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Foreword

Over the past 30 years, Brazil has pursued policies to achieve universal health coverage. The Constitutional Reform of 1988 gave rise to the current Unified Health System (*Sistema Único de Saúde, or SUS*) and since the inception of SUS, virtually the entire population is formally covered by the public health sector, with equal benefits and equal financial protection. As a result, Brazil has significantly improved most general population health indicators, increased access to health care and reduced health inequalities. Life expectancy at birth increased by 5.7 years, from 70.2 years in 2000 to 75.9 years in 2019. Infant mortality rate has decreased by 60%, from 30.3 deaths per 1 000 live births in 2000 to 12.4 deaths per 1 000 live births in 2019. The same is true for maternal mortality rate which has decreased by 13 percentage points over the same period.

However, mobilising sufficient financing for the universal health coverage mandate of SUS has been a constant challenge, not helped by persistent inefficiencies in the use of resources in the Brazilian health system. While Brazil spends a lot on health (9.6% of GDP in 2019 – higher that the OECD average of 8.8%), 60% of this expenditure is private, leaving the Unified Health System underfinanced. Furthermore, OECD projections indicate that health spending is expected to increase to 12.5% of GDP by 2040, based on demographic and technological trends, rising incomes and productivity in the health sector.

Given the challenging economic and fiscal situation, a serious reflexion is needed to secure more funding for the Brazilian Unified Health System. Critically, Brazil will need to spend more and better on its public health system to make health spending effective to achieve the goals of the system, sustainable for the future, and better able to face major health emergencies like COVID-19. This encompasses modernising the primary health care sector, still characterised by persistent problems in co-ordinating care across service levels and with too many patients bypassing primary health care to seek care directly in outpatient specialty clinics and hospitals. There are also widespread inefficiencies in the provision of hospital services in Brazil that could be tackled, such as excess capacity in normal times, outside of the context of health emergencies. In 2019, only around 52% of hospital beds were used on average for treatment, far below the OECD average of 76%. At the same time, Brazil will also face a challenge to cope with future long-term needs in the context of an ageing population. The share of the population being 65 years or older is projected to rise to from 8.8% in 2017 to 21.9% in 2050. It will be vital to transition towards more formal long-term care provision, which is currently not – or only timidly – in place. Several worrying indicators lastly point to an urgent need for better prevention and an improved public health strategy, notably to address growing risk factors for health such as harmful alcohol consumption and especially overweight, which is a known risk factor not only for chronic non-communicable diseases but also for severe COVID-19 infection.

Looking forward, building an efficient and sustainable health system is an objective that is attainable for Brazil only through the intelligent use of data and digital technologies, requiring proper policy actions and oversight. Better and larger collection, linkage, and analysis of health data will lead to significant gains and insight for service delivery planning and management in SUS. This would allow developing a more digitalised health system, and reaching a better understanding of the cost and effectiveness of medical treatments, and health care services.

This review was prepared by the OECD Secretariat to draw on evidence and best practices from across OECD health care systems to support Brazil in strengthening the performance of its health system. It uses internationally recognised indicators and policy frameworks to examine the performance of Brazilian health system, and points to key actions that Brazil should consider to improving efficiency and sustainability of financing, upgrading its health data infrastructure to leverage a digital transformation, and addressing major population risk factors such as overweight and harmful alcohol consumption.

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Acronyms and abbreviations

ABIA	Brazilian Association of food industries
ABV	Alcohol by volume
ACO	Accountable Care Organisation
ADCT	Constitutional Act of Transitional Provision
ADL	Activities of daily living
ANS	National Supplementary Health Agency
ANVISA	National Health Surveillance Agency
BAC	Blood alcohol concentration
BHBM	Be He@lthy, Be Mobile
BIT	Bipartite inter-management committee
BNHS	Brazilian National Health Survey
BRL	Brazilian Real
CA	Constitutional Amendment
CAPS	Psychosocial Care Centers
CBAF	Basic component of pharmaceutical assistance
CESAF	Strategic component of pharmaceutical assistance
CEAF	Specialised component of pharmaceutical assistance
CAISAN	Inter-ministerial Chamber of Food and Nutritional Security
CIAN	National Health Council's Intersectoral Commission on Food and Nutrition
CIINFO	Health Information and Informatics Committee
CIB	Comissão Intergestores Bipartite
CIT	Comissão Intergestores Tripartite
CNJ	National Council of Justice
CNS	National Health Council
COFINS	Federal social contribution levied on business revenue
CONANDA	National Council for the Rights of Children and Adolescents
CONAR	National Council of Self-Regulatory Publicity
CONASS	National Council of State Health Secretaries
CONASEMS	National Council of the Municipal Health Secretaries
CONITEC	National Commission for the Incorporation of Technologies in SUS
COSEMS	State Council of Municipal Health Secretariats
C4NE	Scientific Committee to Combat Coronavirus
DALYS	Disability-adjusted life years
DATASUS	Informatics Department of the Sistema Único de Saúde
DRG	Diagnosis-Related Groups
EHR	Electronic Health Record
EIPCO	Intersectoral Strategy for Obesity Prevention and Control
FFS	Fee-for-service
FUNASA	National Health Foundation
G20	Group of Twenty
GAD	Digital Food Guide

GBP	Geat Britain Pound
GDP	Gross Domestic Product
GP	General Practitioner
HALE	Healthy life expectancy
HTA	Health Technology Assessment
IADL	Instrumental activities of daily living
ITU	International Telecommunication Union
IBGE	Brazilian Institute of Geography and Statistics
IL+S	Ingredients list plus highlighted symbols
IPRF	Personal income tax
IPRJ	Corporate income tax
LAC	Latin America and the Caribbean
LE	Life expectancy
MAC	Média e Alta Complexidade
mHealth	Mobile health
MMC	Mass media campaigns
MP	Ministry of Planning, Development and Management
MPHS	Multi purpose health service
MUP	Minimum unit pricing
NCD	Chronic non-communicable disease
NGO	Non-governmental organisation
NHS	National Health Service
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket payments
OSS	Organizações Sociais de Saúde
PACE	Physical activity calorie equivalent
PAHO	Pan American Health Organization
PeNSE	National School Health Survey
PIS	Program of Social Integration
PHI	Private Health Insurance
PMAQ	National Programme for Improving Primary Care Access and Quality
PNAD *Contínua*	Continuous National Household Sample Survey
PNAE	National School Meals Programme
PNAN	National Policy on Food and Nutrition
PNS	National Health Survey
PNSPI	National Health Policy for the Elderly
PPA	Multi-Annual Plan
POF	Family Budget Survey
PSE	Health at School Programme
RAPS	Network for Psychosocial Care
RAS	Health care networks
RCL	Federal Current Net Revenues
RNDS	National Health Data Network
SBI	Screening and brief intervention
SDG	Sustainable Development Goals
SESP	Public Health Services Foundation
SIGTAB	National fee schedule
SISAN	National Food and Nutrition Security System
SME	Small and medium sized enterprises
SNIS	National Health Information System
SNVS	National Health Surveillance System
SSB	Sugar-sweetened beverages

SUCAM	Health Campaigns Superintendence
SUS	Sistema Único de Saúde
TFA	Trans fatty acids
UBS	Basic health care units
UBF	Ultra-processed foods
UHC	Universal health coverage
UNESDA	Union of European Beverages Associations
USD	United States Dollar
VAT	Value added tax
WHO	World Health Organization

Executive summary

In Brazil, the establishment and roll-out of SUS is considered a success story in extending health care coverage to disadvantaged population groups that previously did not have access to health care services. Since the introduction of the new Federal Constitution in 1988, which gave rise to the current Unified Health System (*Sistema Único de Saúde*,also SUS), virtually the entire population is formally covered by the public health sector, with equal benefits and equal financial protection. The reorganisation and strengthening of primary health care has been a key component of this success. The Family Health Strategy (*Estratégia de Saúde da Família*, [ESF]), one of the largest community-based primary health care programmes in the world, has successfully increased population coverage, improved key health outcomes, and reduced health inequalities. Infant mortality rates have decreased by 60% over the past two decades, from 30.3 deaths per 1 000 live births in 2000 to 12.4 deaths per 1 000 live births in 2019. Life expectancy at birth also increased by 5.7 years, from 70.2 years in 2000 to 75.9 years in 2019. The same is true for maternal mortality rate which has decreased by 13 percentage points over the same period.

However, mobilising sufficient financing for the universal health coverage mandate of SUS has been a constant challenge, not helped by persistent inefficiencies in the use of resources in the Brazilian health system. While Brazil spends a lot on health (9.6% of GDP in 2019 – higher that the OECD average of 8.8%), 60% of this expenditure is private either via voluntary private health insurance or direct payments by households, leaving the Unified Health System underfinanced. In 2019, 25% of health spending was financed by out-of-pocket payments (above the OECD average of 20%), while only 9% of all retail pharmaceutical spending was financed by public schemes in Brazil (compared to 58% across OECD countries). These signal to some extent a failure of current arrangements to provide effective health care coverage.

At the same time, Brazil is undergoing a profound demographic and epidemiological transition. By 2050, 21.9% of the Brazilian population is expected to be 65 years or older, up from 8.9% in 2017. Growth in chronic conditions will also be exacerbated by rising obesity rates, physical inactivity among adults and children, and other unhealthy lifestyles that are already widespread in Brazil. Recent projections suggests that health spending in Brazil will increase to 12.6% of gross domestic product by 2040 (compared to 9.6% in 2019). To face increasing spending pressures and make sure future health care needs are met, the efficiency and sustainability of spending and quality of service in all areas of the health system must urgently improve. In this context, the Review identifies scope for Brazil to strengthen health system performance, especially improving efficiency and sustainability of financing, upgrading its health data infrastructure to leverage a digital transformation, and addressing major population risk factors such as overweight and harmful alcohol consumption.

To meet Brazil health challenges efficiently and sustainably, a few possibilities exist to make more public spending available for health care without compromising the path towards fiscal recovery. Given the current economic climate in Brazil, new sources for health spending on the federal level could be generated by reallocating spending from other areas outside health towards SUS. Adjusting indexation rules for some social programmes and public salaries, or reducing the tax deductibility of private health spending, and reinvesting these savings into SUS are strategies not to underestimate to make more public spending

available. There is also huge potential for efficiency gains throughout the health system. Ongoing efforts to modernise primary health care should continue, notably to ensure greater care co-ordination across different levels or care. This topic is addressed in more detail in the accompanying publication *OECD Reviews of Health Systems: Primary Health Care in Brazil.* Service delivery planning in Brazilian hospitals should also be rethought, with repurposing small hospitals into intermediate care facilities and implementing better payment system to incentivise hospital performance. At the same time, changing pharmaceutical procurement processes, revisiting pricing and substitution policies are key actions to improve access to essential medication. Lastly, Brazil should start investing in more formal long-term care arrangements without any delay.

To generate efficiency gains, Brazil need a strong health information infrastructure and effective use of health system data. Brazil already collects a large amount of digital health data but the country lags behind OECD countries in data availability, reporting, governance and integration. Critically, more efforts are needed to uniquely identify patients and follow their pathways through the health system. Given the political structure of Brazil as a federal republic, a key component of the efficient functioning of data governance and accountability is integration and co-ordination at the federal, state and municipal levels. At the same time, building capacity through access to essential infrastructure, training and economic incentives, and enforcing data standardisation will be vital to improve data collection procedures and reliability. This will go hand-in-hand with evidence-based decision-making and impactful health research in Brazil. Health information infrastructure could also be enhanced by fuller participation in the international benchmarking initiatives, such as the OECD's System of Health Accounts or Health Care Quality Indicators, and adhesion to the Recommendation of the OECD Council on Health Data Governance.

Overweight is a growing public health challenge in Brazil, with over half (56%) of the population overweight in 2016. Brazilians have unhealthier food consumption habits than OECD countries, in particular in relation to the intake of sugar. At the same time, the prevalence of insufficient physical activity in Brazil grew by 15% between 2001 and 2016. While Brazil has started to address the issue of overweight in a number of policies and programmes, Brazil could aim for a more ambitious multi-sectoral comprehensive response. First, Brazil should better influence lifestyles through information and education by introducing menu labelling in restaurants, structured mass media campaigns, well-regulated mobile apps, and promoting prescription of physical activity by family health teams. Second, Brazil should pursue food reformulation more actively, and develop workplace and transport policies to provide new healthier alternatives for people. This would help create a comprehensive policy package to tackle overweight and its drivers. Finally, the Brazilian response need to improve the regulation of food and beverages advertising, in particular for children.

When it comes to alcohol use, there are worrying signs that in recent years consumption has increased in all population groups, particularly for heavy episodic drinking among adults. It almost tripled in six years, from 5.9% in 2013 to 17.1% in 2019. To reduce harmful alcohol consumption, having damaging effects on population health and the economy, Brazil has adopted important national strategies with an inter-sectoral focus. But Brazil can and should do more by implementing a more comprehensive alcohol policy package. This can include initiatives around pricing policies (such as introducing a minimum unit pricing to target cheap alcoholic beverages), expanding the existing drink-driving policies, and conducting mass media campaigns targeting drink driving. Guidance and monitoring of screening and brief interventions in primary health care for alcohol drinkers will also be vital to identify at an early stage individuals with a drinking problem and address the issue. Finally, educational strategy need to be strengthened to discourage drinking initiation and drinking behaviours among school-aged children. More limits on advertising (specifically to children and adolescents), and regulation of alcohol sports sponsorship are policy options to consider to change the social acceptability of harmful alcohol consumption.

Across all these areas, there is scope to improve SUS management and planning processes between the different levels of governments, with greater co-ordination and a stronger focus on regionalised planning. For this to be successful, the scope of the "health regions" could be widened by delegating some

responsibilities from the municipalities to the regions, accompanied with appropriate funding and resources. While regionalised planning has all the potential to increase the efficiency of SUS management and planning, a serious reflexion is needed to secure more funding for the Brazilian Unified Health System. Brazil will need sufficient ambition to prioritising efficiency and sustainability, while ensuring equitable and effective health care coverage. This is paramount in a context of a post-COVID-19 recovery period, characterised by widened economic and health inequalities.

1 Assessment and recommendations for the health system in Brazil

In the 30 years since the inception of a universal health system in Brazil through the creation of its Unified Health System, there has been significant improvement in population health indicators and increased access to health care. However, a number of key challenges remain, including persistent inefficiencies in the use of resources in the Brazilian health system, insufficient collection, linkage and analysis of health data and growing risk factors for health. At the same time, the path towards universal health coverage offering high-quality services has been unequal across socio-economic groups and geographic regions, suggesting some gaps to provide effective coverage. This chapter assesses the performance of the health system in Brazil. It considers four topics in detail: improving efficiency and sustainability of financing, upgrading its health data infrastructure, and addressing major population risk factors such as overweight and harmful alcohol consumption. It provides a set of recommendations on improving the performance of the health system in the country.

Over the past 30 years, Brazil has pursued policies to achieve universal health coverage and improve access to care. The 1988 Federal Constitution gave rise to the current Unified Health System (*Sistema Único de Saúde*, [SUS]). Universality, integrality, decentralisation and community participation are the key principles enshrined in the Brazilian health care system. Since the inception of SUS, virtually the entire population is formally covered by the public health sector, with equal benefits and equal financial protection. As a result, Brazil has significantly improved most general population health indicators, increased access to health care and reduced health inequalities. The implementation in 1994 of the Family Health Strategy, which aimed to reorganise and strengthen primary health care (PHC), has also been a key component of this success. Infant mortality rates have decreased by 60% over the past two decades, from 30.3 deaths per 1 000 live births in 2000 to 12.4 deaths per 1 000 live births in 2019. Life expectancy at birth also increased by 5.7 years, from 70.2 years in 2000 to 75.9 years in 2019. Strong empirical evidence suggests that the Family Health Strategy led to a significant reduction in avoidable hospitalisations over the past two decades.

Nevertheless, major problems remain for the Brazilian health care system. Mobilising sufficient financing for the universal health coverage mandate of SUS has been a constant challenge, not helped by persistent inefficiencies in the use of resources in the Brazilian health system. While Brazil spends a lot on health (9.6% of GDP in 2019 – higher than the OECD average of 8.8%), 60% of this expenditure is private, leaving the Unified Health System underfinanced, and resulting in marked health inequalities. Indeed, the path towards universal health coverage offering high-quality services has been unequal across socio-economic groups and geographic regions. The most vulnerable and remote municipalities in the North and Northeast regions consistently present poorer health outcomes and lower care quality than the wealthier South and Southeast. Diabetic patients, for example, have a higher likelihood of experiencing complications (as measured in hospitalisations) in the Northeast than the Southeast; this risk is systematically higher for individuals whose household income is at or below the minimum wage than for households earning more than three times the minimum wage (IBGE, 2020[1]). In a similar vein, people with a better socio-economic situation, who can pay for private health insurance, have higher access to health care services than those from lower socio-economic backgrounds.

Such socio-economic inequalities are compounded by the persistence of high out-of-pocket costs, which affect disproportionately Brazil's poor and disadvantaged populations. In 2019, 25% of health spending was financed out-of-pocket, above the OECD average (20%). As a result, one in four Brazilians faces financial hardship owing to health care costs – a much higher share than in nearly all OECD countries. This is too much if Brazil wants to achieve a more equitable and efficient health care system, signalling to some extent a failure of current arrangements to provide effective coverage.

Brazil is also undergoing a profound demographic and epidemiological transition. By 2050, 21.9% of the Brazilian population is expected to be 65 years or older, up from 8.9% in 2017 (OECD, 2019[2]). This represents an increase of 13 percentage points, compared to the projected increase of around 10 percentage points across the OECD region (from 17% to 27%).

Growth in chronic conditions will also be exacerbated by rising obesity rates, physical inactivity among adults and children, and other unhealthy lifestyles that are already widespread in Brazil. Recent projections suggest that a substantial increase in health spending will be necessary over the next decades to meet future health and long-term care needs associated with an ageing society. In its baseline scenario, the OECD health spending projection model suggests that health spending in Brazil will increase to 12.6% of gross domestic product (GDP) by 2040 (compared to 9.6% in 2019) (Lorenzoni et al., 2019[3]). This projected increase is more pronounced than in most OECD countries, and also stronger than in Chile and Colombia. Critically, Brazil will need to generate efficiency gains within the health sector to help meet future health care financing needs. Box 1.1 shows the key features of the Brazilian health system.

Box 1.1. Key features of the Brazilian health system

The Brazilian health system is mostly public in terms of governance, funding and provision through SUS. Private initiative in the provision of health care complements the public system. All residents are entitled to services provided by SUS and this is the main source of health care for 78% of the population without private health insurance. SUS is financed through general taxation, and services are free at the point of care. The **Ministry of Health** is responsible for central management of the system, with a mandate to design, monitor and evaluate health policies and services linked to SUS, and national co-ordination. Its mandate includes food and nutrition policies; health surveillance systems; networks of public health laboratories and services of high complexity; and national strategic planning.

The SUS is decentralised, with a shared governance structure within the federal, states and municipal governments. **State Health Secretaries** in 26 states are responsible for regional governance, co-ordination of strategic programs (such as high-cost medicines), and delivery of specialised services. **Municipal Health Secretaries** in 5 570 municipalities handle the management of SUS at the local level, including co-financing, co-ordination of health programs, and delivery of health care services. The Federal District, where the Federal capital is located, has a mix of state of municipal responsibilities.

The main quasi autonomous national level health agencies are the **National Supplementary Health Agency** (ANS) and the **National Health Surveillance Agency** (ANVISA). The mission of the ANS is the defence of the public interest in private health insurance, regulating sector operators. The mission of ANVISA is to protect and promote the population health by intervening in the risks from the production and use of products and services subject to health surveillance, including pharmaceuticals.

The Federal Constitution mandates community participation in the health system at all levels of government. 'Social control' takes form through **health councils** and **health conferences**, which are composed of 50% community members, 25% providers, and 25% health system managers. The private sector is present at the financing and provision levels of health care. **Private health insurance** is voluntary and in 2020, 22% of Brazilians had this type of coverage. It can be classified as duplicate coverage as it covers medically necessary curative services that are also covered under SUS.

Table 1.1. Key health system indicators in Brazil and OECD, 2019 (or latest year available)

	Brazil	OECD average (lowest; highest)
Health status		
Life expectancy at birth (years)	75.9	81 (75.1; 84.4)
Avoidable mortality (deaths per 100 000 population)	176	199 (97; 405)
Infant mortality (deaths per 1 000 live births)	12.4	4.2 (1.1; 17.3)
Risk factors for health		
Smoking (daily smokers, percentage population aged 15+)	9.8%	16.5% (4.2%; 28.0%)
Alcohol (litres consumed per capita, population aged 15+)	6.1	8.7 (1.3; 12.9)
Overweight prevalence (age-standardised, percentage population aged 15+)	56.5%	58.4% (27.2%; 67.9%)
Health system capacity		
Hospital beds (per 1 000 pop)	2.2	4.4 (1.0; 12.8)
Doctors (per 1 000 population)	2.3	3.5
Nurses (per 1 000 population)	8	9.1
Health system financing		
Health spending per capita (USD in PPPs)	1.5K	4.1K (1.1K; 10.9K)
Health spending as a share of GDP (%)	9.6%	8.8% (4.3%; 16.8%)
Health spending as a share of total government spending (%)	10.5%	15.4% (9.5%; 24.1%)
Health spending, government schemes and compulsory health insurance (% of total health spending)	40.9%	74.0% (49.3%; 85.8%)

Persistent health inequalities, combined with the new epidemiologic profile and a post-COVID-19 recovery period, suggest that continued adjustments and reforms are needed in Brazil's health system. Existing SUS arrangements and the range of health care providers are not as developed as they should be, both to keep Brazilians healthy and to deliver a high-quality, equitable and sustainable health care system. A number of key challenges remain:

- Inefficiencies persist, with some evidence pointing to inefficient use of resources in the PHC sector. The registration system with a primary care doctor (or a family health team [FHT]) is not well established, and too many patients bypass PHC to seek care directly in outpatient specialty clinics and hospitals. Co-ordination between primary and secondary care also features some shortcomings, with patchy distribution of integrated care models across the country. Given the challenges brought by the demographic and epidemiological changes, this is untenable.
- The hospital sector in Brazil is characterised by a low occupancy rate of hospital beds (particularly in small municipalities) and low-value care, with a potentially adverse impact on care quality and patient safety. Better governance models, transparency and accountability mechanisms are urgently needed to improve performance in inpatient care delivery.
- Despite the diverse distribution channels and the comprehensive list of essential medicines under SUS, Brazilians still struggle to access medications. Around one in six people who received a prescription for medication during a recent medical consultation is unable to obtain all the prescribed items (OECD, 2019[2]). Fragmented public pharmaceutical procurement and financing, with responsibilities shared across all three levels of government, partly contributes to this problem; so does the underutilisation of generic drugs.
- The administration and governance of Brazil's health system is complex and costly, requiring good stewardship and oversight. In 2019, over 6% of current health expenditure went towards governance and health system administration; this is a higher percentage than in nearly all countries of the OECD region, and more than twice the OECD average. While expenditure for governance and health system administration is not bad in itself, Brazil needs to evaluate carefully the costs and benefits of its current governance model.
- The collection, linkage and analysis of health data is insufficient in Brazil. Improving the health information system would lead to significant gains and insight for service delivery planning in SUS. This would allow developing a more digitalised health system, and reaching a better understanding of the cost and effectiveness of medical treatments and health care services. This, in turn, would lead to a reduction in both wasteful spending and gaps in intra- and inter-regional health care quality.
- Several worrying indicators point to an urgent need for better prevention and an improved public health strategy, notably to address the increase in overweight and harmful alcohol consumption in recent years. These risk factors will increasingly damage health, leading to premature mortality and decreased life expectancy. They also have impacts on health expenditure and the broader economy (in terms of GDP reduction). Implementing public interventions to reduce the risk of overweight and harmful alcohol consumption can be great value to improve population health.

The rest of this chapter summarises the report's in-depth assessment of Brazil's health system and formulates key recommendations to improve its performance. It considers four topics in detail: 1) improving the efficiency and sustainability of health spending; 2) strengthening the health data infrastructure and information system; 3) addressing overweight; and 4) reducing harmful alcohol consumption.

Policy recommendations to strengthen the performance of Brazil's health system

Improving the efficiency and sustainability of the Brazilian health system

- Increase public funding for SUS by revisiting ineffective public programmes or tax exemptions. For example, tax subsidies for out-of-pocket spending and health insurance premiums could be substantially reduced or phased out and resulting savings for the public purse invested into SUS.
- Strengthen PHC by enhancing the gatekeeping system and further supporting the rollout of FHTs; improve the co-ordination of service delivery across different levels of care, with primary care at the centre.
- Explore options to repurpose small hospitals that are not operating efficiently into intermediate care facilities; improve telehealth applications and emergency transportation for patients requiring urgent acute care in remote areas.
- Improve access to essential medication by changing procurement processes (only 10% of total spending for retail pharmaceuticals are publically funded); rein in pharmaceutical spending by revisiting pricing policies and allow substitution also for branded generics (*'similares'*) with proven bioequivalence, and reducing the high costs for medications that are not cost-effective and accessed through court rulings by supporting judges to make informed decisions.
- Begin the transition towards more formal long-term care delivery by expanding day care facilities and rolling out home care; introduce entitlement to long-term care benefits based on needs assessment.
- Improve SUS management efficiency by reviewing management and planning processes across all levels of governments, with a stronger focus on regionalised planning.

Strengthening the health data infrastructure and information system in Brazil

- Consider a greater integration and co-ordination of different levels of government; intensify efforts to uniquely identify patients in order to strengthen data governance and accountability.
- Expand staff training to ensure more reliable data collection; continue to provide monetary incentives to encourage data collection by more municipalities, especially those located in remote areas.
- Ensure access to the Internet, as well as essential infrastructure (such as computers and EHR platforms) for data collection and transmission; strengthen the capacities of programming and IT staff to improve data-collection procedures and the reliability of indicators.
- Accelerate the harmonisation of health-data standards and methodologies to move towards more data comparability and coverage; consider expanding and enforcing data standardisation in Brazil.
- Support evidence-based decision-making and impactful health research in Brazil with real-time, linked health data, which also include remote locations, indigenous communities and localities with limited access to ICT in health-related data-collection processes.
- Adopt OECD standards for national and international benchmarking capacity; participate in OECD data-collection processes, for example covering health care quality and outcomes, health statistics, economics of public health, pharmaceutical and medical devices, and the Patient-Reported Health Surveys (PaRIS).

Tackling overweight and obesity

- Combine interventions in "prevention packages", as well as evaluation and monitoring for higher benefits covering: communication-based approaches through information and education; the development of a more active role of primary health care in prevention and treatment of overweight; policy packages including food reformulation, workplace and school-based interventions; and advertising regulations and pricing food policies.
- Expand communication-based approaches through information and education, notably by introducing the labelling scheme to restaurant menus; use multichannel mass media campaigns and mobile phone applications to promote more active and healthier lifestyles.
- Organise and promote the prescription of physical activity in primary care settings by developing guidelines (such as the Physical Activity Guide for the Brazilian Population) for both health professionals and patients.
- Pursue food reformulation more actively through voluntary or mandatory policies, notably targeting a reduction of trans-fatty acids; set clear objectives and accountability mechanisms to monitor and encourage improvement.
- Develop healthy workplace policies to influence healthier lifestyles. Promote collaboration between the health and labour sectors, as well as co-ordination with the private sector for healthier workplaces.
- Implement stricter regulations governing food and beverage advertisement, with a focus on protecting children; in particular, move towards mandatory regulation of advertising for unhealthy foods and drinks to increase the impact on diet and obesity. Further encourage physical activity and choice of healthy menus in schools.
- Implement targeted pricing policies, such as taxes on sugar-sweetened beverages or other products high in sugar, saturated fats or salt. In this case, careful policy design and implementation will be required to avoid substitution with other calorie-dense foods or beverages and ensure that targeted pricing policies benefit the poorest population.

Reducing alcohol consumption

- Combine interventions in "prevention packages" including regulation of advertising, sobriety checkpoints, alcohol taxation and alcohol counselling in primary care and schools, as well as evaluation and monitoring of policies.
- Avoid the normalisation of alcohol consumption by restricting alcohol advertising, particularly on TV and social media, prioritising the impact on children and adolescents; consider regulating sports sponsorships by alcohol companies.
- Expand drink-driving policies consistently across states by implementing more visible and frequent sobriety checkpoints to better enforce the Lei Seca.
- Review existing pricing policies, for example introduce minimum alcohol pricing policies targeting cheap alcoholic beverages.
- Make screening and brief interventions in family health teams available to all Brazilians; develop clinical guidelines and set standards of care to help teams provide these interventions.
- Expand school-based education programmes by developing national guidelines on alcohol-related harms for school children and adolescents.

1.1. Brazil's health system has continuously progressed towards universal health coverage

1.1.1. The health system in Brazil is decentralised, with complex administration and governance

The current principles and structure of Brazil's health care system were conceived in 1988 following the approval of the new Brazilian Constitution. The constitution established health as a universal right for the whole population and a state responsibility, paving the way for the implementation of SUS in 1990. SUS was put in practice after the enactment of Laws numbers 8 080 and 8 142 in 1990, which enshrined the principles of universality, integrality, decentralisation and community participation within the health system. The laws also moved power and responsibility to local governments, by transferring duties and health care provision funds from the federal government to state and municipal governments. Three principles underpin SUS:

- the universal right to comprehensive health care at all levels of complexity (primary, secondary and tertiary)
- decentralisation, with responsibilities given to the three levels of government (federal, state and municipal)
- social participation in formulating and monitoring the implementation of health policies through federal, state and municipal health councils.

While the Brazilian health care system is predominantly public in terms of governance, funding and provision through SUS, the constitution also allowed the unfettered participation of private initiative as a complementary measure in the provision of health care.

SUS has a shared governance structure, foreseen in the Constitution of the Federative Republic of Brazil from the perspective of the shared competence of the three levels of the republic: the federal district, the states and the municipalities. The Ministry of Health is responsible for central management of the system, with the mandate to formulate, define, audit, control and evaluate the set of health policies and services linked to SUS, along with co-ordinating its national actions. The activities are preferably executed in a decentralised manner, with the municipal component acting as the main provider of health care services. State government duties include regional governance, co-ordination of strategic programmes and delivery of specialised services that have not been decentralised to municipalities. Health departments in the 5 570 municipalities largely handle the management of SUS at the local level, including co-financing, co-ordinating health programmes and delivering health care services.

Several spheres of governance ensure the autonomy of each federative entity. They also ensure both vertical co-ordination of actions, as seen by the tripartite inter-management committee (Comissão Intergestores Tripartites [CIT]) and the bipartite inter-management committee (Comissão Intergestores Bipartite [CIB] on a state level and horizontal co-ordination between states (e.g. through the National Council of State Health Secretaries [CONASS]) and municipalities (e.g. through the National Council of the Municipal Health Secretaries [CONASEMS]). In addition, the Health Pact of 2006 introduced new entities – the "health macroregions" (*Macrorregiões de saúde*) and the "health regions" (*Regiões de saúde*), comprising various neighbouring municipalities supported by the states – charged with institutionalising service delivery planning on a more regional level. A plethora huge number of standing bodies also safeguard the participation of civil society at all three levels of government, such as through health conferences and health councils. A highly developed private sector – both from a payer and provider perspective – adds to the complexity of governance, but also to the delivery of health services.

Both the public and private sectors deliver health services. In the hospital sector, the share of public hospital beds is much lower than among OECD countries. In 2019, 38.2% of hospital beds were public,

38.1% were private non-profit, and 23.6% were private for-profit, while in the OECD, public beds made up the largest portion (69%), and only 12% of beds were private for-profit. Public hospital beds did, however, increase by 47.2% in Brazil between 2009 and 2019, while private for-profit beds decreased by 21.6%, and private non-profit beds remained stable. In primary care, services are predominantly provided by publicly employed staff working in multidisciplinary primary care teams (the FHTs).

Brazil has fewer doctors and nurses per capita than the OECD average, and their geographic distribution is a concern. In 2019, physician density in Brazil was 2.3 per 1 000 inhabitants, lower than in all OECD countries (except Colombia) and well below the OECD average of 3.5 per 1 000 inhabitants. Brazil's nursing workforce has increased over the past decades, reaching 8 nurses per 1 000 people in 2019. Generally speaking, two of the main persisting workforce problems in the Brazilian health system are the shortage of doctors and the misdistribution of professionals between levels of health care and geographical areas (OECD, 2021[4]). Brazil has introduced a comprehensive package of policies designed to strengthen the provision of health care services in underserved communities. The successful More Doctors Programme, established in 2013, has allowed recruiting over 16 000 physicians, both from within Brazil and abroad, to work exclusively in PHC. More recent strategies, such as the *Programa Médicos pelo Brasil* (More Doctors for Brazil Programme) initiated in 2020 by the federal government, are expected to step up the provision of medical services in remote or vulnerable locations.

1.1.2. The population benefits from universal health coverage, but out-of-pocket expenditure remains high

Brazil has steadily progressed towards universal health coverage and has introduced major reforms to improve access to care for the whole population.

The key principles of SUS, as laid out in Articles 196 to 198 of the Constitution of the Federative Republic of Brazil, are universality, integrality, equity, decentralisation and social participation. Based on these principles, everyone in Brazil is entitled to comprehensive health services, provided under SUS, regardless of their socio-economic circumstances or ability to pay. Universal health care coverage was a key milestone in the history of Brazil and is considered a success story in extending health care coverage to disadvantaged population groups that did not previously have access to health care services. This was partly achieved by focusing on the reorganisation and strengthening of primary care, which made it easier to obtain health services at the community level. The Family Health Strategy, one of the largest community-based PHC programmes in the world, has successfully increased population coverage. Since its launch in 1994, the Brazilian population has enjoyed free access to preventive and PHC services delivered by multidisciplinary FHTs.

With expanding coverage, households' out-of-pocket health expenditures have fallen over the past two decades. Today, out-of-pocket expenditures in Brazil account for 25% of total national health expenditure, positioning the country above the 20% OECD average, and below medium-income countries such as Chile (33%) or Mexico (42%). At the same time, restricted access to specialist services, long waiting times and discontent with health care services have spurred middle- and high-income households to seek private care. Private health insurance is voluntary and can be classified as duplicate coverage, since it covers medically necessary curative services that are also covered under SUS. In 2020, 22% of Brazilians were covered by private health insurance.

Overall, Brazil has high – and growing – spending on health. Total health expenditure amounted to 9.6% of GDP in 2019, corresponding to USD PPP 1 514 per capita (United States dollars at purchasing price parity), higher than the average across OECD countries (8.8%), and above other Latin American countries such as Chile (9.3%), Colombia (7.7%), Costa Rica (7.3%) and Mexico (5.4%). While overall spending on health is high in Brazil, its public share is low. In 2019, only 41% of all health spending was financed publicly (mainly through SUS), 30% by private health insurance and 25% by out-of-pocket payments.

1.1.3. Despite progress, Brazil faces challenging health care needs and substantial inequalities

Many measures of health system performance in Brazil have improved since the creation of SUS following the 1988 Federal Constitution. Life expectancy at birth in Brazil increased from 70.2 years in 2000 to 75.9 years in 2019, still five years below the OECD average. Infant mortality rates decreased from 30.3 deaths per 1 000 live births in 2000 to 12.4 deaths per 1 000 live births in 2019. Nevertheless, the infant mortality rate in Brazil is still above the OECD average of 4.2 deaths per 1 000 live births. The same is true for maternal mortality rates in Brazil, which decreased to 60 women per 100 000 live births in 2017 (a drop of 13 percentage points since 2000), still higher than the OECD average of 8 women per 100 000 live births (OECD/The World Bank, 2020[5]).

Similarly to many Latin American countries, Brazil has experienced a rapid epidemiological transition towards a predominance of chronic non-communicable diseases (NCDs). In 2019, four NCDs were the main causes of mortality in Brazil: circulatory system diseases (27%), neoplasms (17%), chronic respiratory diseases (12%), and diabetes (5%). In terms of Brazil's national burden of diseases as measured by disability-adjusted life years (DALYs), the epidemiological transition has also been substantial. In 1990, three of the leading five causes of DALYs were communicable and maternal and child health diseases. By 2019, all five were NCDs, with maternal and neonatal disorders moving to eighth place.

Risk factors for health, such as overweight and alcohol consumption, have been rising over the past decades in Brazil, contributing to the burden of NCDs and a large number of premature deaths. More effective preventive and public health strategies, and appropriate medical interventions, are necessary to keep Brazilians healthy and manage the burden of NCDs.

As in many OECD countries, Brazil's progress in population health features substantial inequalities. Evidence shows large health disparities across education levels, with a difference of more than 30 percentage points in the likelihood of reporting a good health status between the most educated (possessing at least 11 years of schooling) and the least educated (with up to three years of schooling). More worryingly, the gap between these two groups has increased over time. There are also large health inequalities across regions. For example, premature mortality rates from NCDs have decreased in the South, Southeast and Central-West regions, but have remained constant in the North and increased in the Northeast, the least developed regions.

Brazil has pushed different policies to reduce health inequalities, particularly among disadvantaged groups. Such policies include adding information on colour and race to SUS National Health Cards; paying particular attention to sickle cell anaemia, which disproportionately affects black people; exempting homeless persons from needing to show proof of residence to qualify for SUS care; and creating a Special Secretariat for Indigenous Health.

Persistent health inequalities and the new epidemiologic profile suggest that Brazil will need to make new arrangements to deal with its ageing elderly population and the growing burden of NCDs in an effective, equitable and sustainable manner.

1.1.4. The COVID-19 pandemic has had a dramatic impact on the Brazilian population

The impact of COVID-19 on population health and the economy has been considerable in Brazil. As of 17 November 2021, registered deaths totalled over 611 000, with approximately 41 000 average monthly registered deaths in 2021. This situates COVID-19 as the first cause of death during the pandemic when compared to the average monthly figures for 2015-19 of deaths attributed to other conditions. Brazil's economy was also hard hit: GDP dropped by 4.1% in 2020, more than the 3.4% observed globally and the 3.2% in G20 countries.

Co-ordination between the federal, state and municipal levels in handling the pandemic has been challenging, revealing governance weaknesses. In many OECD countries, national governments have steered stay-at-home and mask-wearing policies. In Brazil, states and municipalities were left to decide and enforce such policies. Uncoordinated policy measures and the extensive spread of the virus have worsened the health situation. The federal government has taken some good steps to roll out the COVID-19 vaccine from January 2021, in association with state and municipal government. For example, the National COVID-19 Vaccine Operationalisation Plan provides national guidelines regarding the epidemiological situation and defines the target population for vaccination; it also provides important information on the COVID-19 vaccines, pharmacovigilance and the operationalisation of vaccination (Ministério da Saúde, 2021[6]). Brazil also participates in the United Nations COVAX Facility, an important mechanism to improve the country's supply of vaccines and ensure a more equitable global distribution of vaccines. As of 17 November, 60% of Brazilian population was fully vaccinated, approximately 298 million doses were applied, and vaccine hesitancy has been low in Brazil. A survey conducted in April 2021 found that 93% of respondents would get a vaccine if it were available to them (Ipsos, 2021[7]), and a subsequent survey conducted in August 2021 found that 96% of those fully vaccinated would get a booster shot if it was available (Ipsos, 2021[8]).

1.2. Improving the efficiency and sustainability of the Brazilian health system

1.2.1. Although overall health spending in Brazil is above the OECD average, the share of public spending is very low

SUS has been a major success for Brazil in terms of increasing access to health care services and reducing health inequalities. However, finding sufficient financing has been a constant challenge since its inception, and dissatisfaction with apparent inefficiencies in the Brazilian health system is widespread.

In 2019, Brazil allocated 9.6% of its GDP to health care, up from 8.3% in 2000. Given Brazil's state of economic development, the total share is relatively high – and above the OECD average (8.8%). Yet while Brazil spends more on health care overall than many peer countries, it relies heavily on financing from private sources. In 2019, public health spending represented only 3.9% of its GDP (41% of all health spending), a much lower share than in most OECD countries (6.6% on average), and also below Chile and Colombia. The Federal Government, states and municipalities share responsibilities for the financing and management of SUS, and frequent changes to the financing rules have been the norm since its inception. Over the last decades, these changes have led to a greater involvement of the states and municipalities in financing SUS.

1.2.2. Brazil should increase public spending on health, but also needs to spend better to meet future health financing needs

Because of population ageing and the associated increase in the number of patients with chronic conditions, the Brazilian health financing system will face increasing pressures to meet future health care needs. Without taking into account any structural breaks stemming from the COVID-19 pandemic, the OECD health spending projection model suggests that health spending in Brazil will increase from 9.6% in 2019 to 12.6% of GDP by 2040 in a base-line scenario with similar policies in place; this 3.1 percentage point increase is more pronounced than in most OECD countries.

The escalating health financing needs in Brazil can theoretically be addressed through four options, or a combination of them. The first three of these are: (i) increase total government spending without changing priority spending areas; (ii) better prioritise health spending within the existing total public spending envelope; and (iii) find efficiency gains in the health sector. On the other hand, a fourth option would be relying more on the private sector to meet future health spending needs, which does not seem desirable

for Brazil given both equity and efficiency implications. The share of private spending in total health spending is already higher than in any OECD country due to a strong private health insurance market, which grants duplicate coverage to around one-quarter of the population (mainly with higher incomes) also benefiting from tax deductions for insurance coverage. As mentioned earlier, the share of out-of-pocket spending in total health spending (25%) is also above the OECD average (20%), affecting poor and disadvantaged population groups more disproportionally. Furthermore, private expenditure is not necessarily efficient, as it can be used to overutilisation of costly procedures and exams. For example, in 2019 the number of magnetic resonance imaging exams (MRI) per privately insured person in Brazil (179 per 1 000) (Agência Nacional de Saúde Suplementar, 2021[9]) was 2.3 times higher than that average MRI per population in the OECD (79 per 1 000) and considerably above the rate of Austria (148 per 1 000), which was the highest in the OECD in that year. An in-depth analysis of the Brazilian health system emphasises that a mix of approaches can help meet future health financing needs and make health spending more sustainable. The bottom line is that Brazil needs to rebalance its public-private financing split by devoting more of its public resources to health but it also needs to spend better.

1.2.3. Brazil has limited fiscal space to step up total government spending

Against the background of the challenging economic and fiscal situation of recent years, the federal government has taken several initiatives to improve fiscal outcomes while stabilising and reducing public-sector debt. A key element of this strategy was the adoption of an expenditure ceiling in 2016 through a Constitutional Amendment, limiting the growth of primary federal government expenditure to inflation. For health spending, the amendment set the minimum allocation of federal funding to health at 15% of federal current net revenue, pegging future annual increases of this minimum floor to inflation until 2036.

Given the current fiscal situation in Brazil and the need to pursue the path of adjustments to ensure overall fiscal sustainability, a substantial increase in overall government spending seems less likely in the short and medium term. Moreover, the level of public spending in Brazil (41% of GDP in 2019) is already around the OECD average and much higher than in countries with a comparable level of development (OECD, 2020[10]).

1.2.4. There is scope for better prioritising health spending within government spending

A more viable option than increasing total government health spending to meet future needs is making health spending a higher priority within an existing public spending envelope (health accounts for only 10.5% of total government spending – much less than on average across the OECD). There exist various areas where potential savings could be generated and reallocated to funding SUS, including reducing ineffective subsidies and tax expenditure, improving the effectiveness of social transfers, managing high payroll expenses and revisiting the preferential tax treatment of particular actors in the health system (OECD, 2020[10]).

Preferential tax treatments that are subject to revision include for example the tax deductibility of private health insurance premiums and direct out-of-pocket expenses for health care, as well as tax exemptions for some health care providers. Personal income-tax exemptions depend on the individual tax rate and are therefore highly regressive, benefiting the rich much more than the poor and raising questions about their appropriateness. Phasing out the tax deductibility of health expenses and insurance premiums for individuals from personal income taxation alone would provide fiscal space amounting to around 0.2% of GDP (Receita Federal, 2018[11]).

1.2.5. Ample opportunities exist to cut waste and make the Brazilian health system more efficient and accessible

Generating efficiency gains and cutting waste within the health sector will be key for Brazil to soften the emerging spending pressures. The analysis shows that achieving efficiency gains across the entire health system, including PHC, secondary and hospital care, pharmaceuticals, long-term care, and administration and governance, seems feasible in Brazil.

Despite its achievements, PHC performance should be further strengthened

Since its inception, a clear focus of SUS has been strengthening the role of PHC and moving away from a health system that has historically been very hospital-centred. The development of FHTs and implementation of the Mais Médicos programme have yielded some success in improving equality of access to care and health outcomes. The recently initiated "Previne Brasil" strategy also attempts to increase access while improving efficiency.

However, further efforts are needed to realise the full potential of PHC in Brazil. For example, geographic imbalances in the availability of doctors lead to higher unmet needs in disadvantaged and rural areas. This requires coherent nationwide workforce planning, which has been largely missing to date. Moreover, despite ongoing attempts to roll out FHTs, PHC is still fragmented, with persistent problems in co-ordinating care across service levels. For example, only half of the diabetic population identified basic health units as their last contact with the health system, with the rest using other facilities such as hospital units (IBGE, 2020[12]). This is inefficient, as these types of chronic conditions are best treated in primary care settings (OECD, 2020[13]). While the Family Health Strategy should be promoted, increased financial support may be needed, particularly in disadvantaged rural areas. Further development of PHC in Brazil could also require giving general practitioners (GPs) a stronger "gatekeeping'" role. This would entail patients having to register with a primary care physician or practice, and GPs controlling access to secondary care through a referral system. A related issue is the need to better co-ordinate care across health systems, also addressing the long waiting times for visits to specialists or diagnostics. While there are attempts to establish health care networks in Brazil, the centrality of primary care in these networks is not always clearly established.

Service delivery planning in hospitals should be rethought

Widespread inefficiency in the provision of hospital services in Brazil, mainly owing to the high number of small hospitals, has been thoroughly documented (World Bank, 2017[14]; Tribunal de Contas da União, 2020[15]). These inefficiencies should be addressed, without compromising access to acute care for patients in remote areas. One option could be to convert small hospitals into more intermediate facilities while strengthening telehealth applications and expanding emergency transportation to better-equipped general hospitals in urban areas. The central role played by municipalities (which vary substantially in size and capacity) in the planning and management of SUS services appears to contribute to these inefficiencies. Following the example of many OECD countries, Brazil could explore moving hospital planning to a higher level of government.

The current mechanism to finance hospital services within SUS is complex and does not appear to incentivise improving hospital performance. Transfers from the federal government to states and municipalities are partly based on historic budgets and payments by procedure through an outdated fee schedule. As a result, price signals are distorted, and payments do not necessarily reflect treatment costs. To improve technical efficiency, Brazil could consider allocating hospital budgets according to diagnosis-related groups, wherein payments per case reflect the differences in resource use.

Moreover, Brazil should do more to disincentivise the provision of low-value care, such as surgical deliveries (caesarean sections) without medical indication. This could involve extending financial incentives

to providers to curb surgical births, as well as intensifying efforts to raise awareness of this issue among women. More generally, encouraging patient-provider conversations about the appropriateness of certain treatments can be one way to reduce low-value care. Finally, establishing evidence-based clinical practice guidelines, and monitoring their compliance, is an important tool to improve health care quality and reduce unnecessary care.

Obtaining pharmaceuticals can be a challenge which contributes to a high share of out-of-pocket costs

Although coverage of essential medicines under SUS is theoretically very broad, obtaining them when needed can be an issue for many people. This can trigger high out-of-pocket costs if patients have to purchase necessary medications outside the public system (only 10% of overall retail pharmaceutical spending is financed by SUS). Fragmented public pharmaceutical procurement and financing, with joint responsibilities across all three levels of government, may contribute to this problem. For example, pharmaceuticals used in primary care are procured by municipalities. Procurement for these medications could be delegated upward to states or the federation. Alternatively, Brazil could develop national negotiations or public bidding processes at the federal level, with municipalities directly purchasing medicines from nationally contracted manufacturers at the nationally agreed price.

While the share of generics is comparably high in Brazil, more could be done to rein in pharmaceutical spending. One option could be instituting more frequent price revisions for branded and unbranded generics, and increasing the scope of substitution to include similars with proven bioequivalence. Expanding campaigns to educate prescribers and patients on the interchangeability of generics (including similars) is another option.

Finally, cases where patients obtain access through individual court rulings to medications that are not deemed cost-effective are a huge drain on pharmaceutical budgets. Supporting judges in making informed decisions may help curb these costs.

Future long-term care needs should be anticipated

To prepare itself better for rising long-term needs associated with an ageing society, Brazil should start investing in more formal long-term care arrangements. Relying on informal workers will be increasingly difficult and may also hamper economic growth. A first step in the transition towards more formal arrangements could be for Brazil to better support family carers while at the same time expanding day care facilities and rolling out home care. As a starting point, long-term care benefits should be more explicitly defined, with eligibility criteria based on needs assessments, and the responsibilities of both the Ministry of Health and the Ministry of Social Development should be clarified.

The operation of SUS is complex and resource-intensive

An overarching issue is the immense complexity of managing and operating SUS. Competencies and responsibilities are frequently shared across all levels of government, leading to a duplication of tasks and a lack of clarity and accountability. As a result, Brazil allocates a very high share of total health resources (more than double the OECD average) to administration and governance. A critical evaluation of the current management and planning processes of SUS at all levels of government could help identify superfluous administrative procedures, and streamline competences to increase efficiency and accountability. Given the large number of small municipalities with limited management capability, taking a more regionalised approach in planning and managing SUS could also improve efficiency. To achieve this, the scope of the existing “health regions” should be widened by delegating some responsibilities from the municipalities to them. This would also require providing them with the necessary financial means and resources to carry out such tasks.

1.3. Strengthening the health data infrastructure and information system in Brazil

1.3.1. Brazil has launched an ambitious digital health strategy to leverage the potential of digital health data

Across the OECD, the health sector lags behind other sectors in exploiting the potential of data and digital technology that could help save lives and financial resources. Building people-centred, efficient and sustainable health systems is an objective that is attainable through the intelligent use of data and digital technologies, which requires proper policy action and leadership (OECD, 2019[2])

The Brazilian health data infrastructure and information system recently embarked on an ambitious digital health strategy for 2020-28, based on the National Health Data Network (RNDS). The Ministry of Health has a steering role in the generation of health data and statistics, but other public entities also participate in these processes (Ministério da Saúde, 2020[16]). Bodies such as the National Supplementary Health Agency (ANS), the National Health Surveillance Agency (ANVISA) and the Brazilian Institute of Geography and Statistics (IBGE), are key players for producing health data and could have an even stronger impact when further data linkages are undertaken (IBGE, 2021[17]).

1.3.2. Brazil generates a large amount of digital health data but lags behind in data availability, reporting, governance and integration

Based on the results of the 2019-20 OECD Survey of Health Data Development, Use and Governance, Brazil compares favourably to other countries in terms of the development and use of data within key national health datasets. However, the availability and reporting of health data could be improved, as substantial gaps exist between Brazil and OECD members (OECD, 2021[18]). These gaps exist not only for the OECD Health Statistics main indicators (for which Brazil collected and reported data pertaining only to two out of ten groups of indicators), but also for health care quality outcomes indicators and other health surveys and questionnaires. Brazil is invited to participate in upcoming rounds of OECD health data collection.

Brazil could also improve on the governance of health datasets to approach the average score of OECD member countries. While it has experimented with linking datasets by merging personal records across databases, more efforts are needed to uniquely identify patients and follow their pathways through the health systems. Given the political structure of Brazil as a federal republic, a key component of the efficient functioning of data governance and accountability is integration and co-ordination at the federal, state and municipal levels. Currently, silos separate producers and final users of health data, especially at the state and municipal levels. Improving synergies between these two groups would increase the impact and collection of health data, by better co-ordinating the needs of health data users and the range of data collected by data producers. Brazil could also improve its national coverage of data through regionalisation, to allow comparisons between regions, states or municipalities.

To strengthen data governance and accountability, Brazil could also make it easier to identify patients and facilitate linking their information across the different areas of SUS. In this regard, it is key to continue migrating from probabilistic methods for identifying and linking patient data in VinculaSUS (such as using the patient's name, place and date of birth, or parents' personal information) towards deterministic methods, such as those applied in ConecteSUS, using unique patient identifiers such as the Registry of Physical Persons (*Cadastro de Pessoas Físicas*).

1.3.3. Data-collection procedures and reliability can be improved by providing staff training, as well as the necessary IT equipment and connectivity

The Ministry of Health is promoting the collection and use of health data by training staff and offering monetary incentives to municipalities that submit timely health data. The federal government should continue and enhance such support to ensure the accurate inclusion of data from more Brazilian municipalities – especially those located in remote areas – and the reduction of inequalities.

The federal government should also ensure access to the Internet, as well as provide infrastructure tools (e.g. computers and electronic health records platforms) and training for data collection and transmission. For example, 18% of the Brazilian Primary Care Centres (Unidades Basicas de Saude [UBS]) reported they did not have access to the Internet in 2019, and 9% reported they had not used a computer during the last year (OECD, 2020[13]). Strengthening the skills of health programming and IT staff is also key to improve data-collection procedures and the reliability of health indicators. Such measures would allow developing more sophisticated data collection and linkages, as well as expanding the work on population health surveys (particularly by the IBGE).

1.3.4. Expanding and enforcing data standardisation will lead to more data comparability and coverage

Brazil's standardisation of definitions and compilation methodologies, conducted through the Ministry of Health Ordinance 2.073 of 2011, is an important step forward, although it has not been as timely and efficiently as expected. Meetings to discuss the application of this ordinance and accelerate the harmonisation of health data standards and methodologies could be more frequent. Moreover, monetary incentives to ensure compliance could represent a powerful catalyser for improving the standardisation process.

1.3.5. Evidence-based decision making and impactful health research should be supported with linked and inclusive real-time health data

Brazil should promote a health data infrastructure system featuring timelier data and improved data linkages, and including data from the private sector in national datasets. Progress in these three areas would yield more relevant, up-to-date and comprehensive data, which could serve as building blocks for evidence-based policy design. Research centres and universities would also benefit from these innovative and cutting-edge data. Real-time data are a necessary tool for evaluating the continuous impact of health policies, as well as making better-informed and accurate decisions. This is true not only in exceptional scenarios such as pandemics and other health crises, but also in less contingent times.

Brazil should also improve its health data collection processes to cover data from remote locations, indigenous communities and localities with limited access to information and communication technologies (ICT).

1.3.6. Brazil should adopt OECD standards for international benchmarking capacity and national coverage of health data

Brazil is invited to adopt OECD standards for the national and international use of data and statistics. It should attend the different health statistics and expert meetings that discuss best practices, and participate in the various data-collection processes involving OECD member countries and partner economies. This includes participating in related data-collection processes related to health care quality and outcomes, health statistics, economics of public health, and pharmaceutical and medical devices. More active participation would allow Brazil to improve its data collection, availability and comparability, which could in turn be used in multinational studies and analyses by the OECD.

Brazil is also encouraged to adhere to the Recommendation of the OECD Council on Health Data Governance (OECD, 2019[19]). This recommendation promotes the implementation of a national health data governance framework and sets out 12 high-level principles for the development, content and evaluation of national frameworks in areas such as patient privacy, transparency, monitoring, independent research, and training and skill development (OECD, 2019[19]).

1.4. Tackling overweight in Brazil

Half of Brazil's population is overweight: in 2016, 56.5% of adults had a body mass index of 25 kilogrammes per square metre (kg/m^2 or higher), the threshold endorsed by the World Health Organization (WHO) to define overweight. While this prevalence is below the OECD average (58.4%), Brazil showed the fourth-largest increase in overweight between 2006 and 2016 with an increase of 12.5%, behind only Costa Rica, Japan and Korea.

Overweight rates for children in Brazil and in OECD countries tend to be considerably lower than for adults. In 2016, Brazil had a childhood overweight rate of 28%, very close to the OECD average (28.5%). However, childhood overweight rates in Brazil increased by 27% between 2006 and 2016, more than the 15% increase in the OECD region.

Diet and healthy lifestyle are key determinants of overall health and well-being, including overweight. Individuals who follow a diet rich in fruits and vegetables and low in fat, sugars and salt/sodium have a lower risk of developing overweight, one or more cardiovascular diseases and certain types of cancer. As in most OECD countries, the estimated daily consumption of fruit and vegetables in Brazil in 2018 was under the WHO recommendation 400 grammes (g) per person per day according to the Global Dietary Database. Brazilians consumed 85 g of fruit per day, lower than the average in OECD countries (115 g). Similarly, Brazilians consume 93 g of vegetables per person per day, again lower than the OECD average (137 g). Consumption of sugar through sugary foods such as grain-based desserts (cakes, cookies, pies) and sodas is very high in Brazil and much higher than in OECD countries.

At the same time, a large proportion of the Brazilian population does not exercise. In 2016, the prevalence of insufficient physical activity in Brazil was 47%, higher than the OECD average (32.8%). Between 2001 and 2016, the proportion of insufficient physical activity increased by more than 15% in Brazil. This was the largest increase among all the 65 countries with available data, signalling a substantial public health problem in Brazil.

1.4.1. Overweight will reduce life expectancy by an estimated 3.3 years and will result in a 5% reduction of Brazil's GDP over the next 30 years

The annual number of premature deaths caused by overweight in Brazil between 2020 and 2050 will be high. Around 83 deaths per 100 000 people will result every year from overweight. As a result, overall average life expectancy is expected to drop by 3.3 years in Brazil over 2020-50 owing to overweight, compared to a decrease of 2.7 years in OECD countries.

Overweight is one of the leading risk factors contributing to the burden of NCDs, increasing the risk of developing type 2 diabetes, cardiovascular diseases, musculoskeletal disorders, several types of cancer and depression. Consequently, the prevalence of overweight contributes to an increase in health care expenditure. Brazil will need to devote 8.7% of its total health expenditure to NCDs – higher than the OECD average of 8.4% – demonstrating that overweight will have a significant impact on Brazil's health financing system.

Combining the impact of overweight on life expectancy, demographics and labour-force productivity, Brazil's GDP will be 5% lower over the next 30 years than it would have been in the absence of overweight.

This drop is much greater than the expected impact on GDP on average across the OECD region (3.3%), perhaps owing to the relatively large impact of overweight on life expectancy and workforce productivity in Brazil.

Tackling obesity requires combining public health actions into prevention packages. While some policies may be very effective, none of them is sufficient in isolation. Combining interventions in prevention packages is even more effective and cost-effective, notably because packages of interventions address multiples causes at the same time, target different population groups simultaneously, and because policies within a package interact with one another sustaining positive behavioural changes in a more than additive fashion. Brazil should thus focus on the implementation of the most effective forms of the policy throughout the country, with the proper measures and policy design, including robust monitoring and evaluation systems.

1.4.2. Brazil should expand its communication-based approaches through information and education

Brazil has produced several strategies to address overweight. The National Policy on Food and Nutrition (*Política Nacional de Alimentação e Nutrição*) published in 1999, and the Intersectoral Strategy for Obesity Prevention and Control (*Estratégia Intersetorial de Prevenção e Controle da Obesidade*) implemented in 2014, are important components of the national agenda for overweight control in Brazil. Brazil also has a food labelling scheme featuring both a mandatory back-of-pack nutrition label and a new mandatory front-of-pack label. The new front-of-package label regulation for packaged foods was approved by ANVISA in 2020. Under the new regulation, the nutritional labelling must be placed on the front panel of packaged foods using simple and clear icons to emphasise high contents of saturated fat, added sugar and sodium. This will facilitate understanding of nutritional information, helping consumers to make more informed decisions on their food intake. This is in line with labelling in OECD countries like Chile, Finland, Israel and Mexico.

School-based policies are also well-advanced in Brazil, with mandatory nutritional standards included in several national programmes, such as the Health at School Programme (*Programa Saúde na Escola*, [PSE]) and the National School Meals Programme (*Programa Nacional de Alimentação Escolar*, [PNAE]).

Although all these strategies are valuable and should be maintained, Brazil could also develop more communication-based approaches through education and information. It should, for example, extend the labelling scheme to restaurant menus. The evidence shows that menu labelling can positively influence consumer choices by decreasing calorie consumption, as well as encouraging restaurants to reformulate their menus by offering a lower calorie content. Brazil could learn from the United States, Australia and Canada, where some restaurant chains in certain states or provinces are required to display their menu items' energy content or calorie information.

Beyond menu labelling, Brazil could use other channels, such as mass media campaigns and mobile phone applications, to promote more active and healthier lifestyles. It already broadcasts rare mass media campaigns targeting overweight. Developed by the Alliance for an Adequate and Healthy Diet (*Aliança pela Alimentação Adequada e Saudável*), the campaign called "You have the right to know what you eat" ("*Você tem o direito de saber o que come"*) broadcasts pieces over the radio, television, digital and print media focusing on the relationship between overweight and the consumption of unhealthy foods (AAAS, 2017[20]). As in many countries, Brazil's population has access to a variety of mobile apps, including the Digital Food Guide (*Guia Alimentar Digital*). Although the available evidence shows that using the app has a positive impact on weight loss and the consumption of a high-quality diet, Brazil will need to develop regulations to promote the use of mobile apps that provide reliable and safe nutritional information.

1.4.3. The PHC system should play a more significant role in preventing and treating overweight

The PHC setting is the best place to provide information and advice on healthy lifestyles, as well as encourage physical activity through behavioural counselling or more formal prescribing (OECD, 2019[21]). International evidence supports that prescribing physical activity for people at risk of developing chronic diseases results in an additional 56 extra minutes of moderate exercise per week, about one-third of the 150 minutes per week recommended by the WHO. As in at least one-third of OECD countries, PHC settings do prescribe physical activity, but not as a regular practice: only four in ten health units in Brazil reported running a physical activity intervention programme. At the same time, the instructions given to patients are reportedly not specific enough to empower them to exercise. PHC workers should receive greater guidance to support the prescription of physical activity, for example, within the Physical Activity Guide for the Brazilian Population developed by the Ministry of Health (Ministério da Saúde, 2020[22]). Key international examples also provide a basis for learning, for example from the United Kingdom, Germany and Scandinavian countries, which have introduced counselling programmes for physical activity. In Sweden, a medical worker (who may be any qualified licensed health care practitioner, not necessarily a medical doctor) provides written individualised prescriptions for both everyday physical activities and aerobic fitness, strength and flexibility training to patients at risk of developing NCDs. A formal follow-up procedure is also in place, with the results entered into the patient's medical record.

1.4.4. A more comprehensive package of policies is needed to tackle overweight and its drivers

Brazil's current policies may not be sufficient to tackle overweight and its drivers if the local environments provide only limited opportunities to engage in healthy lifestyles.

Brazil should pursue food reformulation more actively. Food reformulation, where the composition of food products is changed to improve their nutritional profile, can contribute to healthier diets. Since 2007, the Ministry of Health has been working with the Brazilian Association of Food Industries (ABIA), which produces over 70% of all processed foods in the country, to improve their nutritional profile. This included setting targets for reducing salt consumption, with positive results: the average sodium content of over half the existing food categories in Brazil has dropped by a significant 8-34% over the past decade. The Ministry of Health also monitors the targets set by the Pan American Health Organization, publishing reports every two years and releasing the data to the media. Brazil needs to pursue either voluntary or mandatory reformulation policies, notably targeting the reduction of trans-fatty acids, building in clear objectives and accountability processes. Such policies will be beneficial for all stakeholders, including consumers, government and industry.

Brazil should also strengthen the currently timid "healthy workplace" policies to influence healthier lifestyles. Workplace-based interventions include improving diets through changes to the choice of daily menus and snacks in workplace cafeterias; promoting physical activity and reducing sitting time through sit-stand workstations; and implementing workplace wellness programmes. The federal government has also shown a growing interest in developing and promoting preventive strategies for cardiovascular diseases. To expand on such a valuable initiative, Brazil could develop communication strategies and financial incentives for companies and individuals. It could learn from Japan, where central and local governments provide various incentives – usually in the form of awards – to both public and private employers to implement workplace health-promotion programmes. These programmes often focus on addressing risk factors for health such as unhealthy diets, physical inactivity, harmful alcohol consumption, smoking and mental well-being (OECD, 2019[23]).

At the same time, federal and state governments in Brazil should continue to encourage active travel, including walking, which has been found to increase physical activity and improve both physical and mental health.

1.4.5. Advertising regulations and pricing food policies

Brazil should implement stricter regulations for food and beverage advertising, with a focus on protecting children. The benefits of stricter TV advertising policies on food preferences, purchase requests and consumption patterns has already been demonstrated elsewhere, with a strong impact on children. In Quebec, Australia and Chile, for example, restrictions on commercial food advertising and promotion had a significant effect on dietary intake. In Brazil, the National Council for the Rights of Children and Adolescents (*Conselho Nacional dos Direitos da Criança e do Adolescente [CONANDA]*) recently issued a resolution (Resolução 163, 13 March 2014) establishing criteria for publicity and marketing aimed at children (up to 11 years old) and adolescents (12-18 years), and prohibiting any kind of "abusive publicity". However, TV restrictions are voluntary in Brazil, unlike in 14 OECD countries that enforce mandatory restrictions. Brazil should move towards mandatory advertising regulations for unhealthy food and drinks to increase their impact on diet and obesity.

