

# Going Beyond Normal: Challenges for Health and Healthcare in Latin America and the Caribbean Exposed by COVID-19

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## Abstract

This technical note describes how the COVID-19 pandemic has affected Latin America and the Caribbean, and considers the implications for future population health, health spending, healthcare service reforms, and investments to prepare for future health emergencies. It provides a summary of the few existing empirical studies and then contributes original analysis using administrative data from hospitals and vital registration systems in four countries. It shows substantial declines in health and healthcare delivery during the first year of the pandemic, especially for preventive and elective care. Some countries were able to return healthcare to historical levels, while others were still below average in 2021. The study concludes with reflections on how the pandemic has altered health policy recommendations for the region, generating a greater sense of urgency to make progress on long-standing agendas—such as eliminating fragmentation, integrating care, and pursuing digital transformation—while reordering priorities toward investments in emergency preparedness, disease surveillance, resilience, and self-sufficiency. In other words, going beyond normal.

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# Introduction

In the early months of the COVID-19 pandemic, it was not unusual to hear people talk about “returning to normal” in a post-pandemic time. Later, as the gravity of the crisis became clearer, the term “new normal” gained usage. Yet both terms suggest that the old normal was okay. It wasn’t, - especially for the healthcare systems of Latin America and the Caribbean. Even if normal included some progress in overall health and access to healthcare services, it also meant a tacit acceptance of large inequities, poor quality, and waste, along with a resistance to change from entrenched interests. What the region’s healthcare systems need today is a vision of how to go beyond normal - that is, how to use the opportunities generated by this global crisis to break out of conventional constraints, respond with greater urgency in implementing necessary reforms, and adopt cultures of practice that are oriented toward achieving results and engaging in continuing improvements.

But one cannot get beyond normal without understanding what has happened in these last two challenging years. And the old normal is an obstacle to new learning. While the United Kingdom is able to generate nationwide studies in real time with millions of observations regarding clinical outcomes, comorbidities, and the like, Latin American and Caribbean countries are making policy in the dark due to fragmentation and poor administrative data management.

This technical note aims to fill some of the gaps in empirical data regarding how the pandemic has affected the region and to look ahead to the pandemic’s implications for the health of the population, health spending, healthcare service reforms, and investments to prepare for future health emergencies. It reviews the existing empirical studies - which are quite limited - and contributes original analysis of administrative data on the delivery of essential healthcare services not related to COVID-19 in selected countries.

As a prelude, the next section looks at the period before the pandemic, discussing the region’s overall progress in improving the health of the population up until then and the obstacles to pursuing the goals of universal health coverage. That section is followed by an overview of the pandemic and its impact. Subsequent sections focus on analyses of primary evidence, beginning with the methodology used here; the effects of COVID-19 on healthcare services, the health of and population, and public health spending; and the study’s limitations. The study concludes with reflections on how the pandemic has altered health policy recommendations for the region, generating a greater sense of urgency to make progress on long-standing agendas - such as eliminating fragmentation, integrating care, and pursuing digital transformation - while reordering priorities toward investments in emergency preparedness, disease surveillance, resilience, and self-sufficiency. In other words, going beyond normal.



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# 1 Before and During the COVID-19 Pandemic

Latin American and Caribbean countries have made significant progress in improving the health of their populations in recent decades, including substantial increases in life expectancy, significant reductions in infant and maternal mortality, and fewer cases of infectious diseases such as diphtheria, measles, tuberculosis, and malaria.<sup>1</sup> These health gains are due in part to public policies aimed at achieving universal health coverage.<sup>2</sup> Indeed, the region has substantially improved access to health services,<sup>3</sup> and even reduced out-of-pocket spending in many cases (Chang et al. 2019; Pinto et al. 2018).

Despite these achievements, progress towards universal health coverage will stall if countries cannot address three long-standing challenges: (i) the growing burden of noncommunicable or chronic illness; (ii) insufficient and inefficient health spending; and (iii) poor quality of healthcare services, which particularly affects those in the poorest income quintiles (IDB 2021a).

Noncommunicable diseases such as cardiovascular diseases, neoplasms, and diabetes are responsible for about 77 percent of all deaths in the region, up from 60 percent in 1990 (IDB 2021a). This is partly due to success in reducing infant and child mortality, and the subsequent growth and aging of the population. Currently, about 9 percent of the region's population is older than 65 and this proportion is growing so rapidly that, by 2050, almost one-fifth of the regional population is expected to be over 65 years of age (IDB 2021a).<sup>4</sup> However, risk factors such as obesity, smoking, harmful consumption of alcohol, and unhealthy diets are also major contributors to noncommunicable diseases – such that the prevalence at any given age of some illnesses, such as diabetes, is actually increasing.

While noncommunicable diseases are the most significant cause of death and illness in the region, other threats to health are still significant and often avoidable. Maternal and child health have improved and become more equitable, with substantial gains in the last 20 years, but sustaining these gains requires continued support for primary care services and timely referrals to more specialized levels of care when

1. Life expectancy in Latin America and the Caribbean increased by almost four years between 2000 and 2017. Infant mortality decreased by 35 percent and under-5 mortality decreased by 46 percent between 2000 and 2017. Maternal mortality fell by 26 percent between 2000 and 2017 (OECD and World Bank 2020).

2. Universal health coverage has been an overarching goal of health systems around the world for many years, particularly since the United Nations urged countries to accelerate progress towards universal health coverage in 2012, and since it adopted universal health coverage as one of the Sustainable Development Goals in 2015. Universal health coverage aims to ensure that all people obtain the health services they need, when and where they need them, and without suffering financial hardship when paying for them.

3. In the Dominican Republic, the percentage of the population covered by the social security health insurance scheme increased from 13 percent in 2007 to 76 percent in 2019 (Canon 2020). In Brazil, the percentage of the population covered by the family health strategy at the primary level of care increased from 56.1 percent in 2013 to 62.6 percent in 2019, which corresponds to an inclusion of over 18 million people (Giovannella et al. 2021).

4. In France, the share of the population over 65 rose from 10 to 20 percent in 67 years. By contrast, the average Latin American and Caribbean country will make this transition in about half the time, only 32 years (United Nations 2019).





needed. Similarly, gains against infectious disease require regular investment in vaccination, public hygiene, and disease surveillance if they are to be sustained. In recent years, outbreaks of well-known illnesses such as yellow fever, measles, and dengue demonstrate this quite clearly. The emergence of new infectious diseases such as SARS, H1N1, MERS, Zika, and COVID-19 also show the need to invest in anticipating and responding to communicable disease threats, which are becoming more common due, in part, “to environmental degradation and climate change which increase human exposure to zoonotic diseases and air pollution” (IDB 2021a, 7). External causes, such as self-harm, violence, and traffic accidents also constitute an important cause of death and injury in Latin America and the Caribbean – higher than most other regions of the world. Addressing all these challenges not only requires improvements in healthcare provision, but also progress against risk factors with comprehensive policies such as taxes on tobacco, air pollution regulation, promotion of healthy diets, and safer road designs, among other policies (IDB 2021a)

Health spending has increased in the region by about 2.8 percent annually in per capita terms since 1995 (Chang et al. 2019). Despite that growth, health spending continues to be much lower than in countries that have made the most progress towards universal health coverage. For instance, on average, public spending on health in Latin America and the Caribbean is about 3.6 percent of GDP, a little more than half the average of Organization for Economic Co-operation and Development (OECD) countries, which spend about 6.6 percent.<sup>5</sup> Public expenditures vary greatly in the region, from 5.9 percent in Argentina and Colombia to 2 percent or less in Guatemala, Haiti, and Venezuela. Moreover, health spending in the region is inefficient. A study that compared the efficiency of public health expenditure per capita in achieving eight health outcomes in a sample of 53 middle- and high-income countries found that all 21 of the Latin American and Caribbean countries in the study were among the 50 percent poorest performers – and 12 of them were in the bottom 25 percent (Pinto et al. 2018). In this context, reforms to allocate funds to more cost-effective interventions, reduce fragmentation in financing, improve financial management, and provide adequate public funding are essential. Without them, countries will not be able to meet the long-standing challenges of population aging, epidemiological shifts, and rising demands for healthcare along with new pressures to manage COVID-19, which is increasingly likely to become endemic (Phillips 2021), as well as preparations for future pandemics and climate change.

Finally, the quality of healthcare delivery is at the core of an efficient and equitable healthcare system. Access to services has expanded dramatically in recent decades in Latin America and the Caribbean, and it appears that essential services are much more equitably distributed than two decades ago (Sanhueza et al. 2020; Wagstaff et al. 2015)

However, quality of care and productivity are generally low. An estimated 70 percent of preventable deaths in the region can be attributed to poor-quality care, such as unskilled staff, inadequate surgical facilities, or improperly managed chronic conditions, while less than one-third is due to lack of access (Kruk et al. 2018). To improve quality, the region will require more health professionals with new skills, new and better-maintained health infrastructure, and well-equipped facilities, in addition to better work

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5. Figures in this paragraph are the authors' calculations based on the World Health Organization's Global Health Expenditure Database and reported in IDB (2021a), unless otherwise indicated.



processes and effective logistical and procurement systems that attain more value for money (IDB 2021a). COVID-19 has caused enormous disruptions to the healthcare network in Latin America and the Caribbean, leading many people to think these reforms have to be put on hold. However, the crisis has also unleashed innovations that could improve provision in the coming years, such as telehealth, hospital bed management systems, new contractual arrangements, and different ways of deploying staff. It has also shaken up conventional approaches to medicine, procedures, staffing, and management in ways that could open new avenues for reform and change.

## 1.1 The COVID-19 Pandemic in Latin America and the Caribbean

COVID-19 has brought a new set of challenges to the region that will make progress towards universal health coverage even harder. Latin America and the Caribbean is arguably the hardest-hit region in the world, with 17 percent of reported COVID-19 cases and 29 percent of confirmed deaths, despite having only 8 percent of the world's population.<sup>6</sup> The region faced an economic contraction of 6.7 percent of GDP in 2020 – a significant drop for economies that were not doing well even before the pandemic, and almost twice the average global decline of 3.5 percent. An estimated 39 million jobs were lost and more than 20 million people fell into poverty. In this sense, the pandemic has generated a triple crisis – in health, the economy, and society – from which it will take years, if not decades, to recover.

COVID-19 has exposed and exacerbated the region's profound inequities. Though wealthier people who travelled internationally were among the first to be affected by the disease, transmission quickly increased among poorer households, those working in the informal sector, and people living in crowded housing with limited access to water (Lustig and Tommasi 2020). Wealthier households benefited from strategies that were not as widely available to lower-income ones, such as remote work, distance learning, and telemedicine. COVID-19 has also disproportionately affected the most vulnerable populations, including indigenous peoples, Afro-descendants, and migrants. Compared to men, women are substantially less likely to get severe cases of COVID-19 or to die from it; however, women have been severely affected by the public health strategies to reduce transmission, particularly lockdowns, remote work, and school closings (de Paz, Munoz Boudet, and Gaddis 2021; IDB 2021b; WTO 2020). Some of the impacts include leaving the workforce, increased domestic violence, a rise in mental health issues, and adolescent pregnancies (Perez-Vincent et al. 2020). Cash transfer programs and other social protection measures have helped mitigate these problems to some degree. Nevertheless, the increase in poverty and inequity is generating more pressure on governments that were already facing a crisis of confidence and social unrest before the pandemic.

The region's health systems have been tested like never before during the pandemic, and many countries have experienced setbacks in the supply and use of essential services, such as sexual and reproductive

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6. Data as of November 30, 2021.



health, immunization, and chronic disease care. In a World Health Organization (WHO) survey in the first quarter of 2021, 55 percent of Latin American and Caribbean countries reported interruptions in services provided at the first level of care (with a 33 percent level of moderate or severe interruption), and 20 percent reported some type of interruption in the provision of emergency services (with an 8 percent level of moderate or severe interruption) (WHO 2021b).

