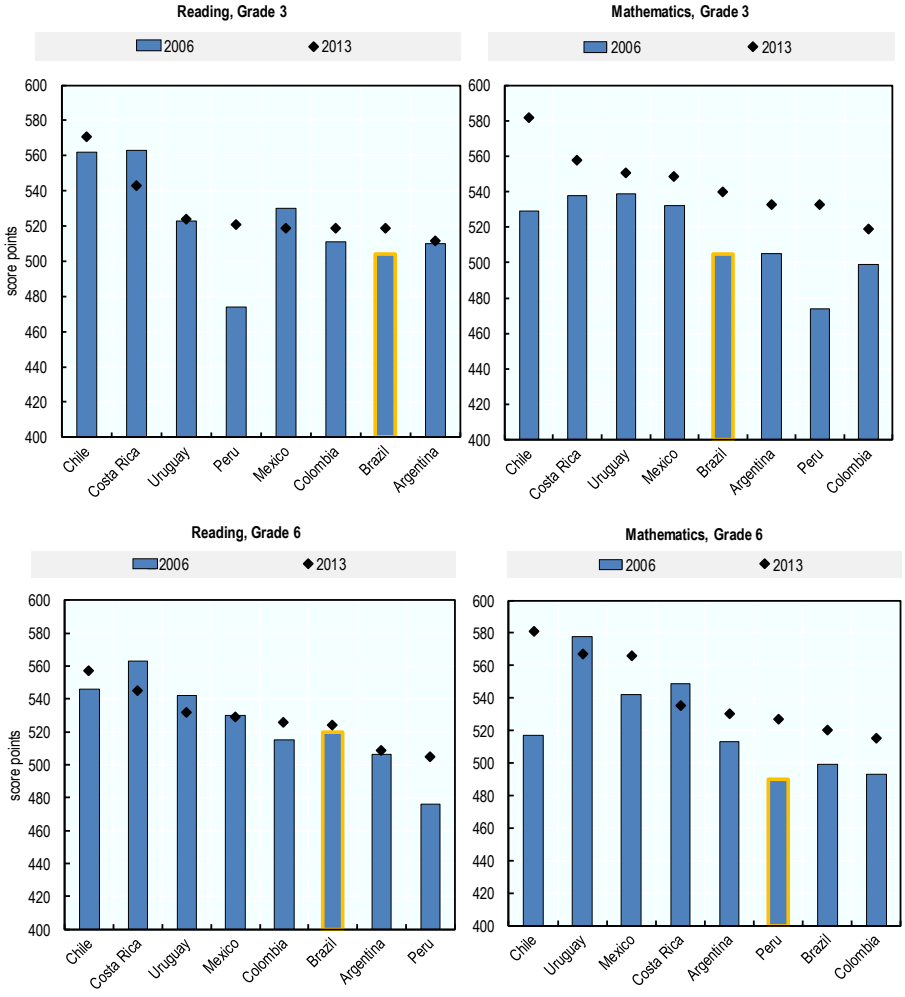
Notes: Differences are statistically significant for:
1. Reading: Brazil, none; OECD, PISA 2009-PISA 2018; PISA 2012-PISA 2018.
2. Mathematics: Brazil, PISA 2003-PISA 2018; PISA 2006-PISA 2018; OECD, none.
3. Science: Brazil, PISA 2006-PISA 2018; OECD, PISA 2009-PISA 2018, PISA 2012-PISA 2018.
Comparisons between PISA 2018 scores and previous assessments can only be made to when the subject first became a major domain or later assessment cycles. As a result, comparisons of mathematics and science performance between PISA 2000 and PISA 2018, for example, are not possible.
Source: (OECD, 2019[6]), *PISA 2018 Results (Volume I): What Students Know and Can Do*, https://doi.org/10.1787/5f07c754-en.

StatLink https://stat.link/wd4mhz

Other data sources also suggest improvement

Data from surveys undertaken across Latin America by LLECE suggest that Brazil has made progress in the first years of education, most notably in mathematics scores in Grade 3. The scores increase from 505 in 2006 to 540 in 2013. Some other Latin American countries however reported even stronger increases (see Figure 3.7).

Figure 3.7. Countries' average performance in reading and mathematics in SERCE 2006 and TERCE 2013, in score points



Notes: This figure compares Second Regional Comparative and Explanatory Study (SERCE) undertaken in 2006 and Third Regional Comparative and Explanatory Study (TERCE) undertaken in 2013 to compute improvements in the scores in tests which are designed to be comparable. For Brazil, the score-point difference between SERCE and TERCE is significant for scores in reading at Grade 3, and in mathematics for both Grade 3 and 6.

Countries are organised is descending order from highest scores in 2013 to lowest.

Source: (UNESCO, 2014[32]), *Comparación de resultados del Segundo y Tercer Estudio comparativo y explicativo: SERCE y TERCE, 2006-2013*, https://unesdoc.unesco.org/ark:/48223/pf0000244239 (accessed on 24 August 2020).

StatLink https://stat.link/rez3jl

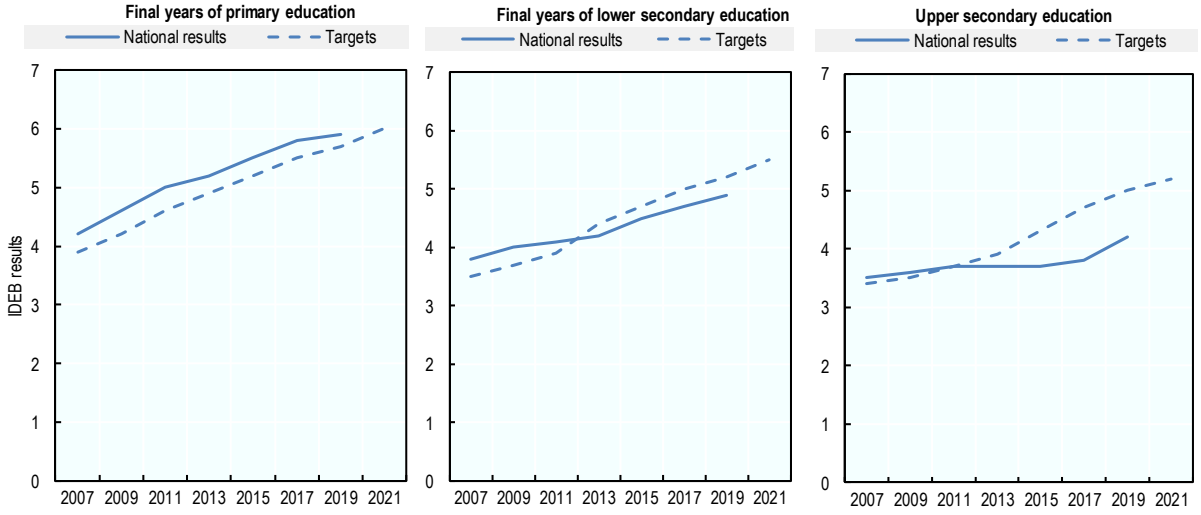
Similarly, national evidence from SAEB shows that between 2007 and 2019, the percentage of students in Year 5 reaching adequate levels of learning grew from 28% to 61% in Portuguese, and from 24% to 52% in mathematics (Todos Pela Educação, 2020[28]; MEC, 2020[29]). Progress has also been made in Year 9 according to SAEB. During the same time period, the share of students reaching adequate learning outcomes in Portuguese doubled from 20% to 41%, while for mathematics, the share increased from 14% to 24% (Todos Pela Educação, 2020[28]; MEC, 2020[29]). Upper secondary education has seen a significant progress in Portuguese, with the share of students in Grade 3 reaching adequate learning outcomes increasing from 24% to 37%; while for mathematics there was virtually no change (9.8% to 10.2%) (Todos

pela Educação, 2020[33]). Given that secondary education expanded rapidly during this period, as with the PISA results, the apparent lack of progress in scores may reflect the expanded student population.

These learning gains translate into progress towards national targets in Brazil

In addition to targets for 2024, the PNE has set intermediary annual targets, as measured by IDEB. At the national level, targets for the initial years of basic education have not only been consistently met, but evensurpassed. However, achievements in the final years of basic education and in upper secondary education have been below the national targets since 2013 (see Figure 3.8). This lack of progress not only reflects slow improvements in learning outcomes, but also persistently low approval rates (discussed in Chapter 2). Disaggregated results also show considerable variation between entities at the sub-national level, with states in the North and Northeast regions falling significantly behind others and national targets.

Figure 3.8. IDEB national results compared to their respective targets for each year, 2007-21



Sources (INEP, 2020[34]), *Ideb - Resultados e Metas [Ideb - Results and Targets]*, http://ideb.inep.gov.br/resultado/ (accessed on 15 May 2020); (INEP, 2019[3]), *O que são as metas de qualidade educacional [What are educational quality goals]*, http://portal.inep.gov.br/educacao-basica/ideb/metas (accessed on 20 April 2020); (INEP, 2020[35]), *Resumo Técnico Tesultados do Índice de Desenvolvimento da Educação Básica, Versão Preliminar [Technical Summary Results of the Basic Education Development Index, Preliminary Version]*, http://download.inep.gov.br/educacao_basica/portal_ideb/planilhas_para_download/2019/resumo_tecnico_ideb_2019_versao_preliminar.pdf (accessed on 22 November 2020).