At the same time, the Brazilian Government may wish to influence food-related consumer behaviour through targeted pricing policies. Policy actions in this field have focused on increasing the price of products high in sugar, saturated fats or salt, and have also included targeted price reductions for healthier foods sold in shops (OECD, 2019[23]). A systematic review and meta-analysis concluded that a 10% tax on sugar-sweetened beverages (SSBs) led to a 10% decline in SSB purchases and dietary intake. Taxes on SSBs or other foods are a strategy implemented internationally by 13 OECD countries. Examples include "soda taxes" in France, Chile, Mexico, the United Kingdom, and the City of Berkeley and State of Pennsylvania in the United States, and a tax on ready-to-eat meals in Hungary. Careful policy design and implementation to avoid substitution with other calorie-dense foods or beverages will be necessary if Brazil wants to move in this direction, as well as to ensure that targeted pricing policies benefit the poorest population.

1.5. Reducing alcohol consumption in Brazil

Although alcohol consumption in Brazil stands below OECD averages, there are signs it has increased in recent years among all population groups. These increases are particularly worrying for women and young adults, for instance with regard to heavy episodic drinking. This scenario will increasingly damage health, increasing premature mortality and decreasing life expectancy at slightly lower rates than in OECD countries. It will also have a significant impact on health expenditure and the broader economy in terms of GDP reduction, although this will be of smaller magnitude than OECD average.

1.5.1. Alcohol consumption in Brazil will reduce life expectancy by an estimated 0.8 years and will translate into a 1.4% reduction of Brazil's GDP over the next 30 years

Levels of alcohol consumption in Brazil are lower that the OECD average. In 2018, Brazilian men drank 11.8 litres of alcohol per year, around 4 litres less than the OECD average, while Brazilian women drank 3.3 litres, just under 2 litres less than the OECD average. However, heavy episodic drinking among Brazilians aged 18 and more has almost tripled in six years, from 5.9% in 2013 to 17.1% in 2019. The increase was larger among women than men.

Alcohol consumption has an impact on Brazil's population health and economy. Alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men can also lead to people dying prematurely, i.e. between the ages of 30 and 70, according to the WHO definition (WHO, 2018[24]). Accordingly,

premature mortality in Brazil from alcohol consumption above 1 drink for women and 1.5 drinks a day for men will amount to 20 people per 100 000 population between 2020 and 2050, lower than the OECD average of 24 people per 100 000. This will translate into a drop in Brazilians' overall life expectancy: on average over 2020-50, life expectancy is expected to decrease by 0.8 years owing to alcohol consumption, close to the 0.9 year reduction across OECD countries.

When the impact of alcohol consumption above the cap of 1 or 1.5 drinks per day translates into loss of employment and productivity, Brazil is projected to lose on average USD PPP 47 per capita per year. Moreover, the Brazilian GDP will be 1.4% lower over the next 30 years – just below the 1.6% average across OECD countries – owing to the impact of diseases caused by alcohol consumption over the daily cap for women and men.

1.5.2. Brazil has implemented a range of policies to reduce alcohol consumption

Brazil recognises the issues surrounding alcohol consumption and has stepped up its response accordingly. In 2007, Brazil introduced its first national policy on alcohol, targeting a collective confrontation of problems related to alcohol consumption. The policy adopts an intersectoral and integral approach to reduce harms to health, as well as situations of violence and criminality associated with alcohol use. Brazil has also progressively developed other alcohol policies, including the Emergency Plan for the Expansion of Access to Treatment and Prevention of Alcohol and Other Drugs in 2009, and the National Policy against Drugs in 2019. Brazil also participates in the WHO SAFER initiative, demonstrating its commitment to combatting alcohol consumption and reducing its harmful consequences. However, while Brazil has a national written policy on alcohol, the lack of a related action plan makes its implementation challenging.

Brazil's minimum drinking age has been very important in limiting the risks associated with early onset drinking, such as violence and injury, and the likelihood of developing alcohol dependence in adulthood. Since 2005, the legally mandated minimum age for purchasing alcohol has been 18, the same threshold applied across 28 OECD countries. Anyone who fails to comply with this rule in Brazil is subject to two to four years' imprisonment and a fine ranging from BRL 3 000 (Brazilian real) to BRL 10 000 (USD 545 to USD 1 800).

Remarkably, the introduction of the Lei Seca ("Dry Law") in 2008 instituted a zero tolerance policy for drink driving in Brazil. Any blood alcohol concentration (BAC) detected on a breathanalyser test is considered an infraction. It becomes a crime when the BAC reaches 0.6 grammes per litre (g/L) of blood or 0.34 milligrammes per litre (mg/L). The law was amended in 2012 to establish stricter punishments for drivers under the influence of alcohol or other psychoactive substances who commit crimes of culpable homicide (without intent), or bodily injury of a serious or very serious nature. Recent evidence shows that the 2012 amendment had a statistically significant impact in reducing lethal accidents. Recent policy developments have made the Lei Seca tougher. Starting in April 2021, drivers under the influence of alcohol or drugs who cause accidents involving bodily harm will be arrested, meaning that the offender will no longer have the right to substitute prison sentences for lighter sentences such as community service, as was previously the case.

Brazil also regularly conducts mass media campaigns targeting drink driving. The federal government conducts drink-driving mass media campaigns during the Carnival period on an almost yearly basis. In 2019, the "Accident Prevention Campaign – Carnival" aimed to promote zero alcohol consumption before driving to reduce traffic accidents, as well as raise awareness of the grave and wide-ranging consequences of alcohol consumption (Ministério da Infraestrutura, 2019[25]). Although no impact evaluation of such campaigns has been conducted in Brazil, evidence from Australia, Denmark, Finland, Italy, the

Netherlands, New Zealand, the United Kingdom and the United States shows that mass media campaigns can increase knowledge on the impact of alcohol consumption and boost treatment-seeking behaviour.

1.5.3. Brazil should create a comprehensive policy package and expand current policies to further reduce alcohol consumption

While alcohol is highly valued by many consumers as a source of individual pleasure and social enjoyment, and its production and trade represent an important part of the economy in many countries, harmful alcohol consumption is an important risks to population health, causing many chronic non-communicable diseases which, in turn, have wider detrimental societal consequences. Furthermore, policies to tackle harmful alcohol use require complex choices to be made. Interventions targeting all consumers – such as alcohol taxation or regulation of advertising – are highly effective at the population level but, by affecting all people who drink independently of their level of alcohol consumption, they also involve interpersonal trade-offs in welfare.

As Brazil already has a number of restrictive alcohol policies in place, it may wish to consider policies further focusing on the most harmful effects of alcohol consumption, such as limits on advertising, drink-driving policies, or those with a strong preventive and educational component, such as primary health care-based approaches or school-based programmes. Overall, these policies should have a positive impact on Brazil's economy and population health. Pricing policies in particular can generate the largest reductions in health expenditure and labour-market costs (e.g. employment), while producing the biggest gains for population health (e.g. life expectancy) and the broader economy (e.g. GDP). Combining policies in coherent prevention strategies would have an even greater impact.

Introducing minimum alcohol pricing policies

Although pricing policies are a critical pillar of a strong comprehensive alcohol package, Brazil has not considered any policy related to alcohol minimum pricing, unlike many OECD countries (e.g. Canada, Australia and the United Kingdom) which have implemented minimum unit pricing policies (MUP). MUP sets a mandatory floor price per unit of alcohol or standard drink, targeting cheap alcoholic beverages. To date, empirical research evaluating MUP has found promising results in reducing consumption. In Scotland (United Kingdom), a study found that MUP led to a 7.6% reduction in alcohol purchases, with a greater impact in households that consumed the most alcohol. Other policy tools Brazil could consider include implementing bans on below-cost selling (as in the United Kingdom) and volume discounts (as in Iceland and Sweden), and setting minimum mark-ups and profit margins (as in the United States).

Limits on alcohol marketing and sports sponsorship are warranted

Alcohol marketing is an important factor in alcohol consumption in Brazil. There exists strong evidence of the positive association between exposure to alcohol marketing and the initiation of alcohol consumption, as well as binge and hazardous drinking.

The current regulations on advertising and restrictions on sports sponsorship in Brazil features important limitations. Law No. 9 294 of 1996 limits the advertising of alcoholic beverages with an alcohol content above 13 degrees (°) on the Gay Lussac scale. While the National Council of Advertisement Self-Regulation (CONAR) also instituted new advertising regulations for alcoholic beverages in 2008 that specifically targeted children and adolescents, advertising of alcohol products (except spirits) remains omnipresent in Brazil.

Brazil could join most OECD countries in further restricting traditional media advertising of alcohol. It may wish to introduce a statutory ban on alcohol advertising to children and adolescents. Across the OECD, seven countries enforce a full statutory ban on traditional platforms, including television, radio and print

media. Brazil could also include social media in this ban, as youth spend more time on these new platforms. Turkey, Norway and Lithuania, for example, take this approach.

In tandem, Brazil could also regulate alcohol sports sponsorship. Extensive international evidence confirms the adverse public health impact of sponsorship, which is associated with initiation of drinking for previous non-drinkers and higher levels of consumption among current drinkers, as well as athletes and sports club members. The current regulation does not cover alcohol beverages below 13° on Gay-Lussac scale, leaving out beer, the dominant category in sports sponsorships.

Stronger drink-driving policies

Brazil should expand its drink-driving policies. First, implementation of sobriety checkpoints to enforce the Lei Seca policy is currently patchy across Brazilian states, with breath tests more frequently performed in capitals. Sobriety checkpoints have been found to be cost-effective in reducing road accidents. In Brazil, they should be widely publicised, highly visible and conducted frequently. Brazil should better target sobriety checkpoints through more efficient use of alcohol-related data. For instance, information about traffic accidents, concentration of alcohol outlets and well-known events where alcohol is consumed could guide the planning of sobriety checkpoints.

Second, alcohol ignition interlock programmes, which require drivers to take a breath test to assess their blood alcohol reading in order to start their vehicle, could be a good complement to the Lei Seca policy. Brazil could learn from several OECD countries (Austria, Belgium, Canada, Denmark, Finland, France, Poland, Sweden and certain states in the United States) that penalise first-time drink-drivers with ignition interlocks, or from countries that impose this penalty for repeat offenders (i.e. Belgium, France, New Zealand, Sweden and certain US states). If Brazil wishes to further update the Lei Seca by introducing alcohol ignition interlock programmes, it will need to undertake pilots within states and municipalities featuring higher alcohol-related traffic accident rates in order to better understand the implications in the Brazilian context.

1.5.4. Screening and brief intervention in PHC and school-based education programmes

Screening and brief intervention (SBI) in the context of PHC, which is designed to identify at an early stage individuals with a drinking problem and motivate them address the issue, has been found to be cost-effective in most of EU countries. Brazil has introduced several initiatives to support the development of SBI in PHC. The Pathways of Care programme (*Caminhos do Cuidado*), implemented in 2013 by the federal government, successfully expanded capacity in PHC for treating alcohol and drug use disorders. The programme trained over 290 000 community health workers and nursing assistants in the prevention and management of alcohol and drug use disorders. The development of Psychosocial Care Centres (*Centros de Atenção Psicossocial*) as strategic points of care within the Network for Psychosocial Care (*Rede de Atenção Psicossocial*) has also been a key reform in improving care for people with alcohol and drug disorders through SBI.

However, beyond the context of Psychosocial Care Centres and Network for Psychosocial Care, SBI in PHC is not systematically embedded in family health teams practice, particularly as part of regular health check-ups. This is unlike OECD countries, such as the United Kingdom, where GPs undertake SBI as part of a normal health check. If Brazil wants to take this direction, it needs to develop and implement clinical guidelines more consistently across the country, setting standards of care for SBI. It could also create a registry and monitoring system, which would be very useful in co-ordinating family health teams with Psychosocial Care Centres and Network for Psychosocial Care to integrate services more efficiently, making health care more people-centred.

There is also scope for strengthening the educational strategy of the Health at School Programme (*Programa Saúde na Escola* [PSE]), established in 2007, to further discourage drinking initiation and

drinking behaviours among school-aged children. The PSE does not propose specific guidelines on alcohol-related harms in schools, so that actions and activities related to alcohol use are more limited than in other prevention areas. In addition, the #Tamojunto programme, implemented by the Ministry of Health in 2013 to prevent adolescents' of alcohol, tobacco and other drugs, has failed to meet – and indeed, countered – its objectives. Indeed, previous evaluations have shown that youngsters involved in the programme were more likely to initiate alcohol use. In this context, it will be crucial to develop national PSE guidelines on alcohol-related harms for school children and adolescents, develop initiatives to support professors and health workers in implementing the guidelines, and create an evaluation system to assess the guidelines' impact. Learning from the experience of the #Tamojunto programme will be paramount, either to scale up a revised form of the programme or develop a new programme for PSE students.

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2 Health care needs and the health care system in Brazil

The current principles and structure of Brazil's health care system (*Sistema Único de Saúde*, SUS) were conceived in 1988 after the approval of the new Brazilian Constitution that established health as a universal right for the whole population and a state responsibility. Many measures of health system performance in Brazil have improved since SUS inception, but gains have not been equal across population groups. While virtually the entire population is formally covered by the public health sector, with equal benefits and equal financial protection, private sources of spending predominate either via voluntary private health insurance or direct payments by households which affect disproportionately Brazil' poor and disadvantaged populations. Low public health spending, along with demographic and epidemiologic transitions, are also challenging the financial sustainability of the Brazilian health care system.

2.1. Introduction

The current principles and structure of Brazil's health care system were conceived in 1988 after the approval of the new Brazilian Constitution that established health as a universal right for the whole population and a state responsibility, which cemented the way towards the implementation in 1990 of the Unified Health System (Sistema Único de Saúde, SUS). Three principles underpin SUS (Massuda et al., 2020[1]):

- The universal right to comprehensive health care at all levels of complexity (primary, secondary, and tertiary).
- Decentralisation with responsibilities given to the three levels of government: federal, state, and municipal.
- Social participation in formulating and monitoring the implementation of health policies through federal, state, and municipal health councils.

Since SUS inception, Brazil has had significant developments by improving in most of the general population health indicators, increasing access to health care and reducing health inequalities. SUS prioritisation on primary care permitted an easier contact with health services at the community level and citizen's participation on health issues was institutionalised at the municipal, state and federal levels.

Brazil has continuously progressed towards universal health coverage (UHC), since all the population has health care coverage through SUS. Total expenditure in health increased to USD PPP 1 514 per capita in 2019 (as compared to an average of USD PPP 4 087 per capita among OECD countries), with private sources of spending predominating as over 50% corresponds to voluntary payments schemes and out-of-pocket spending. Public health care providers dominate the system, but a significant presence of private providers exist, mainly for people able to purchase private insurance. While the share of out-of-pocket payments has come down in the last two decades reaching 25% of total health expenditure in 2019-below many countries in the LAC region but above the 20% in the OECD, Brazil has increased its spending share of voluntary health insurance reaching 30% in 2019, the highest in LAC and way over the 5% in the OECD.[1] Demographic and epidemiologic transitions, along with low public health care spending and several sources of wasteful health spending are challenging the financial sustainability of the Brazilian health care system.

This chapter describes the Brazilian health care system by analysing the demographic, socio-economic and epidemiologic context in which the system operates, as well as describing the major actors in the Brazilian health care sector. The chapter examines Brazil's current situation in terms of achieving UHC, including a particular analysis of the inputs of health care services in the country in order to provide information for planning and management.

2.2. Health and health care needs in Brazil

2.2.1. Demographic transition is generating new challenges for Brazil's health system

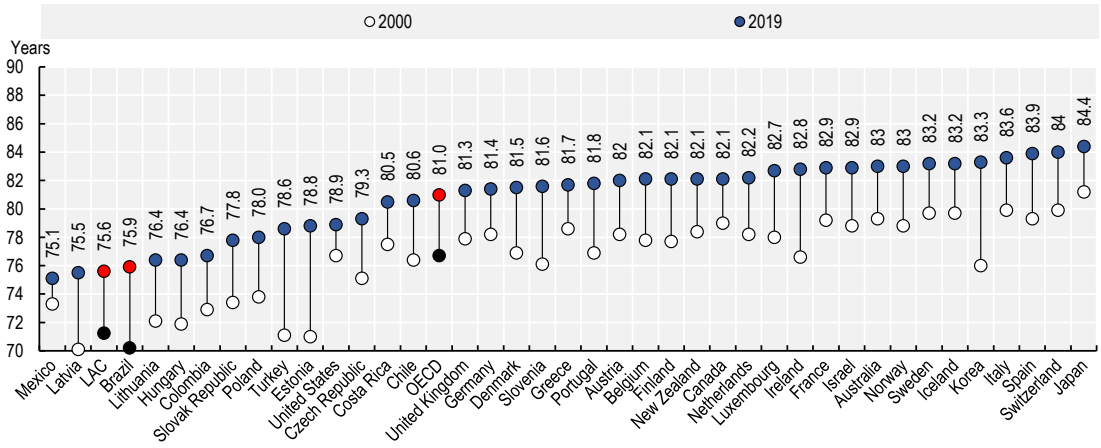
Brazil is located in South America, sharing borders with ten countries, almost all the countries in the sub-region with the exception of Chile and Ecuador. This Portuguese-speaking country has a total land of 8 358 140 km^2 and its territory is administratively divided into 26 states, one federal district, and 5 570 municipalities. The states and the federal district are also grouped into five regions: Northern, Northeast, Central-West, Southeast and Southern, which are used mainly for statistical purposes and to define the distribution of federal funds. In 2020, the population in Brazil was estimated to be more than 212 million inhabitants, with an annual population growth of 0.8% (OECD, 2020[2]). In 2015, 45.2% of the population considered themselves as white, 45.1% mulatto (mixed white and black) and 8.9% black (IBGE, 2016[3]). In 2015, 0.3% of Brazilian population was regarded as immigrant, with 46% of them being women (IOM,

2020[4]). Population density reached 25.1 inhabitants per km2 in 2018, compared to 17.8 inhabitants per km2 in 1990, which is linked to the increasing urban population that rose from 73.8% in 1990 to 86.8% in 2019. However, the annual growth rate of urban population has decreased from 2.9% in 1990 to 1.05% in 2019 (World Bank, 2020[5]).

Life expectancy at birth in Brazil increased from 70.2 years in 2000 to 75.9 years in 2019 still five years below the OECD average of 81 years but above the LAC average of 75.6 years (see Figure 2.1). Infant mortality rates have decreased from 30.3 deaths per 1 000 live births in 2000 to 12.4 deaths per 1 000 live births in 2019. Despite this decrease, the infant mortality rate in Brazil is also above the OECD average of 4.2 deaths per 1 000 live births. The same is true for maternal mortality rates in Brazil, which have decreased to 60 women per 100 000 live births in 2017 (13 percentage points reduction since 2000), although still higher than the OECD average of 8 per 100 000 live births but lower than the LAC average of 83 (OECD/The World Bank, 2020[6]).

Figure 2.1. Life expectancy at birth in Brazil has increased but remains five years below the OECD average

Life expectancy at birth, among OECD and LAC countries, 2000 and 2019 (or nearest years)

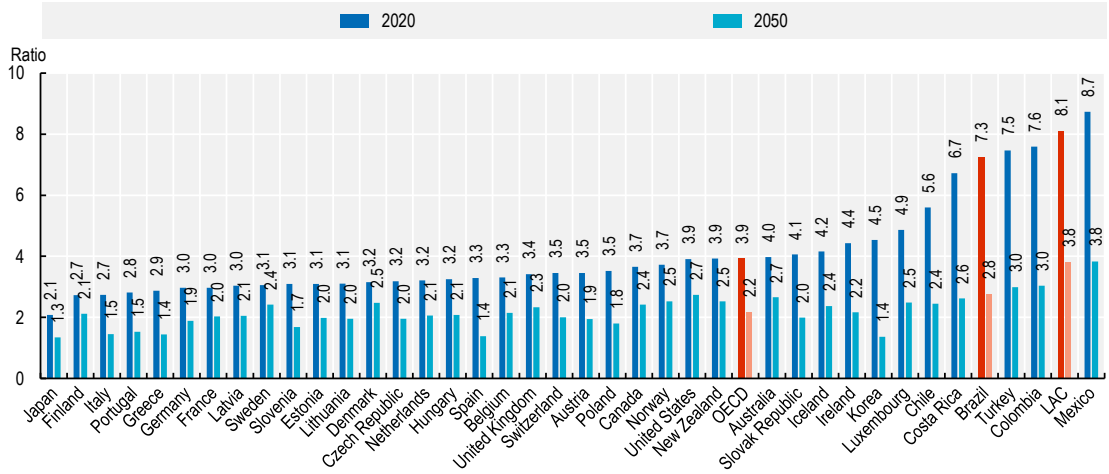


Source: OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en, the World Bank World Development Indicators Online 2021.

These improvements in general population health have been accompanied by decreasing fertility rates, moving from 2.9 births per woman in 1990 to 1.7 births per woman (World Bank, 2020[5]), as in many OECD countries. Falling fertility rates, along with increasing life expectancy means that Brazil is experiencing a demographic transition similar to that of OECD economies; a narrowing younger base and an expanding number of older adults in the population pyramid. In 2020, the ratio of people aged 15-64 to people aged over 65 years was 7.3 in Brazil, nearly twice the OECD average but below the LAC average, meaning that a larger proportion of working age population exist in Brazil than in the OECD. Yet, this ratio is projected to substantially decrease to 2.8 by 2050, almost matching the ratio of 2.2 projected for the OECD (Figure 2.2). This rapid demographic transition is having an important impact on the health of the population in Brazil, putting pressure on both the health care system and the economy.

Figure 2.2. Brazil is projected to experience a rapid population ageing process with a decrease on the proportion of working age population by 2050

Ratio of people aged 15-64 to people aged over 65 years, 2020 and 2050



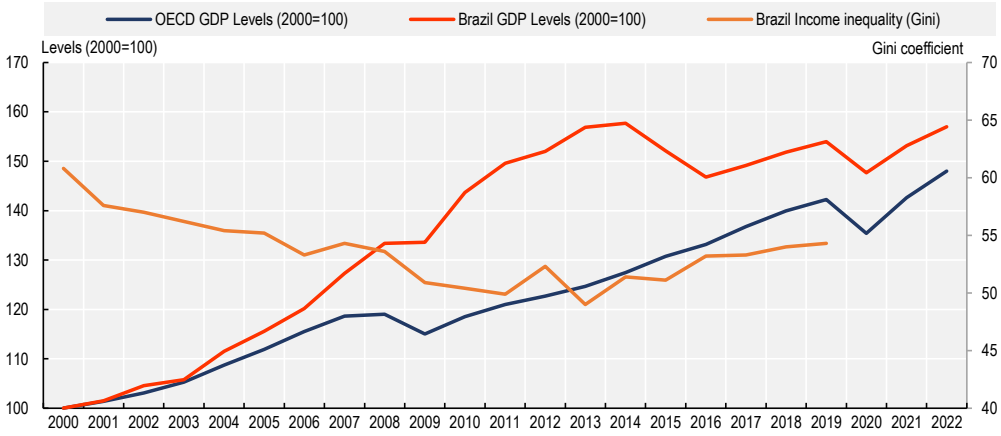
Source: UN World Population Prospects 2019.

2.2.2. A strong recession and governance challenges have limited Brazil's progress towards development and better health

Over the past two decades, Brazil has had strong economic growth combined with remarkable social progress, making it one of the world's leading economies. However, socio-economic inequality remains as a key issue and economic recovery after the recession in 2015 and 2016 has been slow. The situation of its fiscal accounts is challenging with high and rising public debt, while the labour market is characterised by high and persistent labour informality (OECD, 2018[8]). Figure 2.3 shows how Brazil's GDP growth was strong in the 2000s, but lagged behind OECD economies in the 2010s, while the projections for 2021 and 2022 also put Brazil below the OECD estimated averages (OECD, 2021[9]). From 2000 to 2013, the Gini coefficient for income inequality in Brazil dropped continuously from 60.8 to 49. However, after the economic crisis it increased to 51.4 in 2014 to 54.3 in 2019.

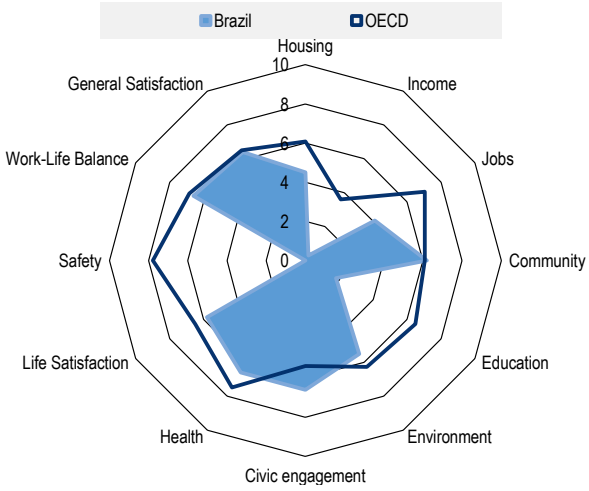
Overall, Brazil has progressed over the last decade in terms of improving the quality of life of its citizens. However, according to the OECD Better Life Index 2020 (OECD, 2020[10]), Brazil performs well in only a few well-being measures relative to most OECD countries. Brazil ranks above the average in civic engagement (involvement in democracy) and community (quality of social support networks), but very low in safety (murder and feeling safe), income (household income and financial wealth) and education (people's education and outcomes). Brazil is also below average in terms of jobs and earnings, housing, environmental quality, life satisfaction, work-life balance and health status. These rankings are based on available selected data (Figure 2.4). All these areas of life are closely related to the population's health status as they reflect the social and economic determinants of health.

Figure 2.3. GDP levels and income inequality in Brazil over the past 20 years



Note: Estimations for 2021 to 2022.
Source: OECD Economic Outlook (2021[9]) https://doi.org/10.1787/edfbca02-en, and World Income Inequality Database (UNU-WIDER, 2020[11]), https://www.wider.unu.edu/project/wiid-%E2%80%93-world-income-inequality-database.

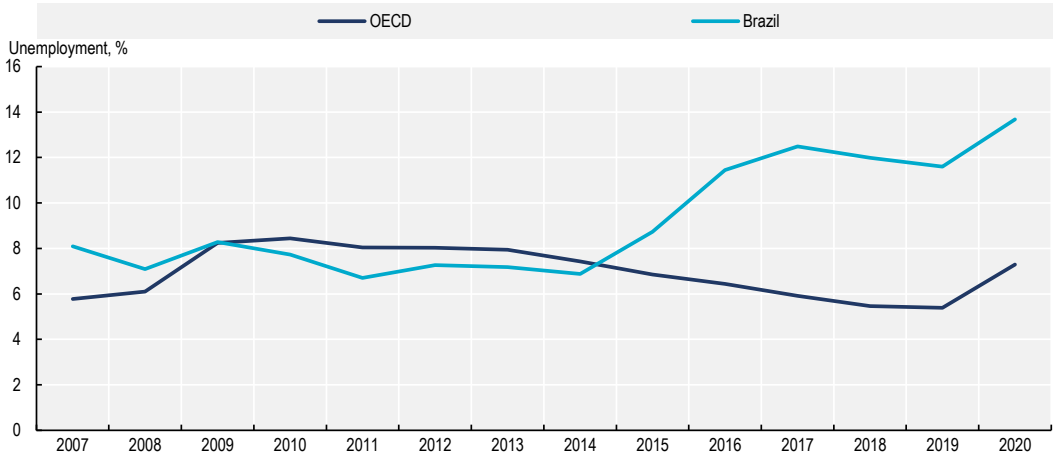
Figure 2.4. Brazil's well-being indicators highlights the challenges in comparison to OECD averages



Source: OECD Better Life Index (2020[10]), http://www.oecdbetterlifeindex.org/countries/brazil/.

Unemployment has been another issue affecting Brazil's economy and, therefore, population's health. Before the economic crisis of 2014, unemployment was below 8% and even below 7% in 2014, similar to OECD averages in those years. However, it went up to 11.5% in 2016 and has remained at that level until 2019, while in the OECD unemployment continue to decrease reaching 5.4% in average in 2019 (Figure 2.5) (OECD/ILO, 2019[12]). In 2020, the unemployment rate reached 13.6%. In addition, labour informality is a significant issue in Brazil, reaching 41.5% in 2018 (as a share of total non-agricultural employment), lower than Colombia (57.3% in 2019) and Mexico (57.3% in 2016), but higher than Chile (27.8% in 2019) and Costa Rica (36.9% in 2019) (World Bank, 2021[13]; OECD, 2020[14]).

Figure 2.5. Unemployment in Brazil and OECD countries, 2007-20



Source: OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

Additionally, recent political turmoil and corruption allegations at the highest levels of government and businesses have exposed significant challenges in economic and political governance. Corrupt practices, kick-backs and collusion among bidders for public funds generate a waste of public resources and exacerbate income inequalities by allowing relatively prosperous public officials and businessmen to divert taxpayer resources. The reduction of corruption through structural reforms (e.g. by improving procurement laws and whistle-blower procedures) would have an estimated impact of 3% on real GDP in Brazil (OECD, 2018[8]), which could also increase the availability of public resources for the health sector, amongst the total public budget. Corruption has also a correlation with some practices in the health sector itself, as discussed on Chapter 3.

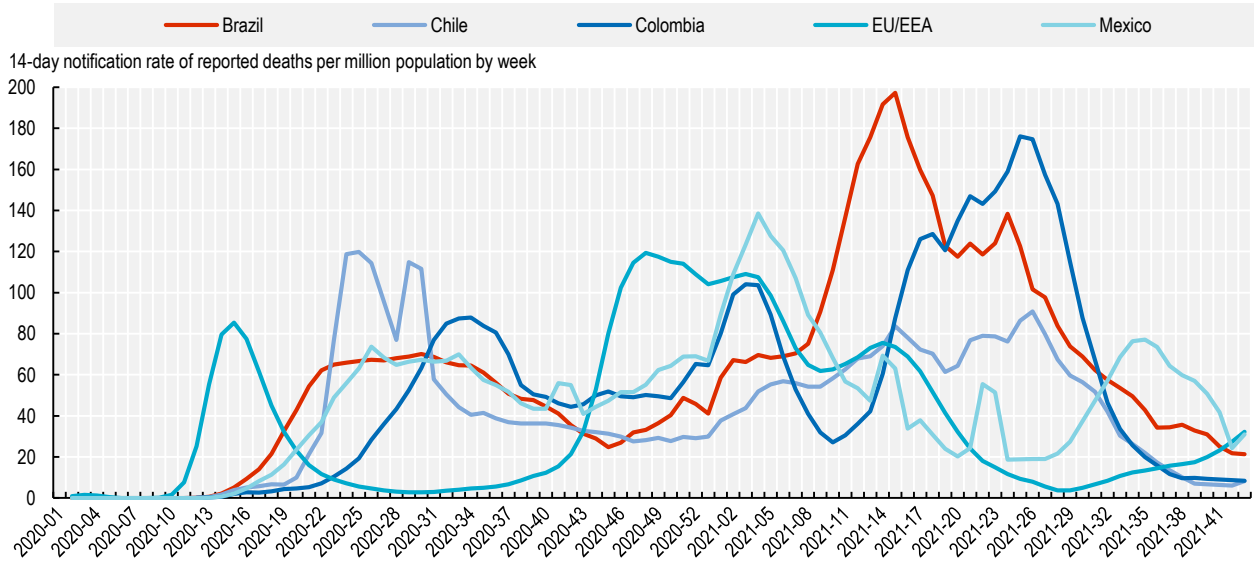
2.2.3. The impact of COVID-19 on health and the economy in Brazil has been large, revealing governance weaknesses

The first case of Coronavirus Disease 2019 (COVID-19) in Brazil was reported on the 25 February 2020. Since then, the impact on population health and the economy has been large. The total number of registered deaths is above 611 000 as of 17 November 2021 with 41 000 average monthly registered deaths in 2021. This situates COVID-19 as the first cause of death during the pandemic when compared to the average monthly figures for 2015-19 of deaths attributed to other conditions, the highest ones being 30 000 for circulatory diseases, 18 500 for cancers, and 13 000 for diseases of the respiratory system.[2] However, there is evidence of underreporting of around 22% of deaths, due to limitations in the ability to perform SARS-CoV-2 RT-PCR test screening (Carvalho, Boschiero and Marson, 2021[15]).

Brazil's economy was also hit hard. During 2020, GDP in Brazil dropped by 4.1%, a larger contraction than the 3.5% and 3.1% in the World and G20 countries, respectively. OECD projections released also show signs of a weaker recovery in Brazil, with a projected GDP growth of 3.7% in 2021 and 2.5% in 2022, lower than the 6.3% and 4.7% forecasted for G20 countries (OECD, 2021[16]).

The mortality epidemic curve in Brazil experienced an increase by early April 2020, reaching the first peak during July, later than what Europe experienced in the early months of the pandemic. Then, cases started to reduce but remained at relatively high levels, similar to other Latin American countries such as Chile, Colombia and Mexico. By mid-November, cases in Brazil began to rise once again. By the beginning of April 2021, mortality rate in Brazil reached its highest levels since the start of the pandemic and then started to decline (Figure 2.6).

Figure 2.6. COVID-19 mortality rate evolution in Brazil and selected OECD countries between March 2020 and October 2021



Source: ECDC (2021[17]), European Center for Disease Prevention and Control, https://www.ecdc.europa.eu/en.

One of the most important problems in handling the COVID-19 pandemic in Brazil was weaknesses in governance of the health sector. At the federal level, in the first year of the pandemic, four different ministers of health were in office, limiting continuity in the management of the response. Risk communication from federal authorities has also been conflicting and confusing for the population. Brazil is not unique, in that other OECD countries have pursued similar approaches.

The co-ordination between the federal, state and municipal levels has been complex as well. In many OECD countries, national governments have steered stay-at-home and mask-wearing policies. In Brazil, states and municipalities were left with the responsibility to decide and enforce. Shortages in medical supplies and technologies have also been reported. Some states have stepped in to cover their gaps. For example, the state of Maranhão purchased more than a hundred mechanical ventilators on the international market, at a moment of fierce international competition for equipment (Alvarenga et al., 2020[18]). Amongst other initiatives, the Interstate Consortium of Sustainable Development of the Northeast Region, created the Scientific Committee to Combat Coronavirus (C4NE) composed of national experts for advising the Consortium and monitoring the pandemic, something that did not exist at the federal level (Pessoa, Teixeira and Clementino, 2020[19]).

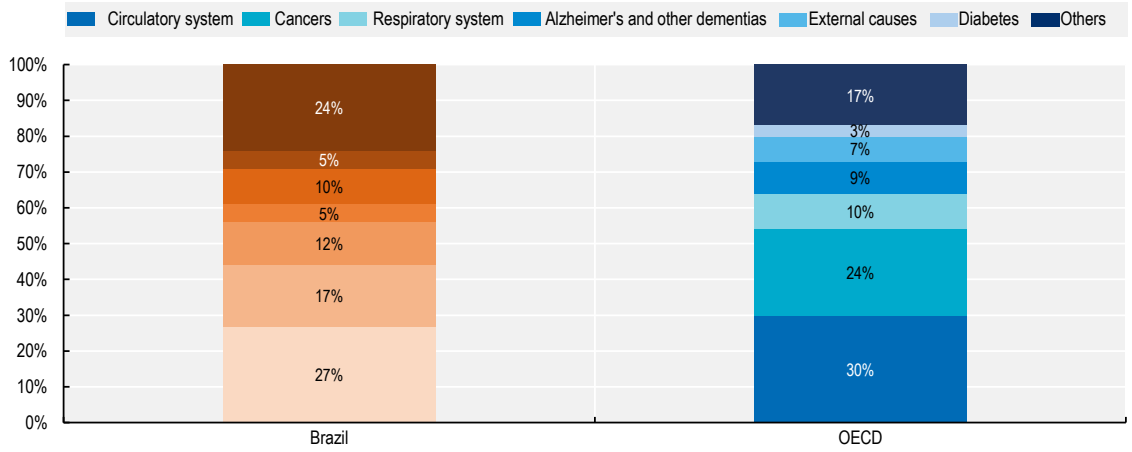
More recently, the Federal Government has developed a National COVID-19 Vaccine Operationalisation Plan. The plan provides national guidelines regarding the epidemiological situation and definition of the target population for vaccination; the COVID-19 vaccines and its pharmacovigilance; the available information systems; the operationalisation of vaccination; the monitoring, supervision and evaluation; the budget for vaccination operationalisation; post-marketing studies; communication campaign; and the closing of the vaccination campaign (Ministério da Saúde, 2021[20]). This plan is very important to align efforts around vaccination, especially as vaccine hesitancy is also widespread in Brazil, linked to scepticism towards the industry and decision makers, the lack of trust in research, and inaccurate information circulating on social media (Caracilo Carvalho Bivar et al., 2021[21]). Brazil also takes part in the United Nations COVAX Facility, which is an important mechanism to improve the country's supply of vaccines and for a more equitable distribution of vaccines globally.

2.2.4. Overall, chronic non-communicable diseases represent the greatest burden of disease in Brazil and this is expected to continue

Brazil, similar to many Latin American countries, has had a rapid epidemiological transition moving towards the predominance of chronic non-communicable diseases (NCDs). In 1990, the five main causes of death were varied including two NCDs (cardiovascular diseases, 27.8%, and neoplasms, 11.4%), maternal and neonatal conditions (7.9%), one communicable disease (respiratory infections and tuberculosis, 7.8%) and one injury (self-harm and violence, 5.1%) (IHME, 2021[22]). In 2019, four NCDs dominated the causes of mortality in Brazil: circulatory system diseases (27%), neoplasms (17%), chronic respiratory diseases (12%), external causes (10%) and diabetes (5%) (Figure 2.7).

Figure 2.7. Chronic non-communicable diseases causes most death in Brazil and OECD

Causes of mortality in Brazil and OECD, 2019



Source: OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

Population death rates in Brazil have been reduced. Between 2000 and 2019, all-cause mortality rates decreased by 14.9% in Brazil, lower than the average decrease of 19.8% in LAC countries and 26% in the OECD. The mortality rate reduction on Brazil's cardiovascular diseases was for example 25.1% between 2000 and 2019. However, there are areas of concern. For instance, deaths attributable to high blood glucose in adults aged 20-69 years old increased by 42% between 2010 and 2019, much higher than the 7.6% increase in LAC and opposite to the reduction of 14% observed in OECD countries.

Table 2.1. Disability-adjusted life years (DALYs) in Brazil, 2019

Rank and disorder	DALYs rate per 100 000 people	% change since 1990
1. Cardiovascular diseases	4 089.91	-13.2%
2. Neoplasms	3 154.45	31.01%
3. Mental disorders	2 269.21	20.32%
4. Musculoskeletal disorders	2 218.88	37.17%
5.Other non-communicable*	2 089.45	-40.1%

Note: *congenital birth defects, urinary diseases and male infertility, gynecological diseases, hemoglobinopathies, and oral disorders.
Source: IHME (2021[22]), https://vizhub.healthdata.org/gbd-compare/.

In terms of Brazil's national burden of diseases as measured by Disability-adjusted life years (DALYs), the epidemiological transition has also been substantial. In 1990, three among the first five causes of DALYs were communicable and maternal and child health diseases, with maternal and neonatal disorders in the lead explaining 12.94% of all DALYs. By 2019, all first five were chronic non-communicable diseases, while maternal and neonatal disorders moved to 8th place (5.15%) (IHME, 2021[22]). Table 2.1 shows the current stance and change since 1990 of the top five conditions explaining DALYs in Brazil in 2019.

2.3. Brazil's progress towards universal health coverage

In the past 30 years, Brazil has progressed in well-being for its citizens, including also major health reforms that introduced a universal system that has allowed Brazil to virtually reach universal health coverage although with significant challenges around inequities, quality and sustainability. This section describes the main legal framework and continued reforms of the Brazilian health care system.

2.3.1. A new federal constitution in 1988 gave birth to the current Unified Health System (Sistema Único de Saúde)

The origins of the Brazilian health system can be traced back to the times of Portuguese colonialism (16th to early 19th century) with the first hospitals in the main cities, and the imperial phase (second half of 19th century) with some organised sanitary police and the first public health tasks being assigned to municipalities. From the end of the 20th century, after its first attempts to become a republic and frequently shifting between an unstable democracy and authoritarian regimes, multiple relevant institutional developments occurred, such as the foundation of the Ministry of Health in 1953 and the creation of social security institutions later on (Paim et al., 2011[23]).

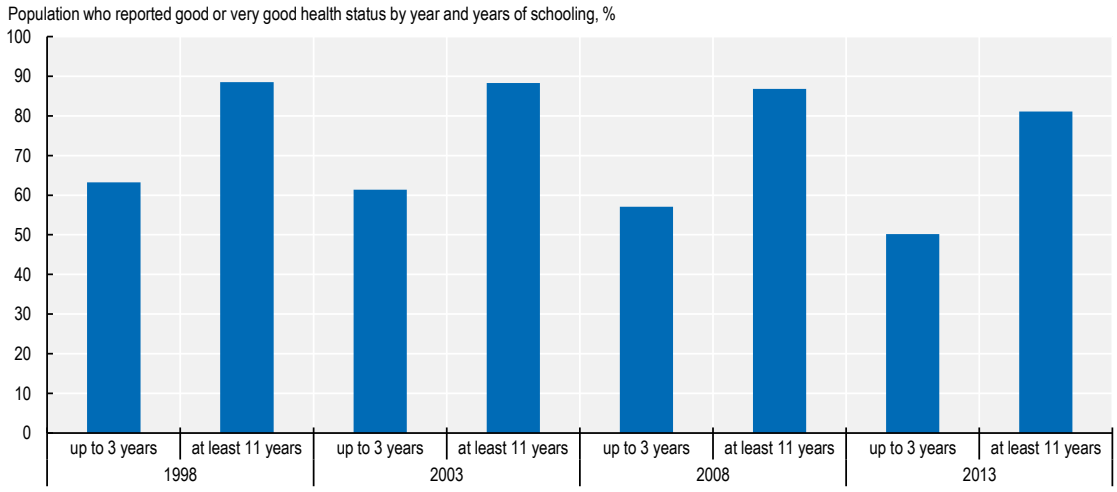
However, the major step towards UHC followed the Federal Constitution of 1988, which paved the way for the creation of the Unified Health System (Sistema Único de Saúde, SUS). The SUS was put in practice after the enactment of Laws 8080 and 8142 in 1990, which enshrined the principles of universality, integrality, decentralisation, and community participation within the health system. They also moved power and responsibility to local governments by transferring duties and health care provision funds from the federal to state and municipal governments (Castro et al., 2019[24]). This milestone in the history of Brazil meant that health coverage for the whole population was assured by SUS. However, the extent to which services are covered and the level of financial protection have varied in time and remains a key challenge for Brazil's health system.

2.3.2. The path towards UHC has been quite unequal across socio-economic groups and geographic regions

As in other OECD countries, Brazil's progress in population health has substantial inequalities. According to the findings of a study analysing national surveys of 1998, 2003, 2008 and 2013 (Viacava et al., 2019[25]), people with at least 11 years of schooling who reported good or very good health status has been consistently over 80%, while among people with up to three years of schooling it was over 60% in the first two surveys but closer to 50% in the last two. The gap between these two groups has increased in time: in 1998 the difference was of 25 percentage points, but in 2013 reached almost 31 points (see Figure 2.8).

Figure 2.8. Socioeconomic inequalities in health are substantial in Brazil

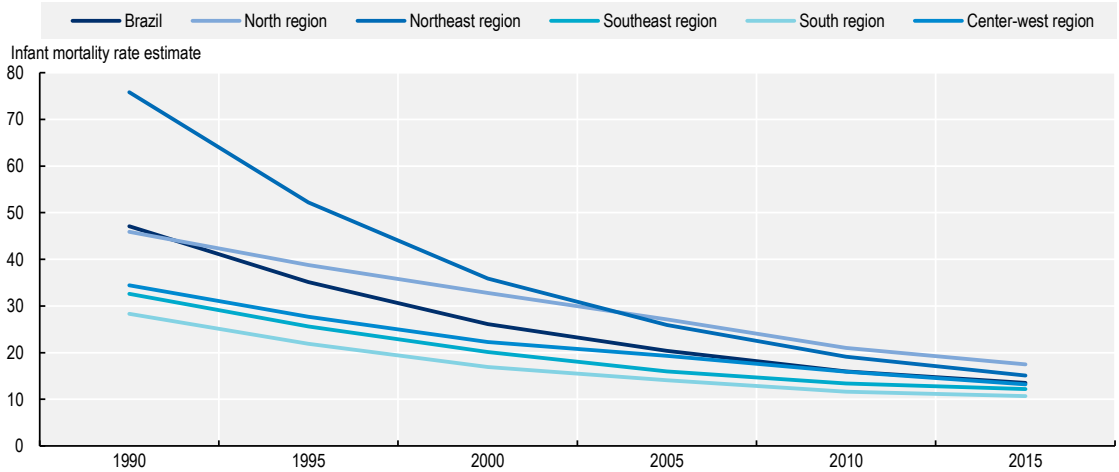
Percentage of population who reported good or very good health status, by years of schooling, by year



Note: Surveys were PNAD 1998, PNAD 2003, PNAD 2008, and PNS 2013.
Source: Data from Viacava et al. (2019[25]), "Desigualdades regionais e sociais em saúde segundo inquéritos domiciliares (Brasil, 1998-2013)" https://doi.org/10.1590/1413-81232018247.15812017.

Another expression of health inequalities can be seen in terms of infant mortality rate (IMR) in Brazil. IMR decreased from 47.1 to 13.4 per 1 000 live births between 1990 and 2015, a reduction of 71%. However, the magnitude of this reduction was not the same across all Brazil's regions. The Northeast region showed the most significant decline of 80% in the period, while the lowest degree of reduction occurred in the Centre-West and North regions (62%). The latter region had the highest IMR in 2015 with 17.5, followed by the Northeast region with 15.1 (Figure 2.9).

Figure 2.9. Geographic health inequities in infant mortality rate in Brazil, 1990 to 2015



Source: Data from Szwarcwald et al. (2020[26]), "Inequalities in infant mortality in Brazil at subnational levels in Brazil, 1990 to 2015", https://doi.org/10.1186/s12963-020-00208-1.

Brazil has pushed forward different policies to reduce health inequalities, particularly among disadvantaged groups of the population For instance, adding information on colour and race to SUS National Health Cards; providing SUS coverage to gender reassignment surgery; giving attention to sickle cell anaemia, which disproportionately affects black people; exempting homeless from having to show proof of residence to qualify for SUS care; and recognising the role of healers and midwives in health care. In the Ministry of Health, the Special Secretariat for Indigenous Health was created to co-ordinate and manage policies and programs related to the health of indigenous people. As expected, the expansion of primary care has led to large improvements in access and in health outcomes as well (Massuda et al., 2020[1]).

2.3.3. Health utilisation is higher among wealthier population who can pay for supplemental private health insurance

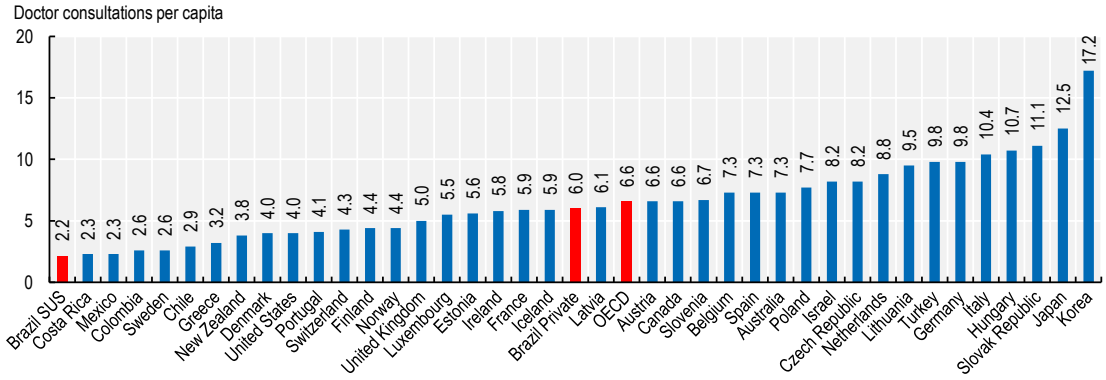
As mentioned before, 25% of the Brazilian population has private health insurance, which is linked to having a better socio-economic situation in order to purchase this type of product. In general, people with private health insurance have higher access to health care services and better health status. Here we summarise a selection of research findings to highlight these differences.

In the area of health status, a study using the Brazilian National Health Survey (BNHS) of 2013 found higher prevalence of current smoking, leisure-time physical inactivity, sedentary lifestyle, whole milk consumption and low ingestion of greens, vegetables, and fruits among those without private health insurance. The authors created a score of unhealthy behaviour, which was significantly worse among those without private health insurance (PR = 1.78) (De Azevedo Barros et al., 2016[27]). Another study using the same survey found that populations with lack of private health insurance in Brazil present a similar prevalence of various NCDs (only higher stroke prevalence, but lower musculoskeletal disorders and cancer). However, this group reported much greater degrees of limitation due to these diseases, in particular, from hypertension, asthma, spinal problems, depression, cancer and chronic kidney failure (Malta et al., 2016[28]).

About health care services utilisation, a study also using the BNHS 2013 found that people without private health insurance compared to those with private health insurance were more than two times likely to underutilise the health system (AdjOR = 2.11, 95% CI = 1.83-2.44). This meant that people with no private insurance had a higher rate of reporting never visited a physician, or never visited a dentist, or never checked the blood glucose, or never checked the blood pressure (Boccolini and De Souza Junior, 2016[29]). This is also confirmed by a study focusing on breast cancer outcomes in Brazil, which observed that patients with no private health insurance presented with more advanced disease at diagnosis ($P < 0.001$) and had worse disease-free survival and overall survival for stage III – IV patients ($P = 0.002$ and $P = 0.008$, respectively). They also found worst post-relapse survival among the group with no private health insurance ($P < 0.001$) (Liedke et al., 2014[30]). Moreover, a recent study using data from the National Household Survey 2008 applied an econometric methodology to estimate the effect of private health insurance and the government subsidy by means of an income tax rebate. The study results indicate that private coverage increases the odds for women examinations for pap smear and mammogram, and the number of visits to a doctor in the last two weeks and in the last year. On the other hand, private health insurance had no effects on the use of non-preventive care, such as inpatient and outpatient care utilisation, surgery, in home emergency service and the use of prescribed and non-prescribed drugs (Menezes-Filho and Politi, 2020[31]).

Amongst OECD countries, a commonly used measure of health care access relates to medical consultations. Figure 2.10 shows that Brazil has the lowest doctor consultations per capita among OECD countries. In 2019, Brazil had 2.2 doctor consultations per capita in SUS, lower than the OECD average of 6.6. On the other hand, Brazil had six doctor consultations per capita considering the population with private insurance.

Figure 2.10. Consultations with a doctor in the past year in population with and without private health insurance in Brazil and OECD countries, 2019 (or latest year)

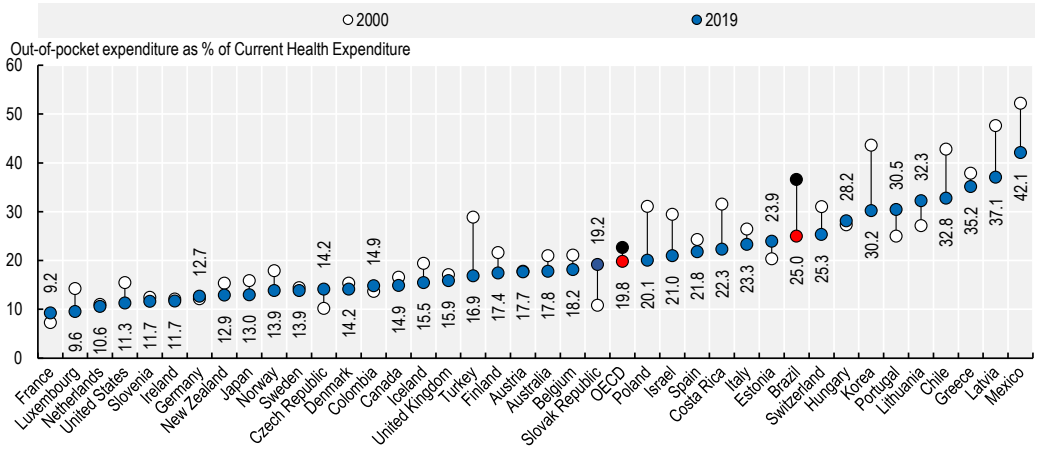


Source: Ministry of Health of Brazil, ANS Brazil, OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

2.3.4. Out-of-pocket expenditure has been substantially reduced in recent decades, but remains higher than the OECD average

As coverage expanded, households' out-of-pocket expenditure in health have fell in the past two decades (Figure 2.11). Today, out-of-pocket expenditures in Brazil reach 25% of total national health expenditure (equivalent to around 1% of GDP), positioning the country above the 20% OECD average but below many countries in the LAC region. The sustained reduction of out-of-pocket expenditure in health is a significant achievement of SUS expansion and consolidation (see Chapter 3 for further details).

Figure 2.11. Evolution of Brazil's out-of-pocket expenditure as percentage of current health expenditure, 2000-19

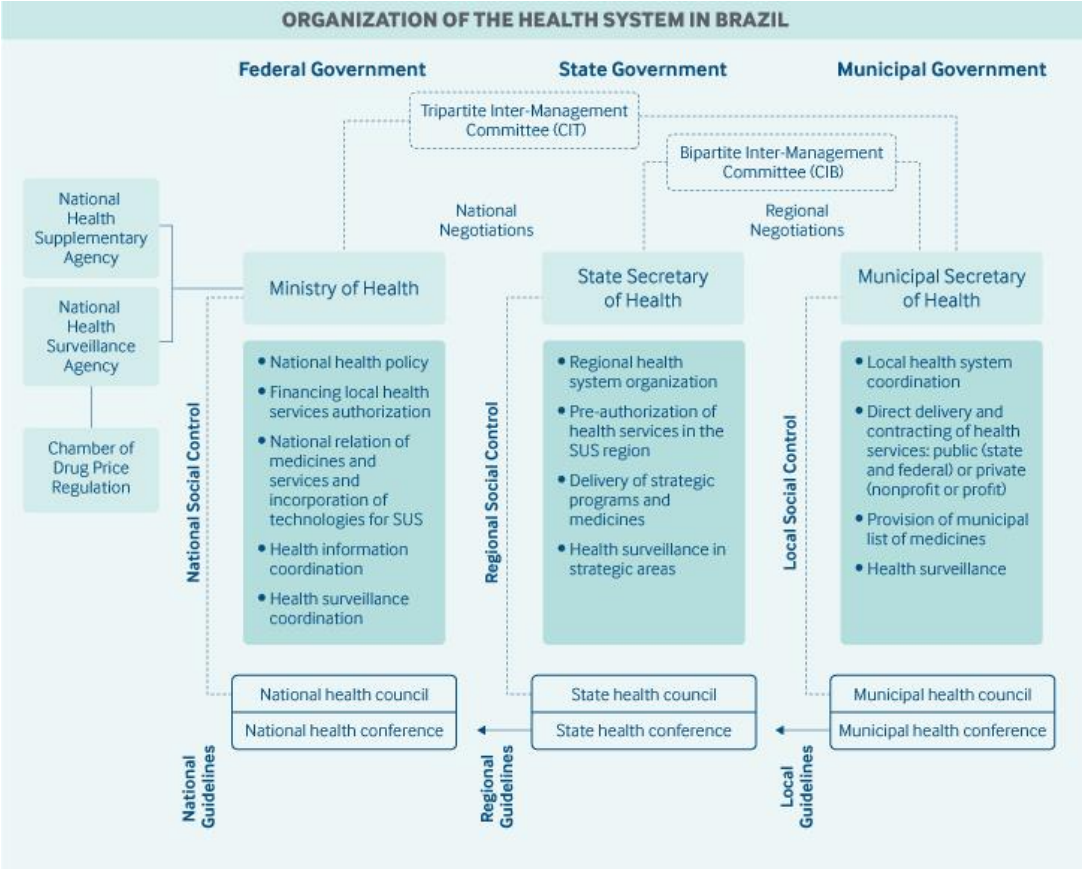


Note: In 2019, arround 3% of all health spending in Brazil cannot be allocated to any financing scheme so the actual share of OOP expenditure may eventually be higher.
Source: OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

2.4. The major actors in the Brazilian health care sector

The Brazilian health care system is predominantly public in terms of governance, funding and provision through SUS. The Federal Constitution also allowed the open participation, in a complementary way, of private initiative in the provision of health care. The central management of the system is the responsibility of the Ministry of Health, while the execution of actions occur mainly in a decentralised manner, with the municipal component being the main health care provider. All citizens are entitled to the services provided by SUS, which is the major source of health care for low-income groups and those without access to private health plans. Figure 2.12 presents a scheme with the general organisation of the Brazilian health system and its main actors.

Figure 2.12. General organisation of the Brazilian health system



Note: Acronyms in the figure are in Portuguese.
Source: Adapted from Massuda et al. (2020[1]), "Brazil – International Health Care System Profiles", https://www.commonwealthfund.org/international-health-policy-center/countries/brazil.

This section presents the major stakeholders within the Brazilian health care sector, as well as their responsibilities. It also describes important challenges for the actors within the public system, as well as the evolving role of private health care providers.

2.4.1. Federal government and national agencies are responsible for steering the health sector

Considering the legal bases of SUS, the Ministry of Health has the mandate to formulate, define, audit, control and evaluate the set of health policies and services linked to SUS, along with the co-ordination of its national actions. The execution of activities is preferably carried out in a decentralised manner, with the municipal component being the main provider of health care services.

The areas considered under the Ministry of Health mandate include food and nutrition policies; health surveillance systems; the network of public health laboratories; the health care network, especially of high complexity; as well as the national strategic planning within the scope of SUS, in technical co-operation with the States, Municipalities and the Federal District. Regarding the latter area, Box 2.1 describes Brazil's Multi-Annual Plan 2020-23 and the National Health Plan 2020-23. In addition, universal access to highly complex procedures, such as organ, tissue, cell and human body transplants has been a high priority in Brazil. With more than 400 000 transplants since 2001 (of which 90% is financed by SUS), the National Transplantation Policy in Brazil is one of the largest programme worldwide.

Box 2.1. Planning for health in Brazil at the national level

Multi-Annual Plan 2020-23 (Plano Pluriannual, PPA 2020-23)

The current Multi-Annual Plan (PPA) was approved by the National Congress and instituted in Law No. 13971 of 27 December 2019. The PPA is a government planning instrument developed by the Secretariat of Evaluation, Planning, Energy and Lottery (Secap), which defines the guidelines, objectives and goals of the federal public administration for a four-year horizon. It considers a wide range of key areas for the country, for instance, around tourism, sustainable agriculture and livestock, integral early childhood care, civil aviation, among others.

The PPA 2020-23 law mentions, in its Article 3, its 20 directives. Item XI is realted with health: expansion of the coverage and resolution of primary health care, with a priority in prevention and the strengthening of integration between health services, containing seven programmes:

- Programme 5017: Pharmaceutical services in SUS.
- Programme 5018: Specialised Health Care.
- Programme 5019: Primary Health Care.
- Programme 5020: Scientific, Technological and Productive Development in Health.
- Programme 5021: SUS Management and Organization.
- Programme 5022: Protection, Promotion and Recovery of Indigenous Health.
- Programme 5023: Health Surveillance.

National Health Plan 2020-23 (Plano Nacional de Saúde 2020-23)

Law No. 8 080/90 defines the legal obligation to elaborate a National Health Plan, in alignment with the health policy needs and the availability of resources in health plans of Municipalities, the States, the Federal District and the Union.

The current National Health Plan 2020-23 has the same seven programmes listed in the PPA 2020-23, bringing details of the commitments of the Federal Administration for the health sector.

Sources: Information taken from Presidência da República (2019[32]) "Lei Nº 13.971. Institui o Plano Plurianual da União para o período de 2020 a 2023", http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/lei/L13971.htm and Ministério da Saúde (2020[33]), "Plano Nacional De Saúde 2020-23", https://bvsms.saude.gov.br/bvs/publicacoes/plano_nacional_saude_2020_2023.pdf.

The main quasi-autonomous national level health agencies are the National Supplementary Health Agency (*Agência Nacional de Saúde Suplementar*, ANS) and the National Health Surveillance Agency (*Agência Nacional de Vigilância Sanitária*, ANVISA). Both agencies are linked to the Ministry of Health having an arms-length relationship, being governed by collegiate boards consisting of five directors with 3-year terms, which can be renewed.

As the Federal Constitution allows the open participation, in a complementary way, of private provision of health care, the ANS was created in the year 2000 with the mission of "promoting the defence of the public interest in supplementary [private] health care, regulating sector operators, including regarding their relations with providers and consumers, contributing to the development of health actions in the country" (Law 9961, of 28 January 2000).

The agents regulated by the ANS are the operators of health care plans (private insurance companies), because what circumscribes the object of the regulation are not the medical-hospital or dental services themselves, but the guarantee of health care coverage, which is characterised by the intermediation of these health care services. The ANS is in charge of proposing general policies and guidelines for the authorisation, regulation, monitoring and control of the supplementary health market. In particular, the ANS can define the list of health care procedures and events that constitute the basic reference for health care coverage and evaluate the technical and operational capacity of private insurers, aiming to guarantee the compatibility of the coverage offered, including regarding the dimension of the health care network. The ANS also monitors the evolution of the prices of plans and service providers, and authorises readjustments and reviews of the financial characteristics of health plans, after consulting the Ministry of Economy, while also sanctioning processes of spin-off, merger, incorporation or transfer of the operators' corporate control. In this way, the ANS monitor and evaluate the economic and financial situation of the operators, with a view to preserving the systemic balance of the sector. Importantly, the ANS articulates with consumer protection agencies and establish norms for the reimbursement to SUS. ANS takes care, in particular, of certain aspects of the functioning of the market, seeking, if not to correct, at least, to mitigate its flaws, especially the asymmetry of information between beneficiaries, operators and health care providers, in the search for systemic balance between these actors and, with this, the sustainability of the sector.

ANVISA was created by Law No. 9782 of 26 January 1999 as an independent public entity under a special regime, which has its headquarters and jurisdiction in the Federal District, and is present throughout the country through the co-ordination of ports, airports, borders and customs areas. ANVISA's mission is to protect and promote the health of the population by intervening in the risks arising from the production and use of products and services subject to health surveillance, in co-ordinated and integrated action within SUS.

ANVISA is responsible for the health surveillance and regulation of medicines; medical devices (health products); food; sanitizing; cosmetics; smoking products, whether or not derived from tobacco; health services and services of interest to health; in addition to blood, tissues, cells and organs. This body is

responsible for registering, operating authorisation, standardisation, certification of good practices, post-market surveillance and health surveillance.

2.4.2. Brazil's health system governance is shared across different entities and its management decentralised

The SUS has a shared governance structure, foreseen in the Federal Constitution from the perspective of common competence of the three levels of the federation: federal, states and municipalities. State government duties include regional governance, co-ordination of strategic programs (such as provision of high-cost medicines), and delivery of specialised services that have not been decentralised to municipalities. Health departments in the 5 570 municipalities largely handle the management of SUS at the local level, including co-financing, co-ordination of health programs, and delivery of health care services.

In order to respect the autonomy of each federative entity, the so-called Interfederative Pact of Executive Management allow SUS to have a dynamic functioning through agreements between its parts (Ministério da Saúde, 2015[34]). To this end, there are several spheres of governance, namely Councils and Commissions. The main ones are described in Box 2.2.

Box 2.2. Main governance bodies in the Interfederative Executive Management of SUS

Conselho Nacional de Saúde (CNS)

The National Health Council (CNS) is a collegiate, deliberative and permanent body of SUS with the mission to oversee, monitor and supervise public health policies, taking the demands of the population to public power. The CNS is composed of 48 members and their respective first and second alternates, representing users, workers, SUS managers and health service providers. Entities of health professionals, scientific community, service providers and private sector are part of the CNS. The CNS has elections every three years to choose its members, Among its main tasks, the CNS approves the health budget and monitoring its implementation, evaluating the National Health Plan every four years.

Conselho Nacional de Secretários de Saúde (CONASS)

It brings together the health secretaries of the states and the Federal District and their legal substitutes, with the purpose of operating the exchange of experiences and information among its members. It aims to ensure the implementation of the constitutional principles, legislation and guidelines into health actions and services. It makes efforts for the health secretariats of the states and the Federal District to participate in decision making concerning the development of SUS, together with the Ministry of Health. Its board is elected in annual assemblies.

Conselho Nacional das Secretarias Municipais de Saúde (CONASEMS)

It is a non-governmental, non-profit entity created to represent the municipal health departments. Its importance in the Brazilian political scenario is because it is primarily up to the municipalities to provide health services, with the technical and financial co-operation of states and the Union. CONASEMS holds an annual congress to discuss issues of interest to the municipal managers and define guidelines for their representatives. Every two years, CONASEMS elects its board of directors.

Conselho Estadual de Secretarias Municipais de Saúde (COSEMS)

The municipal health secretaries get together at COSEMS to discuss the strategic issues before presenting their positions at the CIB. The COSEMS are also instances of political articulation between municipal health managers.