Providing good quality healthcare was already difficult in Latin America and the Caribbean before the coronavirus arrived. On average, countries in the region not only spend less on health than countries in the OECD, they also have fewer resources such as hospital beds, doctors, and nurses.<sup>7</sup> In addition, the region's health infrastructure is relatively old, poorly maintained, and periodically overwhelmed by other epidemics such as dengue (IDB 2021a). The region also has weak disease surveillance and monitoring systems (OECD 2020). COVID-19 exacerbated these weaknesses when countries redirected limited resources towards controlling transmission and treating COVID-19 patients at the same time that demand for other healthcare services was increasing, when health professionals became ill (and sometimes died),<sup>8</sup> and when supplies grew scarce. More resources may be needed to handle the indirect effects of the pandemic, such as an increase in mental health conditions (among health professionals as well as the general population), a rise in violence against women and children, and the emergence of long-term COVID, a poorly understood condition that is taking a toll on people across the world.

COVID-19 has shown that the Latin America and the Caribbean region is inadequately prepared to address major public health crises such as pandemics or natural disasters. Surveillance and early warning systems to detect and monitor infectious diseases and new biological threats are still incipient in most countries, and laboratory networks are often geographically concentrated, leaving rural and isolated areas without key services. To be effective, governments need to finance public health programs that can generate and use data to inform decisions; plan for emergencies and evaluate readiness through periodic exercises; forecast likely threats and monitor disease transmission and natural disasters in real time; communicate effectively with the public and with diverse communities; and design, adapt, and implement emergency protocols related to testing, tracing, treatment, and isolation on a national basis, among other interventions (IDB 2021a).

The pandemic also exposed the reliance of Latin American and Caribbean countries on imports for critical medical supplies such as vaccines and therapeutic drugs, as well as for basic medical supplies like masks, gloves, and gowns. The region invests little in research and development (R&D), which is crucial to the development of new diagnostic methods, medicines, and vaccines that are responsive to the region's particular epidemiological needs (e.g., dengue, chikungunya) as well as to reducing reliance on other regions for products protected by intellectual property laws. The investment that does take place is often financed by universities and other research centers with little reference to manufacturing and marketing, which delays production and utilization.

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7. Latin America and the Caribbean has about 21.4 doctors and 15.8 nurses per 10,000 population (PAHO 2019), while countries in the OECD have an average of 35 doctors and 88 nurses per 10,000 population (OECD 2019).

8. Between March and September 2, 2020, almost 570,000 health workers contracted COVID-19 in Latin America and the Caribbean, and 2,500 of them died (PAHO 2020).



In this context, preparing for the future will require significant investments in emergency and disaster prevention and risk management. In fact, countries will have to go beyond compliance with the International Health Regulations (IHR)<sup>9</sup> that have proven to be inadequate in preventing and controlling COVID-2019 – whether because they are too limited or because they were poorly implemented (Aavitsland et al. 2021; Independent Panel for Pandemic Preparedness & Response 2021). Nevertheless, there is much to learn from the countries that successfully contained or limited the spread of COVID-19, such as China, New Zealand, Singapore, and Korea – all of which institutionalized emergency preparedness plans after the first SARS epidemic in 2003 (IDB 2021a; Chen et al. 2021).

## 1.2 The Evolution of COVID-19 in the Region

COVID-19 was first reported by China in December 2019. The first cases outside of China were confirmed in January 2020 and Brazil reported the first confirmed case in Latin America and the Caribbean on February 26, 2020. As of November 30, 2021, Latin America and the Caribbean had confirmed 45.5 million COVID-19 cases and over 1.5 million deaths. The direct death toll from COVID-19 is likely to be higher due to underreporting, as many countries are showing substantial increases in excess mortality, which could be due to either underreporting of COVID-19 deaths or increases in mortality from indirect causes.<sup>10</sup>

The “delay” in the arrival of COVID-19 from Asia, the United States, and Europe allowed many Latin American and Caribbean countries to start adopting policies aimed at slowing the disease’s transmission chain, including lockdowns, suspension of international travel, cancellation of large events, and closure of schools and universities. The strictness and duration of these measures varied across countries, as did efforts to establish and expand testing, contact tracing, and intensive care treatment capacity, among other interventions (IDB 2021a). Countries’ response “also varied in terms of internal coordination, leadership commitment, enforcement, and public cooperation” (IDB 2021a, 16). Despite the time advantage, and swift action by some governments, the region had difficulties containing the outbreak. By April 1, 2020, most countries had implemented stringent containment and closure policies to try to stop the pandemic.<sup>11</sup> Nevertheless, while such policies seemed successful at slowing the pace of infections and deaths in the United States and Europe during the second quarter of 2020, the level of transmission remained high in Latin America and the Caribbean for a longer period (Figure 1) (OECD 2020). The reasons for this difference are uncertain. However, high levels of informality (about 60 percent of all jobs), inadequate social protection systems,<sup>12</sup> and large numbers of people living in poor and overcrowded housing con-

9. The International Health Relations (IHR) from 2005 is available at <https://www.who.int/publications/i/item/9789241580496>.

10. In 2020, confirmed COVID-19 deaths accounted for only two-thirds of excess deaths in Mexico and about one-third of excess deaths reported in Peru (IDB 2021a).

11. The Oxford Covid-19 Government Response Tracker (OxCGRT) systematizes information on policy measures undertaken by countries to tackle COVID-19. It is available at <https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker>.

12. Despite their limited fiscal space, the region’s governments were able to provide an unprecedented level of support to those most in need (OECD 2020). In Brazil, Chile, and Peru, the net effect of additional spending and foregone revenues specifically responding to the pandemic represented more than 9 percent of GDP. Most of these additional expenditures were assigned to social protection or economic programs (IDB 2021a). Nevertheless, this support was still insufficient to prevent the rise in poverty. The total number of poor people in Latin America and the Caribbean reached 209 million in 2020, 22 million more than the previous year (ECLAC 2021a).



ditions, often without access to water,<sup>13</sup> may have undermined public messaging and mandates related to hygiene, social distancing, and constraints on travel. For those living in precarious circumstances, limitations required to slow transmission of the disease often directly jeopardized their ability to meet their basic needs on a daily basis (OECD 2020). Thus, public policy measures in practice may have been less strict than they seemed.

Public policy responses were also severely constrained by disruptions in medical supplies. The region depends on imports for a substantial part of its medical inputs. Global demand for sophisticated equipment such as ventilators and DNA sequencing machinery skyrocketed, but so did demand for basic items like gloves, masks, and plastic tubing. Wealthier countries bought up supplies at high prices while some of the exporting countries tried to reserve supplies for themselves. The combination left Latin American and Caribbean countries scrambling to keep their health facilities supplied and capable of responding to the outbreak. News stories of bodies left outside hospitals or being discovered in people's apartments were published in cities where the outbreak was particularly severe and the capacity to respond was particularly constrained.

The region faced three main waves of the disease between February 2020 and October 2021 (Figure 2). The first wave stabilized and began to wane after August 2020. After six months of stringent controls, with increasing political and economic pressures, Latin American and Caribbean governments responded to the good news by relaxing many restrictions. Unfortunately, this was followed by a second wave of infections in early 2021. When combined with insufficient preparation for the relaxation of the policies and continuing difficulties with obtaining health system supplies, this second wave was also quite deadly. Supply issues continued to be problematic, with several examples of hospitals running out of oxygen for patients on ventilators. Subsequently, during the rest of 2021, policy approaches and their timing varied; however, most countries began to experience a third wave of infections starting in August and September 2021, possibly connected with the emergence of the Delta variant of COVID-19.

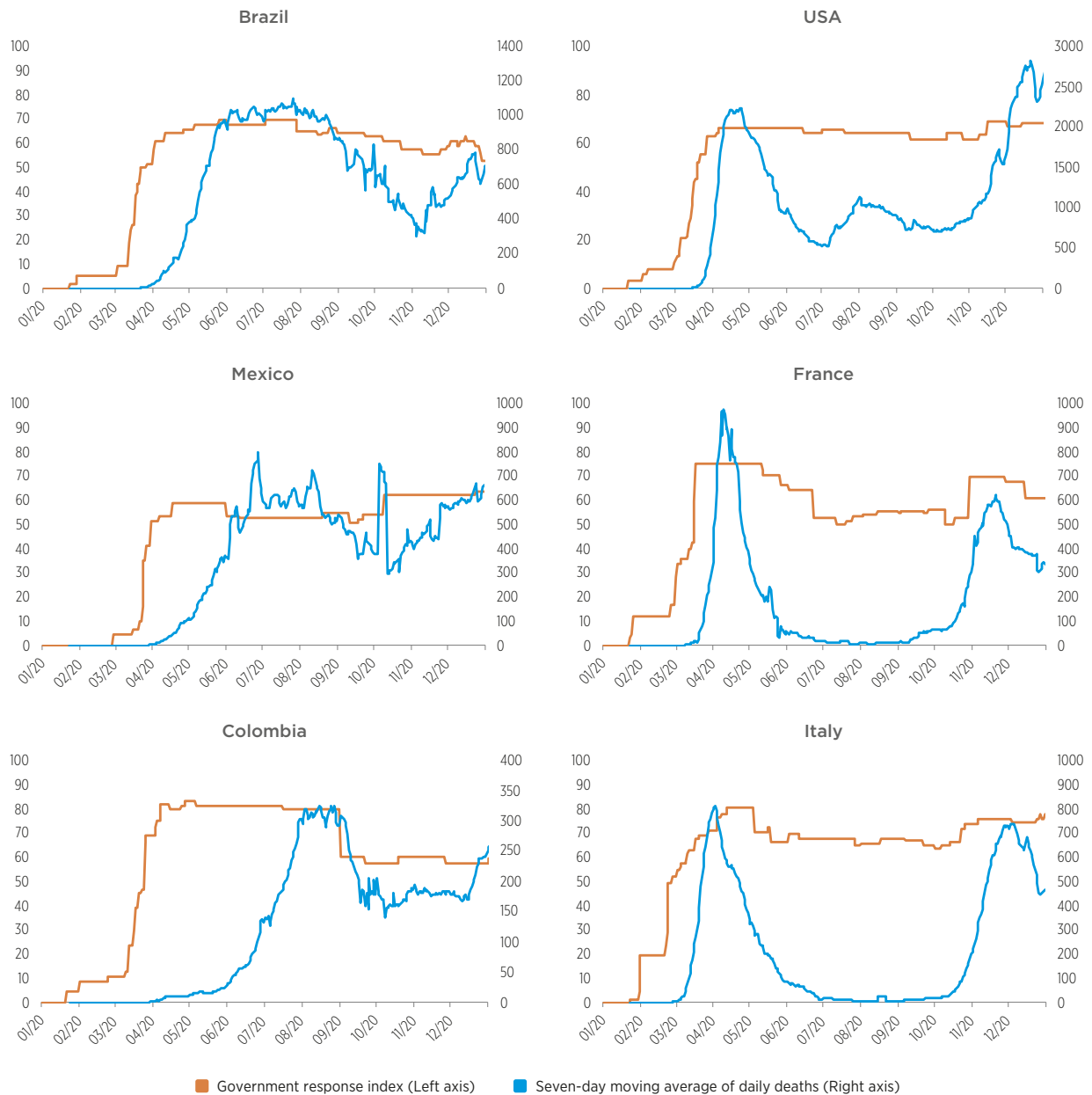
The region has done surprisingly well with vaccinating its population relative to many middle- and low-income countries, and some countries have achieved vaccination levels higher than many high-income countries. Despite relatively widespread distrust of government, people in Latin America and the Caribbean have shown significantly higher commitments to getting vaccinated than in other regions. Between 70 and 80 percent of adults regularly express their interest in getting vaccines when they are available (Kreuter et al. 2021). Aided by this positive attitude, almost half the region's population had received two doses of the vaccine by the end of 2021. Argentina, Brazil, Costa Rica, the Dominican Republic, Ecuador, and El Salvador have vaccinated almost two-thirds of their populations. Uruguay (76 percent) and Chile (85 percent) have achieved vaccination coverage that exceeds the OECD average (64 percent) and the rates in Israel (68 percent) and the United Kingdom (70 percent). Nevertheless, other countries are lagging. The Bahamas, Bolivia, Guatemala, and Jamaica are among the countries with vaccination coverage at or below 40 percent, and Haiti has yet to vaccinate any significant part of its population.<sup>14</sup>

13. In Central American and Andean countries, for instance, an estimated 34 to 38 percent of the population does not have access to improved and safely managed water supplies (PAHO 2019).

