



# Comparative Case Study on Health System Responses to COVID-19 in Brazil and Mexico

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## Executive Summary

The two case studies of Brazil and Mexico and the impacts of the pandemic offer insights into both the achievement and shortcomings of the national responses, highlight strengths and shortcomings of the overall health systems and make clear initiatives and investments that were important both for the pandemic and for the system going forward. Performance in both countries were mixed, but the findings suggest that Brazil gained the most from its response to the pandemic, whereas Mexico had a limited response and an equally limited set of lessons from the pandemic.

Nominal spending rose during the pandemic, but both countries faced difficulties. Brazil has a congressionally imposed cap on health spending which constrained additional federal spending, while Mexico's ability to spend was seriously curtailed by the suspended legal status of the new Instituto de Salud para el Bienestar (INSABI), and needed funds were never made available. In Brazil, states and municipalities compensated for restricted federal spending, but Mexico's recentralization prevented similar initiatives.

Healthcare delivery was affected by the pandemic. Decentralization in Brazil allowed states and municipalities to compensate for inadequate federal financing and inaction, but Mexico was purposefully recentralized leaving individual states with few options to respond to the pandemic.

The year 2021 saw shifts in utilization with declining hospitalization rates, particularly in the public sector that experienced longer lengths of stay and negative outcomes as death rates rose in both Brazil and Mexico. Access to non-COVID-19 services declined, sometimes dramatically, and services for chronic conditions contracted. Pharmacies also saw a rise in utilization both through the Pharmacies with Doctors initiative in Mexico and via electronic prescription refills in as well as via the *farmácias populares* in both countries.

A jump in private care, out of pocket spending and use of private sector alternatives rose in Mexico across all income groups and insurance beneficiaries. The uninsured, those in the lowest income groups, moved sharply toward the use of private services, and overall 58 percent of the population sought private care whereas only 14.7 percent chose to use Ministry of Health facilities. In Brazil, enrollment in private insurance rose during the pandemic, increasing the pressure on the health regulator, Agência Nacional para Saúde Suplementar (ANS), to allow emergence of pared-down health insurance plans to make them more accessible to lower-income groups, leading to a discussion of alternative options in the sector more generally.

Functioning in parallel, the public and private healthcare sectors initiated a dialogue, and though they remain far apart on issues of costs, reimbursement, and their respective roles, both sectors in Brazil and especially in Mexico were forced to respond and to cooperate in some instances. Future pandemics will require a joint, or at least a coordinated, agenda. Brazil has initiated a durable dialogue that both parties view as valuable.

Telemedicine took on new life under the pandemic, in line with global experiences. Information technology saw a surge, particularly in Brazil. A range of apps from the government and private sector emerged, driving connection and communication. Even Brazilian physicians, traditionally uncertain about telehealth, have endorsed telemedicine. In contrast, the IT roll out was poorly managed in Mexico partly due to its weak digital infrastructure and lagging digital solutions. The gap between private and public progress in digitalization is widening rapidly in both countries, leaving the public sector behind as innovations are adopted in the private health sector. Brazil is seeking to build public-private partnerships and has established a Secretary for Digital Health within the Ministry of Health to allow the Single Unified Healthcare System (SUS) to catch up.

Human resources emerged as among the most important shortcomings during the pandemic including inadequate numbers of available healthcare workers, inconsistencies in skill levels, and gaps in needed capacity. Training was adapted to online courses, affecting both academic and on-the-job teaching, as well as supervision, which was often remote too. While return to in-person is preferred by many, the future will undoubtedly be a hybrid. Brazil is already moving toward a greater reliance on apps to communicate with patients.

Mental health problems became exacerbated and both policymakers and healthcare service providers were forced to confront the issue, a challenge that had been effectively ignored in the past. Public efforts in Brazil included lectures and assistance for health workers and a range of digital tools to provide psychological support, largely through mental health apps. Training models for telemedicine, remote health care workers, and digital technologies for consultations now allow health care professionals across the country. Mexico provided on-line support and launched *Nosotros también nos cuidamos*, a remote psychological care program for health care workers across all levels of care.

Ultimately, the pandemic was a shock to the healthcare systems of both countries, but it brought renewed focus on long dormant issues such as the shortcomings and inefficiencies in healthcare, particularly in the public system, and a renewed focus on the potential for primary care services. COVID-19 provided a push for digital health and telemedicine, raised issues of health worker wellbeing and the effects of working conditions on performance, and brought the public and private healthcare systems into the realm of cooperation, an important first step to finding grounds for collaboration. The crisis of COVID-19 should be a wakeup call and a basis for efforts to prevent, prepare, and respond to the inevitable next pandemic.

## I. Introduction

COVID-19 wreaked havoc across Latin America. Hit hard and early, the countries of the region sustained a high incidence of COVID-19 and associated death rates remained high until vaccines such as AstraZeneca, Moderna, and Pfizer became available, and countries were able to vaccinate their populations. Like the rest of the world, health systems scrambled to respond, adapting to the need to substitute for in-person care, coping with a rise in hospitalizations for COVID-19, and experiencing a resulting burnout of staff. With costs rising, governments scrambled to figure out how to finance the national responses. The pandemic tested the resilience of health systems, both public and private, while in some countries introducing new ways of doing business in the health sector that have a lasting potential to improve care.

This paper assesses and compares the responses of Brazil and Mexico: examining health investments; institutional, health delivery, and utilization issues; human resource challenges; and information technology adaptation and use to assess COVID-19's impact on their health systems. Based on this review, we consider the short and medium-term impacts of the COVID-19 response on clinical services.

The methodology for this case study included building on a multi-country health system resilience study by Lewis, Stuttgen, and Coyne (2022), complemented by a thorough literature survey for information and evidence on Brazil and Mexico including recent IDB analyses, harnessing of pertinent data from national and global sources on disease patterns, compilation of financial expenditure data, and interviews with local experts in both countries. The latter provided additional insights into the evolution of the pandemic in each country and the national responses in both the public and private sectors. Annex 2 lists the stakeholders included in the interviews for Brazil (Kantar 2021) and Mexico (KPMG 2021). The key players in both health systems are captured in the included experts. Individuals were not identified, and often group consensus is reflected in the reported quotes.

## II. Health Systems, Financing, and Leadership

### A. Structure of the Health Systems

Both Brazil and Mexico have highly fragmented health systems. In Brazil, the public system consists of multiple institutions and sources of financing, including a small number of federal hospitals; federal, state, and municipal funding for the Family Health (*Saúde da Família*) program that is run by the over 4,000 municipalities; regular medical team outreach to families; federal transfers to municipalities for other health programs; state-funded and operated hospitals; municipal hospital spending and additional primary care services; state *Autorquias*, semi-autonomous providers that service public employees; military health services; and Petrobras, and various other public entities, with their own healthcare arrangements and funding. The private sector is large; it offers a range of delivery and financing products from indemnity insurance to services of physician cooperatives to vertically integrated insurance plans. Many large private companies provide insurance for and offer services to their employees.

Mexico's health system includes various public institutions: the *Instituto Mexicano de Seguro Social* (IMSS) that covers formal sector workers in the private sector; *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE) serving public employees; transfers to states and transfers directly to state hospitals with mostly in-kind inputs, including staff, equipment, consumables, and drugs; military healthcare services; Petromina and other parastatal healthcare services; and general public service provision by the MOH to those classified as uninsured by either public or private institutions. An additional program, *Seguro Popular*, provided catastrophic coverage for the uninsured population, but was terminated by the new government in 2018. The national private sector includes high-end hospitals, physician providers, *Médicos en Farmacias* (MOF)—a private option of physician clinics attached to pharmacies—and private insurance.

Brazil and Mexico already use pharmacies to reach subsidized populations through *farmácias populares* where eligible income groups can obtain subsidized pharmaceuticals (Aceso Global 2021). The private *Médicos en Farmacias* in Mexico played a significant role during the pandemic in reaching those seeking care, and Brazil allowed pharmacists to administer vaccinations.

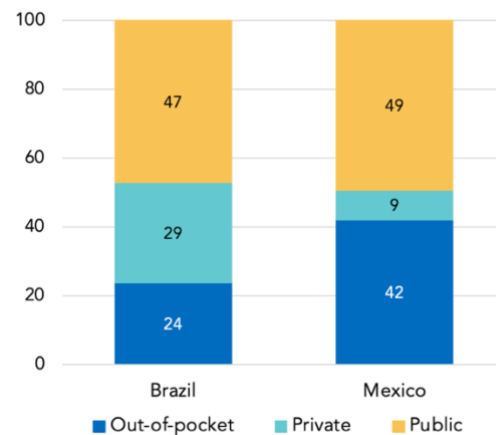
Key Mexican pharmaceutical retail sector experts note that: “*in Mexico, the first level of care is the pharmacy*” (KPMG 2021).

These concrete innovations demonstrate the feasibility of alternative delivery approaches and an effective response under the pressures of the pandemic. Additionally, they have the potential to form the basis for allowing and encouraging other innovations that improve access for citizens.

## B. Healthcare Financing

While the responsibility of governments to provide a safety net in times of stress is assumed and expected in most countries, the reality of government action in response to COVID-19 was mixed both in terms of financing and services. This section explains the nature of healthcare financing by the government, insurers, and households in Brazil and Mexico. It provides background for the subsequent discussion on the institutional responses to COVID-19 that together influenced public and private service delivery, health service utilization, and spending.

**Figure 2.1 Distribution of Public and Private Healthcare Spending by Country, 2019**



*Source: World Bank 2022 and OECD 2022*

Figure 2.1 summarizes the contributions of the three major payers of healthcare in 2019: government, private sector insurers, and household out-of-pocket (OOP) payments. Striking is the level of household spending, captured by OOP payments, which can undermine accessing professional advice, undercut continuity of care, and is increasingly relevant in managing chronic conditions and aging, the current drivers of healthcare in both countries.

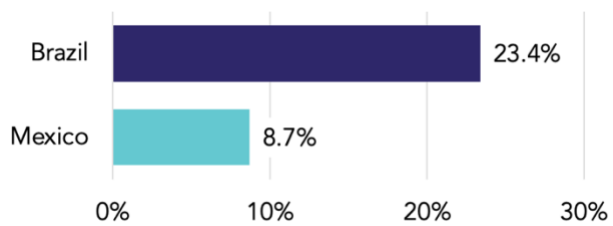
Mexico's OOP payments are high at 42% and close to the public sector percentage of spending, suggesting a significant demand for private healthcare services despite the availability of free publicly provided care. This typically reflects inconvenient, inadequate, or poor-quality public services. Mexican households appear to have a low priority for healthcare, possibly due to high levels of remittances that makes discretionary health services accessible. In 2021, Mexican household remittances represented 4.1% of GDP (BBVA Research 2021).

Brazil prides itself on its universal Single Unified Healthcare System (SUS), but high private spending—mostly through private insurance coverage, which is almost 30% of total health spending and complemented by 26% in OOP payments—belies that fact. Less than half of health expenditure in Brazil is attributable to the public sector.

Both countries rely on a mix of public and private financing and delivery. Figure 2.2 shows the breakdown in private insurance coverage for Brazil and Mexico. The former has a significant private health insurance market offering high-quality care with innovative plans and a range of services (ANS 2022). Mexico is less diversified. Insurance in both countries is often an employment benefit. Mexico's private insurance coverage is less than 9 percent of total health spending, as compared to just over 23 percent in Brazil.



**Figure 2.2 Private Health Insurance Coverage**



Source: OECD 2022 and ANS 2022

The potential for private investment is considerable. The pandemic has led populations to question their reliance on the public sector. Recent developments, such as the Médicos en Farmacias in Mexico and new insurance products in Brazil, point to new ways for patients to access private healthcare. Ease of access, convenience, and responsive providers influence patient

demand for private services, not just cost. There is ample opportunity for private sector actors to push the envelope and help transform delivery models.

Brazil saw a rise in private insurance coverage during the pandemic, despite declines in employment, suggesting a rising demand for private individual health coverage (ANS 2022).

*Key Brazilian private sector player: “[T]he growth in private health insurance coverage in response to COVID [reflects] the concern of citizens and companies that public care falls short. The pandemic has made even more relevant the role of health insurance coverage in attracting and retaining workers in the private sector. And this is the case even in an environment of declining employment” (Kantar 2021).*

Indeed, the health insurance regulator, ANS (Agência Nacional para Saúde Suplementar), has indicated that they are exploring possible alternatives for pared-down insurance options that are more affordable for middle and lower-middle income households (Da Silveira Villa 2022). As part of that strategy, the national competition regulator (CADE) recently agreed to the merger of two behemoth insurance companies—Intermédica and Hapvida—that target lower-middle income households in geographically distinct areas.

Prospects for greater private sector investment in Mexico do not appear to be on the agenda. Mexico has the structure and incomes to expand health insurance, and it lags behind the rest of Latin America in the proportion of the population with private insurance coverage.

### **C. Institutional Leadership**

Institutions and leadership have played important roles in management of COVID-19 in general, and Brazil and Mexico are no exceptions. The pressures under the pandemic have translated into shifts in public and private healthcare services that in turn have implications for changes in healthcare behavior over the long term in both countries.

The response to COVID-19 was inadequate in virtually all countries, and Latin American countries were hit harder than most. However, this reality was not anticipated for all Latin American countries. As of 2015, the World Health Organization’s (WHO) International Health Regulation (IHR) scores suggested that Brazil would weather a pandemic better in absolute and relative terms compared to other countries in the region (WHO 2019). Despite this score, Brazil failed to

manage the pandemic effectively, as did other high-scoring countries, including the US, belying the value of IHR scores to accurately measure a health system's ability to withstand the shock of a major pandemic such as COVID-19. Mexico was also unable to mount an effective response despite indications to the contrary. These failures were due to multiple factors, among them the virulence and rapid spread of COVID-19 and the fact that Latin America was affected early in the pandemic. Nevertheless, politics and institutional characteristics of the health sector in each country played major roles as well.