Comissão Intergestores Tripartites (CIT)

Body for the articulation and consensus in the federal sphere of SUS governance, including the development of SUS strategies, guidelines, programmes and resource allocation. It is made up of SUS managers from the three spheres of government: five are appointed by the Ministry of Health, five by the CONASS, and five by the CONASEMS. Decisions are taken by consensus.

Comissão Intergestores Bipartites (CIB)

State spaces for articulation and political agreement aimed at guiding, regulating and evaluating the operational aspects of SUS decentralised health actions. Members are representatives appointed by the Secretary of State for Health and by the COSEMS.

Source: Information taken from the Ministry of Health of Brazil (2009[35]) "O SUS de A a Z: garantindo saúde nos municípios", http://www.saude.gov.br/bvs.

The Federal Constitution guarantees community participation in the public health system at all levels of government. The so-called 'social control' takes form through health councils (Box 2.2) and health conferences, which are composed of 50% community members, 25% providers, and 25% health system

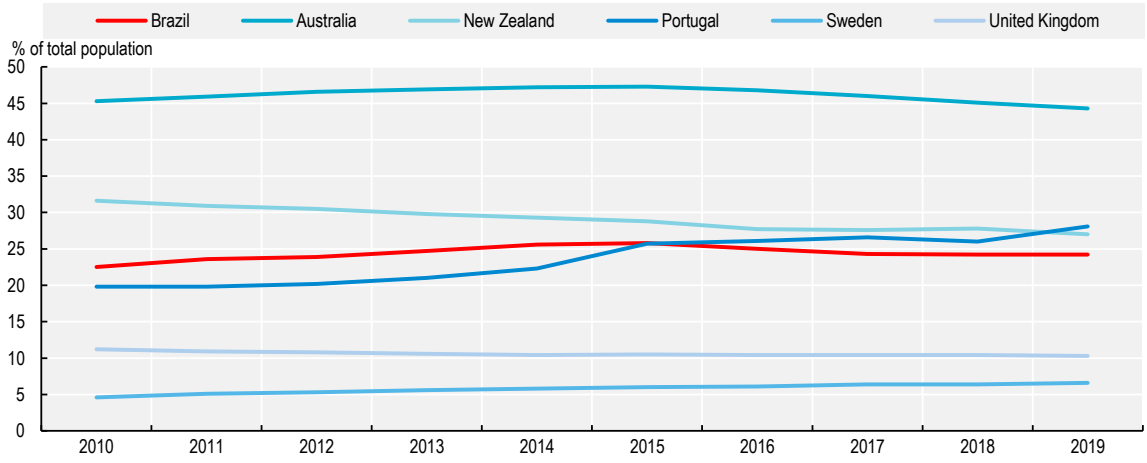
managers. The health councils are deliberative and permanent collective bodies of SUS, proposing strategies and monitoring the implementation of health policies, including its economic and financial aspects. The creation of the councils must be the subject of a law or decree at municipal level or state. Conferences are institutional spaces designed to analyse the progress and setbacks of SUS and propose guidelines for health policy formulation at corresponding levels. The decisions on public health policies, elaborated in the councils, are discussed during the conferences. Conferences should take place every four years (Ministério da Saúde, 2009[35]).

2.4.3. Private actors are sizable players in the Brazilian health system

Private sector is present at the financing and provision levels of health care. Restricted access and discontent with health care services have progressively motivated middle-income and high-income households to seek private care.

Private health insurance (PHI) is voluntary and can be classified as duplicate coverage as it covers medically necessary curative services that are also covered under SUS. In 2019, 24.2% of Brazilians had PHI while in 2008 this proportion was around 22% (OECD, 2021[7]). When compared with other OECD countries having a national health service or a national health insurance scheme and reporting to have duplicate PHI, Brazil stands close to Portugal (28.1%) and New Zealand (27%), lower than the 44% in Australia and higher than the 6% and 10% in Sweden and the United Kingdom, respectively (Figure 2.13).

Figure 2.13. Duplicate private health insurance in Brazil and selected OECD countries, 2010-19



Note: Selected OECD countries have either a national health service or a national health insurance scheme and report having duplicate PHI.
Source: OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

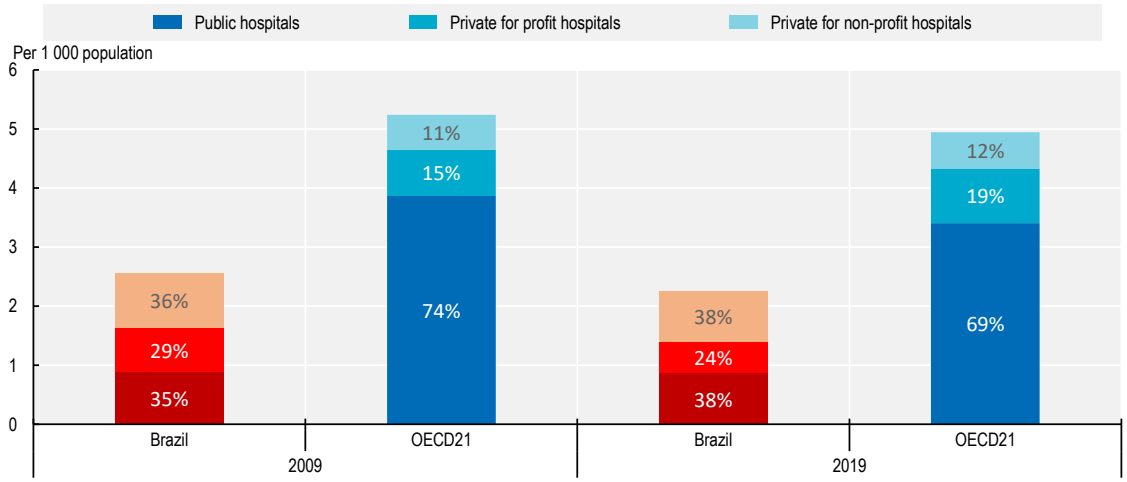
Nearly 70% of Brazilian beneficiaries receive their private health insurance as an employment benefit. Private health plans offer health care services through their own facilities or through accredited health care organisations. Alternatively, private insurance can reimburse enrolees for purchased health care services. Brazil spends 0.5% of GDP on tax exemptions for private health care, primarily to subsidise those who pay for private health insurance (see Chapter 3). Individuals and legal entities may deduct health insurance costs as well as the purchase of health services, medicines, and medical supplies from their taxable expenses (Massuda et al., 2020[1]).

On the provision side, in Brazil 38.2% of hospital beds were public, 38.1% private non-profit, and 23.6% private for-profit in 2019, while in the OECD the largest portion of beds is public with 69% and only 19% is

private for-profit (Figure 2.14). Between 2009 and 2019 in Brazil, public hospital beds increased by 10%, while private for-profit beds decreased by 18% and private non-profit beds increased by 5%. In total, Brazil saw a reduction of 11.5% in the number of beds, higher than the reduction of 5.7% in OECD countries. When estimated in per population basis in 2019, Brazil had a total of 2.2 beds per 1 000 population, much lower than the average of almost five beds per 1 000 people in OECD countries.

Figure 2.14. The share of public hospital beds in Brazil is much lower than in OECD countries

Hospital beds by ownership type in Brazil and OECD, 2009 and 2019



Note: OECD21 averages represent years 2009 and 2019.
Source: Ministry of Health of Brazil and OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

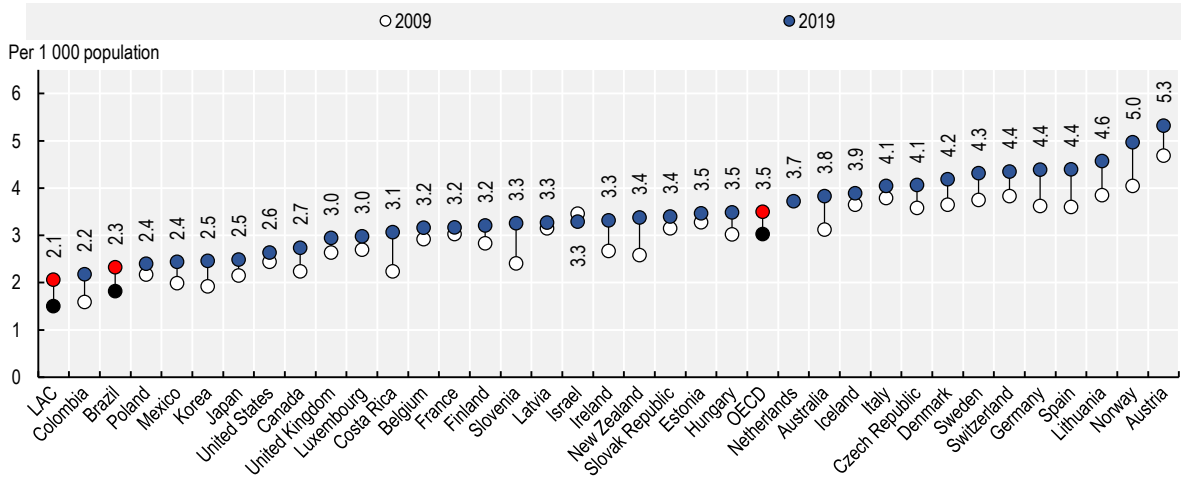
2.4.4. Brazil has fewer doctors and nurses when compared to OECD averages

Compared to OECD health systems, Brazil has very few doctors and nurses. Physician density in Brazil in 2019 was 2.3 per 1 000 inhabitants, lower than all OECD countries (except Colombia) and well below the average of 3.5. Although, it is above the LAC average of 2.1. Between 2009 and 2019, Brazil increased this rate by 28%, while LAC countries in average increased by 37% and the OECD by 16% (Figure 2.15).

The number of medical schools is growing exponentially, driven mainly by the opening of private institutions. In 2020, there were 345 medical schools, offering more than 35 000 training positions. Of these schools, 41%were public and 59% private. Public medical schools are free, while tuition at private medical schools varies from USD 700 to USD 2 500 (BRL 3 600 to BRL 13 000) per month (Escolas Médicas do Brasil, 2021[36]).

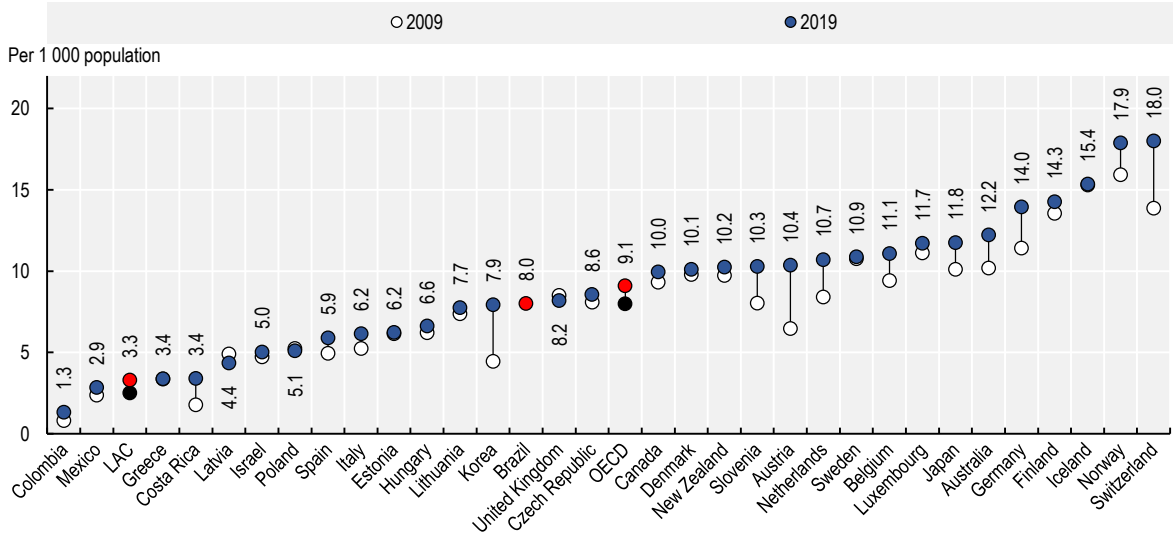
Brazil's nursing workforce has increased over the past decade to reach 8 nurses per thousand population in 2019, moving closer to the OECD average of 9.1 (Figure 2.16).

Figure 2.15. Practising physicians per 1 000 population in Brazil and OECD countries, 2009-19 (or latest year available)



Source: Ministry of Health of Brazil, WHO for LAC average and OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

Figure 2.16. Nurses per 1 000 population in Brazil and OECD countries, 2009-19



Source: Ministry of Health of Brazil, WHO and OECD Health Statistics (2021[7]), https://doi.org/10.1787/health-data-en.

In general terms, two of the main health workforce problems that persist in the Brazilian health system are the shortage of doctors and the misdistribution of professionals between levels of health care and between geographical areas (Oliveira et al., 2017[37]). Addressing Brazil's health workforce issues requires attention to some fundamental issues, in particular related to governance and political matters that have been underpinning the development and stability of national policies. For instance, the More Doctors Programmes (*Programa Mais Médicos*) was implemented by the Federal Government (Law No. 12 871 of 2013) with the purpose of reducing the shortage of doctors in prioritised regions and improving medical training in the country. By November 2020, the programme was responsible for the presence of more than 16 000 doctors in 3 837 Brazilian municipalities. This programme has proven to have positive results, for instance, in terms of doctors availability and health outcomes (Hone et al., 2020[38]; Netto et al., 2018[39];

OECD, 2021[40]). In this scenario, a new programme called *Médicos pelo Brasil (*law No. 13.958 of 18 December 2019) was initiated by the new Federal Government administration. Its purpose was to increase the provision of medical services in places of difficult delivery or of high vulnerability, along with promoting the training of doctors specializing in family and community medicine. The *Médicos pelo Brasil* programme is expected to gradually replace the Programa *Mais Médicos*, in particular by hiring Brazilian trained doctors who have already shown to be scarce or not wanting to go to isolated or underserved areas. This type of changes represent a governance challenge for the Brazilian health system, which should develop a strategic vision to preserve and amend policies and programmes that have shown to improve outcomes.

2.5. Conclusion

Many measures of health system performance in Brazil have improved since SUS was created in 1988. Virtually all of the population is covered for equal benefits and equal financial protection within the public health sector, while one-quarter of the population that can purchase private health insurance obtains mostly duplicate health care services. Out-of-pocket payments represent around 25% of total national health expenditure, higher than the OECD average.

The new epidemiologic profile and persistent health inequalities, along with a post-COVID-19 recovery period, suggest that continued adjustments and reforms are needed in Brazil's health system. In broad terms, SUS and the range of health care providers are not as developed as they need to be to both keep Brazilians healthy and to deliver a high-quality, people-centred and sustainable health care system – issues that will be considered in further detail in the following chapters.

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Notes

[1] Around 3% of all health spending in Brazil can currently not be allocated to a financing scheme so the actual shares of the individual financing schemes may in fact be slighltly higher.

[2] Data for COVID-19 deaths retrieved from OWID, and data for all-causes of mortality in Brazil during 2015-19 retrieved from DATASUS.

3 Financial sustainability of health spending and efficiency

The introduction of the Sistema Único de Saúde (SUS) has been a major achievement for Brazil in increasing access to health care services and reducing health inequalities. However, sufficient financing has been a constant challenge since its inception and there is dissatisfaction with apparent inefficiencies in the Brazilian health system. Recent projections suggest that a substantial increase in health spending will be necessary over the next decades to meet future health and long-term care needs. A combination of initiatives that focus, on the one hand, on generating fiscal space to allow for more public financing in health, and on the other hand, on facilitating a more efficient provision of health care can help meet future health care financing needs. Fiscal space could, for example, be achieved by reducing the tax deductibility of private health spending. Potential for efficiency gains exist throughout the health system.

3.1. Introduction

Modern, patient-centred health systems need to make sure that sufficient financial and physical resources are available to meet population health needs now but also in the future. This requires flexible financing mechanisms that increase available funding if needed. On the other hand, tools need to be in place to make sure that any additional funding is "value for money" and the health services are provided efficiently. For this reason, this chapter analyses the financial sustainability of health spending in Brazil and the efficiency of the health system.

The chapter is structured as follows. First, health spending in Brazil is put into context by comparing it to OECD countries and contextual information on the health financing infrastructure in Brazil is provided. After displaying the latest health spending projection for Brazil until the year 2040, the different options on how to finance future health and long-term care needs associated with an ageing society and their feasibility are discussed. These options include a general increase of government spending, the re-allocation of public resources within the existing public spending towards health or leaving more future health financing obligations to the private sector.

A fourth option to address the increasing health financing needs in Brazil that will be discussed extensively in the chapter is to find efficiency gains in the health system. The analysis will cover the entire health system including primary health care, hospital care, pharmaceutical spending, long-term care or administration including planning and co-ordination. All the areas will be analysed in depth and any potential for efficiency gains highlighted.

3.2. Health spending and financing in Brazil

3.2.1. How does health spending in Brazil compare internationally?

Brazil has high overall spending on health but the public share is low

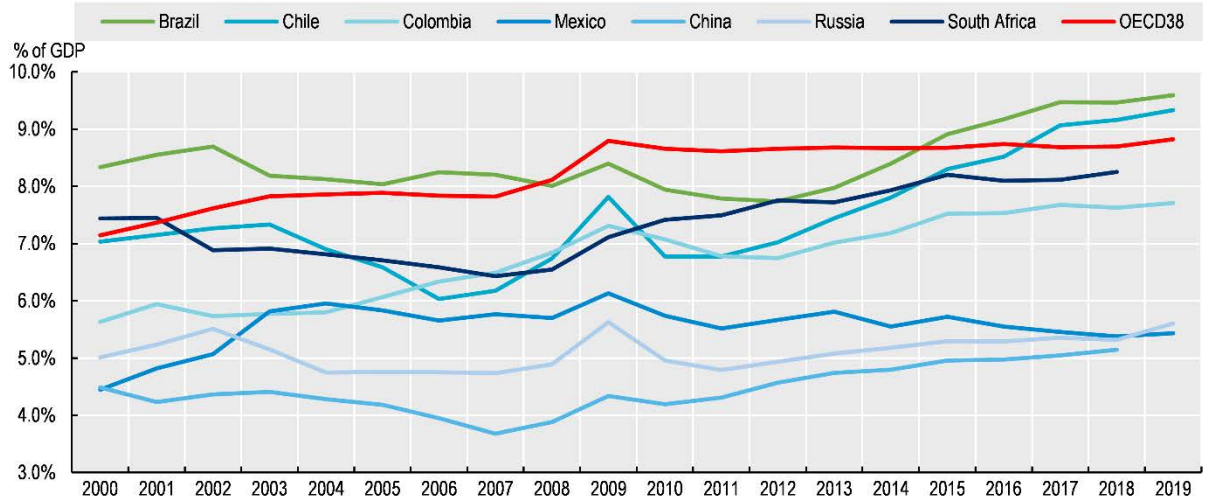
Health care in Brazil is financed by a wide range of actors with the public *Sistema Único de Saúde* (SUS), private health insurance schemes and direct payments by private household being by far the most important payers. In 2019, Brazil allocated 9.6% of its GDP to health care (corresponding to USD 1 514 per capita when adjusted for differences in purchasing power). This share has been growing since 2000, up from 8.3%. The total share is relatively high given Brazil's state of economic development. It is above the values seen in Chile (9.3%), Colombia (7.7%) and Mexico (5.4%), and higher than in China and Russia (Figure 3.1). It stands also above the OECD average (8.8%). That being said, the United States (16.8%), and some Western European countries such as Switzerland, Germany and France (11-12%) still allocate a substantially greater part of their GDP to health care than Brazil.

While Brazil spends more on health care than many peer countries *overall*, the country relies heavily on financing from the private sector, either via voluntary private health insurance or direct payments by households. In 2019, only 41% of all health spending was financed publicly[1] (equivalent of 3.9% of GDP) – mainly via SUS, 30% by private health insurance (2.9% of GDP) and 25% referred to out-of-pocket payments (2.4% of GDP).[2] While the spending share of private health insurance has increased significantly since 2000 (up from 1.7% of GDP), the share of public spending has grown only moderately (up from 3.5% in 2000). The proportion of household out-of-pocket spending in GDP (2.4% in 2019) is smaller than in 2000 (3.0%) but above the value seen in 2015 (2.2%), suggesting an increasing need by patients to finance health care good and services themselves in the most recent years.

In 2019, public spending on health as share of GDP in Brazil was on a similar level than in South Africa (3.6%), and higher than in Russia, China and Mexico (around 3%). However, it was below the proportions recorded in Colombia and Chile (5.7% and 6%, respectively). In most OECD countries, public health

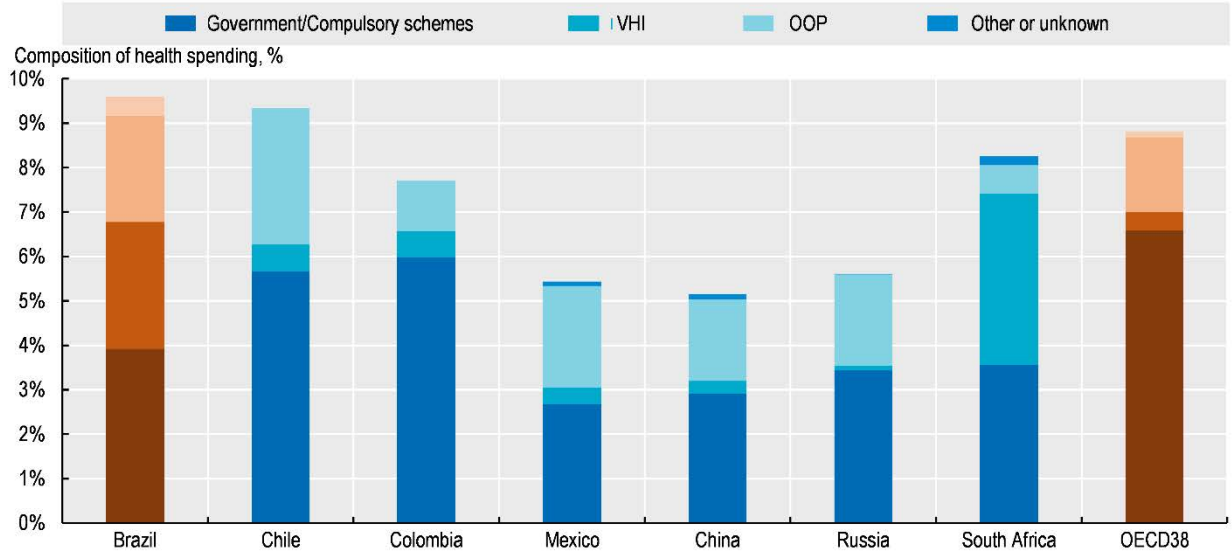
spending accounts for a significantly higher share of their GDP than in Brazil (Figure 3.2). In 2019, the average stood around 6.6% and was above 9% in France, Sweden, Germany and Japan. The share of voluntary private health insurance in GDP on the other hand is exceptionally high in Brazil, only topped by South Africa. Australia, Canada and Slovenia are OECD countries with important voluntary private health insurance markets where they account for shares between 1-1.5% of GDP.[3] With a proportion of 25% out-of-pocket payments in total health spending,[4] Brazil relies less on households' ability to pay directly for health care goods and services than some other medium-income countries such as Chile (33%) or Mexico (42%), but much more than Colombia (15%). Financial protection is also much more comprehensive in the OECD as a whole – only 20% of all health spending originate directly from households.

Figure 3.1. Health spending in Brazil and selected countries, 2000-19



Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; WHO Global Heallth Expenditure Database (2020[2]), https://apps.who.int/nha/database; Brazilian Ministry of Health, 2021.

Figure 3.2. Composition of health spending by key financing schemes, 2019 or latest year, Brazil and selected countries

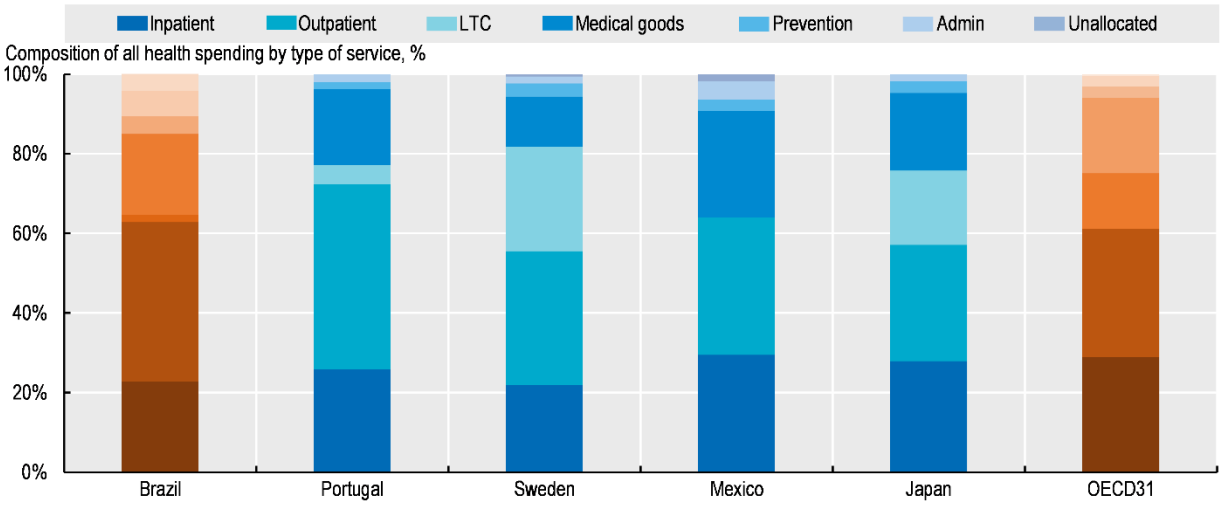


Note: Compulsory private health insurance as is exists in Chile and Colombia are included in the category government/compulsory schemes. VHI stands for voluntary (private) health insurance. OOP stands for direct out-of-pocket payments. The category "Other or unknown" includes financing from NGO, employers, rest of the world and also spending that cannot be allocated to a financing scheme.
Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; WHO Global Heallth Expenditure Database (2020[2]), https://apps.who.int/nha/database; Brazilian Ministry of Health.

Brazil spends less on inpatient care but more on outpatient care and administration than OECD countries

Analysing the composition of health spending from the perspective of the type of service reveals some particularities of the Brazilian health system. Such an analysis shows that Brazil allocates a lower proportion of health spending on inpatient care and long-term care and a higher proportion on outpatient care than on average across the OECD (Figure 3.3). The share of spending on administration (6% vs. 3%) is also higher than the OECD average. However, the fact that around 4% of health spending cannot be allocated to any service in Brazil affects the international comparability of these figures to a certain extent.

Figure 3.3. Composition of all health spending by type of service, Brazil and selected OECD countries, 2019



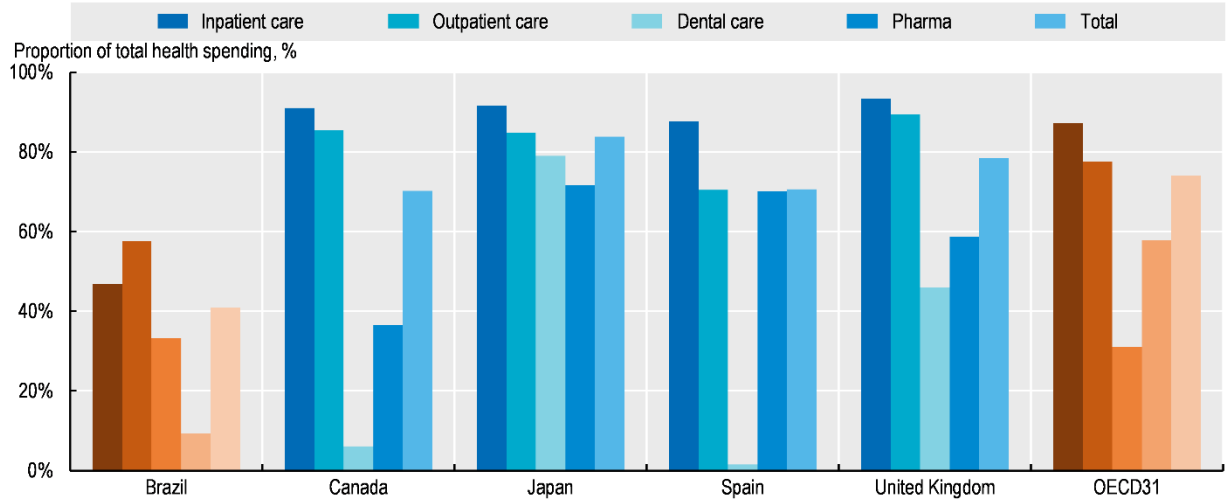
Note: Inpatient care refers to curative-rehabilitative inpatient care and day care. Outpatient care refers to curative-rehabilitative outpatient care and home-based care, and ancillary services. Medical goods include pharmaceuticals. Administration refers to health system and financing administration and governance.
Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; Brazilian Ministry of Health (2020).

Public coverage of pharmaceutical costs in Brazil is much below the OECD average

Combining information of payers of health care with the type of services can give an insight into the generosity of the publicly financed benefit basket of a country but also about public spending priorities. As to be expected, as a general rule, health services in Brazil are less comprehensively covered by public schemes than in most OECD countries (Figure 3.4). In Brazil, only around 47% of all inpatient costs are covered by public schemes compared to 58% for outpatient care. Across the OECD, public inpatient coverage is usually more comprehensive than for outpatient care (87% vs 78% on average). Brazil has a relatively high share of dental care costs covered (33%) – exceeding the OECD average (31%). On the other hand, only 9% of all retail pharmaceutical spending is financed by public schemes in Brazil. This share is far below any other OECD country (average 58%) and suggests a substantial gap in effective coverage.

Figure 3.4. Extent of coverage in Brazil and selected OECD countries, 2019

Government and compulsory insurance spending as proportion of total health spending by type of care



Note: Outpatient care includes general outpatient and specialist curative care, other outpatient curative care but excludes dental care.
Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; Brazilian Ministry of Health (2021).

3.2.2. How is health financing organised in Brazil?

A variety of financing schemes exist in Brazil that provide coverage against the costs of health care and access to services for all or some parts of the population. The *public* scheme under the organisation of SUS provides access to primary care, secondary care, medication and many other services, potentially for the entire population. Yet, although entitlement to services is universal, a good part of the population opts for not using SUS services and rely on private schemes (see Section 3.2.2). SUS is financed through a mix of revenues from the federal and state governments and municipalities that evolved over time. Among *private* schemes, voluntary private health insurance plans that predominantly duplicate coverage by SUS and gives access to a wider set of (mainly) private health providers is very popular in Brazil among particular population groups (see Section 3.2.2). In addition, charities and employers also provide access to health care, although typically limited in scope and target group. An important part of health spending remains financed directly by patients themselves out-of-pocket. Overall, the health financing arrangements in Brazil are complex.

Public scheme – Sistema Único de Saúde

The move towards universal health care coverage in Brazil began with the adoption of the Federal Constitution in 1988 stating that health care is a fundamental right and duty of the state and the subsequent establishment of the *Sistema Único de Saúde* (SUS) – the publicly funded health system. The key principles of SUS as laid out in Articles 196 to 198 of the constitution are universality, comprehensiveness, equity, decentralisation and social participation. Based on these principles, everyone in Brazil is entitled to comprehensive health services provided under SUS regardless of socio-economic circumstances or the ability to pay. The federation, the 26 states (plus the federal district) and the 5 570 municipalities have shared responsibilities for financing and management of SUS and the delivery of public services. The participation of the civil society in determining the strategic direction of SUS is enshrined in the constitution and is operationalised via regular health conferences and health councils on the federal, state and municipality level (see Chapter 2).

Services financed by SUS are delivered by a wide mix of private and public providers. In primary care, services are predominantly provided by publicly employed staff working in multi-disciplinary primary care teams. Outpatient specialist care is available in public clinics or hospital outpatient departments. Inpatient services are provided by public hospitals but private hospitals are also contracted by municipalities or states to provide services under SUS. In total, there are 345 000 health facilities registered in Brazil serving public and private patients.

The scope of health services offered under SUS is comprehensive without cost sharing for patients but there may be out-of-pocket payments for some prescribed pharmaceuticals obtained via the "*farmacia popular"* programme and for any other goods and services not included in the benefit package or obtained from providers outside the SUS network. While the entire population is entitled to receive services under the SUS, a non-negligible part of the population struggles with unmet health needs. Based on result of the Health Interview Survey 2019, nearly 14% of those who sought health care two weeks prior to the survey did not receive it (IBGE, 2020[3]). A particular problem is related to accessing specialist services resulting in long waiting times and unmet need (Castro et al., 2019[4]). A higher proportion (around 25%) forgo their right to treatment under SUS altogether and instead use private health insurance to obtain services or pay themselves. They mainly expect better access and higher quality from the private sector. However, for very costly and complex treatment such as organ transplant, HIV/AIDS treatment or access to high cost medication (not covered by private insurance) these patients frequently return to SUS to obtain these services.

The establishment and the roll-out of SUS is generally considered a success story in extending health care coverage to disadvantaged population groups that previously did not have access to health care services and SUS therefore contributes to reducing inequalities in access to care and improving health outcomes. Part of this was achieved by putting a focus on reorganisation and strengthening of primary care (Couttolenc and Dmytraczenko, 2013[5]). Yet, problems with care co-ordination, low quality of services and inefficiencies are frequently mentioned in the context of SUS (Couttolenc and Dmytraczenko, 2013[5]).

Private scheme – private health insurance

In 2020, around 22% of Brazilians (47 million) were covered by voluntary medical insurance to mainly duplicate health care coverage[5] under the SUS, down from 25% in 2014 (Agência Nacional de Saúde Suplementar, 2020[6]). More than 700 entities and insurers offer this type of coverage (Agência Nacional de Saúde Suplementar, 2020[6]). There is a wide variety in the scope of services covered by the individual plans and in the legal modalities of the entities covering these services. Most cover ambulatory and hospital care but not pharmaceuticals or highly specialised treatment. In addition, more than 26 million Brazilians are covered by exclusively dental insurance plans[6] which duplicate and supplement SUS coverage, a figure that nearly doubled in the last 10 years (Agência Nacional de Saúde Suplementar, 2020[6]).

Most health plans are employer-based group policies as a component of employment contracts where contributions are paid by employers but other individual or collective policies are also available. An important feature of the Brazilian private insurance system is that contributions are deductible from personal income subject to taxation,[7] meaning that people with high income have a higher net tax gain. This is one of the reasons why the uptake of voluntary health insurance is much more prominent among richer population groups (Montaya Diaz and Sarti, 2020[7]). People with private coverage usually access private health providers including for profit and not-for-profit hospitals.

3.2.3. How sustainable is health spending in Brazil?

Similar to the situation in OECD countries, the health system in Brazil faces a number of challenges that can affect the sustainability of health care spending in the future. Population ageing will increase the demand for health and long-term care, as ageing is associated with an increase in chronic conditions. Compared to most OECD countries, Brazil is projected to age more rapidly. By 2050, 21.9% of the

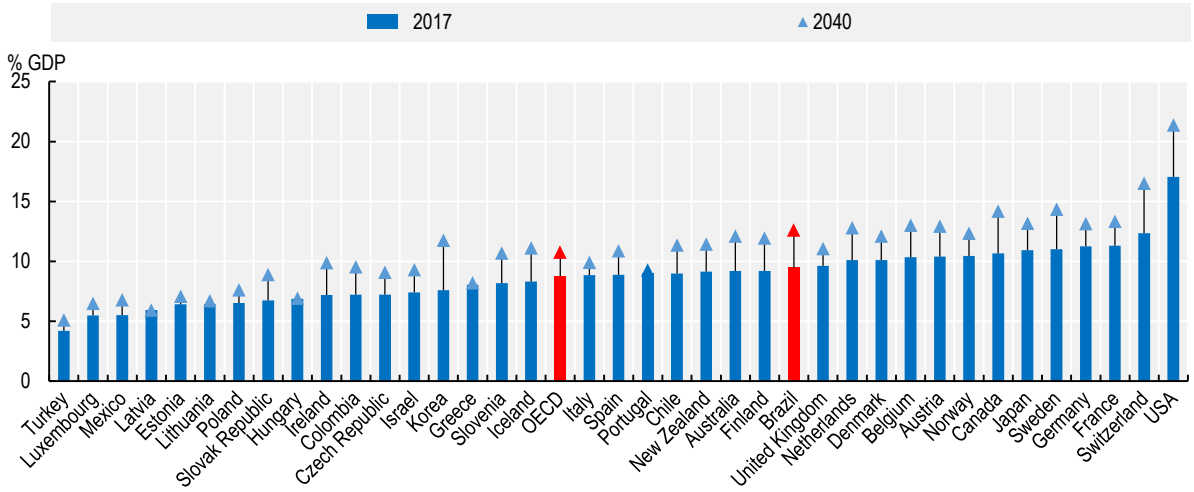
population is expected to be 65 years or older, up from 8.9% in 2017 (OECD, 2019[8]). This is a hike by 13 percentage points; across the OECD, the increase will only be around 10 percentage points, reaching 27% by the mid of the century. Growth in chronic conditions will also be exacerbated by rising obesity rates, physical inactivity of adults and children, and other unhealthy lifestyles which are already widespread in Brazil (see Chapter 5 and Chapter 6). Moreover, the rise in incomes increases population's expectations, which puts an upward pressure on health spending, as does the technological progress. This will be amplified by reduced productivity gains in the health sector compared to other parts of the economy (the so-called "Baumol-effect").

Health spending in Brazil is projected to increase substantially until 2040

Without taking into account any structural breaks due to COVID-19, the OECD health spending projection model suggests that – in the base-line scenario – health spending in Brazil will increase to 12.6% of GDP by 2040 (Figure 3.5). Compared to 2017 this is an increase of more than 3 percentage points – more pronounced than in most OECD countries. On average across the OECD, 10.8% of economic wealth will be allocated to health in 2040, 2 percentage points more compared to 2017. The projected increase in Brazil is also stronger than in Chile or Colombia where health spending is expected to reach 11.4% and 9.5% of GDP in 2040, respectively.

Rising health spending can also be expected under more favourable scenarios in Brazil. In case some 'cost control' policies are implemented, the health-to-GDP ratio is projected to rise to 12.4% of GDP; in case of more 'healthy ageing', the increase can be limited to 11.7%. If additional 'cost pressures' will occur, health spending is expected to grow further, reaching 13.3% by 2040. Significant increases in health spending, albeit below the OECD estimates, are also projected in other research work based on alternative projection models. Rocha et al., for example, project health spending to reach 12.2% of GDP by 2045 in their baseline scenario (Rocha, Furtado and Spinola, 2019[9]).

Figure 3.5. Health spending as share of GDP, Brazil and OECD countries, 2017-40



Note: Projections do not take into account any structural breaks due to COVID-19.
Source: OECD estimation based on Lorenzoni et al. (2019[10]), "Health Spending Projections to 2030: New results based on a revised OECD methodology", https://dx.doi.org/10.1787/5667f23d-en.

In summary, the OECD health spending projection model has two key messages for Brazil:

- the health spending to GDP ratio in Brazil will increase further, even under the most favourable scenario;[8] and
- the expected increase of this ratio will be higher in Brazil than in most OECD countries.

In light of these findings, there are basically four possible options (that could also be used in combination) to address the increasing health financing needs in Brazil, and they will be discussed in detail in the following subsections:

- Increasing public health spending without compensation from lower spending elsewhere, thus raising total government spending (Section 3.3.1).
- Prioritise health spending within the existing overall government spending envelope (Section 3.3.2).
- Rely more on private spending (Section 3.4).
- Find efficiency gains in the health sector (Section 3.5).

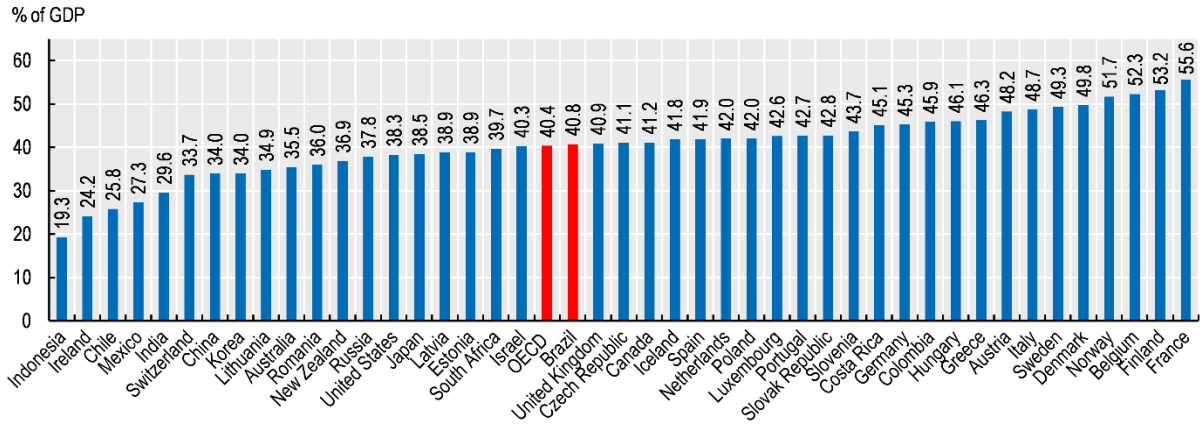
3.3. Health expenditure in relationship to government financing in Brazil

3.3.1. Brazil has limited fiscal space to substantially increase total government spending

The recent development of public spending on health in Brazil -but also total public spending more broadly needs to be seen in the context of the challenging economic and fiscal situation of the country in the last decade.[9] After overall strong economic performance in the first decade of the millennium, GDP growth started to slow down in 2012, followed by a deep recession in 2015 (-3.5%) and 2016 (-3.3%). This also affected the fiscal position of the country and led to a substantial increase of the government debt-to-GDP ratio. It stood at 76% in 2019, and closed the year 2020 at 90% as a result of the different measures taken to tackle the health and economic impact of COVID-19 (OECD, 2020[11]). The debt ratio is expected to increase further in the mid-term unless an ambitious structural reform package is implemented (OECD, 2020[11]).

In addition, the level of public spending in Brazil (41% of GDP in 2019) is around the OECD average (40%) but much higher than in countries with a comparable level of development. In Chile (26%) and Mexico (27%) but also India (29%) and China (34%), the shares are substantially below the value seen in Brazil (Figure 3.6). Over time, this proportion has increased until 2015 in Brazil, when it reached 43%. It has gone slightly down since.

Figure 3.6. General government expenditure as a share of GDP, 2019



Source: OECD (2020[11]), *OECD Economic Surveys: Brazil 2020*, https://doi.org/10.1787/250240ad-en, based on different sources.

When analysing the structure of public spending in Brazil, the most important categories are social benefits (accounting for 39%), followed by education, health and interest payments (OECD, 2020[11]). Social benefits have also been the spending area recording the highest increase since 2012. Besides that, a large array of tax expenditures in the form of tax exemptions, special regimes or special rates significantly reduce Brazil's tax revenues.

Against this background, a number of initiatives have been taken by the federal government to improve fiscal outcomes, while stabilising and reducing public sector debts. A key element of this strategy was the adoption of an expenditure ceiling in 2016, limiting the growth of primary federal government expenditure to inflation. This overall budget ceiling also has also an impact on public health spending.

Frequent changes to the financing rules of SUS have been the norm since its inception and affect the delicate composition of funding from municipalities, states and the federation (Box 3.1). With the current mechanism in place (as defined by Constitutional Amendment 95, CA95), in 2017, the federal government financed around 43% of all SUS spending, the municipalities 31% and the states 26% (Vieira, Piola and de Sá e Benevides, 2019[12]). However, there is concern that the current mechanism is ill-suited to take account of future health spending needs and will result in a considerable shortfall of funding. For example, some research suggest that the implementation of CA95 could lead to a loss of an accumulated BRL 415 billion in federal financing for SUS over 20 years compared to the previously existing financing regime (Vieira and de Sá e Benevides, 2016[13]; Massuda et al., 2018[14]). The National Treasury also estimates that the projected health financing needs will, under different scenarios, outgrow the minimum federal spending floor which could potentially lead to problems of underfunding (Tesouro Nacional, 2018[15]). In an evaluation of what it takes to safeguard universal health coverage in Brazil by 2030, and taking into account health inflation and changes in the age structure of the population, the Federal Court of Accounts projects a significant funding deficit at the federal level in 2030 (Tribunal de Contas da União, 2020[16]).

Box 3.1. How is SUS financed and how evolved it over time?

As set out in the **Federal Constitution of 1988**, health is a responsibility of the state and services provided under the SUS are financed collectively by the federation, the states, municipalities and other sources. However, since its inception the financing of SUS was contested and a number of legal changes and constitutional amendments attempted to make the financing less volatile but other consideration also played a role. A number of researchers believe that SUS has been structurally underfunded from the beginning with the latest financing reforms aggravating the situation -particularly from the side of the federation (Massuda et al., 2018[14]; Castro et al., 2019[4]).

Initially, the **Constitutional Act of Transitional Provision** (ADCT) foresaw that at least 30% of the Social Security Budget should be allocated to health with the participation of states and municipality not being specified. However, this funding commitment by the federation was difficult to maintain throughout the 1990s. The **Constitutional Amendment 29** of 2000 identified minimum "floors" for the federation, the states and the municipalities for the financing of SUS, which brought more funding stability. According to the CA29, the federation should dedicate at least its 1999 value increased by 5% in 2000, and after that annually adjusted with nominal GDP growth. The states and municipalities should dedicate at least 12% and 15%, respectively, out of their own revenues to health. The **Constitutional Amendment 86** of 2015 changed the financing obligations of the federation again. Investment floors were tied to the Federal Current Net Revenues (RCL). The percentage of RCL allocated to health was supposed to gradually increase from 13.2% in 2016 to reach 15% in 2020. However, **Constitutional Amendment 95** in 2016 introduced further changes due to fiscal pressures and generally froze primary federal expenditure until 2036. For health spending, the stipulations from CA95 meant moving the 15% minimum allocation from RCL forward to 2017 but pegging future annual increases of this minimum floor to inflation until 2036.

There was a wide variation in states fulfilling their commitments as laid out in CA29, with a number of them not meeting the 12% minimum floor in the years 2004 to 2012. After the introduction of **Complementary Law 141/2012**, which foresaw penalties for non-compliance, adherence went up. Due to increased decentralisation and demand pressure, in all states the municipalities complied with their minimum spending obligations in the years since 2004. In 2017, municipalities allocated on average 22.5% of their own revenues to health, substantially above the 15% minimum requirement (Vieira, Piola and de Sá e Benevides, 2019[12]).

Overall, the frequent changes in the financing mechanism led to a greater involvement of the states and municipalities in the financing of SUS over time. Between 1995 and 2015, the share of municipalities increased from 16% to 31% and the states' share from 21% to 26%. Consequently, the proportion of SUS funded from the federation decreased from 63% to 43%. However, for all three levels of government, health spending increased in real terms, for municipalities by around 8% per year on average (Vieira, Piola and de Sá e Benevides, 2019[12]).

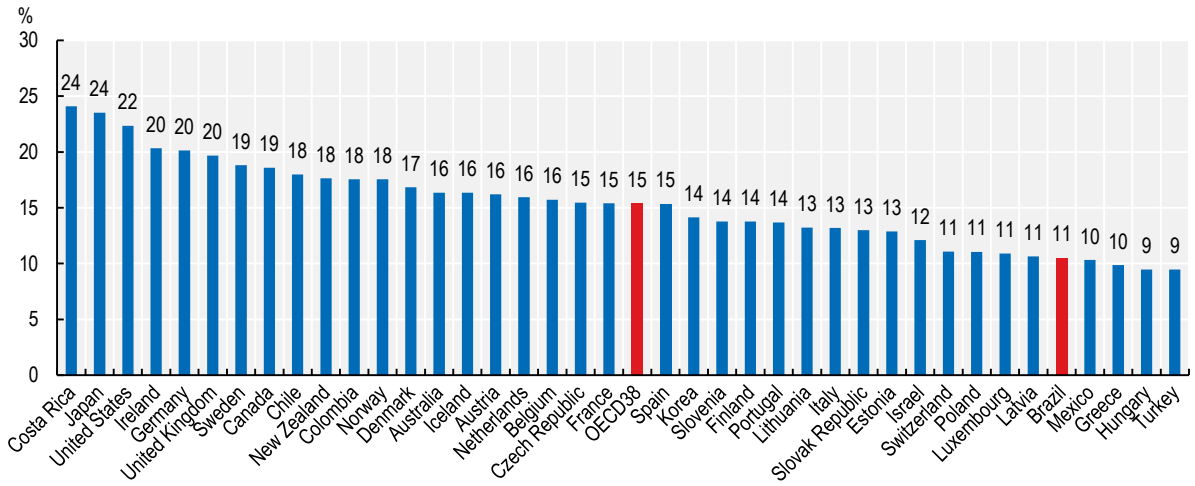
Sources: Piola and Diniz Barros (2016[17]), "O financiamento dos serviços de saúde no Brasil" http://bvsms.saude.gov.br/bvs/publicacoes/sistema_saude_brasil_organizacao_financiamento.pdf; Mendes and Funcia (2016[18]), "O SUS e seu financiamento".

While one option to meet future health spending needs (as identified in Section 3.2.3*)* is to allow for an increase in overall public spending, this possibility seems less likely in the short and medium-term given the current fiscal challenges in Brazil and the need to continue the path of adjustments to ensure overall fiscal sustainability. The discussion mainly focuses on the federal government but it seems unlikely that the states or municipalities would be in a position to drastically increase their absolute spending for health to meet future funding needs.

3.3.2. There is potential to make health a higher priority in government spending

An alternative or complementary option to make more public funds available to meet future health spending needs is to give health spending a higher priority within total public spending, i.e. compensating rising health spending with cuts or efficiency gains elsewhere. Given the current economic climate in Brazil, this seems to be a more viable option than a general increase of public spending. Indeed, comparing health spending from public sources with total government expenditure suggests that Brazil devoted less of its public budget to health (10.5%) than most OECD countries in 2019, well below the average of 15.3% (Figure 3.7).

Figure 3.7. Health expenditure from public sources as a share of total government expenditure, 2019 (or latest year)



Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en.

There appear to be at least four areas in particular where potential savings could be generated of which some could be reallocated to the funding of SUS:[10] (i) reducing tax expenditures and ineffective subsidies; (ii) improving the effectiveness of social transfers, (iii) managing high payroll expenses and (iv) revisiting the preferential tax treatment of some particular actors in the health system.

The *OECD Economic Survey of Brazil 2020* highlighted a number of areas for potential savings that would not prevent Brazil from attaining key policy objectives. Subsidies and tax expenditures have risen to 4.8% of GDP. A number of these, like the SME tax regime, the Manaus Free Zone or income tax exemptions for private health and education services could be reconsidered and adjusted. On the whole, a reduction of subsidies and tax expenditures on the order of 2% of GDP appears feasible.

Similarly, some social programmes in Brazil are not very well targeted or very costly with limited impact to reduce inequalities (OECD, 2020[11]). Better targeting could enhance the impact of the social benefit system while reducing spending. In this context, progress has been made to improve the sustainability of the pension system by raising the effective retirement age and making pensions more progressive. However, an important additional step to make pension payments -but also some other programmes such as survivor pension- more sustainable would be to change their indexation rule, away from the development of the minimum wage, which has increased much more rapidly than real per capita income. Interestingly, these benefits – unlike the social transfers programme "*Bolsa Familia*", which does not have automatic adjustments – predominantly benefit people who are not poor. As a consequence, readjusting the

mechanism of calculating some social benefits could be achieved without being detrimental to disadvantaged population groups.

A second issue where substantial savings for the public purse could be generated is related to public employment. International comparison suggests that public sector staff costs are extremely high and that substantial wage premiums exist for federal employees compared to the private sector (OECD, 2020[11]). Moreover, public salaries have outgrown earnings in the private sector recently. Changing annual salary adjustment rules and revising entry salaries could generate much needed fiscal space to strengthen public health spending. The potential savings of managing the high payroll expenses could be in the area of 2% of GDP.

Finally, an issue that is more directly related to health is the preferential tax treatment of certain expenses of some actors in health sector. This refers for example to tax deductibility of private health insurance premiums and direct out-of-pocket expenses for health care services, as well as to tax exemptions for some health care providers and other instruments.

In total, the tax expenses in the area of health were estimated at BRL 41.3 billion in 2019 (Receita Federal, 2018[19]), representing 13.5% of all forgone taxes or 0.6% of GDP. Among all waived taxes in health, medical expenses and insurance premium for individual health care plans that can be deducted from incomes subject to personal income taxation (IPRF) accounted for more than one-third (BRL 15.5 billion), tax savings from corporate income tax (IPRJ) –for the purchase of health insurance by employers – for around BRL 5.6 billion. Important tax exemptions also related to non-profit health organisations (BRL 3.6 billion) that have exemptions from corporate income taxation (IPRJ) and federal social contribution levied on business revenue (COFINS) -and from social security contributions (BRL 6.8 billion), under the conditions that they provide at least 60% of their activity for SUS. Finally, the production and sale of selected pharmaceuticals (identified through a positive list) is exempted from COFINS and PIS (contribution to unemployment insurance). Together, they account for tax savings of BRL 6.7 billion. Taken together, the sum of all tax expenditure in health equated roughly with one-third of the entire federal budget for SUS in 2019.

The personal income tax exemptions are highly regressive as they depend on the individual tax rate. Moreover, 90% of Brazilians have incomes below the threshold where they would pay income taxes and only around one-quarter of Brazilians are subscribed to private health plans, while most of the population relies on the public health system. In 2017, medical expenses of around BRL 70 billion were declared. Out of the BRL 12.8 billion resulting tax savings, 75% benefited people in the highest income tax bracket of 27.5% (Tesouro Nacional, 2018[15]). In the Brazilian context, it is important to understand that there is no legal ceiling for tax deductibility of medical expenses. Moreover, with some few exceptions (e.g. medication), all health expenses including cosmetic surgeries carried out outside of the country qualify for deductibility. This is exceptional, even in Brazil. For other non-health expenses, such as for education, deductibility ceilings exist.

While preferential tax treatments of health care goods and services also exist in OECD countries, the extent to which they are used in Brazil seems remarkable in terms of volume and raises questions about their appropriateness. Phasing out the tax deductibility for health expenses and insurance premiums from personal income taxation for individuals alone would provide fiscal space in the area of 0.2% of GDP. The tax advantages for non-profit health providers (which also includes ‘social organisations” managing public facilities) also seem abundant. Health providers can gain non-profit status and profit from the ample tax advantages if they commit to dedicate 60% of their activity to SUS patients. Reviewing some of these advantages and carefully assess whether they improve efficiency in service provision could also be an option. While preferential tax treatment in the area of health service provision exist in many OECD countries (e.g. health services are exempted from value-added tax; reduced value-added tax for pharmaceuticals), exempting non-profit providers from social security contributions for their employees seems exceptional.

3.4. Is there potential to increase private health spending in Brazil?

In case no additional or insufficient public funding can be generated to finance projected future health spending growth, the fallback option is to rely on private financing – either via private health insurance or directly by households as out-of-pocket payments. That being said, the share of private financing in Brazil is relatively high already (see Section 3.2) and any future increases may exacerbate already existing inequalities in the country. The share of voluntary private health insurance in total health spending stood at 30% in Brazil in 2019, much higher than the OECD average (5%) and far higher than any other OECD country.[11] The proportion borne directly by patients out-of-pocket in Brazil (25%) is also above the OECD average (20%), but below values seen in Chile (33%), Greece (35%) or Mexico (42%).

3.4.1. The market for private health insurance is already very developed and has equity implications

Private health insurance predates the establishment of SUS, and the federal constitution of 1988 guarantees that private health insurance coverage can supplement automatic coverage under SUS.

The private health insurance market is well established and developed in Brazil. In September 2020, 47 million Brazilians had private medical coverage or "*assistência médica*" (22% of the population) and 26 million were covered by additional dental coverage.[12] There is a wide variation of medical insurance plans depending on the types of services covered (e.g. "hospital and ambulatory", "hospital only", "reference") as well as on the type of contract (e.g. "group insurance" via employer, "individual/family contract"). In addition, many different types of entities can offer private insurance coverage; this includes non-profit medical co-operatives, employers in the form of "*autogestão*" self-management, philanthropic organisations, networks of health providers or "*medicina de grupo*", and health insurance companies. In 2019, 711 entities with beneficiaries were offering more than 36 000 plans for medical coverage in Brazil (Agência Nacional de Saúde Suplementar, 2020[6]). This means that the insurance market is very fragmented with many small operators: 6% of insurance entities cover 50% of insurance holders and more than 2/3 of all entities cover only 10% of beneficiaries (Agência Nacional de Saúde Suplementar, 2020[6]).

While coverage of private health insurance has been increasing over the last decades, it is correlated to the economic cycles with the number of beneficiaries going down during the last recession. Coverage is also unevenly distributed throughout the country. Rates are much higher in the more affluent states of the South-Eastern region (35%) than in the poorer Northern region (11%) (Agência Nacional de Saúde Suplementar, 2019[20]). In addition, a notable urban-rural divide in private insurance coverage can be observed in all states. Moreover, the health insurance market is characterised by very strong socio-economic inequalities in the uptake of private health insurance. In 2013, 64.7% of people in the highest income quintile had private coverage compared to only 5.5% among the poor (Montaya Diaz and Sarti, 2020[7]).

There seem to be at least three reasons why the share of people with private health insurance coverage has grown since the inception of SUS and is particularly prominent among the middle class and the well-off. Firstly, assumed lack of quality in the public SUS network also as a results of rapid expansion in the early 1990s and subsequent underinvestment. Secondly, a historical tradition of purchasing services on the private market as part of employment contracts and thirdly, the tax deductibility of private insurance premiums (Piola and Diniz Barros, 2016[17]).

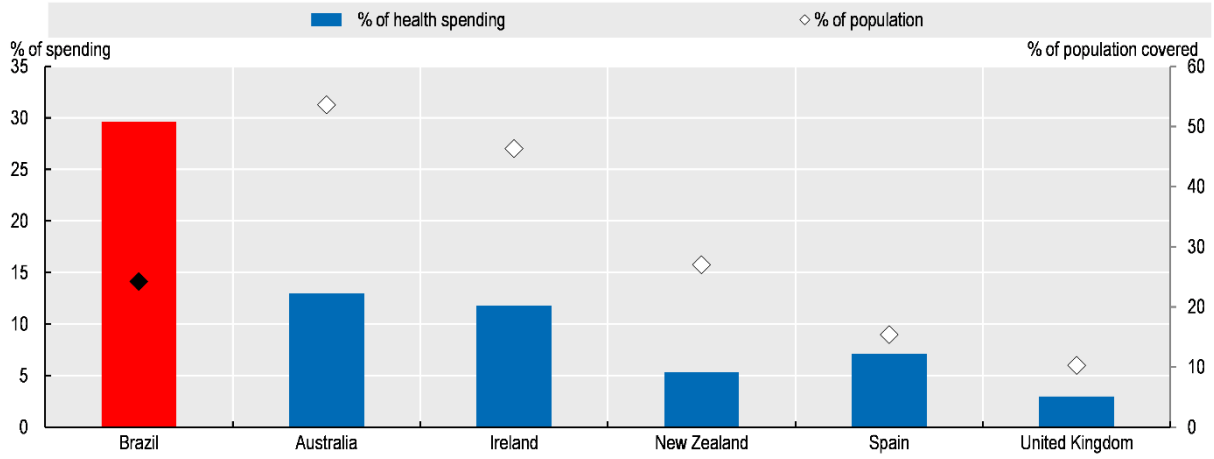
Overall, the Brazilian private health insurance market is different from those in OECD countries with similar health system characteristics, in particular those with universal residence-based entitlements mainly financed via taxation. In countries like the United Kingdom, Australia, Ireland, New Zealand or Spain *duplicate* private coverage is also popular but appears to be much more limited to particular services with private providers, in particular for choosing inpatient and outpatient services in private hospitals. However, while the shares of population coverage are similar to those seen in Brazil, this sector is, from a financing

perspective, much less important in those countries (Figure 3.8). Most likely, this reflects the fact that people with voluntary PHI coverage generally use public services and only resort to private insurance for a very narrow band of (hospital) activities. The case of Brazil seems exceptional in the sense that a quarter of the population broadly forgo their constitutional right to seek free public health care.

Consequently, the market for private health insurance is already more developed in Brazil than in most OECD countries. Without changing the current configurations of this market, a further extension of private insurance coverage does not seem to be desirable from an equity perspective. A further uptake in private coverage -or a further extension of the benefit packages leading to higher premiums- can represent an 'additional drain' of scarce public funds resulting in rising inequalities unless tax exemptions policies are changed. It is also unclear whether more spending on private coverage would contribute to improving efficiency and health system performance overall as high private coverage can lead to overutilisation of costly procedures and exams. For example, in 2019 the number of magnetic resonance imaging exams (MRI) per privately insured person in Brazil (179 per 1 000) (Agência Nacional de Saúde Suplementar, 2021[8]) was 2.3 times higher than that average MRI per population in the OECD (79 per 1 000) and considerably above the rate of Austria (148 per 1 000), which was the highest in the OECD in that year.

Figure 3.8. Voluntary private health insurance in Brazil and selected OECD countries, 2019 or latest year

Share of population with PHI coverage and share of PHI spending in total health expenditure



Note: Private health insurance can be supplementary and duplicate in Australia.
Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; Agência Nacional de Saúde Suplementar (2020[6]), "Dados Consolidados da Saúde Suplementar", http://www.ans.gov.br/perfil-do-setor/dados-e-indicadores-do-setorhttp://www.ans.gov.br/perfil-do-setor/dados-e-indicadores-do-setor; Brazilian Ministry of Health.

3.4.2. Further increase in out-of-pocket spending can lead to an increase in number of people experiencing financial hardship

A final possibility to meet projected health spending increases would be to leave more financing responsibilities to private households. In fact, this is the fallback option if no other funding alternatives are found. As seen before, the level of out-of-pocket spending as a share of total health spending in Brazil (25%) is above the OECD average (20%) but lower than in some OECD countries and many other countries in the Latin American region. Yet as a share of GDP (2.4%), direct payments from households are comparably high in Brazil. When analysing the composition of out-of-pocket payments, it can be seen

that two-thirds of all direct spending is related to the costs of pharmaceuticals in Brazil. Compared to OECD countries, this is a very high share and signals lack of effective coverage in this area.

The structure of out-of-pocket spending in Brazil can be explained by the nature of the benefit package in SUS and other system characteristics. SUS offers, implicitly, a comprehensive benefit package in primary care, hospital care and other services, which does not require any cost sharing. For pharmaceuticals, a positives list of essential medicines has been defined which are available free of charge or with some limited co-payments under certain conditions. However, these may not be available when needed and patients may have to resort to self-paying medicines. Moreover, private health insurance contracts exclude outpatient pharmaceuticals, which require those people that forgo SUS coverage to pay for these goods themselves. In addition, beyond pharmaceuticals, SUS coverage excludes a number of private providers that may be contacted by patients for quicker access.

The problem with high overall out-of-pocket costs is that they, in general, affect poor and disadvantaged population groups more than others (WHO Regional Office for Europe, 2019[21]). For these groups, high direct costs for health care goods and services are more likely to represent a financial burden. For this reason, the United Nations decided to measure progress towards universal health coverage by monitoring the incidence of households that experience “catastrophic” health expenditure as an indicator for financial protection (WHO and World Bank, 2019[22]).

Data included in the financial protection monitoring report of WHO and World Bank suggest that financial hardship due to health care costs is an issue in Brazil (WHO and World Bank, 2019[22]). In 2008, 25.6% of Brazilian households reported that health care costs represented more than a tenth of total household consumption/income and 3.5% reported that it represented a quarter of total consumption/income; these shares were much higher than in nearly all OECD countries and above the average of the Latin American region. However, other studies have found that catastrophic health spending in Brazil was not more problematic compared to other Latin American countries (Roa, 2016[23]). Yet, regardless of the exact proportion of households facing catastrophic health spending, the strong correlation between the overall level of out-of-pocket spending in a country and the proportion of household experiencing financial hardship has been widely established (WHO Regional Office for Europe, 2019[21]). Hence, a policy decision that leads to an increase in cost sharing or decrease in coverage will most likely raise the percentage of the population facing financial hardship as a result, especially among the poor. Alternatively, it may also lead to an increase in delayed or forgone care if people are no longer able to afford services (WHO Regional Office for Europe, 2019[21]).

Therefore, from an equity perspective, letting people bear more health care costs themselves will eventually lead to a further worsening of health inequalities in a country that is already facing serious inequality issues. There are also questions to what extent increasing out-of-pocket spending is efficient. In many instances, private providers charge higher prices for the same services that are provided publicly without a clear difference in quality. For this reason, a deliberate increase in the share of health spending financed out-of-pocket does not seem to be a desirable option.

3.5. Where can efficiency gains been found in the Brazilian health system?

A final possibility to address the projected increase in health spending is to generate efficiency gains and reduce wasteful spending within the health sector. Getting “more value for money” could soften the emerging spending pressures by making sure the right intervention is carried out in the right setting, by using the most cost-effective and evidence-based input mix to treat diseases and by limiting the diversion of financial resources in the health system that are not used for promotion of health, prevention of diseases and the treatment of patients. Across the globe, around 20% of health spending can be considered “wasteful” in the sense that if some services accounting for these costs would not occur, it would make no difference to health outcomes of patients (OECD, 2017[24]).