14. IDB calculations based on data from the University of Oxford's Our World in Data website, available at <https://ourworldindata.org> (accessed December 21, 2021).



**FIGURE 1 Government Responses to the Pandemic, and Number of COVID-19 Daily Deaths, Selected Countries, 2020**

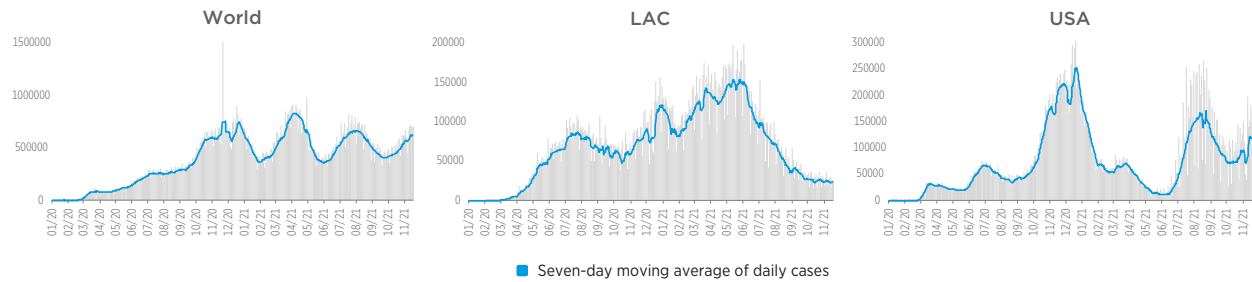


Source: Prepared by the authors based on OECD (2020), data from the John Hopkins Coronavirus Resource Center data, and data from the Oxford Covid-19 Government Response Tracker (OxCGRT) global panel database of pandemic policies, available at <https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker>.

Note: The OxCGRT defines the government response index as “how the response of governments has varied over all indicators in the database, becoming stronger or weaker over the course of the outbreak”. It is an aggregate indicator of policies including containment policies, closures, health investments, testing, public information campaigns, and other actions to control or mitigate the effects of the pandemic.



**FIGURE 2 Daily Confirmed COVID-19 Cases Worldwide, in Latin America and the Caribbean, and in the United States**



Source: Prepared by the authors based on John Hopkins Coronavirus Resource Center data.

Difficulties contributing to lower vaccination coverage in Latin America and the Caribbean, at least initially, included not only the lack of capacity to distribute vaccines, but, in particular, the difficulty in securing supplies. By April 2021, for instance, it was estimated that high-income countries had secured over 3.5 vaccine doses per person, while low- and middle-income countries had secured less than 0.6 doses per person. The COVAX initiative also faced significant delays in vaccine delivery and fell short of its goal of delivering 2 billion vaccine doses by the end of 2021. The countries that were most successful in obtaining supplies did so through direct negotiations with vaccine manufacturers, sometimes with offers to conduct clinical trials. Some countries were able to obtain supplies by offering to produce vaccine components or complete the process of filling and finishing vials. Still others received donations.

Vaccination efforts seem to have made a difference in lowering the rate of infection, which, by November 2021, was stable or declining in most countries. However, while the stabilization of infection rates is welcome, the pandemic is clearly not going away – as evidenced by the emergence of the new variant, Omicron, at the end of 2021. Rather, COVID-19 in some form or another seems likely to become an endemic illness that will require regular vaccination and continue to put demands on limited healthcare service capacity.

The region's future prospects depend on learning from this pandemic and preparing for the next health emergency. Despite worse fiscal conditions, it is crucial to prioritize the investments necessary to have health systems that are resilient and capable of facing emergencies and natural disasters. In the coming years, the region's economic and social recovery (and capacity to generate revenue) will depend on governments' ability to address these health challenges (OECD 2020).



# 2 Methodology

To measure the impact of the pandemic on healthcare services and the health of the population, a variety of primary and secondary data sources were used for this study. First, a literature review was conducted to identify changes in healthcare services and health outcomes due to COVID-19 within and outside Latin America and the Caribbean. The review included peer-reviewed articles that were published between January 2020 and September 2021. Second, secondary data sources were used from official government reports, epidemiological bulletins, and indicators published on the countries' statistics department websites. Third, administrative data on hospital discharges and from vital registrations on cause of death in a subset of countries were analyzed. By comparing the patterns observed in 2020 during the first year of the pandemic with average historical patterns in earlier years, it was possible to calculate changes in service utilization and disease severity for a wide range of procedures and illnesses. The resulting patterns shed light on the impact of COVID-19. Secondary sources were used to provide a fuller picture of how COVID-19 affected healthcare services and health, with information on conditions typically treated outside of hospitals or that do not generally lead to death. Other sources provided insights into whether demand (e.g., care-seeking behaviors) or supply factors (e.g., medical professional responses) were significant drivers of the results.

## 2.1 Hospital Discharges and Causes of Death

To assess changes in non-COVID-19 healthcare services and the health of the population since the beginning of the pandemic, administrative healthcare records were used from 2015 to 2020 on hospital discharges, hospitalization severity, intra-hospital mortality, and mortality in Brazil, Chile, El Salvador, and Mexico. The analysis of Brazil relied on national data collected in the Hospital Information System (SIH) and the Mortality Information System (SIM) from the Unified Health System (*Sistema Único de Saúde* - SUS), which are available on the DATASUS website. This dataset includes only the population in the public healthcare system, accounting for 75 to 80 percent of the total population. In Chile, data were used from the Department of Statistics and Health Information (*Departamento de Estadísticas e Información de Salud* - DEIS), which includes both public and private hospitals. In El Salvador, data collected by the Ministry of Health were used. Finally, in Mexico, the data came from the General Directorate of Health Information (*Dirección General de Información en Salud* - DGIS). In El Salvador and Mexico, data on hospital discharges include only services provided by the Ministry of Health, so they do not include hospitals in the social security systems or private hospitals. Data on deaths for all four countries are from death certificates, which have countrywide coverage of all registered deaths. Additional data sources were used to control for municipal-dependent variation and to evaluate changes for specific





conditions. For example, census data and population projections data were used to assess differences by municipal income poverty headcount and population size.

Outcomes at the municipal-monthly level were aggregated from 2015 to 2020 for specific conditions. Hospital discharges and overall mortality were calculated per 10,000 people. Intra-hospital mortality was calculated as the total number of patients who died during hospitalizations per 10,000 hospital admissions. Conditions considered in the analysis were identified using the principal diagnosis code and the ICD-10 classification (WHO 2019). The analysis covered changes in hospitalizations and deaths overall and for selected conditions such as chronic conditions (diabetes mellitus, hypertensive diseases, and ischemic heart diseases), neoplasms, respiratory conditions, and mental and behavioral disorders (see Table A1 in the Appendix for the list of ICD-10 codes used to identify each of these conditions).

To use these data in examining the association between health outcomes and COVID-19, a linear regression model (ordinary least squares) was used that quantifies the change in the (i) hospital discharge rate, (ii) intra-hospital mortality rate, and (iii) mortality rate from 2020 (March through December) relative to previous periods (generally 2015–2019) in Brazil, Chile, El Salvador, and Mexico. More formally, consider the following model:

$$y_{kcmt} = \theta + \beta COVID_{kcmt} + \gamma_c + \alpha_m + \delta_t + \varepsilon_{kcmt} \quad (1)$$

where  $y_{kcmt}$  corresponds to either the hospital discharge rate, average hospitalization severity, intra-hospital mortality rate, or mortality rate for condition  $k$  for individuals who reported living in municipality  $c$  during month  $m$  in year  $t$ .  $COVID_{kcmt}$  is a dummy variable equal to 1 for the time period starting March 1, 2020, and ending December 31, 2020. Municipality, month, and year fixed effects were included. In this model,  $\beta$  will capture the change in hospitalization/death rates during March–December 2020 relative to the previous five-year average, and this is interpreted as the effect of the pandemic. To ease interpretation, the percent change in hospitalization/death rates during March–December 2020 is reported and is calculated as the estimate of  $\beta$  over the five-year historical average (2015–2019) for each specific condition. Errors are clustered at the municipal level to control for any correlation in errors over time within a municipality. The model was estimated separately for each of the  $k$  conditions of interest.



# 3 Analysis of the Crisis

## 3.1 What Happened to Non-COVID-19 Health Services?

The pandemic disrupted healthcare services in many countries. A WHO survey of Ministries of Health in more than 120 countries found that during 2020, on average, 54 percent of tracer health services such as immunizations, maternal care, reproductive care, and management of chronic conditions experienced some form of disruption, especially in low- and middle-income countries (WHO 2020). A follow-up survey conducted by WHO in 2021 also showed that on average 37 percent of tracer services were still experiencing some form of disruption across all countries, and that the share of countries reporting disruption of emergency surgery remained the same as in 2020 at around 20 percent (WHO 2021b). In addition, a systematic review by Moynihan et al. (2021), including data from 20 countries in the Americas, Europe, Asia, and Australia, found a median decline of 37 percent in the number of healthcare services provided. The study also found that these countries experienced median declines of 42 percent in healthcare visits and 28 percent in hospital admissions during the early phase of the pandemic (February-May 2020).

Both supply and demand factors played a role in the decline of healthcare utilization. In terms of supply, some disruptions were intentional and strategic modifications in response to the pandemic, while others were not (WHO 2021b). In particular, many countries responded to COVID-19 by limiting in-person contacts, which may have impacted access to healthcare. For example, most countries in Latin America and the Caribbean modified some processes to reduce physical presence in healthcare centers in order to comply with social distancing. Many also increased the use of teleconsultations. Another factor that disrupted the supply of non-COVID-19 healthcare services was the reallocation of personnel and resources to care for COVID-19 patients. For example, data available from a subset of primary healthcare facilities in El Salvador and Honduras show a decline in the number of health personnel due to reallocation to COVID-19-related activities, illnesses, or turnover. These facilities also reported fewer scheduled preventive visits for children and pregnant women in order to accommodate the COVID-19 precautions and personnel reductions (Bernal, Rios-Zertuche, and Zuñiga 2021).

On the demand side, healthcare-seeking behavior has changed for a variety of reasons since the pandemic started. The Second Pulse Survey conducted by WHO (2021a) found that the most common reasons cited by Ministries of Health for reduced use of health services by the population were fear and mistrust and financial difficulties caused by lockdowns. Population surveys (both by phone and



in-person) in multiple countries confirm this, as there is evidence that fewer people sought care or more people failed to receive all the care they needed because they feared getting exposed to COVID-19, or because of government-mandated mobility restrictions (Bernal, Rios-Zertuche, and Zuñiga 2021; IHME 2019). In Buenos Aires, many households had difficulty accessing medications or getting a medical appointment (INDEC 2020).

