GSMA™

Closing the usage gap in Brazil

Key barriers to mobile internet adoption and use

February 2023

GSMA

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Executive Summary

A third of the population remains unconnected to mobile internet services in Brazil

Mobile internet connectivity has expanded across Brazil, with penetration increasing from 54% in 2017 to 67% in 2022. However, that still leaves 33% of the population not connected. This comprises a coverage gap of 8% (around 17 million people living in areas not covered by a mobile broadband network) and a usage gap of 25% (around 54 million people living within coverage of a network but not using mobile internet services).

The quarter of Brazil's population who do not use mobile internet services despite living within coverage of mobile broadband represents a key challenge to ensuring every Brazilian is connected and able to enjoy the socioeconomic benefits that the internet can provide.

54m
people are iiving within coverage of a network but not using mobile internet services
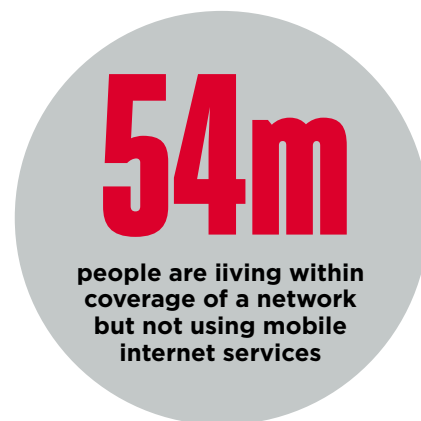
To achieve universal connectivity and move to a more digital society, Brazil's main policy priority should be to close the mobile internet usage and coverage gaps. This means focusing on these two areas:

1
Encouraging mobile internet adoption among those covered by a mobile broadband network (the largest proportion of the unconnected)

2
Creating incentives for the market to deliver as much mobile network deployment as feasible, while finding innovative alternatives for those that remain without coverage

Tackling the usage gap

Following significant reductions in mobile tariffs in Brazil in recent years, the key barriers for mobile internet adoption are related to handset affordability and a lack of digital skills. For a significant proportion of the population, an internet-enabled device is still unaffordable given current income levels. Meanwhile, the large proportion of Brazilians that lack key digital skills represents a significant risk to productivity, since the country will be unable to take full advantage of the opportunities that connectivity brings.

To close the usage gap, taxes and sector-specific charges should be reduced to lower the affordability barrier for new users. In addition, financing mechanisms and subsidies should be promoted to reduce upfront handset costs and ensure access for low-income populations.

Enhancing digital skills and literacy should be a priority – specifically, educating target segments and increasing awareness of use cases among potential mobile internet users. It is recommended that Brazil makes strategic use of resources from the Fundo de Universalização do Serviço de Telecomunicações (Telecommunications Services Universalization Fund, or FUST) to reduce the digital divide by encouraging the use of mobile services and developing skills and educational projects.

Tackling the coverage gap

Efforts are already underway to address the coverage gap, including obligations attached to spectrum licences, infrastructure sharing, enforcement obligations to convert fines into investment, regional initiatives (such as Fala Bahia and Alô Minas) and, more recently, the use of FUST and rules for spectrum licence renewal. These measures can help improve the sustainability of investments in rural areas, creating incentives for infrastructure deployment.

In remote or sparsely populated areas, with negative returns on investment, public investment will likely be required to complement private financing. Additional sources of public funding for connectivity programmes could come from the national federal budgets or through seeking greater tax symmetry between all players in the digital economy. As investment in infrastructure is the main priority for achieving better coverage rates, the next government needs to carry out comprehensive and simplifying tax reform.

1. Introduction

# Brazil's connectivity in context

Addressing the usage gap is one of the mobile industry's main priorities. To reduce the digital divide and make it easier for people to take advantage of the benefits of mobile internet, the industry is partnering with vertical sectors, governments and civil organisations to address the key barriers to mobile internet adoption and use[1].

At the end of 2021, around 250 million people in Latin America[2] were not accessing the mobile internet[3]. Due to its size, Brazil accounts for more than a quarter of the region's unconnected. This research therefore identifies the primary barriers to mobile internet use in the country. It also outlines policy recommendations to reduce the country's digital divide and set an example for others in the region.

In recent years, Brazil has advanced in terms of connectivity and become a benchmark reference in the region for infrastructure deployment[4] – despite the challenges of its geography and demographics. Brazil has one of the best connectivity and network indicators in Latin America, enabling a greater number of users to access high-quality, high-speed mobile internet services **(see Figures 1 and 2)**. Brazil is also one of the 5G leaders in Latin America[5].
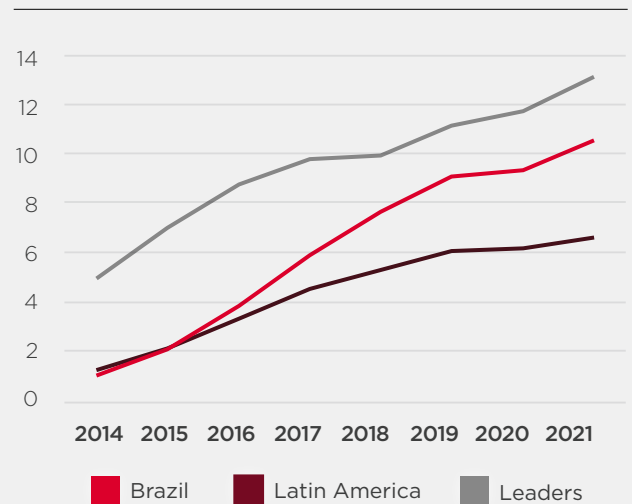
Figure 1 | Average download speeds (Mbps) for mobile users
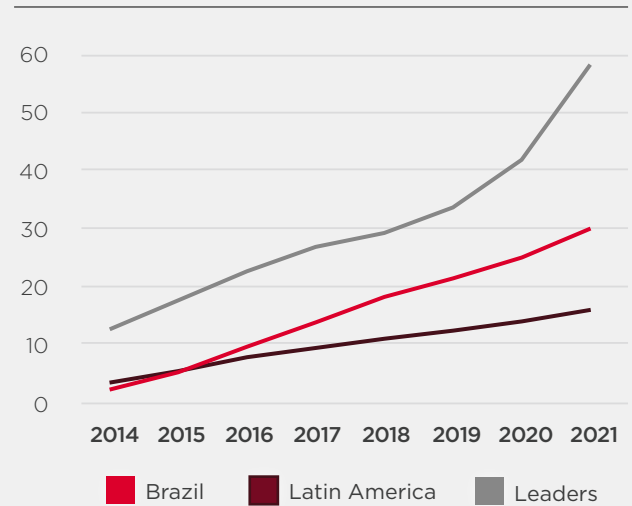
Source: GSMA Intelligence analysis of data provided by Ookla's Speedtest Intelligence

Figure 2 | Average upload speeds (Mbps) for mobile users

Source: GSMA Intelligence analysis of data provided by Ookla's Speedtest Intelligence

250m
people at the end of 2021 in Latin America and the Caribbean were not accessing mobile internet

1/4
of these people are in Brazil

1 Examples are shown at Digital Inclusion: Reducing the Usage Gap Initiatives
2 For the purposes of this report, 'Latin America' refers to Latin America and the Caribbean
3 State of Mobile Internet Connectivity 2022, GSMA, 2022
4 According to the GSMA Mobile Connectivity Index, Brazil is the second highest-scoring country in Latin America for the infrastructure enabler in 2021. This enabler measures the availability of high-performance mobile internet networks based on the following variables: network coverage, network performance, spectrum conditions and other enabling infrastructure requirements such as number of internet exchange points, access to electricity, international bandwidth per user and number of secure servers.
5 According to Anatel and GSMA Intelligence figures, 5G mobile coverage for Brazil in 2022 is 37%, which is higher than other South American countries including Chile (9%), Uruguay (9%) and Argentina (4%).

Understanding the challenges of realising Brazil's digital potential

Structural challenges persist that inhibit Brazil from fully exploiting its full digital potential. Some 8% of Brazilians still do not have mobile broadband coverage – a challenge exacerbated by bureaucratic and costly regulatory conditions for infrastructure deployment in certain municipalities, together with complex tax measures that affect the conditions for network investment by mobile providers. Despite these problems, the mobile industry has made significant investments to reduce the coverage gap. Public policies should therefore further incentivise deployment in rural areas.

According to Anatel, 4G coverage in November 2021 reached 88% of the population in Brazil, with 89 municipalities lacking coverage. By September 2022 (the latest figure available from Anatel), this had increased to 92% – with just five municipalities without coverage. The figures highlight the divide between rural and urban areas, as the latter have near-universal 4G coverage at 99.5%, while coverage in rural areas stands at 52%. Coverage priorities must be focused on establishing favourable investment conditions for rural areas.