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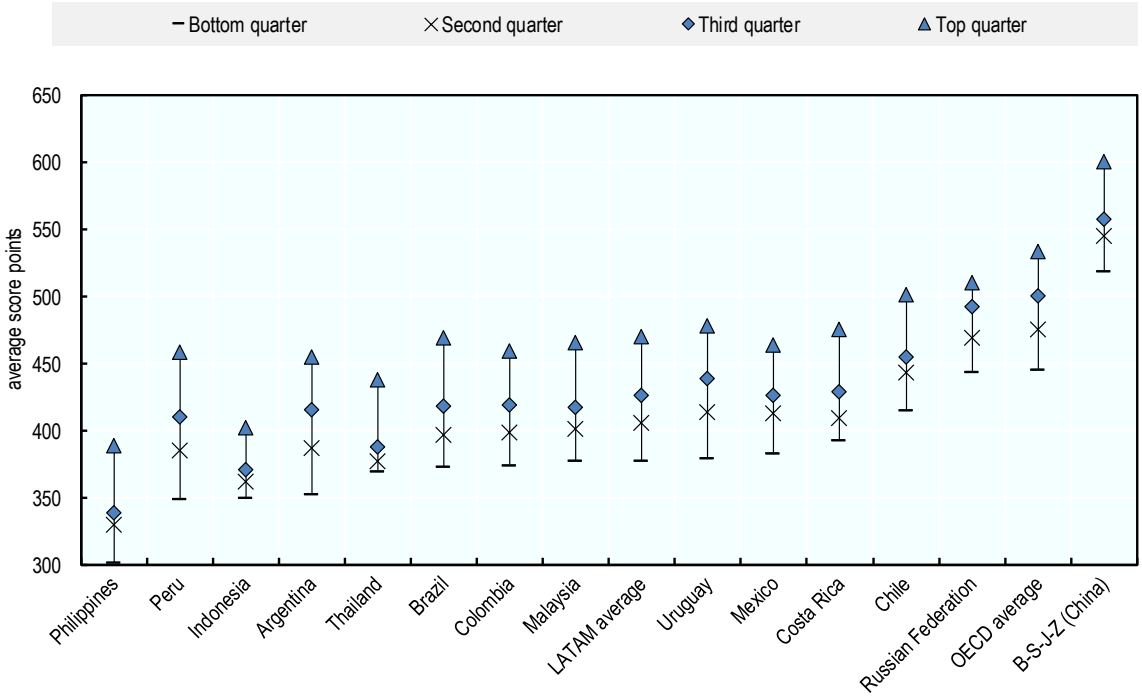
Factors related to student and school performance

Disadvantaged students show poorer learning outcomes

In Brazil, like many other countries, student performance is closely linked to socio-economic background. In PISA, socio-economic background is defined in relation to an index of economic, social and cultural status (ESCS — explained in the note to Figure 3.9). Across PISA-participating economies, socio-economically advantaged students tend to outperform students from disadvantaged backgrounds. In Brazil, the performance gap between students in the top and bottom national quarters of socio-economic status is equivalent to 97 score points in reading, above the OECD average (89 score points) (Figure 3.9).

Figure 3.9. Mean performance in reading by 15-year-olds, by socio-economic status (ESCS), PISA 2018

By students' national quarter of socio-economic status (as measured by ESCS)

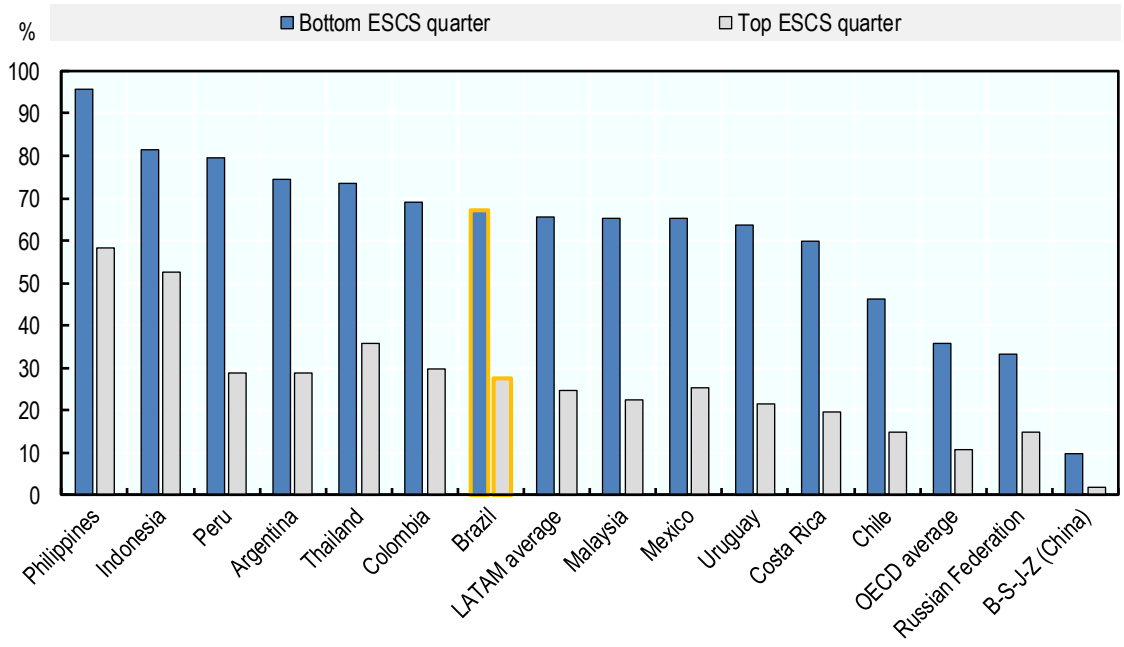


Notes: The PISA ESCS index was created on the basis of: the International Socio-Economic Index of Occupational Status (ISEI); the highest level of education of the student's parents, converted into years of schooling; the PISA index of family wealth; the PISA index of home educational resources; and the PISA index of possessions related to "classical" culture in the family home.
The performance gap between students in the top and bottom national quarters of socio-economic status is not statistically significantly different between the OECD and Brazil, or Brazil and Latin American countries.
B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang.
Source: (OECD, 2019[36]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, https://doi.org/10.1787/b5fd1b8f-en.

StatLink https://stat.link/ea7vt3

In many respects the association between socio-economic background and learning outcomes is stronger in Brazil and in Latin American emerging economies than in most OECD and benchmark countries. Two-thirds (67.3%) of 15-year-olds in the bottom ESCS quarter in Brazil failed to reach Level 2 in reading literacy, compared to just over 27.6% of those in the highest ESCS quarter (see Figure 3.10). For OECD countries, the equivalent figures are 36% and 11% on average. Very similar patterns are found in the mathematics and science domains.

Figure 3.10. Percentage of 15-year-olds scoring below Level 2 in reading, by ESCS, PISA 2018



Note: B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang.
Source: (OECD, 2019[36]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, https://doi.org/10.1787/b5fd1b8f-en.

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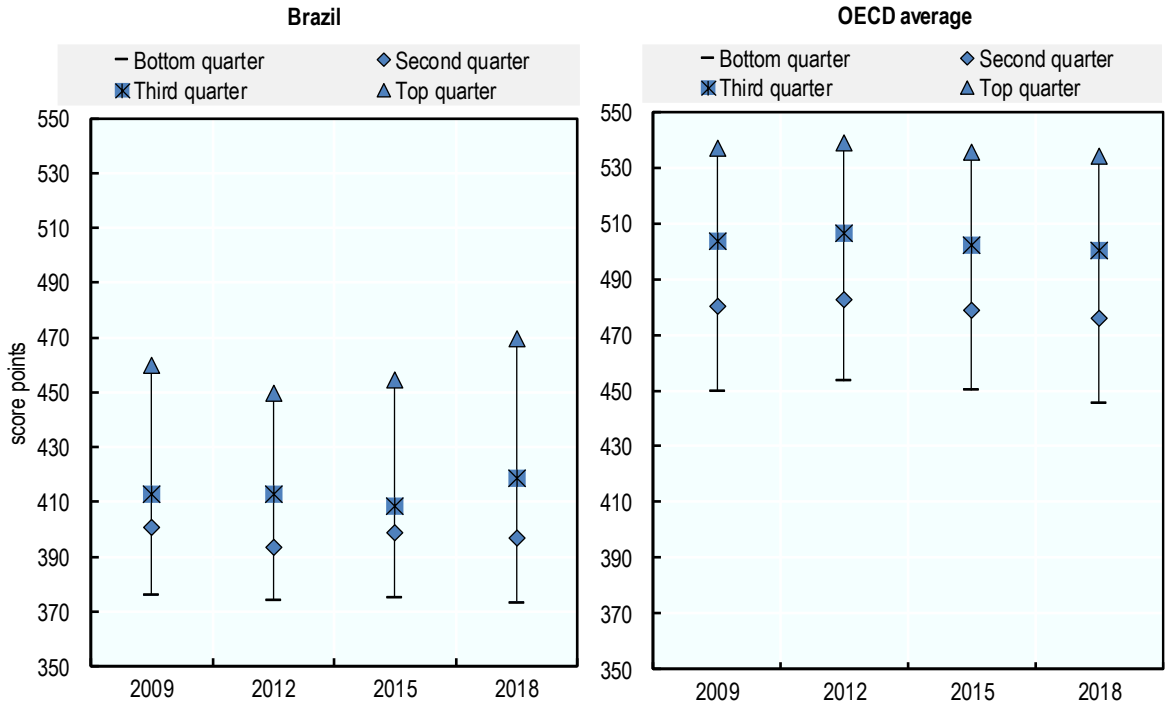
The impact of socio-economic background in Brazil is also visible from the earliest years. ANA 2016 data show that in primary school, and using a seven-group indicator of schools' socio-economic status[9], only 23% of the students from the lowest socio-economic group achieved adequate levels of literacy in reading, 40% in writing and 25% in mathematics – compared to 68%, 86% and 70% of the students in the highest socio-economic group, respectively (Todos Pela Educação, 2020[28]).