3.5.1. The Brazilian health system is widely perceived as being inefficient

Previous work in comparing potential for efficiency gains internationally has found that there is a particular scope for improvement in Brazil. Quantifying possible gains in health-adjusted life expectancy using data envelopment analysis techniques based on data by World Bank and WHO, the *OECD Economic Survey of Brazil 2015* found that more than five years of life expectancy could be gained through efficiency improvement while maintaining current per-capita health expenditure (OECD, 2015[25]). This was more than in any OECD country. The potential for efficiency gains in the Brazilian health system has also been analysed in other studies. The World Bank, for example, estimated total potential savings of around 0.62% of GDP until 2026 in five distinct areas of health with either neutral or positive effects on equity (World Bank, 2017[26]). In calculating the spending requirements needed to reach the Sustainable Development Goals (SDGs), Flamini and Soto estimate that the health sector has room for savings of up to 2.5% of GDP by 2030 through higher spending efficiency without compromising quality (Flamini and Soto, 2019[27]).

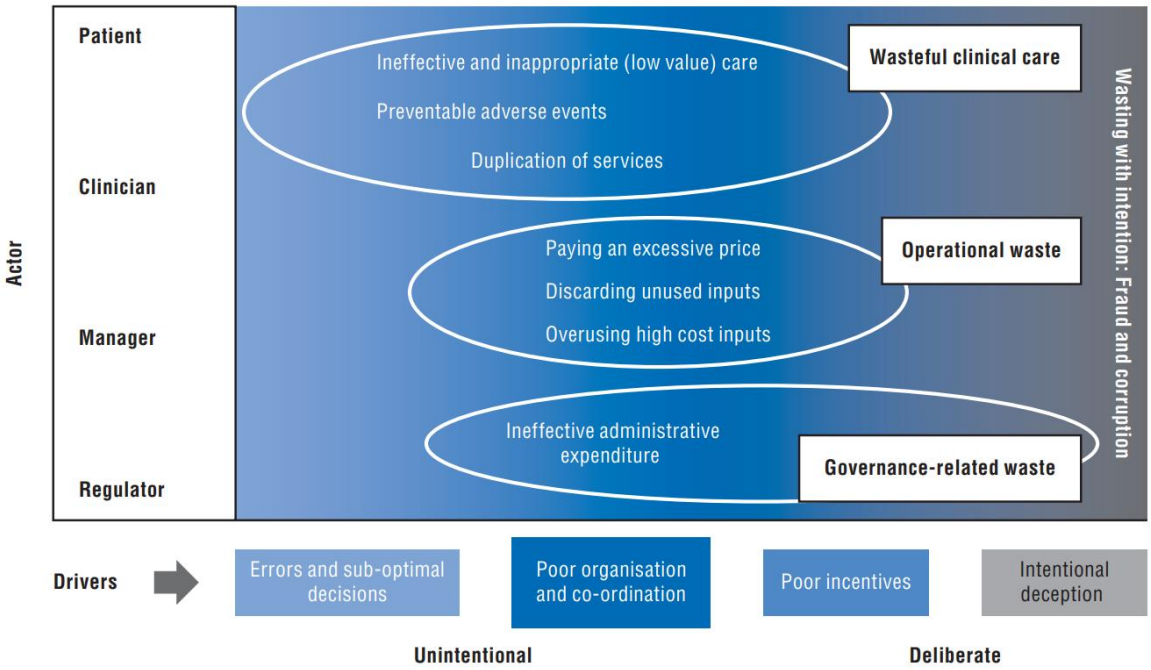
Improving efficiency and performance are important health system goals and they have been included in initiatives of recent and current administrations in Brazil. In this context, the current multi-annual Health Plan ("*Plano Nacional des Saúde 2020-23*") highlights, for example, the need to improve contracting of public service to raise efficiency in the management of SUS, a better integration of primary and secondary care, enhanced co-operation on a regional level, or a wider application of electronic tools. Previous initiatives preceded this, such as the introduction of Health Technology Assessment (HTA) in SUS and the creation of the National Commission for the Incorporation of Technologies in the Unified Health System (CONITEC) in 2011. The introduction of financial incentives to improve access to service as part of the "*Previne Brasil*" strategy was also geared to raise health system performance.

3.5.2. OECD has developed a framework to discuss wasteful spending across the entire health system

These initiatives and ambitions notwithstanding, there is still the perception that more can be done to find better value for money. In Brazil, as well as in all other countries, inefficiencies can be found in every aspect of the health system and the OECD has developed a comprehensive framework to systematically analyse potential sources of inefficiencies, its drivers and root causes, and discusses what can be done about it (OECD, 2017[24]). *Wasteful clinical care* covers instances when patients do not receive the right care, for example inappropriate or low value care. It also includes preventable clinical adverse events. *Operational waste* occurs when care could be produced using fewer resources within the system while maintaining the benefits. Examples include situations where lower prices could be obtained for the inputs purchased, or where costly inputs are used instead of less expensive ones with no benefit to the patient. *Governance-related waste* pertains to the use of resources that do not directly contribute to patient care, either because they are meant to support the administration and management of the health care system and its various components, or because they are diverted from their intended purpose through fraud, abuse and corruption. This basic framework will also be used in the subsequent assessment of potential sources of inefficiency in Brazil (Figure 3.9).

Typically, all actors of the health system contribute to wasteful spending but the degrees differ. Not satisfied with the outcome, patients may ask for redundant repeat examination. Clinicians may choose an unnecessary costly treatment procedure even if a cheaper alternative exist. System managers may contract service providers at a higher price than necessary and the regulator may be responsible for ineffective and costly administrative hurdles in health delivery planning.

Figure 3.9. Categories of waste mapped to actors involved and drivers



Source: OECD (2017[24]), *Tackling Wasteful Spending on Health*. https://dx.doi.org/10.1787/9789264266414-en.

The remaining part of this section will identify some areas of potentially wasteful spending and efficiency gains in Brazil across the entire health system, including primary health care, secondary and hospital care, pharmaceuticals, long-term care, and administration and governance.

3.5.3. Primary health care is a key component of SUS, but it still does not deliver its full potential

The introduction of SUS has been accompanied by several initiatives to strengthen primary health care

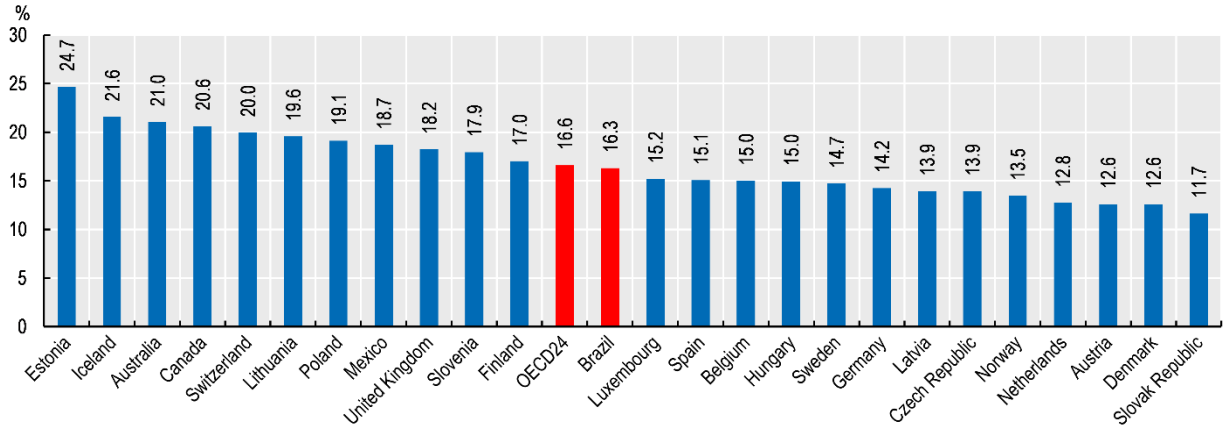
Since its inception, a strong focus of SUS was to strengthen the role of primary health care and move away from a health system that was historically very hospital-centred. In 1994, the Family Health programme was established which set standards on the composition of teams of health care professionals including general physicians, nurses, nurse assistants and community health workers providing a wide range of services, such as acute care, health promotion, chronic disease management and maternal and child health care (Castro et al., 2019[4]). These teams became the key element of primary health care in SUS but problems with staffing slowed down the expansion of this care model. To address problems in access, especially in rural areas, the "Mais Médicos" programme was adopted in 2013, which led to the temporary recruitment of around 18 000 additional doctors, mainly from abroad. While being successful in increasing access to primary health care in some disadvantaged areas (Gonçalves et al., 2019[28]), the programme is currently phased out and is replaced by the "Médicos pelo Brasil" programme. This initiative seeks to centralise recruitment for doctors for disadvantaged communities and to strengthen the professional development opportunities of these newly hired doctors.

A strategy to improve efficiency in primary health care and expand access was the '*Previne Brasil*' initiative introduced in 2020. This initiative marked an important shift in the calculation method how federal funds are transferred to the municipalities to purchase primary care services but also increased overall federal

resources for primary health care. Under SUS, the federal government has financed roughly one-third of total primary health care costs, with the remaining part being funded predominantly by municipalities (61%) (Ministério da Saúde/Fundação Oswaldo Cruz, 2018[29]).[13] Prior to the '*Previne Brasil*' strategy, the federal transfers to municipalities were composed of a fixed and variable capitation component, a voluntary pay-for-performance bonus based on the *National Programme for Improving Primary Care Access and Quality* (PMAQ) and payments for the direct provision of services through community health workers and "*Mais Médicos"* programme. The '*Previne Brasil*' strategy recalibrated the capitation payments to better take account of differences in health care needs across municipalities, streamlined the pay-for-performance indicators and revisited the strategic actions to be financed by the federation (OECD, 2021[30]). An important change in '*Previne Brasil*' is that capitation payments are only made for people registered with Family Health Teams which should incentivise municipalities to further engage in this delivery form. While it is too early to conduct an overall evaluation of this programme, the number of people registered with Family Health Teams has increased substantially, reaching 127 million by November 2020 (OECD, 2021[31]).

Analysing the composition of overall health spending in an international context, can help assessing whether a country makes spending on primary health care a priority. In 2019, Brazil dedicated around 16% of its financial resources to "basic health care services" – defined as general outpatient care, dental care, home-based curative care and preventive activities,[14] a share similar to the OECD average (Figure 3.10).

Figure 3.10. Spending on basic health care as share of current health spending, 2019 or nearest year



Note: Basic health services combine general outpatient care, dental care, home-based curative care and preventive activities provided regardless of the setting. It can be used as a proxy for primary health care for international comparisons.
Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; Brazilian Ministry of Health.

Despite these achievements, performance of primary health care can be further strengthened

Comparing efficiency levels in primary care across municipalities in Brazil, the World Bank identifies possible efficiency gains of 37% (World Bank, 2017[26]). There is hence significant potential to expand service provision using the same amount of resources. Other issues that should be addressed include limited service accessibility and shortcomings in the co-ordination between primary and secondary care.

Lack of availability of doctors can lead to unmet needs and the 2019 Health Interview Survey has shed some light on this. In 2019, around 14% of all Brazilians who sought health care in the two weeks prior to the survey did not receive it (IBGE, 2020[3]). Particularly relevant for primary care is the fact that 21% of all

Brazilians with diagnosed diabetes did not received medical care in the 12 months prior to the survey (IBGE, 2020[32]). Interestingly, while there is little statistical variation for unmet need of this kind across states, rurality or income (IBGE, 2020[33]), differences in quality of care appear to exist. Diabetic patients have a higher likelihood of complications (as measured in hospitalisations) in the North-East than in the South-East and this probability is systematically higher for those where household income is at the minimum wage or below than those with more than three times minimum wage (IBGE, 2020[34]).

Some of this unmet need will be related to the availability of doctors. While substantially increasing over the last decades, the number of doctors in Brazil is still lagging behind the OECD average. In 2017, around 2.2 physicians per 1 000 population were registered in Brazil (Scheffer and al., 2018[35]). This compares with 3.5 practicing physicians[15] across the OECD (OECD, 2019[8]). Similar to most OECD countries, there is a wide geographic disparity in the availability of physicians in Brazil, also reflecting socio-economic differences. In municipalities with less than 5 000 inhabitants, the overall physician density is only 0.3 on average; for municipalities with more than 500 000 inhabitants the ratio stands at 4.3 (Scheffer and al., 2018[35]). Because specialists are more likely to practice in agglomerations, the unbalanced spatial distribution of health professionals is somewhat less pronounced when looking at generalists (i.e. registered doctors without specialisation) only. Nevertheless, significant differences still exit. On a state level, the generalist per 1 000 population ratio ranges from 0.4 in Maranhão in the North-Eastern region to 1.6 in Rio de Janeiro. A high geographical variation of health professionals can suggest an inefficient allocation of resources leading to unmet need and a lower quality of care in underserved regions and to overprovision of services in other parts of the country.

Experience from OECD countries informs that different strategies help redress the geographical imbalance of doctors (OECD, 2016[36]). A first approach tries to address the issue in the long-run by targeting future doctors during their medical education. This can be done by providing scholarships or preferred access to students who commit to practice in rural areas or communities for a defined period of time after graduation, as is the case of Australia, Japan, Canada, England and Chile (OECD, 2021[31]). For current professionals, there is a “stick and carrot” approach. Many OECD countries use financial incentives, either one-off or wage-related, to attract physicians to practice in rural or disadvantaged areas. In Canada and Denmark, some of these policies are in place. On the other hand, a few countries, including Germany, some provinces in Canada and Norway, restrict the place where doctors can practice. In Germany, self-employed doctors are not allowed to set up their practice and serve public patients in a catchment area that is considered ‘overserved’ based on a patient-to-doctor ratio. At any rate, addressing the regional imbalance of doctors, in particular for general practitioners, requires careful and coherent workforce planning. On a national level, this has so far been largely absent in Brazil (OECD, 2021[31]).

There could be potential to get more primary health care activity with existing resources

Interestingly, the substantial increase in the number of doctors in Brazil did not necessarily translate in a commensurate increase in primary care activity under SUS. The ratio of annual consultations for primary care registered under SUS divided by the total population stood at 2.2 in 2019, up from 2.0 in 2000 but below the value of 2014 (2.8)[16] (Ministry of Health, 2020). While this figure should not be confused with the average number of consultations per person, the fact that this ratio increased by only 10% over the last two decades while the number of doctors grew by more than 50% should be analysed in more detail. It could mean that many newly graduated doctors do not want to pursue a career in primary care but it could signal some inefficiencies in care provision.

One issue that may explain the reduced growth in primary care consultation and associated problems in accessing SUS services[17] is the wide-spread use of ‘dual practice’ which means that many physicians split their time between public and private patients. Recent regulation in Brazil prohibits doctors to have more than two jobs in the public sector, however, there is still the option to take on additional tasks in the lucrative private sector. A recent study finds that 51% of all doctors in Brazil work under dual-practice arrangements,

27% only in the private sector and only 22% exclusively in SUS (Miotto et al., 2018[37]). It also shows that those working solely in the public sector tend to be younger, less experienced and more likely to earn less than those in the private sector or in dual practice. Dual practice is also common in many OECD countries and can create problems to reduce service access of public patients if not properly regulated and monitored (Mueller and Socha-Dietrich, 2020[38]). Countries that have recently taken measures to increase physician's time to treat public patients include Ireland and Israel. Part of their strategies include a pay raise for public doctors that forgo the option to work in the private sector.

A consequence of wide-spread application of dual practice can be absenteeism of doctors during regular working hours from their public jobs (Socha and Bech, 2011[39]). Recent research suggests that this may be an issue in Brazil. Analysing time use of 47 physicians working across 27 Family Health Teams in 12 municipalities indicate that they are absent from work during shifts in around a third of the time on average (dos Sanots Matsumoto, 2018[40]). This phenomenon is also a concern in some OECD countries but literature on this topic mentions the difficulty to clearly disentangle dual practice from poor overall management as the source of absenteeism (Socha and Bech, 2011[39]). That said, whether publically employed doctors perform their contractual work duties is clearly something that should be monitored closely. More analysis is needed to assess whether this is a common phenomenon in Brazil. If it is, the implementation of consistent monitoring tools could be an instrument to improve output and system performance.

Primary health care is still fragmented and problems in co-ordination of care across service levels persist

The latest Health Information Survey highlights the fragmentation of primary health care delivery. For example, around 50% of the diabetic population identified basic health units ('*unidade básica de saúde'*) as their last contact to the health system, 11% used public speciality units in hospitals, 6% public urgent care units and 30% private practices or clinics (IBGE, 2020[32]). There is a clear socio-economic gradient to this: While basic health units were the most recent provider of diabetes care for around 60% or more of people from poorer household, these facilities are key health providers for only 15% or less of rich households (IBGE, 2020[41]). Difference in primary health care utilisation patterns and patient experience among elderly Brazilians was found in recent research (Macinko et al., 2018[42]). Those with private health plans (not using SUS) report fewer problems in terms of access, care co-ordination, continuity of care and provider co-ordination than those using SUS-Family Health Teams. Most problems are encountered by patients who use SUS but do not consult Family Health Teams.

The latter examples show that despite ongoing progress to further the roll-out of the Family Health Strategy, many Brazilians still use other providers as their regular point of care for chronic conditions. On the one hand, most people with private health insurance coverage do not use SUS at all and resort to private practices. Yet even for those without private coverage, a good part of them use public speciality units or emergency departments for provision of chronic services. This is inefficient since these types of conditions are best treated in primary care settings (OECD, 2020[43]). To further promote the Family Health Strategy more financial support may be needed, in particular in disadvantaged rural areas. In addition, out-of-hours options for primary care units should be further elaborated as in the "*Saúde na Hora*" programme, so that people with acute conditions do not need to resort to emergency care units. Moreover, cancer screening and preventive activities such as health check-ups should receive greater attention within primary care (OECD, 2021[31]). These are "good value for money" as these interventions reduce more costly treatment later.

In several OECD countries (including, for example, Chile, Portugal, Italy or Norway), strong gatekeeping systems are seen as a way to ensure that patients receive the best possible care for their conditions and to achieve greater appropriateness and co-ordination of care (OECD, 2020[43]). Further development of primary health care in Brazil could also entail to give GPs a stronger 'gatekeeping' role whereby they

control and orient the patient's entry into secondary care. This implies that patients have to register with primary care physician or practices and GPs control access to secondary care with a referral system.

Related to 'gate-keeping' is the need to strengthen the co-ordination of care across the health systems, also to address the long waiting times for visits to specialists or diagnostics. Historically, co-ordination between different care levels has been relatively weak in Brazil. To address these issues, the Federal Ministry of Health has established guidelines for the organisation of thematic Health Care Networks ("*Redes de Atenção à Saúde* – RAS") in 2010 within the scope of SUS. This initiative seeks to integrate service provision through technical, logistical and management support across primary, secondary and tertiary care as well as ancillary services. At the moment, networks exist for prenatal care and childbirth, urgent care and emergencies, psychosocial care, for people with disabilities, and for people with chronic conditions, but the centrality of primary care in these networks is unclear.

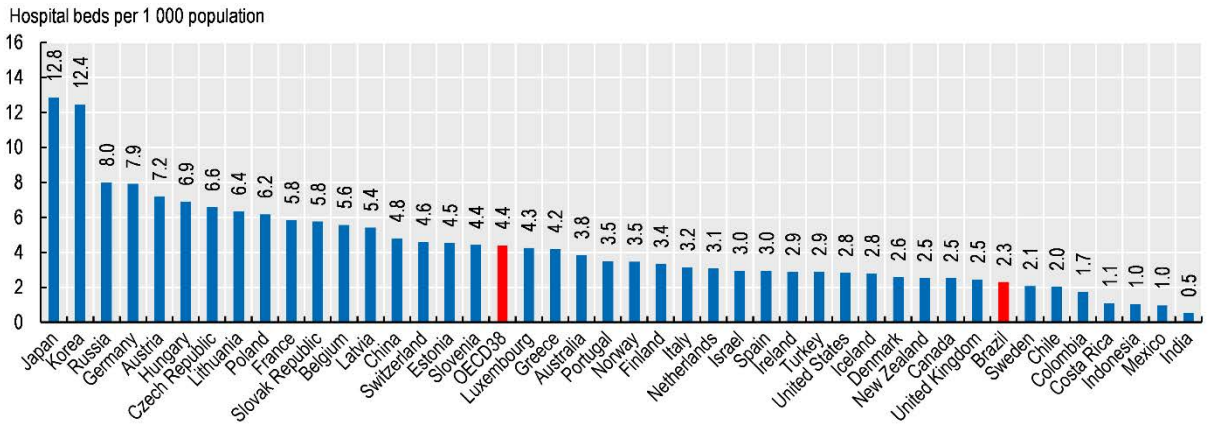
Integrated care models can be successful in improving continuity of care leading to better outcomes but require information sharing across care levels and evidence based care pathways. However, the thematic integrated care network operate within the complex and rigid existing SUS planning and management environment and funding principles. This could be a barrier to a successful roll-out of health care network. Within the OECD, countries have embarked on different pathways to operationalise the integration of care (OECD, 2016[44]). In the United States and Germany, for example, providers joined into "Accountable Care Organisation" (ACO) where they are collectively responsible for patients in a defined catchment area. These ACO receive a virtual budget for a wide range of services and they are incentivised by shared savings contracts with payers to co-ordinate care across different levels efficiently. They can keep part of the savings if they keep total costs below the virtual budget if they meet pre-defined quality criteria. Other good examples for care integration exist in the Basque country of Spain and as primary health care networks in the United Kingdom (OECD, 2021[31]).

3.5.4. Inefficiencies persist in outpatient specialist and hospital care

The Brazilian hospital sector has a lot of excess capacity in normal times but distribution is uneven

Overall, Brazil had approximately 474 000 hospital beds in 2019, around the value seen in 2007 but down from 501 000 in 2010. This equates with 2.3 beds per 1 000 population, around half of the OECD average (Figure 3.11). Nevertheless, the bed density is similar to some European countries such as Denmark (2.6), the United Kingdom (2.5) and Sweden (2.1) and above other countries in Latin America, such as Chile (2.0), Colombia (1.7) or Costa Rica (1.1). As in many OECD countries, in Brazil, too, there is some variation in bed availability within the country. On a state level, the density of hospital beds varies by a factor of 2, ranging between 1.5 beds per 1 000 population in the Northern state of Amapá and 2.9 beds in the Southern state of Rio Grande do Sul (Brazilian Ministry of Health, 2020).

Figure 3.11. Hospital beds per 1 000 population, 2019 or nearest year



Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; Brazilian Ministry of Health.

An important difference between Brazil and OECD countries appears to be the level of activity. In 2019, there were 58 hospital discharges per 1 000 inhabitants in Brazil (Brazilian Ministry of Health, 2020), about one-third of the activity levels seen across the OECD and only one-fifth of the hospitalisation rate seen in Germany or Austria. The low number in Brazil also reflects the fact that the country has a relatively young population. Yet, there are more discharges per population in Brazil than in Colombia or Mexico.

As a result of the very low inpatient activity, the occupancy rate of hospital beds in Brazil is far below all OECD countries highlighting a lot of excess capacity in normal times (not considering peaks in demand associated with the COVID-19 pandemic). Only around 52% of hospital beds were used on average for treatment at any given day in 2019. This share has been slowly increasing recently but is still far below the OECD average of 76%. In Costa Rica, Israel, Ireland and Canada average occupancy rates are above 85%, which is broadly considered to be the limit for safe occupancy for patients in some countries (OECD, 2012[45]).

The very low occupancy rate of hospital beds in Brazil suggests a lot of scope of potential efficiency gains and has been the focus of numerous national and international efficiency analyses. Due to the large number of very small hospitals in Brazil, the 2019 World Bank report finds a staggering average inefficiency of 71%, highlighting substantial scope to expand service provision with existing resources. Based on this model, outpatient hospitals services could be increased by 140% and admissions by 79% while keeping expenditure constant if efficiency was maximised. Alternatively, the same level of results in hospitals could be achieved with 34% less spending, generating savings around BRL 12.7 billion (World Bank, 2017[26]). Unsurprisingly, the report finds that inefficiencies are much more pronounced in small municipalities and mainly driven by hospitals with less than 100 beds.

In a performance assessment of public hospitals, the Brazilian Federal Court of Accounts also found ample evidence of inefficient service provision (Tribunal de Contas da União, 2020[46]). Applying the same method as the World Bank but differentiating by hospital type, the results of this assessment indicate further that efficiency increases with hospitals size but no difference across regions. Interestingly, the report also finds that (i) public hospitals under direct administration are less efficient than those under indirect administration; (ii) hospitals under management of the states are more efficient than those managed by either municipalities or the federation; and (iii) that public hospitals managed by “social organisations” (*Organizações Sociais de Saúde*) have a better efficiency score than other public hospitals. For the latter finding, however, it is important to note that this may also be due to selection bias and the fact that OSS-managed hospitals are nearly three times bigger than the average public hospital (151 beds vs. 61 beds).

The way inpatient delivery is planned for SUS contributes to excess capacity

Even considering that the COVID-19 pandemic has shown that some easily mobilised inpatient reserve capacity can be advantageous under exceptional circumstances, the low efficiency in the hospital sector in Brazil has adverse effects.[18] From a purely economic perspective, the simple solution to improve efficiency in the hospital sector would be to close many small hospitals. In reality, this is more complicated. In areas with very low population density, alternative treatment facilities may be hundreds of kilometres away. In addition, from a political economy perspective, mayors and municipal health secretaries have little to gain from a closure of existing health facilities as this would not be appreciated by voters. A more feasible approach could be a conversion of some small hospitals in rural areas into more intermediate health facilities that can treat urgent cases and patients with acute care needs for a limited period of time. This should be accompanied by a strengthening of transport opportunities to better equipped general hospitals in urban centres for patients requiring urgent inpatient care for a sustained period of time. This model could also be tied in with the roll-out of tele-health applications to help triage patients, distinguishing those who need immediate transport to general hospitals from those who can be treated locally.

On how to find the right balance between efficient acute care provision and accessibility in rural areas, lessons can be learned from some OECD countries with similar spatial challenges. In Canada, all provincial and territorial Medicare plans are expected to provide uniform access to hospital care also in rural and remote areas (Marchildon, Allin and Merkur, 2020[47]). They achieve this by extensive referral patterns involving medical transportation from rural and remote areas to tertiary care hospitals in urban areas. This involves a wide network of road- and air-based emergency medical services. In Australia, some states and territories have developed multi purpose health service (MPHS) as a service for flexible care. It is an amalgamation of services including acute hospital care, residential aged care, community health, home community care and other health related services and generally established in populations not large enough to support a separate hospital, residential aged care and community care services (Queensland Government, 2018[48]). An alternative concept popular in Finland is to embed an inpatient ward into primary health care facilities of municipalities (Keskimäki et al., 2019[49]). These GP-led facilities are typically equipped with 30-60 beds. In recent years, these facilities have taken a more active role in rehabilitation and cancer care. Around half the beds are used for acute and chronic care each.

The existence of many small hospitals leading to the described efficiency issues appears to be also the result of the current mode of hospital planning in Brazil. Law 8080/1990 gives municipalities a central role in planning and management of SUS services, in co-operation with states and health regions. Yet municipalities differ vastly in size and also in the capacity to perform complex managing tasks, such as the operation of secondary and tertiary care facilities. In a number of OECD countries, hospital planning is delegated to a higher governmental level. In Australia, the administration and performance of public hospitals is the responsibility of the states and territories as system managers. In Canada, provincial ministries are responsible for major new capital (e.g. hospitals) and some infrastructure planning (Marchildon, Allin and Merkur, 2020[47]). This is also the case in some social insurance-based health systems. In Germany, for example, hospital planning is carried by the 16 'Länder' while most public hospitals are owned by municipalities. Thus, Brazil could consider moving hospital planning competencies to another government level, be it the states, "health regions" or "macroregions" (see Section 3.5.5). What needs to be in place are clear federal guidelines stipulating transparent planning processes and accountability.

There are few incentives for better performance in inpatient care delivery

The hospital landscape in Brazil is diverse. Public hospitals can be owned by the federal government, the states and municipalities and may be managed directly by system managers or employed hospital managers. The management of public hospitals may also be outsourced to private "Social Organisations" (*OSS*). In addition, state or municipal health managers also contract private non-profit and for-profit

hospitals for service delivery under SUS. The latter two types of hospitals will also cater for private patients that either use their insurance coverage or pay directly. Overall, in 2019, public hospitals and private not-for-profit hospitals each accounted for around 38% of all hospital beds, with the remaining 24% provided by private for-profit hospitals.

In line with the diverse hospital landscape, the current form of financing specialist and inpatient activity in Brazil is very complex and differs across states and municipalities. On average between the years 2010-14, SUS financing for inpatient care was to 39% made from federal sources, to 48% from the states and to 13% from municipalities (Ministério da Saúde/Fundação Oswaldo Cruz, 2018[29]). Most of the federal resources to finance activities of medium and high complexity (*Média e Alta Complexidade- MAC)* are transferred to states and municipalities and the transfers are subdivided into different components: (i) fee-for-service payments based on a national price list for procedures; (ii) incentives related to national policies; (iii) and a global budget for a set of activities. Municipalities and states have to complement the federal FFS funding. In some states, additional incentive payments related to state priorities exist. Finally, there may be performance bonuses made to hospitals at the discretion of the contracting state or municipality manager.

The current mechanism to purchase hospital services does not appear to incentive improving hospital performance. The transfers from the federal government to states and municipalities are partially based on historic budgets and payment by procedure through a national fee schedule (SIGTAB) which, however, is updated only irregularly, mainly for high costs procedures in the context of 'judicialisations'. As a result, the fee schedule sends distorted price signals and payments do not necessarily reflect resource use. Hence, an efficient resource allocation between different hospitals becomes challenging. Some hospitals may receive insufficient funding for the services they provide. Generally, FFS payments also encourage hospitals to provide more procedures than necessary.

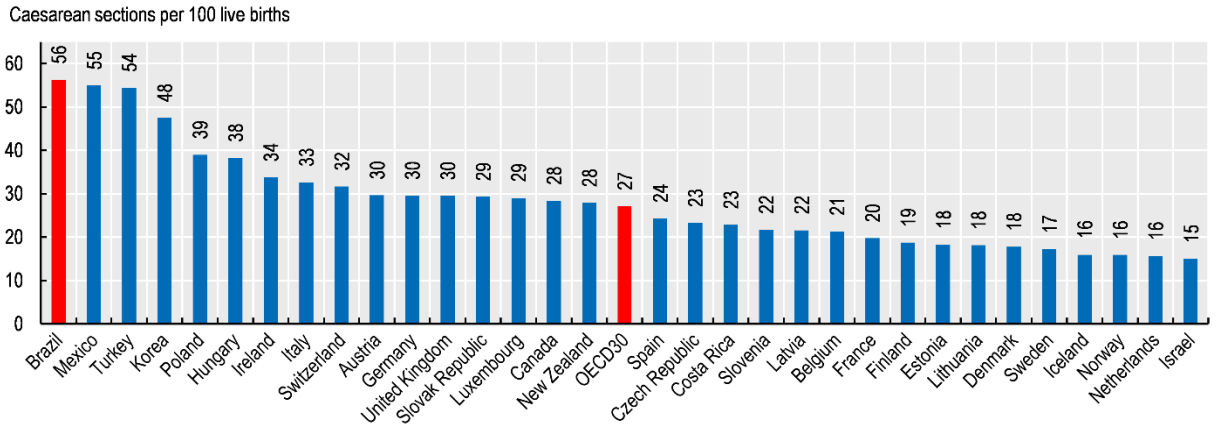
To improve technical efficiency, many OECD countries have introduced prospective case-based payment systems based on Diagnosis-Related Groups (DRG) to pay for hospital activity (OECD, 2016[44]). For the operationalisation of this mode of payments, patients are grouped into different patient groups reflecting the resource-intensity of the treatment taking into account diagnosis and other factors – called DRG. Different weights are associated with the various DRGs reflecting average treatment costs. After discharge, the hospital receives a payment reflecting the weight of the DRG. Alternatively, DRGs can also be used for the allocation of hospital budgets. In this case, hospitals budgets are defined via the sum of DRG weights (or 'case-mix') reflecting the difference in complexity of cases across hospitals. Depending on how DRGs are used, they can incentivise hospital managers to reduce costs per patient, increase the revenue per patient and increase the number of patients (Quentin et al., 2011[50]). To avoid any possible skimping of care, quality of care should be monitored. For an accurate calculation of average resource use per patient, hospital cost accounting systems need to be in place. Brazil could explore options to move towards such a patient classification model and to use it to pay for service provision. There is a wealth of experience in the use of DRGs in OECD countries and how to adapt existing classifications to national circumstances. The existing hospital datasets in Brazil on procedures could serve as a good starting point; what seems to be missing so far is detailed costing information.

The provision of low value care remains an issue in Brazil

Brazil also encounters issue with wasteful clinical spending. One example of health services that are of low value are double examinations or costly procedures that may not be clinically necessary. Caesarean sections can fall into the latter category. While they can save the lives of mother and infant for medically indicated reasons, these surgical procedures can cause complications leading to disability and deaths especially if carried out in facilities that lack capacity to conduct safe surgery. Based on a systematic review, the WHO concludes that C-section rates above 10% are not associated with reductions in maternal and new-born mortality rates at the population level (WHO, 2015[51]). Brazil is one of the leading countries

for these types of intervention. In 2019, birth via C-section accounted for 56% of all life births in Brazil with some significant variation across the country – ranging from 35% in the Northern state of Roraima to 67% in the Central-Western state of Goiás (Secretaria de Vigilância em Saúde, 2021[52]). The share in Brazil is above that of any OECD country and more than twice the OECD average (Figure 3.12). In many European countries and Israel, the proportion is below 20%. The high and growing number in Brazil suggests that other factors than medical indication play an important role in the decision making of delivery. This may be due to cultural differences in patient expectations, availability of midwives and nurses, medical practice but also financial incentives for health providers. There is also some international evidence that private hospitals tend to perform more caesarean sections than public hospitals (OECD, 2019[8]).

Figure 3.12. Caesarean section rates, 2019 (or nearest year)



Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; Secretaria de Vigilância em Saúde (2021[52]), "Painel de Monitoramento de Nascidos Vivos", svs.aids.gov.br/dantps/centrais-de-conteudos/paineis-de-monitoramento/natalidade/nascidos-vivos/.

Reducing the C-section rate is an objective in Brazil and included in the National Health Plan 2020-23. Some OECD countries have also taken measures to address the trend of increasing C-sections. In Australia, for example, a number of states have developed clinical guidelines and required reporting of hospital caesarean section rates, including investigation of performance against the guidelines. These measures have discouraged variations in practice and contributed to slowing down the rise in Caesarean sections (OECD, 2019[8]). A few countries including France, the United Kingdom and Korea have introduced financial incentives to reduce the use of unnecessary caesarean sections, for example by reducing the price gap or aligning the prices between normal delivery and C-section that hospitals can charge (OECD, 2014[53]). Brazil should consider these regulatory options to curb down C-section rates but could also intensify efforts to raise awareness of this issue among young women.

More generally and going beyond C-sections, encouraging patient-provider conversation about whether certain treatments are adequate can be one way to reduce low value care. This is the focus on the *Choosing Wisely*® campaign, an initiative led by clinicians that began in the United States in 2012 and which has since then spread to several other countries, including Brazil (OECD, 2017[24]). This initiative provides an evidence-based list of "do not do's" across multiple medical specialties to help identify inappropriate care that is of little value to patients. The recommendations included in these lists cover many different clinical areas, for example under which conditions expensive imaging test for lower back pain are unjustified or when antibiotics should not be prescribed.

An important tool to improve health care quality and reduce unnecessary care is the establishment of evidence-based clinical practice guidelines and monitoring their compliance. Recent research suggest that while important progress has been made in Brazil in the development of these guidelines in recent years,

many still lack transparency and methodological rigour and do not necessarily follow international standards (Colpani et al., 2020[54]). High geographical variation in medical practices in a country can signal inefficient care provision and low adherence to clinical guidelines. To monitor variation in health care activity that may not be medically justified, many OECD countries including Australia, Canada, the United Kingdom and the United States have developed atlases (OECD, 2017[24]).

3.5.5. Access to medication can be problematic in Brazil

SUS provides access to a range of essential medicines based on a positive list (known by the acronym 'Rename') which is updated annually after assessment by CONITEC once financing is agreed upon by the tripartite commission (CIT).[19] The 2020 list includes 921 items financed by the three levels of government.

These medicines are clustered into various groups according to the financing mechanism applied. The 'basic component' of pharmaceutical assistance (CBAF) covers medicines and other medical inputs for conditions related to primary care. The 'strategic component' (CESAF) refers to pharmaceuticals for control of specific diseases that have a potential endemic impact, frequently related to situations of social vulnerability (e.g. tuberculosis, malaria, HIV). The 'specialised component' (CEAF) covers medications used to treat more specialised clinical conditions, mainly high cost chronic illnesses. The CBAF medicines are co-financed by all three levels of government. The federation makes transfers to the municipalities based on population size, adjusted for the human development index of the municipality. States and municipalities also have to contribute to this programme. Purchase and dispensing are the responsibility of the municipalities (Ministry of Health, 2019[55]). CESAF pharmaceuticals are purchased by the Federal Ministry of Health and distributed to the states, who, in turn, are responsible for dissemination across their territories (Ministry of Health, 2019[55]). The financing of CEAF medicine is more complex as they are subdivided into three groups, of which some are exclusively financed by the federation, some only by the states, and some by all three levels of government (Ministry of Health, 2019[55]).

There are several dispensing channels for medication in Brazil, mainly public and private pharmacies. Since 2004, the *Farmácia Popular* programme provides access to free and subsidised pharmaceuticals under SUS. Under this programme, people can obtain medication for hypertension, diabetes and asthma without cost-sharing. For some other pharmaceuticals, for example to treat dyslipidaemia, Parkinson's disease or osteoporosis, co-payments are required, with governmental subsidies set at 90% of the reference price. More than 31 000 pharmacies (including private pharmacies) in 79% of municipalities participate in this programme and the programme has shown to reduce hospital admissions and mortality due to hypertension and diabetes (OECD, 2015[25]). Beyond the *Farmácia Popular* programme – and depending on the municipality – patients may also obtain pharmaceuticals from their basic health care units (free of charge) or from private pharmacies (at their own costs).

Despite the diversity of distribution channels and the comprehensiveness of the positive list of essential medicines under SUS, there are problems in accessing medications in Brazil. Results of the 2019 Health Interview Survey highlighted that 15% of those who received a prescription for medication during their last medical consultation were not able to obtain all prescribed items (IBGE, 2020[3]). The survey also provides information on where people obtained their medication. Interestingly, on average, only around 30% of all people who were issued a prescription at their last medical visit used the public service (IBGE, 2020[3]), ranging from 42% among the poorest population group to 7% among the well-off. This low proportion of public service use among the poor is remarkable as it could suggest that they resort to private pharmacies (at their own expenses) to acquire their medication due to lack of alternatives. This conclusion is in line with previous research on this topic. Comparing prices, affordability and availability of 50 essential pharmaceuticals in Southern Brazil, Bertoldi et al. found less than expected public sector availability of generics or '*similares*'[20] requiring patients to go more frequently to private pharmacies where medication is more readily available, but prices higher (and not covered by SUS) (Bertoldi et al., 2012[56]). In addition, their research stressed that prices in Brazil for brands, generics and '*similares*' were higher than

international reference prices. Thus, poor availability in public facilities and comparatively high prices help explain why pharmaceuticals comprise the largest share of out-of-pocket spending in Brazil (see Section 3.2), albeit being theoretically covered under SUS.

Accessing medication can be an issue in Brazil and better procurement may help

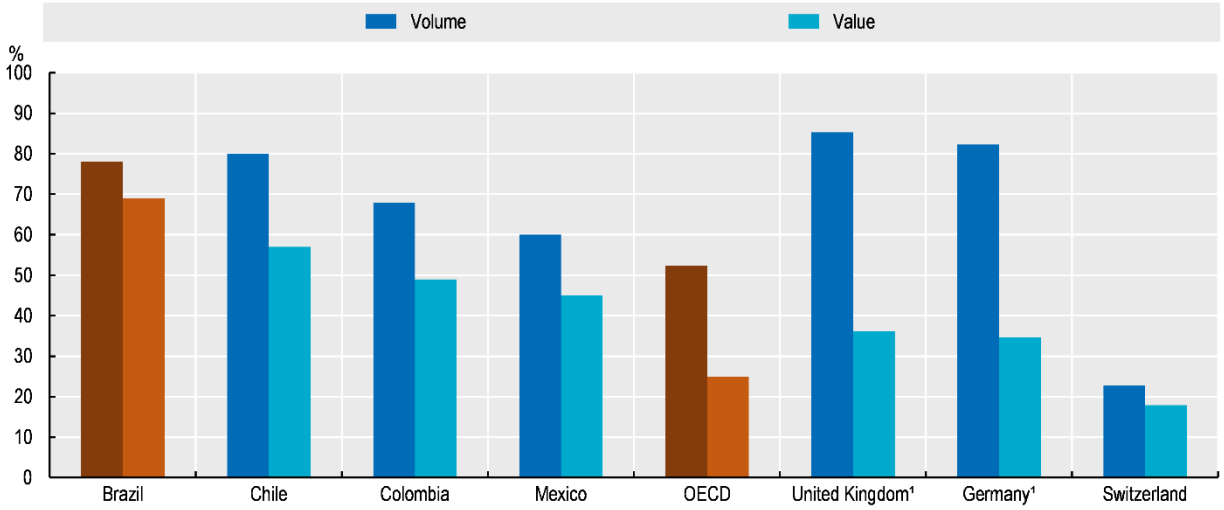
Given the size of the country, ensuring access to essential medicines at all times for everyone is a logistical challenge in Brazil. However, the way purchasing is organised may exacerbate this problem and there appears to be some room for efficiency gains. While making municipalities responsible for procurement for 'basic' medication (CBAF) may allow them to better respond to local population needs, it also leads to a higher degree of fragmentation of the purchasers market. With one-fifth of municipalities having fewer than 10 000 inhabitants, many do not have the capacity to adequately engage in such a complex activity and lack the size to be in a strong position to negotiate prices with manufacturers. While many 'purchaser consortia' among municipalities (and even states, for specialised medications) exist, pharmaceutical procurement responsibilities for SUS pharmaceuticals could be reconsidered all together. For medication in the CBAF category, procurement could be generally delegated to states or the federation. Alternatively, Brazil could develop national negotiations or public bidding processes for CBAF medicines on a federal level where municipalities would purchase directly medicines from (nationally) contracted manufactures for the (nationally) agreed price. Procuring pharmaceuticals in the largest possible quantities to achieve economies of scale – both in centralised and decentralised health systems- is among the principles of good pharmaceutical procurement of WHO (WHO, 1999[57]). These principles also highlight that the performance of local procurement should be monitored closely as decentralisation may threaten the appropriate selection of drugs, and the potential for discounts through bulk purchases, quality assurance and accountability. The Brazilian Federal Court of Account also sees decentralisation as a challenge for pharmaceutical procurement and has issued some guidelines to improve purchasing for the different levels of government (Tribunal de Contas da União, 2018[58]).

There is room for greater use of unbranded generics

Medical goods (including pharmaceuticals) are a substantial cost component of overall health spending in Brazil (20%) and can be a financial burden for both governments and people. Generally, the development of generic markets is an opportunity to increase efficiency in pharmaceutical spending. Underutilisation of generic drugs can be a substantial source of inefficiency as generics have the same therapeutic effects as branded alternatives but are typically much less expensive.

In Brazil, the development of the generic market has progressed rapidly since the Generic Medicines Law was passed in 1999. The law required tests for bioequivalence of generic products for marketing authorisation that made the requirements for market entry in Brazil relatively strict compared to those in other Latin American countries (Massard da Fonseca and Shadlen, 2017[59]). The legal change led to a decrease in the market share of originator drugs and price reductions for originator products and '*similares'* (which already existed before 1999) in the ten years following the introduction of this law (Bertoldi et al., 2019[60]). In 2019, the generic market share in the retail market in Brazil stood at 78% by volume, well above the OECD average of 52%, while at 69% of all retail pharmaceutical sales by value, which was nearly three times the OECD average (26%) (Figure 3.13). However, it is important to note in this context that the majority of the generics used in Brazil -as in most Latin American countries- are *similares*.[21] *Similares* are copies of off-patent products using a trade name instead of the name of the molecule. In Brazil, most *simliares* can be understood as 'branded generics' as they have to prove bioequivalence for renewal of registration since 2003 (this is not necessarily the case in other Latin American countries). Their prices are usually higher than those of non-branded generics. In contrast, in OECD countries, branded or unbranded generics do not make a major cost difference, mainly because health systems provide coverage for them irrespective of this classification. This also implies that price differentials between originator and generic medicines (including branded) are smaller in Latin American countries than across the OECD.

Figure 3.13. Volume and value share of generics in the retail pharmaceutical market, selected countries



Note: 1. Refers to the reimbursed pharmaceutical market.
Source: OECD (2019[8]), *Health at a Glance 2019: OECD Indicators*, https://dx.doi.org/10.1787/4dd50c09-en; OECD/The World Bank (2020[61]), *Health at a Glance: Latin America and the Caribbean 2020*, https://dx.doi.org/10.1787/6089164f-en.

While the use of unbranded generics is relatively high in Brazil compared to other Latin American countries (OECD/The World Bank, 2020[61]), there appears to be some scope to rein in pharmaceutical spending. In a comparison of prices for pharmaceuticals in six Latin American countries between 2010 and 2015, Álvarez and González found that, on an aggregate level, those seen in Brazil were higher than those in Argentina, Chile, Colombia, Mexico and Peru, for both ex-manufacturer and retail prices (Álvarez and González, 2020[62]). This ranking is confirmed when looking at prices for unbranded generics. Above-average international prices for unbranded and branded generics in Brazil were also found by Bertoldi et al. (Bertoldi et al., 2012[56]). Earlier research suggests that generic prices (branded and unbranded) in Brazil were above those seen in the United States, France and Spain and on the same level as in Canada and in the United Kingdom (Danzon and Furukawa, 2008[63]). The comparably high prices for generics may partly be explained by the way prices are set. While a generic drug entering the market needs to be at least 35% below the price of the originator product, there are no regular price updates required once authorisation is issued (Bertoldi et al., 2019[60]). As a result, the price of a generic may actually exceed that of the originator drug. Moreover, the 35% difference is not applicable to branded generics (Bertoldi et al., 2019[60]), and prescriptions for branded generics are currently exempt from substitution to unbranded generics (Massard da Fonseca and Shadlen, 2017[59]).

More regular revisions of maximum prices of generics and increasing the scope of substitution to include *similares* with proven bioequivalence could be ways for Brazil to rein in overall pharmaceutical spending and improve affordability among disadvantaged population groups. Expanding campaigns to educate prescribers and patients on the interchangeability of generics could also be an option since studies suggest that there is lack of confidence in the quality of generics and confusion how to differentiate between originator, *similar* and generic products (Massard da Fonseca and Shadlen, 2017[59]). The government tried to address this in 2014 by proposing to add the label “EQ” to the packaging of interchangeable products, also hoping that this would increase competition and thereby reduce prices. Yet this proposal was not enacted, giving in to industry concerns that the “EQ” symbol would send a message to patients to ignore branded medicines (Massard da Fonseca and Shadlen, 2017[59]).

3.5.6. Brazil will face a challenge to cope with future long-term care needs in the context of an ageing society

Brazil will go through a fundamental demographic transition in the next decades that will have an impact on the health and social system. By 2050, the share of the population being 65 years or older is projected to rise to 21.9%, the proportion of the elderly with 80 years or more to 6.5% (OECD, 2019[8]). This transition will not only increase the number of patients with chronic conditions such as diabetes but will also raise the number of people with long-term care needs – i.e. those who need help to perform activities of daily living (ADL) and/or instrumental activity of daily living (IADL).[22] Even now, these needs are already visible in Brazil. According to the 2013 Health Information Survey, 6.8% of the elderly had functional limitations that require ADL support while 17.3% needed help with IADL (Ministerio da Saúde, 2018[64]).

Reviewing the evidence of long-term care policies in Latin-America and the Caribbean, a report by the Inter-American Development Bank finds that comprehensive long-term care policies in the region are basically non-existing at the moment, with very limited regulation or public provision of long-term care services (Bloeck, Galiani and Ibarrarán, 2017[65]). To satisfy the long-term care needs of the elderly and dependent population groups, Brazil mainly relies on informal care provision by family members and relatives. The formal long-term care sector in Brazil is still underdeveloped and fragmented. The Ministry of Health is responsible for elderly health and has developed a National Health Policy for the Elderly (PNSPI) in 2006, with the priority to promote, maintain and recover the autonomy of elderly in the context of comprehensive primary health care. However, recent research suggests that the implementation of this policy still faces a number challenges in municipalities including lack of specific actions, limited accessibility and lack of training for health professionals (Damaceno and Chirelli, 2019[66]). The Ministry of Citizenship (formerly Ministry of Social Development), on the other hand, is responsible for policies regarding long-term care facilities ('*Instituição de Longa Permanência para Idosos'*) but the role of the state in this area is limited to providing shelter for the poor (Ministerio de Saúde, n.d.[67]). A survey from 2009 found more than 3 500 registered residential facilities with around 100 000 residents representing around 1% of elderly population. Two-thirds of the facilities were run by non-profit organisation and only 7% were public. On average, only 20% of costs were covered from public financing with most of the remaining part by patients themselves (Garcez-Lemell and Deckers Lemell, 2014[68]).

Experiences from OECD countries highlight the value of a comprehensive strategy to meet the increasing long-term care needs by moving towards more formal care provision. A key element of such a strategy would be to reduce the reliance on family members to provide care. Sustaining such care arrangements will become increasingly difficult in the future with shrinking family size and growing labour force participation by women. These informal care arrangements also hamper economic growth and are associated with an increased negative impact on mental health of caregivers.

The models how professional long-term care at home are organised differ across OECD countries. In many cases, care professionals will be employed with dedicated home help providers that focus on the support with ADL, IADL and medical nursing care. Depending on the country, these providers may be managed by municipalities, non-profit organisation or private enterprises. For people with severe long-term needs or who lack an appropriate environment to be cared for at home, OECD countries attempt to provide a sufficient number of beds in residential long-term care facilities. These care arrangements can take different forms depending on the activity limitations of the elderly, ranging from assisted living facilities where care assistance is available on-sight to nursing homes that allow for 24-hour care provision for people with the severest form of activity limitations.

To ensure that these services are accessible to those with needs, the bulk of the cost of long-term care provision in OECD countries is financed by the government or social insurance schemes. On average, OECD countries allocated around 1.5% of their GDP (or the equivalent of USD 760 per capita) to long-term care in 2018 of which nearly four-fifths were covered by public schemes (OECD, 2020[69]). Yet, in some countries, important gaps in long-term care coverage still remain and recent research by the OECD

highlight that the high costs for care can represent a significant financial burden for people with long-term care needs (Oliveira Hashiguchi and Llena-Nozal, 2020[70]).

Transitioning towards more formal long-term care provision will take time and is resource-intense but remaining unprepared for the demographic shift will be more costly in the long-run. Most OECD countries have used a phased approach by gradually introducing and increasing public long-term care benefits. Taking inspiration from developments in Chile, a first step for Brazil could be to better support family carers (with better training and respite care opportunities) while at the same time expanding day care facilities and rolling out home care. As a transitionary method to meet long-term care needs in Brazil, conditional cash transfers or vouchers for dependent people could be introduced, with which they can purchase LTC services from the public or private sector. In some OECD countries cash benefits allow beneficiaries to either purchase professional services or pass them on to their informal care-givers. However, when using these types of benefits, it should be monitored that it does not negatively affect labour force participation by women. At any rate, as a starting point, long-term care benefits should be more explicitly defined in Brazil with eligibility criteria based on ADL/IADL needs assessments, and the responsibilities between the Ministry of Health and Ministry of Citizenship should to be clarified.

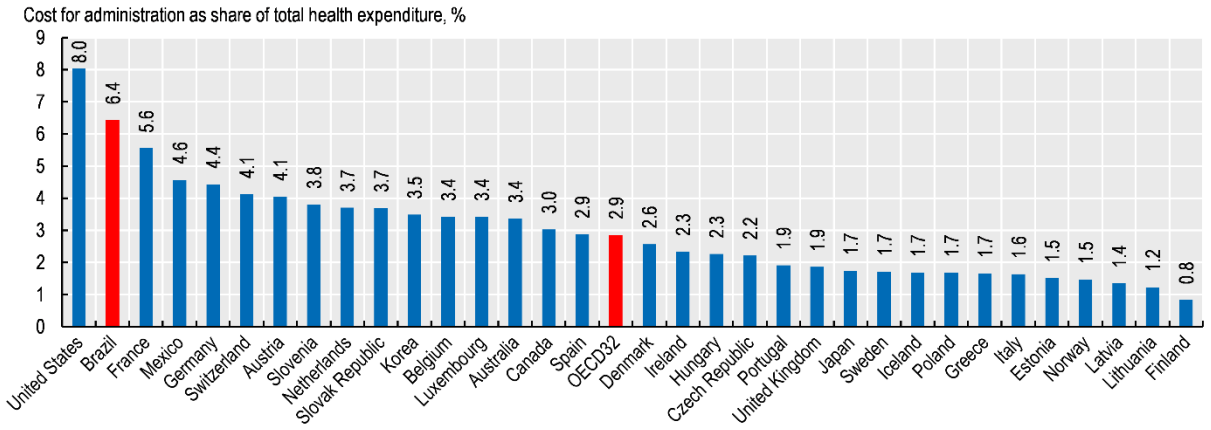
3.5.7. Administration and governance of the system is complex and costly

As could be seen throughout the chapter so far, the administration and governance of the Brazilian health system is complex and resource-intense. Within the public sector, the management, planning and financing of SUS is shared across the three levels of government requiring extensive co-ordination across actors. This refers both to vertical co-ordination as seen by the tripartite inter-management committee (CIT) and the bipartite inter-management committees (BIT) on a state level but also to horizontal co-ordination between states (e.g. with the National Council of State Health Secretaries CONASS) and municipalities (e.g. with the National Council of the Municipal Health Secretaries CONASEMS). In addition, the Health Pact of 2006 has introduced new entities charged with institutionalising service delivery planning on a more regional level – the “health macroregions” (*Macrorregiões de saúde*) and the “health regions” (*Regiões de saúde*). These are composed of various neighbouring municipalities supported by the states. Moreover, there is also a huge number of standing bodies to safeguard civil society participation in all three levels of government, such as health conferences and health councils. In addition, there is a highly developed private sector – both from a payer and provider perspective – which adds to the complexity of governance but also health service delivery. While it is obvious that attempting to provide equitable access to high quality health care in a country such as Brazil – characterised by cultural diversity, a large geographic division and high social inequalities – requires substantial co-ordination, there appear to be some areas where administration could be streamlined and governance strengthened to improve effectiveness or costs reduced.

The administration of the complex Brazilian health system comes at a cost

The complexity of the management of the SUS and the strong role of the private health insurance market in Brazil results in a very high share of resources needed to administer the health system. In total, more than 6% of current health expenditure is used for governance and health system and financing administration.[23] This share is higher than in nearly all countries of the OECD and more than twice its average (Figure 3.14). The fact that Brazil has an important private health insurance market explains partly why the country ranks very highly in an overall comparison since private health insurance is typically associated with much higher administrative costs than public schemes (OECD, 2017[24]). However, what is surprising in the case of Brazil is that for government schemes the share of administrative expenses is also substantial, standing at 5.7% of total government health expenditure. Other countries with mainly tax-financed system and residence-based entitlements such as the United Kingdom, Italy or the Scandinavian countries dedicate a much smaller proportion of their resources to the administration of the health system. A reasonable hypothesis why the share in Brazil is so high is that it reflects the complexity of SUS.

Figure 3.14. Costs for administration as share of current health expenditure, 2019 or nearest year



Note: Costs for administration only refer to governance, health system administration and financing and exclude administration costs that occur in particular health providers such as hospitals.
Source: OECD Health Statistics (2021[1]), https://doi.org/10.1787/health-data-en; Ministry of Health of Brazil 2021.

It should be made clear that expenditure for governance and health system and financing administration are not bad *per se*. Stewardship and oversight are needed to make sure that services are provided safely and effectively throughout the country. However, countries with high administrative costs should carefully weigh if they obtain corresponding benefits in return. In the case of Brazil, this is not obvious. It rather seems that the joint responsibilities across all three levels of government in the management of SUS contribute to a situation characterised by unnecessary complexity, redundant tasks and a lack of clarity and accountability. Moving forward, Brazil should map out and evaluate critically all processes related to the management and planning of SUS at all levels of government. This can contribute to identifying superfluous administrative procedures, can help streamline competencies for each level of government and can be the starting point for discussing changes in governance and responsibilities across the levels of government to increase efficiency and accountability in SUS. In that context, Brazil should also carefully review data requirements for improved service delivery planning in SUS. While existing knowledge gaps that have been identified should be addressed (Chapter 4), there also appears to be disconnect in the country between data availability and data usage by planning authorities and decision-makers. Improving data exchange and communication can prevent that Brazil becomes “data rich but information poor”.

Stronger focus on regionalised planning can overcome some inefficiency barriers

A key topic when reviewing management responsibilities in SUS is the role of municipalities. They are important actors in the financing and management of SUS as well as in service delivery planning in line with the principle of “decentralisation” on which SUS is based on. Yet the size of municipalities differs vastly across the country, which affects the capacity of municipal health officers to effectively organise and manage SUS. The existence of many small municipalities raises the question whether some of the SUS functions should not better be delegated from a local to a regional level.

The need for better regional co-ordination to improve service delivery planning has been realised in Brazil with the Health Pact of 2006 and with Law 7 508 of 2011. The latter provides guidelines for the establishment of “health regions” which are composed of a varying number of (neighbouring) municipalities within states. These “health regions” are defined in the multi-annual state health plan and have to combine at least primary care, urgent and emergency care, psychosocial care, specialised outpatient and hospital care and health surveillance. To organise care of medium and high complexity the regions should organise themselves in “macroregions”.[24] On paper, it appear that the installation of such health regions can be a

powerful tool to improve care co-ordination and efficient service provision and also facilitate the operation of health care networks. However, as of now, it does not seem that regionalisation has shown its full potential. One problem appears to be that these entities have no decision-making power, budget authority or human resources and rely entirely on municipal and state support. There may also be reluctance among state and municipality officials to delegate financing and planning competences to the health regions for fear of loss of influence. However, the strengthening of the roles and responsibilities of health regions appears to be a vital element to improve SUS performance.

Access to health services through courts are a drain on available resources

A specific challenge to the Brazilian health system is the fact that a high number of people resort to the judicial system to access health care at the expense of SUS.[25] This is the case when people who have prescribed treatment or pharmaceuticals denied to them, invoke the Federal Constitution which stipulates that "…health is a right for all and duty of the state". These so-called "judicialisations" have been growing constantly for many years and represent a considerable drain to the scare resources of SUS. Between 2010 and 2015, federal spending based on judicial decisions increased tenfold, reaching BRL 1 billion (Tribunal de Contas da União, 2017[71]) or roughly 1% of the federal health budget, mainly related to access to high cost medicine.[26] At the state level, the aggregated costs for these cases seem to be even higher (Tribunal de Contas da União, 2017[71]).

Getting access to health care services, which are not deemed cost-effective based on judicial interventions, however, is problematic, both, from an efficiency and equity perspective. It is an inefficient use of resources because it complicates priority setting in health and runs against the purpose of HTA conducted by CONITEC. As an example, based on court rulings, a substantial amount of "judicial spending" in 2014 went on the drug Soliris®, which had not been granted market authorisation at the time and where annual treatment costs are estimated to be over BRL 1 million per person (Tribunal de Contas da União, 2017[71]). In addition, the high and growing number of court cases also put a strain on the judicial resources. By the end 2018, all pending health related court cases at all court levels in Brazil (including the "judicial cases") amounted to over 2.2 million (Vieira, 2019[72]).[27] Beyond preventing an efficient use of resources based on criteria such as cost-effectiveness, "judicialisation" is also a problem from an equity perspective since those who get access to health care based on court rulings are typically those who are able to pay for legal fees or know how to navigate the legal system – mainly the rich and the better educated.

For international observers, the magnitude of the problem and the fact that judges give favourable rulings for access to experimental treatment for not authorised medication on a regular basis seems puzzling, especially since the establishment of CONITEC was an important achievement for the Brazilian health system.[28] By doing so, judges become de facto co-managers of the health budget. The Ministry of Health is also concerned about the rise in 'judicialisations' and has taken a number of measures to help judges make an informed decision. For example, a co-operation agreement was signed with National Council of Justice (CNJ) with the objective to provide advisory services to the different competent courts in the judicial system. While the legal system can play an important role in guaranteeing universal health care in many countries, courts in OECD countries typically do not systematically bypass standardised HTA processes but rather hold HTA agencies to account in case they find flaws in the assessment processes. A change in the judicial culture in Brazil seems critical for a solution to this problem. A recent analysis of judicialised court rulings finds that the establishment of CONITEC had little impact on courts' tendency to rule in favour of patients (Wang et al., 2020[73]). In most cases, CONITEC decisions were simple ignored and not even cited in the ruling decisions. Making the concept of cost-effectiveness in the provision of SUS more explicit could also be an option to reduce the size of the problem but critics would argue that the current legal framework is already sufficient to reign in 'judicialisations'.[29]

Budget issues prevail at federal and other government levels and raise questions whether they can accommodate changing priorities

The overall resources available to finance activity of SUS is decided on the three levels of government taking account of the relevant laws and constitutional amendments which, on the one hand, define the minimum spending floor for each governmental entity but, on the other hand, limit annual federal public spending growth to inflation. On the federal level, the overall budget is generally perceived as very rigid with 93% of spending mandated by law either through earmarking, indexation or mandatory spending floors (OECD, 2020[11]).

The executed federal budget on health in 2018 stood at around BRL 121 billion, financing around 42% of all SUS expenditure (SIGA Brasil, n.d.[74]). Due to the decentralised nature of the management of SUS around two-thirds of federal health spending refers to transfers to the states and municipalities to purchase health care goods and service. Most of these transfers are directed towards municipalities. Since 2007, the federal transfers are structured around six financing blocks (primary care, medium and high complexity hospital and outpatient care, health surveillance, pharmaceutical assistance, SUS management and investment), including subcomponents, with the individual transfers being determined by population size but for some blocks, such as primary care, other factors reflecting difference in needs also play a role. While some flexibility in the use of funds has been allowed for over the years, there is an issue at state and municipality level to reallocate earmarked federal funds for other purposes (dos Santos and de Luiz, 2016[75]). The current budgeting practice is also not conducive to the envisaged roles of the health networks and it is difficult to see how 'health regions' or 'macro regions' can play a bigger part in planning in the current environment without having some sort of budget autonomy.

More budget flexibility would make it easier to pursue policy priorities. In addition, there is a wide-spread use of amendments to the federal budget by parliamentarians as a tool to increase spending in their constituency. This practice undermines spending efficiency and transparency and makes local authorities depend on members of congress (OECD, 2020[11]). These spending items are also typically not audited. The fiscal implications of these amendments have been growing in recent years, with spending commitments reaching BRL 12.9 billion in 2019 (Portal da Transparência, 2019[76]). More than half of the committed amount stem from amendments in the area of health (BRL 6.7 billion) mainly for primary care or care in hospitals.

Substantial resources are diverted from health service delivery

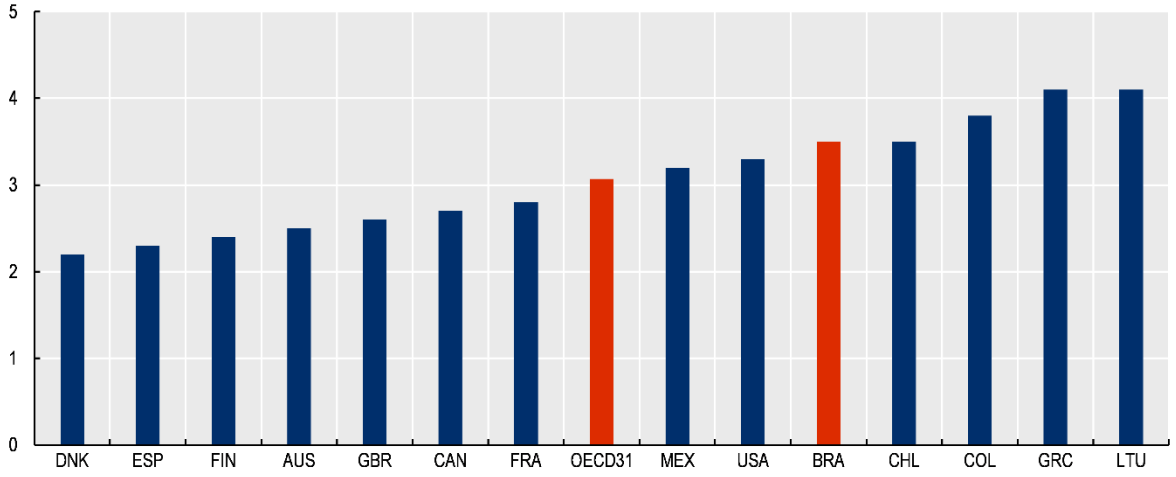
The intentional misuse of funds and corruption is commonplace to differing degrees around the globe in many areas of public life and Brazil is no exception. In fact, Brazil had some major corruption scandals involving prominent public figures in the last decade. In 2020, Brazil ranks 94th of 180 countries in the perceived level of public sector corruption,[30] much lower than nearly all OECD countries (Transparency International, 2020[77]). When it comes to health care, fraud and the diversion of funds can take different forms. Health providers and professionals may bill services to purchasers that they did not deliver, system managers may contract health providers at artificially high prices or divert health care goods for their own benefits and patients may offer bribes for health providers or professionals to 'jump the queue' for quicker treatment. This practice is problematic for a number of reasons. It is inefficient spending, frequently creates equity issues and undermines the trust of people in the public health system. In 2013, corruption in health was perceived to be more widespread in Brazil than on average across OECD countries (Figure 3.15). It was similar to the United States and Chile, but below Colombia, Greece or Lithuania (Transparency International, 2013[78]). On the other hand, it was much higher than in Denmark, Spain, Finland or Australia.