Nevertheless, a larger proportion of the population (25%) live within the footprint of a mobile broadband network but do not use mobile internet. This usage gap is the focus of this report because it accounts for the majority of Brazil's unconnected population. Structural challenges, which include broader socioeconomic challenges and industry-specific conditions, undermine Brazil's position among leading connectivity countries[6] despite efforts made so far.

Defining connectivity

Connected: those who have used a mobile data internet subscription (3G, 4G or 5G) in the last three months. In this study, we consider connectivity relative to Brazil's total population. Given that it is unrealistic and undesirable to connect every person, including infants and young children, we define universal connectivity in Brazil as 90% internet adoption because just over 10% of the population are under the age of 10 years old[7]. We also present analysis based on adults aged 18 and above in the **Appendix**.

Analysis of the connected population excludes individuals who do not have a mobile internet subscription but who may still access the internet on a shared device. International connectivity targets[8] aim to connect all individuals, as people benefit more from having direct internet access than from shared or intermittent access.

Usage gap: refers to those who live within coverage of a mobile broadband network but are not using mobile internet services.

Coverage gap: refers to those who live in an area not covered by a mobile broadband network.

Further information on definitions and data sources is provided in **Appendix 1**.
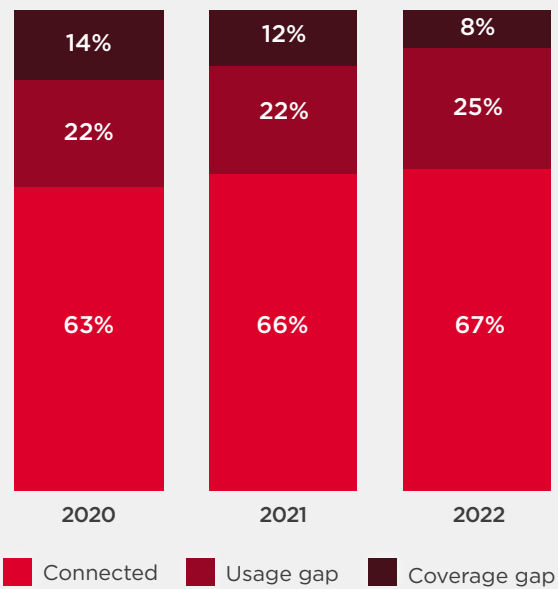
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2. State of the market

The mobile internet usage gap is the main challenge to universal access

Brazil's sheer geographic size means that the challenges of addressing the coverage gap tend to be greater than in other countries in Latin America and elsewhere. Despite this, Brazil has managed to reduce its coverage gap in recent years. This resulted in an increase in the usage gap – from 22% to 25% over the last three years. A large proportion of the population remains unconnected even though the mobile industry has increased coverage. By the third quarter of 2022, almost 145 million Brazilians were connected (67% mobile internet penetration[9]), while almost 54 million were not connected despite living within 4G network coverage.

If the population base considered is limited to adults aged 18 years and above (the population eligible for a mobile service contract in Brazil), the usage gap was 10% in 2022 **(see Appendix 2)**. This means more than 16 million adults are not using mobile internet despite living within coverage of a mobile broadband network.

Figure 3 | Mobile internet connectivity in Brazil, 2020–2022

	2020	2021	2022
Coverage gap	14%	12%	8%
Usage gap	22%	22%	25%
Connected	63%	66%	67%

■ Connected ■ Usage gap ■ Coverage gap

Base: total population

Source: GSMA Intelligence and Anatel

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9 This analysis is based on unique mobile internet subscribers or those that use internet services on a mobile device. Mobile internet services are defined as any activities using mobile data. A unique subscriber is distinct from a mobile connection, which is a unique SIM card registered on a mobile network. Connections differ from subscribers in that a unique subscriber can have multiple connections.

Brazil's usage gap is lower than that of Latin America and similar to the average usage gap of the Leader countries. However, it is important to note that this analysis for adults excludes school-age students, for whom the adoption of technology and digital skills is increasingly essential.

With the increase in smartphone adoption and rapid growth of 4G/5G connections in Brazil in recent years, smartphones account for a higher proportion of total connections than in other Latin American countries and Leader countries **(see Appendix 2)**. The vast majority of people with mobile access in Brazil are enjoying advanced services and high speeds. The digital and technological gaps between the unconnected and connected are therefore more significant, with mobile internet impacting most essential activities, including work and study.

The scope of this report is based on the international connectivity targets[12] that aim for all individuals to be connected with a mobile phone and to have direct access to the internet. This allows individuals to realise the full benefits of connectivity. In the most recent data available from the Brazilian Institute of Geography and Statistics (IBGE), the percentage of households using mobile broadband internet is 81%[13]. However, this includes intermittent or shared mobile internet access, which differs from the definition of 'connected' used for this research.

Figure 4 | Mobile internet connectivity in Brazil,[10] rest of Latin America[11] and Leader countries, 2021
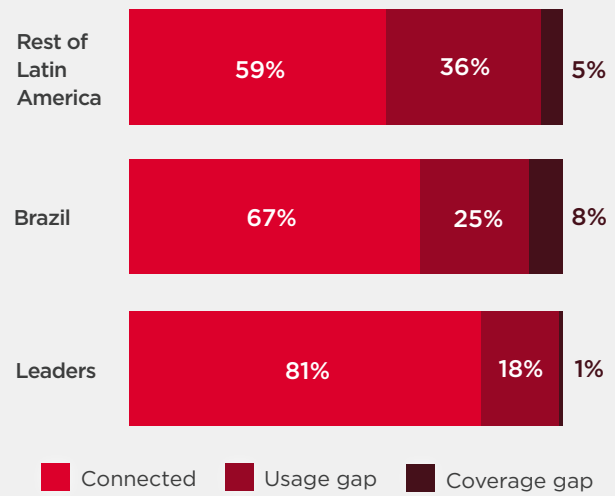
	Connected	Usage gap	Coverage gap
Rest of Latin America	59%	36%	5%
Brazil	67%	25%	8%
Leaders	81%	18%	1%

Base: total population

Source: GSMA Intelligence and Anatel

Brazil has made significant progress with connectivity enablers

To evaluate the mobile connectivity conditions for Brazil, this report uses the Mobile Connectivity Index (MCI)[14] which measures the performance of 170 countries against the key enablers of mobile internet adoption (Infrastructure, Affordability, Consumer Readiness and Content and Services). Countries are scored on a range of 0 to 100 across a number of indicators, with a higher score representing stronger performance in delivering mobile internet connectivity. With an index score of 75, Brazil is in the 'Advanced' cluster of the MCI 2021. Brazil progressed from the 'Transitioner' group in 2015 and increased its overall MCI score by 19 points between 2015 and 2021.

Brazil has seen improvements across each of the four enablers since 2015, with Infrastructure and Affordability (meaning the total cost of mobile ownership, including mobile tariffs, handset prices, inequality and taxation) the two enablers recording the strongest growth. Despite significant progress in recent years, affordability remains the main area for improvement. For the Infrastructure enabler, network performance is the main driver of improvement, with good network quality a key factor (driven in large part by the adoption of 4G).

Brazil outperforms most other countries in Latin America in the Content and Services enabler, thanks to good availability of local content (including apps) and a high score for e-government. This is Brazil's highest-scoring enabler and is similar to the levels achieved by the Leader countries. The results for Consumer Readiness suggest Brazil's gap versus Leader countries is narrower, reflecting high levels of mobile ownership and a small gender gap. However, Brazil could improve in the area of basic skills in particular.

Overall, Brazil has transitioned from being at similar levels to the Latin America region as a whole between 2015 and 2018 to scoring better than the other countries in the region[15]. Between 2018 and 2021, Brazil achieved the highest relative index score increase in Latin America. However, it is still behind the Leader countries[16] – the benchmark used for this report.