And they seem to be falling further behind

Figure 3.11 shows that students in the highest ESCS quarter have seen statistically significant performance improvements in reading in the latest cycles of PISA, whereas the most disadvantaged students (from the lowest ESCS quarter) have seen no improvements.

Figure 3.11. Trends in reading performance by students'socio-economic status, PISA 2009-2018

Average 15-year-olds' reading performance in reading (score points), by national quarter of students' socio-economic status (as measured by ESCS)



Notes: Brazil score difference is statistically significant between PISA 2012-PISA 2018 at the top ESCS level and between the top-bottom score difference gap, and between PISA 2015-PISA 2018: between the top-bottom score difference gap.
OECD score difference is statistically significant between PISA 2012-PISA 2018 at the bottom ESCS level and between the top-bottom score difference gap, and between PISA 2015-PISA 2018: between the top-bottom score difference gap.
Source: (OECD, 2019[36]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, https://doi.org/10.1787/b5fd1b8f-en.

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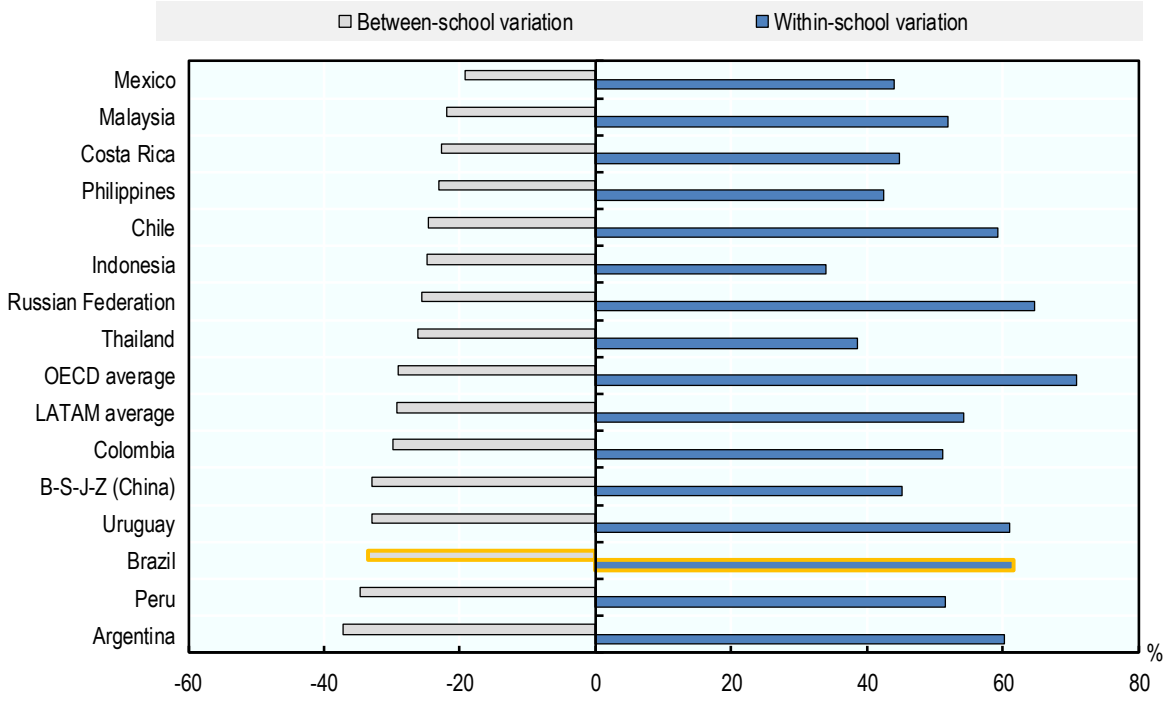
This is a concerning trend, as it means that the achievement gap between the most advantaged and disadvantaged students is increasing, with the least advantaged falling even further behind. In 2009, this difference was at 84 score points, and has increased to 97 in 2018. Across the OECD, the achievement gap between the most advantaged and disadvantaged has also increased recently, but at a lower level, from 87 in 2009 to 89 in 2018.

While reliable data on the impact of school closures and distance education on Brazilian students' learning outcomes as a result of the COVID-19 pandemic are not available yet, studies predict that disadvantaged students will have fallen even further behind their wealthier peers. Prolonged episodes of school closures can increase inequalities if governments do not effectively implement measures to ensure every child has sufficient resources to learn in good conditions, particularly in countries where non-school factors play a strong role in learning outcomes (Gouëdard, Pont and Viennet, 2020[37]; Saavedra, 2020[38]), as is the case in Brazil.

Differences between schools show that where students enrol matters for their performance

PISA 2018 results show that 34% of Brazil's variation in reading performance was observed between schools (OECD average: 29%) and 62% of Brazil's variation was accounted for by differences within schools (OECD average: 71%) (see Figure 3.12). Internationally, in countries where there is substantial variation between schools, like Brazil, students tend to be grouped in schools in which other students perform at levels similar to their own. One implication is that, at the system level, there is less consistency with regards to performance, meaning that where parents enrol their children can have important implications on their future performance.

Figure 3.12. Variation in reading performance between and within schools, PISA 2018



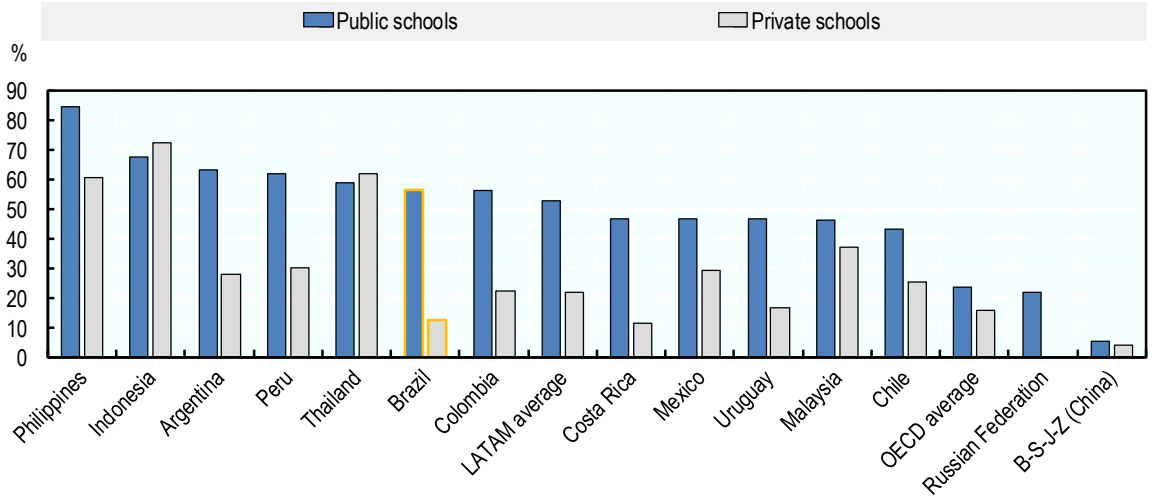
Notes: The total length of both bars is indicative of the total amount of variance of a country (relative to the OECD average, which sums up to 100%).
B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang.
Countries are ordered in ascending order from the lowest between-school variation to the highest.
Source: (OECD, 2019[36]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, https://doi.org/10.1787/b5fd1b8f-en.

StatLink https://stat.link/hbin72

Performance of public school pupils lags far behind those attending private schools

Internationally, students in private schools tend to perform better in PISA than those in public schools. The performance gap found in Brazil is however particularly large. Students from public schools in Brazil score below Level 2 on reading literacy over four times more often than students from private schools (57% as opposed to 13%). In Latin America the equivalent ratio is between 2 and 3; in the OECD it is only 1.5 (see Figure 3.13). National data from Brazil also show large performance differences between students in public and private schools at all levels of education (see Figure 3.14).