Since information on illegal activity its patchy at best, it is very difficult to quantify the problem. When looking at the population willing to engage in integrity violations, 5% of Brazilians reported having paid bribes in public clinics and health centres within 12 months in 2019, down from 7% in 2017 (Transparency International, 2019[79]). Among Latin American and Caribbean countries, this was a very low share.

However, misuse of funds does not necessarily require the patient. Recent research estimated the total costs of fraud, corruption and misuse of funds in the health sector in Brazil to be around BRL 14.5 billion or 2.3% of total health spending (Instituto Ética Saúde, 2020[80]). Due to its complex nature that involves many actors at different levels of government, the misuse of fund may be more difficult to detect in SUS than in other health system. Indeed, in a 2017 report, the Federal Court of Accounts highlighted important deficiencies in the National Auditing System of SUS as an oversight instrument in municipalities and states (Tribunal de Contas da União, 2017[71]). It also noted that 55% of the federative entities that were audited did not implement SUS' internal auditing component.

Figure 3.15. Perceived level of corruption in medical and health, 2013, Brazil and selected OECD countries

Level on a scale of 1 to 5; where 1 means not at all corrupt, 5 means extremely corrupt



Source: Transparency International (2013[78]), Global Corruption Barometer 2013", https://www.transparency.org/en/gcb/global/global-corruption-barometer-2013.

Brazil tries to address these issues. For example, to detect misuse of public funds the Comptroller General in Brazil conducts a substantial number of special audits each year. Between 2002 and 2018, the funds associated with irregularities amounted to BRL 23.8 billion, of which 28% (BRL 6.6 billion) were under the remit of the Ministry of Health (Controladoria-Geral da União, n.d.[81]).

There are different policy levers used in OECD countries to mitigate integrity violations in health addressing the different stakeholders (OECD, 2017[24]). One response is primarily organisational in the sense that it involves assigning responsibilities for detecting or tackling integrity violations in service delivery and financing to specific institutions. Depending on the country, these can be dedicated central or government programmes or institutions, or these responsibilities are delegated to public or private payers. In some instances fraud detection is very pro-active going beyond simple audits. The Belgian National Institute for Health and Disability Insurance, for example, uses data mining to detect integrity violations in service delivery and payment. To tackle inappropriate business practices, countries' responses are typically regulatory in nature and consist of limiting or banning certain practices. The main domains where some countries have introduced regulation seek to limit self-interested referrals by health providers and the means by which the pharmaceutical industry is allowed to promote sales – including Sunshine regulations.[31] In the last 15 years, a number of countries introduced specific and comprehensive legislation, notably France, Portugal, the Slovak Republic and the United States.

More clarity about the role of the private sector can improve health system performance

Traditionally, Brazil has an important private health sector predating the inception of SUS and the Federal Constitution of 1988 warrants the continuation of private service delivery and private health insurance. Private providers play a vital role to ensure access for SUS patients, in particular for inpatient care. In addition, private organisations are contracted to manage public hospitals or other facilities, and private health insurance can 'supplement' SUS coverage. However, the co-existence between a public and private sector is not without friction and can be a source of inefficiency.

Private "social organisations" (OSS) have become a popular tool among some SUS managers to operate public health facilities. By contracting out the management of a health facility to a private company, this option gives more flexibility in hiring staff. Some studies highlight that public facilities under OSS management have more activity or provide services at lower costs than those under direct management (World Bank, 2017[26]), but other research cannot rule out some selection bias when finding that OSS operate more efficiently (Tribunal de Contas da União, 2020[46]). However, OSS contract management seems to be challenging for SUS manager as audit courts have frequently highlighted the insufficiency of monitoring mechanism (dos Santos and Servo, 2016[82]).

The fact that some private hospitals treat SUS patients and private patients simultaneously can lead to reduced access for public patients and associated equity issues. This happens when hospitals (or hospital doctors) receive higher payments when treating private patients. Access problems for public patients were the reason why Ireland introduced a ban on this practice and promoted the clear separation between hospitals that treat public patients from those that treat private patients (Mueller and Socha-Dietrich, 2020[38]). One way to address this issue would be to define a fee schedule that is applicable to all payers. This is the case for example in Germany, where for inpatient treatment the DRG tariffs are identical for public and private patients and applied regardless of whether they are treated in public, private for profit or non-for-profit hospitals.[32]

The well-developed private health insurance market in Brazil has some peculiarities which distinguishes it from those in OECD countries. It provides mainly duplicate insurance to SUS coverage but de-facto it is used by many as a substitute insurance for SUS as the range of services covered by private plans can be extremely wide. This unclear role of private health insurance is accentuated by the fact that SUS can demand under certain conditions reimbursement of costs from private insurers in case patients use SUS services instead of their private insurance coverage ("*ressarcimento ao SUS*"). This is unusual compared to OECD countries with a tax-financed system and duplicate insurance. Brazil could benefit from an open discussion to clarify the role private health insurance should play within the health system. As already mentioned, the generous tax subsidies are highly regressive. Moreover, the co-existence of SUS and private insurance is also problematic for care integration. So far, there is very little communication or data exchange between providers (or schemes) in case patients move between treatment under SUS and private coverage. The introduction of a unique patient identifier and interoperability health records between SUS and private insurance would facilitate the co-ordination of care.

3.6. Conclusion

The implementation of SUS has been a success in Brazil by providing millions of people access to health services who did not have it previously. Yet, with population ageing and the associated raise in the number of patients with chronic conditions, the Brazilian health system will face increasing spending pressures to make sure future health care needs are met, even under the most optimistic scenario. The analysis of the Brazilian health system has shown that a mix of approaches can make health spending in Brazil more sustainable. The bottom line of this analysis is: Brazil needs to rebalance its public-private financing split by devoting more of its public resources to health but it also needs to spend better.

The chapter has shown that the public share in overall health spending in Brazil is very low compared to most OECD countries but an overall increase in government spending is unrealistic in the current economic climate in Brazil. However, a few possibilities exist to make more public spending available for health care without compromising the path towards fiscal recovery. New sources for health spending on the federal level could be generated by reallocating spending from other areas outside health towards SUS. This relates, for example, to adjusting indexation rules for some social programmes and public salaries. In a similar vein goes the proposal to limit the tax expenditure for health. A starting point would be to at least introduce a ceiling for the deductibility of health expenses and private health insurance premium payments from revenues subject to income/corporate taxation (or abolish it altogether). These savings should be reinvested into SUS.

On the other hand, there is a wide scope for potential efficiency gains in all areas of the health system. Ongoing efforts to strengthen primary health care should continue. This refers to the roll-out of the Health Family Teams and to putting primary care at the centre to co-ordinate health service delivery across levels of care. The “health networks” can play an important role in this concept.

Service delivery planning in hospitals should be rethought in Brazil. A high number of very small hospitals mainly in rural area cannot be operated efficiently. It is clear that people need access to acute care services but the question is whether this cannot be organised differently, by turning small hospitals into intermediate facilities and strengthening transport and tele-medicine options. More generally, payment systems for service delivery in hospitals could be reconsidered to incentivise provider performance.

While coverage to essential medicines under SUS is theoretically very broad, obtaining access is an actual issue for many people, also triggering high out-of-pocket costs. Here, the way purchasing is organised or price setting could be reconsidered.

To be better prepared for rising long-term needs associated with an ageing society, Brazil should start invest in more formal long-term care arrangements. Relying on informal workers will be increasingly difficult also hampering economic growth.

An overarching issue that Brazil needs to address is the immense complexity of operating SUS. This is reflected in the very high administration costs. Competences and responsibilities are frequently shared across levels of governments, however, it appears that they are not always clarified which affects accountability. This complexity permeates all levels of health care planning and operation. There seems to be potential to improve on this. One way forward is to increase efforts to implement “regionalisation” in planning. For this to be successful, the scope of the “health regions” could be widened by delegating some responsibilities from the municipalities to them, accompanied with direct funding and resources. Finally, the relationship between the public and private sector should be clarified.

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Notes

[1] Public health financing refers to health spending by health care schemes with automatic or compulsory coverage.

[2] 3% of all health spending in Brazil can currently not be allocated to any financing scheme.

[3] The United States has also an important private insurance market but with the Affordable Care Act, the purchase of private coverage became compulsory as of 2014 (but this mandate was repealed in 2018).

[4] But given that 3% of total health spending can currently not be allocate to a financing scheme, the real share of OOP spending may be higher.

[5] Voluntary private *duplicate* insurance provides health insurance coverage for a range of services that are also available from public coverage but expands the list of (mainly private) providers. *Supplementary* insurance coverage provides access to services not covered by the public benefit package.

[6] Dental services may also be included as one element of the medical insurance policies.

[7] Employers can deduct the premium payments they make from corporate taxation.

[8] The fact that under the "Healthy Ageing" scenario the projected health spending increase is much more limited makes a powerful argument to strengthen public health measures as discussed in Chapter 5 and Chapter 6.

[9] If anything, the COVID-19 pandemic has amplified these challenges.

[10] A recent public spending review of the World Bank has found many more areas where public funds could be used more efficiently (World Bank, 2017[26]) but listing them all here would go beyond the scope of this chapter.

[11] The United States is not considered here since it is difficult to distinguish between compulsory and voluntary private insurance in that country.

[12] There may be some overlap between the two population groups but medical coverage may also include dental coverage depending on the individual plan.

[13] Figure refer to the average value of 2010-14.

[14] Taken together, general outpatient care, dental care, home-based curative care and prevention are classified as "basic care" services in health spending statistics of the OECD. This can be taken as a proxy for primary health care (a more meaningful analysis would also take the location of service provision into account but limitations in international health spending data from Brazil does not allow for this analysis at the moment). At any rate, the international comparison of primary care spending is challenging due to differing notions of what services primary care entail as well as data issues (OECD, 2018[84]). Moreover, since 4% of all health services are unallocated in Brazil the share dedicated to basic care services may actually be higher.

[15] For international comparisons, the number of practicing physicians is typically used. The number of registered physicians is overestimating the number of practicing physicians.

[16] The ratio is calculated by dividing all primary care related consultations per year registered in SUS by the total population. The number of total medical consultations including GPs and specialists and the private sector for SUS users was estimated at 4.0 in 2017 by the Federal Court of Accounts (Tribunal de Contas da União, 2020[16]) with substantial variation across states.

[17] This problem is, however, typically more pertinent in specialist care than in primary care.

[18] It should be noted, however, that in most countries the bottleneck in treating severe COVID-19 cases was the availability of ICU beds, ventilators, oxygen and ICU staff and not regular hospital beds.

[19] In addition, patients have access to pharmaceuticals that are used as part of an inpatient treatment. They are not included in 'Rename' and their costs are covered through the hospital budget.

[20] *Similares* are copies of off-patent originator products that – depending on the country- may be approved without demonstration of bioequivalence and that can be marketed with a brand name. In Brazil, new *similares* have to prove bioequivalence since 2003 and they can hence be considered as branded generics.

[21] In Brazil, in terms of volume, 34% of the market are unbranded generics and 44% branded generics (reflecting 28% and 41% of value, respectively)

[22] ADL refer to activities such as getting out of bed, dressing, personal hygiene and moving around while IADL refer to activities such as shopping, cleaning the house or preparing meals.

[23] This share may in fact even be higher since 4% of all health spending in Brazil are unallocated and may include some administrative activities.

[24] At the moment Brazil has 438 health regions and 118 macroregions.

[25] A high number of judicial cases, however, also exists for care in the private health sector.

[26] Available data for more recent years suggest a decrease in the costs of "judicial spending" for pharmaceuticals in 2017 (Vieira, 2019[72]).

[27] In this context, it should be highlighted that with nearly 1.4% of GDP, Brazil spends between three and six times the resources on its judiciary system than most European countries (OECD, 2020[11]).

[28] Function and processes of CONITEC are similar to those seen by HTA authorities in Australia, Canada and the United Kingdom, countries generally considered as having advanced HTA processes (Lima, de Brito and de Andrade, 2019[83]).

[29] Law 12 401/2011 creates CONITEC and defines its competence. Even Article 196 of the constitution could be interpreted in a way that the "right to health for all" is under reservation, since it also mentions "economic policies" as a lever to guarantee this right. Improving the cost-effectiveness of SUS resources is an example of an economic policy.

[30] With the first place going to the country with the least perceived corruption.

[31] Sunshine regulations consist of requiring that payments made by pharmaceutical and device industries to stakeholders in the health sector be systematically reported to authorities.

[32] Private patients may however pay additional fees for better amenities or visits by the head of department.

4 Health data infrastructure and information system in Brazil

Brazil has launched an ambitious digital health strategy to leverage the potential of digital health data. Remarkably, the country already generates a large amount of digital health data within key national health datasets, but it lags behind OECD countries in data availability, reporting, governance and integration. An objective-oriented roadmap should include guidelines such as strengthening data governance and accountability, improving data collection and data comparability, and supporting evidence-based policy design with real time, linked, and inclusive health data. Health information infrastructure in Brazil could also be enhanced by fuller participation in the international benchmarking initiatives, such as the OECD's System of Health Accounts or Health Care Quality Indicators.

4.1. Introduction

Effectively producing the relevant and timely data on resources, activities, and quality across the health care sector is a major health system objective – a fact that has been exacerbated during the COVID-19 crisis, and the broad use of such data is a key factor for the improvement of health systems performance. Assessing and enhancing the health of populations and the quality and efficiency of health systems relies on the use of high-quality health data that allows measuring, monitoring, and benchmarking. The quality of these data is correlated with the strength and capacity of health information systems and infrastructure, as well as its preparedness to produce regional and national health indicators (OECD, 2013[1]).

Countries across the OECD have differences in data availability, quality, and use. Although all OECD members are investing in the enhancement of their health data infrastructure, some are falling behind due to restrictions that limit access and use of already insufficient data. Better use of data ultimately comes with more advanced and integrated information systems, throughout all service delivery sub-systems in the country (OECD, 2015[2]).

Compared to other sectors, health lags behind in exploiting the potential of data, and digital technology, which could contribute to saving lives and financial resources. Building people-centred, efficient, and sustainable health systems is an objective attainable through the intelligent use of data and digital technologies, which in turn require proper policy action and leadership (OECD, 2019[3]).

Brazil seems to share these challenges, generating the need for an in-depth revision of the health data infrastructure and information system. Some of these challenges are exacerbated due to the continental size of Brazil, with a large geography that technologies needs to reach (e.g. internet, computers), the needs for training of a large number of workers, the different climate zones, and even the highly diverse size municipalities have. Significant gains and insight could be achieved if health information system development is improved, allowing for a more digitalised health system, better comprehension of the cost and effectiveness of medical treatments leading to a reduction in wasteful spending, as well as the reduction in the gaps of intra- and inter-regional health care quality, for example.

This chapter analyses how the Brazilian health data infrastructure and information system is currently designed, together with its limitations. It describes the roles of the most important institutions within the health data infrastructure and information system, the type of data each institution handles, and the sources from which these data are collected. The chapter then compares Brazil's health data development and governance with OECD member countries, as well as data collection and availability gaps. Finally, it assesses Brazil's progress in the development of health data infrastructure and information systems, including policy recommendations oriented to moving towards a knowledge-based people-centred health system.

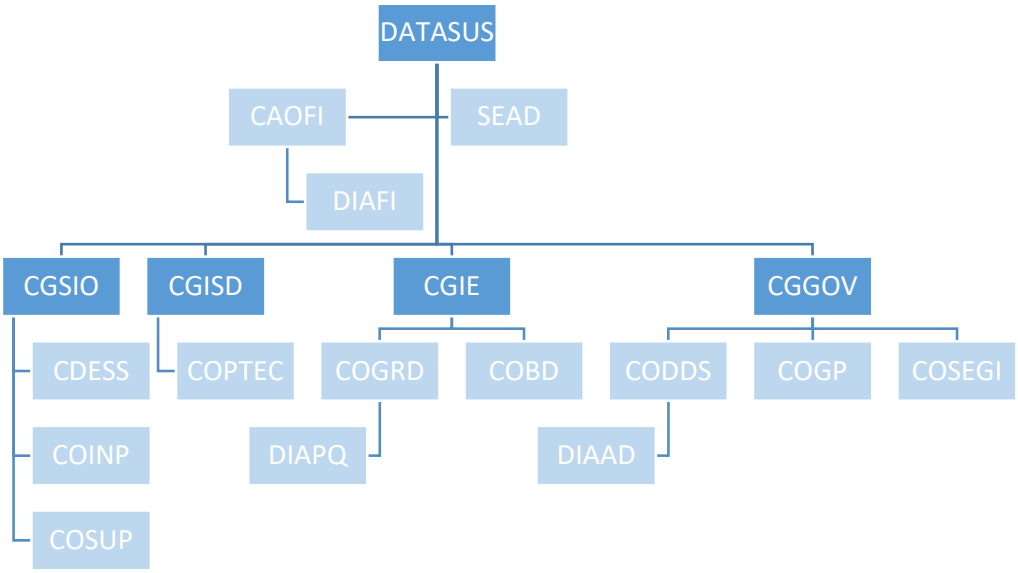
4.2. The Brazilian health data infrastructure and information system

4.2.1. The Ministry of Health has the steering role in the generation of health data and statistics

Intended to provide information systems and IT support to the Unified Health System-SUS, the Department of Informatics of SUS-DATASUS was created alongside the National Health Foundation-FUNASA in 1991, with staff transferred from DATAPREV, the Public Health Services Foundation-*Fundação* SESP, and the Health Campaigns Superintendence-SUCAM. The control and processing of health data fell under the competences of the Ministry of Health, through FUNASA. DATASUS being constituted as an organ of FUNASA with the objective to specify, develop, implement, and operate health information systems related to SUS.

DATASUS was then formally incorporated into the Executive Secretariat of the Ministry of Health, following a process that started in 1998 and concluded in 2002. DATASUS proposes guidelines and implements information and communication technology actions in the Ministry of Health in line with the guidelines and standards defined by the Ministry of Planning, Development and Management-MP, through its Information Technology Secretariat (Ministério da Saúde, 2020[4]). See Figure 4.1 for a more detailed view on the structure of DATASUS.

Figure 4.1.Structure of DATASUS



Note: Acronyms in the DATASUS organigram stand for: CAOFI – Co-ordination of Budgetary and Financial Administration; DIAFI – Financial Administration Division; SEAD – Administrative Support Service; CGSIO – General Co-ordination of Information Systems and Operation; CGISD – General Co-ordination of Innovation in Digital Systems; CGIE – General Co-ordination of Infrastructure; CGGOV – General Co-ordination of Governance and Project Management in Information and Communication Technology; CDESS – Co-ordination of Systems Development; COINP – Co-ordination of Interoperability; COSUP – Co-ordination of Users Support; COPTEC – Co-ordination of Prospecting and Innovation in Information Technology; COGRD – Co-ordination of Network and Datacentre Management; DIAPQ – Division of Technology Complex Administration; COBD – Co-ordination of Databases Management; CODDS – Co-ordination of Health Data Dissemination; DIAAD – Division of Data Analysis and Management; COGP – Co-ordination of Governance and Projects; COSEGI – Co-ordination of Information Security.
Source: Ministério da Saúde (2020[4]), "Plano Diretor de Tecnologia da Informação e Comunicação – 2019 | 2021 (1ª Revisão de 2020)", https://datasus.saude.gov.br/wp-content/uploads/2020May 22052020v5.pdf.

More recently, the Health Information and Informatics Committee-CIINFO was created in 2009 with normative, directive and supervisory functions of the activities concerning health information and informatics systems within the scope of the Ministry of Health. CIINFO co-ordinates and oversees the activities related to health data, information systems and digital governance policy in the Ministry of Health and SUS, and is part of the National Health Information System-SNIS, which is in turn organised by the Ministry of Health. In 2019, CIINFO was redefined in accordance with new national legislation that established the Digital Governance Policy within the scope of the organs and entities of the Federal Public Administration.

In line with these health data and statistics entities, the Ministry of Health is currently undertaking the Digital Health Strategy for Brazil 2020-28, which aims to improve the implementation, applications and benefits of digital health in the country progressively through 2028, having SUS as one of its main pillars. The priorities of this strategy are presented in Box 4.1.

Box 4.1. Digital Health Strategy for Brazil 2020-28

The seven priorities of the Action Plan

1. Governance and leadership for the Digital Health Strategy

Ensure that the Digital Health Strategy 2028 is developed under the leadership of the Ministry of Health and incorporating the active contribution of external actors.

2. Digitalisation of the three levels of health care

Induce the implementation of digitalisation policies for health systems, accelerating the adoption of Electronic Health Records-EHR and hospital management systems as an integral part of health services and processes.

3. Support for improving health care

Make the National Health Data Network-RNDS support the best clinical practices, through services, such as telemedicine and mobile phone applications.

4. The user as the protagonist

Engagement of patients and citizens, to promote the adoption of healthy habits and the management of their health, their family, and their community, in addition to assisting in the construction of the health information systems they will use.

5. Training and capacity building of human resources

Train health professionals in Health Informatics and ensure the recognition of Health Informatics as a research area.

6. Interconnected environment

Allow the National Health Data Network-RNDS to enhance collaborative work in all health sectors so that technologies, concepts, standards, service models, policies and regulations are put into practice.

7. Innovative ecosystem

Ensure that there is an innovative ecosystem, which makes the most out of the health interconnected environment.

Source: Ministério da Saúde (2020[5]), "Estratégia de Saúde Digital para o Brasil 2020-28", http://bvsms.saude.gov.br/bvs/publicacoes/estrategia_saude_digital_Brasil.pdf.

Based on the guidelines of the Digital Health Strategy for Brazil 2020-28, the National Health Data Network-RNDS was enacted as the national health data interoperability platform. Established in 2020 as a DATASUS initiative, it is part of *ConecteSUS*, a programme from the federal government that promotes the exchange of information between the actors of the health care network in Brazil, aiming to allow the transition and continuity of care in the public and private sectors. It is expected that the RNDS will be connected to all 27 states by 2023, through the implementation of virtual cloud containers provided to each state. The General Co-ordination of Information Systems and Operation-CGSIO from DATASUS is responsible for the acquisition, installation and maintenance of these virtual cloud containers (DATASUS, 2020[6]).

4.2.2. Several public entities participate in health data and statistics processes

Linked to the Ministry of Health, and created to regulate the private market of supplementary health insurance, the National Supplementary Health Agency-ANS was enacted in 2000. The Agency is the dedicated public entity that periodically collects and publishes figures on the users, providers, and use of private supplementary health insurance plans, and the different plans that are offered in Brazil. Data on the number and characteristics of users, geographic coverage, incomes and expenses of providers, types of private supplementary health plans offered, and the number of claims and disputes made by the users are amongst the statistics regularly published by the ANS.

Also linked to the Ministry of Health, the National Health Surveillance Agency-ANVISA protects the Brazilian population health through the sanitary control of the production, marketing and use of products and services subject to health regulation. ANVISA is part of SUS as the co-ordinator of the National Health Surveillance System-SNVS. ANVISA regularly collects and publishes data on the receipt and registration of documents related to its scope; import licenses and customs enclosures; budget execution panels; and the price list of medicines. The Agency also envisages to openly publish data that they already collect on pharmacovigilance and food and medicines registries, for example.

Outside the Ministry of Health, other institutions contribute with the collection, publication and analysis of health data in Brazil. One of these entities is the Brazilian Institute of Geography and Statistics-IBGE, which is tied to the Ministry of Economics and is the main provider of data and information in the country, aiming to fulfil the needs of civil society, as well as federal, state, and municipal government agencies. Box 4.2 contains in more detail the different surveys on the health of the Brazilian population performed by the IBGE.

States and municipalities also participate in the process of health data collection. DATASUS has the mission to assist states and municipalities in the digitalisation of activities related to SUS in accordance to the Decree 9795 of 2019 from the Presidency of Brazil.

Box 4.2. Brazilian Institute of Geography and Statistics-IBGE main health-related surveys

Pesquisa Nacional de Saúde – PNS

The National Health Survey-PNS collects information on the performance of the national health system. Access and use of available services and continuity of care is taken into consideration, as well as the health conditions of the population, surveillance of chronic non-communicable diseases, and risk factors.

The most recent version of this survey was performed in 2019 and featured four main topics: perception of own health, risk factors, chronic diseases, and dental health. The survey shows data disaggregated by the following age groups: population aged 18 to 29; 30 to 59; 60 to 64; 65 to 74; aged 75 and over; and total population.

Pesquisa Nacional de Saúde do Escolar – PeNSE

The National School Health Survey-PeNSE determines and measures risk factors on the health of adolescents. There are two target populations: the first sample focuses on elementary school students attending 9th grade; and the second sample on schoolchildren aged 13 to 17 (attending 6th to 9th grade of elementary school and 1st to 3rd grade of high school).

Last performed in 2015, this survey provides information on the basic characteristics of the study population, including topics such as socio-economic aspects, behavioural risk factors, exposure to

accidents and violence, and mental health. The characteristics and infrastructure of the school environment and surroundings are also included in the analyses.

Pesquisa de Orçamentos Familiares – POF

The Family Budget Survey-POF provides information on the composition of household budgets and the living conditions of the Brazilian population. Factors such as their perception of quality of life and their nutritional profile are measured and analysed.

The latest edition of this survey was performed in 2017-18, and in addition to information on expenditure and its components, other dimensions were analysed: income, housing, access to public services, health, and education.

Pesquisa Nacional por Amostra de Domicílios Contínua – PNAD Contínua

The Continuous National Household Sample Survey-PNAD *Contínua* monitors quarterly fluctuations and the evolution of the workforce, and other information necessary for the study of the Brazilian socio-economic development.

On November 2020, the most recent edition of this survey was released; it includes indicators such as the unemployment rate and the average monthly income of the population aged 14 and over.

Sources: OECD (2019[3]), *Health in the 21st Century: Putting Data to Work for Stronger Health Systems*, https://dx.doi.org/10.1787/e3b23f8e-en.

4.2.3. Internet and EHR access is lacking in some parts of Brazil

In 2019, 18% of the Primary Care Centres (*Unidades Basicas de Saude* – UBS) did not report having access to the internet, and 9% reported not having used a computer during the last 12 months (OECD, 2019[3]). Remote locations, indigenous communities and localities with limited access to information and communication technologies-ICT are excluded as a result from health data collection processes in Brazil.

Availability of EHR is also hindered due to the lack of connectivity. Patients require access to the internet and the *ConecteSUS* platform in order to visualise their EHR. As mentioned in Chapter 4 on Digital technology of the Primary Health Care Review for Brazil, an estimated 82% of all health care facilities and 78% of primary health care units had EHR systems in 2019 (CGI.br, 2020[7]). Around 18 000 health care facilities – corresponding to 18% of all facilities and including 12 000 public facilities- did not have an EHR system in place. Of the 50 202 family health teams in the National Register of Health Establishments-CNES, only 62% of its registries were digitalised (Ministério da Saúde, 2020[8]). Adoption of EHR systems was highest in the southern and south-eastern regions at 90% and 83%, respectively, compared to the north-eastern and northern regions at 77% and 74%, respectively. Digitalisation is least advanced in the north-eastern and northern regions, where Brazil's indigenous communities are more commonly based (Ministério da Saúde, 2020[9]). See Box 4.3 on the importance of connecting and digitalising primary care practices.

Box 4.3. A digital transformation can help realise the full potential of primary health care

Digital primary health care is the use of digital technologies to support primary health care (it is a subfield of digital health focusing specifically on primary health care). Digital technologies (or information and communication technologies) are electronic tools, systems, devices and resources that generate, store, process and/or transmit data. Digital technologies include devices such as smartphones and computers, as well as intangible products such as software, platforms and algorithms, and can support primary health care in a variety of ways.

At the centre of digital primary health care is the electronic health record or EHR. The EHR is a longitudinal digital record of an individual patient that contains or virtually links together multiple electronic medical records from different institutions and health care settings. As it contains a history of contact with health care providers from any organisation at any level of care, the EHR plays an essential role in helping primary health care providers co-ordinate care for individual patients.

An EHR that is complete, accurate, up-to-date, comprehensive, and that can be shared, enables a plethora of digital applications in primary health care. An EHR that contains clinical (e.g. medications prescribed), sociodemographic (e.g. employment) and administrative (e.g. insurance) information allows supports many applications, including among many others:

- Targeted alerts and reminders to patients (e.g. for screenings or vaccinations).
- Electronic referrals, ePrescribing and certifications (e.g. for sick leave).
- Clinical decision making (e.g. medications to avoid given patient allergies).
- Telemedicine applications (e.g. video consultations and remote monitoring).
- Mobile health or mHealth applications (e.g. smoking cessation and mental health apps).
- Population-level statistics on the prevalence and incidence of diseases and risks.
- Research studies taking into account real-world data (e.g. pharmacovigilance).

It is possible to implement some of these applications without a complete EHR system (e.g. telemedicine), however without the EHR, digital technologies will fall short of their potential and will not fully assist primary health care.

Source: World Health Organization (2018[10]), "Digital technologies: shaping the future of primary health care", https://apps.who.int/iris/bitstream/handle/10665/326573/WHO-HIS-SDS-2018.55-eng.pdf; OECD (2019[3]), *Health in the 21st Century: Putting Data to Work for Stronger Health Systems*, https://dx.doi.org/10.1787/e3b23f8e-en.

4.3. Comparing Brazil's health data development and governance with OECD countries

4.3.1. Health data governance performance in Brazil is around OECD average, but there are gaps in the development and use of health datasets

Health data governance refers to the regulations, policies, and practices that foster the development and use of health data for research, statistics, and other uses within the health-related public interest while protecting health data privacy and data security.

In 2020, Brazil participated in the OECD Survey of Health Data Use and Governance which provides a foundation for understanding the current situation in Brazil and permits comparison of health data governance policies and practices in Brazil to those of 23 OECD countries who responded to this survey

in 2019-20. The survey contributes to monitoring countries' progress toward adopting the 2017 OECD Council Recommendation on Health Data Governance (OECD, 2019[11]). This Recommendation asks countries to develop a national health data governance framework and sets out the principles for doing so (see Box 4.4 and Table 4.1).

Box 4.4. OECD Council Recommendation on Health Data Governance

The 2017 OECD Council Recommendation on Health Data Governance asks all adhering countries to implement a national health data governance framework and sets out 12 high-level principles for the development, content and evaluation of national frameworks:

1. Engagement of stakeholders in the development of a national health data governance framework.
2. Co-ordination within government and co-operation amongst personal health data processors to encourage common data-related policies and standards.
3. Review of the capacity of public sector health data systems to serve the public interests.
4. Clear communication to individuals about the processing of their personal health data.
5. Processing of personal health data by informed consent and appropriate lawful alternatives.
6. Implement review and approval procedures to process personal health data.
7. Achieve transparency through public information about the processing of personal health data.
8. Maximise the development and use of technology for data processing and data protection.
9. Have mechanisms to monitor and evaluate the impact of the national health data governance framework.
10. Provide training and skills development of personal health data processors.
11. Have controls and safeguards within personal health data processors.
12. Require personal health data processors to meet the expectations set out in the national health data governance framework.

These 12 principles set the conditions to encourage greater cross country harmonisation of data governance frameworks so that more countries can use health data for research, statistics and health care quality improvement.

Implementing the Recommendations helps to address barriers to using data and to developing digital technologies and provides health system leaders with a tool for clear communication about the benefits of a digital transformation of the health sector. The framework enables informed public discourse about opportunities and risks of data uses, including the benefits foregone from not putting health data to work.

Source: OECD (2019[11]), Recommendation of the Council on Health Data Governance.

In Brazil, a new law protecting personal data privacy, the General Data Protection Law-LGPD, entered into force in August 2018 and, one year later, the National Data Protection Agency-ANPD was launched. The Agency is responsible for approving the creation of personal health datasets and approving requests for the processing of personal health data, such as dataset linkages.

It is challenging to implement new data governance legislation. Brazil is developing a national framework for health data governance via CIINFO. Brazil reports experiencing delays in the introduction of the new data protection law and in the new National Data Protection Agency and there is work remaining to develop regulations governing data sharing and access. The country is also challenged to develop sufficient qualified technical staff to process data and support making data more accessible for research.

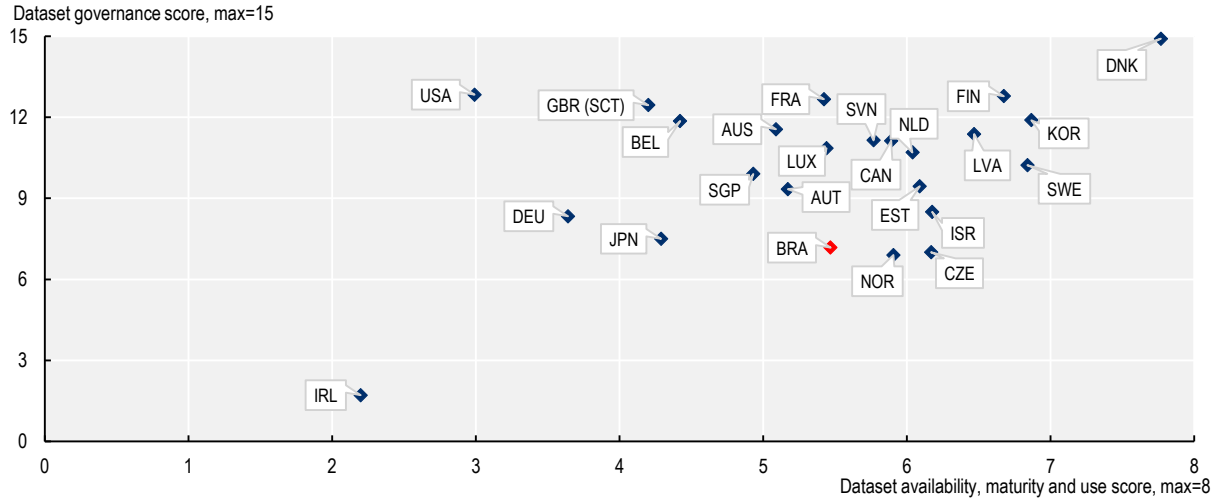
Table 4.1. National Health Data Governance Elements

Country	A national health data governance framework is established or is being established	Public consultation has occurred or is planned about the elements of the national health data governance framework	National law or regulation exists that speaks to the protection of health information privacy and/or to the protection and use of electronic health records	A central authority for the approval of requests to process personal health data is established or planned
Australia	No	Yes	Yes	Yes
Austria	Yes	Yes	Yes	Yes
Belgium	No	No	Yes	Yes
Brazil	**Yes**	**Yes**	**No**	**No**
Canada	Yes	Yes	No	No
Czech Republic	Yes	Yes	Yes	No
Denmark	Yes	No	Yes	No
Estonia	No	No	Yes	Yes
Finland	Yes	No	Yes	Yes
France	Yes	No[1]	Yes	Yes
Germany	Yes	No	Yes	No
Ireland	Yes	Yes	Yes	Yes
Israel	Yes	Yes	Yes	Yes
Japan	No	No	Yes	No
Korea	Yes	Yes	Yes	Yes
Latvia	Yes	Yes	Yes	Yes
Luxembourg	No	Yes	Yes	Yes
Netherlands	Yes	Yes	Yes	Yes
Norway	n.r.	n.r.	Yes	Yes
Singapore	No	Yes	Yes	No
Slovenia	Yes	Yes	Yes	Yes
Sweden	Yes	No	Yes	n.r.
United Kingdom (Scotland)	Yes	Yes	n.r.	Yes
United States	Yes	Yes	Yes	Yes
Total Yes	**17**	**15**	**21**	**16**

1. Mission of the Health Data Hub is to elaborate a citizens and patients charter in collaboration with patients associations.
Source: OECD Survey of Health Data Development, Use and Governance 2019-20.

Results of the survey indicate that Brazil compares favourably to other countries in terms of the development and use of data within key national health datasets and has elements of good governance of these datasets. Figure 4.2 provides a summary of the survey results.

Figure 4.2. Distribution of countries overall performance in health data development, maturity and use and in governance of health datasets



Source: OECD Survey of Health Data Development, Use and Governance 2019-20.

Dataset availability, maturity and use is calculated through a series of parameters that measure how developed each country is on these aspects. According to the responses sent to the OECD Survey of Health Data Development, Use and Governance, Brazil has reported to perform very well in some of these parameters, such as the percentage of available datasets sharing the same unique patient identifier; and health care datasets where standard codes are used for clinical terminology. For other parameters Brazil performs closely to the OECD members average, such as the percentage of available key national health datasets; health care datasets with coverage of 80% or more of the population; health care datasets where data is extracted automatically from electronic clinical or administrative records; datasets used to regularly report on health care quality or health system performance; and datasets regularly linked for research, statistics and/or monitoring. Finally, Brazil's performance is of 0% on the percentage of available datasets where the time between record creation and its inclusion in the dataset is one week or less, compared to 16% for OECD members.

On Dataset governance, another set of parameters is taken into account to evaluate the performance of each country. Brazil has reported to perform very well on having legislation that authorises datasets, and having a data privacy/data protection officer, as well as a public description of datasets. Brazil's performance is close to OECD average on having staff that are trained in data protection, and sharing data within the public sector, academic/non-profit sector, for-profit sector, and across borders. The performance of Brazil is considered low compared to the OECD average on having staff data access controls; de-identifying data prior to analysis; testing re-identification attack risk; having standard data sharing agreements and remote data access service or research data centres; having descriptions that include legal basis for the dataset; and having procedures to request and approval criteria for data linkages; with scores for Brazil that go as low as 0%.

4.3.2. Brazil has conducted several dataset linkages, but unique identification of patients is still insufficient

Dataset linkages are regularly conducted amongst the following datasets in Brazil: hospital in-patient data, mental hospital in-patient data, emergency care data and mortality data. Birth data is also linked regularly to these datasets. Most dataset linkages in Brazil are for research purposes, however, primary care data

linkages also support health care financing and mortality data linkages can be done to audit records for quality.

A strength in Brazil is the use of a patient identifying number across all of the key national health care datasets, the *Cartão Nacional de Saúde*-CNS. However, it is possible that more than a single number has been assigned to the same patient, creating a duplicated identity issue that could be solved through the ongoing migration towards the use of the *Cadastro de Pessoas Física*-CPF some databases have recently started. Other identifying variables are also available within these health care datasets that could support approved dataset linkages. Identifying variables were not available; however, within Brazil's population health and patient experiences survey data or within population census data. Thus it is not technically possible to link survey or census data with health care data so that the richness within these datasets regarding demographic and socio-economic characteristics and health behaviours, for example, can be used to better understand health care utilisation and outcomes of care.

A caution, however, is that Brazil also reports that the requirement to include a personal identifier within national health datasets is relatively new and problems identifying individuals in the health datasets is an important data quality problem.

Most national health datasets in Brazil are used to regularly report indicators of health care quality or health system performance. However, only primary care data are regularly linked to provide indicators to monitor quality or performance and the main purpose of the linkage is limited to produce indicators monitoring immunisation of children aged 0-1. As indicated in the survey, many datasets are regularly linked for research purposes, although Brazil is not linking the datasets regularly to report on health care quality or health system performance, which would represent an improvement for the outputs of the national health data infrastructure and information system.

In other countries, indicators based on dataset linkages provide a wider range of information to monitor health care quality and performance such as indicators of readmission to hospital and death following key events, like acute myocardial infarction or following key hospital procedures, for instance hip replacement surgery. With Brazil's timely health data and capacity to conduct dataset linkages, there is a missed opportunity to utilise these data to monitor how the health system is performing and to detect problems. See Table 4.2 for examples of the indicators based on record linkage that are used to regularly monitor health care quality or health system performance in OECD member countries.

Of course, the datasets themselves must be of sufficient quality to support research and indicator development and Brazil has raised a number of concerns. These include that hospital in-patient, mental hospital in-patient, and emergency care data are populated from insurance claims and this information source is limited in terms of key clinical information. These data also have problems with the quality of health terminology coding and with underreporting of data elements. For primary care data, where the source of data are clinical records, concerns relate to the need to improve electronic clinical record systems by improving the adoption of standardised clinical terminologies, expanding the maturity of clinical information models and adopting a standard for clinical information exchange, such as HL7-FHIR. Mortality data in Brazil is challenged by the need to investigate unidentified causes of death.

Brazil is not alone in confronting data quality challenges within national datasets. Indeed, 18 of 23 countries identified challenges developing several and often most national health datasets. As with Brazil, data quality problems related to availability of terminology standards and coding to these standards are common. The OECD has been surveying countries' development of electronic health record systems and the use and governance of data within these systems, including progress toward and barriers to data interoperability, and Brazil is encouraged to participate in these efforts.

Table 4.2. Indicators based on record linkage that are used to regularly monitor health care quality or health system performance

Country	Indicators
Australia	Unplanned hospital readmissions for selected surgical procedures; annual reporting of cancer survival.
Austria	Hospital readmission rates after surgery, mortality rates following hospitalisation, 30-day mortality for heart attack patients.
Belgium	Monitoring Antibiotic prophylaxis in hospital; 30- and 90-day mortality for pancreas, oesophageal and rectal cancer.
Czech Republic	30-day mortality indicators for hospital and cardiovascular disease patients; survival estimates for patients with cancer, diabetes, and other diagnoses.
Estonia	30-day and 1-year mortality for patients with acute myocardial infarction; suicide among schizophrenic patients.
Finland	Mortality following AMI, stroke, hip fracture; prescriptions of antibiotics for acute respiratory infections; vaccination coverage; survival from breast, colorectal and uterus cancer (and other cancers); number of days that hip fracture patients spend at home in the year following the fracture; and risk-adjustment of performance indicators.
Korea	Mortality (at hospital, within 7 days after discharge, within 30 days after surgery) for coronary artery bypass grafting; injection rate of antibiotics within 8 hours after hospital arrival for pneumonia; readmission of mental hospital inpatients within 30 days after discharge; MRI or CT rate within 1 hour after arrival to emergency room; antibiotics prescription rate; number of drugs per prescription; 5-year cancer survival rate with lung cancer, breast cancer, et al.; mortality following coronary artery bypass graft; and indicators for patients in long-term care including: percentages of patients with a reduced activities on daily living; prescription rate of atypical anti-psychotics for schizophrenia; 30-day readmission to hospital after discharge from hospital for schizophrenia; Rate of overlapping prescription, prescriptions of 4-or-more component anti-hypertensive, parallel administration of diuretics, prescription of not-recommended parallel therapies, prescription days, and continued prescription group for hypertension; and medication cost per administration day.
Latvia	191 indicators of process, outcome and structure domains. Different indicators included from Eurostat (healthy life years at birth; amenable mortality; life expectancy at birth), EU-SILC survey (inhabitants aged 16 year and over very good or good self-perceived health; self-reported unmet need for medical care; the main reasons for unmet need for medical care (except dentist) during last 12 months: too expensive, waiting list, too far to travel; financial reason for unmet need for medical care (except dentist) during last 12 months: too expensive), OECD (AMI, ischemic/haemorrhagic stroke 30 day mortality (patient based); death from suicide within 30 days/1 year after discharge among patients diagnosed with mental disorder; health expenditure; remuneration of doctors; etc.), ECDC (alcohol hand rub consumption; number of blood cultures per year/patient days) and nationally developed indicators (immunisation coverage; incidence of different malignant tumours; share of practicing doctors and nurses aged 55 years and over, etc.) are combined.
Luxembourg	HCQO indicators; 30 and 90-day mortality rates following initial treatment for cancer; annual indicators of cancer mortality and survival.
Netherlands	Readmission, unexpected length of hospital stay, HSMR, HCQO indicators (mortality after AMI or stroke, hip fracture, avoidable admissions, patient safety, prescribing); suicide rates and excess mortality rates; survival rates; cholesterol levels and eye exams among diabetic patients; and spirometry measures for lung patients.
Slovenia	HCQO indicators; cancer incidence, prevalence, mortality, survival, and geographical distribution.
Sweden	Appropriate prescribing of drugs among persons with heart failure; deaths and prescribing in mental health populations; mortality following hip fractures; benzodiazepine prescriptions; cancer survival; AMI and stroke case fatalities; suicides in various populations; and prescription rates for long-term care patients.

Source: OECD Survey of Health Data Development, Use and Governance 2019-20.

Estonia provides a good example of how beneficial health data linkages can be for patients, facilitating the access to their own electronic health records-EHR, which can also be securely accessed by their health care providers. This was achieved through the unique patient identifier – the national personal identification number- Estonians have. See Box 4.5 for a more in-depth view of the Estonian patient portal.

Box 4.5. The Estonian patient portal

In Estonia, all citizens who are insured by the Estonian Health Insurance Fund have access to their health data through a web-based patient portal. The portal provides access to the national health database, which unifies data from various health care providers in EHR. People can view their medical data, including data entered by health care providers on diagnoses, test results and their interpretations, and treatments received as well as data on medicines prescribed and dispensed.

In addition to providing access to data stored in their EHR, the portal allows people to create summary documents (such as case summaries and dental care charts), set up reminders, book appointments, inform all medical institutions simultaneously about changes in their contact details, make declarations of intent (such as registering for organ donation) and initiate administrative processes. For example, instead of seeing a health care provider for such purposes, they can apply for health certificates through virtual medical checks that use existing medical data in their EHR and make such documents available for administrative purposes, for instance for getting a driving license.

By default, all citizens can access their own data and health care providers can access data of their patients. Parents also have access to data of their underage children. However, users are their own access administrators and can restrict data access selectively or opt out of the system entirely at any time. Adult users can authorise other persons to access their data and appoint representatives for the performance of certain activities (for instance for buying prescription medicines) so that, for example, people can support the care of their parents or grandparents. A function to give consent for use of data for research purposes is currently under development.

For data security, the system relies on digital authentication for access, digital signing of all data, encryption and decentralised data storage, and logging of all activity backed by blockchain technology. People access the portal using their digital identity card tied to a citizen ID, which is identical for all public services, including health care. Every data query results in an unalterable log so that any potential abuse remains fully traceable. Data access logs are monitored centrally and by users themselves, who can check by whom and when data were viewed. In the past, health care providers who accessed data without appropriate authorisation already faced severe disciplinary measures, including loss of their license to practice.

As per 2018, the portal has been actively used by approximately 480 000 people, representing 37% of the Estonian population. Just under 700 people have opted out of the system, which represents less than 1% of users.

Source: OECD (2019[3]), *Health in the 21st Century: Putting Data to Work for Stronger Health Systems*, https://dx.doi.org/10.1787/e3b23f8e-en.

4.4. Data collection and availability gaps between Brazil and OECD member countries

4.4.1. Substantial gaps in data availability and reporting exist between Brazil and OECD member countries

Brazil lags behind in the regular collection and reporting of some health indicators, which might limit the potential for national health-related analysis and hinders the comparability of the country with OECD members in multi-countries reports. When contrasting the health data indicators and years available in the

OECD Health Statistics 2020 update, Brazil data availability is below the OECD average for all the group of indicators, and in most cases it is less or equal than the minimum value amongst OECD member countries (see Table 4.3).

Table 4.3. OECD Health Statistics data availability for member countries and Brazil, 2020

Group of indicators	Brazil	OECD	Maximum value	Minimum value	Number of indicators
Health status	0.12	0.67	0.85	0.48	25
Risk factors	0.19	0.37	0.85	0.06	12
Remuneration	0.00	0.43	1.00	0.00	5
Waiting times	0.00	0.32	1.00	0.00	7
Employment	0.00	0.61	0.93	0.11	80
Health care resources	0.00	0.60	1.00	0.14	40
Health care utilisation	0.00	0.56	0.77	0.11	35
Long-term care	0.00	0.41	0.97	0.00	9
Pharmaceutical market	0.00	0.64	0.98	0.00	62
Social protection	0.08	0.64	1.00	0.19	9

Note: Values are averages per group of indicators that range from 0 to 1, with 1 point assigned to each indicator if data is available up to t-1 (2019), 0.75 if data is available up to t-2 (2018), 0.5 if up to t-3 (2017), and 0 if data is older or not available.
Source: OECD Health Statistics 2020.

Increasing the number of health data indicators for Brazil in OECD health databases represents an opportunity to allow for more evidence-based policy recommendations and the inclusion of Brazil in multi-country studies. Some indicators can also improve its utility with more recent data, such as the density of nurses which is available only up to 2012 in the OECD Health Statistics database.

Amongst the group of indicators we can find topics that widely encompass the functioning of health systems. The first group in Table 4.1 is Health status, which includes indicators such as life expectancy, maternal and infant mortality, infant health, and communicable diseases; Chile, Israel, and the Slovak Republic were the OECD members with the highest completeness in this group of indicators with values around 0.80, while Belgium, New Zealand, and the United States were amongst the lowest ones with values around 0.50. On Risk factors we have indicators on tobacco, alcohol, fruits and vegetables consumption, as well as overweight and obese population; countries like Belgium, France, and New Zealand have the highest completeness, while Chile, Hungary, Slovenia, and the Slovak Republic have the lowest values on completeness.

Then, on Remuneration we observe indicators on the annual income of salaried and self-employed general practitioners, specialists, and nurses; with Chile, Estonia, Iceland, Turkey, and the United Kingdom having a full completeness, while Austria, Denmark, France, Korea, Latvia, and Lithuania had a completeness value of zero like Brazil. On Waiting times we can observe indicators on the number of days that passed between assessment and treatment for procedures like cataract surgeries, hip and knee replacements, and coronary bypasses; with a similar story showing OECD member countries like Hungary, Italy, and the Netherlands with a full completeness of data availability, and a few other members having a completeness value of zero like Brazil. This is also the group of indicators with the lowest number of respondents, only 16 of the 38 OECD member countries have sent information on waiting times.

For Employment, indicators on practicing physicians, nurses, specialists, dentists, pharmacists, and medical graduates are taken into account; and member countries like Iceland, Israel, and Norway exhibit the highest values on data completeness, while Finland, Mexico, and the Slovak Republic are amongst the countries with the lowest data completeness, although higher than Brazil.

On Health care resources, there are indicators on number of hospital by ownership, number of hospital beds, and medical technological units; member countries like Iceland, Israel, and Slovenia have a full or nearly full data completeness, while Australia, Norway, and the United Kingdom have the lowest data completeness, although once again these lower values are still higher than Brazil. Then, for Health care utilisation, the OECD Health Statistics databases handle data on consultations, immunisations, hospital aggregates, screening, diagnostic exams, and surgical procedures; Estonia, Lithuania, and Slovenia are the member countries with the highest data completeness, while Greece, Japan, and Portugal are those with the lowest data completeness. Brazil has fully completed data available on diphtheria, tetanus and pertussis-DTP, measles, and hepatitis B immunisations up to 2018, although for the methodological approach of this data completeness figure only considers data on influenza immunisation, which is not available for Brazil in the OECD Health Statistics databases.

For long-term care, the group contains selected indicators on workers, recipients, and number of beds; Israel, New Zealand, and Portugal are the OECD member countries with the highest data completeness values, while Belgium, Chile, and Mexico are those with the lowest availability of data, Brazil also exhibits a lack of data for this group of indicators. Pharmaceutical markets include a wide set of indicators on consumptions, sales, and generic market; on one side we find Estonia, Italy, and Portugal that have a nearly complete availability of data for these indicators, while France, Poland, and the United States are on the opposite side with a major part of pharmaceutical indicators not available, similarly to Brazil. Lastly, on Social protection there are indicators on public and private health insurance coverage; Australia, Canada, and New Zealand are the OECD member countries with a fully complete data availability on these indicators, while Japan, Latvia, and Lithuania exhibit the lowest data completeness, although it is still higher than the data completeness value for Brazil.

Areas in the OECD Health Statistics like health care resources and utilisation, both crucial for a correct assessment of the strengths and weak points of national health systems, are lacking data for Brazil as aforementioned. Having a proper data collection for these indicators, and its subsequent transmission to the OECD, could be a key component for evidence-based policy recommendations that benefit from the past experiences of member countries that provided a similar set of comparable indicators. This could contribute to building a more resilient and inclusive health system, people centred, and with an improved understanding of Brazil's population health, health care outcomes and health system financial aspects. See Box 4.6 for examples on how OECD member countries use data to improve the quality of their health systems.

Box 4.6. Using data to drive quality improvements in Sweden

In Sweden, the National Board of Health and Welfare and the Swedish Association of Local Authorities and Regions (SALAR) regularly publish counties' performance across more than 150 indicators of health care quality and efficiency, drawn from Sweden's extensive set of national patient registers. The National Board also conducts in-depth assessments of defined areas of care.

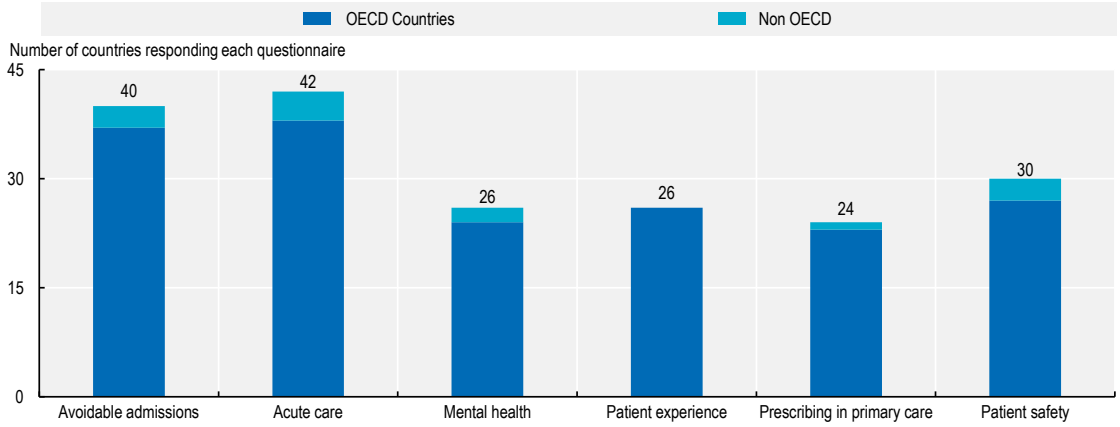
These reports typically examine 20 to 60 relevant indicators, presented on different levels (national, regional, county council and unit for instance hospital) as well as being disaggregated by age, gender and socio-economic status (such as educational level). In an appendix to the main report the county councils' and units' results are presented as profile graphs showing their achievements relative to the national mean value per indicator.

For each county council a summary of what areas need to be improved is compiled and measures to be taken in order to increase the quality of care are recommended. The assessment also results in national recommendations to the care providers focusing on indicators where performance appears poor (OECD, 2013[1]).

4.4.2. Gaps exist between Brazil and OECD member countries on health care quality outcomes indicators and other health surveys and questionnaires

Other OECD Health Statistics databases such as those on Health Care Quality Outcomes-HCQO are also lacking figures from Brazil. The aim of HCQO database is to collect, analyse, and monitor variations in health care quality across countries over time, instead of a descriptive assessment of health-related topics which is undertaken in the aforementioned health data collections. Every two years, questionnaires on avoidable admissions, acute care, cancer care, mental health, patient experience, prescribing in primary care, and patient safety are sent to countries. Brazil currently has no data on these HCQO indicators even if the questionnaires are being periodically sent to national contact points, although some countries that are not OECD members either did provide the Organisation with figures on these indicators during the 2020-21 data collection round. These data are subsequently used in multi-country analyses and publications (see Figure 4.3).

Figure 4.3. Distribution of countries responding to the Health Care Quality Outcomes questionnaires, 2020-21



Source: OECD Health Statistics 2021.

Having indicators on HCQO for Brazil would represent another major improvement for data comparability with OECD member countries and key partners, allowing as well for more tailor-made policy recommendations based on the outcomes of the Brazilian health care system.

Related to HCQO, the OECD Secretariat jointly with country representatives are continuously exploring new sources to analyse quality of health care. For instance, a new generation of indicators presented in 2020 will allow international benchmarking on performance of integrated care delivery with the development of quality measurement. These indicators are part of the HCQO Integrated Care-IC data collection, and take a patient care pathway perspective by using country-wide EHR systems and data linkage across existing data sets. Linked data, for instance, would allow monitoring the disease progression of a given patient throughout long episodes of care involving various services and data sourced by hospital in-patient care, primary health care and outpatient specialist care, as well as drug prescribing and death registries, so to follow key events on a journey across the system for a person, for example, suffering a first stroke. This will allow to measure how care delivered before and after hospitalisation prevents hospital re-admissions or death. The OECD Framework for Health System Performance is being used to assess performance of integrated care delivery to start HCQO IC indicator development by piloting 19 new indicators in 2021 for patients admitted in the hospital with congestive heart failure-CHF or stroke.

In addition, HCQO has also included a pilot data collection in 2020 of new indicators related to end-of-life care in OECD countries. Indicators around people's last year of life such as place of death, hospital admissions, 30-day hospital readmissions, utilisation and length of stay in palliative care services, medications used, ICU admission and emergency department visits in the last 30-days of life are being explore to be collected on a more regular basis in the future.

4.4.3. Brazil has started to implement the System of Health Accounts and should consider participating regularly in the OECD health spending data collection

The OECD has been collecting data on health spending based on a common definition and framework for more than 20 years. The purposes of the "System of Health Accounts 2011" (know by the acronym SHA) (OECD/Eurostat/WHO, 2017[12]) are manifold: (i) to provide a framework of the main aggregates relevant to international comparisons of health expenditures and health systems analysis; (ii) to provide a tool, which can produce useful data in the monitoring and analysis of the health system; (iii) to define internationally harmonised boundaries of health care for tracking expenditure on consumption.

The SHA 2011 framework is structured around a tri-axial accounting approach where health spending should be categorised along the dimension of financing schemes ("who pays for services?"), health providers ("who provides the services?") and health functions ("what types of health services are consumed?"), defining health expenditure as the final consumption of health care goods and services.

At the moment, more than 40 countries are submitting annually health spending data for year t-2 along the three core dimensions as part of the Joint Health Accounts Questionnaire (JHAQ) data collection.

Brazil has started to implement the System of Health Accounts building on their long experience with their Health Satellite Account, an exercise that is carried out on in regular intervals by the IBGE, together with other stakeholders such as the *Fundação Oswaldo Cruz*-Fiocruz, the Ministry of Health and others (IBGE, 2019[13]). Work to map those result into the international SHA framework are ongoing. For the years 2010-14, a mapping exercise for the three dimensions of SHA was successful for SUS spending (Ministério da Saúde/Fundação Oswaldo Cruz, 2018[14]). In 2021, Brazil has participated in the JHAQ data collection submitting for the first time internationally comparable date for health care functions. To improve the international comparability of its health spending data, Brazil has become an active member of the OECD Working Party of Health Statistics, which provides a platform to exchange country experiences with the implementation of the System of Health Accounts and discuss methodological challenges and possibilities to solve them.

Brazil should continue the implementation efforts for the System of Health Account and consider to regularly participate in the annual OECD data collection for health spending data for year t-2 for all three core dimensions. This would benefit health system analysis in Brazil by providing a clearer picture how the country compares internationally.

4.5. Moving towards a knowledge-based health system for stronger sustainability

Brazil has been able to start developing their health data infrastructure and information system through a digitally oriented approach that has increased the importance and visibility of relevant health data for a more resilient and inclusive health system. Although important advances have been achieved, Brazil can highly benefit from a well-defined strategy towards a knowledge-based health system, enhancing the Digital Health Strategy for Brazil 2020-28 (Ministério da Saúde, 2020[5]). An objective-oriented roadmap should include guidelines such as strengthening data governance and accountability through integration, transparency, and interoperability; improving data collection procedures with a better prepared, connected and equipped staff; increasing data comparability and coverage through the standardisation of definitions and methodologies; supporting evidence-based policy design with real time, linked, and inclusive health

data; and increasing Brazil's capacity for international benchmarking and its national coverage of health data by adopting OECD standards.

4.5.1. Integration of different levels of government and use of a unique patient identifier would strengthen data governance and accountability

Promotion of tripartite integration and regionalisation

Given the political structure of Brazil as a Federal Republic, a key component for an efficient functioning of data governance and accountability is the integration and co-ordination at federal, state, and municipal levels. Organs such as CONASS and CONASEMS are key for the achievement of this tripartite partnership between the different levels of government, and including them in the elaboration of a roadmap aimed at this objective would facilitate a seamless integration. State and municipal levels require continuous and institutionalised mechanisms of feedback, and for retrieving information useful for planning and management. On this aspect, regionalisation can also be decisive for better structuring tripartite integration, as well as to improve the capacity for planning and management of the health system, and the dissemination of health data.

In addition, silos are in place between health data producers and final users in Brazil, especially at the state and municipal levels. Improving synergies between these two groups would increase the impact and collection of health data, by better co-ordinating the needs of health data users, and the range of data collected by data producers. In this sense, enhancing the skills and data literacy of health workers that collect and report health data can facilitate the reduction of these gaps. Regionalisation would also ease co-ordination on health data collection and use, by better planning these needs between different states and municipalities.

The national coverage of data in Brazil is another aspect that could be improved through regionalisation, in order to allow for comparisons between regions, states or municipalities in Brazil, as well as having health data that more accurately reflect the needs and requirements of the Brazilian population as a whole. Having in mind the difficulties that exist in a geographically extent country like Brazil, and the many differences the territory englobes, this is a hard-to-achieve but certainly worthy objective.

Use of a unique patient identifier and moving from probabilistic to deterministic health data linkages

An effective way of strengthening data governance and accountability is facilitating the identification of patients to improve the linkage of their information across the different areas of SUS. In this sense, it is key to continue the migration from probabilistic methods for identifying and linking patient data in *VinculaSUS* – such as using the patient's name, place and date of birth, or parents' personal information – towards deterministic methods like those applied in *ConecteSUS* using unique patient identifiers such as the *Cadastro de Pessoas Físicas*-CPF. The CPF is the taxpayer identification number, which is unique at a federal level, unlike other identification numbers that are issued at a state level or the *Cartão Nacional de Saúde*-CNS from SUS that in some cases identifies the same patient with various numbers instead of a single identifier. This process should receive special attention and be boosted trough the enhancement of related efforts such as the recently established RNDS.

Italy, for example, uses the *Codice Fiscale*-taxpayer identification number as a unique patient identifier, it is therefore the single identification number printed on the national health card to identify patients (see Box 4.7).

Box 4.7. Italian taxpayer identification number as a unique patient identifier

The *Tessera Sanitaria*-health card is the personal identification document that includes the taxpayer identification number as the unique patient identifier. All Italian citizens entitled to the services provided by the National Health Service-SSN have access to a national health card.

Municipalities assign taxpayer identification numbers to the newborns after the presentation of the birth declaration, this process is performed in co-ordination with the tax registry. Alternatively, the taxpayer identification numbers can be issued by offices of the *Agenzia delle entrate*-Italian revenue agency.

Once the taxpayer identification number has been assigned, the health card is issued and delivered to the address of the newborn citizen. This national health card for newborns is valid for one year, while the health cards issued after are valid for six years -just like those issued to citizens that request them for the first time (Agenzia delle entrate, 2021[15]).

Through this unique patient identifier, datasets can be linked more effectively and allow for impactful health research. For example, analyses on topics such as the administrative data of acute ischemic stroke events and thrombolysis treatments were performed through databases that were linked using the Italian taxpayer identification number as a unique patient identifier, showing the benefits that researchers, and not only policy makers, can obtain from the availability of linked health data (Baldereschi et al., 2018[16]).

Protect personal data privacy of patients

Having this integration in mind, the personal data privacy of patients needs to be protected with an appropriate legal framework. Brazil has recently moved forward in this aspect through LGPD, which entered into force in August 2018, and ANPD that was launched one year after, nevertheless both are experiencing delays in introduction, and there is work remaining to develop regulations governing data sharing and access as mentioned in Section 4.3.

The Access to Information Law-LAI, enacted in 2011 and which allows citizens to ask the three different levels of government for access to public information, is another way of enforcing transparency in health data use and governance. Although, a national law or regulation that aims to ensure the protection of health information privacy and/or to the protection and use of EHR should be enacted following the OECD Council Recommendation on Health Data Governance, as has been the case in 21 member countries to date (see Table 4.1).