Indeed, an overwhelming factor in the response to COVID-19 was political rhetoric and inaction of national political leaders in both Brazil and Mexico. Presidents in both countries undermined public health efforts by denying the importance of the virus, persisting in driving a minimalist response, and continuing to flaunt the use of masks and social distancing in the face of scientific evidence. This response contributed to both the spread of COVID-19 and their own contraction of the virus. National leadership was either lacking or delayed in multiple areas: acknowledging and communicating the pandemic as a public health threat, adapting the healthcare system to emerging needs, informing the public, promoting testing, obtaining vaccines and driving vaccination coverage, and reaching out to the private sector.

Communication about the pandemic to citizens was chaotic at the onset, as it was in much of the world, but at the national level in both Brazil and Mexico, little information was shared regarding the health risks or mitigating measures as evidence emerged from pandemic management. While Mexico set up an efficient communication channel with the population, including daily reports and press conferences, its communication was riddled with scientific errors to the extent of suggesting religious amulets as solutions (Felbab-Brown 2020).

In Brazil, a similar set of misleading information-sharing persisted from the government. In parallel, private groups, states, and municipalities launched websites and apps that informed constituents of the pandemic, prevention measures, and treatment options, among other things. But the disconnect with national messaging had already sowed confusion halfway through the pandemic.

Thus, the national government's policy response was muted in both countries. The Brazilian Ministry of Health (MOH) provided limited leadership in the pandemic and instead deferred to state and local government initiatives for prevention measures and treatment services, complemented by private sector options from hospitals to pharmacies. The variability in the response was stark, with wealthier states initiating public health measures and effectively treating patients, while rural and lower income states were overwhelmed by patients. The catastrophe in Amazonas state—due to ill-prepared providers and under-resourced public healthcare—offers an important example where inadequate prevention combined with a hospital network ill-equipped to cope with a surge of COVID-19 patients led to a serious cost of lives. A revolving door of ministers of health further constrained national leadership, compromising policy responses to the pandemic. However, with the appointment of a new Minister of Health in 2021, the federal government shifted focus and aggressively purchased,

distributed, and administered vaccines, supported public health measures, and initiated a dialogue on the shortcomings of the national response (Kantar 2021)

The Mexican government, in contrast, was reactive from the start of the pandemic. It required significant public pressure to take basic actions such as introducing lockdowns and mask wearing, initiating testing, and launching a comprehensive vaccination plan. The government cut off lines of communication with the WHO over policy disagreements and denied state government requests to implement WHO recommended communication strategies and testing systems for their citizens (KPMG 2021).

Those state arrangements were suspended in favor of a national response that saw procurement, surveillance, and vaccinations centralized. This centralization stripped states of any authority for travel restrictions, social distancing and mask use mandates, testing, and vaccinations, in effect reversing decades of shared responsibility in a crisis (Felbab-Brown 2020). The effective centralized procurement process run by the Instituto Mexicano de Seguro Social (IMSS) was suspended and transferred to the Ministry of Health's (MOH) Secretary of Finance in 2019, with the rationale of providing more effective management (Sánchez-Talanquer et al. 2021). This caused tensions and disruptions between state and federal authorities as the pandemic unfolded, exacerbating delays in processes such as medicine distribution (Infobase 2021).

With states reliant on federal revenue sharing for health funding, they had no recourse. For example, in the state of Jalisco, critical aspects of health policy have generated conflict and debate between state and federal officials. The state requested federal authorities to regulate travel as well as expand testing. However, both requests, at different points in the pandemic, were denied or simply ignored by the federal government (Ortega 2020). The result was few measures of mitigation, poor communication with citizens, limited testing, and high incidence of both COVID-19 cases and deaths.

In an escalation of the power struggle, the state of Jalisco partnered with the local University of Guadalajara to secure and analyze test samples. However, the national Epidemiological Surveillance System for Respiratory Diseases (SISVER) denied access to those records, making it impossible to report state cases. Only National Network of Public Health Laboratories members were allowed to access and upload data into the system. In response, the state government built a parallel surveillance system integrating public and private laboratories. With the federal authorities refusing to work with Jalisco's system, and other state authorities, the national system only accounted for roughly 24% of conducted state tests (Gobierno de Jalisco 2022). However, the state government has also been criticized for deepening a national divide by challenging the federal government's policies (Ortega 2020).

### III. Impact of COVID-19 on Health System Response and Service Utilization

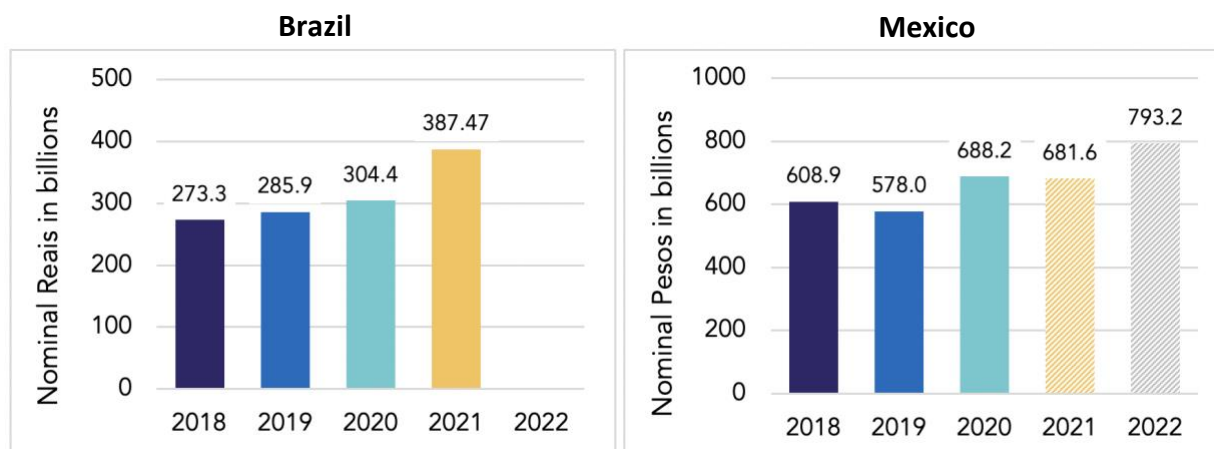
Health systems were put under intense pressure to respond to the demands of COVID-19 patients and to maintain services for prevention, non-COVID-19 treatment, and continued treatment for chronic conditions. The impacts were severe, from burned-out staff to eroding retention rates to access barriers for sick patients reluctant to seek care where they might contract the virus. Brazil and Mexico both faced serious challenges and pieced together responses, but the impacts of their responses diverged significantly. The impact of the pandemic has multiple aspects from spending to service provision to utilization.

#### A. Public Health Spending

The pandemic placed severe economic pressures on governments as economies shrank and demand for healthcare soared. This section summarizes the fiscal responses and the impacts on the public sector, with some attention to the role of the private sector in the pandemic. Subsequently, it examines issues of incentives within the health systems, focusing on payment system reform. Brazil has used the crisis to adapt to changing circumstances and transform its healthcare system.

In 2020, the onset of the pandemic led governments to increase spending on health, while lingering infections pushed governments to raise health spending even more: for Brazil in 2021 and Mexico in 2022. Figure 3.1 summarizes these nominal trends in government spending. Using nominal figures allows an assessment of budgeting and actual spending levels and reflects government spending decisions. These expenditure patterns mean that countries have increased average nominal public health spending in the pandemic by significant margins, as shown in Figure 3.2. However, while Brazil allocated more funds, in real terms spending declined from US\$ 73.8 in 2019 to US\$70 in 2021. Mexico's pattern of spending was similar in nominal and real terms.

**Figure 3.1: Trends in Total Public Health Expenditures, 2018-2022 (Nominal Reais/Pesos)**

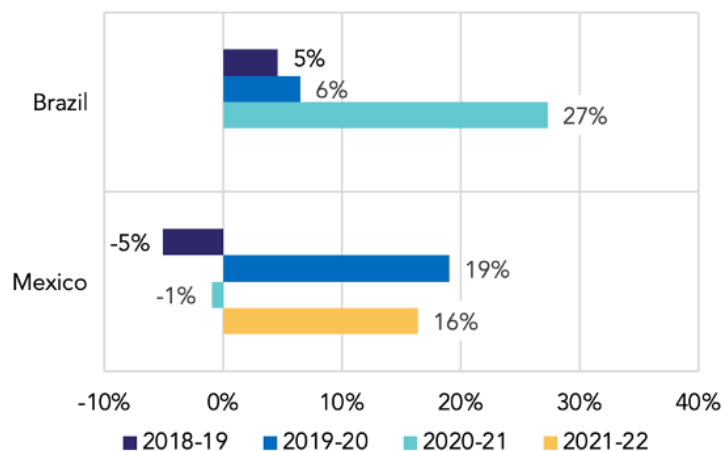


Sources: Brazil ANAHP Observatory 2020, 2021, and 2022 and México Evalúa 2020-21

Note: Figures are reported in nominal terms since we are comparing budget allocations across years. Moreover, these funds are allocated to public expenditure that do not closely align with inflation.

As shown in Figure 3.2, Brazil saw only a small increase in nominal public healthcare financing during 2020, the first year of the pandemic, hampered by legislation that places a ceiling on health spending at the federal level. High non-federal public and private spending—close to 6 percent of GDP, provided a cushion for the response (ANAHP 2022). The MOH received approximately 20% more in FY20-21 than FY19-20 from the federal COVID-19 “War Budget” (SIGA Brasil 2021). Brazilian states and municipalities also increased their spending from federal transfers and own revenue. Strikingly, however, federal health spending increased in nominal terms by approximately 27% from 2020 to 2021, overcoming the ceiling on health spending (ANAHP 2022). This increase calls into question the sustainability of this high level of spending in a post-pandemic future.

**Figure 3.2: Percent Change in Nominal Public Health Budgets in Response to COVID-19, 2018-2022**



Sources: Brazil ANAHP Observatory 2020, 2021, and 2022 and México Evalúa 2020-21

Note: Figures are reported in nominal terms since we are comparing budget allocations across years. Moreover, these funds are allocated to public expenditure that do not closely align with inflation.

Consensus from Brazilian private sector leaders: “[W]e foresee a worrying scenario characterized by increased demand for healthcare services in parallel with worsening budgetary pressures for [government spending for] SUS” (Kantar 2021).

Despite lapses in the initial speed of response, funding and harnessing of its highly regarded public health system and research capacity aided effective adaptation in information campaigns, vaccine research and production, and vaccination rollouts (WHO 2019).

Mexico’s response to the pandemic was modest. Funding and bureaucratic constraints delayed the transition to financing under the new Institute of Health and Social Welfare—Instituto de Salud para el Bienestar (INSABI). The MOH recentralized purchasing and management of the healthcare system, leading to delays and rigidities that compromised adaptation and undermined potential for health system transformation. There was no focus on expanding research, vaccine production, or purchases. The private sector chose to collaborate with the public sector and provided both pro-bono care and support to public initiatives, including underwriting and participating in vaccination campaigns (Sánchez-Talanquer et al. 2021).

Experts from both the Mexican public and private sectors concluded that: “[T]he health crisis caused a shortage of medicines, saturation of public hospitals, and social distrust in the provision of quality services, resulting in rising demand for private medical care” (KPMG 2021).

## B. Impacts of the Pandemic on Service Provision

Service provision proved largely inflexible in the crisis of the pandemic in both countries, highlighting some of the innate shortcomings of both systems. However, the shortcomings were different. Brazil failed to effectively harness spare capacity. Where such capacity was limited, states and municipalities faced serious health system responses, for example, in the Amazon, where many lives were lost (Bigoni et al. 2022).

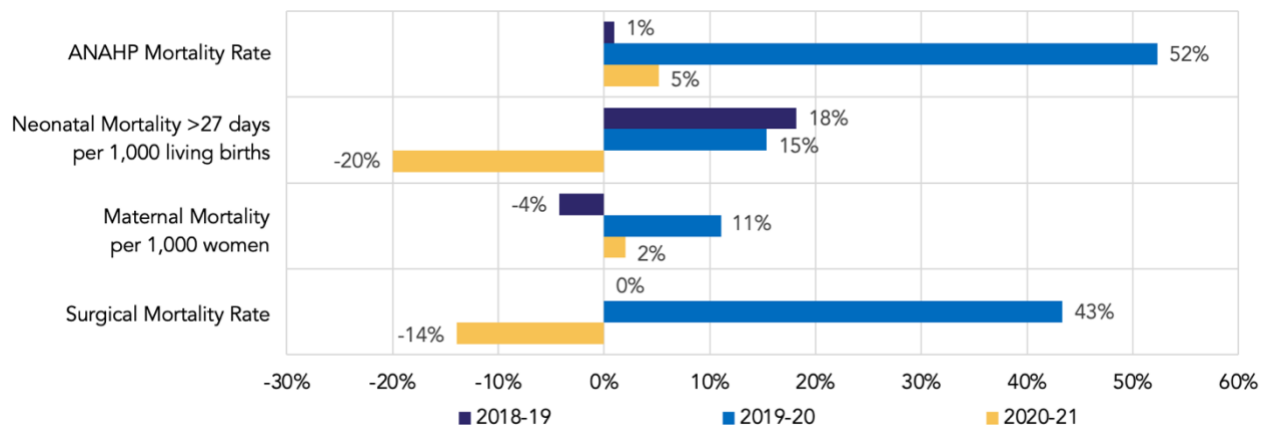
Healthcare services in Brazil's public and private sectors were often overwhelmed during the pandemic. However, over the course of pandemic, private sector demand stabilized, but the public sector could not benefit as the private and public sectors failed to work together leaving idle private capacity untapped. Nonetheless, the pandemic has finally made dialogue between public and private health providers and payers a possibility as the failure to collaborate has been acknowledged. It is a critical opening that is long overdue as the public and private sectors both overlap and complement one another, and both will be essential in future pandemics (Forum de Gestores 2022).