Figure 5 | GSMA Mobile Connectivity Index scores, 2015–2021

Brazil ■ Latin America ■ Leaders
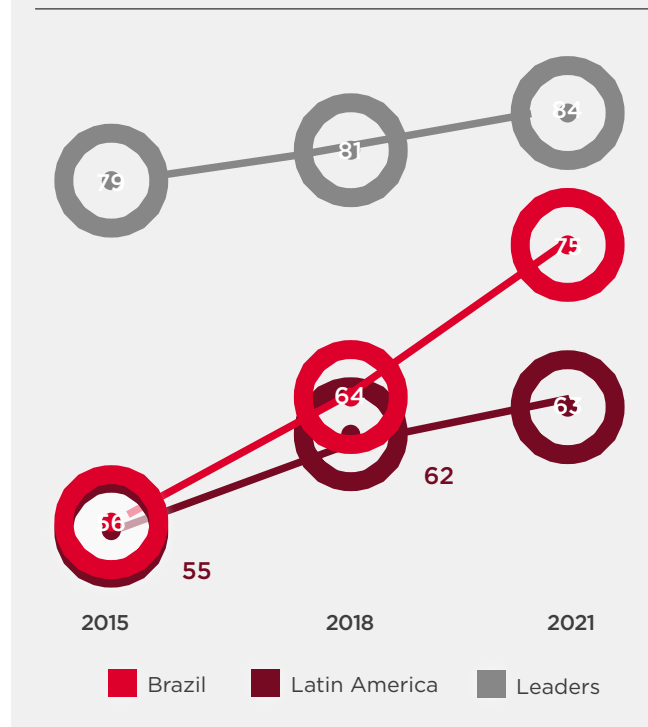
Source: GSMA Intelligence

Figure 6 | GSMA Mobile Connectivity Index scores for four enablers, 2021
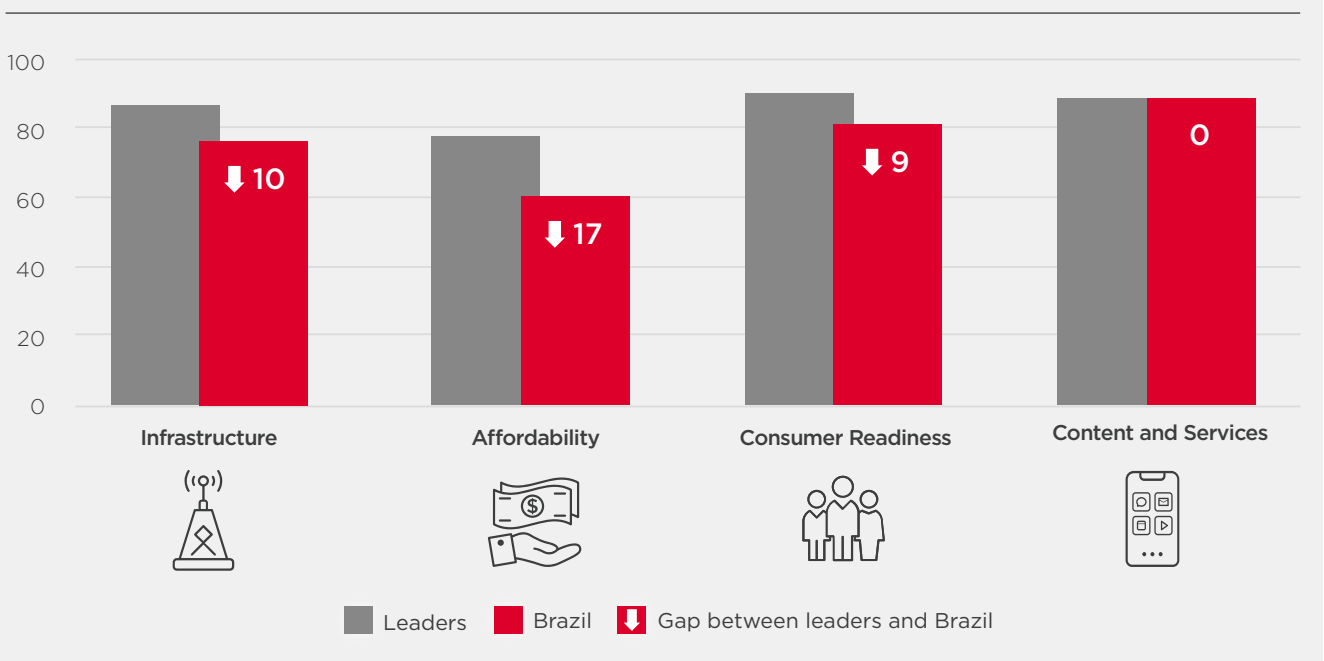
Infrastructure — Affordability — Consumer Readiness — Content and Services

Leaders ■ Brazil ■ Gap between leaders and Brazil
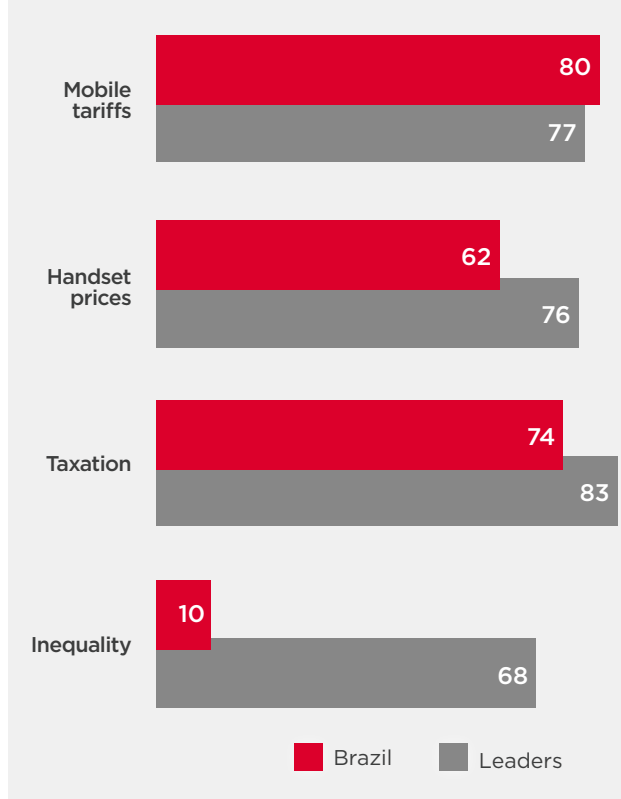
Source: GSMA Intelligence

Mobile tariffs are low, but device affordability remains a barrier to universal access

Affordability – a key determinant of mobile internet service adoption – is defined as the ability of users to pay for a handset and cover the cost of mobile internet services. This is referred to as the total cost of mobile ownership (TCMO). The indicator is a function of two principal variables: the cost of having a mobile data service and device, and consumers' income. In Brazil, the ability to pay for a handset is the most significant barrier to addressing the mobile internet usage gap.

The Affordability enabler of the MCI considers several dimensions: mobile tariffs, handset prices, inequality and taxation[17]. It is clear that lower scores for handset prices, inequality and taxation are driving the lower score for the Affordability enabler in Brazil **(see Figure 7)**. Conversely, the country performs better than Leader countries in terms of mobile tariffs, reflecting the continued fall in the price of mobile internet services in recent years **(see Figure 8)**. Improved affordability, especially of mobile data, in 2021 is likely to be a key factor driving the increases in mobile internet adoption and usage.

Figure 7 | Affordability by dimension, 2021

Mobile tariffs: Brazil 80, Leaders 77
Handset prices: Brazil 62, Leaders 76
Taxation: Brazil 74, Leaders 83
Inequality: Brazil 10, Leaders 68

■ Brazil ■ Leaders

Source: GSMA Intelligence

Figure 8 | Brazil: monthly price[18] evolution for mobile internet baskets (US dollars), 2015–2021

■ 1GB ■ 5GB
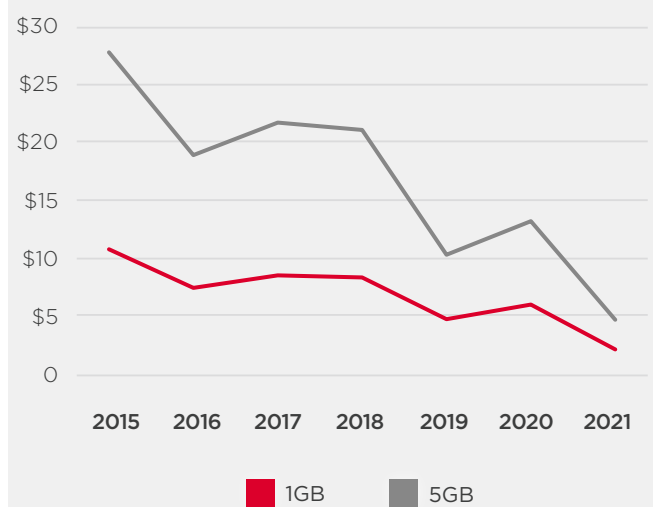
Source: GSMA Intelligence

17 For details on how we gather mobile and device pricing data, please refer to the MCI Methodology document. Mobile tariffs and handset prices include taxes, so refer to retail prices.
18 Prices are inclusive of taxes; they are list prices for consumers

High device costs for low-income groups limit mobile internet adoption

Mobile internet services and internet-enabled devices are generally more affordable in Brazil than most other countries in Latin America. The cost of an internet-enabled handset has fallen, from 15% of monthly GDP per capita in 2018 to 6% in 2021. Although the figure for Brazil is better than the 15% for low- and middle-income countries (LMICs), it is significantly higher than the level seen for the Leader countries (2.5%). Device affordability lags behind the Leader benchmark, which is explained by lower incomes in relative terms **(see Figures 9 and 10)**.