Figure 3.13. Percentage of 15-year-old students scoring below Level 2 in reading in public and private schools, PISA 2018



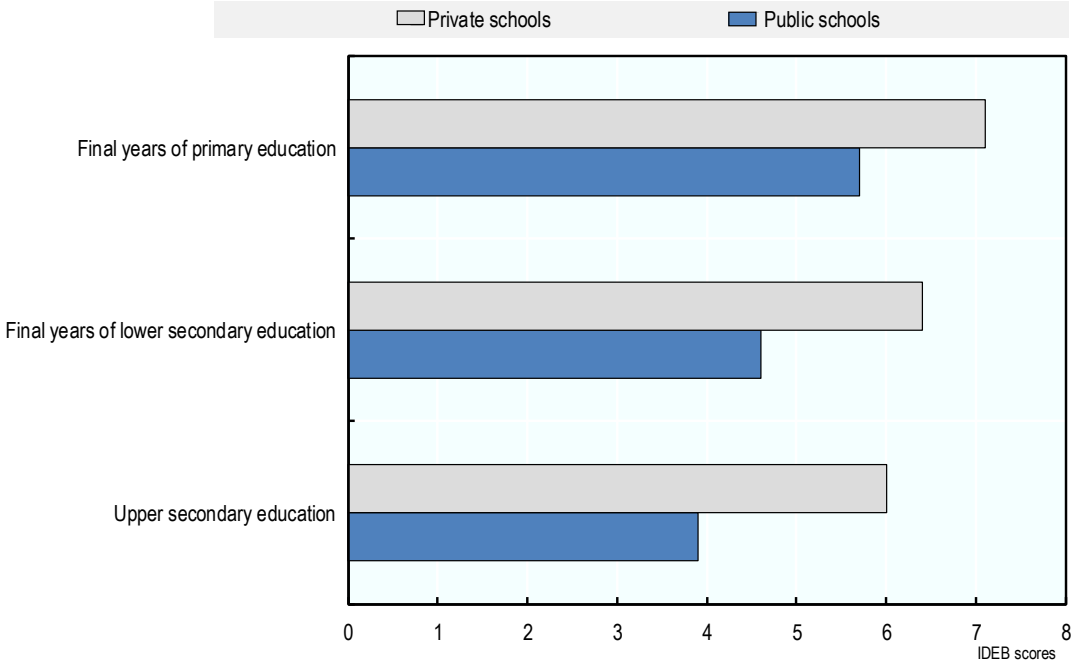
Notes: B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang. Countries are ordered in descending order from the highest percentage of 15-year-old students scoring below Level 2 in reading in public schools to the lowest.
Source: (OECD, 2019[39]), *PISA 2018 database*, https://www.oecd.org/pisa/data/ (accessed on 26 August 2020).

StatLink https://stat.link/sclix7

As discussed in Chapter 1, this gap is explained in part by differences in the intake of students between the public and private sector. Students in private schools tend to come from more advantaged socio-economic backgrounds (average ESCS: 0.2) according to the ESCS index than their peers in the public sector (average ESCS: -1.3). After taking into account the differences between students' socio-economic background in the two sectors, the performance advantage of private schools in reading scores declines from 113 points to 32 points (OECD average: from 27 to -12.5).

Figure 3.14. IDEB scores in public and private schools, 2019

Data refers to final years of primary education (Year 5, ISCED 1), final years of lower secondary education (Year 9, ISCED 2) and upper secondary education (Grade 3, ISCED 3)



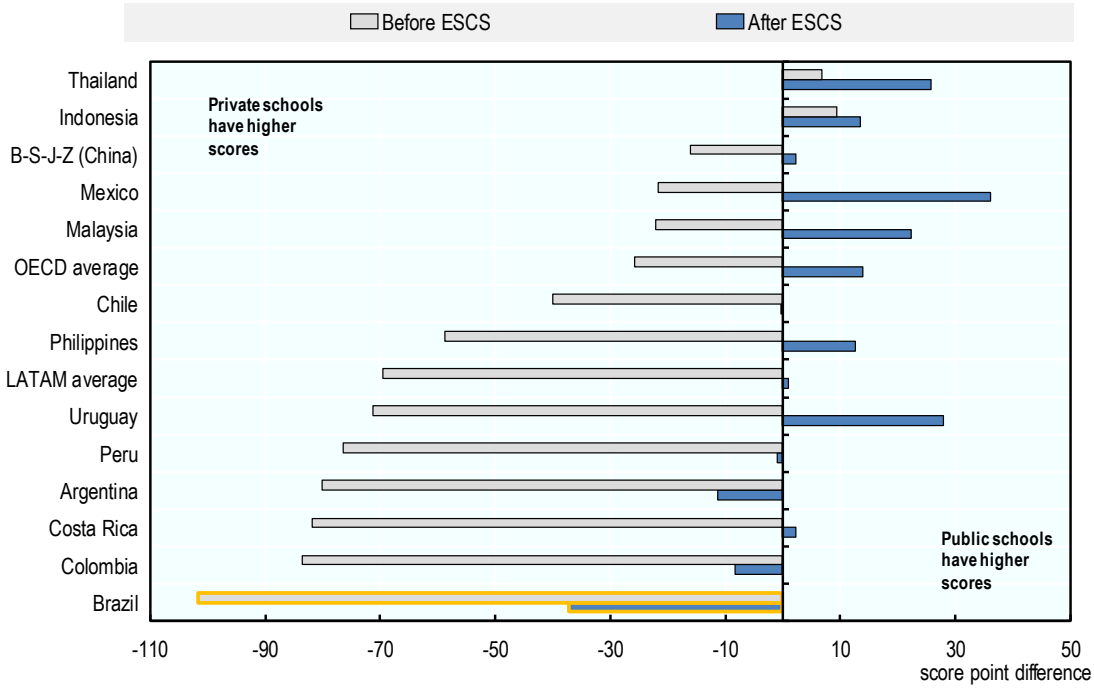
Source: (INEP, 2020[34]), *Ideb - Resultados e Metas [Ideb - Results and Targets]*, http://ideb.inep.gov.br/resultado/ (accessed on 23 November 2020); (INEP, n.d.[40]), *Resultados [Results]*, http://inep.gov.br/educacao-basica/ideb/resultados, (accessed on 23 November 2020).

StatLink https://stat.link/plbahw

However, even accounting for differences in school intake, a substantial and statistically significant difference remains between private and public schools in Brazil (see Figure 3.15). This contrasts with other LATAM countries, such as Chile, Colombia, Costa Rica and Peru, where there are no statistically significant differences in reading scores between private and public schools once ESCS is taken into account. This suggests that, once selection effects are taken into account, private schools in most LATAM countries do not deliver better quality education than public schools (OECD, 2011[41]), whereas in Brazil the evidence suggests real differences in quality between the two sectors, consistent with the findings of some researchers (Medeiros, 2016[42]). This means that parents who can afford to enrol their children in private schools can give them a learning advantage, which contributes to ensuring that socio-economic advantages are passed on to their children.

Figure 3.15. Performance disparities between public and private schools, PISA 2018

Score-point differences of 15-year-olds in reading, before and after accounting for students' and schools' ESCS



Notes: B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang. Countries are ordered in ascending order from the lowest score-point difference before ESCS to the highest.
Source: (OECD, 2020[43]), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools*, https://doi.org/10.1787/ca768d40-en.

StatLink https://stat.link/wd046s

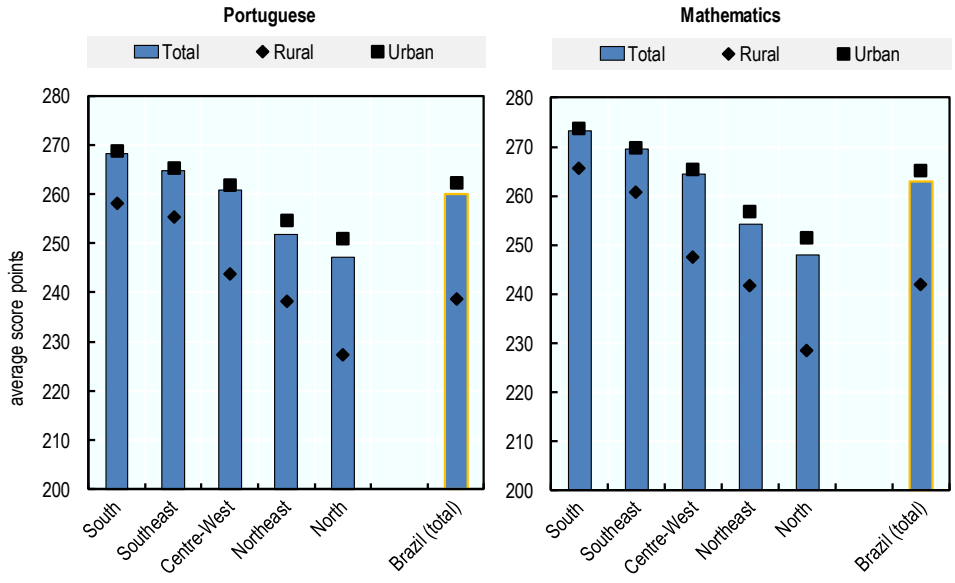
There are large regional variations in performance.

National and international assessments reveal large regional variations in performance. In PISA 2018, Brazil did not report state-level scores[10], but results from previous cycles revealed significant disparities. In PISA 2015, the state of Espírito Santo scored 435 points in science, similar to Uruguay, whereas the state of Alagoas scored 360 points, below Albania and Kosovo. Such disparities are also reflected in national data. In the North and Northeast regions, average performance in SAEB was lower than the national average and lower than in the South and Southeast regions (see Figure 3.16). The gap between urban and rural locations are also significant, and particularly wide in the North, Northeast and Centre-West regions. This is most probably, at least in part, associated with the socio-economic and ethnic differences between schools and students across Brazil, whereby in schools in the North and Northeast states there are more disadvantaged students, and more students from minority backgrounds (see Chapter 1).

Seemingly, there is also a performance gap in PISA results between rural and urban schools in Brazil. However, once the socio-economic background of students is accounted for, this difference disappears or in fact suggests that rural schools, taking account of their student make-up do better. The score-point difference drops from around 80 points to the advantage of urban students to 33 points to the advantage of rural students, after accounting for ESCS (OECD, 2019[39]).