The pandemic's impact in Brazil was measurable with declines for all reasons in public inpatient facilities (Ministério da Saúde 2022). The impact in terms of hospital deaths as well as utilization in the private sector was similar, but details differed in the high-end hospitals. The National Association of Private Hospitals (ANAHP), the association of the 118 high-end hospitals in Brazil, most of which are specialty facilities in São Paulo, collected data on mortality that complements national trends across Brazil's health system as a whole. It highlights differences in recovery among specialty facilities (ANAPH 2021; 2022).

The impacts on mortality at ANAHP facilities were dramatic, as indicated in Figure 3.3, showing an increase in neonatal mortality of 18 percent between 2018 and 2019, and another 15 percent the next year. The decline in 2021 did not show a return to 2018 levels. This rise in death rates of neonates occurred in hospitals where neonatal mortality is roughly half the national average, and where the infrastructure and human resources are among the best in Brazil. Similarly, maternal deaths increased 11 percent between 2018 and 2019, though did not decline in 2021. Surgical mortality rates rose by over 40 percent 2019 and only declined modestly the following year (ANAHP 2022). Older patients and those with multiple comorbidities were at greatest risk during the pandemic, which may account for the declines observed in both hospital stays and mortality.

These trends suggest that even in the best facilities COVID-19 affected outcomes. It is important to note that these 118 hospitals are outliers in terms of quality, but they were nonetheless affected by the pandemic, but often in different ways, and the data presented suggest that these facilities were faster to adapt and reverse negative trends, hence the improvements in 2020-21.

**Figure 3.3 Percent Change in Overall, Neonatal, Maternal, and Surgical Mortality Rates in Brazil from 2018-2021**



Source: ANAHP 2022

Brazil’s response was clearly inadequate as even where well-run and staffed hospitals provided high-end care saw a decline in outcomes, and, as elsewhere, private facility utilization waned.

Mexico’s overall healthcare response was tepid at best; it was hamstrung by government rejection of the pandemic as a priority and further burdened by bad timing. The new public health program INSABI was intended to replace the defunct *Seguro Popular*, but as noted above, its launch and financing authorization were delayed due to the pandemic’s slowing of government functions.

Consensus among Mexican experts: “[The] pandemic took the recently created INSABI by surprise, and it lacked the necessary experience to address problems, thus hindering the absorption and adaptation processes” (KPMG 2021).

The recentralization of public healthcare management and purchasing led to delays and rigidities that compromised both quality and access for patients since state and municipal services were required to await distribution of inputs with no means to influence the arrival of needed supplies and no independent source of revenue (Dobova et al. 2022).

At the onset of the pandemic, IMSS restricted access to its facilities except for emergencies and respiratory problems and canceled routine healthcare services. It did not introduce telemedicine, like much of the rest of the world, but did initiate refillable electronic prescriptions for chronic illnesses, and established a phone line for COVID-19 information and medical advice (Dobova et al. 2022). As the major public sector payer and provider, IMSS took some definitive steps during the pandemic but fell short on expanding on-line consultations, a major flaw in its response.

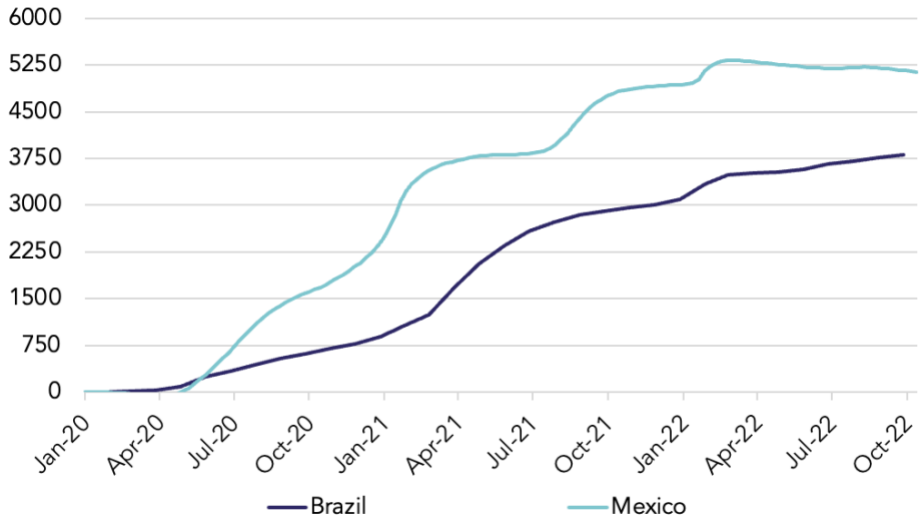
Mexico maximized hospital capacity at least in Mexico City. For example, a collaboration between the for-profit health industry and non-profit organizations set up a temporary COVID-19 Unit at a downtown Mexico City performance center with 623 clinical and operational staff to manage

easy cases, referring seriously ill patients to specialized hospitals around the city (Salud Pública 2020). IMSS and the private sector adopted similar arrangements, which allowed more effective use of hospital capacity (Sánchez-Talanquer et al. 2021). The private sector also provided some pro-bono hospital care leading to better capacity use, and like Brazil, Mexico saw a rise in enrollments in private insurance during the pandemic.

Meanwhile, common morbidities often exacerbated the severity of COVID-19’s effect on a patient’s health. For example, in Mexico, high body-mass index (BMI) and high fasting plasma glucose are the two risk factors driving the most death and disability and were risk factors for fatal COVID-19. Environmental and behavioral risks also contributed to morbidity and mortality (Sánchez-Talanquer et al. 2021). A high prevalence of chronic diseases such as hypertension, diabetes, and obesity in combination with poor quality medical attention and timeliness helped contribute to much higher mortality among the non-elderly population. Over 50% of all deaths occurred in people under age 65 (Sánchez-Talanquer et al. 2021).

Another important metric to understand the impact of COVID-19 on overall mortality is excess deaths. Figure 3.4 represents the cumulative number of deaths from all causes compared to the projected number of deaths for the same period based on previous years from January 2020 to October 2022. These numbers may not account for all deaths due to delays and inaccuracies in reporting. However, excess mortality rates are key to understanding the scope of the pandemic’s impact as it reflects the difference in mortality between the pre- and post-pandemic periods, therefore including deaths that can be attributed to COVID-19 both directly and indirectly.

**Figure 3.4: Excess mortality: Cumulative number of deaths from all causes compared to projection based on previous years, per million people**



Source: Our World in Data 2022

As of October 2022, Mexico’s reported excess deaths was 654,920, almost 2 times the number of confirmed deaths from COVID-19. Comparatively, as of January 2023, Brazil’s excess deaths reached 832,666 people, which is 1.2 times the number of confirmed COVID-19 deaths. Although



Brazil's total number is higher, when compared to the population as shown in Figure 3.4, the pandemic's overall impact on mortality in Mexico was more severe. A significant percentage of these excess deaths, which have not been linked to COVID-19 may be due to limited access to testing, diagnosis, and treatment. Additional to the undiagnosed, this high figure likely reflects a disruption in care for other conditions, as well as a lack of data on deaths from private sector laboratories and unrepresented hospitals.

Further, this metric differed across regions due to varying case rates, testing capability, health facility capacity, and patient hesitancy. Mexico City and the State of Mexico were two of the most affected regions, with very high excess mortality with Mexico City registering the highest number of excess deaths per population among populated cities disproportionately affected by the pandemic (Romero and Despeghel 2021).

In Brazil, higher excess mortality was likely to occur in the Northern, Center-Western, and Northeastern states where regional, demographic, and socioeconomic disparities exposed individuals to increased risk of death from COVID-19 and related causes. These regions suffered disrupted access to preventative and diagnostic care (Knaul et al. 2021).

The quickly rising case numbers and fatalities in 2021 were a result of newer variants such as the Gamma and Delta variants that were more contagious and deadlier than previous strains. These variants overstretched the country's hospital network in low-income states and led to the collapse of many regional health care centers unable to care for patients in any capacity.

## Testing

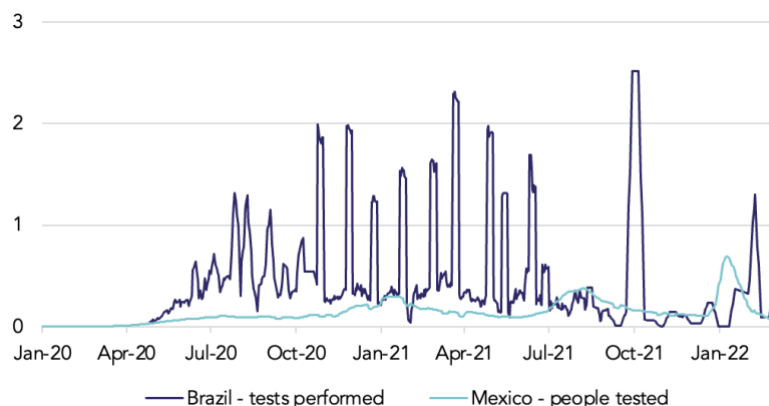
Testing proved to be a major public health tool to track the pandemic and target responses. The strategies adopted in Mexico and Brazil were dramatically different. Figure 3.5 summarizes daily testing rates for both countries between January 2020 and January 2022.

Mexico placed a low priority on testing, and as a result, suffered from a significant level of underdiagnoses and uncontrolled transmissions throughout the pandemic. As of February 2021, Mexico ranked #156 in testing per million population globally (Sánchez-Talanquer et al. 2021). Limited testing leads to an inability to implement other control measures such as isolation and contact tracing. Only Mexico City was able to implement a contact tracing strategy, but results remained limited. Moreover, as previously mentioned, campaigns about testing and behavior post-infection were undermined by misinformation. Gaps in official data also occurred because tests conducted by laboratories outside the National Network of Public Health Laboratories were not recorded in the Epidemiological Surveillance System for Respiratory Diseases (SISVER) (Sánchez-Talanquer et al. 2021).

In comparison, Brazil's testing data reflects consistently high numbers and positivity levels, despite striking discontinuities due to aggregated reporting at the sub-national level. The MOH in Brazil adopted a diagnostic testing strategy that attempted to increase testing capacity using public-private partnerships and significant donations (Kameda et al 2021). The strategy relied on

the existing laboratory networks of the central public health system, public universities, and HIV/AIDS viral testing centers. One example included setting up four new PCR testing facilities in densely populated areas to increase capacity to process a million tests per month. Various contact tracing initiatives—including the creation of technologies to automate disease surveillance and tracking—were intended to help control rapidly growing case

**Figure 3.5: Daily New COVID-19 Tests per 1,000 January 2020-January 2022**



Source: Our World in Data 2022

numbers but were not adapted by the public and proved unsuccessful. At the federal level, the government prioritized COVID-19 testing in hospitals and clinical settings for symptomatic patients, launching a national testing program called “Diagnose to Care” in May 2020 with the goal to test 22% of the population (Kantar 2021). In short, Brazil invested in testing and encouraged broad based testing, and was able to track the pandemic effectively.

### Vaccinations

Table 3.1 compares vaccine doses per 100 population for both countries and the US as of the first quarter of 2021.

**Table 3.1. Comparison of COVID-19 Vaccinations in Brazil, Mexico, and the US, Q1 2021**

Country	COVID-19 Vaccine Doses (per 100 population)
Mexico	2.41
Brazil	5.34
United States	28.01

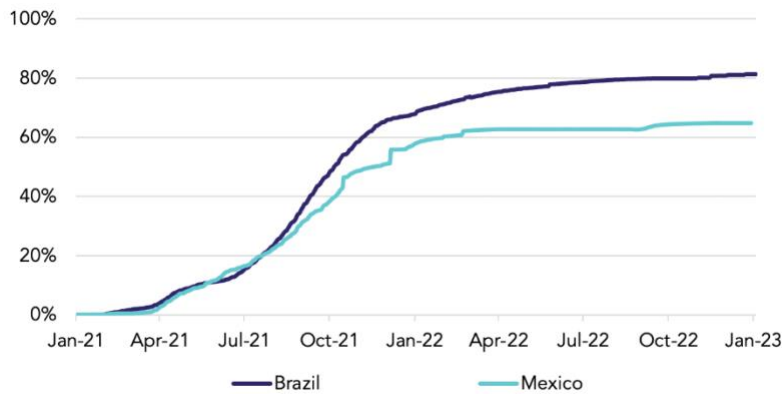
Source: Our World in Data 2022

Brazil relied on Chinese and Russian vaccines until they gained access to AstraZeneca, and then Pfizer and Moderna vaccines. Subsequently, Brazil launched an aggressive vaccination campaign starting with the elderly and those with compromised immune systems or secondary conditions.

Consistent with the lack of coordination and confusion in communicating health guidelines, vaccination rollout by the Mexican government was poor and inefficient. The goal set by the national government in January 2021 was to have at least 70% of the total population vaccinated, with 100% of health workers vaccinated, while also achieving 95% coverage in people 16 and older (Sánchez-Talanquer et al. 2021).