Figure 9 | Monthly price of mobile internet and devices (US dollars), 2018 and 2021

Legend: ■ Brazil ■ Leaders
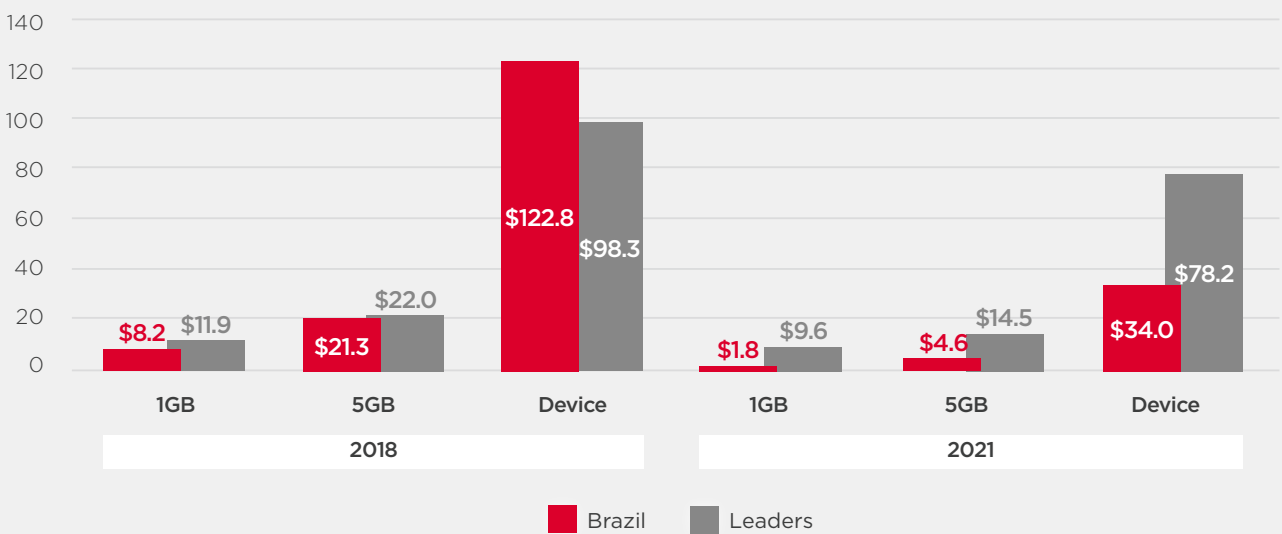
Source: GSMA Intelligence

Figure 10 | Monthly price of mobile internet and devices as a percentage of GDP per capita, 2018 and 2021

Legend: ■ Brazil ■ Leaders
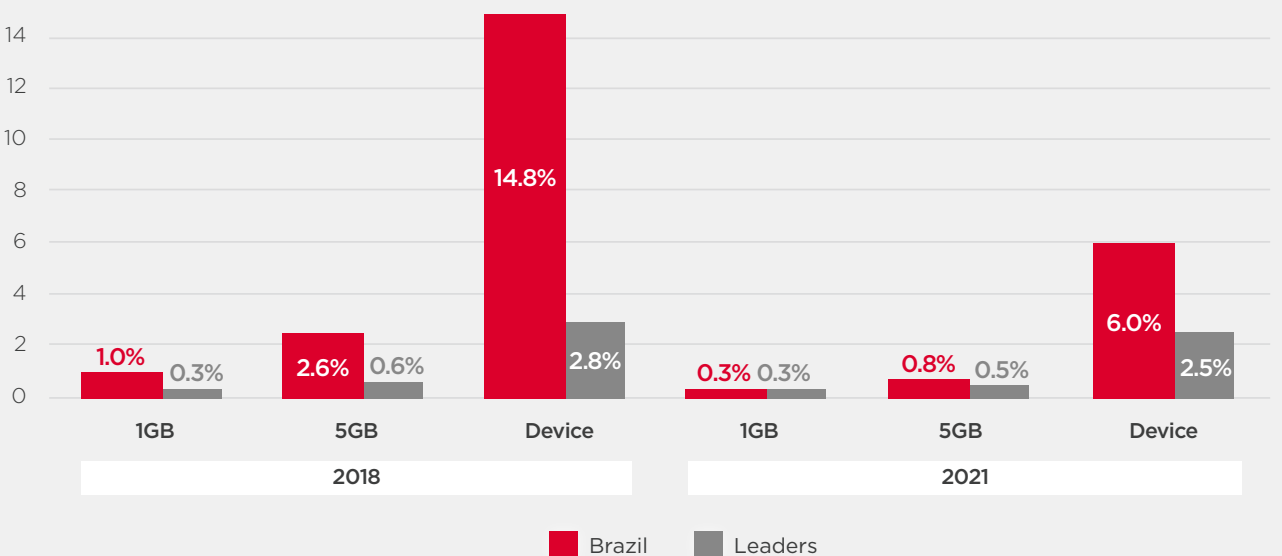
In absolute terms, mobile tariff costs are much lower in Brazil than in the Leader countries. In relative terms (as a percentage of monthly income), the costs of 1GB and 5GB are almost the same for both (Brazil and Leaders), which is remarkable given the disparities in income. In fact, since 2019, the mobile industry has already accomplished one of the affordability targets set by the ITU for 2030, with an entry-level broadband subscription costing less than 2% of gross national income per capita[19].

Handset affordability remains a significant barrier to internet access for those on the lowest incomes and the underserved. Income inequality is a further factor which is making it a challenge to close the usage gap. High inequality levels mean affordability for those in the poorest 40% of the population will be much worse and therefore a key barrier to mobile internet adoption. Of the 170 countries included in the MCI, Brazil is ninth in terms of countries with the greatest levels of inequality. Income inequality and its implications, particularly with respect to handset affordability, are key causes of Brazil's digital gap.

Those in the highest income quintile in Brazil spend 2.2% of their monthly income on a handset, while those in the lowest quintile spend 26.5%, on average.

Figure 11 | Brazil: data plans and device costs as a proportion of monthly income for the 20% of the population with the lowest and highest incomes, 2021
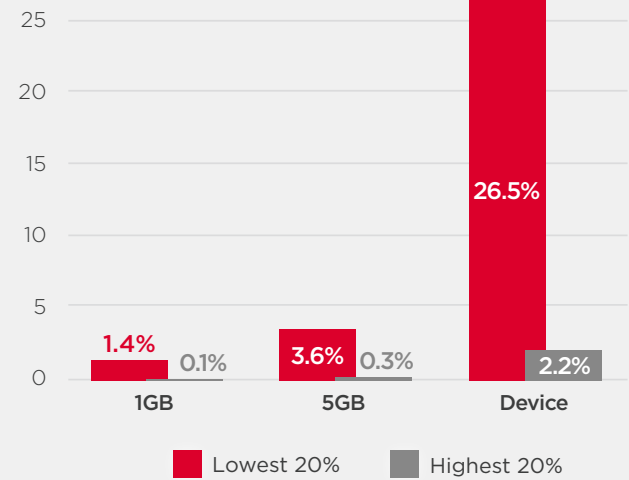
Source: GSMA Intelligence

Low-income groups would need to spend more than a quarter of their monthly income to be able to afford a device. If the comparison is made for people in the 20% of the population with the lowest income, this expenditure is 6.4% for the Leader countries – a figure considerably lower than for Brazil **(see Appendix 2)**.

In contrast, Brazil has achieved the second ITU affordability target for 2030 of entry-level broadband subscriptions costing less than 2% of average income for the bottom 40% by income level[20]. The price for 1GB is 1% of monthly income in this segment **(see Appendix 2)**.