Granting patients access to personal health records

Another aspect in which Brazil has moved forward is in allowing patients to access their personal health records. This has started to be implemented through the *ConecteSUS* system, which allows patients to access their personal health records and information on other aspects such as exams, immunisations and treatments using the CPF unique identifier. These personal health records can also be accessed by medical personnel in order to provide better health care. The *ConecteSUS* also facilitates the delivery of prescribed medicines to patients in pharmacies that are part of the SUS partnership network *Aqui tem Farmácia Popular*, allowing also for a better control of medicines delivered by these pharmacies under the scope of their partnership with SUS. See Box 4.8 on the Swedish eHealth strategy which enables people to access their personal health information.

ConecteSUS should be expanded to allow for as many as possible patients in the country to access this platform. A key component of this access is the CPF as a unique patient identifier, ensuring that more

citizens have one can strengthen and expand access to *ConecteSUS* and, therefore, personal health records.

The integration and interoperability, through a unique patient identifier, of these databases at a national level could also result in performance indicators available to health care managers, health workers and the general public, which would facilitate the progressive improvement of health systems through the transparent identification of existing issues and bottlenecks.

Box 4.8. Enabling patient access to electronic health records: The Swedish eHealth Strategy

Since 2017, electronic health records for patients have been accessible in all 22 counties in Sweden. Through their EHR, Swedish residents have access to information from medical and dental services, including physician's notes, test results, vaccination histories, medications, referrals, and a history of who has accessed their online medical record. While residents cannot change the information in their patient record, they are able to add comments to flag where information may be incorrect (Armstrong, 2017[17]). Throughout Sweden, multiple electronic health records systems have been implemented. From the patient's perspective, however, the development of a national Health Information Exchange platform has allowed the multiple EHR systems to be consolidated, allowing a single record to be viewed by the user (Hägglund, 2017[18]).

Efforts to roll out access to electronic health records have come as part of Sweden's national e-health strategy, which has been developed to promote patient empowerment through involvement in their health and social care, as well as strengthen quality of care and decision-making among health and social care professionals. In addition to facilitating access to residents' health and social care information, the eHealth Strategy has also made it a priority to provide information important to health and social care systems users, such as quality and accessibility issues, in a user-friendly format. To strengthen the quality of long-term care for older persons, the platform also allows residents to authorise access to information related to their care, contained in a Care Diary, to family and friends who wish to monitor the care they receive on a regular basis (Swedish Ministry of Health and Social Affairs, 2011[19])

Sweden has further monitored user response to the rollout of electronic patient records, to ensure the system is meeting the needs of its users. A national patient survey of users of the patient-accessible electronic health records (PAEHR) system, Journalen, found that overwhelming majority of users felt positively towards the system (Moll et al., 2018[20]).

4.5.2. Data collection procedures and reliability can be improved through the training of staff, and provision of necessary IT equipment and connectivity

Providing staff with infrastructure tools, training and monetary incentives to municipalities

The Ministry of Health is promoting the collection and use of health data through the training of staff and monetary incentives provided to municipalities that comply with the submissions of health data in a timely manner. The continuation and enhancement of such support from the federal government is necessary for the accurate inclusion of data from more municipalities in Brazil, especially those located in remote areas, and the reduction of inequalities. Ensuring access to the internet, as well as infrastructure tools -such as computers and EHR platforms- and training for data collection and transmission, need to be taken into consideration as well. See Chapter 4 on Digital technologies of the Primary Health Care Review for Brazil for a more in-depth discussion on these aspects.

Strengthening staff who are programmers and IT specialist is another key component for the improvement of data collection procedures and the reliability of these indicators. In order to satisfy the needs and

requirements of data collection and handling, Brazil should count with sufficiently skilled staff in these areas. DATASUS and other bodies that handle health data are in an optimal position to foster programming and IT skills of health workers, especially in areas that have less access to these technologies.

Implementing a national repository of EHR

Based on the improvement of data collection procedures and the programming and IT skills of Brazilian health workers, a more sophisticated data collection and linkage could be developed. Through the migration from probabilistic to deterministic data linkage methods that rely on unique identification numbers, Brazil could connect primary care centres and hospitals in an effort towards implementing a national repository of EHR. See Box 4.9 for an example from Denmark on the successful implementation of EHR, and the consolidation of governance over health data infrastructure and information system.

Box 4.9. Development and use of Electronic Health Records-EHR in Denmark

The majority of OECD health systems have implemented or are starting to implement a national electronic health record system that contains or virtually links together records from multiple electronic medical and patient record systems which can then be shared (interoperable) across health care settings.

Denmark provides a good example of successful implementation of electronic health records that facilitate portability of care (Protti and Johansen, 2010[21]). Nearly all primary care physicians in Denmark use electronic health records, which are linked through a national network that allows physicians to communicate directly with other health care providers. All individuals have unique person identification numbers linked to their health records which are also linked to other areas including taxation, making it easy to follow individuals, regardless of where they receive care.

Electronic health records were phased in gradually in Denmark. In the 1980s, doctors began to be paid a small amount for electronically sending medical claims. This incentivised greater use of computers in medical practices, and spawned a later programme that allowed doctors to send clinical messages to other providers and to eventually electronically send prescriptions to pharmacies. With support from the Ministry of Health, this endeavour grew; in the 1990s, national standard templates for frequently used communications were developed and a health care data network was established. An independent non-profit organisation, MedCom, was tasked with overseeing and expanding the electronic health records programme. Throughout, there has been a strong focus on maintaining homogeneity across the system. For example, while there are over 50 different electronic medical record platforms, there is a single electronic form that is used for all communications from primary care physicians. This has helped to deter parallel, incompatible information systems from being created.

At the same time, Denmark has consolidated governance of its health care information systems. The National Institute for Health Data and Disease Control functions as a public enterprise under the Danish Ministry of Health, and is responsible for collecting all health documentation within the Danish health care system and steering a strategic approach to development of the information infrastructure. This includes co-ordinating agreements between the central authorities on common goals for better data use, co-ordinating activities across central and regional authorities and liaising with Denmark's extensive set of national patient registers (OECD, 2013[22]).

Consolidating and expand the work on population health surveys

Another benefit from improving data collection procedures and having more skilled health workers could be the expansion of the work on population health surveys. As discussed in Section 4.2, the Brazilian

Institute of Geography and Statistics-IBGE currently works on different population health surveys (see Box 4.2) which could benefit from these advances, both in terms of data collection and analysis, as well as in terms of the amount of population covered, therefore contributing to the reduction of inequalities in health amongst Brazilians.

IBGE health surveys such as the PNS and the PeNSE should be fully published with regular periodicity at least every five years, allowing for a more organised funding and planning while also improving the timeliness and relevancy of these surveys and the health indicators they collect. To obtain a more accurate picture of children and adolescents health in Brazil, the PeNSE survey could be expanded to account for a broader age group than only Brazilians aged 13 to 17, or through the creation of a new national children and adolescents health survey again with a more regular periodicity of at least very five years. See Box 4.10 for examples from Australia and the United States on national children and adolescents health surveys.

Box 4.10. National children and adolescents health surveys in Australia and the United States

Australia's children report

Australia's children report provides an overview of the well-being of children in the country. Latest available data is brought together on a wide range of topics, and builds on previous Australian Institute for Health and Welfare-AIHW reporting about children.

The publication includes information on health, education, social support, household income and finance, parental employment, housing and justice and safety. Children aged 0 to 12 are taken into account for this report, covering infancy through to the end of primary school. The report was launched in 2020 and is expected to be updated periodically as more data becomes available.

National Survey of Children's Health

Designed to produce nationally and state-representative estimates, the National Survey of Children's Health-NSCH examines the health of children aged 0 to 17 in the United States.

The range of topics analysed in the NSCH includes physical and emotional health, access to quality health care, and the child's family, neighbourhood, school, and social context. The NSCH is a yearly survey that begun in 2016, with data collected by the Census Bureau. Data can be refined to assess differences by states, income, race/ethnicity, type of health insurance, amongst other demographic and health status characteristics.

Sources: Australian Institute of Health and Welfare (2020[23]), "Australian's Children", https://doi.org/10.25816/5ebca4d0fa7dd; Census Bureau (2019[24]), https://www.census.gov/programs-surveys/nsch.html.

4.5.3. Towards more data comparability and coverage through expansion and enforcement of data standardisation

Standardising data definitions and methodologies

Brazil has been conducting a standardisation of definitions and compilation methodology with the Health Ministry Ordinance 2073 of 2011, which regulates the use of health interoperability and information standards for health information systems within the scope of SUS, at all government levels, and for private and supplementary health sector systems.

In this sense, the terminology SNOMED-CT is being applied for coding clinical terms and mapping terminologies used in Brazil, the Exchange of Information on Supplementary Health- TISS standard for the interoperability with supplementary health systems, and the Health Level 7-HL7 standard for the integration of exams requests and results, supporting semantic interoperability between systems. Ordinance 2073 of 2011 also contemplates the application of standardised EHR in Brazil through the OpenEHR terminology. Following international guidelines and best practices for EHR can be beneficial for Brazil in this task, as aforementioned in this section and in Box 4.9.

Brazil's standardisation of definitions and compilation methodology conducted through the Ordinance 2073 of 2011 is an important step forward, although it has not been done as timely and efficiently as expected. Organs like CONASS are asking to increase the frequency of the meetings that discuss the application of this Ordinance in order to accelerate the harmonisation of health data standards and methodologies. In addition, monetary incentives for compliance would represent a powerful catalyser for improving the standardisation process.

4.5.4. Supporting evidence-based decision making and impactful health research in Brazil with real time, linked and inclusive health data

Improving timeliness of data

Brazil should promote a health data infrastructure system with an enhanced timing of data, improved data linkages, and that includes data from the private sector. Progress in these three areas would yield more relevant, up-to-date, and comprehensive data that could serve as building blocks for evidence-based policy design. Research centres and universities would also benefit from this innovative and cutting-edge data. See Box 4.11 for examples on how Portugal has been using data to optimise their health system.

Having real time data is a necessary tool for evaluating the continuous impact of health policies, as well as to make better informed and accurate decision. This is true not only for exceptional scenarios as pandemics and other health crises, but also in less contingent times.

Box 4.11. Portugal's use of data to inform smarter purchasing

Portugal has implemented, and continues to develop, a number of initiatives that seek to optimise both cost and quality. A particularly successful area of reform has been the reduction in spending on pharmaceuticals through the promotion of generic drugs. Generic prescribing became mandatory in 2012. The Ministry of Health already exercises its monopsony powers by setting an annual limit on total pharmaceutical spend (as a percentage of GDP), and uses countries with the lowest purchase prices for each drug (such as Spain, France or the Slovak Republic) as the reference point from which to begin negotiations. In addition, the ministry is currently negotiating a new tax on pharmaceutical sales – in effect, a fiscal claw back. Initiatives have also been directed toward pharmacists. They are required to have available three of the five cheapest formulations for each drug and be able to sell the cheapest. If not, they are heavily fined. This comprehensive and sophisticated set of measures has led to Portugal exhibiting one of the sharpest declines in pharmaceutical expenditure over the past decade.

It is important to note that this reduction in pharmaceutical spend was not achieved simply through imposition of budget cuts, product withdrawals and sanctions. Initiatives to encourage higher quality prescribing were also introduced. A shift to electronic prescribing has allowed better monitoring of individuals' medication history, compliance and potentially unsafe drug interactions.

A key advance has been to integrate these initiatives together – guidelines and the formulary are now embedded in the electronic prescribing system, allowing the issue of alerts if doctors prescribe beyond these guidelines. Doctors also receive monthly feedback on their prescribing patterns, alerting them, for example, to the extent to which they prescribe outside the national formulary.

Making health data in Brazil more inclusive

There is a need to include remote locations, indigenous communities and localities with limited access to ICT into health data collection processes in Brazil. Fostering the inclusion of parts of the country most excluded by these factors can help prevent the widening in inequality gaps between states and municipalities that have different levels of financial resources, number of inhabitants and development.

Finally, the inclusion of the private sector would also be beneficial in order to have a more complete picture of the Brazilian health system. Partnerships between the ANS and SUS under the umbrella of the Ministry of Health, as well as the inclusion of ANS data in the RNDS of *ConecteSUS* could be favourable for all stakeholders, and yield more relevant data to policy makers, researchers and analysts.

4.5.5. International benchmarking capacity and national coverage of health data through adoption of OECD standards

Adopting OECD standards for use of data and adhering to Council recommendations

Brazil is invited to adopt OECD standards for national and international use of data and statistics, attending as well the different health statistics and expert meetings in which best practices are discussed, and participating in the different data collection processes for OECD member countries and key partners. This closer participation can also allow Brazil to improve their data collection, availability and comparability, which can in turn be used in multi-national studies and analyses performed by the OECD and others.

Brazil's adherence to the Recommendation of the OECD Council on Health Data Governance is also encouraged. This recommendation promotes the implementation of a national health data governance framework and sets out 12 high-level principles for the development, content, and evaluation of national frameworks on areas such as patient's privacy, transparency, monitoring and independent research, training and skills development, amongst others (OECD, 2019[11]). See Box 4.4 for a detailed view of the OECD Council Recommendation on Health Data Governance, and Table 4.1 for a list of countries that have implemented or are implementing a national health data governance framework which is a principle aspect of adhering to the OECD Council Recommendation, as well as other elements that are also part of the adherence.

Participation in international expert meetings and data collections

Brazil is encouraged to attend the different health data expert meetings in which best practices are discussed, and participate in related data collection processes such as HCQO, Health Statistics, economics of public health, and pharmaceutical and medical devices.

Brazil could also to take part in ad hoc expert groups that have been recently created such as mental health performance, integrated care, end-of-life care and the Patient-reported Indicator Surveys-PaRIS, along with any other that can be created in the future.

4.6. Conclusion

The Brazilian Health Data Infrastructure and Information System, highly reliant on DATASUS, has recently started an ambitious Digital Health Strategy for the period 2020-28, based on the RNDS, and even if the Ministry of Health has the steering role in the generation of health data and statistics, other public entities also participate in health data and statistics processes. Bodies such as the ANS, ANVISA and the IBGE are key players for health data production in Brazil, which could be even more impactful when further data linkages are undertaken. Although, one of the most restrictive issues is the lack of access to the internet, and digital health resources such as EHR, in some parts of the country, especially in remote and indigenous communities.

Based on the results of the 2019-20 OECD Survey of Health Data Development, Use and Governance, Brazil compares favourably to other countries in terms of the development and use of data within key national health datasets, although improvements could be made on the governance of these datasets to approach the average score of OECD members. In addition, even if Brazil has conducted several dataset linkages, more efforts are required to uniquely identify patients.

Another aspect to be improved by Brazil is the availability and reporting of health data, as substantial gaps exist between the country and OECD members. These gaps exist not only for the OECD Health Statistics main indicators, for which Brazil collected and reported data only for two out of ten groups of indicators, but also for health care quality outcomes indicators and other health surveys and questionnaires. Brazil is invited to participate in upcoming data collection rounds for projects such as HCQO and the Integrated Care indicators.

Brazil can strengthen data governance and accountability by integrating different levels of government and using a unique patient identifier; and improve data collection procedures and reliability in the country through the training of staff, and providing them with the necessary IT equipment and connectivity. Brazil can also increase comparability and coverage through expanding and enforcing data standardisation; and support evidence-based decision making and impactful health research with real time, linked and inclusive health data. Lastly, Brazil can promote their international benchmarking capacity and national coverage of health data by adopting OECD standards.

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5 The economics of overweight in Brazil

Overweight is a growing public health challenge in Brazil, with over half of the population overweight in 2016. Brazilians have unhealthier food consumption habits than OECD countries, while the prevalence of insufficient physical activity has increased more rapidly in Brazil than elsewhere over the past decades. Brazil has started to address the issue of overweight in a number of policies and interventions, including a food labelling scheme and school-based policies such as the Programa Saúde na Escola. While these are valuable strategies, Brazil could aim for a more ambitious multi-sectoral and comprehensive response. Brazil should better influence lifestyles through information and education programmes such as introducing menu labelling in restaurants, mass media campaigns, and promoting prescription of physical activity by family health teams. Brazil should also pursue food reformulation more actively, developing workplace or transport policies, while regulating food and beverage advertising particularly for children.

5.1. Introduction

Being overweight, including pre-obesity and obesity, is a major risk factor for various chronic non-communicable diseases including diabetes, cardiovascular diseases and certain cancers. The risks associated with obesity were made worse by the COVID-19 pandemic, given that obesity is a recognised risk factor for severe COVID-19 illness.

High consumption of calories-dense food and increasingly sedentary lifestyles have contributed to growing global obesity rates. Similarly, childhood overweight rates have been growing worldwide. Environmental factors, lifestyle preferences, genetic makeup and culture all can cause children to be overweight. Obese children are at greater risk of developing hypertension and metabolic disorders and, psychologically, obesity can lead to poor self-esteem, eating disorders and depression. Further, obesity may act as a barrier for participating in educational and recreational activities.

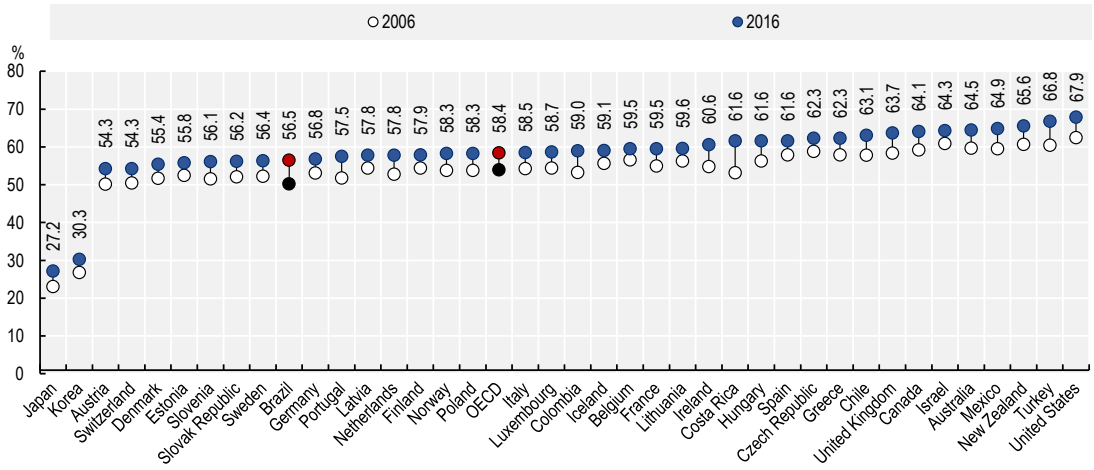
In this chapter, we explore the current epidemiological landscape of overweight in Brazil in comparison with OECD countries, along with its impact over the health system and the economy. Then, we review the main policies that Brazil has put in place, from population-level initiatives to individual interventions within the health system and other sectors. Subsequently, the chapter outlines a policy framework for overweight control and makes a number of recommendations to be considered in future reforms in Brazil. It finalises by providing evidence about the impact of implementing such policies over population health, the health system and the economy, while discussing some implementation considerations.

5.2. Health and economic impact of overweight and obesity in Brazil

5.2.1. Overweight in Brazil is currently below OECD average but the trend is increasingly upwards

In 2016, estimations show that 56.5% of adults in Brazil were overweight, close to the OECD average of 58.4%. However, Brazil showed the fourth largest change in overweight between 2006 and 2016 with an increase of 12.5%, only behind Costa Rica, Japan and Korea, but the latter two countries have substantially lower overweight rates (Figure 5.1).

Figure 5.1. Adults who were overweight, 2006-16

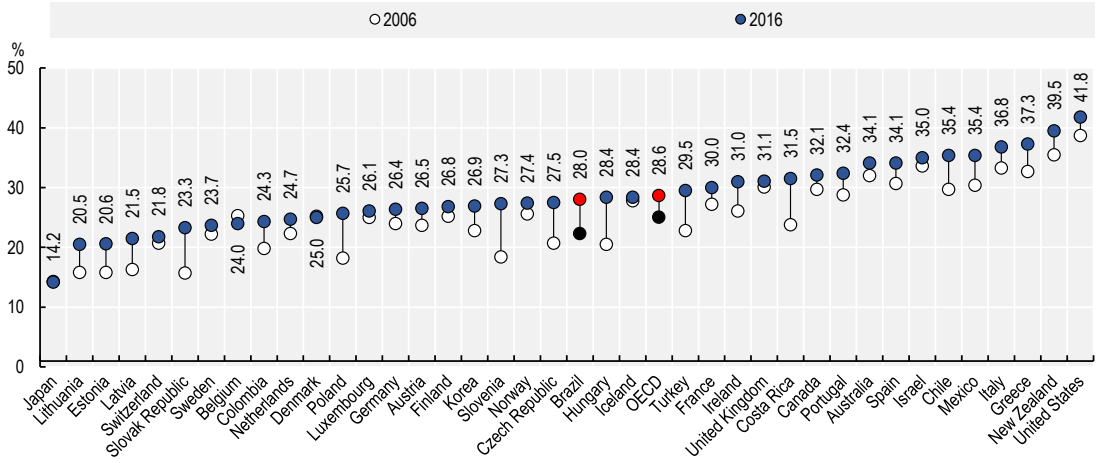


Note: Overweight considers adults with pre-obesity (BMI 25-30 kg/m2) and obesity (BMI >30 kg/m2).
Source: WHO Global Health Observatory (2020[1]), https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-risk-factors.

More recently, the National Health Survey 2019 (*Pesquisa Nacional de Saúde*, PNS) found that 61.7% of the adult Brazilian population was overweight, of which 25.9% were obese. Overweight population was 43.3% in PNS 2002/2003, signalling an increase of 42% in 16 years. Overweight in 2019 reached 60% of adult men and 63.3% of adult women, with 22.8% and 30.2% of obesity, respectively (IBGE, 2020[2]).

Children overweight rates in Brazil and OECD countries tend to be considerably lower compared to rates in adults. In 2016, Brazil had a children overweight rate of 28%, very close to the 28.5% in average amongst OECD countries. Nevertheless, Brazil experienced an increase of 27% between 2006 and 2016, higher than the 15% increase in the OECD. The largest increases were observed in the Slovak Republic, Slovenia and Poland, above 40% (Figure 5.2).

Figure 5.2. Children who are overweight in Brazil and OECD countries, 2006-16



Note: Children between 5-19 years of age.
Source: WHO Global Health Observatory (2020[1]), https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-risk-factors.

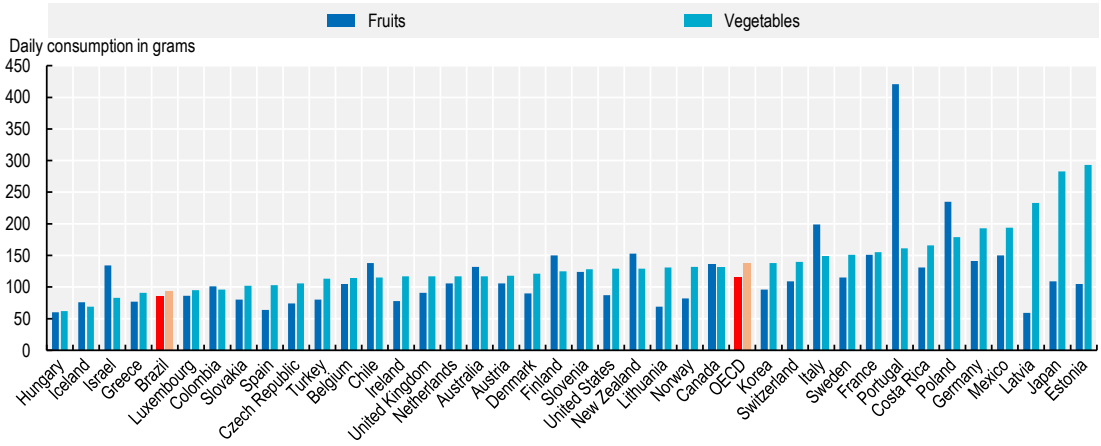
According to PNS 2019, the percentage of overweight adolescents between 15 and 17 years of age was 19.4%. The prevalence was higher among female adolescents (22.9%) than male (16%). Regarding obesity, the percentage was 6.7%, being 8% for females and 5.4% for males (IBGE, 2020[2]).

5.2.2. Dietary and lifestyle habits in Brazil are in worst shape than in OECD countries

Diet and healthy lifestyle are key determinants that contributes to the overall health and well-being, including the development of overweight. In the field of food consumption, individuals who follow a diet rich in fruits and vegetables and low in fat, sugars and salt/sodium are at a lesser risk of developing overweight, one or more cardiovascular diseases and certain types of cancer (Graf and Cecchini, 2017[3]).

In 2018, daily consumption of fruit and vegetables in Brazil was estimated to be under the recommended 400 grammes per person per day, the same as in most OECD countries. Brazilians consumed 85 grammes of fruit per day, lower than the average 115 grammes in OECD countries. Similarly, Brazilians consume 93 grammes of vegetables per person per day, again lower than the OECD average of 137 grammes (Figure 5.3).

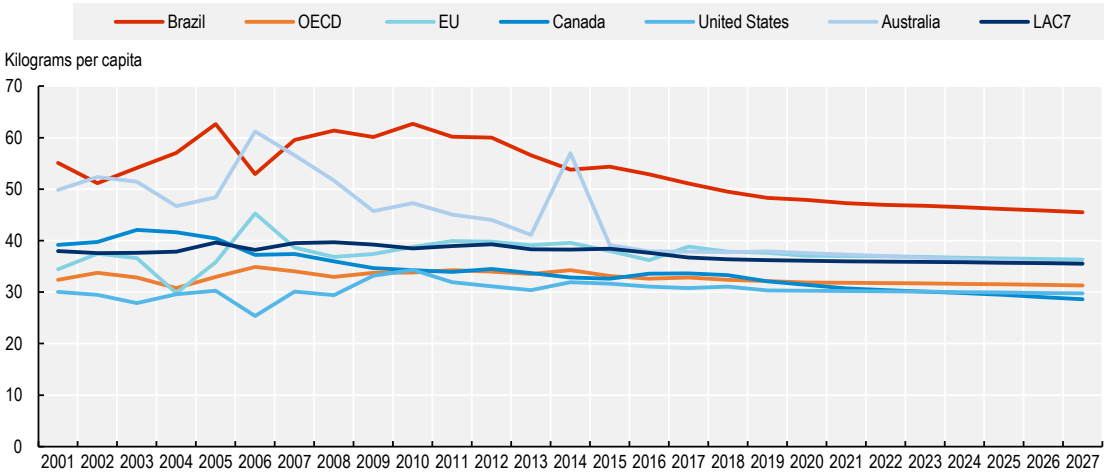
Figure 5.3. Fruit and vegetables consumption in Brazil and OECD countries, 2018



Source: Global Dietary Database, 2018.

Excessive free sugar consumption is considered a risk factor for overweight (Bray and Popkin, 2014[4]) and its consumption is already high in OECD countries, expecting to grow further in the future. Consumption of sugar through sugary foods, such as grain-based desserts (cakes, cookies, pies) and sodas is very high in Brazil, much higher than in other OECD countries (Figure 5.4).

Figure 5.4. Sugar consumption in Brazil and OECD countries, 2001-27



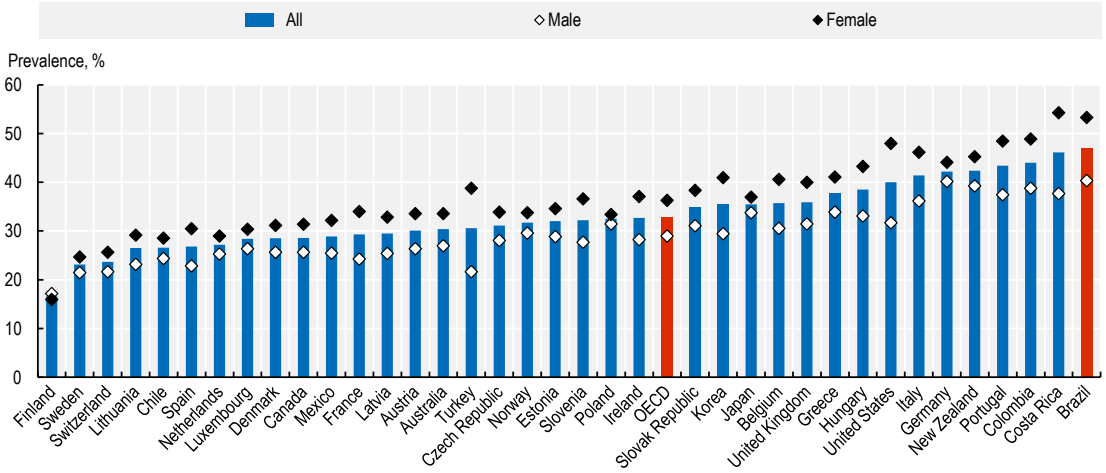
Note: LAC7 considers Argentina, Brazil, Chile, Colombia, Mexico, Paraguay and Peru.
Source: OECD-FAO Agricultural Outlook 2018-27.

Regular physical activity, and even light-intensity physical activity, has a number of health benefits, including the prevention of NCDs (such as cardiovascular disease, diabetes, and cancer), hypertension, obesity, depression, and premature mortality (OECD, 2019[5]). Despite these health benefits, in 2016, the prevalence of insufficient physical activity in Brazil was higher than in any OECD country, reaching 47% of the population, while the OECD average stands at 32.8%. As in almost all OECD countries (except for Finland), rates of insufficient physical activity are higher among women compared to men in Brazil. The

disparity in Brazil is of almost 13 percentage points, higher than the 7 percentage points in the OECD, and only lower than in Turkey, Costa Rica and the United States (Figure 5.5).

An analysis of trends in physical activity levels between 2001 and 2016 found that insufficient physical activity, defined as not meeting the physical activity recommendations as set out by WHO, increased by more than 15% in Brazil, the largest increase among all the 65 countries with information (Guthold et al., 2018[6]), signalling a substantial public health problem for Brazil.

Figure 5.5. Prevalence of insufficient physical activity levels among adults in Brazil and OECD countries, 2016



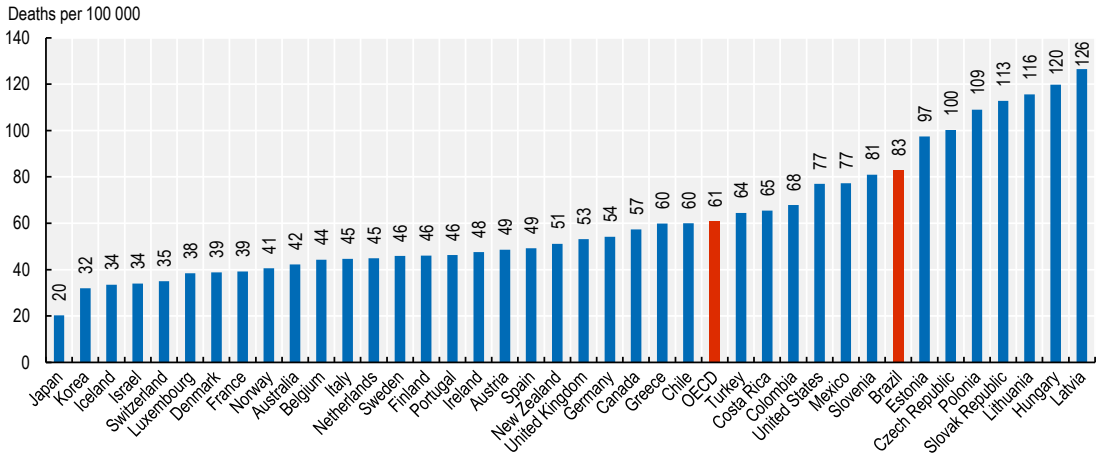
Note: Data unavailable for Iceland and Israel. Data is age-standardised.
Source: WHO Global Health Observatory (2020[1]), https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-risk-factors.

5.2.3. Overweight seriously damages Brazil's health and has an adverse economic impact

The annual number of premature deaths that overweight will cause between 2020 and 2050 in Brazil will be high. Around 83 deaths per 100 000 people will occur every year due to overweight, which is well above the OECD average of 61 (Figure 5.6). Premature mortality is lower in countries where the overweight prevalence is low and life expectancy is high, such as Japan and Korea.

Figure 5.6. The impact of overweight on premature mortality in Brazil and OECD countries

Annual number of premature deaths per 100 000 population, average 2020-50

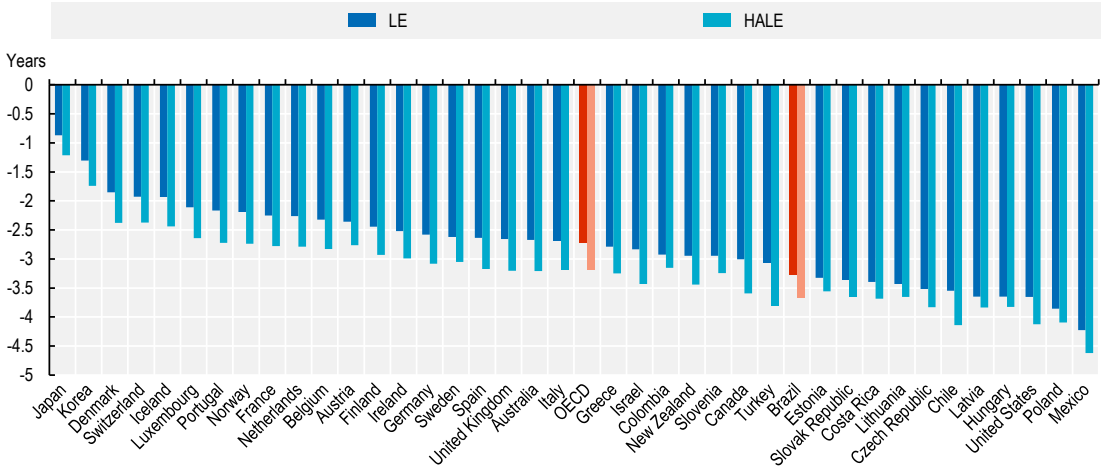


Note: Premature mortality is defined as mortality of people aged 30 to under 70.
Source: OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en.

The impact of overweight on premature mortality translates into a decrease in overall life expectancy. On average over the 2020-50 period, life expectancy in Brazil is expected to be lower by 3.3 years due to overweight, a higher reduction than the 2.7 years amongst OECD countries (Figure 5.7). Countries with low overweight prevalence will see a smaller impact on life expectancy. Healthy life expectancy – which uses disease disability weights to calculate the number of years lived in perfect health – will be reduced even further, by 3.7 years, again higher than the 3.2 on average in OECD countries.

Figure 5.7. The impact of overweight on life expectancy in Brazil and OECD countries

The impact on life expectancy (LE) and healthy life expectancy (HALE) in years, average 2020-50

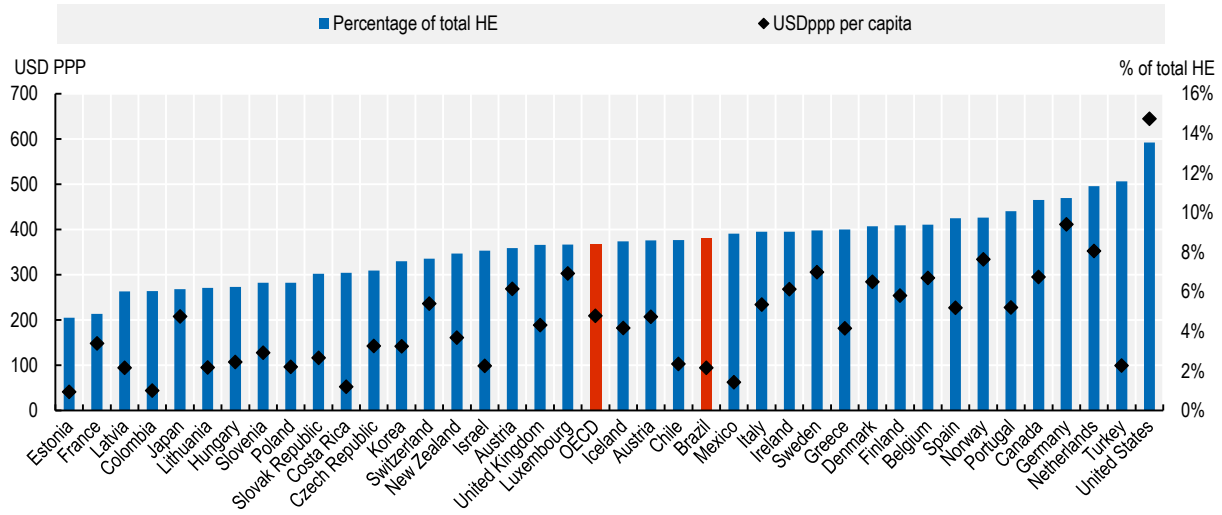


Note: Decreases in life expectancy are the average across the total population.
Source: OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en.

On a health financing perspective, since overweight is a major risk factor for several NCDs, on average people with overweight require health care services more often and for more complicated issues. As a result, the per capita health expenditure in the business-as-usual scenario is higher than in the no-overweight scenario. In Brazil, the annual average health expenditure between 2020-50 is projected to be of USD 94.40 per capita, lower than the OECD average of USD 209.50, which can be explained by the magnitude of health expenditure in each country. More importantly, Brazil will require devoting 8.7% of its total health expenditure to overweight, higher than the OECD average of 8.4%, showing that its impact in Brazil's health financing system will be large (Figure 5.8).

Figure 5.8. Health expenditure associated with overweight in Brazil and OECD countries

Health expenditure due to overweight per year, in USD PPP per capita and as a percentage of total health expenditure, average 2020-50

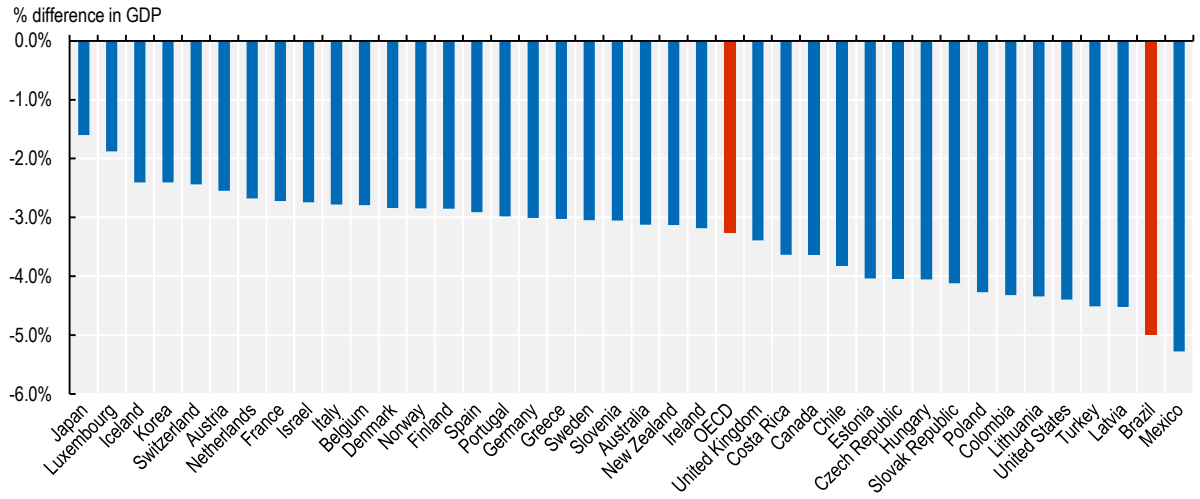


Note: HE: health expenditure.
Source: OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en.

On average in Brazil, GDP will be 5% lower due to the impact of overweight over the next 30 years. This is larger than in all OECD countries, except Mexico. The GDP impact in OECD countries will be of -3.3% on average between 2020 and 2050. Importantly, these results do not take into account that an increase in life expectancy due to no overweight may mean that people will work for longer and retire later. If the retirement age is increased by two-thirds of a year for every year of additional life expectancy, the impact of overweight on GDP would be doubled, with the average going from 5% to 8.2% in Brazil and from 3.3% to 6.8% in the OECD (see Annex 3.A in OECD (2019[5]).

Figure 5.9. The impact of overweight on GDP in Brazil and OECD countries

Percentage difference in GDP due to overweight, average 2020-50



Source: OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en.

Wages will be also affected in Brazil due to overweight increase. On average, OECD countries will lose USD PPP 863 per capita per year in labour market output due to overweight, while Brazil will lose USD PPP 212 (Figure 5.10). Presenteeism has the greatest economic impact on the labour market, and accounts for nearly half of the lost output in both Brazil and the OECD. Absenteeism and employment rate account for roughly a quarter each.

Figure 5.10. Economic impact of overweight on the labour market

Impact on per capita labour market output based on average wages, per year, in USD PPP, average 2020-50

Source: OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en.

5.3. Brazil has taken efforts to control overweight

OECD member countries have implemented a suite of regulatory and non-regulatory initiatives to reduce overweight population rates. Prominent examples include mass media campaigns to promote the benefits of healthy eating; promotion of nutritional education and skills; 'sin' taxes on energy-dense food and drink items to discourage consumption; food labelling to communicate nutritional value; and agreements with the food industry to improve the nutritional value of products. Policymakers are also exploring initiatives that address the social determinants of being overweight. Despite these efforts, the overweight epidemic has not been reversed, highlighting the issue's complexity.

5.3.1. National strategies address overweight as one of the main public health issues in the country

Food was recognised as a right in the Brazilian Constitution in 2010 and as one of the determinants of the population's health in the law that created SUS. In this line, SUS national directives are responsible for "formulating, evaluating and supporting food and nutrition policies". The actions of food and nutrition in SUS were institutionalised from the publication of the National Policy on Food and Nutrition (*Política Nacional de Alimentação e Nutrição*, PNAN) in 1999. In addition, the Intersectoral Strategy for Obesity Prevention and Control (*Estratégia Intersetorial de Prevenção e Controle da Obesidade*, EIPCO) in 2014 constitutes an important part of the national agendas for overweight control (Bortolini et al., 2020[7]; Pinheiro et al., 2019[8]) (see Box 5.1).

Box 5.1. Brazil's national agendas for overweight control

National Policy on Food and Nutrition, PNAN 2011

The National Policy on Food and Nutrition (*Política Nacional de Alimentação e Nutrição*, PNAN), approved in 1999, integrates Brazil's efforts to respect, protect, promote and provide human rights to health and food. In partnership with the National Health Council's Intersectoral Commission on Food and Nutrition (*Comissão Intersetorial de Alimentação e Nutrição*, CIAN), the Ministry of Health conducted a broad and participative process to update and improve PNAN. In its new edition, finalised in 2011, PNAN aims to improve the conditions of food, nutrition and health of the Brazilian population, through the promotion of appropriate and healthy eating practices, food and nutrition surveillance, prevention and comprehensive care of diseases related to food and nutrition (Ministério da Saúde, 2013[9]).

Intersectoral Strategy for Obesity Prevention and Control, EIPCO 2014

The National Food and Nutrition Security System (*Sistema Nacional de Segurança Alimentar e Nutricional*, SISAN) takes part in obesity prevention and control actions in Brazil, being instituted in 2006 aiming to guarantee the human right to adequate food and formalising the government's responsibility. In this context, the Inter-ministerial Chamber of Food and Nutritional Security (*Câmara Intersetorial de Segurança Alimentar e Nutricional*, CAISAN), also part of the SISAN, co-ordinated the development of the Intersectoral Strategy for Obesity Prevention and Control (*Estratégia Intersetorial de Prevenção e Controle da* Obesidade, EIPCO) in 2014 (CAISAN, 2014[10]). The EIPCO includes actions to be implemented across 19 governmental sectors responsible for agricultural, educational, health, labour, environmental and international relations policies, among others.

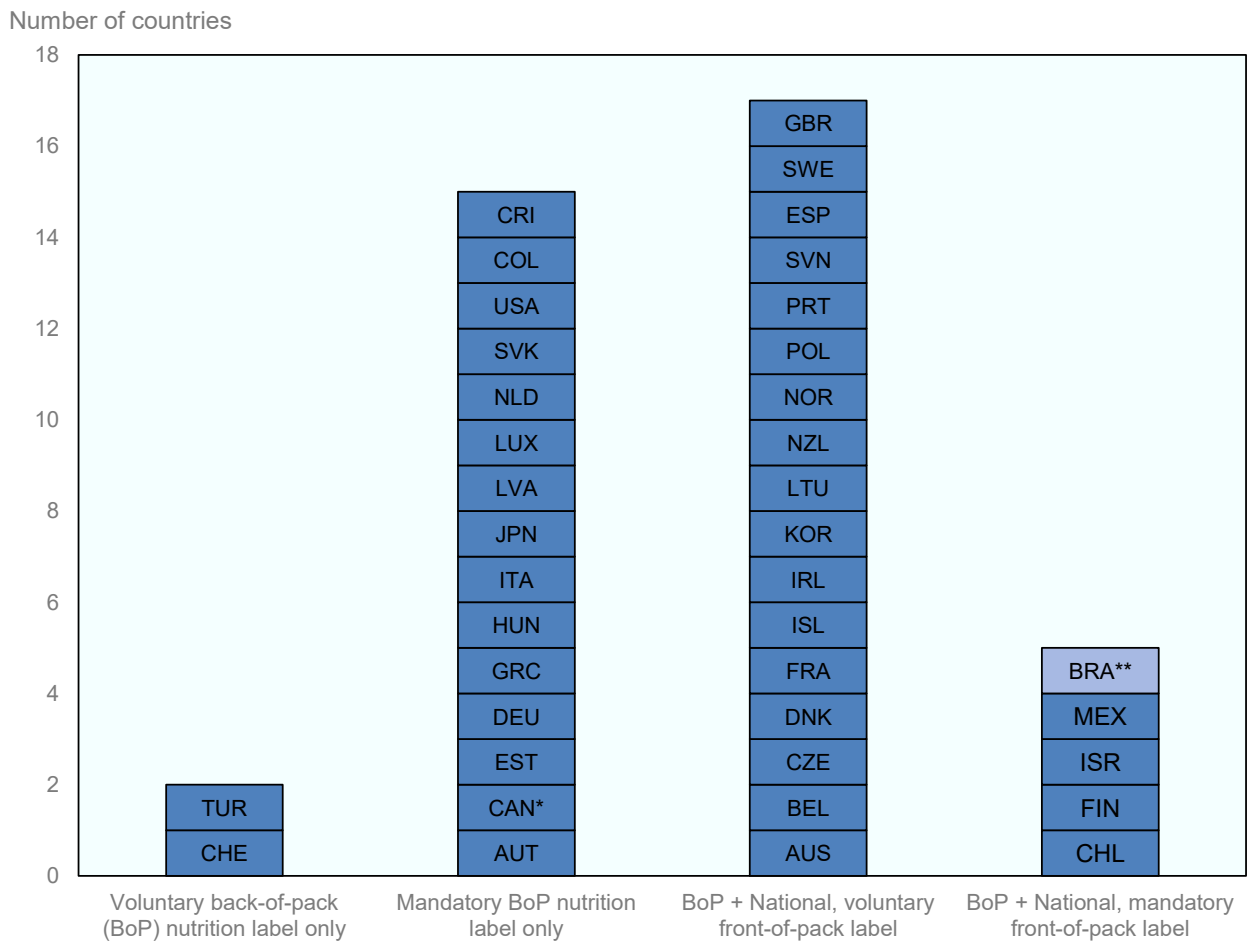
5.3.2. Brazil recently took a significant step forward approving a new front-of-package food labelling policy

Food labels on pre-packaged foods aim to inform consumers about the nutritional value of foods. They can include “informative” labels containing a list of nutrients, usually put on the back, or clearly visible “interpretive” labels providing nutritional information in a more easy-to-understand format, usually put on the front. In addition, front-of-pack (FoP) labels may aim to warn about nutriments that should be consumed in limitation or avoided altogether, e.g. salt, sugar, saturated fats content, or highlight positive aspects such as dietary fibre content (OECD, 2019[5]).

Currently enforced, Brazil has a mandatory back-of-pack nutrition label, applied to packaged food, with the exception of water, alcoholic beverages, salt, vinegar, vegetables and meat in natural forms, spices, coffee, tea, herbs, food additives, technology adjuvants, restaurant food and small packaging (100 cm2) without nutritional claims. It mandates to report on energy value, carbohydrates, dietary fibres, protein, total fat, saturated fat, trans fat, sodium and nutrients targeted in nutrition claims (ANVISA, 2019[11]).

On October 2020, after a process initiated in 2014, ANVISA approved a new mandatory front-of-package label regulation of packaged food in Brazil, which will be enforced 24 months after its publication. The new rules aim to facilitate the understanding of nutritional information and lead consumers to make more conscious food intake decisions. This goes in line with what other OECD countries have done, such as Chile, Finland, Israel and Mexico (Figure 5.11). Box 5.2 summarises the content of the new regulation in Brazil.

Figure 5.11. Nutrition labelling policies for pre-packaged foods in Brazil and OECD countries

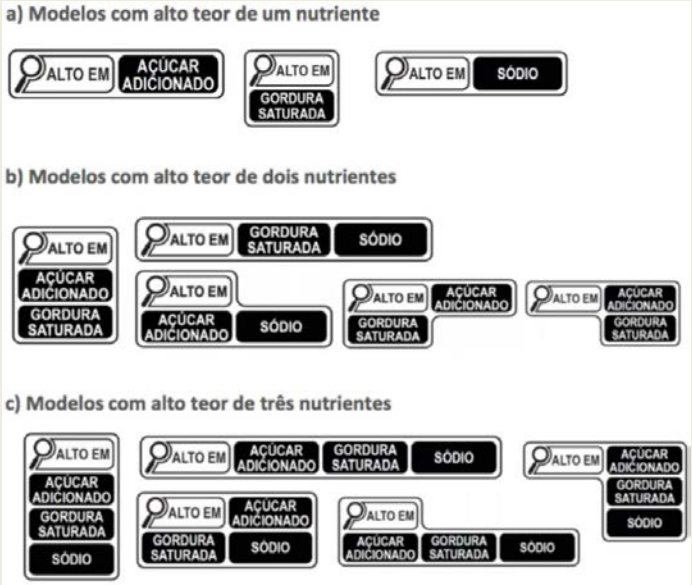


Notes: OECD countries in dark blue. * Canadian legislation on mandatory labelling has been proposed but not yet implemented; ** Mandatory FoP label to come into force in 2022.
Source: OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en and ANVISA (2020[12]), "Anvisa aprova norma sobre rotulagem nutricional", https://www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2020/aprovada-norma-sobre-rotulagem-nutricional.

Box 5.2. New Brazilian nutritional label regulation of packaged food

The Resolution of ANVISA's Collegiate Board 429 (Diário Oficial da União, 2020[13]) and Normative Instruction 75 (Diário Oficial da União, 2020[14]) published on 9 October 2020, in the Brazilian Official Gazette establishes significant changes about the information that must be displayed to consumers. Under the new regulation, the nutritional labelling must be placed on the front panel of packaged foods using simple and clear icons to emphasise high contents of saturated fat, added sugar and sodium (Figure 5.12). The new model does not include warnings for non-caloric sweeteners.

Figure 5.12. New label design in Brazil to be enforced from October 2022 onwards



Note: a) Models for high content of one nutrient; b) Models for high content of two nutrients; c) Models for high content of three nutrients. Nutrients: saturated fat, added sugar and sodium.
Source: ANVISA (2020[12]), "Anvisa aprova norma sobre rotulagem nutricional", https://www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2020/aprovada-norma-sobre-rotulagem-nutricional, USDA (2020[15]), "Brazil Approves New Regulations for Food Labeling".

5.3.3. School-based policies are well-advanced in Brazil

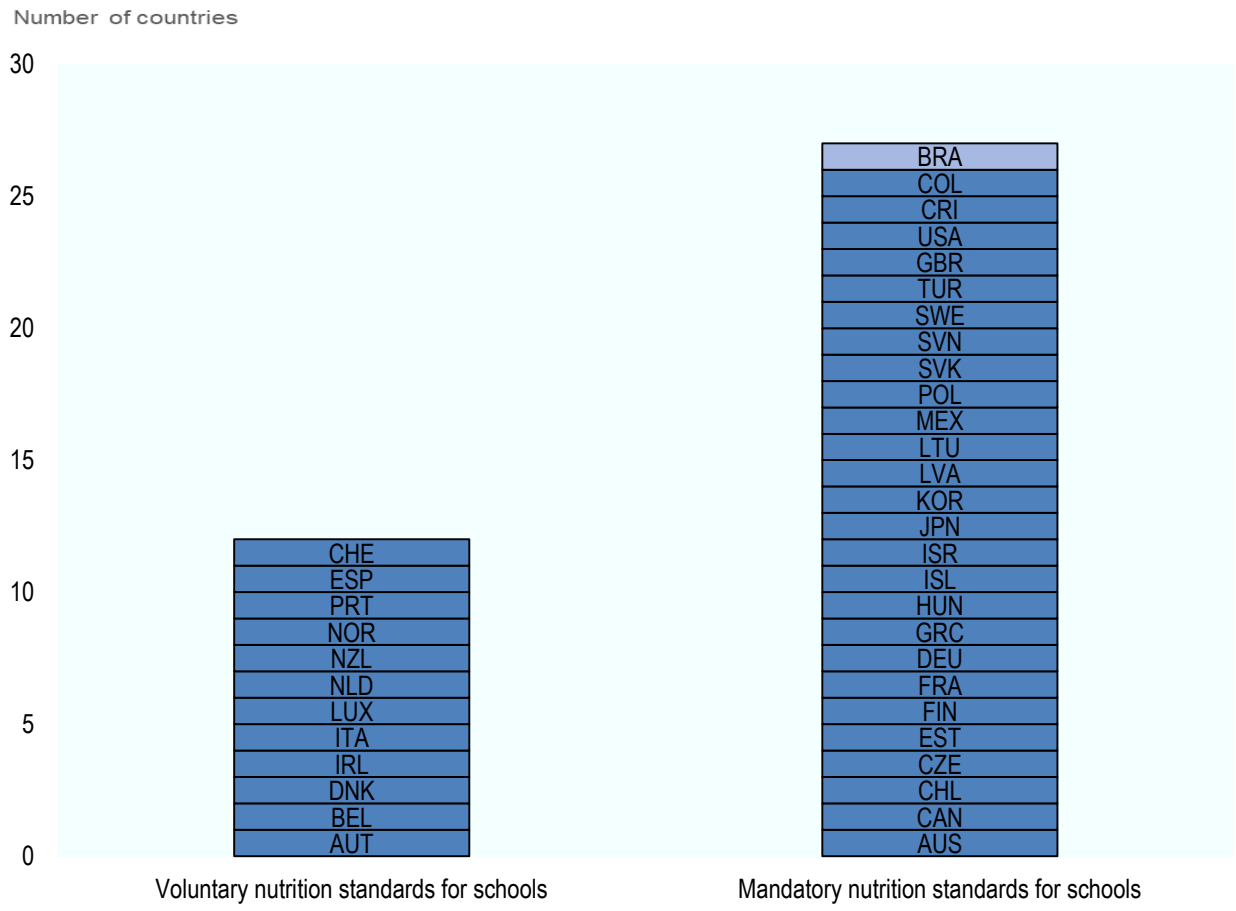
Children in early stages of their lives are only just beginning to develop critical thinking skills and learning to exercise self-control, which makes them particularly vulnerable to outside influences. They share their parents' diet and acquire exercise-related habits from them. School may affect the food options surrounding children as well. Their choices are also influenced by the broader environment, for example, some communities may provide accessible alternatives to exercise or buy healthy food, while others may be described as "food deserts" or "food swamps" (Saunders, Saunders and Middleton, 2015[16]).

Regarding interventions designed to encourage healthy lifestyles among children, a meta-analysis of studies combining intensive classroom physical activity lessons led by trained teachers, moderate-to-vigorous physical activity sessions, distribution of nutritional education materials and provision of healthful foods, found that such interventions can reduce BMI by an average of 0.3 kg/m^2 (Wang et al., 2015[17]). In addition, other reviews found stronger evidence for school-based programmes including the involvement

of other family members or a community, compared to the purely school-based ones (Verjans-Janssen et al., 2018[18]; Bleich et al., 2018[19]) .

Some concrete examples of such policies include the EU School Fruit, Vegetables and Milk Scheme (European Commission, 2020[20]), the Co-ordinated Approach to Child Health in the United States (CATCH, 2021[21]), Crunch&Sip® in Australia (Crunch&Sip®, 2021[22]), the "Kids to kids" programme in Slovenia, and the "Contrapeso" programme in Chile (OECD, 2019[23]). Having such programmes entails that countries have school-based nutrition standards, either voluntary or mandatory (see Figure 5.13). Brazil has such nutrition standards, reflected in programmes such as the Health at School Programme (*Programa Saúde na Escola*, PSE) and the National School Meals Programme (*Programa Nacional de Alimentação Escolar*, PNAE) (see Box 5.3).

Figure 5.13. School-based nutrition standards



Note: OECD countries in dark blue.
Source: OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en.

Box 5.3. School-based policies for children's health and healthy lifestyle in Brazil

Programa Saúde na Escola

The Health at School Programme (*Programa Saúde na Escola*, PSE), an intersectoral policy of the health and education sectors, was established in 2007 by the Presidential Decree No. 6.286. The programme aims to provide comprehensive care (promotion, prevention and care) to protect the health of children, adolescents and youth in public schools. The PSE is delivered in partnership with primary health care units bringing together the Family Health Teams and education professionals. Municipalities can adhere by agreeing on commitments every two years. The target audience of PSE are students from all public day care centres and those associated with municipalities, all rural schools, schools with students under socio-educational measures, and schools that have at least 50% of enrolled students belonging to families benefiting from the Bolsa Família Programme. (Ministério da Saúde, 2021[24]).

Programa Nacional de Alimentação Escolar

The National School Meals Programme (*Programa Nacional de Alimentação Escolar*, PNAE) provides schools with meals and food and nutrition education for students at all stages of public basic education. The federal government transfers to states, municipalities and federal schools supplementary financial amounts made in 10 monthly instalments (from February to November) to cover 200 school days, according to the number of students enrolled in each education network. The PNAE covers students of all basic education (pre-school, primary, secondary and youth and adult education) enrolled in state schools, philanthropic organisations and community organisations (with public authority agreements). Importantly, the school menu is defined by each municipality, but it should be prepared by a nutritionist, respecting local and cultural food habits, meeting specific nutritional requirements. The PNAE also mandate schools to purchase at least 30% of its food to local suppliers (*Agricultura Familiar*), and its supervison includes representatives of government, education workers and students, civil entities and parents of students (FNDE, 2021[25]).

5.4. Advancing towards a multi-sectoral comprehensive response targeting the main overweight determinants

This section reviews the existing national policy landscape, placing a particular focus on a limited set of policies that are either recognised as particularly innovative, or for which there is a well-developed body of evidence on their effectiveness.

In line with the OECD framework (Sassi and Hurst, 2008[26]), public health policies, including policies to tackle overweight and to promote healthier lifestyles can be categorised into the four broad groups shown in (OECD, 2019[5]):

- policies influencing lifestyles through information and education
- policies widening the set of healthy choice options
- policies regulating or restricting actions promoting unhealthy choice options, and
- policies modifying the cost of health-related choices.

While some policies may be very effective, none of them is sufficient in isolation. For example, policy actions aiming to influence lifestyle choices through information or education are important, but not sufficient for someone living in a community where it is difficult to purchase healthy foods, or where exercise options are limited. In such cases, action plans to widen the set of healthy options are essential, such as the provision of certain infrastructure or food retail improvements. Lifestyles can also be influenced by the marketing of calorie-dense and/or ultra-processed foods, regardless of where one lives. Therefore,

a certain amount of regulation may be needed, for example in the form of limiting marketing practices (especially advertising targeting children), taxation or even banning certain foods or nutrients (e.g. trans fats). However, even these policies may not be sufficient unless other causes of the recent increase in overweight rates are addressed, such as rising income inequality or poverty. At the very least, such policies should pay particular attention to the needs of the lower socio-economic status groups, who are often the least resilient to the influence of the obesogenic environments in which they live (OECD, 2019[5]).

Public health interventions to reduce overweight can improve the health of the Brazilian people, delaying the development of chronic diseases such as cardiovascular disease, diabetes, and cancer (OECD, 2019[5]). Improvement in population health goes hand in hand with a positive impact on health expenditure. On average, USD PPP 0.99 per capita per year can be saved across 36 countries included in the OECD analysis by implementing menu labelling schemes, the interventions with the biggest impact on health expenditure. The other interventions produce average savings in health expenditure ranging from USD PPP 0.04 to USD PPP 0.97 per capita per year.

5.4.1. Brazil can make further progress in policies influencing lifestyles through information and education to control overweight

Communication-based approaches through the provision of information and education represent a significant share of disease prevention policies put in place by OECD countries, and may take a number of forms. Brazil has made significant progress with its new front-of-package policy, but other policies could be also explored. For instance, restaurant menu labelling, mass media campaigns, use of new technologies and prescription of physical activity by primary health care doctors.

Menu labelling in restaurants could be introduced in Brazil

Menu labelling in restaurants and cafeterias encompasses displaying information on the calorie and other nutrients content, such as salt and sugar, of items on the menu at points-of-purchase. This can be done with or without contextual information like recommended daily calorie intake, or interpretive information such as a traffic light system design. It can also be done with the help of PACE (physical activity calorie equivalent) labels that indicate the number of minutes of exercise needed to burn off the calories consumed.

A systematic review and meta-analysis of mostly mandatory initiatives found that participants who received menus with labels consumed 41 fewer calories per purchase, compared to the control group. The same study also found that contextual or interpretive labels were more effective, by reducing calorie consumption by 81 kcal (Sinclair, Cooper and Mansfield, 2014[27]). Another systematic review assessed the impact of menu labelling on children and adolescents (or their parents), finding that examinations of hypothetical food purchases in artificial environments suggest that menu labelling may be efficacious in reducing calories purchased for or by children and adolescents. Real-world studies are less supportive, although school-based studies were generally positive (Sacco et al., 2017[28]). In addition, menu labelling, besides influencing consumer behaviour, might also encourage restaurants to reformulate their menus by offering lower calorie content. There is evidence in favour (Bleich et al., 2015[29]) and against (Dunford et al., 2010[30]) this assertion, and scientific doubts exist about whether studies focused on calorie changes in chain restaurants are capturing responses to menu labelling legislation rather than responses to other forces encouraging restaurants to change their menus (Bleich et al., 2017[31]).

Mandatory menu labelling initiatives are relatively recent and therefore implemented in a limited number of settings. In the United States, all chain restaurants with at least 20 outlets have been required to show calorie information on their menus since 2018 (Cleveland, Simon and Block, 2018[32]), while these regulations have also covered operators of at least 20 types of vending machines in the United States (Dell, 2018[33]). In Australia, several states introduced legislation between 2011-18 requiring restaurant chains with more than 20 outlets in the state (or more than seven in the Australian Capital Territory), or 50

or more in the whole country, to display the energy content of their menu items (Niven et al., 2019[34]). In Ontario, Canada, all food service chains with at least 20 locations have been required to list calorie counts on their menus since 2017 (Ontario Government, 2019[35]).

In Brazil, a randomised controlled trial with university students in real restaurant settings compared menu labelling information in the form of a traffic light plus guideline daily amounts, an ingredients list plus highlighted symbols (IL+S), and a control group with no menu labelling. Healthy food choices of students who received the menu showing IL+S were significantly higher, while this format positively affected healthy food choices in women, not overweight participants and in participants who often ate out more than twice a week (Oliveira et al., 2018[36]). A qualitative study explored preferences of young adults in Brazil and the United Kingdom about restaurant menu labelling formats. In both countries, participants preferred the ingredients list plus symbols format to make an informed food choice. Organic food and vegetarian symbols were the ones considered most important to appear on restaurant menu labels with ingredients list. However, most participants rejected the information restricted to calories and calories plus nutrients formats, saying that these would not influence their own choices (de Oliveira et al., 2017[37]). This type of studies with Brazilian population are very important for policy design and implementation if Brazil decides to pursue menu labelling in the future.

Channels-wide mass media campaigns are an alternative for expanding Brazil's actions on overweight control communication

Mass media campaigns (MMC) have the potential to reach many people, while affecting multiple overweight risk factors at the same time. Traditional (TV, radio, newspaper) or new media (online marketing, social media) are used for such campaigns and are often implemented at the national level, although, they can be launched by local authorities.

In Western Australia, the "2&5" MMC (eating two servings of fruit and five servings of vegetables a day) resulted in a population-wide increase in the mean intake of fruit and vegetable servings by about 0.2 servings per day over three years (Pollard et al., 2008[38]). In the United Kingdom, following the introduction of the Change4Life MMC, 58% of people in the treatment group switched to lower-fat dairy products compared to 26% in the comparison group (Wrieden and Levy, 2016[39]). An OECD review of studies assessing MMC to promote an active lifestyle estimated that within one month of the intervention starting, MMC can result in a 60% increase in the number of people who are considered at least moderately active, with the effect disappearing after about three years (Goryakin et al., 2017[40]).

Most, if not all OECD countries, already have, or have had in the past, at least one nationally run MMC to encourage healthier lifestyles. For example, there is almost universal governmental promotion of fruit and vegetable consumption, not only of the well-known "5-a-day" target (e.g. in Chile, Germany, Italy, Mexico, New Zealand, Spain) but also of other types, e.g. "6-a-day" in Denmark or the "2&5" campaign in Western Australia. Governmental programmes also encourage physical activity, such as the "Eat Move" campaign in France or Change4Life campaign in England and Wales (OECD, 2019[5]).