A few studies have analyzed how health services were affected during 2020 in Latin America and the Caribbean. All show a substantial reduction in all types of services (outpatient, inpatient, and emergency), with preventive care being one of the most affected.

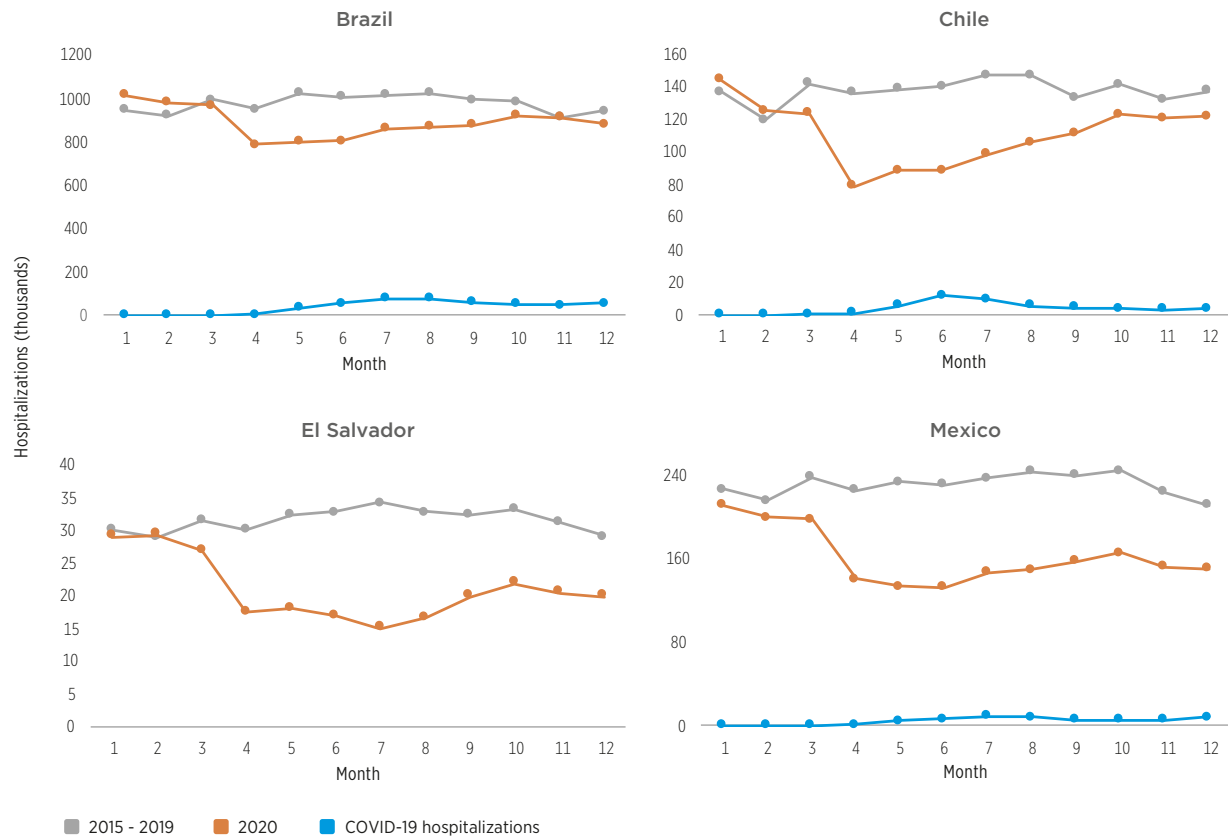
- In El Salvador, Bancalari, Bernal, and Garcia (2021) found that preventive visits decreased by 52 percent in 2020.
- In Paraguay, Tullo et al. (2020) found that in the first months after the pandemic started, there was a reduction of around 20 percent in ambulatory care visits and hospital discharges.
- In Chile, Alé-Chilet et al. (2020) found evidence of a substantial decrease of around 49 percent in emergency visits at the start of the pandemic, which they attribute to a lower incidence of emergencies. These results show lockdown measures may have had some positive effects, such as fewer traffic injuries, that offset some of the pressures on healthcare resources caused by the pandemic.
- Using data from the health information system of the Mexican Social Security Institute (*Instituto Mexicano del Seguro Social* - IMSS), Doubova et al. (2021) found substantial disruptions in reproductive, maternal, and child health and noncommunicable disease services and outcomes during the first nine months of the pandemic.
- In Ecuador, the Ministry of Public Health, based on preliminary data, estimated a 30 percent reduction in the total number of patients who received care.
- Health establishment and emergency department visits, outpatient consultations, and hospitalizations under the Ecuadorian Social Security Institute declined by an average of 39 percent (Mena and Casali 2020).

The data analysis conducted for this report in Brazil, Chile, El Salvador, and Mexico shows that there was a reduction of between 22 and 40 percent in public hospitalization rates for all causes in 2020 compared to previous years (Figure 3). The largest decline occurred in April 2020 for all countries, a month after WHO declared the COVID-19 pandemic. In Brazil and Chile, rates recovered to levels similar to pre-pandemic levels by the end of 2020, but not in El Salvador or Mexico. These declines in total hospitalization rates occurred even though hospitalizations for COVID-19 increased. In fact, COVID-19 hospitalizations represented only a small fraction of total hospitalizations throughout 2020 (Figure 3) even when they were overloading intensive care units.

The decline in overall hospitalizations obscures large heterogeneity across health conditions. For example, deliveries were mostly unaffected, while hospitalizations for neoplasms (particularly benign neoplasm) dropped dramatically. Hospitalizations for other chronic conditions such as diabetes, hypertensive disease, and ischemic heart disease also fell, but not as steeply.



**FIGURE 3 Change in Total Public Hospitalizations due to the COVID-19 Pandemic, Selected Countries, 2020 vs. 2015-2019**



Percent change in hospitalization rates	Brazil	Chile	El Salvador	Mexico
	-22%***	-30%***	-40%***	-33%***

**Source:** Authors' estimates based on administrative data of public hospitals in all countries. Mexico and El Salvador include data only from Ministry of Health hospitals. Chilean data are from public and private hospitals. COVID-19 hospitalizations are not available for El Salvador. The changes reported are derived from the regression results that can be found in the Appendix and represent the average change in 2020 relative to earlier years after controlling for month, year, and municipality fixed effects. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

In 2021, healthcare services in most of the region recovered to some or all of their pre-COVID-19 levels. According to WHO'S Second Pulse Survey, healthcare service disruptions in 2021 were much reduced relative to 2020 (WHO 2021b). In particular, services related to reproductive, maternal, newborn, child, and adolescent health, nutrition, and immunization appear to have recovered substantially.



## Child Healthcare

Although severe COVID-19 in children has been rare (Sinha et al. 2020; Smith et al. 2021), pediatric healthcare services were severely affected in the region. In some countries, certain health facilities interrupted the provision of preventive health services for children in order to provide care exclusively to COVID-19 patients (Castro 2020). For example, in Peru, by the end of April 2020, six out of seven facilities had suspended routine antenatal and postnatal consultations in Mamas del Rio, an indigenous community in the Peruvian Amazon (Reinders et al. 2020). In El Salvador and Honduras, facility surveys show that between 13 and 18 percent of facilities suspended child healthcare services during 2020 (Bernal, Rios-Zertuche, and Zuñiga 2021). Moreover, a survey of hospitals predominantly in Latin America and sub-Saharan Africa reported that only around 4 percent of hospitals had intensive care units admitting adults and children; 3 percent had pediatric and regular intensive care units admitting adults and children; and only 52.7 percent of intensive care units were constantly staffed with a pediatric intensivist or anesthesiologist (Muttalib et al. 2021). According to a UNICEF survey, only three countries in Latin America and the Caribbean maintained access to all healthcare services: Cuba, Costa Rica, and Uruguay (Castro 2020).

### *Preventive Care Measures: Vaccines and Visits*

As children and adolescents reach certain stages of development, healthcare services are usually scheduled to prevent and detect conditions and diseases in their earlier, more treatable stages. This significantly reduces the risk of illness, premature death, and expensive medical care. However, such preventive care was disrupted during the pandemic in most countries of the region. For example, Mexico saw a decline of around 50 percent in child healthcare visits and of 30 percent in childhood vaccinations (Dobova et al. 2021). Preventive care services among children under 5 years old fell by 40 percent in El Salvador (Bancalari, Bernal, and Garcia 2021). In Argentina, 44 percent of the households delayed preventive health checkups for children (Tuñón and Sánchez 2020).

Disruptions in the delivery and uptake of immunization services caused by the COVID-19 pandemic caused a sharp decline in the number of people, including children, who received routine vaccines in the region. At the beginning of pandemic, 38 of the 51 member countries of the Pan American Health Organization (PAHO) reported reductions in the demand for vaccination services due to the spread of COVID-19 (Castro 2020). Mexico, Argentina, and Venezuela were among the countries with the largest decline in the number of children receiving their first dose of the diphtheria-tetanus-pertussis combined vaccine (UNICEF 2020). Children in rural areas may have been affected disproportionately, as was documented in Colombia (Moreno-Montoya et al. 2021). Routine immunization, however, remained stable in a few countries. In Chile, for example, the tuberculosis, pneumococcal vaccine, and hexavalent vaccine showed continuity, or fell less than 2 percentage points in 2020 (Figure A2.1 in the Appendix). Overall, according to WHO and UNICEF data on Latin America and the Caribbean, key childhood vaccine coverage fell between 5 and 7 percentage points during 2020 relative to 2019 (Figure 4). While the decline might seem small, it is significant for two reasons. First, the effectiveness of vaccines at a

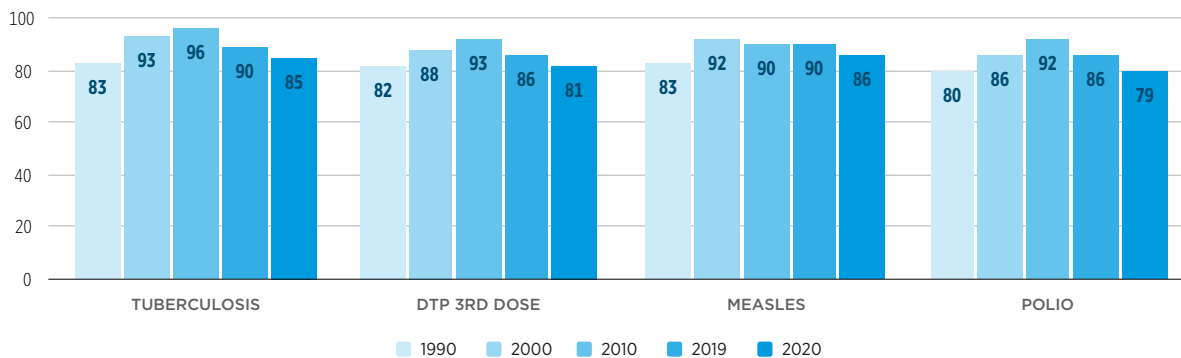


societal level requires high overall vaccination rates, particularly for highly transmissible diseases such as measles.<sup>15</sup> Second, vaccination coverage in the region during 2020 for tuberculosis, polio, and diphtheria-tetanus-pertussis is roughly equivalent to the levels from 23 to 28 years ago – an indication of the difficulties in maintaining high coverage levels during the pandemic.