While prices for mobile plans in Brazil have fallen and are lower than in Leader countries on average, income inequality and handset prices pose significant barriers to digital inclusion because there is a disproportionate gap in affordability between low- and high-income groups. The opportunity cost for people with lower income levels (who also represent the greatest proportion of the unconnected in Brazil) is higher due to more limited income to save and access to credit. This creates significant expenditure trade-offs for the segment, representing a major constraint on universal mobile internet access in Brazil.
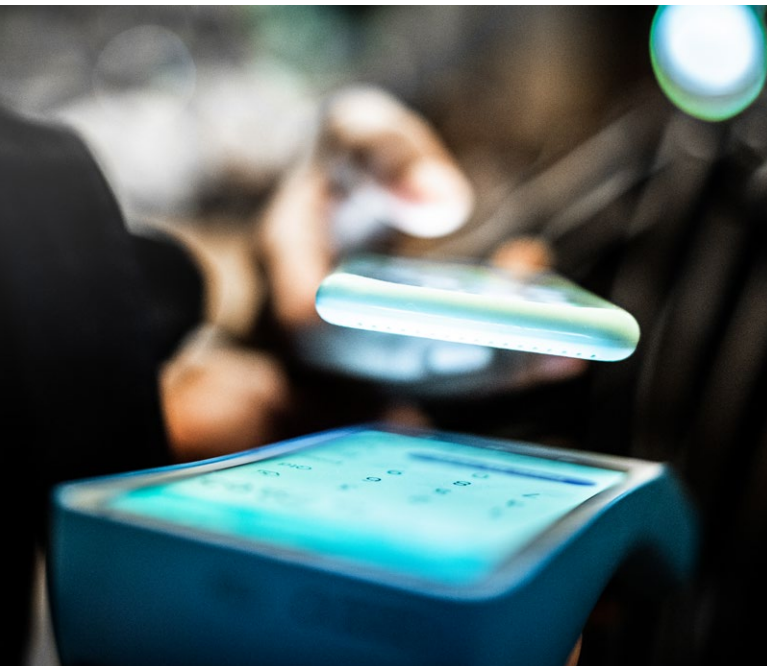
19 ITU's Aspirational targets for 2030
20 See the ITU's Aspirational targets for 2030

Simplifying taxation for consumers and operators can improve affordability and network investment

Despite recent improvements in affordability in Brazil, taxation remains a key barrier for the population with the lowest incomes. Tax as a percentage of total cost in Brazil is higher than in Leader countries, as well as other countries in Latin America.

Brazil imposes several taxes on mobile services and handsets, including state VAT (ICMS), federal VAT (IPI), municipal services tax (ISS), PIS/COFINS, FUST and FUNTELL charges. In 2020, analysis from Anatel[21] showed Brazil had the fourth highest tax burden on mobile worldwide. While steps were taken in 2022 to reduce this (with lower ICMS rates, for example), the proportion of mobile service costs that are driven by taxation in Brazil still remains among the highest globally, equating to approximately 30% of operators' net income.

This pressure is mainly explained by complex fiscal and regulatory fees, including multiple contributions to several funds and local/national taxes such as FUST, FUNTTEL, ICMS, PIS/PASEP and COFINS. This multiplicity of taxes requires a structural modification towards a predictable tax design that generates fewer costs to operators and creates more certainty for infrastructure investment. Reductions and simplifications to sector-specific taxes can drive two main benefits: a reduction in the coverage gap as operators take advantage of better conditions in which to invest in infrastructure, and an increase in the affordability of mobile services, boosting demand and adding value to the economy through the knock-on effect for other industries.

Figure 12 | MCI indicator for tax as a percentage of TCMO, 2021

Brazil	Rest of Latin America	Leaders
47	71	72
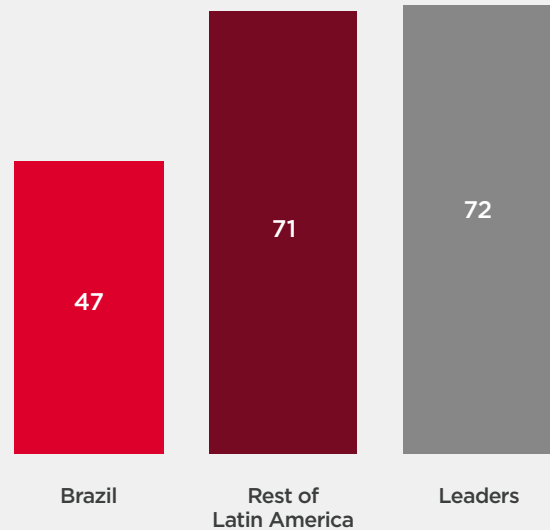
Note: lower score indicates higher taxation as a percentage of total cost

Source: GSMA Intelligence

21   Carga Tributária Em Telecomunicações, Anatel, 2021

Improving digital literacy and skills can help close the usage gap

Brazil performs relatively well on the MCI's Consumer Readiness enabler. This mainly reflects high levels of mobile ownership and the fact there is no gender gap in mobile or mobile internet access in the country. However, the Basic Skills dimension is an area where Brazil can improve; it scores 68, compared to 84 for the Leader countries. This reflects lower levels of educational attainment in Brazil – in terms of years of schooling and tertiary enrolment, for example **(see Appendix 2)**.

Looking at ITU data on ICT skills, several indicators show the urgency for improved digital skills, with a relatively low proportion of Brazilians demonstrating these competences. This represents a significant risk to productivity because the country may not be able to take full advantage of the opportunities that connectivity brings. Figure 13 shows how Brazil is behind the Leader countries[22] in terms of types of skills defined by the ITU[23].

The GSMA Consumer Survey in Brazil for 2019 (in which 1,000 adults were interviewed) showed that 12% did not have an active mobile SIM. This prevented them from accessing mobile services (voice and data). The top reasons for not having access were digital literacy and skills[24] and the cost of a device, followed by concerns around safety and security **(see Figure 14)**[25]. These barriers were also cited as the most important reasons for consumers not accessing mobile internet.

Figure 13 | Percentage of individuals with ICT skills, 2021

Source: GSMA Intelligence and ITU

Figure 14 | Top barrier to owning a mobile phone in Brazil, 2019

- Digital literacy and skills — 36%
- Handset cost — 29%
- Safety and security — 18%
- Lack of relevant content — 7%
- Mobile cost — 6%
- Other access barriers — 2%
- Network coverage — 2%

Note: Non-mobile phone owners aged 18+. Percentages indicate the proportion of respondents who answered "This is the most important reason stopping me" to the question "Which one of those factors would you say is the single most important reason stopping you from having a mobile phone or SIM card, connected to a mobile operator's network?" Thirteen different response options were grouped into categories.

Source: GSMA

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22 The number of Leader countries was reduced in this specific analysis to 31 countries due to limitations or reduced data coverage in the database from the ITU.
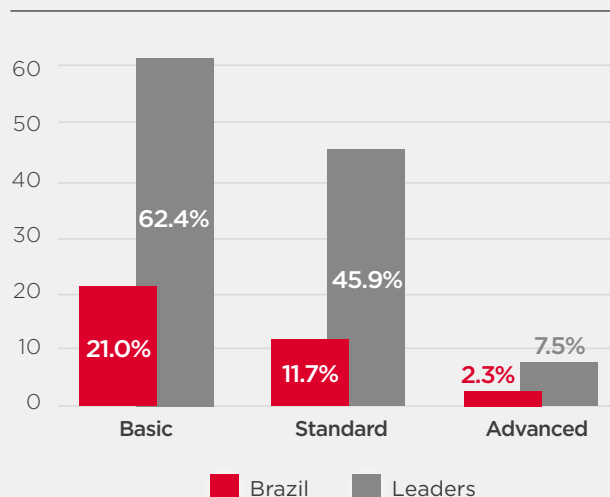
23 According to the ITU, 'basic skills' refers to the following computer tasks: copying or moving a file or folder; using copy and paste tools or moving information within a document; sending emails with attached files; and transferring files between a computer and other devices. Standard skills involve using basic arithmetic formula in a spreadsheet, connecting and installing new devices; creating electronic presentations with presentation software; and finding, downloading, installing and configuring software. 'Advanced skills' includes writing a computer programme using a specialised programming language.

24 Not knowing how to use a mobile phone or not being able to read and write were the relevant responses.

25 Concerns around physical safety (theft, mugging and harassment) as well as unwanted calls or messages and concerns about identity or private information being stolen or misused were the relevant responses.
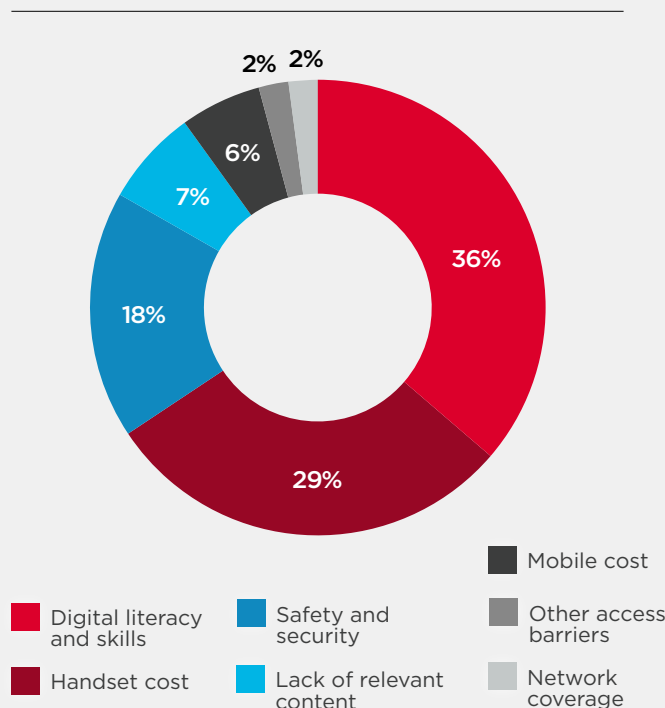
3. Policy recommendations

The analysis presented in this study shows a number of factors directly impacting the use of telecoms services in Brazil. Based on these issues, the following measures, supported by an enabling regulatory environment with coordinated national, federal and municipal policies[26], could be considered.