Figure 3.16. National assessment results, by region and location, 2019

SAEB score-point averages of Grade 9 students in Portuguese and mathematics



Note: Regions are ordered from the highest to lowest percentage of students reaching adequate level of reading.
Source: (MEC, 2020[29]), *SAEB Resultados [SAEB Results]*, https://www.gov.br/inep/pt-br/areas-de-atuacao/avaliacao-e-exames-educacionais/SAEB/resultados (accessed on 22 November 2020).

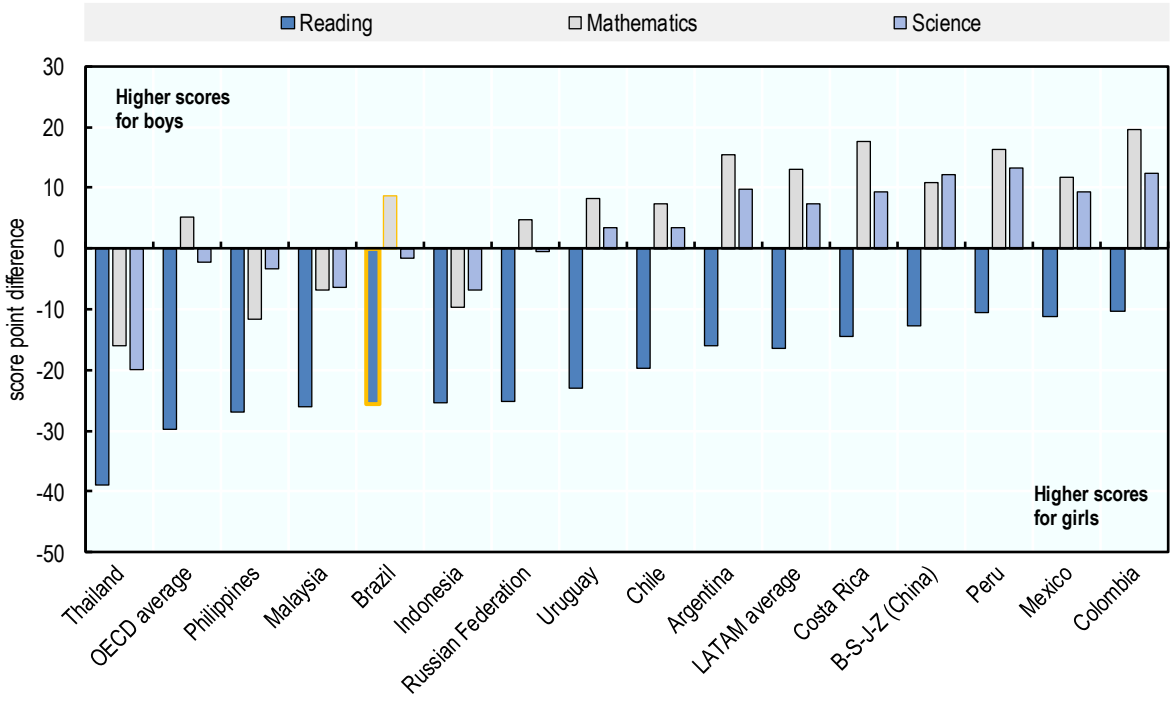
StatLink https://stat.link/m4vokd

Gender is associated relatively weakly with school performance, but strongly with career aspirations

In Brazil, at age 15, girls are ahead of boys in reading by 26 score points, slightly behind boys in mathematics (9 score-point difference), and about the same level in science (1 score-point difference[11]) (see Figure 3.17). It is noteworthy that the gaps in favour of boys in mathematics and science observed in Brazil are much lower, whereas the advantage of girls in reading is much higher than in many LATAM countries, although similar to the average across OECD countries.

Figure 3.17. Gender disparities in PISA 2018

Score-point difference between 15-year-old boys and girls in reading, mathematics and science



Notes: B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang. Countries are ordered according to reading results. For Brazil, score difference between boys and girls in science is not statistically significant.
Source: (OECD, 2019[36]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, https://doi.org/10.1787/b5fd1b8f-en.

StatLink https://stat.link/evzh1f

As in many other countries, there are large differences in career aspirations between boys and girls in Brazil. In OECD countries, more than three times as many boys as girls expect a career in engineering or computing (OECD, 2012[44]); conversely girls are three times more likely than boys to expect to work as doctors, veterinarians, nurses or other health professionals (OECD, 2017[45]). A similar pattern was observed in Brazil: among high-performing students in mathematics or science, about one in three boys in Brazil expects to work as an engineer or science professional at the age of 30, while only one in five high-performing girls expect to do so, but two in five of these girls expect to work in health-related professions (OECD, 2019[4]).

Students in VET tracks outperform their peers in academic tracks

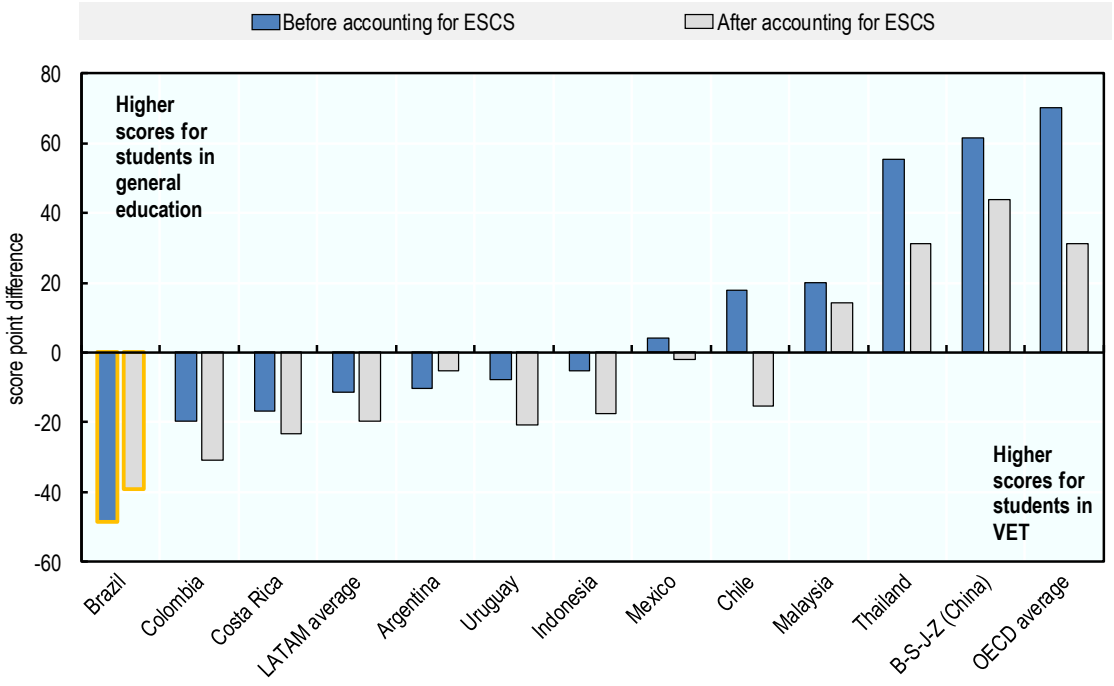
Unlike most PISA-participating countries, in Brazil, as in many other Latin American countries, students in pre-vocational or vocational programmes scored higher in reading than students in general or modular programmes. The difference is equivalent to 48 score points before accounting for students' socio-economic background and 39 score points after accounting for it, which is significantly higher than in neighbouring countries and among the highest across PISA-participating countries (see Figure 3.18).

This disparity may be partly explained by the fact that Brazil's vocational education and training (VET) systems have been, as discussed in Chapters 1 and 2, academic in focus and have attracted higher-performing students.

While the current reform to Brazil's upper secondary education is expected to increase enrolment in VET programmes, this could have implications for student performance. International experience shows that the stigmatisation of lower status pathways (and this is often how vocational programmes are seen), can lead teachers to assign slower-paced and more fragmented instruction to students in these programmes. As a result, students adjust their expectations and efforts, leading to even lower performance. To counter such stigmatisation, it is crucial to maintain high expectations for *all* students by ensuring that all tracks offer an appropriately challenging curriculum and high-quality instruction.

Figure 3.18. Disparities between students in general and VET programmes, PISA 2018

Difference between mean score points in reading of 15-year-old students enrolled in general and VET education (general-vocational), before and after accounting for students' socio-economic background (ESCS)



Notes: B-S-J-Z (China) is an acronym for the four Chinese provinces that participated in PISA 2018: Beijing, Shanghai, Jiangsu and Zhejiang. This analysis is restricted to schools with the modal ISCED level for 15-year-old students. Results may thus differ from those estimated on the entire sample of 15-year-old students.
Source: (OECD, 2019[39]), *PISA 2018 database*, https://www.oecd.org/pisa/data/ (accessed on 26 August 2020).

StatLink https://stat.link/3xa8hp

Race is also correlated with learning outcomes

National data reveal how race is linked to learning outcomes. White Brazilians generally perform better than average, mixed-race Brazilians around the average, and black Brazilians well below the average. For example in the 2017[12] Portuguese assessment for Year 9 (lower secondary education), around 52% of white Brazilians reached adequate learning levels, compared with 36% of mixed Brazilians, and 29% of black Brazilians (Todos pela Educação, 2020[33]). In mathematics, 32% of white Brazilians reached the expected standard, compared with 18% of mixed Brazilians and only 13% of black Brazilians (Todos pela Educação, 2020[33]). While these disparities are widely recognised, there seems to be limited research and few targeted policies that explicitly address this issue.