However, only a fraction of health workers in the public sector and even fewer in the private health sector were vaccinated. Furthermore, rural areas and low-exposure regions were prioritized over high-density areas, leading to low total vaccination rates both absolutely and

**Figure 3.6 Percent of the Population Fully Vaccinated in Brazil and Mexico, January 2021-March 2022**



Source: Our World in Data 2022

when compared to Brazil or the US. By March 2021, Mexico had only administered 2.4 doses per 100 population, whereas Brazil had administered 5.34 doses per 100 population, and the US reached over 28 doses per 100 population largely due to preferred access for US citizens.

Figure 3.6 shows the share of the population fully vaccinated against COVID-19 as of January 2023, with Brazil at 80 percent

vaccinated and Mexico at just over 60 percent. The data suggest that Mexico was able to catch up on vaccinations after a poor start with renewed efforts between early 2020 and the first quarter of 2022 (Our World in Data 2022).

The private sector aided the national government in the logistics and distribution of COVID-19 vaccines in both countries. Further, in Mexico, the private sector was heavily involved in the manufacturing and distribution process of the AstraZeneca vaccine through the Carlos Slim Foundation. This agreement initially supplied 150 million doses to Latin America, excluding Brazil.

### C. Trends in Service Utilization

In Mexico, utilization patterns across health facilities during the pandemic suggest low patient trust and confidence in public sector providers. First, national reporting and social media highlighted high mortality rates in public COVID-19 hospitals, which discouraged patients from seeking care (Angel 2021). Second, an analysis of the National Health and Nutrition Survey that focused on COVID-19 in 2020, found that while 18.6% of the population reported health needs during 2020, only 34% of patients received care in public facilities, well below the 41% that sought care in 2018 before the pandemic. Among the reasons for not seeking or receiving care, 11% indicated “fear of contracting COVID,” 18% reported that “facilities only take COVID-19 patients,” and 55% said their condition was not severe enough to seek care (Colchero et al. 2021). Since patients sought medical attention only when gravely ill, an estimated 58% died out-of-hospital (Sánchez-Talanquer et al. 2021).

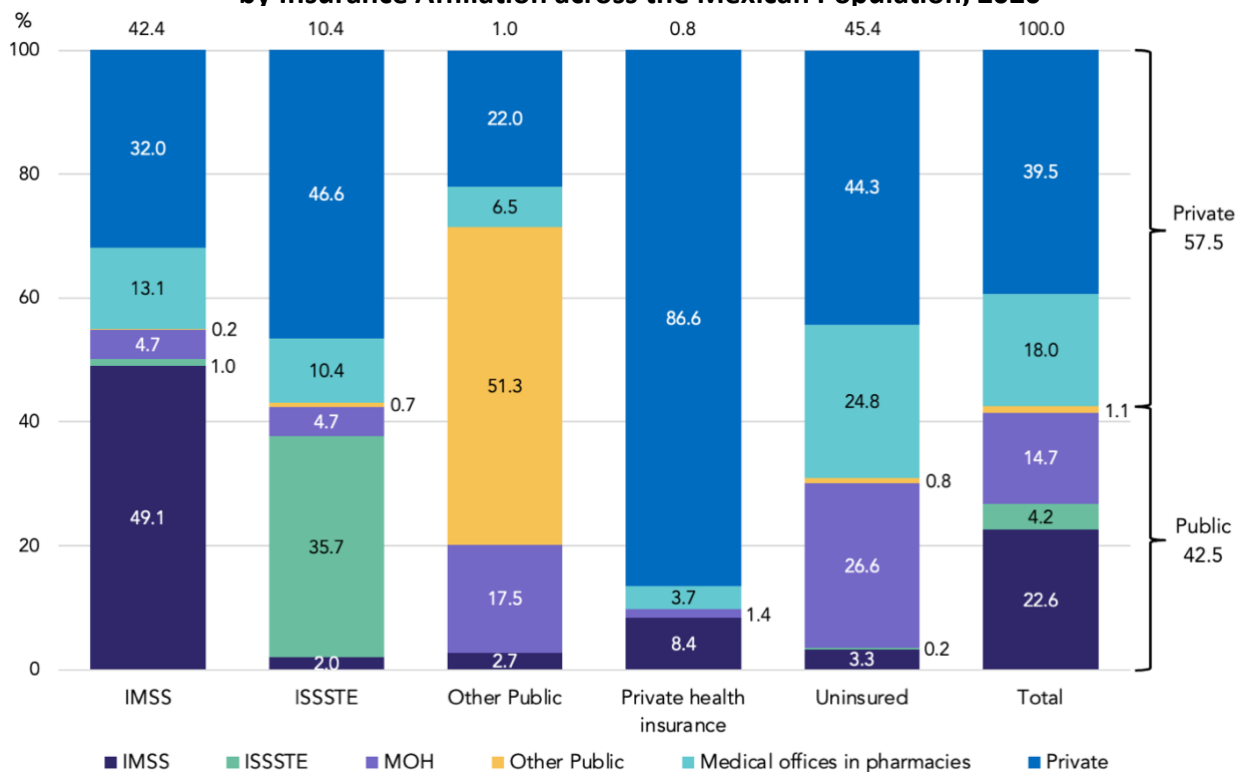
Other shifts in patient behavior were also observed. Colchero et al. (2021) examined utilization and linked use to public or private insurance coverage. Figure 3.7 shows the distribution of healthcare providers and insurance affiliation of patients who received care in 2020. Strikingly, only 49 percent of IMSS beneficiaries received care in an IMSS facility while 45 percent sought care in the private sector—although many IMSS recipients also have employer covered health insurance and can draw on that source. In addition, 57 percent of ISSSTE beneficiaries sought

care from private providers despite their public insurance coverage that provides free care in ISSSTE facilities.

The proportion purchasing private care was even higher among the uninsured at 69 percent, reflecting decisions by the poorest citizens to substitute for free public care. Less than 27 percent of that group received care in a Ministry of Health facility. Across the entire population, 57.5 percent of users chose to pay for care from the private sector, either through insurance or out-of-pocket spending. The surge of demand for private care suggests perceptions of poor quality or inadequate access to public facilities. However, this is a broader issue that was exacerbated, but also highlighted, by the pandemic.

Regarding chronic conditions, of those receiving care for diabetes—the most common chronic condition in Mexico—46 percent received care in the private sector and only 34 percent in a public health facility. Further, over three-quarters of public providers accessed were either an IMSS or ISSSTE facility (Colchero et al. 2022), reflecting limited use of traditional public health services of the Ministry of Health.

**Figure 3.7: Distribution of Healthcare Utilization by Insurance Affiliation across the Mexican Population, 2020**



Source: Colchero et al. 2021

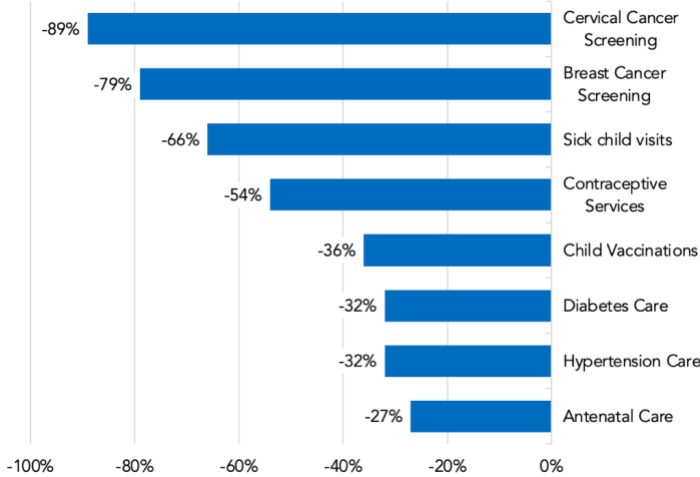
Disruptions to normal healthcare services during the pandemic were severe. Based on Health Information System data from IMSS comparing the pre-COVID-19 period of January 2019 to March 2020 and the COVID-19 period January 2019 and December 2020, IMSS experienced a decline of 8.74 million patient visits in the first nine months of 2020 (Dobova et al. 2022). The

failure to adopt telemedicine no doubt contributed to the decline in outpatient services given reduced access and patient reluctance to seek care. Figure 3.8 shows the services with the most drastic percent declines, which include both preventive cancer screening, child vaccination, antenatal care, and chronic care services. This translates into 4.2 million and 2.0 million fewer consultations for diabetes and hypertension, respectively, and 488,153 and 1.1 million fewer women screened for breast and cervical cancer, respectively.

Deliveries at IMSS facilities declined by 10 percent, which translates to 49,174 fewer deliveries, but IMSS contracted with the private sector to provide 28,000 deliveries, though it did not contract for antenatal care. Twice that number of women delivered in private facilities requiring patients to pay out-of-pocket. However, Mexico maintained facility deliveries in a time of crisis. As noted above, other services had fewer positive outcomes, as the percentage of patients with controlled diabetes and hypertension declined by 22 percent and 17 percent, respectively, between January 2019 and December 2020 (Doubova et al. 2022). In summary, IMSS and other

public providers saw a sharp decline in a range of preventive services and chronic disease management. Most remarkable, the population overwhelmingly turned to the private sector for care during the pandemic, often paying out-of-pocket for those services.

**Figure 3.8: Percent Declines in Healthcare Service Utilization in Mexico by Service Type, January 2019-December 2020**



Sources: *Doubova et al. 2022*

In Brazil, health utilization similarly declined, but the evidence on spending does not compare to the careful evidence compiled in Mexico. Evidence is pieced together for the high-end private sector that has relevance for healthcare service use nationally and for the public sector using DATASUS data.

The National Association of Private Hospitals (ANAHP), the association of the best hospitals in Brazil, collected data on key issues that have implications for understanding the impact of the pandemic on Brazil’s health system as a whole. The private sector saw a decline in consultations,

surgeries, and hospital occupancy, but a rise in Average Length of Stay (ALOS) and patient stays over 90 days, as shown in Table 3.2, reflecting the reluctance of patients to seek treatment during the pandemic given their fear of contracting COVID-19 (ANAHP 2022). These high-end experiences are reflective of broader private hospital experiences.

**Table 3.2 Trends in Key Efficiency and Utilization Indicators for High-end Private Hospitals in Brazil 2018-2021**

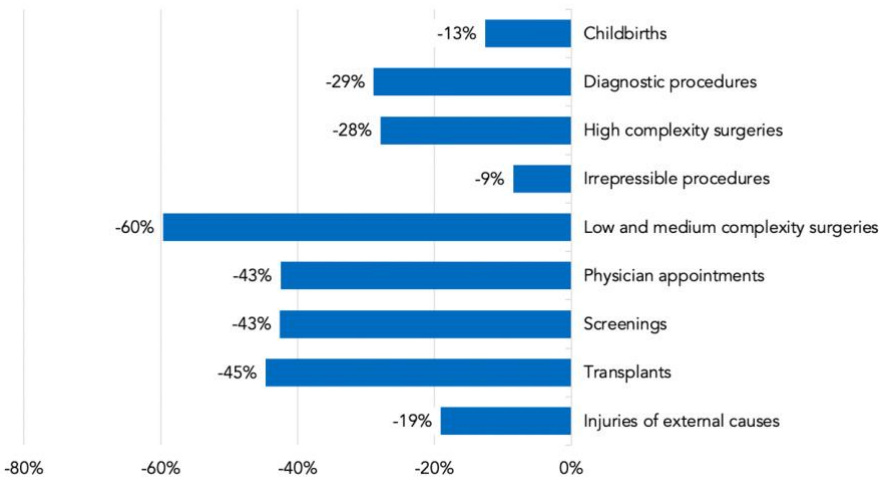
Indicator	2018	2019	2020	2021
Operational Occupancy Rates	76.4%	77%	67.6%	75.3%
Mean Length of Stay in days	4.1	4.0	4.6	4.6
Patients Stay >90 days	19.7	18.0	28.8	26.9
Rate of Vaginal Delivery	17.2%	17.7%	19.5%	21.6%

Source: ANAHP 2022

Like Mexico, Brazil experienced declines in non-COVID-19 services as well, fueled by an unfocused response by the Ministry of Health that neglected to prioritize the under-served Northern and Northeastern states, leaving their hospital and outpatient networks vulnerable to an external shock (Bigoni et al. 2022). As discussed above, those hospital and healthcare networks were overwhelmed, preventing the effective treatment of COVID-19 patients and leaving little space or personnel to serve the needs of non-COVID-19 patients. Figure 3.9 summarizes the reductions in non-COVID-19 services nationally between 2019 and 2020. Surgeries, outpatient consultations, screenings, and transplants saw the biggest reductions, and most states experienced a decrease of at least 50 percent throughout 2022 (Bigoni et al 2022). Declines in outpatient consultations is noteworthy given the significant investment in telemedicine and the expansion of apps targeted at health-related needs during the pandemic.

More concerning was that the reductions were most pronounced in the lowest income states and municipalities, adding to the negative effects of the pandemic in those communities. Bigoni et al. (2022) suggest that childbirth reductions were due to postponed pregnancies, a pattern that emerged during the Zika outbreak in 2016, but there are no data to shed light on this speculation.