### Emergency Visits

Emergency department visits by children fell during 2020 according to available evidence. The number of weekly visits by persons under 18 years of age to emergency departments in Buenos Aires was 39 percent lower in March 2020 than March 2019, and visits continued to decline through May 2020, at which time emergency department visits for this subpopulation were 87 percent lower than in 2019 (Ferrero et al. 2021). Wealthier countries experienced similar declines. For example, pediatric emergency department visits in children’s hospitals fell by 45 percent in the United States (DeLaroche et al. 2021; Pelletier et al. 2021). Similarly, general pediatric care and pediatric emergency admissions in the Netherlands decreased by 59 percent and 56 percent, respectively, relative to the 2016–2019 average, with the largest reduction observed for consultations related to communicable diseases (Kruizinga et al. 2021).

FIGURE 4 Vaccine Coverage in Latin America and the Caribbean, 2015–2020 (percent)



Source: Authors’ calculations based on the World Health Organization (WHO) Immunization Data Portal vaccination coverage information. Data include the WHO/UNICEF electronic Joint Reporting Form (eJRF); WHO and UNICEF estimates of immunization coverage (WUENIC), 2020 revision; WHO and UNICEF HPV Estimates, 2020 revision; and WHO and UNICEF Protection at Birth estimates, 2020 revision. The figure shows the average vaccine coverage of all IDB member countries in Latin America and the Caribbean, except for The Bahamas, Barbados, Suriname, and Trinidad and Tobago. In 2000 the average for measles excludes Ecuador and Peru, and for polio excludes Peru. For the third dose of the diphtheria-tetanus-pertussis (DTP) combined vaccine and the measles and polio vaccines for 1990, the figure reports vaccine coverage in 1994, 1995, and 1992, respectively.

15. As observed in Venezuela, the weakening of immunization programs can set the stage for the resurgence of vaccine-preventable infections such as measles, as well as the potential for the expansion of outbreaks beyond a country’s borders – in this case, to Colombia and Brazil (Paniz-Mondolfi et al., 2019).



## *Hospital Admissions*

In Bolivia, Chile, Colombia, and Uruguay, Vásquez-Hoyos et al. (2021) reported a decrease of 83 percent in admissions to pediatric intensive care units for lower respiratory tract conditions in 2020 relative to the 2018–2019 average. However, these rates varied across countries: 95 percent in Uruguay, 93 percent in Chile, 67 percent in Colombia, and 50 percent in Bolivia. In El Salvador, hospitalizations among children under age 5 decreased by around 41 percent, and for children ages 5 to 14, they decreased by around 54 percent during 2020 relative to 2015–2019 (Bancalari, Bernal, and Garcia 2021). In other settings, the pattern on hospital admissions among children is similar. Akuaake et al. (2020) found that the number of hospital admissions of children under age 13 in Cape Town, South Africa decreased by 56 percent during the lockdown period relative to the previous year. The authors also documented significant reductions in respiratory and infectious-related diseases and injuries.

## Reproductive and Maternal Health Services

As discussed earlier, the pandemic affected both the supply of and demand for reproductive health services. On the one hand, disruptions in supply chains for medical and other essential supplies reduced imports, availability, and distribution of modern contraceptives, emergency contraception, anti-retrovirals for HIV/AIDS, antibiotics to treat sexually transmitted infections (STIs), and medications for maternal and neonatal health, among other items. On the demand side, the recession that accompanied the pandemic reduced income, making it more difficult to purchase contraceptives. UNFPA (2020), which reports on access to contraceptives in Latin America and the Caribbean, projected that by the end of 2020, the share of women in the region with unmet needs for modern contraceptives would increase from 11.4 to 14.5 percent in an optimistic scenario, or to 17.7 percent in a pessimistic scenario. Some evidence indicates a decline in the use of reproductive health services, though it is not clear whether this has translated into a reduction in population coverage of modern contraceptives. In Mexico, contraceptive services declined by more than half during the first months of the pandemic (Dobova et al. 2021). Sexual and reproductive health consultations decreased 47.3 percent in 2020 compared to the average over 2015–2019 in Chile (Table A2.2 in the Appendix).

However, while it is likely that reproductive health services were disrupted during 2020, in some settings they had recovered by mid-2021. For example, household surveys in El Salvador and Honduras conducted between June and August 2021 show that the coverage of modern family planning methods among women in need was about the same as in previous years (Bernal, Rios-Zertuche, and Zuñiga 2021). In Peru, the share of women who use a modern and traditional contraceptive in 2020 also remained stable and in fact even increased by 2 percentage points relative to previous years (Table A2.2 in the Appendix). Finally, the diagnosis of key sexual transmitted diseases seems to have been affected by the pandemic. According to data from the IMSS, the detection of AIDS in Mexico declined 29.5 percent in 2020 compared to the average during 2015–2019 (Table A2.2 in the Appendix).



The COVID-19 pandemic is posing considerable challenges for the region to maintain the provision of high-quality, essential maternal health services. Pregnant women may have experienced difficulties accessing services due to transport disruptions and lockdown measures or have been reluctant to go to health facilities due to fear of contagion. Overall, antenatal care visits declined in the region, but the magnitude varied across countries: 30 percent in Chile (Table A2.2 in the Appendix), 39 percent in El Salvador (Bancalari, Bernal, and Garcia 2021), 27 percent in Mexico (Doubova et al. 2021), and 9 percent in Paraguay (Tullo et al. 2020). By contrast, evidence from household surveys in El Salvador, Peru, and Honduras showed little to no change in population coverage of at least one antenatal care visit during 2020 (Bernal, Rios-Zertuche, and Zuñiga 2021; INEI 2020). Nevertheless, administrative data from these countries shows an overall reduction in the number of antenatal care visits, indicating that the average number of such visits for each woman during pregnancy declined. Initial visits were also delayed in countries for which data are available. In El Salvador and Honduras, the share of women who had their first antenatal visit before the first 12 weeks of gestation fell during 2020 (Bancalari, Bernal, and Garcia 2021; Bernal, Rios-Zertuche, and Zuñiga 2021). On the other hand, researchers found no substantial change in the quality of antenatal care in these two countries (Bernal, Rios-Zertuche, and Zuñiga 2021).

In contrast to the decline of prenatal care visits, institutional deliveries seem to have been remained stable in number through the pandemic. Deliveries in hospitals were largely unchanged in the countries in the analysis. In Brazil, Chile, and El Salvador, the number of deliveries in hospitals in 2020 was statistically indistinguishable from the average for 2015–2019 (Table A2.1 in the Appendix). The number of deliveries in Mexico’s public hospitals does show a substantial decline, but it is likely that this resulted from contracting out to private hospitals rather than a decline in attended deliveries. These findings are also found in survey data from Peru, El Salvador, and Honduras that covered both public and private providers, and where there was little to no change in the coverage of institutional deliveries (Bernal, Rios-Zertuche, and Zuñiga 2021; INEI 2020).

## Cancer Screening and Treatment

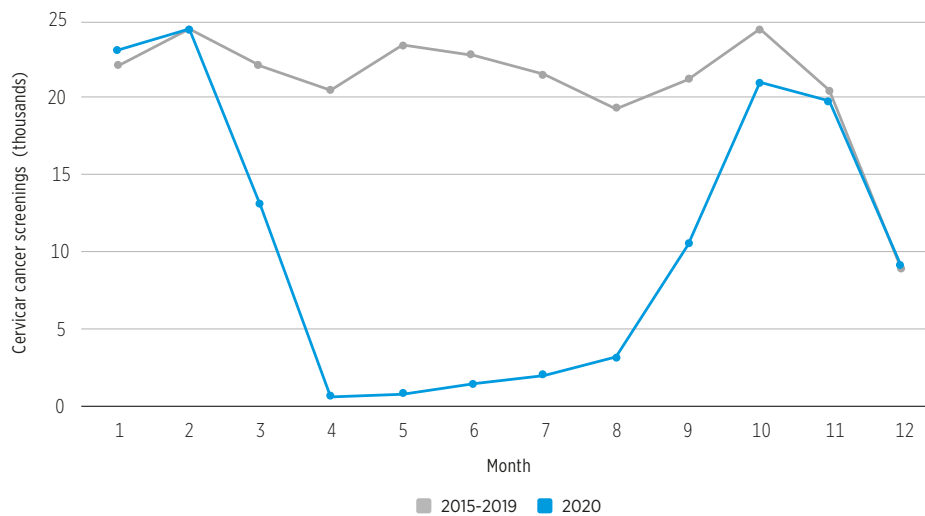
In many countries, cancer screening and treatment was intentionally suspended so that resources could be shifted to COVID-19 patients or to protect against COVID-19 transmission. A study in a Brazilian cancer center found that the total number of oncological consultations declined by 45 percent and new consultations fell by 56.2 percent (Araujo et al. 2020). Doubova et al. (2021) documented a sharp decline of 70 percent or more in cervical and breast cancer screenings in Mexico. In Paraguay, Tullo et al. (2020) found that in the first months after the pandemic started, services such as cervical cancer screenings fell by 28 percent. In El Salvador, cervical cancer screenings dropped by around 60 percent during 2020. While the largest decline occurred from April to May, the rate of screening had mostly recovered to pre-pandemic levels by the end of the year (Figure 5) (Bancalari, Bernal, and Garcia 2021). Despite the recovery in screenings, the decline in 2020 has created a backlog that the health system must address. Otherwise, the number of undetected cancers is likely to rise, or detection will occur at more advanced stages. A similar pattern has been found in high-income countries such as the United Kingdom (Lai et al. 2020).





To study the potential effects of the pandemic on cancer care of children, Vasquez et al. (2020) conducted a cross-sectional survey of pediatric oncohaematologists in Latin America, 89 percent of whom reported indefinite postponement or delay of diagnostic consultations. Vázquez Rosas et al. (2021) data from Argentina, Brazil, Chile, Colombia, Honduras, Mexico, Nicaragua, Peru, and Uruguay and found that the response to the pandemic resulted in fewer first-time oncologic consultations, pathologic studies, surgeries, and chemotherapies.

**FIGURE 5 Change in Cervical Cancer Screenings by El Salvador’s Ministry of Health Due to the COVID-19 Pandemic**



Source: Banacalari, Bernal, and Garcia (2021).

Note: The lines in the figure represent the total number of cancer screenings by the Ministry of Health in El Salvador. According to Banacalari, Bernal, and Garcia (2021), there was a 61 percent decrease during March–December 2020 relative to the 2015–2019 period.

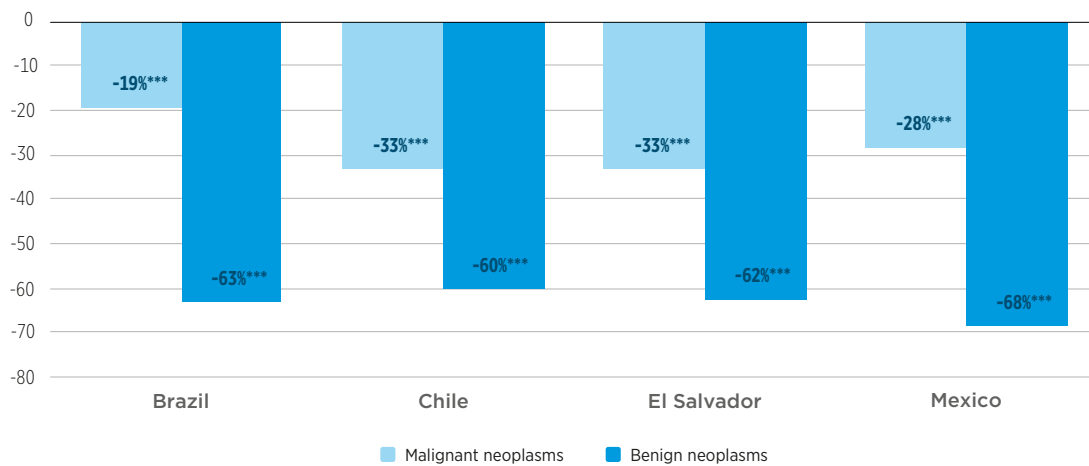
In-hospital treatment for neoplasm was also severely affected during the pandemic in Brazil, Chile, El Salvador, and Mexico, as can be seen in Figure 6, though this varied by the type of neoplasms. There was a large decline in hospitalizations for benign neoplasms of between 59 and 68 percent, while hospitalizations for malignant neoplasm declined less, by between 19 and 33 percent. These results make sense given decisions by many hospitals to suspend or delay non-urgent procedures such as the treatment of benign neoplasms. However, this seems a less likely explanation for the reduction in care for malignant neoplasms. In either case, suspending or delaying care is likely to have affected the prognosis of such cases.