Labour market outcomes

Education improves labour market outcomes

Internationally and in Brazil, labour market returns from education include both a better chance of getting a job and higher earnings once in work. These returns reflect, in part, greater productivity of individuals with more knowledge and skills, gained through education. The raw returns are also partly attributable to the "signalling" effect of education credentials, rather than to the additional knowledge and skills delivered by the associated education programme. Employers often use education qualifications as screening measures to identify the knowledge, skills and personality traits that granted individuals entry to an education programme and helped them successfully complete the programme, rather than the qualities developed through the education programme. Such signalled qualities include intelligence, self-control and persistence. Brazil does not yet participate in the OECD Survey of Adult Skills (PIAAC), which would offer a perspective on the actual levels of literacy, numeracy and digital literacy skills associated with higher levels of educational attainment.

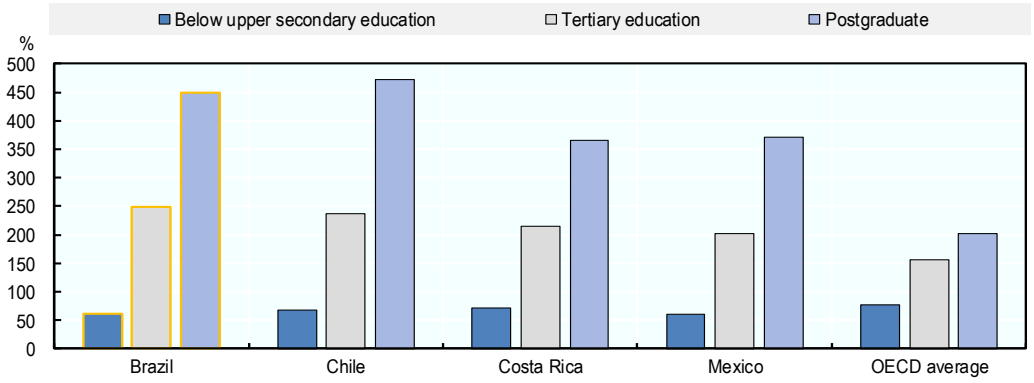
Strong labour market returns from education in Brazil suggest bottlenecks in supply

In Brazil, the returns from educational attainment are high, and while similar to other LATAM countries, they are much higher than in OECD countries on average (Figure 3.19). In Brazil, those with bachelor's degrees earn, on average, more than twice as much as those with upper secondary qualifications. In OECD countries on average, those with bachelor's degrees earn only half as much as those with upper secondary education (OECD, 2020[46]). The returns are even higher in Brazil for those with a master's or doctoral degree who on average have earnings more than four times higher than those with upper secondary education, much larger than the OECD average (twice as high) (OECD, 2020[46]).

One explanation for these comparatively high returns by international standards is the strong demand for, and weak supply of highly-qualified individuals (see Figure 3.20). Chapter 2 explained how the Brazilian labour market is increasingly demanding higher-level skills. At the same time, tertiary attainment levels, especially at the master or doctorate level, remain low by international standards.

Figure 3.19. Earnings of full- and part-time workers relative to upper secondary education, by level of education, 2015

Population aged 25-64, earnings of upper secondary graduates = 100

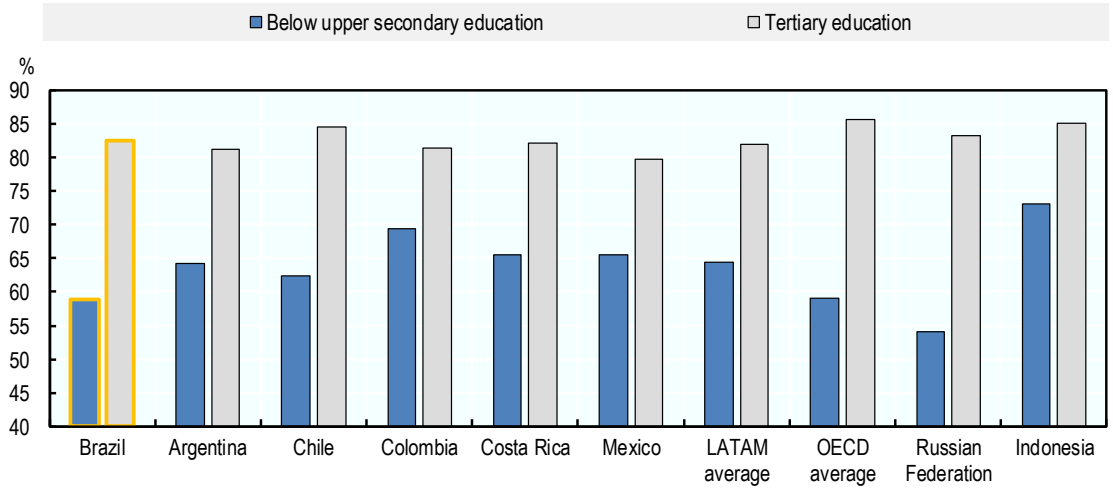


Source: (OECD, n.d.[47]), *Education and Training / Education at a Glance*, https://stats.oecd.org/ (accessed on 22 November 2020).

StatLink https://stat.link/n4wizd

Research also shows that the probability of informality decreases significantly with educational attainment (Mello and Santos, 2009[48]). The same authors also find that those whose first jobs are informal are more likely to remain in that condition for an extended period. This may result in long-term challenges, since informal jobs offer no protection against unemployment, sickness and old age. For the government, informality means that much economic activity is unregistered, unregulated and untaxed (OECD, 2014[12]).

Figure 3.20. Employment rates by educational attainment among 25-64 year-olds, 2019



Note: For Argentina, Brazil and the Russian Federation, the reference year for the data presented in the right graph (employment rates by educational attainment) is 2018, while for Chile and Indonesia it is 2017.
Source: (OECD, n.d.[47]), *Education and Training / Education at a Glance*, https://stats.oecd.org/ (accessed on 22 November 2020).

StatLink https://stat.link/2963kr

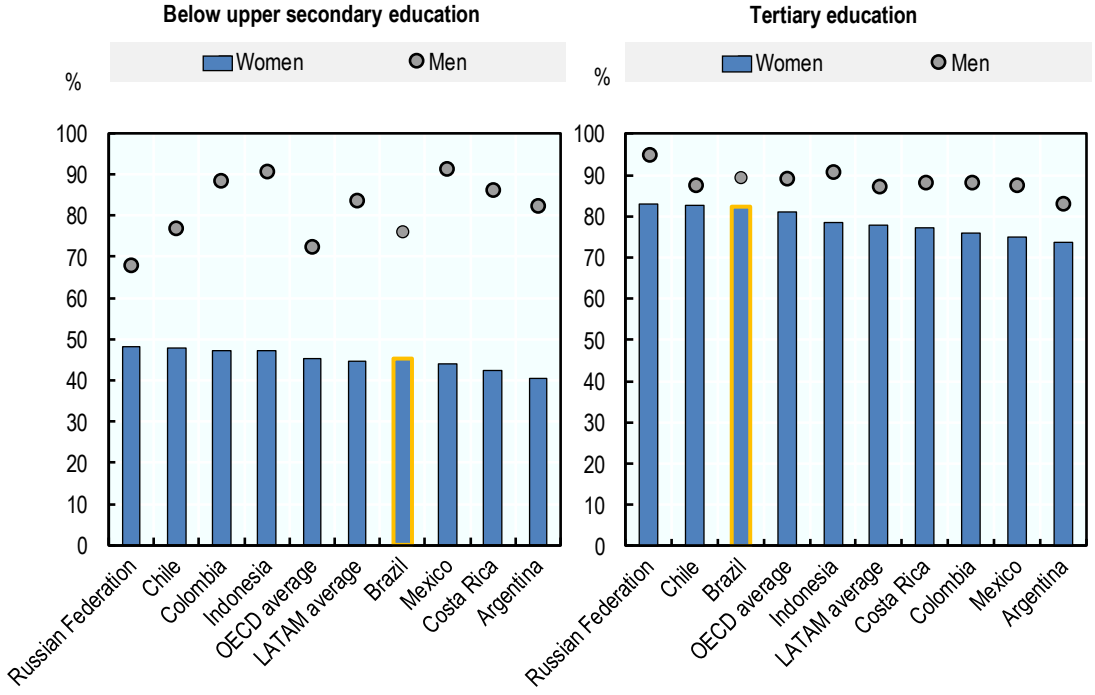
Women are particularly disadvantaged in the labour market, at all education levels

As described in Chapter 2, Brazilian women have higher participation and completion rates than men. As a result, young women are now more likely to have completed upper secondary education or a tertiary degree. Similarly to what is observed internationally, women's employment prospects improve considerably with better qualifications. However, it is noteworthy that, irrespective of their level of qualification, upon leaving education, women still face on average worse labour market prospects than their male peers:

- **The prospects of employment rise more sharply for women with better qualifications than for men.** In Brazil, in 2018, under half (45%) of young women with less than upper secondary qualifications were employed, compared with over three-quarters (77%) of their male counterparts. At tertiary level the comparable figures were 81% and 90% (see Figure 3.21) (OECD, n.d.[47]). While the male-female gap in employment chances narrows at higher levels of educational attainment, data suggest that a relatively high share of well-educated women remain inactive or unemployed. This represents an important untapped resource for the country.
- **Women are more likely to be unemployed.** According to data from 2018, in Brazil, the unemployment rate is 19% among young women with less than upper secondary education, compared with only 12% for males. Among the tertiary-educated, the comparable figures are considerably lower at 9% for women and 7% for men (OECD, n.d.[47]).
- **Despite wage returns from education, women still earn less than their male peers at all qualification levels.** In 2015, women's earnings were 69% of men's earnings, among those with below

upper secondary education. Among those with upper secondary and tertiary qualifications, women's earnings were equivalent to 65% of men's (OECD, 2017[49]). Discriminatory barriers in the labour market may explain at least part of these gaps (OECD, 2014[12]).