**Fig. 3.9 Reductions in Selected Medical Procedures per 100 people in Brazil, 2019-2020**

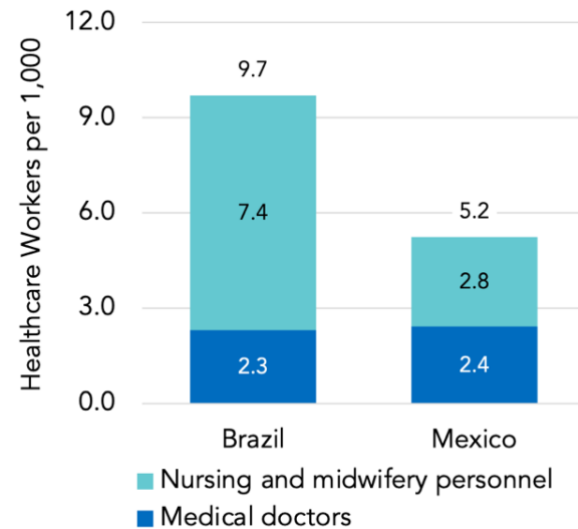


Source: Bigoni et al. 2022

## IV. Human Resources

The COVID-19 pandemic has had a catastrophic impact on healthcare workers and placed health workforce management and policy under a microscope. Many countries around the world faced shortages of doctors, nurses, and other healthcare workers in responding to COVID-19. This section will explore the gaps in supporting healthcare professionals (HCPs) with a particular focus on support measures enacted, mental health issues, and the potential medium and long-term solutions for strengthening the healthcare workforce. Equitable and human-centric healthcare service begins with healthcare worker empowerment.

**Figure 4.1 Number of Doctors and Nurses per 1,000**



Source: World Health Organization 2021

According to the WHO (2016), the recommended number of doctors and nurses per 1,000 people is 4.45. This ratio represents the minimum necessary number of trained healthcare workers—doctors, nurses, and midwives—to attain coverage of 80% of healthcare services for NCDs, maternal and child health, and infectious diseases among many others. Figure 4.1 displays the per capita number of doctors and nurses/midwives in both Brazil and Mexico. While Figure 4.1 shows that Brazil and Mexico are above this recommended ratio, both countries reported a shortage of necessary medical personnel to combat COVID-19 and continuous care for all other services.

Given the unprecedented and grave nature of the pandemic, adjusting the parameters of this index to include COVID-19 issues will aid in preparation for future shocks. The evident shortages in HCPs may be explained by a change in HCPs' willingness to work in unsafe conditions due to the pandemic, inefficient medical team structures, unequal distribution of personnel within each country or burnout. This section will dive into each country's response to these factors within their unique context.

### A. Challenges of HR During the Pandemic

Throughout the pandemic, there have been significant issues around healthcare workers, including personnel shortages, unsafe working conditions, a lack of personal protective equipment (PPE), insufficient training, and low or unreliable pay. The pandemic exposed weaknesses in the global health system as a whole and within individual countries. During the first year and a half of the pandemic, at least 115,000 healthcare workers died due to COVID-19 globally (WHO 2021).

One of the most common issues across the countries in this study was a shortage in staffing and PPE, which in turn created unstable and dangerous working conditions. HCPs often had to engage in task-shifting and task-sharing tactics to mitigate the influx of COVID-19 patients while also managing other essential health services. While this strategy helped utilize the workforce more efficiently, it risked over-extending HCPs' capacity—especially if implemented incorrectly—and is unlikely to last in the long-term unless there is appropriate training and organization.



In response to the lack of PPE, HCPs in Mexico and Brazil had to buy or manufacture their own equipment to protect themselves from infection, the latter citing almost 64% of the workforce noting the need to improvise PPE (Leonel 2021). Additionally, at the beginning of the pandemic, around half of Mexican healthcare workers withdrew or were unable to work due to being in a part of the high-risk population, which exacerbated the shortage (KPMG 2021).

Many healthcare workers also received insufficient training and education on COVID-19 protocols and how to effectively use PPE if provided. The process of establishing new learning mediums and receiving widespread acceptance is difficult due to the inability and hesitancy of HCPs to work with new programs, an unequal access to technology and internet, and a lack of investment from public and private institutions. In Mexico, transitions to remote systems led to a deficit in the qualifications of health care students as new learning models were not adapted quickly enough to address the new medium—an issue that still requires great attention (KPMG 2021).

Meanwhile, even though community health workers (CHWs) in Brazil played an important role in the country's pandemic response, only 13% received training and 80% reported feeling unprepared. Amongst the other HCPs, 49% received training and 60% felt unprepared (Lotta et al. 2020). The lack of access and adequate training methods put into question the capacity of HCPs trained during this period. To address these issues and provide proper training in digital tool literacy, improvements first need to be made in software systems, internet connectivity and bandwidth, and a shifting of priorities in both the public and private sectors.

Another failure was the lack of sufficient and timely pay for workers exacerbating financial stress, absenteeism, and burnout. Insufficient salaries in Brazil led to more than 45% of HCPs needing



more than one job (Leonel 2021). In Mexico, COVID-19 exacerbated declining labor supply issues caused by pre-pandemic health reforms that led to inconsistent payment (KPMG 2021).

## **B. Responses and Solutions**

In response to the gaps caused or widened by COVID-19, countries employed a variety of strategies to support HCPs. Finding effective and sustainable solutions to the gaps in supporting and managing healthcare workers is imperative for building a “foundation of global health security in the future” (WHO 2020). The immediate responses of the health workforce and policymakers to manage the pandemic varied between countries based on their existing abilities to absorb shocks. The most common adaptations at the beginning of the pandemic were task-shifting, task-sharing, and longer shifts. This was unsustainable for the prolonged period of elevated demand caused by COVID-19.

Both countries widened their healthcare workforce pool through the temporary recruitment of medical students, interns, and retired health professionals. For example, the Mexican government implemented Operation Chapultepec which redirected medical personnel from the Mexican Social Security Institute (IMSS) to areas with the highest need (Codigo F 2020). The INSABI also reallocated specialists to hospitals and started an initiative to recruit more doctors and nurses, while the government enacted a strategy to hire foreign doctors (Medscape 2020). Brazil expanded their workforce with relaxed licensing for foreign hires, recruiting first-year medical students, and reinstated the “More Doctors” (*Mais Médicos*) program (Leite et al. 2021).

Innovative education models and e-learning initiatives are a possible long-term solution to address the shortcomings experienced by HCPs during COVID-19. Various digital tools were created in both countries to provide information to both the public and healthcare workers whose training was severely curtailed by the pandemic. Resources such as websites, social networks, helplines, free online courses, databases, and other tools became available to varying degrees in every country. In Mexico, the Carlos Slim Foundation became an important source of information as it compiled the best courses and sites in one location for free for the general population (Fundación Carlos Slim 2022). The National Center of Technological Excellence (CENETEC) has also published a set of guidelines on telehealth services. Furthermore, Mexico has proposed a new Digital Health Law that includes aid from CENETEC in the training of HCPs but requires continued government support to pass (Government of Mexico 2021). Due to the current government priorities, it is unlikely this proposal will gain much traction.

Brazil introduced new policies to improve training models for telemedicine and provisions for remote HCPs. A number of private and non-profit entities invested in training and logistical support during the pandemic that complemented state and federal government efforts. One example is a digital platform for support and consultations called Vtalk that has aided 2,600 HCPs (Kantar 2021).

Other long-term solutions involve investment in nurses and community health workers and the restructuring of health workforce teams. To counteract its limited workforce, Mexico’s Cascade

Care model entails an intensivist leader leading five general physicians trained in COVID-19 care to manage 25 patients (Medscape 2020). This model is in tandem with WHO guidance in assessing workforce management needs to face COVID-19 by “quantifying task and time expenditures, combined with epidemiological context and population data,” which requires improved data systems within each country (WHO 2020).

However, the future role of CHWs remains uncertain and needs investment by the government and private actors. Telemedicine development, implemented to varying degrees in both countries, also helped HCPs across levels and disciplines reduce their risk of infection.

Many countries provided stipends and other forms of monetary compensation for qualified personnel from both public and private entities. Both the public and private sector in Mexico implemented programs to provide financial aid and incentives such as increased remuneration packages and bonuses for certain institutions and insurance coverage in case of the death of an HCP. The president also awarded the “Miguel Hidalgo Medal,” a grant that included an economical remuneration, to more than 6,000 doctors (IMSS 2020). However, financial aid was not equitable across the levels of HCPs. Many supervisors, caretakers, and orderlies among many others were not eligible for increased remuneration (KPMG 2021).

Non-monetary support measures were also implemented in both countries. In Brazil, the private sector took important steps to aid the training of HCPs and donated medical equipment and supplies such as surgical masks and cleaning materials, COVID-19 tests, beds, and food, among other donations (Kantar 2021). The Secretary of Foreign Relations (SRE) in Mexico coordinated a substantial number of donations in the form of medical supplies and equipment from China. There were also public and private collaborative initiatives to raise donations such as *Juntos por la Salud* (Secretaría de Relaciones Exteriores de Mexico 2020). However, despite these efforts, the scarcity of PPE remained a major issue and led to protests against working conditions and delays in PPE acquisition.

### **C. Mental Health Issues**

Many mental health challenges emerged during the pandemic: an area of health rarely prioritized prior to the pandemic. Figure 4.2 outlines the combination of causes that led to mental health problems and the subsequent solutions enacted across the selected countries. Some of the most common solutions were virtual and telemedicine consultations, support from mental health professionals for other health professionals, and training in basic psychosocial skills. Several public and private investments in programs and initiatives supporting mental health for HCPs emerged.

In Brazil, Fiocruz (2021) conducted two studies on mental health issues for HCPs. The studies found the working environment, conditions, and hours had a significant impact on the physical, emotional, and psychological state of health personnel. In response to the mental health issues that were exacerbated by the pandemic, the Federal Nursing Council and Federal Medical Council offered emotional support lectures and implemented digital tools providing psychological

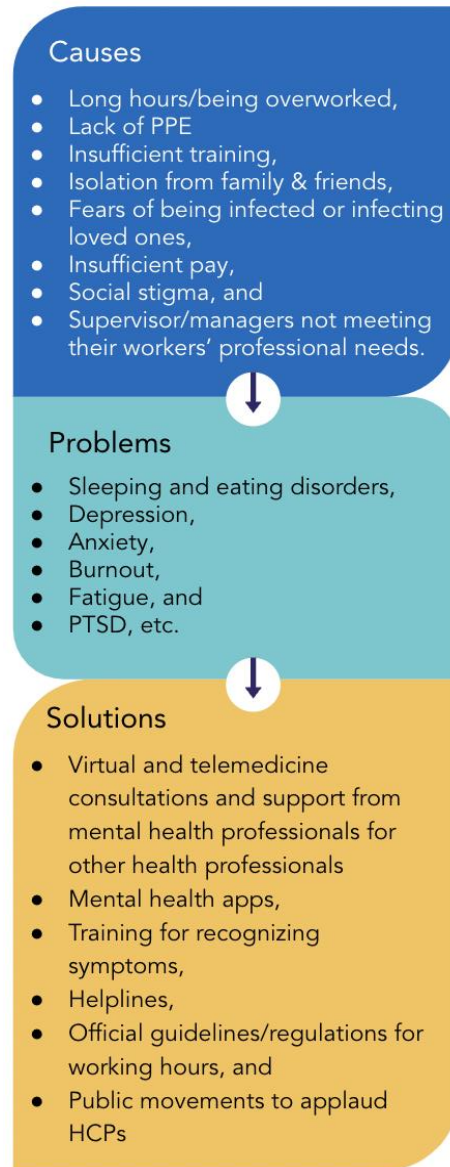
support. Two other solutions in Brazil were the development of mental health apps and private sector investments in mental health telemedicine and training programs (Kantar 2021).

Mexico’s mental health portion of the total health budget is only 2%, wherein 80% goes to psychiatric hospitals, which often become asylums. There is also a lack of mental health professionals due to the prejudices that prevail in society (KPMG 2021). One step Mexico took to counteract mental health issues in HCPs for the future was to double residency positions in psychiatry to draw in more students (Rojas 2020). Among a couple different programs to provide HCPs with psychological assistance and support, one notable program was started by AMIIF, APM, and UNAM was *Nosotros también nos cuidamos* (“We also take care of ourselves”) (AMIIF 2021).

Some Mexican health sector leaders suggested that: *“The burnout seemed to be one of the big problems faced by health workers... some experts believed that empathy fatigue should be considered as a mental difficulty”* (KPMG 2021).

Mental health issues among HCPs did not begin with COVID-19, however, the pandemic played an important role in highlighting the psychological stresses and consequences of healthcare work. The next step for improving the mental health of HCPs is to analyze the current initiatives through in-depth reviews for which programs have been the most helpful and show the highest probability of sustainability. Given the likelihood of continued focus on mental health in the post-pandemic period, the market for mental health apps and programs will continue to grow. The focus on mental health is a welcome shift and will help to build a more adaptable and resilient healthcare system.

**Figure 4.2 Mental Health Summary**



#### **Box 4.1 Mental Health in Mexico: “Nosotros también nos cuidamos”**

Mental health specialties and care are scarce in Mexico due to taboos and prejudices in the public and medical professional spheres. However, COVID-19 brought forth a variety of mental health initiatives. One of the major, successful agendas among healthcare professionals was called “*Nosotros también nos cuidamos.*”

The program lasted from June 2020 and August 2021, consisting of 19 volunteer psychologists giving 641 consultations to 322 patients. Aspects making it a successful program:

- Spanning health care workers across all levels, specialties, and degree of exposure to COVID-19;
- Volunteers providing the consultations signified solidarity among healthcare professionals; and
- Cross-sectoral partnership: Mexican Psychiatric Association (APM) and the Mexican Association of Pharmaceutical Research Industries (AMIIF) with technological support by the Department of Biomedical Informatics at UNAM

The President of APM noted that the unprecedented program provides both a “proven model of remote psychological care” and sets a foundation for continuation in future crises.

Source: AMIIF 2021

#### **D. Human Resources in a Post-Pandemic World**

The weaknesses of individual country health systems exposed by the pandemic can best be confronted by public-private collaboration and widespread community engagement—both key factors in building resilience. The best strategies are the ones that combine the financial, material, and social solutions for a holistic approach to maximum health workforce utilization, however, the capacity for countries to do so may be limited and therefore require multi-sector collaboration. The most critical strategy to bolster the healthcare workforce is the intersection of digital technology and training, which can be furthered by public and private collaboration along with investment and expertise from international entities.