In Brazil, not many MMC targeting overweight exist. One example came from civil society, with the campaign called "You have the right to know what you eat" (*Você tem o direito de saber o que come*), by the Alliance for an Adequate and Healthy Diet (*Aliança pela Alimentação Adequada e Saudável*), a network of social organisations that defend the human right to adequate and healthy food. The campaign included pieces on radio, television, digital and print media, focusing on the relationship between overweight and consumption of unhealthy foods (AAAS, 2017[41]). No evaluation was recorded for it.

Should Brazil considers designing and implementing MMC, it might consider a number of challenges. For example, MMC are usually time-limited and not necessarily repeated on a regular basis. In addition, while innovative approaches such as social media are welcome, it is important to make sure that such policies do not create digitally driven inequalities in health. Therefore, the use of more traditional channels, such as television and printed media, should also be maintained. More generally, MMC should be designed

while keeping in mind the needs of all people, and especially underprivileged communities. Thus, promotion of healthy lifestyles should go hand in hand with ensuring that sufficient healthy options are available for those wishing to take advantage of them (OECD, 2019[5]).

Mobile apps about food and nutrition exist in Brazil but initiatives can be taken forward to enhance its positive impact

New electronic tools designed to promote various health-related behavioural changes have been developed and adopted in recent years. Among them, mobile phone applications (apps) can help individuals count the numbers of steps they walk in a day, estimate calories consumed, link calorie information to product barcodes that can be scanned by phones; generate charts on trends in calorie consumption and physical activity levels; provide information on nearby health and wellness events/facilities; and promote health behaviours through various rewards programmes (OECD, 2019[5]).

Emerging evidence indicates the potential of such technologies to positively affect health outcomes. A recent systematic review concluded that the use of mobile apps is related to a significant decrease in BMI of about 0.45 kg/m^2 and in weight of over 1 kg after 3 to 9 months of follow-up (Islam et al., 2020[42]). Another systematic review found that mobile apps interventions improve nutrition behaviours and nutrition- related health outcomes, including positive effects on obesity indices, blood pressure and blood lipids (Villinger et al., 2019[43]). Nevertheless, the uptake and usage of most apps can be quite low, which may depend on various factors, such as the spread and intensity of the marketing campaigns promoting their use, as well as privacy-related concerns (Neubeck et al., 2015[44]).

There are already some examples of such technologies in practice. In Austria, an online tool enables the comparison of sugar, salt, fat and energy content of foods across different product categories (lebensmittellupe.at, 2021[45]). Yuka is another mobile app present in the United Kingdom, Ireland, France, Belgium, Switzerland, Luxembourg, Spain, North America and Italy that through scanning bar codes analyses store or supermarket food items, providing a detailed nutritional data sheet for each product. If a scanned product has a bad nutritional score, the app offers independent recommendations for similar items with better nutritional rate (Yuka, 2021[46]). In Estonia, the National Institute for Health Development implemented a web-based tool to help households calculate the amount of salt and sugar in their diet, and software to check the nutritional value of products by name or brand (Toitumine.ee, 2021[47]).

Box 5.4. Be He@lthy, Be Mobile joint venture between WHO and ITU

The “Be He@lthy, Be Mobile” (BHBM) is a joint initiative between the International Telecommunication Union (ITU) and the WHO established in 2013. BHBM is the first UN initiative to use population-wide mobile health (mHealth) prevention services at scale, and claims to be the largest-scaled mHealth initiative for NCDs in the world (WHO, 2021[48]).

The main goal of BHBM is to encourage and facilitate partnerships between Ministries of Health, Ministries of Information and Communication Technology, academia and local civil society, with the goal of scaling up national mHealth programmes for NCD prevention and management. Specifically, the initiative aims to leverage the power of mobile technology to deliver a number of public health messages, while other technology mediums for information dissemination are being considered as well.

BHBM now works mostly in low and middle-income countries. It is also active in two OECD countries, Norway and the United Kingdom. Independent impact evaluations have confirmed, for example, that there was a 19% quit rate amongst participants in the mTobaccoCessation programme. In Zambia, mCervicalCancer programme resulted in a 6% increase in cervical cancer screenings (ITU, 2017[49]). A randomised trial in Senegal found that HbA1c levels were better diabetic patients receiving SMS for 3 months. The campaign cost was EUR 2.50 (USD 3.10) per person (Wargny et al., 2018[50]).

As in many countries, Brazil has a variety of mobile apps available for its population. For instance, a study evaluated the mobile app Digital Food Guide (*Guia Alimentar Digital*, GAD) on self-reported food intake and body weight of 442 Brazilian users of both genders, aged 19-50 years. After using the app, approximately one-third of participants improved their eating pattern and 60% lost weight ($p < 0.01$). The percentage of individuals consuming poor-quality diet decreased by 8.5%, those achieving intermediate quality increased by 6.8%, and those with high quality increased by 1.6% ($p = 0.01$) (Caivano and Domene, 2018[51]). However, another study assessed 16 free mobile apps with nutritional information in Brazil finding that they presented partially adequate or inadequate information about food composition (macro- and micronutrients) and that the adequacy of the food energy values ranged from 0 to 57.1%. Despite this, the apps received positive ratings by users (Braz and Lopes, 2019[52]). In this scenario, Brazil could consider the development of regulations to promote the use of mobile apps that can provide reliable and safe nutritional information to help Brazilians to have healthy lifestyles, for instance, about food choices and weight management.

Prescription of physical activity by primary health care teams could be organised and promoted by the Federal and State Governments

Primary health care settings present a good opportunity to provide information and advice on healthy lifestyles and to encourage physical activity, especially among the at-risk population groups. Physicians in particular may be ideally suited to provide advice on adequate physical activity levels. Such advice can take the form of general behavioural counselling or more formal prescribing (OECD, 2019[5]).

Good evidence support prescribing physical activity in primary health care settings to increase its levels amongst sedentary patients, at least in the short term. According to a systematic review and meta-analysis, prescribing physical activity for people at risk of developing chronic diseases may increase physical activity by about 56 extra minutes of moderate-level exercise per week, which can account for about a third of the 150 minutes per week of moderate exercise recommended by WHO (Goryakin, Suhlrie and Cecchini, 2018[53]).

Physical activity on prescriptions programmes exist in at least one-third of OECD countries. In the United Kingdom, they were introduced as early as 1990s, and in Scandinavian countries in the 2000s. They also exist in Germany, the Netherlands, Austria, Belgium, Spain, Portugal, the United States, Canada, New Zealand and Australia. The programme design varies. For example, in some countries, prescriptions are given by general practitioners, while in others by nurses or other health professionals. Prescribed physical activity can be facility, home-based, or both, and may be limited to aerobics, or include other activities such as walking, swimming or gardening (Arsenijevic and Groot, 2017[54]).

Box 5.5. Prescribing physical activity in Sweden

The Swedish physical activity on prescription programme was selected as a best practice example by the European Commission (European Commission, 2019[55]). This is a patient-centred counselling programme, in which patients at risk of developing NCDs receive written individualised prescriptions from a medical worker (who may be any qualified licensed health care practitioner, and not necessarily a medical doctor), for both everyday physical activities, as well as for aerobic fitness, strength and flexibility training. The prescription also specifies duration, frequency and intensity of the exercise. There is also a formal follow-up procedure, the results of which go into the patient's medical record. The ultimate aim of this scheme is to help patients integrate physical activity into their daily lives (Kallings, 2016[56]). A systematic review investigated the effects of the core elements of the Swedish model for physical activity and found that it probably results in an increased level of physical activity (Onerup et al., 2019[57]).

In Brazil, physical activity is prescribed in some primary health care teams but it is not a regular practice and no guideline exist. In general, participation in a physical activity programme starts with counselling from a health professional (physician, nurse, community worker), followed by an invitation to participate in a programme sponsored by the primary health care unit. Program awareness in many cities is also enhanced through special events and community educational activities performed by the health units. A study explored the characteristics of programmes that promote physical activity in the public primary health care system in Brazil. It found that four out of ten primary health care units reported having a physical activity intervention programme, the most common involving walking groups. Most of the activities were performed in the morning, once or twice a week, and in sessions of 30 minutes or more. Physical education professionals were primarily responsible for directing the activities (Gomes et al., 2014[58]), as prescribing exercise is generally considered the domain of physical activity professionals. Another relevant barrier is that physicians are not specific enough in their instructions to patients, not providing enough information to empower people to exercise, especially if the patient has a comorbid condition (De Souto Barreto, 2013[59]). This type of information would be very useful to develop an organised national programme to support the prescription of physical activity by primary health care workers in Brazil. This could be included in the Physical Activity Guide for the Brazilian Population that is currently being developed by the Ministry of Health (Ministério da Saúde, 2020[60]).

5.4.2. Brazil can widen choices for its population through actions in food reformulation, workplaces and transport

While information and education policies to influence lifestyles are important, they may not be sufficient if local environments provide limited opportunities to engage in healthy lifestyles. For instance, mobile apps promoting physical activity may be ineffective if there is a lack of safe, walkable and green spaces. Similarly, encouraging people to eat more fruits and vegetables through mass media campaigns may be hindered if the conditions to buy healthy food are limited, or if food preparation skills are lacking (OECD, 2019[5]).

Actions taken through food reformulation could be further pursued

Food reformulation delivers a different end product through a deliberate change in the production process or in the content of ingredients. Most producers reformulate their products every few years as part of their normal business process, for example to improve quality, save costs, respond to changes in consumer preferences or as an adjustment to food-related governmental policies.

Since the early 2000s, a number of OECD countries have been in discussions with industry on suitable actions to promote reformulation initiatives, which can be either voluntary by industry or mandated by formal regulation. For example, in 2015, the United States food manufacturers and restaurants can no longer produce foods containing partially hydrogenated oils, a primary source of trans fats. Some countries have strict controls, sometimes even bans, on the amount of trans fat in foods (or their major sources, such as partially hydrogenated oils), including Austria, Canada, Chile, Denmark, Hungary and Latvia. Mandatory limits on the amount of salt have also been set, for example, in Belgium, Bulgaria, Greece, Hungary, the Netherlands and Portugal (WCRF, 2018[61]). There are also examples of voluntary reformulation initiatives, which are most often undertaken in collaboration between private companies and governmental entities. For instance, in 2010, the Ministry of Health in Austria, the Agency for Health and Food Safety and the Industrial Bakers of Austria agreed on a voluntary target to reduce the salt content in bakery products by 15% by 2015 (WHO Europe, 2013[62]). At the European level, The Union of European Beverages Associations (UNESDA), representing the European soft drink industry, has committed to voluntarily reducing added sugar in beverages by 10% by 2020, compared to 2015 baseline. A mid-term evaluation carried out by auditors concluded that there was a 11.9% reduction in added sugar achieved by the end of 2017 (Eat and Live Well, 2017[63]).

In terms of scientific evidence, a systematic review found that mandatory reformulation in salt contents alone could achieve a reduction of approximately 1.45g/day, while voluntary reformulation only 0.8g/day (Hyseni et al., 2017[64]). Similarly, a review indicated that all types of trans fatty acids (TFA) policies led to their reduction; however, TFA mandatory bans had a larger impact (TFAs virtually eliminated) than did voluntary agreements (20-38% reduction in TFA intakes) (Downs et al., 2018[65]). Another review of modelling studies of reformulation of processed foods showed that mandatory scenarios were always found to be more effective than voluntary ones (Federici et al., 2019[66]).

In Brazil, since 2007 the Ministry of Health has been working with ABIA (Brazilian Association of Food Industries), who make over 70% of all processed food in the country, to improve the nutritional profile of food. Following the results of the Household Budget Survey in 2009, salt reduction was made a priority. In 2010, ABIA committed to lowering the sodium content of processed food over 10 years and a baseline assessment was undertaken. Following this, in April 2011, the first voluntary sodium reduction targets were set for processed foods that account for 90% of salt consumption in Brazil. As a result, a study found that there was a significant 8-34% reduction in the average sodium content of over half food categories. By 2017, most products of all food categories had met the regional targets proposed by the Pan American Health Organization, while some subcategories may not achieve the targets or may slow their reductions in the long term (Nilson et al., 2017[67]). The targets are monitored by the Ministry of Health, who publish their reports every two years and release the data to the media (Brown, 2017[68]).

OECD (2019[5]) modelled analyses showed that achieving a 20% calorie reduction for foods high in sugar, salt, calories and saturated fats can result in up to 1.1 million cases of cardiovascular diseases, diabetes and cancer avoided annually in 42 countries included between 2020 and 2050. In addition, about USD PPP 13.2 billion can be saved each year across the countries considered, which corresponds to about 0.21% reduction in total health expenditure. Reformulation can also increase the GDP of these 42 countries by 0.51% on average each year relative to the trend, generating additional economic growth. Properly implemented, a broader reformulation policy in Brazil, either voluntary or mandatory (e.g. trans fatty acids), can help achieve a win-win-win outcome for public health, the food industry and for consumers.

Workplace policies could be promoted with collaboration from the health and labour sectors

Workplace-based interventions are increasingly considered as a potentially effective tool to influence healthier lifestyles. Policies include dietary improvements through changes in the selection of daily menus and snacks provided in workplace cafeterias; the promotion of physical activity and reduction of sitting time through the provision of sit-stand workstations; and the implementation of workplace wellness programmes, which may provide various educational materials, classes, seminars, group activities and individual counselling sessions encouraging healthy lifestyles, as well as give incentives such as bonuses and reimbursements to encourage participation (OECD, 2019[5]).

Different reviews have analysed the evidence on the effectiveness of such programmes. Interventions using sit-stand desks, either alone or in combination with information and counselling, reduced sitting time at work on average by 100 minutes per workday at short-term follow-up (up to three months) compared to sit-desks, but no significant effects for implementing walking strategies on workplace sitting time at short-term and medium-term follow-up (Shrestha et al., 2018[69]). A two-year multicomponent workplace programme which included actions to promote a healthy diet, including through information events and education awareness campaigns, was found to increase consumption of fruit and vegetables by 0.3 servings a day (Afshin et al., 2015[70]). A workplace wellness programme, entailing component such as health risk assessment for employees, group activities and individual counselling about healthy lifestyles, as well as provision of various incentives such as performance-related bonuses or reimbursements to encourage participation, was found to reduce BMI by up to 0.64 kg/m^2 at the 12 month mark (Penalvo et al., 2017[71]). On the other hand, evidence about the effectiveness of workplace-based policies or practices targeting diet, physical activity, obesity, tobacco use and alcohol is sparse and inconsistent. Only

low certainty evidence suggests that such strategies for improving the implementation may make little or no difference on measures of implementation fidelity or different employee health behaviour outcomes (Wolfenden et al., 2018[72]).

While interest in workplace programmes is growing, they are still relatively infrequently implemented in OECD countries, and when they are, there are usually no evaluations of their effectiveness (OECD, 2019[5]). One notable exception is Japan, where such programmes are very popular (see Box 5.6). In Ireland, a National Workplace Well-being day was launched in 2015 with the stated aim to promote physical activity and better nutrition in the workplace, with more than 700 companies participating in 2019 (Civil Service Employee Assistance Service, 2018[73]).

In Brazil, a review found that workplace physical activity is a rather recent subject that has been scarcely addressed by researchers as well (Da Fonseca Neves et al., 2018[74]). Another review found that the Brazilian Government has been showing a growing interest in developing and promoting preventive strategies for cardiovascular diseases, primarily through better control of known risk factors (i.e. smoking, obesity, physical inactivity, high cholesterol, high blood pressure, and high blood glucose). However, the scope of the programmes, communication and marketing strategies and the financial incentives for companies and individuals are fundamental (Cipriano et al., 2014[75]). The Labour Inspectors of the General Occupational Safety and Health Co-ordination are responsible for the management of all activities related to occupational safety and health, representing a good governmental area for promotion workplace polices. Other than inspection and auditing activities, they also support the formulation of directives and norms in the area of occupational safety and health and of the directives for the technical-professional improvement and management (Secretaria de Trabalho, 2020[76]). The collaboration between the health and labour sectors, along with co-ordination with the private sector, would be ideal to promote these healthy workplace policies.

Box 5.6. Workplace health programmes in Japan

Central and local governments in Japan provide various incentives, usually in the form of awards, for both public and private employer, to implement workplace health promotion programmes. These programmes often focus on affecting such risk factors as unhealthy diet, physical inactivity, harmful alcohol consumption, smoking and mental well-being. The activities are often carried out in small teams so that people can better motivate each other (OECD, 2019[77]).

The scope and comprehensiveness of such programmes is directly proportional to the size of the company, although as a rule, they comprise both targeted (e.g. health check-ups to identify people at higher risk of NCDs), and population-level approaches (e.g. menu labelling and healthier foods offers in canteens, provision of pedometers and installation of standing desks to encourage physical activity). The participation rates in such programmes are usually very high, which may be due to both cultural reasons, as well as owing to the provision of various incentives. For example, rewards such as money, additional leave or other benefits may be given to participating employees based on meeting various targets, such as walking a minimum number of steps, or reaching a certain BMI threshold.

Policies promoting active transport and walking could be expanded and led by the Federal and State Governments

There are numerous examples of policies designed to make it easier for people to integrate physical activity into their daily lives through active travel and walking. They can include, for example, access to dedicated cycle lanes and bike-sharing schemes. Other actions can also include urban planning to increase the number of parks, recreational areas and green spaces, as well as expanding access to convenient public

transport options to encourage people to switch from car use and to walk more to reach their destinations (OECD, 2019[5]).

Active travel options, such as travelling by bicycle, can increase physical activity and decrease the need for passenger vehicles, and ultimately improve physical (Otero, Nieuwenhuijsen and Rojas-Rueda, 2018[78]) and mental health (Martin, Goryakin and Suhrcke, 2014[79]). Physical activity can also be encouraged by better access to public transport. For example, for each person living in a community exposed to a newly available public transport system, walking increases by about 30 minutes per week (Xiao, Goryakin and Cecchini, 2019[80]). Active travel, walking and physical activity in general can be encouraged by better access to parks, green space areas and recreational facilities. For example, in the United States, living near parks and playgrounds is associated with a statistically significant reduction in childhood obesity, by 0.47 kg/m2 and 0.27 kg/m2 among boys and girls, respectively (Fan and Jin, 2014[81]).

There are numerous best practices in this area, including dedicated cycle lanes and bike-sharing schemes in cities such as Copenhagen, London, Amsterdam, Paris, Vienna and New York. As an added benefit, riding bicycles can also contribute to reduced air pollution, as in Barcelona, where the scheme was linked to the reduction of yearly CO2 emissions by about 9 000 tonnes (Rojas-Rueda et al., 2011[82]). On a global level, C40 is the network of the world's largest cities that collaborate to take action on climate change while improving the quality of urban life. Other policies of note include: closing central parts of the cities to traffic on certain days of the week; the introduction of electric (or zero emission) buses in the cities; or community programmes to encourage leisure-time physical activity. While these policies have the potential to positively affect the health of many people, their implementation often relies on local administrations, which may have limited incentives or support at a national level. This creates a risk that poorer communities are less likely to have sufficient resources to implement such actions. Without appropriate intergovernmental fiscal transfers, there is a threat of increasing health inequalities driven by such disparities in financing (OECD, 2019[77]).

In Brazil, several cities have promoted such strategies, which some have been also evaluated. For example, three years after a walking and cycling route was built in Florianopolis, those living less than 500 metres away from it increased their walking and moderate-to-vigorous physical activity by about 50 minutes per week, compared to almost no change in those who lived 1 000-1 500 metres away (Pazin et al., 2016[83]). Another shed light on inequalities around these policies in Rio de Janeiro and Curitiba, find that both cities have more than twice the supply of bicycle lanes in the wealthiest quintile than the lowest income quintile relative to area and population (Tucker and Manaugh, 2018[84]). Brazilian state and federal structured policies can further develop these municipal initiatives, putting a focus on how reducing inequalities.

5.4.3. Brazil can improve the regulation of actions that promote unhealthy choice options

Regulation of food and beverages advertising should be revised in Brazil, having children as a priority audience to protect

Food marketing represents a key factor incentivising the consumption of high-calorie and nutrient-poor foods through persuasive messages. Advertising restrictions typically take the form of a ban on commercial advertising for certain products during peak viewing time for children, although the target age of the affected children can vary (e.g. under 12 years of age in Sweden, or 14 years of age in Chile) (OECD, 2019[77]).

Literature vastly report a significant positive association between food advertising and food choices and purchasing behaviour, with women appearing to be more susceptible (Vukmirovic, 2015[85]). A review focusing on the effect over children found that food advertising is prevalent, it promotes largely energy dense, nutrient poor foods, and even short- term exposure results in children increasing their food

consumption (Boyland and Whalen, 2015[86]). A meta-analysis of 18 experiment studies indicated that participants eat more after exposure to food advertising than after control conditions. Subgroup analyses showed that the experiments with adult provided no evidence of an effect of advertising, but a significant effect of moderate size was shown for children, whereby food advertising exposure was associated with greater food intake (Boyland et al., 2016[87]). Another review confirmed these findings, as its meta- analysis revealed that children exposed to food advertising on TV (11 studies) and advergames (5 studies) consumed an average of 60.0 kcal and 53.2 kcal, respectively, more than children exposed to non-food advertising did. In addition, compared with non-food adverts, children with overweight or obesity consumed an average of 45.6 kcal more than children with healthy weight (Russell, Croker and Viner, 2019[88]).

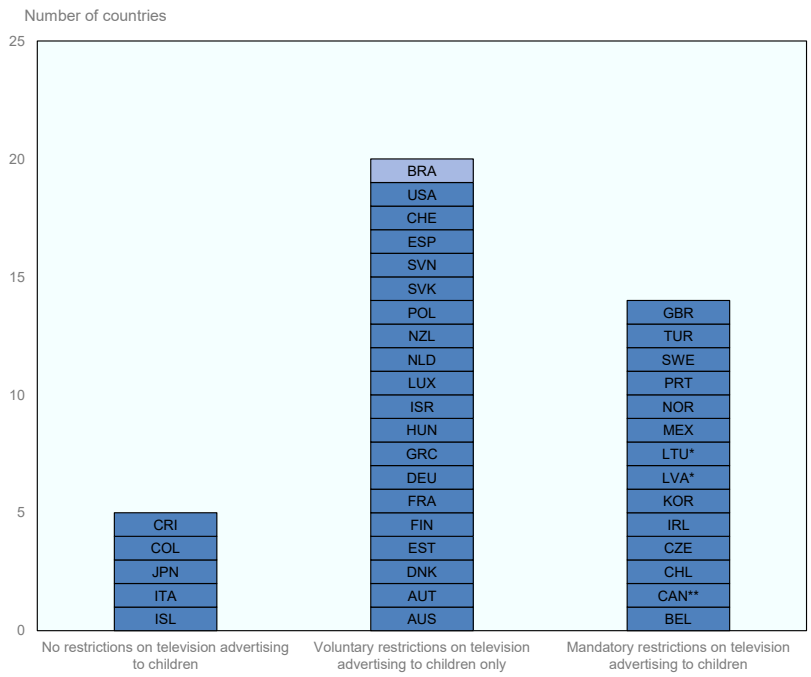
Studies suggest that statutory restrictions on commercial food advertising and promotion can have a significant effect on dietary intake. For example, in Quebec, the implementation of this policy was followed by a reduction in calorie consumption at fast-food restaurants of between 5.6 billion and 7.8 billion per year (Dhar and Baylis, 2011[89]). In Australia, a study concluded that banning TV advertising for energy-dense food during children's peak viewing times was highly cost-effective (Magnus et al., 2009[90]). In Chile, following a 2016 child-directed marketing regulation, pre-schoolers' and adolescents' TV exposure to advertising of foods high in saturated fats, sodium and sugars decreased significantly by 44% and 58%, respectively. Exposure to "high-in" food advertising with child-directed appeals, such as cartoon characters, decreased by 35% and 52% for pre-schoolers and adolescents, respectively (Dillman Carpentier et al., 2020[91]). On the other hand, a systematic review concluded that voluntary pledges to restrict high-calorie advertising may not be as effective in reducing exposure of children to advertisements, which may be due to the lack of enforceability or penalties for non-compliance (Galbraith-Emami and Lobstein, 2013[92]). In the same vein, a study assessed the 2009 food industry voluntary initiative to reduce marketing of unhealthy food to children in Australia. Total food advertising rates increased from 5.5/h in 2011 to 7.3/h in 2015, due to an increase of 0.8/h for both core and miscellaneous foods. The youth-oriented channel had fewer total food advertisements (3.7/h versus 7.3/h) but similar fast-food advertisement rates (1.3/h versus 1.3/h) (Watson et al., 2017[93]).

In Brazil, the National Council of Self-Regulatory Publicity (*Conselho Nacional de Autorregulamentação Publicitária*, CONAR) is a non-governmental organisation responsible for issuing and supervising the Code of Ethics applied to marketing strategies, including recent reviews of specific rules concerning advertisement of food and beverage industry and advertisement of products for children and adolescents, published in 2006. In addition, the National Council for the Rights of Children and Adolescents (Conselho Nacional dos Direitos da Criança e do Adolescente, CONANDA), co-ordinated by the federal government, published a resolution (Resolução 163, 13 March 2014) that establishes criteria for publicity and marketing aimed at children (up to 11 years) and adolescents (12-18 years), prohibiting any kind of "abusive publicity" (Kassahara and Sarti, 2017[94]). However, self-regulation of food advertisement remains as the norm in Brazil, which place it with other 19 OECD countries having voluntary TV restrictions to children, while 14 countries have mandatory restrictions and only 5 countries have none (Figure 5.14).

In this context, studies have analysed the TV advertisement scenario in Brazil. Costa et al. (2013[95]) found that 13.8% of all advertisement during children programme´s broadcasting in three Brazilian 'free-to-air' TV stations was of food. Sugars and sweets represented 48.1%, and oils and fats 29.1%, while food publicity was more concentrated in the afternoon. The broadcast with more audience was the one that advertised more food (A: 63.5%; B: 12.2%; C: 24.3%), especially 'sugar and sweets' (A: 59.2%; B: 43.5%; C: 21.7%). Another study analysing the four most popular Brazilian TV channels in January 2014 found that 10.2% of all advertisements were of food. Ultra-processed foods (UPF) accounted for 60.7% of the commercials, while fresh or minimally processed foods at around 7%. Authors concluded that these findings run counter to the Food Guide for the Brazilian Population's recommendations (Maia et al., 2017[96]). A third study assessed the three major Brazilian free-to-air TV channels in April 2018 finding that 18.1% of the total advertisements shown were for food and beverages. Over 80% of all foods and beverages advertised did not meet the PAHO and WHO/Europe nutritional quality standards and were

considered eligible for marketing restrictions. The proportion of unhealthy food advertisement was significantly higher on weekends, in the afternoon, and during soap operas programming (Leite et al., 2020[97]). A fourth study assessing the same three major TV channels in April 2018 found that 14.2% of all advertisements were food related. Approximately 91% of food items advertisements included UPF products, and the top three most promoted products were soft drinks, alcoholic beverages and fast-food meals. Frequency of UPF advertisements were equally broadcasted during the morning, afternoons and evenings (Soares Guimarães et al., 2020[98]). In light of this evidence and the current regulatory framework, Brazil could consider implementing and monitoring stricter regulations to food and beverages advertisement, having children as the priority group to protect.

Figure 5.14. Policies restricting television advertising targeting children



Note: OECD countries in dark blue. * Mandatory regulation only applies to energy drinks; ** Province-level regulation (Quebec).
Source: Updated from OECD (2019[5]), *The Heavy Burden of Obesity: The Economics of Prevention*, https://dx.doi.org/10.1787/67450d67-en.

5.4.4. Policies to modify the costs of health-related choices can be effective, but it requires careful policy design and implementation

Pricing food policies, in particular sweetened beverages, are a policy option to reduce obesity, but its effectiveness depend on aspects of supply and demand

Governments can affect food-related consumer behaviour by implementing targeted price policies. Most policy action in this field has focused on increasing the price of products high in sugar, saturated fats or salt. Such policies may also include targeted price reduction for healthier foods sold in shops (OECD, 2019[77]).

Among the various price policies, taxation of sugar-sweetened beverages (SSBs) is gaining particular attention. In general, evaluations of such policies have found that they do have an intended effect on consumption, with one recent systematic review and meta-analysis concluding that a 10% SSB tax was related to a 10% decline in SSB purchases and dietary intake (Teng et al., 2019[99]). It is also clear that the

magnitude of the tax effect varies depending on the programme design, on the size of the tax and the extent of its pass-through to consumers (i.e. extent to which producers pass the tax to consumers through an increase in the price of the taxed product). For example, in Mexico, an SSB tax in the amount of MXN 1/L (about USD 0.05 USD/L) was almost entirely passed to the consumers, resulting in a 10% increase in the price of SSBs (Caro et al., 2018[100])and a 6-12% drop in per capita purchases (Colchero et al., 2016[101]). In Chile, an 8% tax difference between two SSB categories, containing high and low amounts of sugar, resulted in a price difference of 3.3%, equivalent to an additional 15 Chilean pesos (about USD 0.04/L) for a typical 500 ml beverage (Nakamura et al., 2018[102]). As a result, monthly purchased volume was reduced as well, although the estimated effect varied between 4-21%, depending on the methodology used. In the United States, the city of Berkeley levies tax at a rate of USD 0.01 per ounce (USD 0.34/L), equivalent to a price increase of about 8% after a pass-through of about 47% of tax, which resulted in a 21% decline in sales of SSBs in low-income neighbourhoods (Falbe et al., 2016[103]).

Among OECD countries, 24 do not have any health-related food taxes in place. Thirteen countries tax SSBs or other foods, but the United States and Spain only at subnational levels. Some examples of taxation policies include “soda taxes” in France, Chile, Mexico, the United Kingdom, the city of Berkeley and the State of Pennsylvania in the United States. Other examples include a tax on ready-to-eat meals in Hungary and on food high in saturated fats in Denmark, introduced in 2009 and abolished in 2013 (Vallgårda, Holm and Jensen, 2015[104]).

The design of price policies should take into account potential multiple challenges. First, there should be a sufficient pass-through of the tax in the form of a price increase, as minimal changes in price are unlikely to significantly modify purchasing patterns. Second, any potential substitution effect should be taken into account as well. For example, if SSBs are taxed, people may switch to other high-calorie drinks (e.g. high-fat milks, or juices), increase their consumption of non-beverage foods high in sugar, or even increase purchases of alcoholic beverages. Third, if the demand curve is inelastic, then there may be little change in consumption, although, on a positive side, low elasticity may also imply little substitution with other calorie-dense foods or beverages. There is also concern about the adverse economic effect of such taxes, especially on low-income groups. However, previous OECD analyses suggest that health improvements resulting from such actions may disproportionately benefit the poor. In addition, revenues generated from the application of such taxes may be designed to benefit primarily low-income households (OECD, 2019[77]).

5.5. Conclusion

Overweight in Brazil, including pre-obesity and obesity, is growing at a higher rate than in OECD countries. Children overweight is already above the OECD average creating a worrying scenario for the future. Brazilians have unhealthier food consumption habits than other OECD countries, in particular in relation to the intake of sugar. At the same time, Brazil has a very high prevalence of insufficient physical activity, greater than all OECD countries. This scenario will progressively damage health, increasing premature mortality and decreasing life expectancy at higher rates than in OECD countries. It will also hit harder health expenditure and much harder the economy in terms of GDP reduction.

Brazil has already initiated the implementation of actions to control overweight, by having national strategies dedicated to it with an intersectoral focus. The country also has innovated in terms of approving a new front-of-package food labelling policy that will help Brazilian consumers in making healthier choices. School-based programmes are also in place having a very important role for the present and the future. With this as baseline, Brazil could aim for a more ambitious multi-sectoral comprehensive response targeting the main overweight determinants. It can include policies influencing lifestyles through information and education by introducing menu labelling in restaurants, structured mass media campaigns, well-regulated mobile apps, and promoting prescription of physical activity by family health teams. The strategy

can widen choices through encouraging food reformulation and developing workplace and transport policies to provide new healthier alternatives for people. Finally, the Brazilian response can improve the regulation of food and beverages advertising, in particular for children.

Evidence shows that the convergence of several of these policies can have an impact in reversing the overweight increasing trend in Brazil, diminish the development of chronic conditions and improve population health, have a positive impact on the health system financing sustainability, and produce substantial returns on the investment for the general economy. With the proper measures and policy design, including robust monitoring and evaluation systems, the pursuit of such a multi-sectoral comprehensive response can be beneficial for all actors.

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6 The economics of alcohol consumption in Brazil

Harmful alcohol use is a growing public health issue in Brazil. There are worrying signs that consumption has increased in all population groups in recent years, particularly for heavy episodic drinking among adults. While Brazil adopted important and effective alcohol control policies including drink driving policy or mass media campaigns, there remains scope to improve. Implementing a more comprehensive alcohol policy package, including pricing policies, limiting advertising and introducing regulation of alcohol sports sponsorship, can help tackle harmful alcohol consumption in Brazil. Embedding more systematically screening and brief interventions in primary health care, and implementing education and awareness programmes, are other key strategies to combat alcohol consumption and reduce its harmful consequences in Brazil.

6.1. Introduction

Alcohol use is a leading cause of death and disability worldwide, particularly in those of working age. High alcohol intake is a major risk factor for heart diseases and stroke, liver cirrhosis and certain cancers, but even low and moderate alcohol consumption increases the long-term risk of these diseases. Foetal exposure to alcohol increases the risk of birth defects and intellectual impairment. Alcohol misuse is also associated with a range of mental health problems, including depression and anxiety disorders, obesity and unintentional injury, while it contributes to more accidents, injuries, violence and homicide, all this particularly among young people. The definition used in this chapter are presented in Box 6.1.

In this chapter, we explore the current epidemiological landscape of alcohol consumption in Brazil in comparison with OECD countries, along with its impact over the health system and the economy. Then, we review the main policies that Brazil has put in place, from population-level initiatives to individual interventions within the health system and other sectors. Subsequently, the chapter outlines a policy framework for alcohol consumption control and makes a number of recommendations to be considered in future reforms in Brazil. It finalises by providing evidence about the impact of implementing such policies over population health, the health system and the economy, while discussing some implementation considerations.

Box 6.1. Definitions of harmful alcohol use

Definitions and limits of harmful drinking differ by country and study

Based on a recent OECD study, this chapter uses the following definitions (OECD, 2021[1]):

- **Heavy or hazardous drinking** = more than 20 grammes (women) or 40 grammes (men) of pure alcohol per day. This is an often-used definition in alcohol research (Rehm et al., 2006[2]) and corresponds roughly to the various national guidelines set by countries.
- **Harmful drinking** = more than 40 grammes (women) or 60 grammes (men) of pure alcohol per day. This is an often-used definition in alcohol research (Rehm et al., 2006[2]).
- **Heavy episodic ("binge") drinking** = consuming 60 grammes or more of pure alcohol on a single occasion. This is in line with the definition used by the WHO (2021[3]).

In this research (OECD, 2021[1]), the amount of alcohol is quantified in grammes of pure alcohol for the sake of simplicity and harmonisation across the various types of beverage. The density of alcohol is 0.8 grammes per millilitre. However, the common usage is to quantify alcohol in volume. ABV stands for alcohol by volume and measures the amount of alcohol as a percentage of the drink's volume (here in millilitres). For example, various types of beverage contain different levels of alcohol:

- A 500 mL can of beer at 5% ABV contains 25 mL (or 20 grammes) of pure alcohol.

A 100 mL glass of wine at 12.5% ABV contains 12.5 mL (or 10 grammes) of pure alcohol.

There are some differences between the WHO GISAH database and the *Pesquisa Nacional de Saúde* 2019

In order to make valid cross-country comparisons, the chapter uses the World Health Organization Global Information System on Alcohol and Health (GISAH) database, rather than data from the last national health survey "*Pesquisa Nacional de Saúde 2019*". The GISAH database, which covers 52 countries, reports per capita alcohol consumption, while the national health survey reports the proportion of the population reported consuming alcohol once or more a week. The data from the national health survey thus differ from the WHO figures owing to methodological differences.

The results from the *Pesquisa Nacional de Saúde 2019* show an increase in alcohol consumption between 2013 and 2019 in the Brazilian population. In 2019, 26.4% of the adult population reported drinking once or more a week, compared to 23.9% in 2013. The increase in mainly driven by women, with an increase of 4.1 percentage points in the proportion of women reported drinking alcohol once or more a week (from 12.9% of women in 2013 to 17% in 2019). The *Pesquisa Nacional de Saúde 2019* also shows that 17% of drivers reported drinking while driving, ranging from 23% in the North and Northeast regions to 14.8% in the South and Southeast regions.

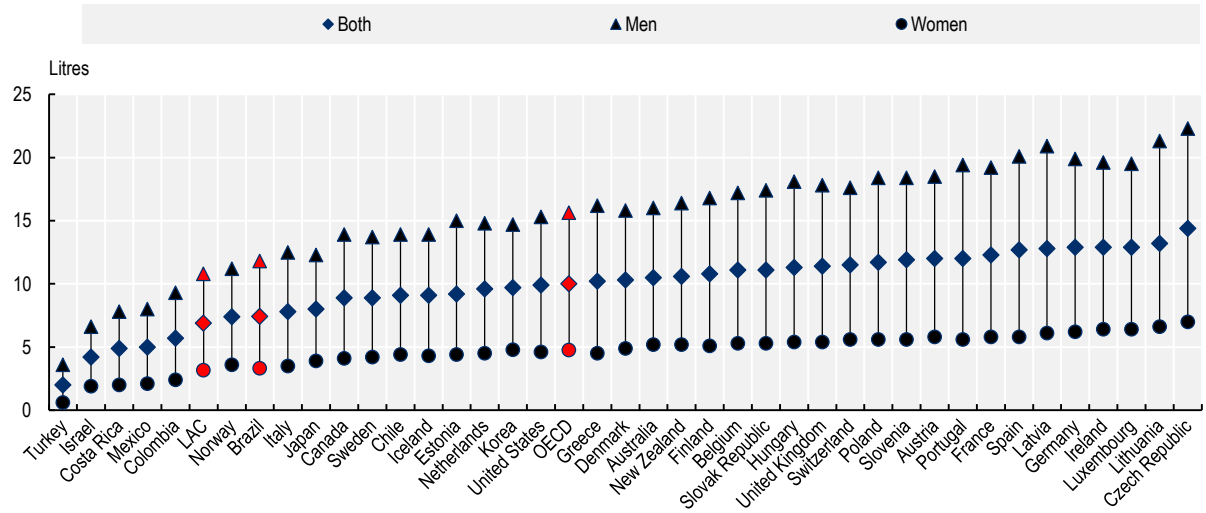
6.2. Alcohol consumption and its consequences in Brazil

6.2.1. Brazilians have a lower alcohol consumption than OECD averages

In terms of alcohol consumption, Brazil with 7.4 litres per capita amongst adults in 2018 is above the Latin America and the Caribbean (LAC) average of 6.9 but below OECD average of 10. Brazilian men drink 11.8 litres, around 4 litres less than the OECD average, while Brazilian women drink 3.3 litres, a bit less than 2 litres than the OECD average (Figure 6.1).

Figure 6.1. Alcohol consumption by gender in Brazil, OECD and LAC average, 2018

Total per capita (aged 15+) alcohol consumption (litres of pure alcohol), 2018

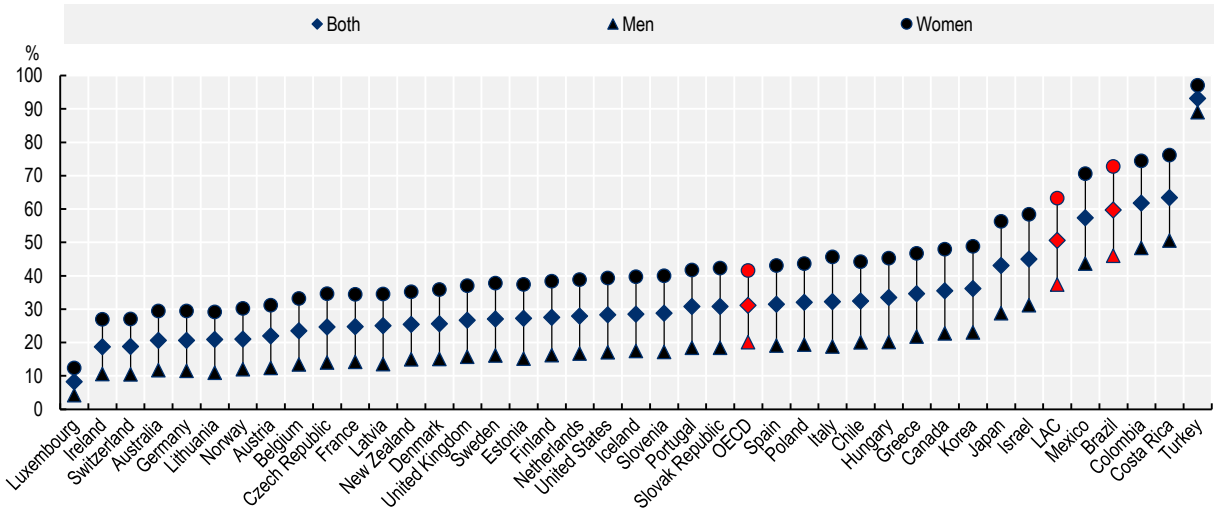


Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en, based on WHO Global Information System on Alcohol and Health 2020.

Brazil has a rate of abstainers – defined as people who did not consume alcohol in the preceding 12 months- of 59.7%, higher than the OECD average of 31.1% and closer to the 51% in LAC in 2016. Almost 73% of women in Brazil are abstainers, higher than the 42% in OECD countries, while 46% and 20.1% of men in Brazil and the OECD are abstainers, respectively (Figure 6.2).

Figure 6.2. Prevalence of abstainers by sex, Brazil and OECD

Proportion of population (aged 15+) that abstained from drinking alcohol in the past 12 months (%), 2016

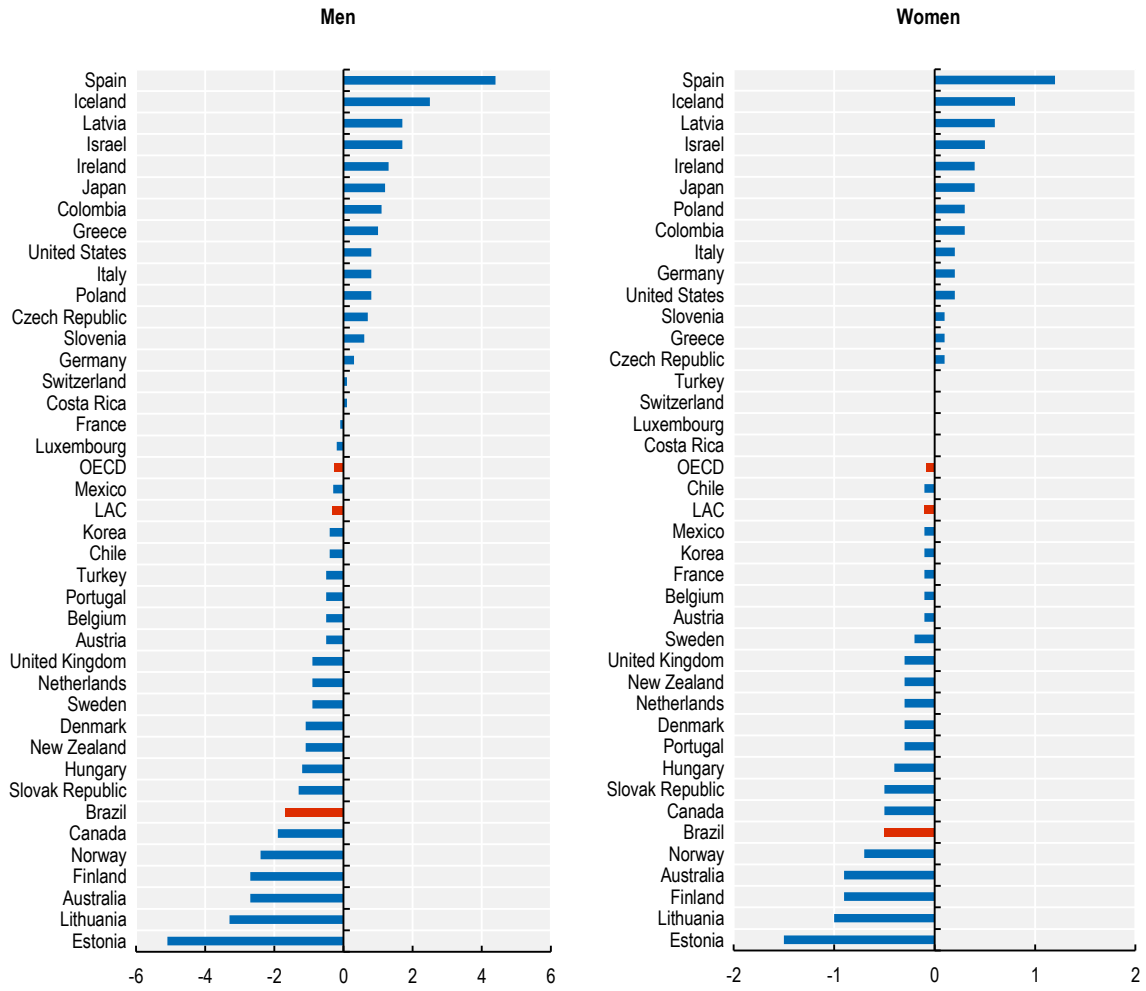


Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru. The latest national data sources about abstainers in Brazil are from 2012. For more details about methodological differences, please see Box 6.1.
Source: OECD (2021[4]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en, based on WHO Global Information System on Alcohol and Health 2020.

Between 2010 and 2018, the average total per capita alcohol consumption changed little for OECD countries. Amongst women, it decreased by 0.1 litres per capita and by 0.3 amongst men. The reduction was larger in Brazil: -0.5 litres for women and -1.7 litres for men (Figure 6.3). However, partly due to different methodologies, data sources, and different points in time, the National Health Survey of Brazil (PNS) shows that alcohol consumption among people aged 18 and more grew from 24% in 2013 to 26.4% in 2019, a 10% increase. Among men, it went from 36.3% in 2013 to 39.5% in 2019 (8.8% increase), while for women it augmented from 13% to 20.7% (59.2% increase).

Figure 6.3. Change by gender in alcohol consumption over time in Brazil and OECD countries

Change in total per capita (aged 15+) alcohol consumption between 2010 and 2018 (litres of pure alcohol).



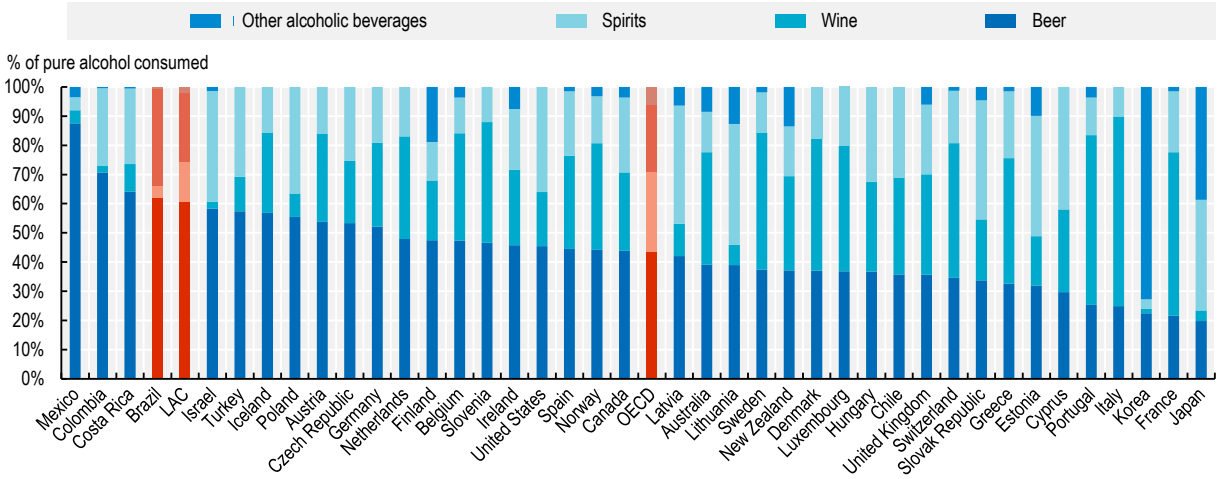
Note: Positive numbers indicate an increase in alcohol consumption between 2010 and 2018, while negative numbers reflect a decrease in per capita consumption. LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en, based on WHO Global Information System on Alcohol and Health 2020.

6.2.2. The pattern of alcohol consumption in Brazil is different than in OECD countries, with binge drinking substantially increasing in recent years

On average in OECD countries, 43% of alcohol is consumed in the form of beer, 28% as wine and 23% as spirits. Brazil consumes a higher percentage of both beer and spirits, with 62% and 33%, respectively, while wine only reaches 4% (Figure 6.4).

Figure 6.4. Alcohol consumption by type of beverage in Brazil and OECD

Recorded consumption of pure alcohol by type of beverage (%), 2018



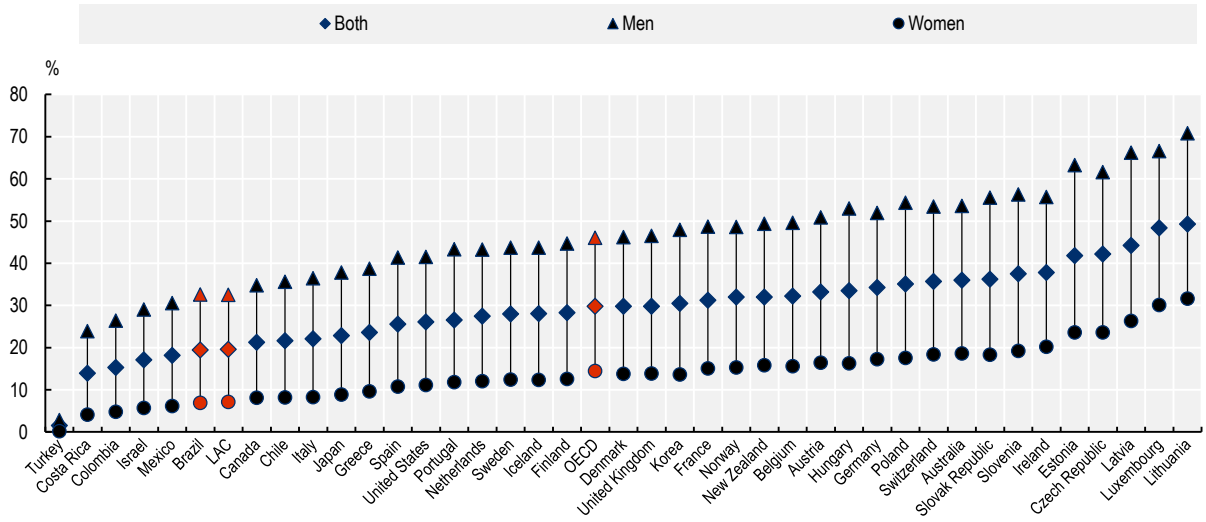
Note: Share of alcohol consumption by type of beverages is calculated by WHO using a standard approach across all the countries. Individual counties may use different approaches, which may result in slightly different estimates, for example, in Estonia. LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en, based on WHO Global Information System on Alcohol and Health 2020.

While consuming large quantities of alcohol carries significant public health risks, heavy episodic drinking – drinking a large amount in a single sitting – poses health threats that go beyond the impact on overall consumption. Based on WHO data, on average, 30% of adults in OECD countries engage in heavy episodic drinking at least once within 30 days, while in Brazil this percentage is close to 20%. Heavy episodic drinking is higher among men in all countries.

Likewise, the National Health Survey of Brazil shows that heavy episodic drinking among Brazilians aged 18 and more has almost tripled, from 5.9% in 2013 to 17.1% in 2019. The increase was larger among women growing 3.8 times from 2.4% to 9.2%, but it is higher among men (9.9% to 26%). Worryingly, heavy episodic drinking grew across all age groups, with largest increase among people aged 18-24 years moving from 7.1% in 2013 to 22.9% in 2019, followed by people aged 25-39 who increased from 7.8% to 23.7%. In addition, heavy episodic drinking also increased across all educational groups, with people having higher education experiencing the largest increase moving from 5.2% in 2013 to 18.7% in 2019. People with no education or incomplete school increased from 5.4% to 12.7%.

Figure 6.5. Prevalence of heavy episodic drinking in Brazil and OECD countries

Percentage of adult population (aged 15+) with at least one occasion of heavy episodic drinking in the past 30 days, 2016

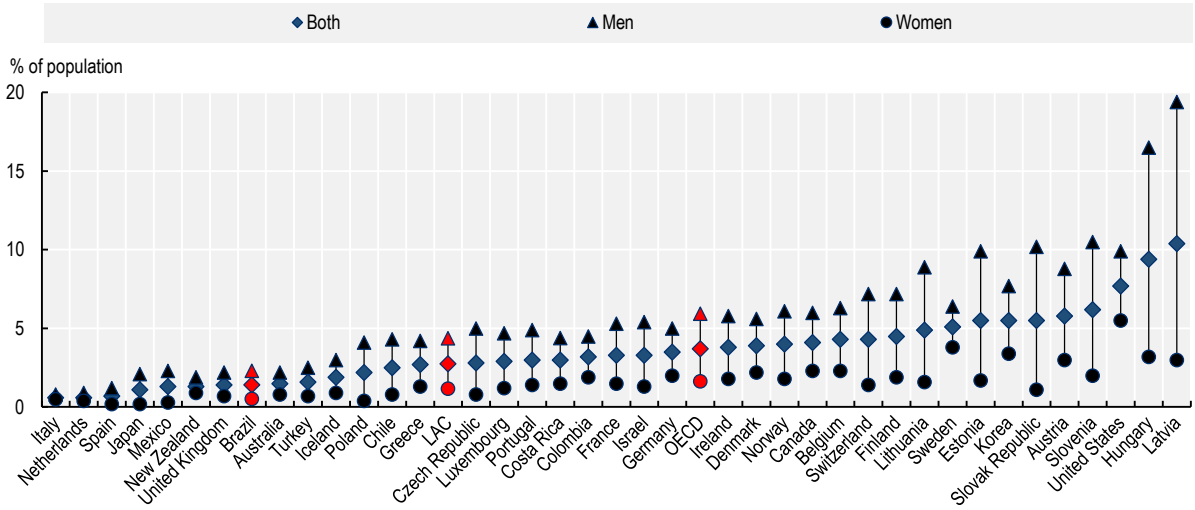


Note: Heavy episodic drinking is defined as consuming at least 60 grammes or more of pure alcohol. LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en, based on WHO Global Information System on Alcohol and Health 2020.

Repeated or continuous use of alcohol can result in alcohol dependence. In OECD countries, 3.7% of the population is alcohol dependent, while 1.4% of the population in Brazil is alcohol dependent. In all countries, alcohol dependence is higher amongst men than women. In the OECD, 5.9% of men and 1.6% of women are alcohol dependent, whereas in Brazil it reaches 2.3 and 0.5, respectively (Figure 6.6).

Figure 6.6. Prevalence of alcohol dependence in Brazil and OECD countries

Alcohol dependence (population aged 15+) by sex, 12-month prevalence (%), 2016



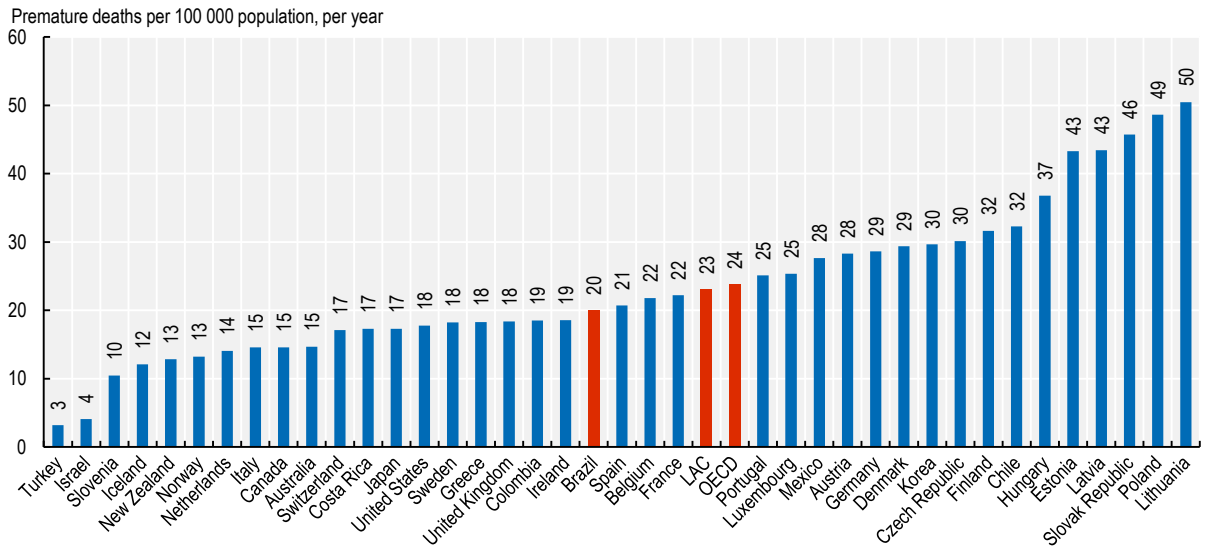
Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en, based on WHO Global Information System on Alcohol and Health 2020.

6.2.3. The projected impact of alcohol consumption in Brazil's population health gets closer to OECD averages

Alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men can also lead to people dying prematurely – between ages 30 and 70, according to the WHO definition (WHO, 2018[4]). Specifically, the OECD 2021 model predicts that, on average across OECD countries, 24 people per 100 000 population will die prematurely each year due to alcohol consumption above the 1/1.5 drinks per day cap. In Brazil, this rate reaches 20 people per 100 000 population (Figure 6.7), which is higher the Colombia, the United States and Canada in the region of the Americas.

Figure 6.7. The impact of alcohol consumption in premature mortality

Annual number of premature deaths per 100 000 population due to alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men, average 2020-50

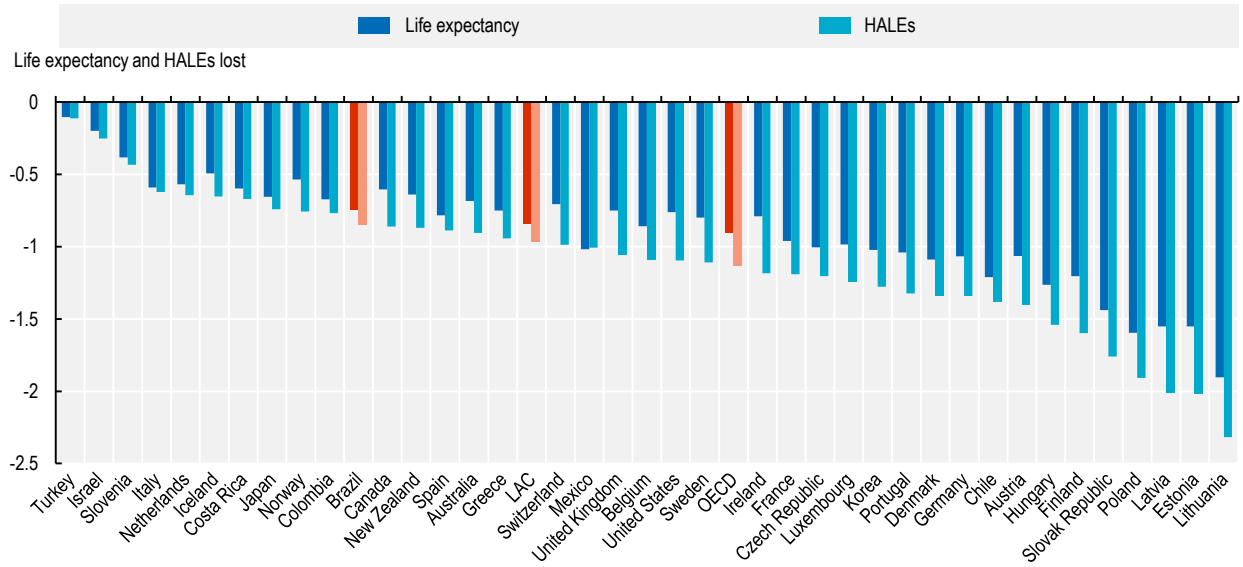


Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

The impact of alcohol consumption above the 1/1.5 drinks per day cap on population health can also manifest itself in shorter life expectancy. On average across all OECD countries, this risk factor decreases life expectancy by about 0.9 years over 2020-50, while in Brazil the decrease gets close to 0.8 years. The effect on years of healthy life expectancy (HALEs) – i.e. after taking into account the quality of life years lived through disability-adjusted weights for people with diseases – is even greater. Across all OECD countries, 1.13 HALEs are lost over 2020-50 due to this level of alcohol consumption, with Brazil predicted to lose 0.85 HALEs in the same period (Figure 6.8).

Figure 6.8. The impact of alcohol consumption in life expectancy

Life expectancy and HALEs lost due to alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men, average 2020-50



Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en,

Importantly, the general calculations of the negative impacts of any level of alcohol consumption are developed in Box 6.2.

Box 6.2. Any level of alcohol consumption causes population health harms

The risk of some diseases and outcomes such as dependence, cancers, cirrhosis and injuries is increased even at low levels of alcohol consumption. This means that the burden of total alcohol consumption (i.e. any drinking at all, as opposed to drinking above the 1/1.5 drinks per day cap) is greater. More specifically, the OECD model calculated that any alcohol consumption cumulatively over the next 30 years in 52 countries causes:

- approximately 14% more cases of dependence than drinking above the caps (1 263 million cases, 100% of the total, vs. 1 111 million cases, 88% of the total);
- an additional 48 million cases of injury (128% more cases than the burden caused by drinking above the caps) and extra 10 million of cancer (97% more cases);
- an extra 4.2 people per 100 000 population who will die prematurely (18% more than the premature deaths caused by drinking above the 1/1.5 drinks per day cap). In total, about 1.1 million people will die prematurely each year due to drinking above the cap, and about 1.3 million due to any level of alcohol consumption;
- an extra reduction in life expectancy of two months on average at the population level, on top of the lowering by nine months of life expectancy for consumption above the caps (17% greater reduction, compared to drinking above the 1/1.5 drinks per day cap).

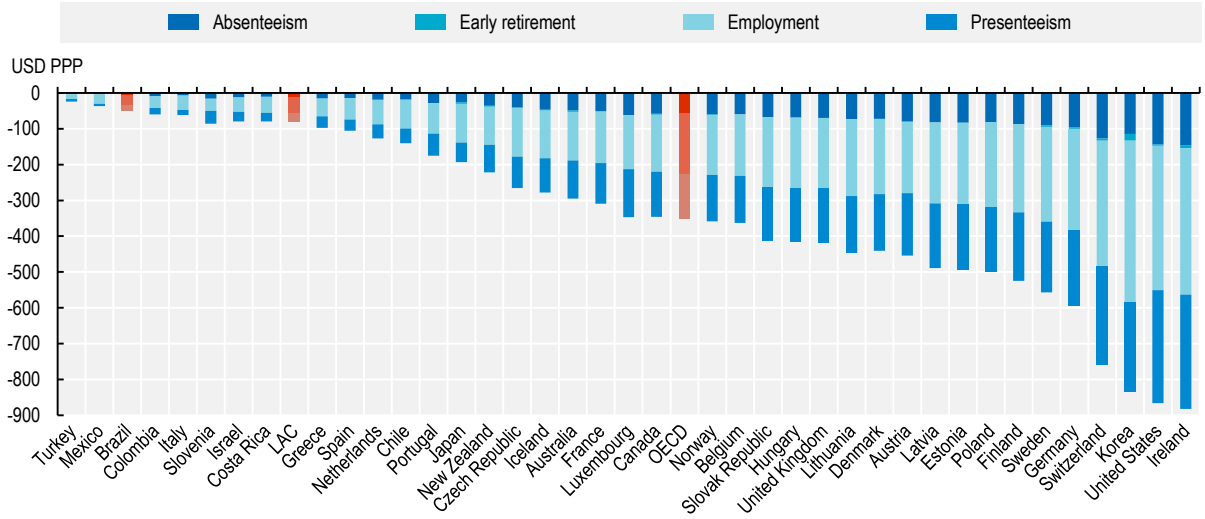
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

6.2.4. Current trends of alcohol consumption will adversely affect Brazil's economy

When the impact of alcohol consumption above the 1/1.5 drinks per day cap is translated into employment and productivity lost as measured by PPP-adjusted market wages, OECD countries lose on average USD PPP 351 per capita per year (see Figure 9). This is equivalent to a labour-related economic loss of about USD PPP 595 billion per year in OECD countries. This roughly corresponds to the annual GDP of Belgium or Sweden. Brazil is projected to lose on average USD PPP 47 per capita per year. In general, The majority of costs are due to decreases in employment, while the effect on early retirement is small (Figure 6.9).