Figure 3.21. Employment rates by gender and level of education attainment, 25-34 years-old, 2019



Notes: Countries are ordered by highest to lowest employment rates among women. For Argentina, Brazil and the Russian Federation, the reference year for the data presented is 2018, while for Chile and Indonesia it is 2017.
Source: (OECD, n.d.[47]), *Education and Training / Education at a Glance*, https://stats.oecd.org/ (accessed on 22 November 2020).

StatLink https://stat.link/fnh2ya

In Brazil, one-quarter of young adults are not in education, employment or training

Young people who are neither in employment nor in education or training – commonly referred to as NEETs (*jovens nem-nem* in Portuguese) – are at greater risk of becoming socially excluded, with income below the poverty line and poor career prospects. In OECD countries, around 11% of young adults (aged 15-24) were in this category in 2019, but in Brazil, as in many other developing countries, rates are much higher. In 2018[13], in Brazil, nearly one-quarter of individuals in this age group were NEET (24%). The pattern is similar across Latin America: in Colombia 24% of 15-24 year-olds were NEET, as were 20% in Argentina and in Costa Rica (OECD, n.d.[47]).

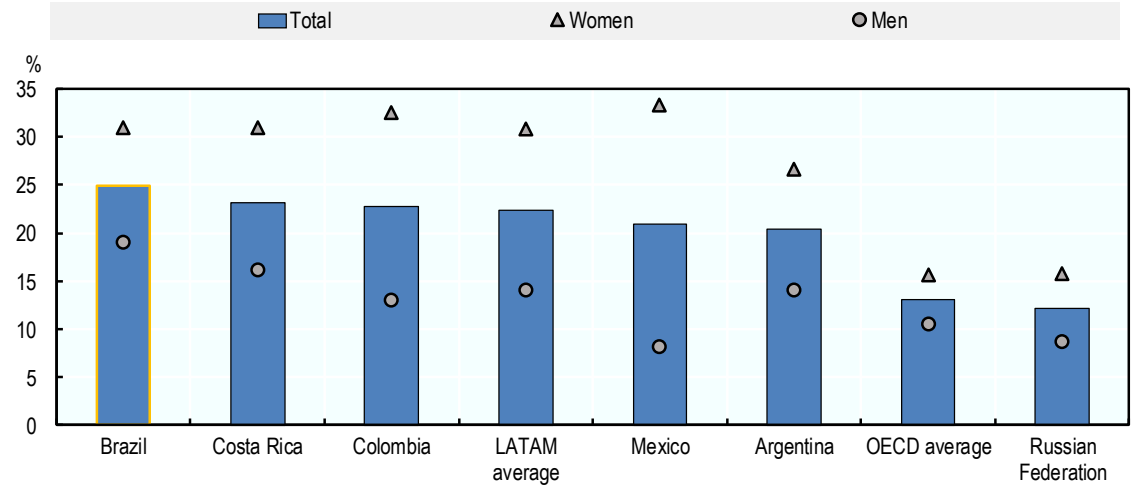
NEET rates are strongly associated with individual's education, socio-economic status, gender and ethnicity.

- In 2018, almost half (47%) of those aged 18-24 and NEET had not completed basic education (ISCED 1 and 2). This suggests that many of those who drop out early on from school end up in the NEET category.
- Unlike the majority of OECD countries, in Brazil, NEET is primarily a female phenomenon often attributed to early pregnancy, housework, childcare or other family responsibilities (OECD, 2014[12]). In 2018, nearly a third of young Brazilian women (aged 15-29) (31%) were classified as NEET,

12 percentage points higher than for men (19%) (see Figure 3.22). While the gap between men and women has decreased since the early 2010s, this is primarily due to a large increase in NEET rates among men rather than in any change of female NEET rates (OECD, 2014[12]). In 2012, an estimated 20% of Brazilian women aged 15-29 were NEET, almost twice the rate for young men (12%). In OECD countries, female NEET rates in 2018 (on average 16%) are only a little higher than those for men at 11% (see Figure 3.22).

- Of those who are NEET, 42% were in the lowest household income quintile, while only 7% come from the richest quintile (IBGE, 2019[50]).
- Black or mixed women are the most likely to be NEET (32%), compared to 22% of white women, 20% of black or mixed men and 15% of white men (IBGE, 2019[50]).

Figure 3.22. Rates of 15-29 year-olds not in education, employment or training (NEET), by gender, 2018



Note: Countries are ordered in descending order by highest to lowest total percentage of 15-29 year-olds not in education, employement or training.
Source: (OECD, n.d.[47]), *Education and Training / Education at a Glance*, https://stats.oecd.org/ (accessed on 22 November 2020).

StatLink https://stat.link/npco1g

Race and ethnicity are also key determinants of earnings

In 2018, white people earned on average 74% more than mixed and black people (IBGE, 2019[50]). In addition,mixed and black individuals are concentrated in economic sectors with low wages (e.g. domestic services and construction) (IBGE, 2019[50]). Even after taking into account educational attainment, the earnings of mixed and black Brazilians lag behind those of whites, with larger gaps at higher attainment levels. Earnings of the tertiary-educated white population were 45% higher than those of their mixed and black counterparts with the same level of qualification (IBGE, 2019[50]).

Conclusion

Ensuring that everyone takes part in education is only the beginning. Students also need access to quality education, where they are able to learn and develop knowledge and skills of value for the labour market and beyond. However, this is often not the case in Brazil. Low levels of skills can not only undermine individuals' career opportunities, but also slow Brazil's development and growth.

This chapter highlighted four main issues that Brazil faces:

- **First, relatively low outcomes in PISA at the age of 15 reflect a school trajectory where students are progressively falling behind.** Results from national and international assessments show that students' underperformance has its roots in the early years of schooling. Without mastering foundational skills, students are unable to progress and accumulate more advanced skills, falling increasingly behind expectations. Children from disadvantaged backgrounds are more vulnerable to this vicious cycle, having often entered school ill-prepared for the demands of formal education (World Bank, 2018[1]).
- **Second, despite improvements, many students leave school without the skills and knowledge they need for their future careers and lives.** Brazil's expansion in access to education and school enrolments has been accompanied by improvements in terms of learning outcomes. While this is a significant achievement, student performance, as measured by PISA, remains well behind OECD countries. Prolonged school closures and distance learning models put in place during the COVID-19 pandemic may also lead to learning losses. Sustaining and accelerating progress will become increasingly challenging as participation in education continues to rise, and larger numbers of disadvantaged students, who are more likely to have fallen behind in school, stay on in education. But national and international evidence has shown that this is not an unsurmountable challenge.
- **Third, performance gaps between the private and public sectors risk further accentuating socio-economic disparities.** At present, Brazil's education system does not offer a level playing field for children and young adults. Families that can afford to enrol their children in private schools are able to offer them better academic and professional prospects. Those from less well-off backgrounds, on the other hand, do not have the same opportunities and tend to attend lower-quality public schools. This damages their life chances, as measured by their employment status and earnings, both reflecting and compounding inequalities in the country. The COVID-19 pandemic and its socio-economic consequences add greatly to this challenge for the current youth cohort.
- **Fourth, Brazil still faces important gender gaps**. In education, girls and women are more likely to be enrolled in school and progress to more advanced levels than boys. In the labour market, however, the trend reverses. Women show lower levels of employment and face a significant wage penalty, relative to men. More research should focus on the potential barriers women face to join and progress in the labour market (e.g. lack of high-quality and affordable childcare; scarcity of full-day schooling; discrimination in the labour market; unawareness of labour market opportunities for women; etc.). Overcoming these barriers would help Brazil make fuller economic use of its female working population and ensure women are able to successfully enter and remain in the labour market, realising their full potential.