In May 2020, the American Society for Radiation Oncology surveyed 115 centers in Latin America that specialized in radiation therapy services to assess the impact of the COVID-19 pandemic. The centers reported a median 8 percent decrease in patient volume and a 27 percent shortage of personnel due



to COVID-19 (Martinez et al. 2020) The effects of these reductions may have been partially offset by an increased use of telemedicine, which was reported by 64.3 percent of facilities as of May 30, 2020, for follow-up services during radiation treatment (29.6 percent) and post-radiation treatment (34.8 percent). There is also evidence in São Paulo of a reduction in the total number of patients undergoing intravenous systemic treatment, the number of days patients were hospitalized, and the volume of surgical oncology cases (Araujo et al. 2020). That study also reported a significant increase in the number of patients who initiated treatment with oral chemotherapeutic regimens, which may represent a response to the pandemic by selecting treatments that require fewer in-person visits to cancer centers.

**FIGURE 6 Change in Hospitalizations for Neoplasms Due to the COVID-19 Pandemic, Selected Countries, 2020 vs. 2015–2019 (percent)**



Source: Authors' estimates based on administrative data.

Note: Mexico and El Salvador only include Ministry of Health hospitals. Brazilian data include all public hospitals. Chilean data are from both public and private hospitals. The changes reported are derived from the regression results that can be found in the Appendix and represent the average change in 2020 relative to earlier years after controlling for month, year, and municipality fixed effects. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

## Care for Chronic Conditions

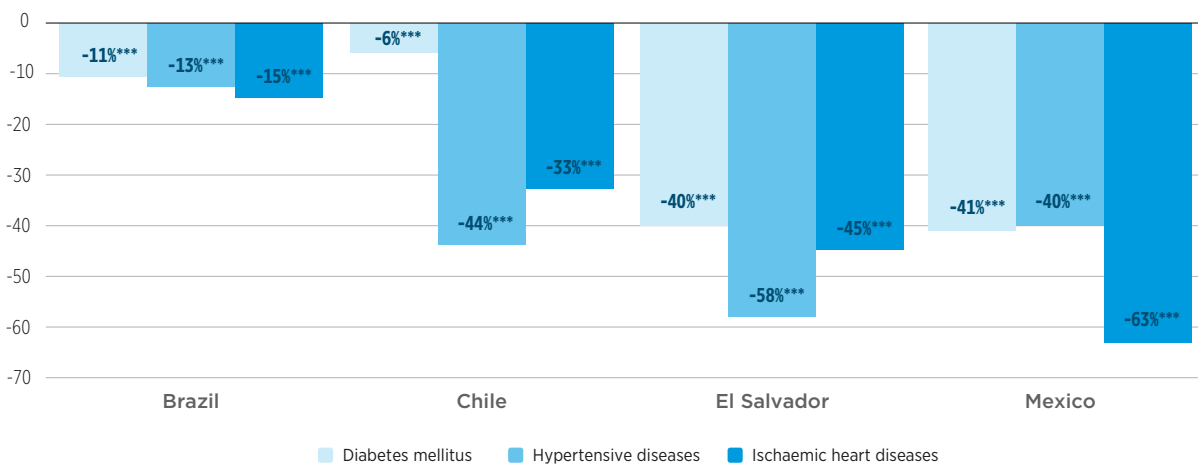
To help contain the spread of COVID-19, most countries implemented lockdown measures that included postponing planned hospital admissions and visits, and in some cases, replacing face-to-face consultations with teleconsultations. However, this shift was not enough to avoid a disruption in the utilization of healthcare services by patients with chronic diseases. For example, health check-ups for cardiovascular patients decreased by 59 percent in Chile (Table A2.2 in the Appendix). Data from the Ecuadorian Institute of Social Security show a significant decline in care for diseases such as hypertension and diabetes (-16.7 percent and -23.4 percent, respectively) when comparing 2020 to 2019 (Mena and Casalí 2020). Tullo et al. (2020) present evidence of a reduction of 11.5 percent for hypertensive disease checks in



Paraguay. Bancalari, Bernal, and Garcia (2021) report a decrease of 39 percent in diabetes visits and a 31 percent decrease in hypertension visits in El Salvador. Almeida et al. (2020a) document a 90 percent decrease in cardiology consultations and a slightly smaller decrease in diagnostic tests in a tertiary hospital in Brazil. This situation is highlighted on a much larger scale with the results from the WHO Pulse Survey. In the first round of the survey, around 55 percent of the surveyed countries reported a disruption to hypertension and diabetes management of less than 50 percent, and 3 percent of countries reported a disruption of more than 50 percent (WHO 2020).

Our analysis confirms these findings for Brazil, El Salvador, and Mexico, which experienced a reduction of between 11 and 41 percent in hospital discharges for diabetes mellitus, 13 and 58 percent for hypertensive disease, and 16 and 63 percent for ischemic heart disease (Figure 7). Fewer hospitalizations for these chronic conditions could indicate either lower prevalence (which would be good but unlikely) or greater reticence of people to seek treatment (which would be bad, though the people involved would presumably have less severe conditions). In fact, the evidence supports the latter hypothesis because there is a statistically significant increase in the severity of the conditions, as indicated by higher intra-hospital mortality for them (Table A2.3 in the Appendix). This suggests that hospitalizations during 2020 were for more severe cases of uncontrolled diabetes and hypertension. Doubova et al. (2021) also present evidence in this direction, with Mexico showing a 20 percent reduction in patients with controlled diabetes and hypertension.

**FIGURE 7 Change in Hospitalizations for Selected Chronic Conditions Due to the COVID-19 Pandemic, Selected Countries, 2020 vs. 2015–2019 (percent)**



Source: Authors' estimates based on administrative data.

Note: Mexico and El Salvador only include Ministry of Health hospitals. Brazilian data include all public hospitals. Chilean data are from both public and private hospitals. The changes reported are derived from the regression results that can be found in the Appendix and represent the average change in 2020 relative to earlier years after controlling for month, year, and municipality fixed effects. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.



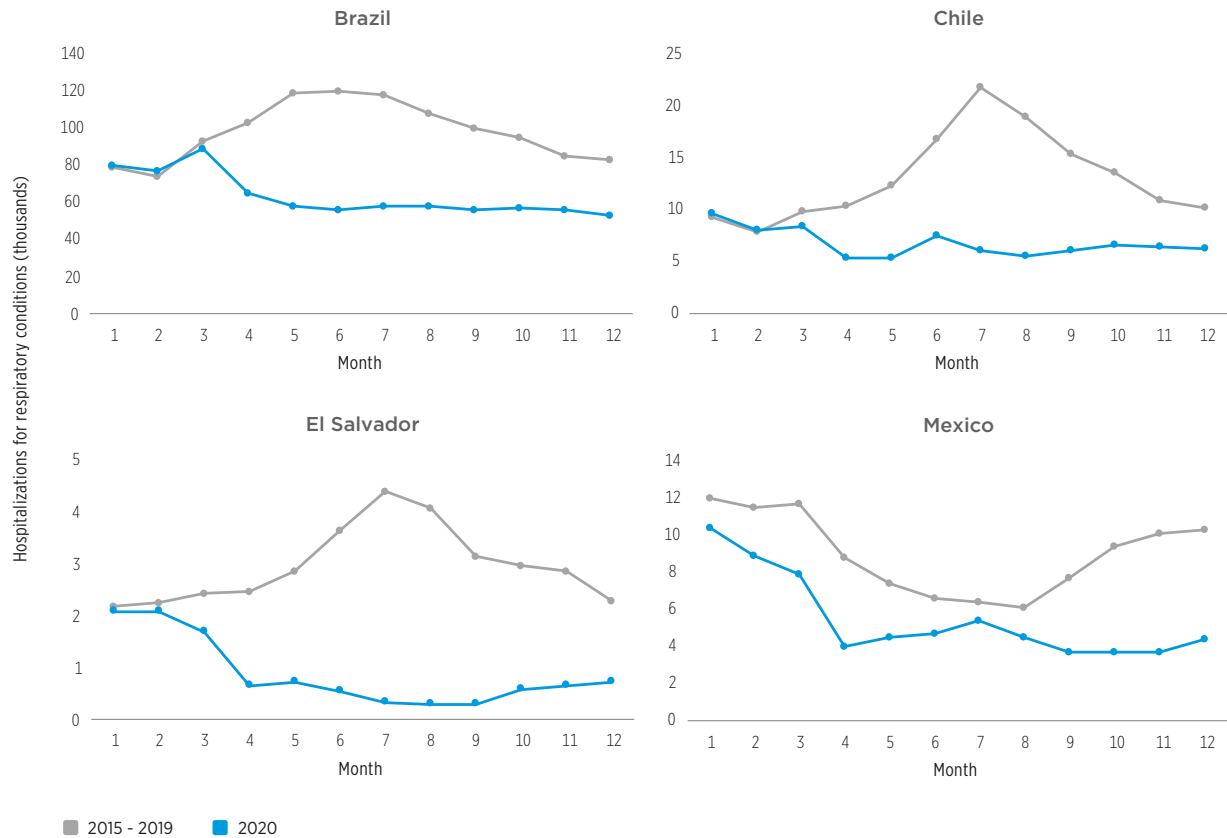
## Care for Respiratory Conditions

A seasonal cycle of respiratory viral diseases (i.e., the common cold and influenza) is common during the winter season in temperate regions (Moriyama, Hugentobler, and Iwasaki 2020). Data from 2020 suggest that the COVID-19 pandemic reduced the winter peak of demand for health services for respiratory diseases. All countries in Figure 8 exhibit a similar seasonal pattern from 2015–2019 in hospitalizations for respiratory conditions, with a peak in the winter months (November–March in Mexico, and June–September in Brazil, Chile, and El Salvador). However, despite the spread of COVID-19 in 2020, overall hospitalizations for respiratory conditions fell dramatically (Figure 8). Similar findings of a decrease in the use of healthcare services for respiratory conditions have been documented in the region and around the globe, particularly among children. Vásquez-Hoyos et al. (2021) analyzed admission data for lower respiratory tract infections in children in Bolivia, Chile, Colombia, and Uruguay and found there were 83 percent fewer pediatric intensive care unit admissions for these infections in 2020 compared to the 2018–2019 average over the winter, and similar results were noted for respiratory syncytial virus and influenza (92 percent and 78 percent, respectively). In South Africa, Akuaake et al. (2020) found a strong decrease in child emergency visits for respiratory conditions and, in the United States, Pelletier et al. (2021) found a similar pattern for child hospital admissions for asthma and bronchiolitis.

While part of the decrease could be due to changes in healthcare service supply, several authors have suggested that policies to reduce transmission of COVID-19, such as stay-at-home orders, mandatory use of face masks, and changes in hand-washing behaviors, may have reduced the incidence of other respiratory diseases. For instance, evidence from Canada (Rennert-May et al. 2021) China (Geng et al. 2021), and other settings (Olsen et al. 2020) suggests that there was a sharp reduction in the transmission and incidence of communicable seasonal respiratory conditions such as influenza, which they argue could be due to the non-pharmaceutical interventions imposed by countries. In addition, reductions in pollution due to mobility restrictions and lockdowns could have caused a reduction in some respiratory conditions.