Boost investment incentives

- Define an economic and industrial policy to finance, produce and commercialise goods and services in connectivity, technology and innovation, with a particular focus on promoting reduced taxation for smartphones, tablets, computers and other devices, especially entry-level models.

- Create regulatory and economic conditions that encourage more investment in rural and remote areas[27]. Stimulate public and private investment and public–private partnerships.

- Enable a business environment that promotes innovation, and revise regulations so that they better reflect today's technologies and markets.

- Adopt additional investment alternatives from other players in the digital ecosystem, so that the resources do not depend exclusively on connectivity providers.

Improve digital literacy

- Define a state policy to improve digital literacy and skills to bring the benefits of being connected to more Brazilians (in terms of work, health, education, commerce, payments and entertainment, for example). It is important to guarantee the synergies of these new initiatives with other digital instruments already made available by telecoms companies, which allow access to the advantages of connectivity

- Develop a policy impact analysis on current government programmes to increase efficiencies and improve programmes that provide connectivity and devices to low-income segments, public schools and students.

26   See also: Making internet-enabled phones more affordable in low and middle-income countries, GSMA, 2022; Understanding people's mobile digital skills needs, GSMA, 2021. El camino hacia un Brasil Digital, GSMA, 2022; Mobile taxation in Brazil GSMA, 2020; and Rethinking mobile taxation to improve connectivity, GSMA, 2020.
27   This is also a recommendation made by the Organization of American States (OAS) in the AG/RED 2966 (LI-O/21) resolution, which approved 21 initiatives for connectivity in rural and underserved areas.

Make taxation compatible with universal coverage and usage objectives

- Remove, or at least reduce, sector-specific taxes and adopt the same tax rates across sectors to create incentives and policies that are aligned with the connectivity goals. The recent ICMS reduction is a first step towards this objective.

- Maximise the effectiveness of FUST investments. Improve disbursement rates and select projects based on systematic investment evaluations (for example, the number of people connected per amount of money invested). Measuring the efficiency of the programmes is critical to incorporating additional decision-making tools.

- Reduce sector-specific taxation. Plan, implement and execute the use of FUST resources to reduce the coverage gap, especially in rural areas, and encourage the use of mobile services through skills and education projects.

- Promote a simple and transparent tax system that involves a harmonised and reduced number of taxes for mobile providers, network infrastructure providers and device manufacturers. A stable, predictable tax design generates less cost for businesses and creates more certainty for investment across the entire value chain. Further driving down investment and operational costs will also be key to making connectivity more affordable.
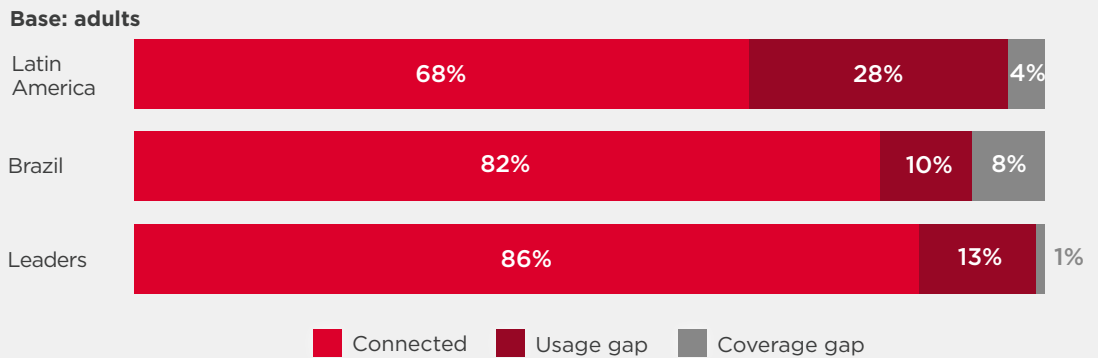
Appendices

Appendix 1: Definitions and sources

Connected	Refers to people who use mobile internet. The 'unconnected' refers to those who do not use mobile internet. Data on mobile internet adoption is sourced from GSMA Intelligence, based on connections data reported by mobile operators and regulators, and combined with consumer survey data collected by the GSMA and other third parties.
Coverage	'Population coverage' is the share of the population that lives in an area where the signal provided by a mobile network is strong enough to use telecoms services (voice, SMS, data). Data on mobile coverage is sourced from GSMA Intelligence based on data reported by mobile operators and regulators.
Coverage gap	Refers to those in the population who do not live within the footprint of a mobile broadband network.
Low- and middle-income countries (LMICs)	Countries classified as low income, lower-middle income and upper-middle income by the **World Bank Country and Lending groups.**
Mobile broadband	3G, 4G or 5G technologies.
Mobile connection	A unique SIM card (or phone number, where SIM cards are not used) that has been registered to a mobile network. Connections differ from subscribers in that a unique subscriber can have multiple connections. Data on mobile connections is sourced from GSMA Intelligence based on data reported by mobile operators and regulators.
Mobile internet user	A person who uses internet services on a mobile device. Mobile internet services are defined as any activities that use mobile data.
Smartphone	A mobile handset enabling advanced access to internet-based services and other digital functions. Smartphone platforms support a broad range of applications created by third-party developers.
Usage gap	Refers to those in the population who live within coverage of a mobile broadband network but do not use mobile internet.

Appendix 2: Additional charts

Figure A1 | Percentage of population connected, in the usage gap and in the coverage gap, 2022

Base: adults

	Connected	Usage gap	Coverage gap
Latin America	68%	28%	4%
Brazil	82%	10%	8%
Leaders	86%	13%	1%

■ Connected ■ Usage gap ■ Coverage gap

Source: GSMA Intelligence and Anatel

Figure A2 | Mobile connections by device type for existing phone users, 2019–2021

	Latin America			Brazil			Leaders		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
Data-only devices	12%	11%	11%	9%	8%	7%	12%	12%	11%
Basic or feature phones	24%	20%	18%	8%	7%	7%	15%	13%	10%
Smartphone	64%	68%	71%	84%	85%	86%	73%	75%	79%

■ Smartphone ■ Basic or feature phones ■ Data-only devices
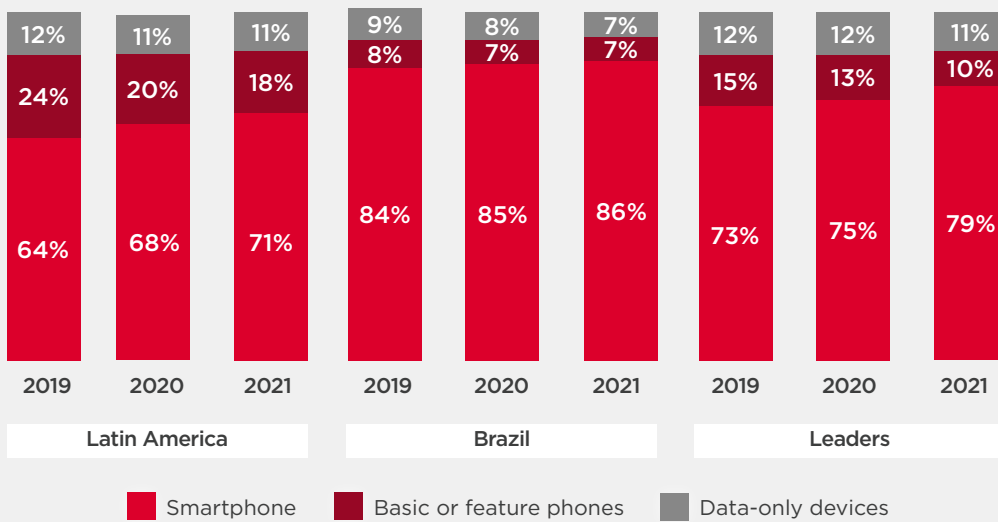
Source: GSMA Intelligence

Figure A3 | Brazil: mobile data costs as a proportion of monthly income, 2018–2021