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Annex 3.A. PISA reading, mathematics and science scores in Brazilian states and regions, 2003-2018

Annex Table 3.A.1. PISA scores in Brazilian states and regions, reading, 2003-2018

		PISA 2003	PISA 2006	PISA 2009	PISA 2012	PISA 2015	PISA 2018
Brazil		403	393	412	407	407	413
North	Acre		356	383.2	383	407	
	Amapá		390	390.4	396.2	385	
	Amazonas		343	386.6	381.7	407	
	Pará		387	383.4	387.3	395	
	Rondônia		415	398.7	400.1	393	
	Roraima		388	383.6	377.1	403	
	Tocantins		374	390.7	380.6	376	
	North (average)		377				392
Northeast	Alagoas		373	371.8	355.4	362	
	Bahia		384	396.8	388	372	
	Ceará		366	385.1	396.9	409	
	Maranhão		272	369.9	368.9	377	
	Paraíba		395	390.8	411.4	385	
	Pernambuco		352	387.7	376.3	394	
	Piauí		378	380.9	402.6	381	
	Rio Grande do Norte		386	385.2	393.2	384	
	Sergipe		408	387.9	397.2	379	
	Northeast (average)		359				389
Southeast	Espírito Santo		403	423.6	427.3	441	
	Minas Gerais		413	432.1	427.2	431	
	Rio de Janeiro		427	419.8	407.9	400	
	São Paulo		392	425.1	421.6	417	
	Southeast (average)		404				424
South	Paraná		418	423	421.9	433	
	Rio Grande do Sul		412	436.3	432.9	410	
	Santa Catarina		431	439	422.6	419	
	South (average)		419				432
Centre-West	Distrito Federal		429	449.4	427.9	430	
	Goiás		387	413.1	393.4	416	
	Mato Grosso do Sul		375	414.2	427.6	411	
	Mato Grosso		372	399.6	381.6	402	
	Centre-West (average)		388				425

Source: (INEP, n.d.[51]), *Ações Internacionais, Pisa: Resultados,* http://portal.inep.gov.br/acoes-internacionais/pisa/resultados (access 23 July 2020).

Annex Table 3.A.2. PISA scores in Brazilian states and regions, mathematics, 2003-2018

		PISA 2003	PISA 2006	PISA 2009	PISA 2012	PISA 2015	PISA 2018
Brazil		356	370	386	389	377	384
North	Acre		346	350	358.7	377	
	Amapá		344	365.3	360.2	354	
	Amazonas		298	353.2	355.8	378	
	Pará		348	362.8	359.8	363	
	Rondônia		378	379.1	381.9	364	
	Roraima		353	358.8	361.8	373	
	Tocantins		341	363.4	365.5	350	
	North (average)		339				366
Northeast	Alagoas		341	354.3	342	339	
	Bahia		339	371.3	373.2	343	
	Ceará		349	363.9	378.3	382	
	Maranhão		270	344.6	343.2	343	
	Paraíba		355	376.7	395.3	357	
	Pernambuco		335	368.3	363.4	360	
	Piauí		343	366.6	385.3	355	
	Rio Grande do Norte		349	360.8	380.4	353	
	Sergipe		385	363.9	384	354	
	Northeast (average)		333				363
Southeast	Espírito Santo		385	397.3	414.2	405	
	Minas Gerais		386	408.9	403.1	398	
	Rio de Janeiro		391	392.9	388.8	366	
	São Paulo		370	391.3	403.6	386	
	Southeast (average)		378				392
South	Paraná		400	401.8	403.5	406	
	Rio Grande do Sul		405	411.7	407	385	
	Santa Catarina		413	412.7	415.3	398	
	South (average)		405				401
Centre-West	Distrito Federal		431	424.8	415.8	396	
	Goiás		378	385.5	379.1	380	
	Mato Grosso do Sul		363	389.7	408.3	377	
	Mato Grosso		353	379.7	370.2	373	
	Centre-West (average)		378				396

Source: (INEP, n.d.[51]), *Ações Internacionais, Pisa: Resultados,* http://portal.inep.gov.br/acoes-internacionais/pisa/resultados (access 23 July 2020).

Annex Table 3.A.3. PISA scores in Brazilian states and regions, science, 2003-2018

		PISA 2003	PISA 2006	PISA 2009	PISA 2012	PISA 2015	PISA 2018
Brazil			390	405	402	401	404
North	Acre		366	379	379.8	399	
	Amapá		364	378.2	382	381	
	Amazonas		349	373	376	399	
	Pará		380	381.8	376.9	386	
	Rondônia		396	397.7	389.1	387	
	Roraima		384	384.6	375.1	398	
	Tocantins		362	392.2	378.5	372	
	North (average)		372				384
Northeast	Alagoas		366	365.2	345.9	360	
	Bahia		364	389.6	390.4	368	
	Ceará		367	390.1	386.4	401	
	Maranhão		317	367.6	359.3	369	
	Paraíba		389	389	411.8	380	
	Pernambuco		355	383.7	374.2	383	
	Piauí		375	382.6	402.7	380	
	Rio Grande do Norte		364	370.5	387.4	377	
	Sergipe		402	385.7	394.2	375	
	Northeast (average)		359				383
Southeast	Espírito Santo		403	421.3	428.2	435	
	Minas Gerais		406	429.8	419.9	422	
	Rio de Janeiro		411	411.5	400.6	392	
	São Paulo		385	412.5	417.4	409	
	Southeast (average)		396				414
South	Paraná		422	421.3	415.6	425	
	Rio Grande do Sul		424	430.9	419.2	411	
	Santa Catarina		427	435.5	418.4	418	
	South (average)		424				419
Centre-West	Distrito Federal		447	442.6	422.8	426	
	Goiás		398	409.5	396.3	409	
	Mato Grosso do Sul		377	408.7	414.8	403	
	Mato Grosso		370	391.6	380.9	396	
	Centre-West (average)		396				415

Source: (INEP, n.d.[51]), *Ações Internacionais, Pisa: Resultados*, http://portal.inep.gov.br/acoes-internacionais/pisa/resultados (access 23 July 2020).

Notes

[1] Brazil, like many Latin American countries, takes part in regional assessments of younger children, coordinated by the UNESCO Regional Bureau of Education for Latin America and the Caribbean, and the Latin-American Laboratory for Assessment of the Quality of Education (Laboratorio Latinoamericano de Evaluación de la Calidad de la Educación, LLECE). The First Regional Comparative and Explanatory Study (Primer Estudio Regional Comparativo y Explicativo, PERCE) was implemented in 1997 in 13 countries. Nine years later, in 2006, the Second Study (Segundo Estudio Regional Comparativo y Explicativo, SERCE) tested students in 16 countries plus one Mexican state. The Third Study (Tercer Estudio Regional Comparativo y Explicativo, TERCE) was implemented in 2013 in 15 countries and the same Mexican state. PERCE, SERCE and TERCE have measured learning outcomes of reading and mathematics of children in Grades 3, 4 (only in 1997) and 6. Brazil has participated in all rounds of the studies. Brazil also takes part in the International Civic and Citizenship Study (ICCS).Their participation in these assessments was until very recently one of the reasons why Brazil had not undertaken PIRLS and TIMSS. However, the Brazilian government recently announced that Brazil will take part in PIRLS 2021 and TIMSS.

[2] This refers to PISA Coverage Index 3, which represents the coverage of the national 15-year-old population. This estimates the proportion of the national population of 15-year-olds covered by the non-excluded portion of the student sample. The index is below 1.0 to the extent that 15-year-olds were excluded, or not enrolled in Grade 7 or higher. For further information on Brazil's student sample in PISA, please access: https://www.oecd.org/pisa/data/pisa2018technicalreport/

[3] A proposal to reform the SAEB had been put forward in early 2021, but will no longer be rolled out as planned. The government still plans to implement many of the proposed changes, albeit under a different timeline. A forthcoming OECD report provides insights to this discussion.

[4] In the most recent, 2019 edition of SAEB, Year 2 students were assessed in literacy for the first time. Previously, SAEB assessed Year 3 students. This change reflects Brazil's new common curricular base, which establishes that students should be literate by the end of Year 2. However, given that the assessment of the Year 2 was sample-based, rather than census-based, the authors have chosen not to include these results in the graph.

[5] Up until 2016, Grade 3 students who reached Levels 3 and 4 in ANA were considered to have adequate proficiency levels in literacy. However, the federal government has not explicitly defined adequate proficiency levels for other grades or subjects for SAEB 2019. The OECD has opted to use the approach that other national stakeholders (such as Todos Pela Educação) take, whereby: in Portuguese, students in Years 5, 9 and in Grade 3 or 4 of upper secondary education who reach Level 4 on the SAEB proficiency scale are considered to have adequate levels of learning; in mathematics, students in Years 5 and 9 who reach Level 5, and students in Grade 3 or 4 of upper secondary education who reach Level 6 are considered to have adequate levels of learning.

[6] The data show improvements in reading performance between the PISA 2000 cycle and the PISA 2018 cycle.

[7] Only for reading was there a statistically significant increase in the share of high achievers between 2012 and 2018

[8] PISA 2018 results allow however a comparison across regional averages. Results show, as discussed, that the South, Southeast and Centre-West regions have higher scores across all subjects than the North and Northeast regions.

[9] This refers to the National Institute of Educational Studies and Research Anísio Teixeira (Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira, INEP) indicator of socio-economic level, which is based on data obtained from students' responses to contextual questionnaires. Students are categorised into eight socio-economic levels, with Level 1 being the lowest and Level 8 the highest on the scale. Schools are then categorised by their students' socio-economic profile, ranging from 1 to 6 (1 to 7 until 2016). Schools at Level 1 have the highest concentration of students from the lowest socio-economic backgrounds and schools at Level 6 have the highest concentration of students from the highest socio-economic background (Todos pela Educação, 2019[52]).

[10] PISA 2018 results allow however a comparison across regional averages. Results show, as discussed, that the South, Southeast and Centre-West regions have higher scores across all subjects than the North and Northeast regions.

[11] The difference is not statistically significant

[12] SAEB 2017 instead of SAEB 2019 results were used in this paragraph because at the time of the draft of this publication, the microdata for SAEB 2019 with information disaggregated by race for example, was not yet available.

[13] Most recent year with available data for Brazil in the OECD statistics database.