**FIGURE 8 Change in Hospitalizations for Respiratory Conditions Due to the COVID-19 Pandemic, Selected Countries, 2020 vs. 2015-2019**



Percent change in hospitalization rates	Brazil	Chile	El Salvador	Mexico
	-22%***	-30%***	-40%***	-33%***

Source: Authors' estimates based on administrative data.

Note: Mexico and El Salvador only include Ministry of Health hospitals. Brazilian data include all public hospitals. Chilean data are from both public and private hospitals. The lines in the panels represent hospitalizations due to respiratory conditions by country. Respiratory conditions are those with a Chapter X (J00-J99) ICD-10 code of primary diagnosis. The changes reported are derived from the regression results that can be found in the Appendix and represent the average change in 2020 relative to earlier years after controlling for month, year, and municipality fixed effects. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.



## Care for Mental and Behavioral Disorders

The COVID-19 pandemic has increased the number of domestic violence cases (Feder et al. 2021), and stress coming from financial hardships and confinement has put considerable pressure on mental health services. Face-to-face mental health services have also been interrupted by social distancing and stay-at-home orders. For example, in Chile, El Salvador, and Mexico, there was a statistically significant reduction in hospitalizations for mental and behavioral disorders of between 28 and 58 percent in 2020 compared to the average for 2015–2019 (Table A2.1 in the Appendix). In order to reduce physical distance between patients and healthcare providers, while limiting exposure to COVID-19, tele-psychiatry has been widely adopted to provide services to patients with preexisting mental health disorders (Li et al. 2021). Nevertheless, the region faces challenges in implementing this type of service due to the limited capacity of health services to use virtual/telemedicine platforms to provide care to specific populations such as older adults and indigenous communities (Antiporta and Bruni 2020). Despite these challenges, some strategies have been implemented in the region, such as strengthening local hotlines for mental healthcare and psychosocial support. For example, the Ministry of Health and Social Protection in Colombia implemented a mental health hotline to provide information regarding counseling and advice on disease prevention, diagnosis, treatment, and rehabilitation (Ministerio de Salud y Protección Social 2021).

## Summary: The Effect of the COVID-19 Pandemic on Healthcare Services

Overall, COVID-19 has caused a major disruption in the provision of all types of health services. Preventive care saw a sharp decline, particularly for services such as vaccinations, cancer screenings, and chronic conditions. Some health services normally considered time-sensitive, such as emergency visits, also experienced reductions during the pandemic, in particular for pediatric patients. Hospitalizations also saw declines in multiple countries, despite the surge due to the COVID-19 pandemic, as care for non-urgent procedures was postponed. Nevertheless, care for some conditions that cannot be delayed, such as deliveries of babies, was maintained in most of the region. Thus, both the scope of service disruptions and their impact on health are likely to vary depending on the condition and type of care. Some reductions in preventive care might have immediate health consequences, but other conditions that go undetected and untreated may manifest themselves in the medium or longer term. A similar pattern could be expected for hospitalizations for non-urgent conditions – that is, their effect on health will vary depending on whether or not the postponement of care led to further complications. Finally, some of the reductions in health services may actually reflect improvements in health. In particular, non-pharmaceutical interventions imposed during the pandemic such as masking, social distancing, and handwashing may have reduced the prevalence of respiratory and infectious diseases.

The next section explores the consequences of the pandemic and its disruption of healthcare services on the health of the population in the region.



## 3.2 What Happened to the Health of the Population? Will There Be Lasting Consequences?

The COVID-19 pandemic caused a substantial increase in mortality worldwide, with some of the highest death tolls in Latin American and Caribbean countries. According to WHO estimates, the total number of excess deaths in the region of the Americas in 2020 (including the U.S. and Canada) was at least 1.3 million, of which 900,000 corresponded to confirmed COVID-19 deaths (WHO 2021c). The Economist tracker for COVID-19 excess deaths estimates that, in 17 countries in Latin America and the Caribbean with available data, there were 834,761 excess deaths in 2020, representing at least 1.3 times more deaths than reported (Figure 9). Mexico, Brazil, and Peru had the highest death tolls in the region, accounting for over 70 percent of total excess deaths. Other countries such as Bolivia and Ecuador had around 50 percent more deaths than expected in 2020 and had among the highest excess death rates per 100,000 population (Table A3.1 in the Appendix). Similarly, a few studies estimated that excess deaths in 2020 reached 44 percent in Mexico (Sanmarchi et al. 2021), 22 percent in Brazil (Carvalho, Boschiero, and Marson 2021), and between 30 to 37 percent in Peru (Sempé et al. 2021). These trends continued to vary in 2021 across countries in the region. Excess mortality increased in early 2021 but started to decline toward the end of 2021 as mass vaccination campaigns reduced COVID-19-related mortality.

The impact of COVID-19 on mortality was heterogeneous among population groups and at the sub-national level. In Chile, Colombia, Mexico, Peru, and Brazil, excess deaths were higher among men and individuals ages 60 or older. In contrast, there were almost no excess deaths among people younger than age 25 (Carvalho, Boschiero, and Marson 2021; Ibañez and Schady, 2022; see also Figure A3.1 in the Appendix). Significant differences in 2020 were also observed for excess deaths at the subnational level. For instance, in Peru, of a total 173,099 all-cause excess deaths, 50 percent were concentrated in the Lima region, including the capital of Lima itself (Sempé et al. 2021). In Brazil, excess deaths in the North (57 percent) and Northeast (41 percent) were nearly or more than double the excess mortality level in the Southeast (21 percent) and far higher than the level in the South (6 percent) (Carvalho, Boschiero, and Marson 2021).

Differences have also been documented across ethnic groups. Soares et al. (2021) report that mortality among indigenous Brazilians was 34.8 percent higher than historical averages, and nearly double the 18.1 percent excess deaths among non-indigenous Brazilians. Baqui et al. (2020) also showed that hospital mortality from COVID-19 was higher in the North and among *pardo* and black populations. People with higher incomes, who are more likely to use private healthcare in the region, may have fared better than poorer people. For example, in Brazil, deaths among patients hospitalized with COVID-19 was higher in public hospitals than in private hospitals.<sup>16</sup> Similar trends were reported in Mexico (Badillo 2020) and Chile (Sepúlveda and Miranda 2020). A number of explanations for these differences are possible, including differences in severity and in the initial health condition of patients before contracting COVID-19.

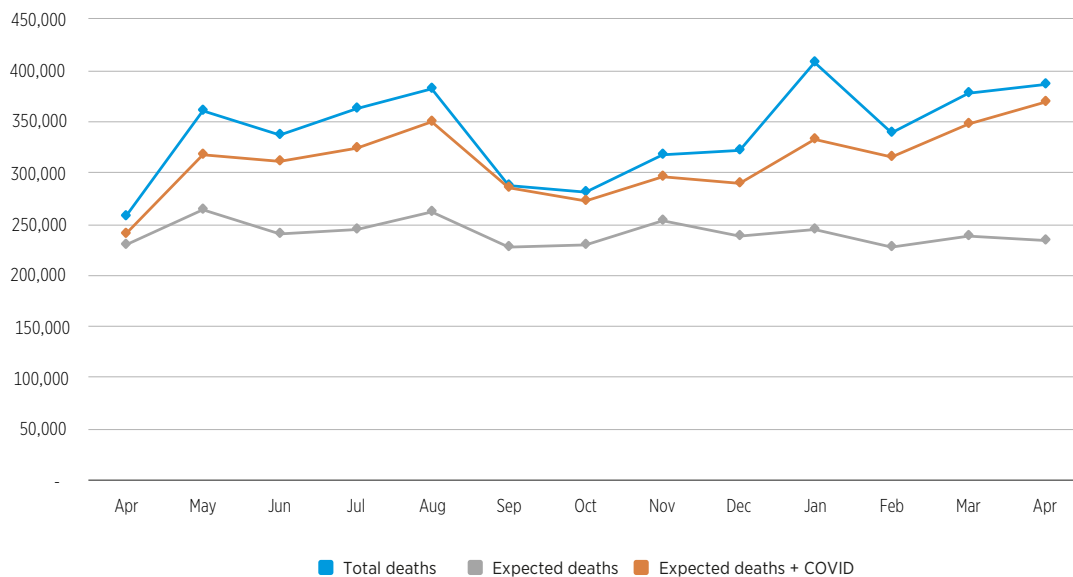
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16. Data from UTIsbrasileiras, Registro Nacional de Terapia Intensiva, available at <http://www.utisbrasileiras.com.br/sari-covid-19/benchmarking-covid-19/> (accessed December 15, 2021).



However, it is likely that a significant part of the difference reflects long-standing and well-established social phenomena: societal discrimination against people of color, differential treatment within the healthcare system, and weaker resilience in public healthcare delivery.

**FIGURE 9 Excess Deaths in 11 Latin American and Caribbean Countries between April 2020 and 2021**



Source: Authors' calculations based on The Economist's tracker for COVID-19 excess deaths, available at <https://github.com/TheEconomist/covid-19-excess-deaths-tracker>.

Note: Includes only Latin American and Caribbean countries with data availability until 2021: Bolivia, Brazil, Chile, Colombia, Ecuador, Guatemala, Mexico, Panama, Paraguay, Peru, and Uruguay.

The burden of excess mortality has affected life expectancy at birth in the region, which is now back to the levels of 20 years ago. In a recent study, ECLAC (2021b) estimated a decline of between 0.3 and 0.7 years of life expectancy at birth in countries in the region where the prevalence of the COVID-19 virus was low (5 percent) and of between 1.5 and 3.2 years in countries where the spread of the virus was less contained and its prevalence was around 25 percent. Additional estimates for Brazil, Chile, Ecuador, Guatemala, Mexico, and Peru suggest even higher declines in life expectancy at birth in coming years of around 2 to as many as 10 years (Mena and Casalí 2020). These reductions also vary across gender and regions. In Chile, for example, life expectancy at birth is estimated to have declined by 1.6 years for men and 0.9 years for women (Islam et al. 2021). In Brazil, declines could be at least 3 years in the Northern regions, representing 1.7 years more than the estimates for the national average and South regions (Castro et al. 2021). The future effects of the pandemic on life expectancy at birth, however, are hard to anticipate. Life expectancy has typically rebounded after major epidemics and pandemics, as was the





case following the 1918 influenza epidemic (Harper 2021; UNFPA 2020). But there are many features of the current pandemic that differ from earlier ones. First, this pandemic appears to be evolving quite rapidly, with new variants causing reinfection in people who had previously been infected or vaccinated. This could prolong disruptions to healthcare and social services in ways that may curb life expectancy from rebounding to 2019 levels. Second, COVID-19 has given rise to a condition known as “long COVID,” which is not well understood. If long COVID causes chronic conditions that increase mortality risk, it could also slow any rebound in overall life expectancy (Harper 2021).