In Brazil, while HCPs need enhanced training for data analysis and digital tools, the country first needs to improve its current software systems to ensure that future training is adapted for modern technology. Brazilian experts note that the current state of the health system requires an adaptive virtual learning approach to health worker training (Kantar 2021).

In Mexico, the hybrid system created from the pandemic has shown great deficits in maintaining training standards for healthcare students, emphasizing the need to find the ideal combination between education and practice, and signaling the urgency of investment in innovative learning models. While both Brazil and Mexico have acknowledged the need for enhanced virtual learning models, Mexico has no agenda to pursue such changes.

## V. Information Technology

In addition to its effects on healthcare financing, COVID-19 has fundamentally altered the delivery of health services by rapidly advancing the use of technology and digital tools. This digital health revolution has affected almost every aspect of health care delivery, from supply chain and procurement to telemedicine, electronic health records, and more. Not only did the pandemic provide the impetus for a significant shift in the degree of digitalization in the health space to respond to new needs, but it also changed the trajectory of technological adoption and resulted in major transformations of the health sector in many countries worldwide. This section discusses the way that COVID-19 affected digitalization in Mexico and Brazil both through direct responses to the pandemic, the utilization of telemedicine, and broader transformations in the provision of health services that will be felt for years to come.

### A. Digitalization Policy and Services

While digitalization has now touched almost every aspect of the health sector, the clearest example of COVID-19's effect on healthcare trends is the advent of services specifically designed to address the pandemic. In 2020, these COVID-19 digital services were primarily focused on disease surveillance and centralizing testing information, but as the pandemic progressed and lockdowns loosened it allowed innovations such as vaccination verification.

Many countries developed apps to provide a central communication point for useful information for users and governments on the spread of the disease. Brazil developed an app early in the pandemic but failed to undertake the needed marketing at the national level, resulting in limited uptake (Kantar 2021). Network effects are very important for decentralized disease surveillance efforts, so the Brazilian Ministry of Health's lack of early leadership on the issue contributed to the project's failure. The Mexican government developed public apps for COVID-19 data collection, but evidence that the data were effectively used to advance the interests of public health is limited (KPMG 2021).

Later in the pandemic, as focus switched from reactive surveillance and testing to proactive vaccination distribution, digital health had an additional role to play. As countries and localities loosened lockdowns and other movement restrictions, many areas, primarily urban centers, instituted policies requiring proof of negative COVID-19 test results or vaccination to engage in commercial activities. Brazil developed QR codes for vaccination verification that until late in 2022 were required for access to travel and restaurants, among other public establishments (Ministério da Saúde 2021). In 2021, the Brazilian Ministry of health established a Secretary for Digital Health within the Ministry of Health to spearhead national policies and to promote development of digital solutions across healthcare delivery within SUS.

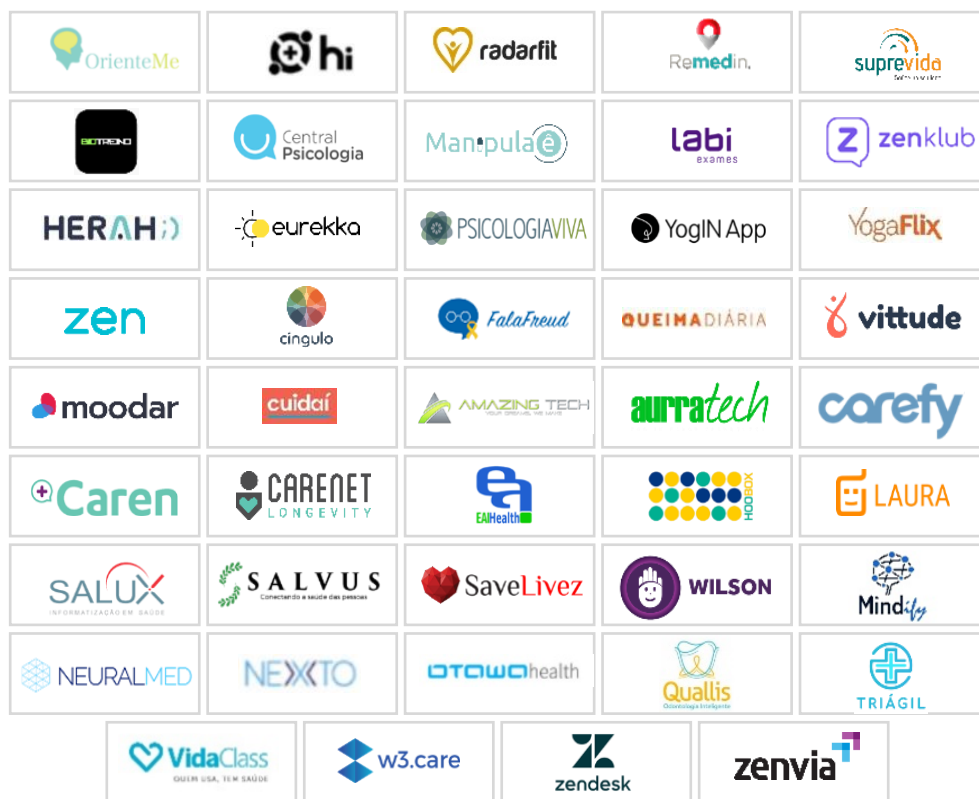
## Procurement and Distribution

Another key role for digital health technologies both during the pandemic and into the future is in the procurement and distribution of medical goods. In Brazil, COVID-19 posed a multitude of logistical challenges for medical equipment like beds, ventilators, tests, and PPE. Centralized management systems that allowed healthcare workers to monitor and order supplies as well as request equipment transfers from other providers proved valuable for states and municipalities to mount agile responses to the pandemic and deal with surges (Ministério da Saúde 2020).

Brazil made significant advances towards e-pharmacy initiatives and took strong action, with the national government launching the development of an interoperable digital platform for medical requests and a regulatory mandate that requires insurers to allow online access to medications (Donida et al. 2021). Given the centralized and integrated action between multiple federal actors, this program is likely to be transformative for the pharmaceutical sector in Brazil.

Mexico has not kept pace with innovations in other countries as even where telemedicine services were in theory adopted, patients often still had to show up in-person to receive their medications (KPMG 2021). The regulatory framework for adoption of digital health solutions for the procurement and distribution of pharmaceuticals and medical equipment was not substantially altered by the pandemic, and the lack of significant movement among policymakers suggests that this is unlikely to change soon absent some change in government priorities.

**Figure 5.1 Sample of Brazilian Health Apps Used for COVID-19**



Source: Distrito 2020

Consumer preferences for digital health products in general shifted substantially during the pandemic. Lockdowns and other limitations on traditional commercial activity at brick-and-mortar retailers resulted in increased demand for online services and delivery. Figure 5.1 provides a sample of prominent apps in Brazil that cover a wide range of needs, including access to online marketplaces for medical products, home exercises, therapy services, and daily activity substitutes for high-risk populations such as food delivery.

Apps have been embraced broadly in both the public and private sectors as a means of engaging and informing patients, and they are proliferating as digitally savvy patients find them valuable (Forum de Gestores 2022).

## Telemedicine

As in the rest of the world, Mexico and Brazil were unprepared for the rapid transition to telemedicine, and to the growing importance of digital health caused by COVID-19. Serious regulatory, technological, financial, and cultural hurdles to widespread telehealth initiatives were present in both countries at the beginning of 2020. The necessity of responding to the pandemic spurred rapid changes in all these areas, breaking down barriers and significantly accelerating telehealth adoption. Many of the pre-pandemic challenges were resolved or mitigated in 2020 and 2021, although there was significant heterogeneity in how the two countries responded.

During the pandemic, Brazil found that telemedicine provided significant accessibility to care, improved ability to consultations with specialists, and increased surveillance and monitoring capabilities. These effects are important for those living in both rural and urban areas because while rural populations may face geographical barriers in attending in-person care, urban populations—especially high-risk and chronically ill individuals—patients in general were reluctant to show up in-person out of fear of contracting COVID-19 (KPMG 2021). The accelerated adoption of some forms of telemedicine in Mexico has been a silver lining of the catastrophe of the pandemic, and understanding trends related to telehealth are an important indicator for the future of health systems.

*Brazilian private sector leaders: “[I]n the face of all these technological changes, the patient should be the center of care following the model of the 4 P's (prediction, personalization, participation and prevention)” (KPMG 2021).*

The pandemic reinforced the importance of finding ways to ensure continuity of care, particularly for chronic conditions, and several evidence-based approaches were recommended and implemented to ensure patients received comprehensive, proper clinical attention while reducing their potential exposure to COVID-19 infection. These strategies included the increased use of electronic prescriptions and multi-month scripting and dispensing (MMSD). This helped support patient-centered service delivery and allowed HCPs to virtually prescribe and pharmacies to electronically process patient prescriptions of 90 days or more to decrease regular visits to a clinic or pharmacy for monthly refills.

## B. Challenges in the Advancement of Telemedicine and Digital Health

At the beginning of the pandemic both Brazil and Mexico revised regulations that inhibited the adoption of telemedicine. This included removing limitations on the types of services that could be provided virtually, altering prices and spending authority in the public sector, and relaxing health data privacy laws to allow for alternative modes of communication between patients and providers.

As a more active means of support, public health services in both countries adopted telemedicine to varying degrees, either on their own or in partnership with the private sector. Public health services in Brazil expanded telemedicine capabilities in parallel with the private sector while the Mexican public sector did not adopt telemedicine to nearly the same degree, as discussed above (Kantar 2021; Deloitte 2021).

### Technological Limitations

The second major obstacle to widespread telehealth adoption is technological in nature. A primary technological limitation is digital infrastructure and internet access. In Brazil and Mexico, internet coverage reaches roughly 70 percent of the population (World Bank 2022). However, infrastructure limitations are also present. The distribution of internet access is heavily geographically skewed, meaning that poorer rural areas are less able to access digital health services (Almathami et al. 2020). Even in more connected areas, healthcare workers in Mexico and Brazil report that data limitations on their internet service inhibited their ability to use digital health technologies and access data online (KPMG 2021; Almathami et al. 2020).

There remains a gulf between the technological capability of the public and private sectors. In Mexico, where policymakers have limited the expansion of public offerings, this gap is wide and will require a range of strategies and public priorities to close it in a timely fashion (KPMG 2021).

In Brazil, the public health system, SUS, has expanded their digital capabilities and the new Secretary for Digital Health will play a central role in focusing resources on the topic, but the highly innovative private sector has digitally progressed at a far greater rate and will continue to do so (Kantar 2021). A tighter pre-pandemic regulatory framework and a lack of leadership from the Ministry of Health broadened the public-private gap by both limiting the digital options available for public providers, loosening restrictions on private providers, and limiting the ability of public and private sector entities to work together, disseminate and share information. Hopefully this can be addressed with new policies from the Secretary for Digital Health, but that agenda is not yet defined.

Regulators have observed this gap and it has resulted in policy action to allow closer interactions between the public and private sectors, opening the door to an increase in public-private partnerships in the future with the potential to transform the Brazilian healthcare landscape. Additionally, Brazil's Supreme Audit Agency (*Tribunal das Contas da União*, TCU) is promoting greater embrace of digital tools within the public health sector to assist in audits of public



providers, specifically hospitals, where budget transfer arrangements remain opaque and therefore outside the reach of traditional audit tools (Secom TCU 2021).

Interoperability remains a challenge for both countries. In Mexico, the heavily fragmented healthcare system has resulted in many different digital systems that do not “talk to” one another (ehCOS 2021). While this fragmentation can become a barrier to the implementation of digital health initiatives, increased interest and drive for digital health transformations can also help mend the fragmentation of the healthcare system, if that issue is adopted as a priority. This appears to be more likely in Brazil than in Mexico. While Brazil and Mexico face similar challenges in terms of significant fragmentation in their healthcare systems, policymakers in Brazil have been more proactive during the pandemic about engaging the private sector to encourage interoperability, particularly as it relates to electronic medical records.

### **Cultural Limitations**

It has been assumed that the personal preferences of doctors and patients help explain some of the cultural obstacles to telehealth. Brazil and Mexico reported limited digital health capability among a sizable share of their healthcare workforce at the onset of the pandemic as well as poor levels of digital literacy among their healthcare workers, particularly in the public sector.

*Brazilian healthcare leader: “Beyond infrastructure and regulatory barriers, a more complex bottleneck is human resistance” (Kantar 2021).*

Physicians in Mexico remain uncertain about telemedicine due to concerns around information security, digital infrastructure, and reimbursement issues (AIMX 2021), issues that are similar to those of other countries, including the US. Telemedicine is comparatively more accepted in Brazil where 72 percent of the Brazilian population considered telemedicine to be a great tool to improve access to health services and physicians generally agree that it enhances health access and equity (Saúde Business 2021).

Physicians’ resistance to telemedicine in Brazil highlights two key topics: fear that patients will under use in-person medical services and concerns that telemedicine will result in medical hubs in big cities, worsening outcomes and access to in-person care in rural areas over the long-term (Kantar 2021). Despite these misgivings, a survey carried out in February 2020 by the São Paulo Medical Association (*Associação Paulista de Medicina*) with responses from over 2,200 physicians from 55 different specialties revealed that just over 64% of doctors wanted regulations that would allow the expansion of telemedicine services for the population, including direct doctor-to-patient teleconsultation (Associação Paulista de Medicina 2020).