	2018	2019	2020	2021
1GB	1.0%	0.6%	0.8%	0.3%
5GB	2.6%	1.3%	1.8%	0.8%

■ 1GB ■ 5GB
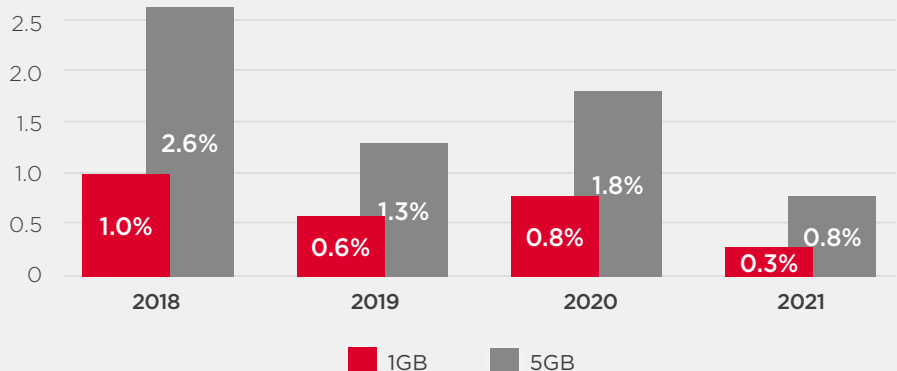
Source: GSMA Intelligence

Figure A4 | Mobile data and devices costs as a proportion of monthly income for 20% of the population with the lowest income, 2021

Data only (1GB): Leaders 0.8%, Brazil 1.4%
Data only (5GB): Leaders 1.2%, Brazil 3.6%
Device: Leaders 6.4%, Brazil 26.5%

Leaders | Brazil
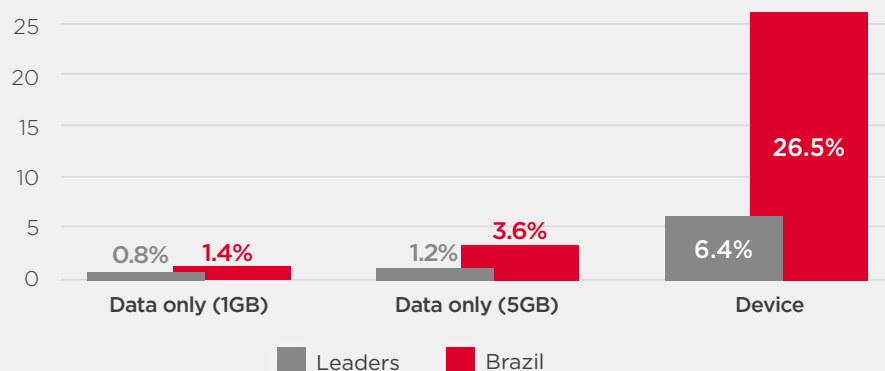
Source: GSMA Intelligence

Figure A5 | Brazil: mobile data and device costs as a proportion of monthly income, by income level, 2021
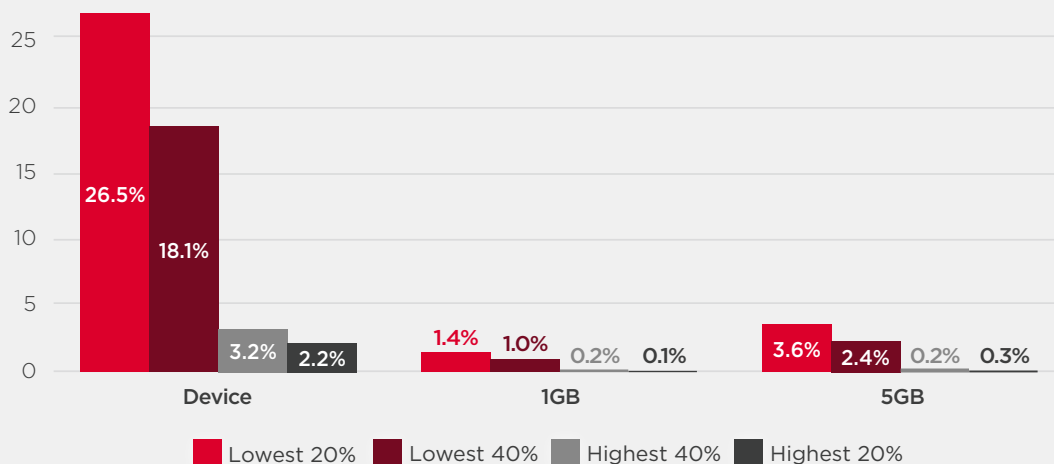
Device: Lowest 20% 26.5%, Lowest 40% 18.1%, Highest 40% 3.2%, Highest 20% 2.2%
1GB: Lowest 20% 1.4%, Lowest 40% 1.0%, Highest 40% 0.2%, Highest 20% 0.1%
5GB: Lowest 20% 3.6%, Lowest 40% 2.4%, Highest 40% 0.2%, Highest 20% 0.3%

Lowest 20% | Lowest 40% | Highest 40% | Highest 20%

Source: GSMA Intelligence

Figure A6 | Indicator scores for basic skills, 2021

Literacy: Brazil 93.2, Leaders 98.4
Tertiary enrolment: Brazil 55.1, Leaders 73.8
Years of schooling: Brazil 52.4, Leaders 84.7
School life expectancy: Brazil 69.5, Leaders 77.9

Brazil | Leaders
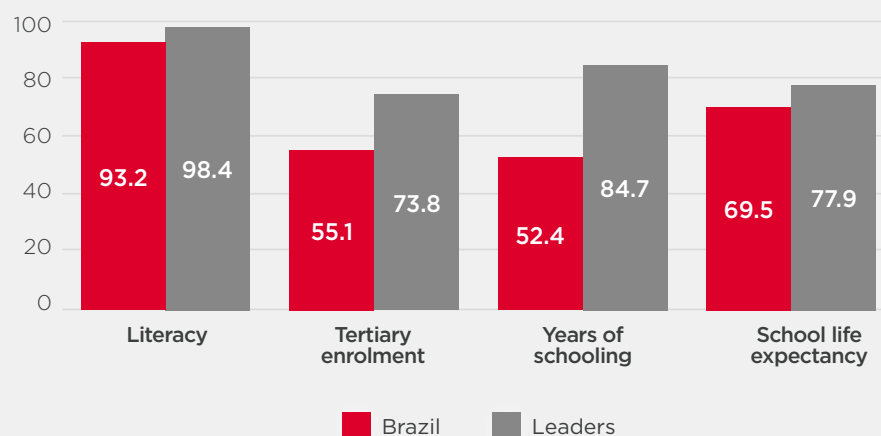
Source: GSMA Intelligence

Appendix 3: Operators' initiatives

Algar and Algar Institute

Digital Skills & Relevant Content

TALENTOS DO FUTURO – The programme has partnerships with 28 social organisations, and is designed to increase the number of young people with valuable skills in mathematics and logical reasoning. The initiative works with social organisations to replicate the methodology, and is dedicated to promoting the development of behavioural skills, with a focus on young people aged 15 and over.

JORNADA PARA O FUTURO – A programme developed with Cia de Talentos and 16 other partner companies, which integrates university students and companies, to support the development of soft skills valued by the job market. The initiative offers activities, experiences and tools for self-knowledge and development for university students.

PROGRAMA TRANSFORMA – The purpose of this initiative is to create conditions for a better future for children and adolescents, delivered through sport, art and culture.

BÚSSOLAS DO AMANHÃ – A project offering educational support aimed at helping the ethical and moral development of children and young people, forming conscious citizens, aware of their duties and capable of fighting for their rights.

OPORTUNIDADES QUE TRANSFORMAM – This programme focuses on the development of behavioural and technical skills to assist young people with personal and professional development, covering topics such as: basic mathematics, basic Portuguese, computer skills, financial and ethical education, teamwork, communication, negotiation, innovation, proactivity, and mental health.

Access to services

CONECTIVIDADE PARA ESTUDANTES – This provides broadband services to over a thousand public schools within the scope of the 'Banda Larga nas Escolas' programme, along with the provision of the 5GB Data Control Plan, which is intended exclusively for teachers, in addition to the 3GB Data Control Plan, intended for students, both a public network.

ALÔ MINAS – This is the installation of 4G technology or higher in Minas Gerais cities with a counterpart of tax incentives through ICMS Credit Granted.

Claro and Claro Institute

Digital Skills & Relevant Content

EDUCONEXÃO – This project provides broadband internet and paid TV to public schools, along with training to the teachers and internet connection to the NGOs partner throughout Brazil.

CAMPUS MOBILE – A contest for college students and newly graduated to develop studies in Health, Games, Education, Diversity, Smart Cities and Smart Farms. This programme has a partnership with the Association of Technological Integrated Systems Laboratory (LSI-TEC/USP) and the support of the São Paulo University Polytechnic School.

DUPLA ESCOLA – This initiative offers High School education integrated with telecommunications, a vocational technical course, and further training for professionals and citizens.