Figure 6.9. Economic impact of diseases caused by alcohol consumption on employment and productivity

Per capita employment and productivity losses based on average wages due to alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men, per year, in USD PPP, average 2020-50



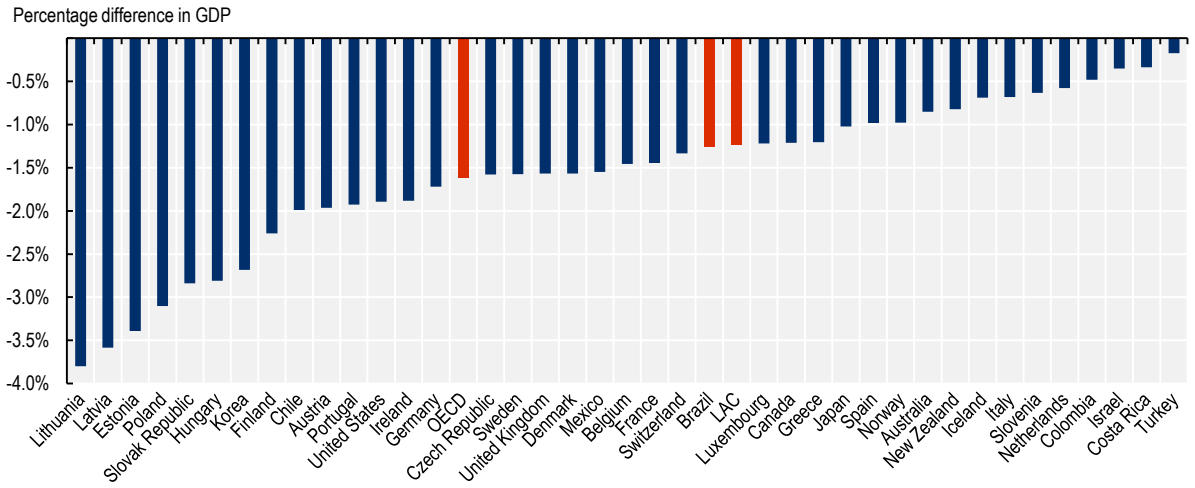
Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

The general economy is also affected by alcohol consumption. On average in Brazil, GDP will be near 1.3% lower over the next 30 years due to the impact of diseases caused by alcohol consumption above the 1/1.5 drinks per day cap, just below of the 1.6% in average across OECD countries (Figure 6.10).

Fiscal pressure is another measure in the analysis of the long-term macroeconomic burden of diseases caused by drinking. Fiscal pressure is measured as government primary revenue needed to stabilise the public debt ratio, and is equivalent to an overall tax rate (under the assumption that governments respond to rising fiscal pressure by raising additional revenue). The impact of diseases caused by alcohol consumption on the overall tax rate can be translated into an equivalent impact on per capita taxes for the public. In Brazil, every person will be subject to USD PPP 16 per year in additional taxes due to alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men in 2020-50. However, this is lower than the USD PPP 232 in average across OECD countries (Figure 6.11).

Figure 6.10. The impact of diseases caused by alcohol consumption on GDP

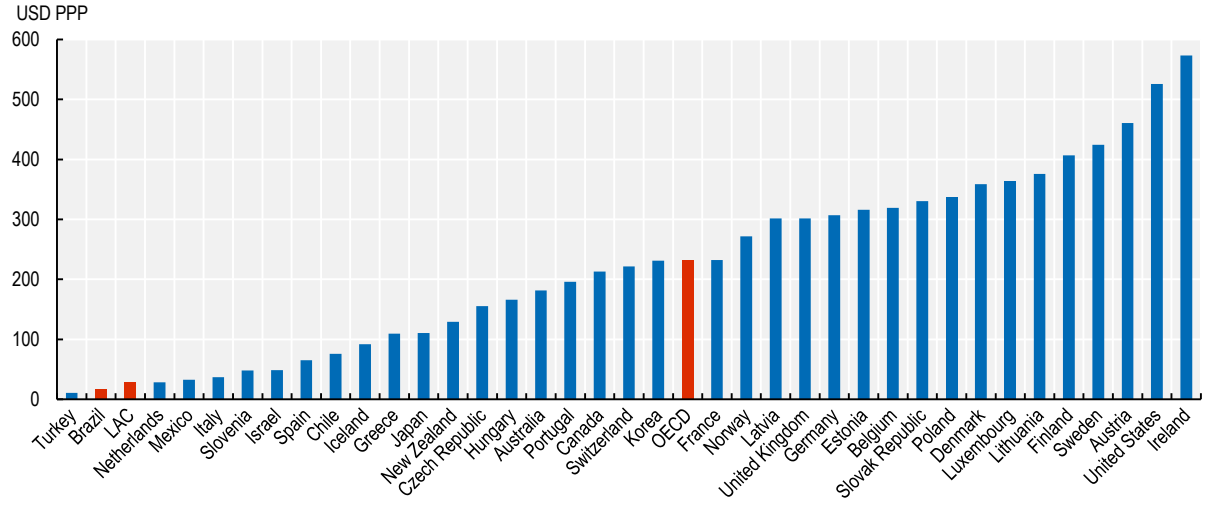
Percentage difference in GDP due to diseases caused by alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men, average 2020-50



Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

Figure 6.11. Equivalent per capita tax increase due to diseases caused by alcohol consumption

Per capita annual tax needed to cover the increased fiscal pressure due to diseases caused by alcohol consumption above 1 drink per day for women and 1.5 drinks per day for men, in USD PPP, average 2020-50



Note: LAC: Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

6.3. Brazil has adopted important and effective alcohol control policies

Recognising harmful use of alcohol as a key public health issue, in 2010, Member States of the WHO agreed to the Global Strategy to Reduce the Harmful Use of Alcohol (WHO, 2010[5]). Later on, this Global

strategy played an important role in shaping the WHO Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013-20, which included the aim of achieving a relative reduction of harmful alcohol use by 10% (Target 2) (WHO, 2013[6]). In 2017, the WHO released Tackling NCDs: "Best Buys" and Other Recommended Interventions for the Prevention and Control of Non-communicable Diseases, which outlined 11 interventions considered the best use of resources based on an assessment of their cost-effectiveness and feasibility to implement. Of these, taxation, restrictions on the availability of alcohol and bans on alcohol advertising were identified as best buys for alcohol policy (WHO, 2017[7]). These interventions are reflected in WHO's SAFER initiative which, in addition to the best buys, promotes the importance of drink-driving counter-measures and screening and brief intervention treatments (WHO, 2018[8]).

The OECD report on alcohol of 2021, presented new analysis and alcohol policies, which are further analysed and applied to the Brazilian context in the present section.

6.3.1. Brazil has adopted a national policy on alcohol but implementation is still a challenge

The 1988 Federal Constitution gave the basis for future alcohol policies in Brazil, particularly due to the recognition of health as one of the essential conditions for a dignified life, and therefore a fundamental right of citizens. The Inter-Ministerial Working Group of the Ministry of Health in 2003 and the Special Chamber of Public Policies on Alcohol in 2005 meant important institutional steps in terms of alcohol policy developments. In 2007, the first national policy on alcohol was created. Box 6.3 describes the most relevant national alcohol policy developments in Brazil until nowadays.

Box 6.3. Brazil's alcohol policy development through time

Política Nacional sobre o Álcool, 2007

The first national strategy of its kind in Brazil, the National Policy on Alcohol 2007 provides strategies for the collective confrontation of problems related to the consumption of alcohol, with an intersectoral and integral approach for the reduction of harm to health, as well as situations of violence and criminality associated with the harmful use of this substance.

Plano Emergencial de Ampliação do Acesso ao Tratamento e Prevenção de Álcool e outras Drogas, 2009

The Emergency Plan for the Expansion of Access to Treatment and Prevention of Alcohol and Other Drugs 2009 aims to expand health care access to people in need through the SUS. It also looks to diversify actions aimed at prevention, health promotion, treatment, risk and harm reduction, and build effective intersectoral responses, sensitive to the cultural environment, human rights and the particularities of the users' alcohol and other drugs.

Política Nacional Sobre Drogas, 2019

The new policy places the Ministry of Citizenship as responsible for the treatment of drug users, with a focus on drug abstinence. Among the changes, the Decree Nº 9.761 of 11 April 2019 strengthens the Therapeutic Communities as a measure for treatment. The units offer shelter, assistance and treatment for people with drug dependency, through structuring the services at the community level in order to offer a higher quality treatment to patients.

Source: CISA (2020[9]), Álcool e a Saúde dos Brasileiros: Panorama 2020", https://cisa.org.br/index.php/biblioteca/downloads/artigo/item/207-panorama2020.

In October 2019, the Ministry of Health, in partnership with the Pan American Health Organisation (PAHO), and with the support from CONASS, CONASEMS, the civil society and the academia, organised an event with the aim of mobilising key actors in the dissemination and implementation of WHO's SAFER initiative. This marked the Council's support in the face of public discussion and mobilisation regarding political engagement with the WHO initiative (OPAS/OMS Brasil, 2019[10]).

As of 2016, 32 of 37 OECD countries have adopted a national written policy on alcohol, which is also the case of Brazil. However, only 17 OECD countries have an action plan outlining implementation of the national policy, an instrument currently absent in Brazil (OECD, 2021[1]).

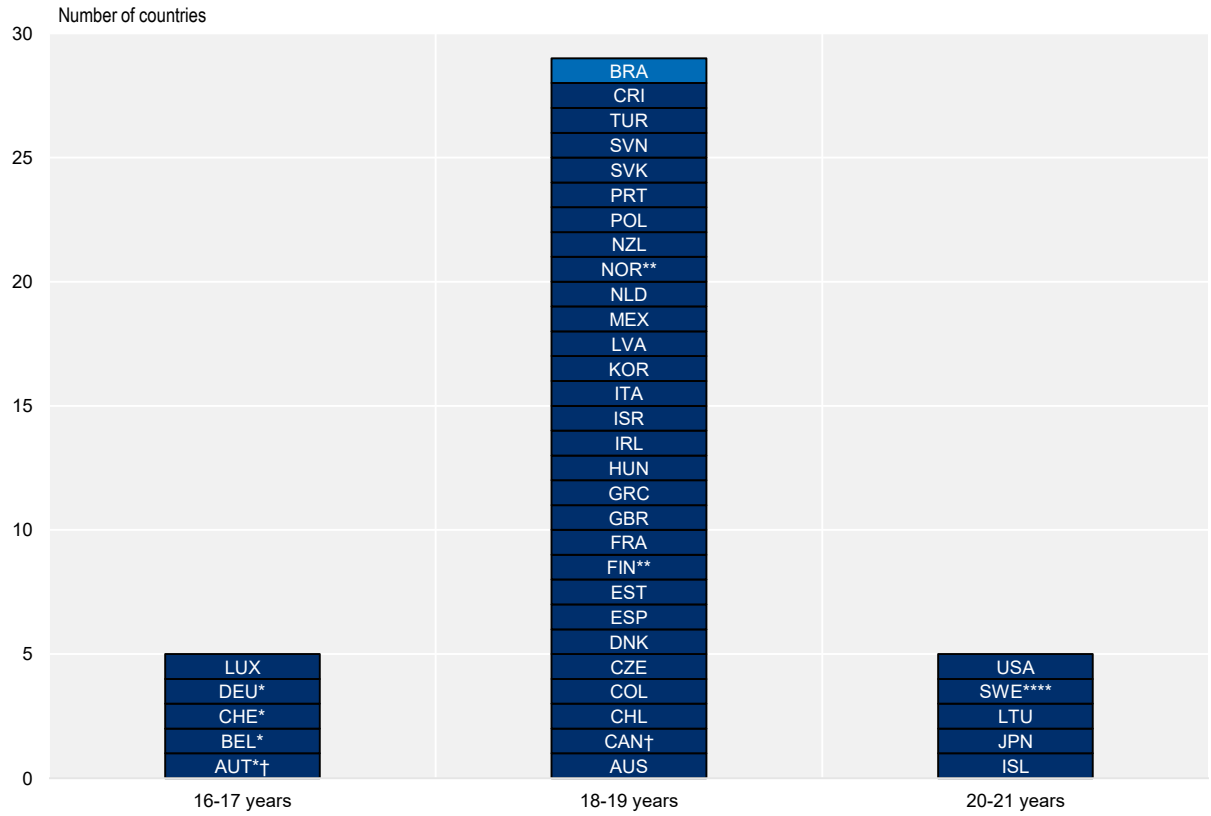
6.3.2. The law about minimum age for accessing alcohol has been very important in Brazil

All OECD countries have implemented a minimum age restriction for purchasing alcohol. Many risks are associated with early onset drinking, such as violence and injury, as well as a greater likelihood of developing alcohol dependence in adulthood (Grant et al., 2006[11]). Given that the availability of alcoholic drinks is a significant predictor of drinking behaviour among young people (Wagenaar, Salois and Komro, 2009[12]; Kypri et al., 2008[13]), most countries have set a minimum age at which people can purchase or consume alcohol legally.

The legally mandated minimum age for purchasing alcohol in OECD countries ranges from 16 to 21 years, with most setting the threshold at 18 years (Figure 6.12). The vast majority of OECD countries (83%) apply the same threshold across all alcohol types; those who do not typically increase the minimum age by two years for spirits (e.g. in Norway and Finland (off-premise), the minimum age is 18 for beer and wine but 20 for spirits).

In 2015, Law 13.106 was approved making a crime to offer alcoholic beverages to minors (Planalto, 2015[14]). It is prohibited to sell, supply, serve, administer or deliver to children and adolescents alcoholic beverages or other products that may cause addiction. Anyone who fails to comply with this rule is subject to two to four years' imprisonment and a fine of BRL 3 000 to BRL 10 000 (USD 545 to USD 1 800). As for the establishment where the sale is made, an administrative measure of interdiction is applied.

Figure 6.12. Legal minimum age for purchasing alcohol in Brazil and OECD countries

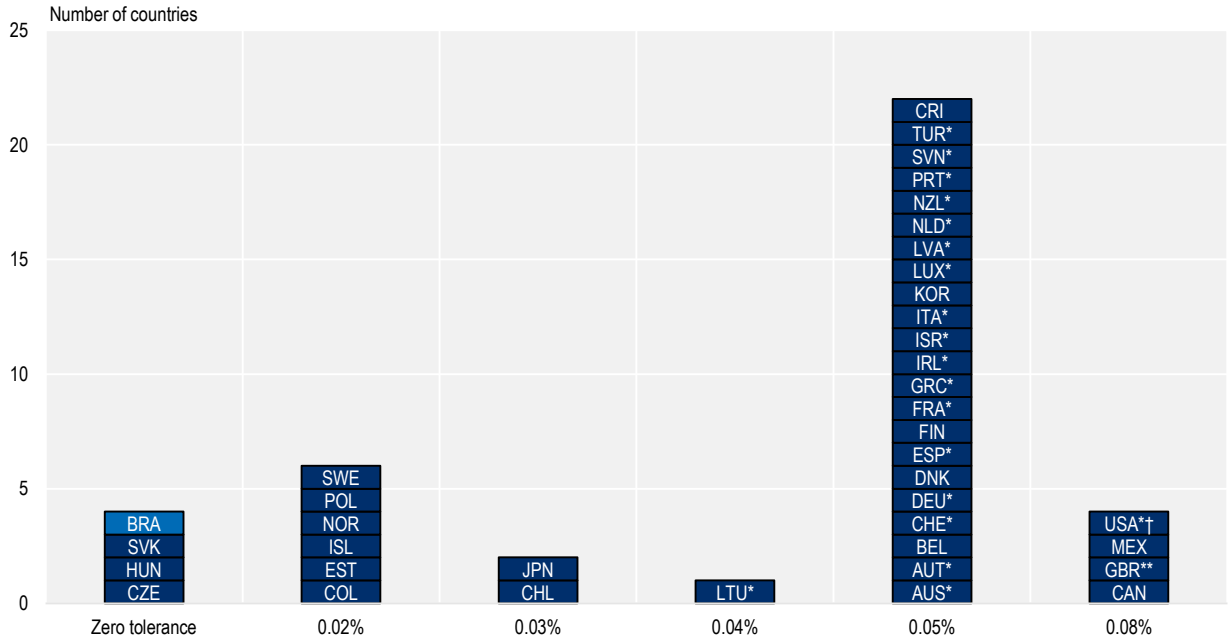


Note: Dark blue = OECD countries. *18 for spirits. **20 for spirits (for Finland, this applies to off-premise only). ***18 for beer (both on- and off-premise) and 20 for wine and spirits (off-premise only). ****In Sweden the legal age is 20 for beer, wine and spirits when purchasing from Systembolaget (government-owned liquor stores – off-premise), with the exception of light beer, which can be purchased at 18 years. The legal purchasing age in restaurants and bars, however, is 18. †Age limits are set at the subnational level.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

6.3.3. The drink-driving zero-tolerance policy has been positive in Brazil

Given the higher risk of accidents when driving under the influence of alcohol, it is common for countries to employ blood alcohol concentration (BAC) limits for drivers, which may differ according to the type of driver. The majority of OECD countries (57%) set the BAC limit at 0.05% for the general population. The highest BAC limit in OECD countries is 0.08% and is enforced in four countries: the United States (with the exception of Utah), the Slovak Republic, Canada and the United Kingdom (with the exception of Scotland, where the limit is set at 0.05%) (Figure 6.13). Over half of OECD countries (n = 21) enforce lower BAC limits for professional and novice/young drivers. In these countries, BAC limits range between zero tolerance to 0.03% for professional and novice/young drivers and between 0.04% and 0.05% for the general population. Brazil is in the latter group with a zero tolerance alcohol policy for drinking-driving.

Figure 6.13. BAC limits for the general population in Brazil and OECD countries



Note: Dark blue = OECD countries. *Lower limit set for novice and/or professional drivers. **The limit is 0.05% for Scotland. † In the United States, the limit in the state of Utah is 0.05%.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

In 2008, law 11.705 (the so-called Dry Law or "*Lei Seca*") Brazil amended the Brazilian Traffic Code, establishing more severe penalties for drivers who drive under the influence of alcohol. Any alcohol concentration detected was considered an infraction (Planalto, 2008[15]). It becomes a crime when the BAC reaches 0.6 g/L of blood or 0.34 mg/L on a breathalyser test. The fine reaches BRL 957.69 (USD 175). The *Lei Seca* was amended in 2012 (Planalto, 2012[16]). The fine was increased from to BRL 1915.38 (USD 350), and the possibilities of proof for driving under the influence of alcohol – or any other substance – were expanded. The crime is configured in cases where the driver has a BAC equal to or greater than 0.6 g of alcohol per litre of blood, a measurement equal to or greater than 0.34 mg of alcohol per litre of exhaled alveolar air, or signs of altered psychomotor capacity. In these cases, the driver is subject to detention from 6 months to 3 years, a fine and suspension or prohibition to obtain a driving licence. More recently, the 2017 law 13.546 (Planalto, 2017[17]) increased the fine to BRL 2 934.70 (USD 530). The BAC levels were maintained, but the amendment determined stricter punishments for drivers who, under the influence of alcohol or other psychoactive substances, commit crimes of culpable homicide (without intent) or bodily injury of a serious or very serious nature. In these cases, the penalty is 5 to 8 years and in cases of culpable homicide, 2 to 5 years. None of these situations allows for the payment of bail.

In terms of evaluations of the law, a preliminary study found no evidence of reduced traffic-related mortality in Belo Horizonte, Rio de Janeiro, and São Paulo, 5.5 years after the Lei Seca 2008 was adopted (Volpe, Ladeira and Fantoni, 2017[18]). A later study evaluating the same law in Rio de Janeiro did not find an impact on overall mortality rates due to road traffic accidents. However, the study found statistically significant association between the Lei Seca and reductions between 0.1% and 1.5% a year in the mortality due to road traffic accidents of cyclists and motorcyclists aged ≥60 years and pedestrians of both sexes aged ≥20 years (Jomar et al., 2019[19]). A third study in Brazil's Federal District assessed the effect of law 11.705 (the Lei Seca of 2008) and law 12.760 of 2012, which was called the new Lei Seca, which sought to address loopholes in the original legislation. The study found that while the 2008 law had no significant impact, the 2012 one did have a statistically significant impact in reducing lethal accidents (Guimarães and

da Silva, 2019[20]). The latter results highlights the importance of enforcement, particularly through the introduction of different ways to prove that a person is driving under the influence of alcohol. The latest development relates with the tightening of Lei Seca. Starting in April 2021, drivers under the influence of alcohol or drugs who cause accidents involving bodily harm – even those considered without intention – will be arrested. meaning that the offender will no longer have the right to substitute prison sentences for lighter ones, such as community service, which was previously permitted (DNIT, 2021[21]).

6.3.4. Drink-driving mass media campaigns are regularly conducted in Brazil

Mass media campaigns are a commonly implemented tool used to communicate messages regarding the harmful effects of alcohol consumption. They can have either a direct or an indirect influence on consumer behaviour. A systematic review of the effectiveness of mass media campaigns to reduce alcohol consumption and related harm covering campaigns in Australia, Denmark, Finland, Italy, the Netherlands, New Zealand, the United Kingdom and the United States, concluded that although campaigns can enhance knowledge regarding the impact of alcohol consumption and treatment-seeking behaviour, there is little evidence to suggest they reduce alcohol consumption (Young et al., 2018[22]).

Mass media campaigns are commonly devoted to topics such as drink-driving and the long-term harms of alcohol use. A systematic review of the impact of mass media campaigns found that they reduce instances of drink-driving by around 15% (Yadav and Kobayashi, 2015[23]). The authors did not find an improvement in the number of alcohol-related injuries and crashes, but heterogeneity in study design meant that it was not possible to draw overall conclusions. A study assessing a Danish campaign found that awareness of alcohol as a risk factor for cancer rose by 5 percentage points (from 45% to 50% when prompted and from 22% to 27% when not prompted). The campaign also led to increased support for other alcohol policies such as minimum unit pricing (MUP) and mandatory nutrition labelling (Christensen et al., 2019[24]). This is important as a low proportion of the population are aware of the risks of alcohol consumption. For instance, in the United Kingdom only 13% of a national survey respondents identified alcohol as risk factor for cancer (Sinclair et al., 2019[25]).

In Brazil, the Federal Government regularly conduct drink-driving media campaigns in the context of the Carnival celebrations (Box 6.4). However, no impact evaluations have been conducted so far, which would be helpful for re-designing future campaigns.

Box 6.4. Carnival drink-driving mass media campaigns in Brazil

Almost on a yearly basis, the Federal Government of Brazil conducts drink-driving mass media campaigns during the Carnival period. In 2019, the “Accident Prevention Campaign – Carnival” aimed to promote zero alcohol consumption before driving to reduce traffic accidents and seeking to provoke a reflection in the population about the gravity and extent of the consequences caused by the use of alcoholic beverages (Ministério da Infraestrutura, 2019[26]).

The campaign was broadcast between 25 February and 10 March of 2019 on the internet and radio, the second and third best placed media exposure, as they convey credibility and coverage within the defined target population in Brazil. The first, open television, was not used due to the low availability of funds for this campaign.

6.4. A comprehensive policy package can contribute to further reduce alcohol consumption and its harmful consequences in Brazil

In order to analyse the main policies outlined within national policy documents and action plans, the OECD 2021 Alcohol report grouped them into the following policy domains – these include the domains within WHO's SAFER framework (WHO, 2018[8]) and consumer information:

- alcohol pricing
- drink-driving
- alcohol marketing
- screening and brief interventions
- consumer information

According to the OECD report, these policy actions have a positive impact on Brazil's economy and population health. In particular, a comprehensive "PPPP approach" – including actions to protect children from alcohol promotion; policing to limit alcohol-related injuries and violence; primary care to help patients with harmful patterns of alcohol consumption; and pricing to limit the affordability of cheap alcohol – is both effective and cost-effective to tackle harmful alcohol consumption.

The present sections analyse the current stand of Brazil in each domain and make benchmark with OECD countries. It also resumes the best available scientific evidence behind the main interventions.

6.4.1. Minimum alcohol pricing policies could be introduced in Brazil

There is strong evidence to support the inverse relationship between prices of alcoholic drinks and consumption. A systematic review by Elder et al. (2010[27]) found that nearly all studies (95%) calculating price elasticities were negative, with this figure ranging from -0.5 to -0.79 (i.e. a 10% increase in the price of alcohol corresponds with a decrease in consumption ranging from -5% to -7.9%), depending on the type of alcohol. These findings are supported by a meta-analysis by Wagenaar et al. (2009[12]) that concluded that a 10% increase in alcohol prices decreases consumption by approximately 5%. Higher prices were also found to reduce alcohol-related mortality and morbidity (e.g. cirrhosis, road-traffic deaths, assault and suicide) and are considered highly cost-effective (Wagenaar, Tobler and Komro, 2010[28]; Elder et al., 2010[27]; Cobiac, Mizdrak and Wilson, 2019[29]).

Minimum unit pricing (MUP) is a policy tool that sets a mandatory floor price per unit of alcohol or standard drink,[1] thereby targeting cheap alcoholic beverages. Unlike taxes, it prevents retailers from absorbing the additional cost of production. Further, it has been argued that MUP is more effective, since problem drinkers and/or young people are more likely to consume cheap forms of alcohol (O'Donnell et al., 2019[30]).

Several countries have implemented MUP, including Canada (certain provinces), one territory in Australia, the United Kingdom (Scotland and Wales) and the Russian Federation. Empirical research evaluating MUP, to date, has found promising results. In the United Kingdom (Scotland), O'Donnell et al. (2019[30]) found that MUP led to a 7.6% reduction in alcohol purchases, which is equivalent to 41 alcohol units per person, per household every year. The impact on price was greatest in households that consumed the most alcohol, indicating that the policy was successful at targeting people who drink heavily. Findings from this research is supported by more recent analysis undertaken by Public Health Scotland and the University of Glasgow, which found that alcohol sales in supermarkets and off-licence outlets fell by 4.5% one year after the introduction of MUP (with the impact greatest for cheap products) (Christie, 2020[31]; Public Health Scotland, 2020[32]). In Australia, an investigation into the introduction of MUP in the Northern Territory (AUS 1.30 per standard drink) found that the policy led to a reduction in the wholesale supply of alcohol per capita (by 0.22 litres of pure alcohol), a reduction in alcohol-related assaults and a fall in alcohol-related ambulance and emergency admissions (Coomber et al., 2020[33]).

In addition to MUP, other policy tools to minimise the price of alcohol include:

- Bans on below-cost selling: to restrict the sale of heavily discounted alcohol, several countries have banned the sale of alcohol below the cost of production. In the United Kingdom, for example, it is illegal to sell alcohol at a price less than the amount of duty plus VAT (UK Home Office, 2017[34]).
- Bans on volume discounts: under this policy it is illegal to offer customers discounts based on the volume of alcohol bought, such as two drinks for the price of one. This policy is used, for example, in Iceland in off-premise settings and in Sweden (WHO Regional Office for Europe, 2014[35]).
- Minimum mark-ups and profit margins: by capping minimum profit margins for wholesalers and retailers of alcohol, policy makers are effectively setting a minimum price (Sassi, 2015[36]). For example, in the United States, seven states require wholesalers to establish a minimum mark-up/maximum discount on beer, wine and spirits (Alcohol Policy Information System, 2019[37]).

In Brazil, no policy related to alcohol minimum pricing seems to have been considered. Therefore, authorities and stakeholders could study this area of reform as an alternative for the future.

6.4.2. Drink-driving policies

Sobriety checkpoints could be better targeted by alcohol-related data

Sobriety checkpoints can help with the enforcement of drink-driving policies in place. There are two types of sobriety checkpoints: selective breath tests, which are pre-determined check points where police officers must have reason to believe the driver is under the influence of alcohol to test blood alcohol levels; and random breath tests, for which drivers are selected at a random to have their blood alcohol level tested (Bergen et al., 2014[38]).

Evidence on the effectiveness of sobriety checkpoints largely comes from the United States. Ecola et al. (2018[39]) summarised findings from five meta-analyses, which indicate that selective and random breath tests play a significant role in reducing road-traffic crashes. As an example, Bergen et al. (2014[38]) estimated that sobriety checkpoints led to, on average, an 8.9% decrease in fatalities related to drink-driving. Similarly, Erke et al. (2009[40]) found that checkpoints resulted in a reduction in crash injuries by 16% and fatalities by 6%. Regarding cost-effectiveness, a 2014 systematic review concluded that the benefits associated with sobriety checkpoints exceed the associated costs, with cost-benefit ratios ranging from 2:1 to 57:1 (Bergen et al., 2014[38]). To maximise the potential of sobriety checkpoints, it is important they are widely publicised, highly visible and conducted frequently (US Department of Transportation, 2017[41]).

With the exception of Mexico, all OECD countries implement one or both sobriety checkpoints (WHO, 2020[42]). Brazil reports conducting both types of sobriety checkpoints, which is linked to the enforcement of the *Lei Seca* that allowed public entities to inspect, fine and prevent alcohol-related traffic accidents through alcohol breath tests at points of sobriety. However, its application does not seems to be homogeneous among the states, and are more present in the capitals, where the breath tests are more frequently used (Fiocruz, 2017[43]). Therefore, this is an area where public actors could better plan the widespread use of sobriety checkpoints by making a better use of alcohol-related data. For instance, information about traffic accidents, concentration of alcohol outlets and well-known events where alcohol is consumed could help to guide planning of sobriety checkpoints in Brazil.

Alcohol ignition interlock programmes can be a good addition for a future update of the Brazilian "Lei Seca"

Alcohol ignition interlock programmes give offenders who would normally lose their driving licence a possibility to continue driving, as long as they are sober. Ignition interlocks require drivers to take a breath test to assess their blood alcohol reading in order to start their vehicle. They can also be installed voluntarily

– for example, in commercial vehicles transporting goods (Vanlaar, Mainegra Hing and Robertson, 2017[44]; European Transport Safety Council, 2018[45]).

An evaluation of an ignition interlock programme in Canada (Nova Scotia) concluded that the scheme was successful in reducing recidivism rates (Vanlaar, Mainegra Hing and Robertson, 2017[44]). Specifically, the study compared recidivism rates between three groups of offenders: 1) those who voluntarily agreed to use the ignition interlock; 2) those who were mandated to use the ignition interlock; and 3) those who made up the control group, who were not enrolled in the ignition interlock programme. The offenders who agreed to use the ignition interlock had a lower recidivism rate while the device was installed (0.9% for voluntary and 0.3% for mandatory participants) compared to those not enrolled (8.9%). Although recidivism rates rose once the device was removed (1.9% for voluntary and 3.7% for mandatory enrolees), the rates were still significantly below those who did not enrol, suggesting that the scheme had an ongoing impact. A study comparing 18 states that made interlocks mandatory against 32 that did not found that requiring ignition interlocks for all drunk-driving convictions was associated with 15% fewer alcohol-involved crash deaths (Kaufman and Wiebe, 2016[46]). Similarly, a study assessing alcohol-involved fatal crashes in the United States between 1982 and 2013 found that state laws requiring interlocks for all drunk driving offenders were associated with a 7% decrease in the rate of BAC >0.08 fatal crashes and an 8% decrease in the rate of BAC ≥0.15 fatal crashes. This translated into an estimated 1 250 prevented BAC >0.08 fatal crashes.

Laws requiring interlocks for segments of high-risk drunk driving offenders, such as repeat offenders, may reduce alcohol-involved fatal crashes after two years of implementation (McGinty et al., 2017[47]). In the Netherlands, another study showed that the percentage of repeat offenders in the ignition interlock programme group was lower than in the control group. When the ignition interlock programme was imposed alongside a criminal settlement, recidivism was reduced from 8% to 4% (Blom and Blokdijk, 2021[48]). These findings echo previous research by Elder et al. (2011[49]), which largely focused on the United States and the review of Burton et al. (2017[50]), which found that ignition interlocks reduce reoffending in both first-time and repeat offenders and can be cost-effective.

Nine OECD countries currently penalise first-time drink-drivers with ignition interlocks (Austria, Belgium, Canada, Denmark, Finland, France, Poland, Sweden and certain states in the United States), and another group of countries imposes this penalty for repeat offenders (Belgium, France, New Zealand, Sweden and certain states in the United States) (WHO, 2020[51]; National Conference of State Legislatures, 2018[52]; ETSC, 2020[53]).

Box 6.5. Swedish alcohol ignition interlock after drink-driving programme

The Swedish Transport Agency began a trial of an ignition interlock programme in 1999. It took until 2012 to entry into force. The voluntary programme give the possibility for drink drivers to enter a one-year programme for drivers convicted with a BAC level between 0.2 and 0.9 g/l; or a two-years programme for convicted repeat offenders (within a five-year period) and offenders with a BAC level of at least 1.0 g/l.

The programme is not designed to include a rehabilitation aspect but, in many cases, it has shown these kinds of effects for the participants anyway. Especially since there is a demand to undergo medical exams, including leaving blood samples before, during and sometimes after participation in the programme.

The estimated costs for the one-year programme ranged between EUR 2000 and EUR 2 700, while the two-years programme moved between EUR 2 800 and EUR 4 000.

In practice, 30% of offenders have entered the programme, while 83% of participants completed the programme. In March 2018, a new legislation does not allow offenders with a dependency or an addiction to enter the alcohol interlock programme, unless they can prove that they fulfil all the medical demands beforehand, e.g. prove sobriety six months prior to entering the programme. In 2018, about 3 000 people were driving with an alcohol interlock.

Source: ETSC (2020[53]), "Alcohol interlocks in Europe: a an overview of current and forthcoming", www.etsc.eu/safe-and-sober/.

In Brazil, an alcohol ignition interlock programme does not exist. This policy would be a good alternative for the country to upscale its measures for drink-driving offenders and repeat offenders aiming to reduce alcohol-related traffic accidents with the consequent injuries and deaths. A future update of the Brazilian "Lei Seca" could legally introduce alcohol ignition programmes. Pilots can be undertaken within states and municipalities with higher alcohol-related traffic accident rates in order to better understand the implications for the Brazilian context.

6.4.3. Alcohol marketing

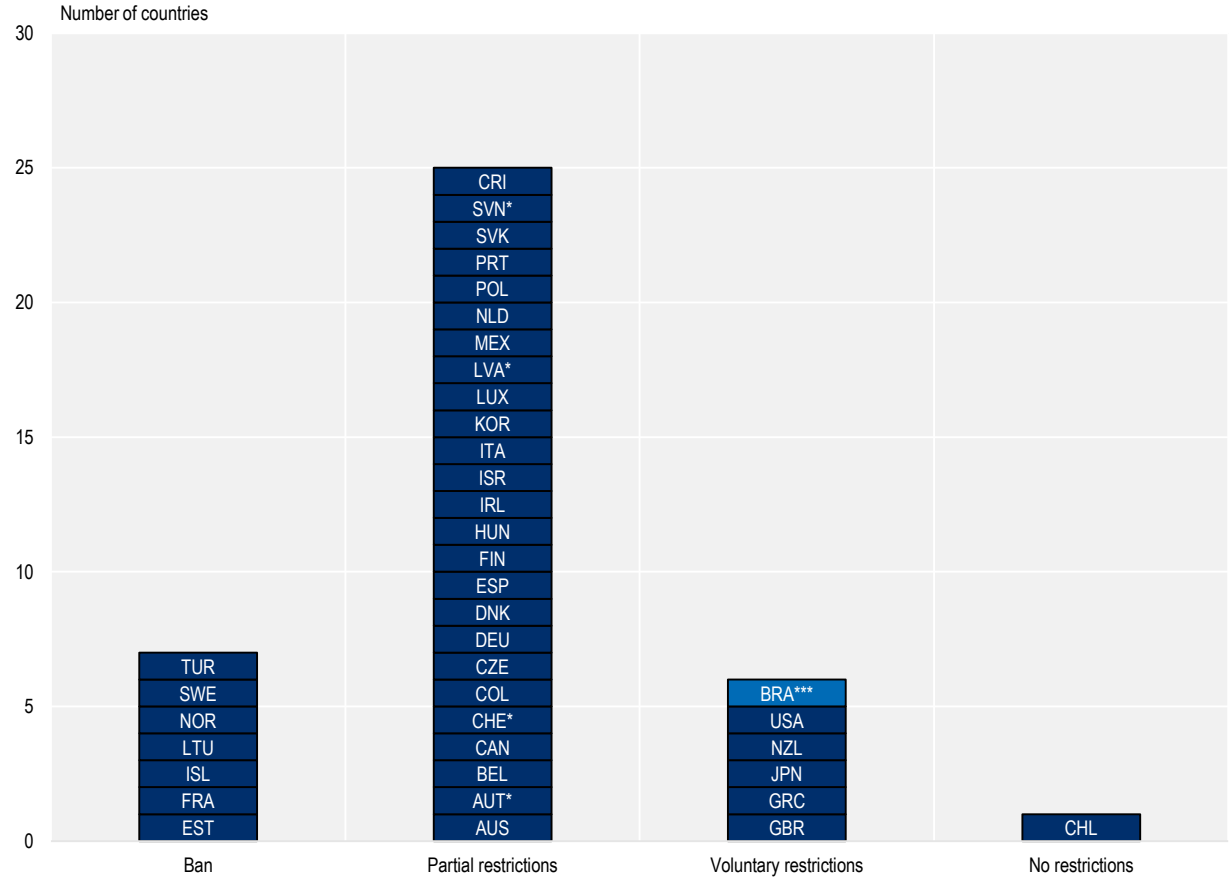
Alcohol marketing in traditional and new media platforms could be further regulated, having children and adolescents as an initial priority

Countries can limit advertising on traditional (e.g. television, radio and print media) and new digital media platforms (e.g. social media). Research suggests that there is an association between alcohol advertising through traditional media channels and alcohol consumption, with young people particularly vulnerable (Smith and Foxcroft, 2009[54]). Most recently, Jernigan et al. (2017[55]) concluded from their systematic review that there is a positive association between exposure to alcohol marketing and initiation of alcohol consumption, as well as binge and hazardous drinking.

Across OECD countries, 31 employ some form of statutory restriction on alcohol advertisements, legally banning any form of advertising. For example, regarding beer and wine, 24 countries apply partial restrictions on national television advertisement (e.g. restriction during a certain time of day or place), while 7 countries employ a full statutory ban (Figure 6.14). Only two countries extend full advertising bans across all media channels: Norway and Turkey.

Active surveillance schemes to monitor adherence to alcohol advertising regulations also exist and are implemented by 35 of the 37 OECD countries. In Australia, alcohol marketing is characterised as a "quasi-regulatory" system, with guidelines (the Alcohol Beverages Advertising Code – ABAC- Scheme) set by industry, advertising and government representatives (ABAC Scheme, 2019[56]). Similar arrangements exist in the United Kingdom, New Zealand and Japan (Noel, Babor and Robaina, 2016[57]). In relation to the latter, a review exploring self-regulation of marketing industry concluded that alcohol advertisements continually violate self-regulatory codes, meaning that young people are frequently exposed to alcohol advertising material (Noel, Babor and Robaina, 2016[57]). Similarly, a review of advertisement self-regulation in Brazil determined that there are sufficient evidences on the need for government regulation of advertisements addressed to children and adolescents complementarily to institutional self-regulation. For instance, most ethical transgressions informed to CONAR on food and beverage advertisements are related to alcoholic beverages and processed foods, especially regarding trustworthiness, social responsibility and children/adolescents (Kassahara and Sarti, 2017[58]).

Figure 6.14. National television advertising restrictions for beer and wine in Brazil and OECD countries



Note: Dark blue = OECD countries. *Ban for spirits. **Brazil applies stricter restrictions for spirits – that is, partial as opposed to voluntary restrictions.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

As adults and children spend an increasing amount of time on their mobile devices (more than time spent watching TV), brands have shifted their focus from traditional forms of media to digital media platforms, including social media. Advertising via digital media channels can lead to greater increases in alcohol consumption, particularly when audiences participate (e.g. co-create, share or engage in the content) (Critchlow et al., 2017[59]). For example, a study by Critchlow and colleagues (2019[60]) found that young people (aged 11-19) who currently drink are twice as likely to be high-risk drinkers if they participate in two or more forms of alcohol marketing via social media. This figure increased to over three times for those who participated in user-created promotion. A meta-analysis by Curtis et al. (2018[61]) concluded that there is a significantly positive correlation between alcohol-related social media engagement and consumption among young adults. Finally, a 2017 narrative literature review established that digital marketing was associated with higher levels of intention to purchase alcohol, as well as consumption (Lobstein et al., 2017[62]). Linked to this, several studies have examined alcohol advertising practices on social media platforms such as Twitter, Instagram and Facebook. The finding suggests that posts and interactions have a low utilisation of alcohol moderation or risk-related content, while there is persisting content appealing to youth and in violation of the alcohol industry's self-developed marketing codes (Niland et al., 2017[63]; Barry et al., 2018[64]; Barry et al., 2018[65]).

Relative to traditional forms of media, fewer OECD countries have regulatory arrangements in place to limit alcohol advertising via social media (Figure 6.15). Further, where regulatory arrangements do exist, they are partial restrictions in 13 countries and full ban in only 3. For example, in Estonia regulations forbid alcohol advertising on social media networks, except on the website of the account handle of the alcohol brand. As part of this ban, alcohol brands cannot share user-generated content or content that is intended to be shared (e.g. competitions and prizes, production of videos intended to go viral) (WHO, 2018[66]; EUCAM, 2018[67]).

Figure 6.15. Social media advertising restrictions in Brazil and OECD countries

Note: Dark blue = OECD countries. *Ban for spirits. **No restriction for beer only (total ban for wine). Partial restrictions may refer to time and/or place and/or content. ***Brazil applies stricter restrictions for spirits – that is, partial as opposed to voluntary restrictions.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

In Brazil, Law 9 294 of 1996 limit advertising of alcoholic beverages with alcohol contents above 13°Gay Lussac. In addition, the National Council of Self-Regulatory Publicity (*Conselho Nacional de Autorregulamentação Publicitária*, CONAR) includes in its recommendations all alcoholic beverages, regardless of alcohol content.

Brazil can join most of OECD countries in passing further restrictions to traditional media advertising of alcohol, particularly on TV and prioritising children and adolescents (e.g. statutory ban on alcohol advertising to children). Social media platforms could be also considered as people, in particular the youth, spend more time on these new media platforms. This could be also linked to regulating alcohol sport sponsorship as well in a more broad alcohol marketing reform (see next sub-section). Collaborative alternatives exist to create schemes where public, civil society and private actors (e.g. CONAR) could converge to define mandatory rules and compliance systems in Brazil.

Restrictions on alcohol sport sponsorship can be expanded to all types of alcohol

Sport sponsorship allows alcohol producers to “promote their product and create a positive, emotional relationship between the brand and consumers” (Babor, Robaina and Noel, 2018[68]). For this reason, the

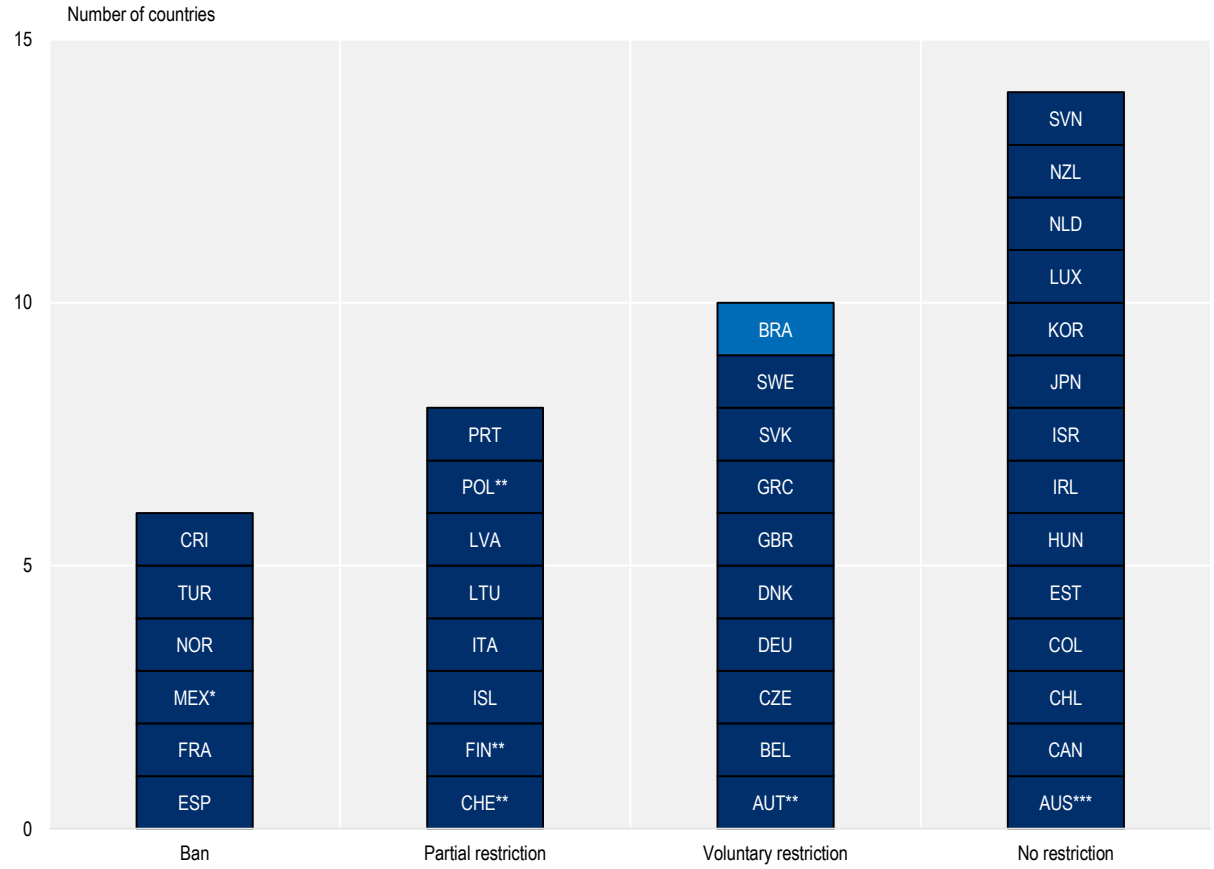
alcohol industry is a key sponsor of sporting events, sporting teams and individual athletes across the world (Jones, 2010[69]).

There are public health concerns regarding alcohol industry's sponsorship of sport, since alcohol advertising is associated with initiation of drinking for previous non-drinkers and higher levels of consumption among current drinkers (Smith and Foxcroft, 2009[54]; Houghton et al., 2014[70]). Studies have also examined the impact sponsorship has on athletes and sporting club members – specifically, its impact on consumption (Brown, 2016[71]). For example, O'Brien et al. (2014[72]) found that university students in the United Kingdom whose team and club are sponsored by the alcohol industry are approximately twice as likely to report hazardous levels of drinking as those with no sponsorship.

In response to public health concerns, most OECD countries have implemented some form of ban to restrict the alcohol industry's influence in sport (Figure 6.16). Across OECD countries, Spain, France, Norway, Turkey and Costa Rica have implemented legally binding bans on sport sponsorship across all beverages (WHO, 2018[73]). A further 17 countries apply partial or voluntary restrictions (e.g. restrictions on sponsoring sporting teams and/or sporting events), while 14 countries apply no restrictions.

In Brazil, law 9294 of 1996 recognises as alcoholic beverages those with alcohol contents above 13°Gay Lussac, leaving out beer, which is the most predominant category in sports sponsorships. CONAR, on the other hand, includes in its recommendations all alcoholic beverages, regardless of alcohol content, and issues recommendations applicable to broadcast of sponsored events. The advertising strategy must be limited to the identification of the brand and/or manufacturer, slogan or promotional phrase, without the presence of recommendation of consumption of the product, without restricting the time of broadcast. In practice, a study identified that beer brands sponsored 16 of the 20 studied football clubs of the Brazilian League in 2018 (Matos, Araújo and Horta, 2021[74]). A qualitative study investigated the nature of relationships between the alcohol industry and university student sports clubs in Sao Paulo found that most clubs (n = 53; 88%) reported having signed contracts with beer brands to have their sports events and parties sponsored. In return, clubs agreed to exclusively sell the sponsors' brand of beer and/or order and sell a quota of beer at their events. Forty-nine interviewees (81%) reported agreements with alcohol companies whereby open bars (free alcohol events) would also be provided (Pinsky et al., 2017[75]).

Figure 6.16. Restrictions on sport sponsorship for alcohol brands in Brazil and OECD countries



Note: *No restrictions for beer. No data for the United States. **Stricter requirements for spirits. ***Alcohol-related sponsorship agreements are managed by subnational jurisdictions and individual sporting codes and teams.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

In this scenario, Brazil can revise its current regulation that does not cover alcohol beverages below 13°Gay Lussac in terms of its participation in sport sponsorship. With a more broad perspective, a general reform could include expanding regulation to all types of alcohol in traditional media, new social media and sport sponsorship, having children and adolescents as the main target population.

6.4.4. Screening, brief interventions and treatment

Guidance and monitoring of screening and brief interventions for alcohol drinkers can be enhanced in primary care in connection to Centros de Atenção Psicossocial

Screening and brief interventions (SBIs) are designed to identify, at an early stage, individuals with a "real or potential" problem with alcohol and to motivate them to address the issue (Babor and Higgins-Biddle, 2001[76]). The process begins by screening individuals, which involves a series of questions related to their level of alcohol consumption. Excessive drinkers can be identified through various screening tools. Following screening, excessive drinkers receive brief interventions, which typically last between 5 and 30 minutes over 1-5 sessions; or dependent drinkers may be referred to specialised psychosocial and pharmacotherapy treatment.

Evidence on the effectiveness of SBIs largely relates to primary care interventions and is positive. Kaner et al. (2018[77]) in their systematic review estimated that after one year, brief interventions reduced individuals' alcohol consumption by 20 g a week compared to those who received no or minimal interventions. SBIs are also estimated to be cost-effective. For example, Angus et al. (2016[78]) modelled the impact of a national SBI programme across Europe and found it would be cost-effective in 24 of 28 EU countries and dominate in 14 countries ("dominate" indicates that brief interventions are more effective and cheaper than no or minimal interventions).

Among OECD countries, 78% with available data have developed and implemented national guidelines and standards of care for SBIs in primary care related to hazardous and harmful alcohol use. For example, in the United Kingdom (England), an SBI is undertaken as part of a normal health check (Box 6.6).

Box 6.6. SBIs in the United Kingdom (England)

In 2008/09, National Health Service (NHS) employers and general practitioners agreed on five new clinical areas where services should be enhanced (i.e. clinical directed enhanced services). One of these areas was alcohol, which encouraged general practitioners to deliver simple brief interventions in order to identify adults who drink at harmful and hazardous levels (NHS Employers, 2008[79]).

As part of the enhanced services, general practices were required to engage in the following steps:

- screen newly registered individuals aged 16 and over, using either tools such as the AUDIT-C or FAST test;
- if positive, the remaining AUDIT questions must be asked to determine the level of hazardous, harmful or dependency drinking;
- provide a brief intervention to hazardous and harmful drinkers using the five-minute tool developed by the WHO, which was adapted for the United Kingdom;
- refer dependent drinkers to a specialist service.

Data at each step were collected in order to reimburse general practices financially. Specifically, practices received GBP 2.33 for each newly registered patient who was screened.

The enhanced services ended in 2015; however, since then, SBI protocols have been integrated into the main GP contract. Today, SBIs form part of the NHS Health Check (NHS, 2019[80]).

In Brazil, SBIs in primary care do not have a clear guidance nor incentives. The national guidelines for screening in primary care includes a recommendation for alcohol screening and counselling, suggesting to use instruments such as AUDIT or CAGE (Ministério da Saúde, 2010[81]). However, implementation at the level of doctors, nurses or other health professionals is not supported and there is no monitoring. An important initiative was Pathways of Care (*Caminhos do Cuidado*), a strategy implemented in 2013 by the Federal Government to build capacity in alcohol and drug use disorders, which trained more than 290 000 community health workers and nursing assistants (Spector et al., 2015[82]). Importantly, Psychosocial Care Centres (Centros de Atenção Psicossocial, CAPS) are strategic points of care of the Network for Psychosocial Care (Rede de Atenção Psicossocial, RAPS). CAPS are community-based health care services consisting of a multidisciplinary team providing care to people with mental health conditions, including those with needs arising from the use of alcohol and other drugs. The modality of CAPS for alcohol and drugs provide services to all age groups, serving cities and/or regions with at least 70 000 inhabitants. The modality of CAPS level III for alcohol and drugs have 8 to 12 places for night admission and observation, with 24 hours operation, serving cities or regions with at least 150 000 inhabitants (Ministério da Saúde, 2017[83]). SBIs are mainly conducted in these CAPS and patients then receive appropriate care.

Taking advantage of the extensive and strong primary care, Brazil could develop a national policy to enhance SBIs for hazardous and harmful drinkers at this level of care. SBIs could be included as part of the core services of Family Health Teams, in particular as part of health check-ups. A register and monitoring system could be implemented, which would be very important to connect with CAPS in order to integrate services in a better way, making care more people-centred.

National clinical guidelines can be developed for the specialised treatment for dependent drinkers

People with alcohol use disorders, particularly in the most severe forms, may have trouble controlling consumption, neglect other interests in order to drink and persist with drinking despite clear evidence of its harmful effect. Compared to other excessive drinkers, dependent drinkers require more intense, specialised treatment. The objective of treatment for dependent drinkers can be either total abstinence or a significant reduction in consumption. The former is necessary for patients with psychiatric or physical comorbidities (e.g. depression, alcohol-related cirrhosis), while the latter is only appropriate for mildly to moderately dependent drinkers (NIAAA, 2005[84]; Moyer and Finney, 2015[85]).

Treatment for dependent drinkers can be broken into two complementary components: psychosocial treatment and pharmacotherapy. Individuals diagnosed with alcohol dependence typically receive psychosocial treatment including cognitive behavioural treatment, 12-step facilitation (self-help groups promoting abstinence through acceptance, surrender and active involvement), motivation enhancement therapy (designed for patients to internally motivate change), coping skills training and support groups (e.g. Alcoholic Anonymous). Psychosocial treatment has been shown to be effective for alcohol dependence, but for some patients it might be necessary to combine it with pharmacological treatments such as naltrexone, acamprosate, disulfiram, topiramate or gabapentin (APA, 2018[86]).

In Brazil, CAPS provides services to patients diagnosed with alcohol use disorders. These patients may also receive inpatient treatment in specialised wards of the public hospital system or psychiatric clinics. Despite the improvements brought by the creation of RAPS, the system is reported to be highly fragmented, with no organised structure to reach and retain patients (Pinsky et al., 2018[87]). Furthermore, there are gaps reported in terms of the availability and clinical use of pharmacological treatment in CAPS, as although medications might be officially listed these does not guarantee their obtainability at the health units (Dalago, 2018[88]) nor its clinically appropriate prescription when needed as no updated clinical practice guideline exist in Brazil. Therefore, Brazil could make a significant progress by developing an official national clinical practice guideline for the management of dependent drinkers, which could be done in collaboration with Brazilian clinical experts or professional associations. This would be a fundamental step towards developing further initiatives for improving care such as navigation systems or care management (Pinsky et al., 2018[87]).

6.4.5. Consumer information

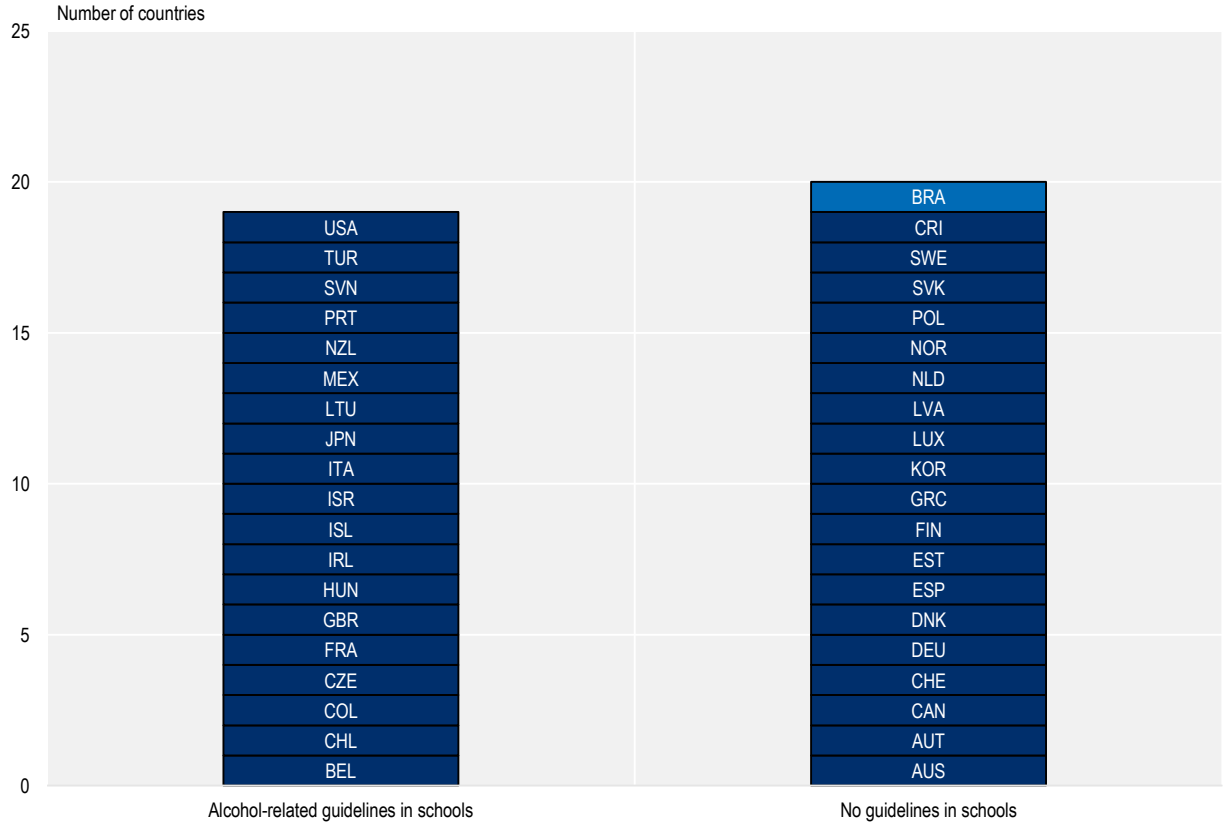
The "Programa Saúde na Escola" can benefit of boosting its component for alcohol use prevention among students

Despite being illegal, it is common for underage school children/young people to consume alcohol. School-based education programmes can influence drinking initiation and drinking behaviours among school-aged children. Several evaluations of school-based alcohol prevention programmes have been undertaken. Recently, MacArthur et al. (2018[89]) found that school-based interventions targeting multiple risk behaviours compared to "usual practice" reduced alcohol use from 163 per 1 000 students to 123 per 1 000 students 12 months after implementation (equating to a 28% reduction in alcohol use). However, the evidence suggests no long-term effects after the end of the period of exposure. These results support earlier studies – for example, a systematic review of the effectiveness of universal school-based

programmes (i.e. delivered to all students, not just those at risk) concluded that they can be effective in reducing drunkenness and binge drinking (Foxcroft and Tsertsvadze, 2011[90]).

Across OECD countries, 19 have in place national guidelines regarding the prevention and reduction of alcohol-related harm in schools (Figure 6.17). A country with no national school guidelines does not necessarily mean that students are not accessing alcohol prevention programmes. For example, in Australia, where they are no national guidelines, students may access the Climate programme (Lee et al., 2016[91]).

Figure 6.17. National guidelines for the prevention and reduction of alcohol-related harm in schools



Note: Dark blue = OECD countries.
Source: OECD (2021[1]), *Preventing Harmful Alcohol Use*, https://doi.org/10.1787/6e4b4ffb-en.

In Brazil, the Health at School Programme (*Programa Saúde na Escola*, PSE), an intersectoral policy of the health and education sectors, was established in 2007 with the aim to provide comprehensive care (promotion, prevention and care) to protect the health of children, adolescents and youth in public schools. The PSE is delivered in partnership with primary care units bringing together the Family Health Teams and education professionals. The actions of the PSE include the prevention of alcohol, tobacco and other drug use (Ministério da Saúde, 2021[92]). However, the programme does not have guidelines specifically devoted to alcohol-related harms in schools. In practice, this means that promotion and prevention activities in schools are conducted, in fact, in 2019 there were 22.480 activities in the PSE related to alcohol, tobacco and others drugs prevention. This situates the alcohol area in 10th place out of 12 areas monitored by the Ministry of Health (Ministério da Saúde, 2020[93]). Seven of the top nine areas have their specific guidelines (*cadernos e guias temáticos*) available online (Ministério da Saúde, 2021[92]).

In addition to PSE, the #Tamojunto programme was implemented by the Ministry of Health in 2013 to prevent the use of alcohol, tobacco and other drugs among adolescents in the 8th grade of primary schools. The current format of #Tamojunto is the result of an adaptation of the Unplugged Program, created by European researchers and recommended by the United Nations Office on Drugs and Crime. In the second half of 2013, #Tamojunto was implemented in the cities of Florianópolis, São Paulo and São Bernardo do Campo; and, in the first half of 2014, it reached a total of nine cities across six states (Ministério da Saúde, 2017[94]). The programme was evaluated with a randomised controlled trial. A first analysis found that students in the experimental group had a 30% increased risk of initiating alcohol use during the 9-month follow-up (Sanchez et al., 2017[95]). A second analysis showed that adolescents in the programme group were 30% more likely to have reported past-year use of alcohol than students in the control group at 21 months follow-up (Sanchez et al., 2018[96]). This rigorous evaluation is very important as it reveals that the Brazilian version of the European Unplugged programme may be misinterpreted by public school students, perhaps arousing their curiosity regarding alcohol use, which could lead to a full revision of this programme component.

In this context, the Ministry of Health jointly with the Ministry of Education could develop a PSE national guidelines devoted to alcohol-related harms for school children and adolescents, along with developing initiatives to further support professors and health workers to implement the guidelines. Likewise, an evaluation system could be put in place to assess the impact of such guidelines implementation. Learning from the experience of #Tamojunto programme will be crucial for either upscaling a revised form of it in the area of alcohol use or developing a new programme for PSE students.

6.5. Conclusion

Alcohol consumption in Brazil stands below OECD averages, but there are signs that in recent years consumption has increased in all population groups. These increases are particularly worrying for women and young adults, for instance in relation to heavy episodic drinking. This scenario will increasingly damage health, increasing premature mortality and decreasing life expectancy at slightly lower rates than for OECD countries. It will also have a significant impact on health expenditure and the broader economy in terms of GDP reduction, although of smaller magnitude than OECD averages.

Brazil has adopted important and effective alcohol control policies, by having national strategies dedicated to it with an intersectoral focus. The country has a remarkable zero tolerance drink-driving law, which has been amended several times to tighten the BAC limits and its associated penalties. This has been accompanied by regular mass media campaigns to alert and create awareness about the dangers and harms associated with drink and driving. Brazil also approved a law about minimum age for accessing alcohol that has been important in protecting children and adolescents. With this as baseline, Brazil could aim for a more comprehensive alcohol policy package to further reduce alcohol consumption and its harmful consequences. It can include initiatives around pricing policies such as introducing a minimum unit pricing to target cheap alcoholic beverages. It can also expand on the existing drink-driving policies by using more data to better plan sobriety checkpoints and by introducing ignition interlock programmes on a future update of the Lei Seca. On the health system, guidance and monitoring of screening and brief interventions for alcohol drinkers can be enhanced in primary care in connection to CAPS, while national clinical guidelines can be developed for the specialised treatment for dependent drinkers. Finally, the Programa Saúde na Escola could benefit of boosting its component for alcohol use prevention among students.

OECD analysis shows that all these policies are predicted to have a positive impact on Brazil's population health and the economy. OECD (2021[1]) shows minimum unit pricing can produce the largest reductions on health expenditure and on labour market related costs (e.g. employment), while generating the biggest gains on population health (e.g. life expectancy) and the broader economy (e.g. GDP).

The proper combination of policies in Brazil can effectively reduce harmful alcohol consumption. As a result, Brazilians health will improve and the economy will substantively benefit, with important returns on the investment made. Taking a participative approach in policy design and by including robust monitoring and evaluation systems, the pursue of such comprehensive alcohol policy package would be beneficial for all Brazilian society.

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Notes

[1] A standard drink is a measure of alcohol consumption in a drink and differs across beverage types and countries. In Australia, for example, one standard drink includes 10 g of alcohol, so a 750 mL bottle of wine (13.5% ABV) contains eight standard drinks.

OECD Reviews of Health Systems

BRAZIL

In the 30 years since the inception of the Unified Health System (*Sistema Único de Saúde, or SUS*), Brazil has reduced health inequalities, and improved coverage and access to health care. However, mobilising sufficient financing for the universal health coverage mandate of SUS has been a constant challenge, not helped by persistent inefficiencies in the use of resources in the Brazilian health system. Demographic and epidemiological changes, rising expectations from society, and the emerging needs of a post-COVID-19 recovery period mean that continued adjustments and reforms are needed to ensure the sustainability of the health system. This review uses internationally recognised indicators and policy frameworks to examine the performance of Brazilian health system. The report points to key actions that Brazil should consider prioritising in the coming years to strengthen health system performance, especially improving efficiency and sustainability of financing, upgrading its health data infrastructure to leverage a digital transformation, and addressing major population risk factors such as overweight and harmful alcohol consumption. A companion publication with a review of primary health care in Brazil further examines the key role of primary health care to improve the performance of the Brazilian health system.

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