Nonetheless, there continues to be concerns expressed by the Brazilian Federal Council of Medicine (*Conselho Federal de Medicina*), health plan operators, medical associations, and medical professionals, especially concerning teleconsultations. The challenge is how to expand access to medical services particularly specialist services to populations in remote regions, reduce

healthcare costs and the displacement of patients, and on the other hand, minimize the fear of damage to the medical profession (Maldonado et al. 2016).

Additionally, critics of telemedicine stress that the potential overuse and careless use of telemedicine could convert physicians into “telemarketing operators,” which could lead to poor quality, clinical errors such as preventing and identifying misdiagnoses and prescriptions, and eventually reduce the number of face-to-face doctors (Caetano et al. 2020). Other challenges include uncertainty about the use of patient data and privacy (Rodrigues et al. 2021).

As digital tools were quickly rolled out, corresponding training struggled to keep pace, resulting in gaps in service and further frustration for workers. Both countries found success with e-learning initiatives to safely engage their workforce with training courses on new digital health capabilities as well as other aspects of the COVID-19 pandemic, such as the most recent medical knowledge regarding the treatment of the virus. Brazil and Mexico began to branch out and use these new (or at least newly accepted) e-learning platforms to share other types of information and engage in the upskilling of their workforce, setting the precedent for far more rapid training and learning programs in the future.

Privacy concerns remain a key component of cultural pushback to the digital health transformation with relatively restrictive laws on how personal health data are stored and shared.

*Mexican experts concluded: “Due to the lack of adequate computer equipment, staff had to use their personal devices, threatening the security and confidentiality of patient data” (KPMG 2021).*

With a push towards big data and interoperability requiring that health records are shared between different parties, either changes need to be made in data governance rules or health records will need to be heavily anonymized, potentially limiting their utility for policymakers and providers.

Brazil has recently passed new data privacy laws and created a national agency—the Brazilian National Data Protection Authority (*Autoridade Nacional de Proteção de Dados* or “ANPD”)—dedicated to data protection. What little gains Mexico has made in digital health during the pandemic will be limited by the lack of changes in long-term data sharing laws, necessitating action by policymakers to revise those rules if digital health is to be on the agenda a priority.

### **C. COVID-19 and the Future of Telemedicine and Digital Health**

The future of telemedicine and digital health varies between Brazil and Mexico. Digital health is the technical area in which both countries made the most significant advancement throughout the pandemic—the primary limiting factor going forward will be whether advancement in the other technical areas will keep pace. The difference in public sector responses in Brazil and Mexico will lead to stark divergence in uptake and the long-term viability of telehealth.

In Mexico, the lack of complete adoption of telemedicine and digital tools by the public sector and continued restrictions on private actors suggests that the COVID-19 experience will not result in significant long-term change in digital health transformation. In particular, Mexico's public sector has not seen a major digital transformation and the combination of the lack of political engagement, fragmented health system, and growing technological gaps between the public and private sector suggest that such a transformation is not coming in the near future.

In Brazil, this transformation will likely take the form of relaxed regulatory restrictions on PPPs and increased interaction between the public and private sector. Digitalization has been embraced by Congress and will likely play a key role in broader changes to how the public and private sectors interact (UNDP 2020). Indeed, the consensus between the public sector and private providers in adopting EMRs and addressing interoperability issues is encouraging as it both engages these often-opposing forces and provides a constructive opportunity to work together for the benefit of public and private providers, not to mention patients.

## VI. Implication of the Pandemic Responses

The pandemic had a broader impact on health systems and its financing in Brazil and Mexico, and decentralization had a significant effect on pandemic management. These two issues are addressed here as lessons from the pandemic.

### A. Impact of the Pandemic on Healthcare Systems

Numerous lessons emerged from the pandemic and health system responses. First, the pandemic inspired a new appreciation of the role of primary care in triaging patients, treating illness, and relieving hospitals by managing outpatient illnesses. Historically, both Mexico and Brazil have had a tepid response with rigid and user-unfriendly public primary care services—the Family Health Care in Brazil is an exception, but it is only part of primary care services and is separate from the municipal and state primary care programs. Municipal primary care clinics, for example, require in-person appointments and then require that appointments, tests, and treatments take place on different days, requiring patients to return multiple times for one episode of illness (Lewis and Bonfert 2018).

There is also limited primary care services in the private sector in Brazil, although there are now private providers targeting lower income SUS users, such as Dr. Consulta and Hapvida, among others. Dr. Consulta offers primary and specialty care on a walk-in and a fee-for service basis and integrates patient information across its clinics. Box 1 provides highlights of its innovations and focus. The pandemic brought home the value of primary care services for both providers and patients. If and how that will be maintained in a post-pandemic world is unknown, but for Brazil where both public and private sectors saw the value, it holds promise for a restructuring of services to take advantage of the managerial and clinical benefits of primary care. It also may be able to jumpstart a focus on integrated care to bring

#### **Box 1. Dr. Consulta – São Paulo, Rio de Janeiro, Belo Horizonte**

##### ***Innovation of Dr. Consulta:***

Fast-growing low-cost, high-volume outpatient delivery model focused on convenience and affordability for patients.

##### **Key elements:**

- Chain of “one-stop shop” outpatient clinics with on-site lab, diagnostics, and specialty care
- Target low-income earners
- Located in poor neighborhoods and high-end neighborhoods to be near employers of the poor
- Providers paid on a fee-for-service basis
- Patients pay out-of-pocket at flat rate fees
- Digital patient records, and online patient portal app for patients for results and feedback.
- Harnessing technology (e.g., cloud, AI) to manage costs and supply chain, and moving toward utilizing machine learning algorithms and predictive analytics

Source: Banks-Louie 2017

clinics, outreach workers, and hospitals into a more integrated way of managing and treating patients.

Second, the pandemic drove uptake and innovation around digital services and information technology (IT) in healthcare, which have the potential to improve primary care in the long run. Digitization and IT allow primary care consultations and appointments to be accessed through widely available cellphones, an approach Brazil is already harnessing across the healthcare system. Furthermore, telemedicine reinforces the value of accessing basic care before higher levels of care are sought, mitigating the use of unnecessary, high-cost services (Forum de Gestores 2022).

Brazil embraced technology in healthcare delivery, training, and communication and reinforced the public sector effort in building-out electronic medical records (EMR). As a result, there is renewed emphasis and accelerated investments in EMR in both the public and private sectors (Araujo 2022; Da Silveira Villa 2022). Cellphone interfaces, the development of new apps, and other means of ensuring communication within the sector are accelerating, a direct outgrowth of the experience during the pandemic (Forum de Gestores 2022).

In Brazil, new private sector companies, such as *Alice*, that are digitally based and focus on integrated care, are working to expand digital connection in primary care, demonstrating new ways to expand value in healthcare. Established companies like *Prevent Senior*, which targets seniors, those over age 50, and focuses on primary care, digital infrastructure, and management for quality and results. Box 2 provides additional insights. are also demonstrating the feasibility and profitability of alternative models of delivering care. In the Northeast, a rapidly growing company, Hapvida, that serves lower middle-class clients and has expanded across the far wealthier Southeastern states with a digital focus and tight management (see Box 3 for additional details).

*Previne*, a new public initiative of the Brazilian Ministry of Health, is experimenting with alternative

#### **Box 2. Prevent Senior – Greater São Paulo**

##### ***Innovation of Prevent Senior:***

Vertically integrated HMO targeting population over aged 50. Model of care emphasizes integrated care and prevention, clear incentives for physicians and strong management based on data analytics.

##### **Key elements:**

- Patient centered organization with defined objectives, processes, and support to physicians.
- Risk stratification of patients and designated care givers.
- Integrated, comprehensive IT and data system encompassing EHRs, and hospitals, clinic, and physician performance.
- Strong management across the system
- Services based on team structure and coordinated patient care.
- Protocols and continuous education for physicians.
- Just-in-time clinical back up to reduce wait times for patients.

Source: Parillo 2018

### Box 3. Hapvida – Nationwide

#### ***Innovation of Hapvida:***

Rapidly growing HMO originated in poorer states of the Northeast targeting (lower) middle class with strong reliance on EHR/IT and data driven management.

#### Key elements:

- Managed care chain in the poorest states in the Northeast, Amazonas and Pará, offering medical and dental plans.
- Expanding rapidly nationally
- Exclusive network of hospitals, clinics, and emergency care.
- Fully EHRs—and electronically obtained from external network providers.
- Patients can schedule follow-up appointments online.
- Focus on quality—dedicated team to review surgical standards using electronic analytics platform.

Source: Filho 2019

payment arrangements for the Family Health Care Program. The arrangement is based on a mix of salary, capitation, and pay-for-performance, promoting greater emphasis on primary care and quality outcomes, and using alternative payment systems to drive change in the public sector (De Silveira Villa 2022). These will all serve as transformative initiatives going forward as they are changing healthcare. The challenge will be sustainability, evaluation of impact, and broader adoption of successful elements of innovation.

Third, the pandemic rendered fee-for-service difficult and inefficient for providers and payers, which supported the value of alternative financing and payment arrangements. Brazil's private sector has demonstrated an openness to innovative payment structures, encouraged by the health regulator, ANS. Considerable discussion is ongoing in multiple states about ways to

consider innovative financing. Minas Gerais is testing Diagnosis Related Group (DRG) payments in both the public and private sectors led by IAG Saúde/DRG Brasil (see Box 4). In Bahia, the state Secretary of Health has launched new public private partnerships, most notably hiring Phillips Healthcare to provide diagnostic services inside public hospitals to raise quality and performance. The trends in the digitalization of the health sector offer a basis for adopting more advanced payment systems to replace budget allocations and fee-for-service options, a key element in embracing Value Based Health Care, an initiative being promoted by ANS (Da Silveira Villa 2022) and an integral part of ongoing discussions within private healthcare. Alternative financing arrangements are conceptually appealing but often difficult to implement, particularly when retrofitting payment systems.

Brazilian opinion leaders from both the public and private sectors expressed “*concern about the lack of concrete experiences, except pilot initiatives of new models of financing implementation in Brazil*” (Kantar 2021).

Unlike Brazil, Mexico has shown little to no sign of potential for significant transformation in terms of primary care, digital health, or health financing, and the pandemic did not change those circumstances.

#### **Box 4. IAG Saúde/DRG Brazil – Minas Gerais state**

##### ***Innovation of DRG Brazil***

Promotes and advises on DRG adoption, implementation, and use of DRGs for management. Only reliable national source of data on performance, costs, and adverse events.

Key elements:

- Developed DRGs for Brazilian private sector based on US/CMS DRGs and its algorithms.
- Major tool for quality assurance, management data, and only source of Brazilian data on hospital adverse events.
- Implemented DRG for managed care company (UNIMED) as a tool for quality, management, data control and cost containment.
- Adapters have raised performance, reduced costs, and improved outcomes in service delivery.
- Working with Belo Horizonte municipal Health Secretary on adapting to public hospitals.

Source: Grilli 2018

## **B. The Role of Decentralization in Pandemic Management**

The starkest difference between Brazil and Mexico's pandemic response is the role of decentralized entities in surveillance, local response (e.g., masking and social distancing), testing, health service management, and vaccinations. While both countries historically relied on states for public health leadership in their localities, private initiatives became important under the pressure of COVID-19 and the shortcomings of the national governments.

Decentralization is particularly relevant on the public sector side, although public regulations, laws, and practices also impinge on the private health sector's ability to do business. A decentralized structure has innate inefficiencies as duplication and overlap are inevitable, but it allows flexibility and development of alternative solutions, and in turn, leads to a country learning from successes and mistakes on a small scale. It also introduces alternatives to centralized decision-making bodies, which allows for flexibility in responding to crises particularly where national governments are unresponsive.

Brazil benefited from alternative approaches across states and the learning that comes from success in one state even while others may be floundering or delayed in responding. States led the country by decisions and actions of governors; they had the fiscal flexibility and authority to act independently of the federal government and to compensate for federal shortcomings.

Mexico imposed a completely centralized approach to the pandemic response and public healthcare. It removed previous flexibility by re-centralizing pharmaceutical procurement by the

medical arm of the Mexican Institute for Social Security (IMSS). The rollout of the new and underfunded INSABI lacked the legal standing to operate, causing serious failures in responding to the pandemic.

By taking a centralized approach to pandemic management, Mexico forsook the many benefits a decentralized approach could have provided. In large nations like Mexico, decentralized systems generate an advantage in building sustainable and resilient systems. In effect, they have the support and help of states willing to share and to collaborate, particularly because they have an ultimate say in the process. In politics, objectives and actions differ, and decentralized systems allow taking advantage of those that are most effective or visionary. Decentralization also offers more opportunities for innovation and experimentation. Working with states permits a smaller scope and simpler experimentation.

In order to capitalize on this higher potential for innovation in decentralized systems, public and private sector actors must engage in peer-learning and peer-support between high- and low-performing regions. For example, several large cities in Brazil have made impressive advancements in the quality and resilience of their health sectors, spurred by serious private sector innovation, but these are not necessarily of interest or are adopted in other municipalities and states. Minas Gerais and Rio Grande do Sul are particularly noteworthy in their innovation and commitment to improving performance and outcomes. Box 4 highlights the innovations of IAG Saúde/DRG Brasil, a Belo Horizonte company supporting private and public providers to adopt and use DRG for payment, and data for management and tracking performance.

However, these shifts on their own do little to transform the national health landscape. Public and private sector actors are now awash in empirically validated pilot projects and have the opportunity to support the spread of such innovations to lower-performing states and localities. Decentralization does not mean that these positive experiences are embraced, but it provides an empirical base and can spark change. Politics will bear out how valuable such adaptations are in the medium term.