NAVES DO CONHECIMENTO – Provision of multipurpose, digital and interactive spaces, offering courses and leisure options to promote creativity and innovation. There are eight units in the North and west of Rio de Janeiro city.

CLARO INSTITUTO WEBSITE – Instituto Claro is an information channel that provides podcasts and reports. It suggests lesson plans for teachers, study guides for students and news updates of supported projects.

CLARO INSTITUTE AND UNICEF – A partnership with the United Nations Children's Fund in the "School Success Trajectory" project, which creates solutions for public schools to produce and implement educational technology, supporting a specific curriculum for adolescents who are behind in school. Claro Institute sponsors and monitors the project execution stages with the UNICEF partnership. It combats the age-grade distortion, one of the biggest problems of Brazilian basic education, which immobilises millions of young Brazilians, leaving them tied to a school failure cycle.

Access to services

5G NA COMUNIDADE DE PARAISÓPOLIS – In 2020, Claro provided 5G technology to Paraisópolis, in São Paulo city, to benefit the population served by Central Única das Favelas (CUFA) and Pró-Saber SP Institute. This benefitted more than 8,000 people.

PARCERIA COM GOVERNO BRASILEIRO – A partnership providing free data to users to be able to access information and social revenue programmes along with government websites for COVID-19 support.

DESCOMPLICA – An education platform that offers free text and video content to help students to prepare for ENEM (the National Brazilian Programme to access universities). Claros's customers have unlimited access to navigate the platform, with no monthly fee and traffic without discounting the franchise.

TIM and TIM Institute

Digital Skills & Relevant Content

MULHERES POSITIVAS – A project to help and sustain the employment and empowerment of women. TIM Brasil led its creation and development and, with the other 140 companies, has offered more than 200 courses and 80,000 job opportunities to Brazilian Women through the Mulheres Positivas Digital Platform, available on the main digital marketplace. Also, the programme **'TIM + VENDAS E MULHERES POSITIVAS'** enables extra employment for Brazilian women, selling mobile chips from TIM Brasil.

ACADEMIC WORKING CAPITAL – A business education programme supporting students to transform their final degree project into solutions that contribute effectively to people's lives.

TIM TEC – A MOOC (Massive Open Online Courses) platform and free software offering free online courses in line with the Information and Communications Technological pathway of the PRONATEC – the National Programme for Access to Technical Education and Employment.

BUSCA ATIVA ESCOLAR – In partnership with UNICEF, this platform supports public managers in identifying and tracking children and teenagers who are out of school or at risk of avoidance. This technical solution improves the coordination of various government departments, as everyone has access to the same database.

MAPAS CULTURAIS – A platform for collaborative management and mapping that enables managers, cultural agents and citizens to share and access the cultural production within a territory. Local cultural departments that wish to have a platform deployed may do so autonomously, by accessing the source code. Mapas Culturais incorporates the logics of free software, collaboration, decentralisation, open data and transparency into public processes.

BATERIA DO INSTITUTO TIM – Action promoting the musical education of children, young people and adults in the city of Rio de Janeiro, many of whom have a disability, promoting music education with a focus on accessibility and inclusion.

O CÍRCULO DA MATEMÁTICA NO BRASIL – An initiative to develop skills and interest in mathematics in children from public schools by adapting 'The Math Circle' approach to the Brazilian scenario. Since 2013, the project has involved 25,000 pupils and 4,500 teachers in 29 cities.

BOLSAS INSTITUTO TIM-OBMEP – Instituto TIM-OBMEP Scholarships are a study grant aimed at medal-winners of the Brazilian Public School Math Olympics (OBMEP) who about to commence mUndergraduate Studies. The programme is the result of a partnership between TIM Institute and the Brazilian National Institute for Pure and Applied Mathematics (IMPA).

EXPONENTIAL EDUCATION – The programe is aimed at children and young people served by the NGO One By One and their families with the aim of developing the whole family. The programme prepares them for the job market by encouraging entrepreneurship skills in a playful and interactive way.

TIM Faz Ciência – Educational action inviting elementary school teachers and students to explore seven intellectual operations inherent to knowledge production. The project provides open educational resources and is available on Instituto TIM's website.

Inclusion

TIM created an area dedicated to Diversity and Inclusion, maintaining its efforts to disseminate a culture of respect and inclusion within the company and the Brazilian society, according to its Diversity and Inclusion (D&I) strategic plan. Through this, the company aims to create a healthy work environment and achieve a competitive advantage in the market by constantly supporting inclusion pillars, such as gender, sexual orientation, race, ethnicity, generation, disabilities, and minority groups.

Awareness of the innovation ecosystem and launched initiatives to develop people on digital competencies and tech skills, to contribute to the empowerment of people, improve talent attraction and make talent acquisition more effective.

Digital Skills & Relevant Content

PENSE GRANDE TECH – CIÊNCIA DE DADOS – Technical and professional training in Data Science that aims to democratise data training for high school students in the public school system. The main objective of the project is to offer public networks and schools support in the implementation of qualified training, which resonates with high school students and society, to promote more meaningful learning by supporting pedagogical practices that arouse greater interest, autonomy and engagement of students to make use of digital technologies in a critical, responsible and conscious way.

PENSE GRANDE TECH – ELETIVAS – With "Pense Grande Tech – Eletivas", "Fundação Telefônica Vivo" supports teaching networks in the implementation of New Secondary Education by training educators and offering content related to Digital Technologies to ensure the expansion of Digital Culture, in addition to exclusive partnerships with Departments of Education.

PROJETO ESCOLAS CONECTADAS – An initiative that aims to continue education for teachers in the basic education network. It has offered more than 2.3 million hours of free online content in 2022, and addresses topics such as the use of technology in pedagogical practice, blended learning, learning delays, anti-racist education, and socio-emotional education, among others.

DIALOGANDO – An initiative for the conscious use of technology that brings together multiplatform content on sustainability, innovation, entertainment, education, behaviour and safety. The platform, created by Vivo and present in 11 countries besides Brazil, encourages dialogue and reflection in society, with a focus on technology and its impact.

PENSE GRANDE TECH – CONTEÚDOS DIGITAIS – Partnering with international institutions such as Code.org and Scratch, Vivo provides reference content for learning topics related to digital culture, with tools and activities for those who want to learn to programme.

VIVO EXPLICA – Online platform with publications about news and tips about smartphones, technology, games, among others. Including "Para Descomplicar" - the provision of practical information on technology such as problem-solving and digital security, among others.

DESCOMPLICANDO A TECNOLOGIA ONLINE – Video series in partnership with Vivo Guru, which brings dynamic, creative and easy-to-assimilate content to facilitating the learning and use of technology in everyday life, especially for senior audiences.

Access to services

PRODUCTS AND SERVICES – Vivo has a digital ecosystem that facilitates and accelerates access to essential services, promoting social development and inclusion based on digitalisation, such as: (a) education (VidaE – offers free and short courses focused on increased employability), (b) health (Vida V – offers health services at more affordable prices), (c) financial inclusion (Vivo Pay – banking through a digital wallet and Vivo Money – access to credit through a 100% digital personal loan) and others.

BANDA LARGA POPULAR – a product guided by legislative definitions of coverage in the State of São Paulo that comprises affordable broadband services with speeds of up to 2 megabytes for a pre-fixed price.

TELEFONE POPULAR – This is an initiative of the Federal Government so that low-income families can have a fixed telephone plan for an affordable price with reduced rates - a monthly plan with 90 minutes to make calls.

ALERTAS DE DESASTRES – SMS messages are sent by the Civil Defense to citizens pre-registered on the platform in a region that is at risk of disasters.

PLATAFORMA BIG DATA MAPAS DE CALOR – A platform created in partnership with other operators to help combat the Covid-19 pandemic by identifying points where people gather, with granularity in the visualisation of specific neighbourhoods and areas.

CONTRIBUTIONS TO THE NATIONAL FUNDS AND PROJECTS CREATED THROUGH SPECIFIC LEGISLATION FOR FUNDRAISING AIMED AT TECHNOLOGICAL DEVELOPMENT:
(i) Fundo de Universalização dos Serviços de Telecomunicações (FUST): created to finance government telecommunications policies and promote the democratisation of the internet and new technologies; (ii) Fundo para o Desenvolvimento Tecnológico das Telecomunicações (FUNTTEL): created to stimulate the process of technological innovation, encourage the training of human resources, encourage the generation of jobs and promote the access of small and medium-sized companies to capital resources, in order to increase the competitiveness of the Brazilian telecommunications industry; and (iii) Projeto Amazônia Integrada e Sustentável (PAIS): a programme by the Ministry of Science, Technology, Innovations and Communications (MCTIC) to connect the Amazon region with more than 6,000 km of fibre.

GSMA