It is also possible to have a centralized system if there is a culture of listening to different stakeholders in the health system and reaching agreements that are subsequently handed down from a strong governing body. On the other hand, it is also possible to have a highly decentralized system of healthcare delivery where power is concentrated in a single governor or other policymaker, though circumstances vary.

Overall, despite aggressive rhetoric from the Brazilian president negating the significance of the pandemic to health—and survival—and forgoing the necessary response, other organs of government, including the 27 states and the bigger cities, took action. Brazil's mixed healthcare system learned from the pandemic and initiated discussions among public and private leaders on how to manage the pandemic and collaborate in the future, something that has not occurred in the past. The government allocated budgets to states to manage spending, procurement rules were eased to facilitate purchasing, public health measures were bolstered, if unevenly, and



alternative delivery modes for vaccinations were endorsed by having pharmacies administer them.

Both public and private health players have acknowledged the need for change, from strongly embracing the notion of VBHC to acknowledging the need for better data in general to upgrading auditing in the public sector (IAG Saúde 2022). Investments in vaccines and pharmaceuticals are also on the agenda to counter isolation in times of stress.

In Mexico, dogged re-centralization, the lack of transparency, and the unfortunate timing of the launch of INSABI just as the pandemic was taking hold provided major distractions and contributed to short-term initiatives that failed to build a foundation for responses in building resilience. Instead, the MOH defined all spending and programs without involvement or actions by the states, restricted procurement initiatives by the public health institutions (IMSS and ISSSTE), and failed to use the pandemic to make structural improvements in a range of areas, including IT and health worker training.

## VII. Summary and Conclusions

The case studies of Brazil and Mexico focused on the impacts of the pandemic on a range of factors in each country's health system and provided insight into some of the challenges they faced and documented how they responded. Responses to the pandemic globally were uneven and sporadic. However, some experiences brought home shortcomings in existing health systems, and highlighted areas of importance that had been previously ignored or overlooked. Performance in both countries was mixed, but the long-term implications suggest that Brazil gained the most from coping with the pandemic, whereas Mexico had a less purposeful response and thus limited lessons and learnings from COVID-19.

### Trends in National Health Spending

Spending by necessity rose during the pandemic given demand and rising death tolls. Mexico made incremental increases in health budgets over the pandemic. At the height of COVID-19 in 2020-21, nominal health funding decreased by one percent but recovered in 2021-2022. The inability of INSABI in Mexico to obtain funding given its suspended legal status, severely restricted public health spending. Brazil's ceiling on spending, increases imposed by the Congress well before the pandemic, only allowed a small increase in nominal 2019-2020 health spending, but the ceiling was effectively lifted in 2020-2021 leading to an increase of 27 percent that underwrote major efforts in public health and service delivery.

### Healthcare Delivery, Utilization, and Financing

Healthcare delivery was affected by the pandemic, and Brazil and Mexico's fragmented systems, combined with confusing messages from national leaders made a coordinated response difficult to achieve. Mexico suffered from a shift in public priorities as well as a recentralization of pandemic management that introduced rigidities and undermined independent state efforts to cope with the effects of COVID-19. Brazil on the other hand benefited from a functioning decentralization with both financing and initiatives forthcoming from states and municipalities in response to the health threats of COVID-19. Both countries experienced high case incidence and death rates from COVID-19, but Brazil's more effective, decentralized response, improved leadership over the course of the pandemic, and broad testing and effective vaccination campaigns led to better performance and lower mortality.

The year 2021 saw shifts in utilization with declining hospitalization rates, particularly in the public sector, longer lengths of stay and negative outcomes as death rates rose in both Brazil and Mexico. Access to non-COVID-19 services declined, sometimes dramatically, compromising patient access to both inpatient and outpatient care. Services for chronic conditions declined too as patients feared contracting COVID-19 from healthcare visits, and providers were often unable to reach patients. Alternatives emerged in the form of telemedicine, that saw a dramatic increase and a scramble by governments to have the legal basis in both countries adapt quickly, but adaptation was uneven within countries, and while Brazil made major strides in digital consultations, Mexico relied less on telemedicine. Pharmacies also saw a rise both through the

Pharmacies with Doctors initiative in Mexico and via electronic prescription refills in as well as via the *farmácias populares* in both countries.

A jump in private care, out of pocket spending and use of private sector alternatives rose in Mexico across all income groups and insurance beneficiaries. The uninsured, those in the lowest income groups, moved sharply toward the use of private services, and overall 58 percent of the population sought private care and only 14.7 percent chose to use Ministry of Health facilities. In Brazil, private insurance enrollment rose during the pandemic, and pressure to have the health regulator, ANS, allow emergence of pared down health insurance plans to make them accessible to lower income groups has led to a discussion of alternative options in the sector more generally.

Functioning in parallel, the public and private healthcare sectors initiated a dialogue, and though they remain far apart on issues of costs, reimbursement, and their respective roles, both sectors in Brazil and Mexico were forced to respond, and in some instances to cooperate, particularly in Mexico. While the collaboration is far from normalized, there is both a renewed appreciation of the other, and a realization that collaboration has benefits. Moreover, future pandemics will require a joint, or at least a coordinated, agenda. Brazil has initiated a durable dialogue that both parties view as valuable.

### **Digitalization in Healthcare**

Telemedicine took on new life under the pandemic, in line with global experiences. Along with telemedicine, information technology saw a surge, particularly in Brazil. A range of apps from government and private groups emerged, driving connection and communication. Even Brazilian physicians, traditionally uncertain about telehealth, have endorsed telemedicine, an innovation that was widespread in that country. In contrast, the IT roll out was poorly managed in Mexico partly due to its weak digital infrastructure but also attributable to its half-hearted promotion of IT as a means to connect the population to healthcare, and for health providers to communicate. Brazil has embraced a digital future and both public and private players in the health sector see digital solutions as intertwined with future initiatives in the sector. One important example is the broad investment in electronic medical records that both public and private health leaders are promoting, and interoperability remains an issue for discussion.

Despite progress, regulatory, technological, and cultural barriers to digital health solutions persist. Regulatory issues around what services can be provided via telemedicine, reimbursements for telemedicine services, and data and privacy concerns continue to plague progress. Digital infrastructure shortcomings in both countries, including internet access and the consistency and power of service provision, pose challenges. The gap between private and public progress in digitization is widening rapidly, leaving the public sector behind as innovations are adopted in the private health sector. Brazil is seeking to build public-private partnerships to slow the skewed growth in digitization and has established a Secretary for Digital Health within the Ministry of Health to promote digital solutions for SUS. The challenge is more serious among lower-level care providers and physicians, who have largely endorsed a digital future, but with caveats that focus on rules, privacy, and compensation. The new data privacy agency will help to

address these concerns in the medium term. Cultural barriers revolve around provider comfort with “going digital” partly due to poor levels of digital literacy among health care workers, particularly in the public sector in both countries.

## **Human Resources**

Human resources emerged as among the most important shortcomings during the pandemic including inadequate numbers of healthcare workers, mixed skill levels, and gaps in needed capacity. Training adapted to online courses affecting both academic and on-the-job teaching, and supervision too was often remote. While return to in-person is preferred by many, the future will undoubtedly be a hybrid. Brazil is already moving toward a greater reliance on apps to communicate with patients.

The burn out of staff, the fear of contracting COVID-19, lack of PPE, and lack of adequate compensation drove health workers out of facilities. Mental health problems emerged and both policymakers and healthcare service providers were forced to confront the issue, a challenge that had been effectively ignored in the past. Indeed, in many respects, health workers were taken for granted in the past. The pandemic changed that perception with the reality of health workers’ concerns and behaviors.

Public efforts in Brazil included lectures and advice for health workers, and a range of digital tools to provide psychological support, largely through mental health apps, and private sector telemedicine and training programs. Training models for telemedicine, remote health care workers, and digital support for consultations now support health care professionals across the country. Mexico provided on-line support and launched *Nosotros también nos cuidamos*, a remote psychological care program for health care workers across all levels of care. These kinds of initiatives were unique for both countries’ medical care staff. Mexico is hoping to allow legal shifts to digital training and telehealth services, an initiative that is ongoing.

Ultimately, the pandemic was a shock to the healthcare systems of both countries, but it brought renewed focus on long dormant issues such as the shortcomings and inefficiencies in healthcare, particularly in the public system, and a renewed focus on the potential for primary care services. COVID-19 provided a push for digital health and telemedicine, raised issues of health worker wellbeing and the importance of working conditions to performance, and brought the public and private healthcare systems into the realm of cooperation, an important first step to finding grounds for collaboration. The human cost of the pandemic included high death rates and burned-out healthcare workers. While the next pandemic will draw on the lessons learned, the current focus is to consolidate the benefits and prepare to mitigate the effects that will inevitably arrive with a new health shock.

## Annex 1. Acronyms

ALOS	Average Length of Stay
AMIIF	La Asociación Mexicana de Industrias de Investigación Farmacéutica/Mexican Association of Pharmaceutical Research Industries
ANAHP	Associação Nacional de Hospitais Privados/National Association of Private Hospitals
ANS	Agência Nacional para Saúde Suplementar/National Health Agency
APM	Asociación psiquiátrica Mexicana/Mexican Psychiatrists Association
BMI	Body-mass index
CADE	Conselho Administrativo de Defesa Econômica/Administrative Council for Economic Defense
CENETEC	Centro Nacional de Excelencia Tecnológica en Salud/National Center of Technological Excellence
CHW	Community health worker
DRG	Diagnostic-related group
EMR	Electronic medical records
FFS	Fee-for-service
FY	Fiscal year
GDP	Gross domestic product
HCP	Healthcare professional
HR	Human resources
IFC	International Finance Corporation
IMSS	Instituto Mexicano del Seguro Social/Mexican Institute of Social Security
INSABI	Instituto de Salud para el Bienestar/Institute of Health and Social Welfare
ISSSTE	Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado/ Institute for Social Security and Services for State Workers
IHR	International Health Regulations
IT	Information technology
KOL	Key Opinion Leader
MOF	Médicos en Farmacias
MMSD	Multi-month scripts and dispensing
MOH	Ministry of Health
NCD	Non-communicable disease
OECD	Organization for Economic Cooperation and Development
OOP	Out-of-pocket
PPE	Personal protective equipment
PPP	Public-private partnership
SISVER	Epidemiological Surveillance System for Respiratory Diseases
SRE	Secretaría de Relaciones Exteriores/Secretary of Foreign Relations
SUS	Sistema Único de Saúde/Unified Health System
TCU	Tribunal de Contas da União/Federal Court of Accounts

UNAM Universidad Nacional Autónoma de México/National Autonomous University of Mexico  
VBHC Value-based healthcare  
WHO World Health Organization

## Annex 2. Sources of Qualitative Data

Qualitative evidence from opinion leaders on the impact of COVID-19 was collected for Brazil and Mexico by Kantar and KPMG, respectively. The approaches differed, but the intent was to tap into the experience and insights of a broad range of knowledgeable stakeholders to understand the trends emanating from the pandemic. In both countries individuals preferred not to be identified, and the results include anonymous individual perspectives, consensus perspectives by public or private, and general consensus. These are indicated in the citations included in the text.

### Brazil

Insights from individuals from both the private and public healthcare sectors were obtained through a set of in-depth interviews and involved two rounds of interviews. Standardized guidelines were developed, and refined after the first round of interviews, to ensure comparability. Additionally, hypotheses were offered to the interviewees for validation and explanation. Below is a list of the interviewees:

1. Policy maker (economist), former Minister of Economy, recently representing an NGO representing private health insurers (IESS)
2. Policy maker (health manager), former health advisor of several municipalities, currently represents the Council of Municipal Health Secretariats (CONASEMS)
3. Technical advisor (infectious disease, physician), former director of the public Health Technology Assessment Commission (CONITEC), currently representing the Federal Council of Medicine
4. Health manager (occupational health and safety management), former business consultant, currently stipulator from a significant foundation providing support for workers
5. Healthcare professional (psychology, bioethics, and health advocacy), currently managing an NGO dedicated to supporting, information, and advocacy for cancer patients
6. Manager, a healthcare provider, currently works for a primary healthcare provider in diagnostics (DASA)
7. Business executive (administrator), currently works for a major healthcare payer/provider (Notre Dame Intermedica)
8. Policy maker (lawyer), former director of the ANS
9. Manager (Innovation and digital transformation), currently works for a major Physician Cooperative provider (UNIMED Brasil)
10. Manager (medical affairs), currently works for a major HMO provider (AMIL)
11. Policy maker (social services), currently works for the Pernambuco State Health Secretariat and represents the Council of State Health Secretariats (CONASS)
12. Technical medical director (physician), currently works for a major healthcare provider (SULAMERICA)
13. Healthcare professional (nurse), currently representing the National Council of Nursing
14. Professor (physician), founder of ANVISA
15. Technical advisor (pharmacist), currently works at ANVISA

- 16. Technical medical director oncology (physician), currently works for a major he
- 17. Healthcare provider/payer (Hapvida)

**Mexico**

Interviews entailed 96 questions covering four topic areas with the following distribution:

- 21 on policy,
- 40 on financing,
- 20 on digital health, and
- 15 on human resources in health.

Overall, 43 Mexican opinion leaders from both the public and private sectors were interviewed with the questions tailored to the specific themes noted above. Current government officials were not authorized to be interviewed, but previous officials were included.

Breakdown by area of expertise of the opinion leaders:

Public hospitals	10%
Research	5%
Pharmaceutical	5%
Civil organization	4%
Businessmen	4%
Medical organization	4%
Pharmacy	2.5%
Reporters	2.5%
Academic	2.5%
Insurance	2.5%
Medical laboratories	2.5%
Physicians	2.5%
Deputies	1.2%
Public hospital	1.2%
Former public officials	1.2%



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