## Child Health

Although the direct impact of COVID-19 is greatest among older adults, preliminary studies have projected substantial harm to children due to expectations that healthcare services would be disrupted and malnutrition would rise as a result of increased levels of poverty and unemployment (Headey et al. 2020; Osendarp et al. 2021; Robertson et al. 2020; Shapira, Walque, and Friedman 2021). Fortunately, these projections do not appear to have materialized in Latin America and the Caribbean. Information from official reports and administrative data on child health shows little to no evidence of excess mortality among children during 2020 (ECLAC 2021b), and some evidence even suggests that child mortality may have continued to fall (Table 1). For example, in the Dominican Republic and Peru, infant mortality improved during 2020, falling by 16 percent and 13 percent, respectively, relative to the historical average. Evidence of the effect of the pandemic on child malnutrition, on the other hand, is mixed. In Peru, chronic malnutrition, and the prevalence of anemia in children under 5 years old decreased by 6.8 percent and 10.6 percent, respectively. On the other hand, in Guatemala acute malnutrition in children under 5 rose from 13,800 children on average over 2015–2019 to 27,900 children in 2020, representing an increase of almost 80 percent. Still, the full impact of the pandemic on child health remains unknown. While increased hygiene, masking, and social distancing may have reduced the prevalence of infectious and respiratory diseases among children, leading to lower mortality from these illnesses, child morbidity and mortality could still increase in the near future due to lower routine vaccination rates and other disruptions in preventive healthcare services.



**TABLE 1 Child Health Status Indicators, Selected Countries, 2015–2020**

	2015	2016	2017	2018	2019	Average 2015–2019	2020	Δ percent <sup>1</sup>
<b>Colombia</b>								
Low birth weight ( percent)	8.8	9.1	9.1	9.2	9.5	9.1	9.2	0.7
<b>Dominican Republic</b>								
Infant mortality (thousands)	2.7	2.4	2.9	3.5	3.1	2.9	2.4	-17.8
<b>Guatemala</b>								
Acute malnutrition < 5 years (thousands)	14.7	13.8	12.6	12.6	15.5	13.8	27.9	101.6
<b>Peru</b>								
<b>Mortality rates per 1,000 live births<sup>2</sup></b>								
<i>Neonatal</i>	10.0	-	10.0	10.0	-	10.0	8.0	-20.0
<i>Perinatal</i>	13.0	-	14.0	24.0	-	17.0	17.0	0.0
<i>Infant</i>	15.0	-	15.0	15.0	-	15.0	14.0	-6.7
<i>Under-5</i>	18.0	-	18.0	19.0	-	18.3	16.0	-12.7
<b>Weight and nutrition (percent)</b>								
<i>Low birth weight (&lt; 2.5 kg)</i>	7.1	7.0	7.3	7.3	6.5	7.0	6.6	-6.3
<i>Chronic malnutrition &lt; 5 years</i>	14.4	13.1	12.9	12.2	12.2	13.0	12.1	-6.6
<b>Disease prevalence (percent)</b>								
<i>Diarrhea &lt; 5 years<sup>3</sup></i>	12.0	11.5	11.0	10.7	11.5	11.3	8.2	-27.7
<i>Acute respiratory infection &lt; 5 years</i>	15.1	15.9	14.6	14.4	14.5	14.9	4.0	-73.2
<b>Children with anemia (percent)</b>								
<i>Children with &lt; 6-35 months</i>	43.5	43.6	43.6	43.5	40.1	42.9	40.0	-6.7
<i>Children with &lt; 5 years</i>	32.6	33.3	34.1	32.8	29.5	32.5	29.0	-10.7

Source: Epidemiological reports and administrative records from each country, including DATASUS in Brazil; the Department of Health Statistics and Information (DEIS) in Chile; the National Statistics Office (ONE) in the Dominican Republic; the National Integrated Health System (SINADIS) in Uruguay; and survey data from the Demographic and Family Health Survey (DHS) in Peru.

<sup>1</sup> The percentage change (Δ percent) shows the percentage difference between 2020 and the 2015–2019 average.

<sup>2</sup> Deaths per 1,000 live births for the five-year period preceding the survey.

<sup>3</sup> Children under 5 years old whose mothers declared they had diarrhea during the two weeks before the survey.

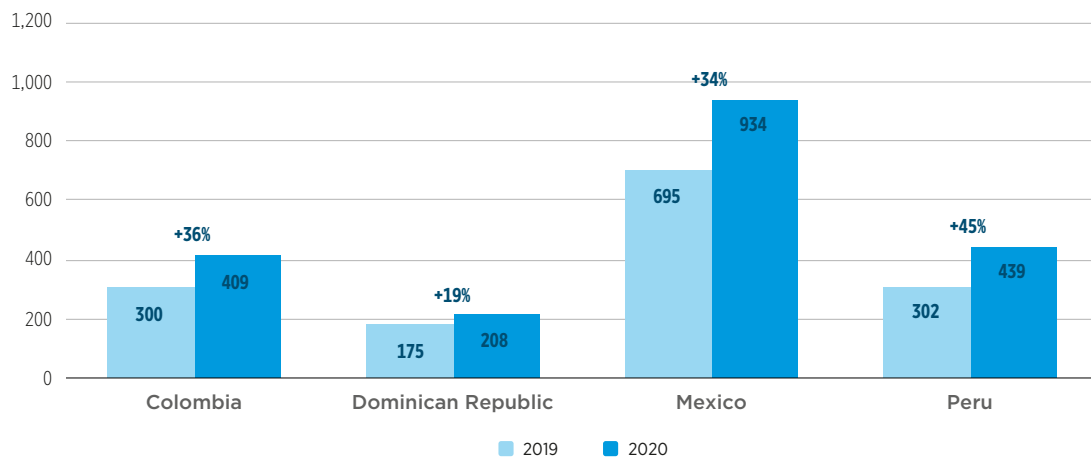
## Maternal Health

While maternal services (e.g., institutional deliveries) were among the least disrupted during the pandemic, several countries had higher maternal mortality due to COVID-19 infection and reductions in prenatal care. A few studies projected 12,200 additional maternal deaths (Robertson et al. 2020) and 2.1 million additional women with maternal anemia by 2022 (Osendarp et al. 2021) in low- and middle-income countries. A number of studies projected that maternal mortality would increase by 40 percent in Peru (UNFPA 2020) and that the country would regress to levels of five years earlier (Gianella et al. 2021). In Peru, maternal deaths indeed increased substantially in 2020 relative to other countries in



the region (Figure 10), going from 302 in 2019 to 439 in 2020, which represents a 45 percent increase. Other countries, like Colombia and Mexico, exhibited a rise of around 35 percent in maternal deaths. Part of this increase can be attributed to contracting COVID-19 during pregnancy, leading to death or to pregnancy complications that resulted in death. Disruptions in access to reproductive, prenatal, and postnatal care could have also played a role (Souza and Amorim 2021). According to international evidence the outcomes of pregnancies could have also been affected, as there have been increases in stillbirths in multiple settings due to healthcare system inefficiencies during the pandemic (Chmielewska et al. 2021). Finally, there is evidence that maternal depression also appears to have risen (Almeida et al. 2020b; Chmielewska et al. 2021).

**FIGURE 10 Numbers of Maternal Deaths, Selected Countries, 2020 vs. 2019**



Sources: Epidemiological reports and administrative records from each country, including the National Institute of Health (INS) and National Administrative Department of Statistics (DANE) in Colombia; the National Statistics Office (ONE) in the Dominican Republic; the Epidemiology General Directorate (DGE) in Mexico; and the National Center for Epidemiology, Disease Prevention and Control (CDC) in Peru.

## Cancer Mortality

The important backlog in cancer screenings is expected to increase the number of undetected cancers and lead to worse cancer stages at the time of detection or excess cancer deaths in the coming years, even if the number of screenings and treatments return to pre-pandemic levels. A simulation analysis of the incidence and progression of cancer in Chile found that the drop in the number of diagnosed cancer cases in 2020 will result in 3,542 excess deaths between 2022 and 2030, an increase of almost 14 percent relative to a scenario without the pandemic (Ward et al. 2021). Similarly, Hanna et al. (2020) have found that a four-week delay in cancer treatment (e.g., surgery) increases the risk of deaths by 6 to 8 percent. The risk of death, however, varies across cancers. While a delay in radiotherapy for head and neck cancer increases the risk of death between 9 and 13 percent, for breast cancer surgery delays of up to 8 and 12 weeks increases the risk of death by 17 percent and 26 percent, respectively. Addition-

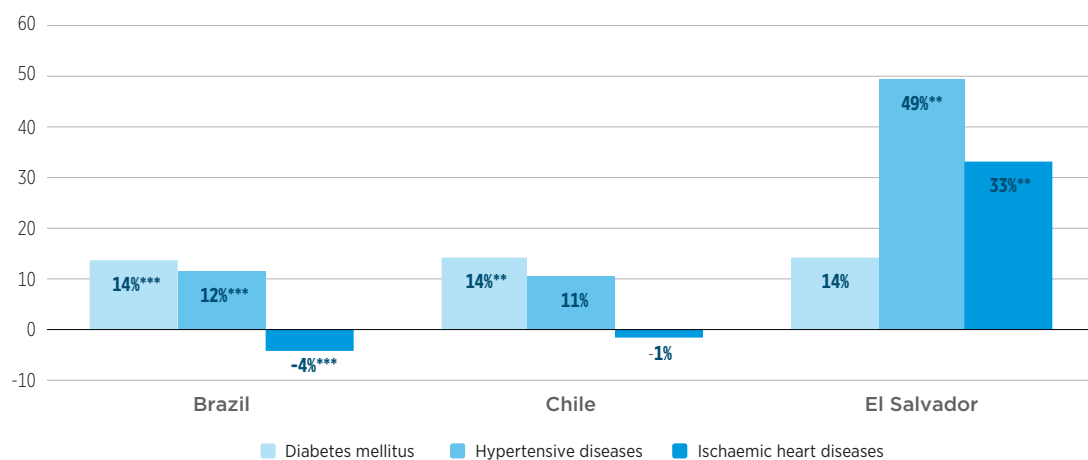


al modeling studies in England predicted an increase of 20 percent in cancer mortality in 2020 (Wise 2020), an increase of 33 percent in overall cancer deaths due to a three-month delay in surgery (Sud et al. 2020), and nearly an 8 percent increase in expected breast cancer deaths up to year five after diagnosis (Maringe et al. 2020). Rapid attention to the already accrued backlog in cancer screening and treatments is needed to mitigate the expected impact on the number of avoidable excess cancer deaths.

## Chronic Conditions

For people with chronic diseases, the impact of the COVID-19 pandemic has been severe. Besides the risk of severe infection, hospitalization, or death due to COVID-19, preventive care and disease management for these conditions were severely affected (Azar et al. 2020). Brazil, Chile, and El Salvador show an increase of 14 percent in the number of deaths for diabetes mellitus. Deaths for hypertension diseases also increased. While Brazil and Chile saw a rise in deaths from hypertension of between 11 and 12 percent, the number of deaths in El Salvador increased by 49 percent (Figure 11). Trends in the leading causes of death in the United States also show substantial increases in deaths for diabetes (15.4 percent), stroke (6 percent), and heart disease (4.8 percent) relative to 2019 (Ahmad and Anderson 2021). These findings, however, should be interpreted with caution, as it is hard to distinguish whether these increases are directly related to COVID-19, reticence to seek healthcare, or service disruptions (Hacker et al. 2021).

**FIGURE 11 Change in Deaths for Selected Chronic Conditions Due to the COVID-19 Pandemic, Selected Countries, 2020 vs. 2015–2019 (percent)**



**Source:** Authors' estimates based on administrative data of death certificates in all countries.

**Note:** The changes reported are derived from the regression results that can be found in the Appendix and represent the average change in 2020 relative to earlier years after controlling for month, year, and municipality fixed effects. Standard errors are clustered at the municipality level. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$ .



## Respiratory Conditions

Most countries had fewer deaths due to respiratory diseases during the pandemic, particularly in months when influenza is typically most common. For the countries in our analysis, deaths from diseases of the respiratory system significantly decreased (Figure 12). El Salvador experienced a sharp decline of 54 percent, from an average of 0.45 deaths per 10,000 population between 2015 and 2019 to 0.21 per 10,000 population in 2020. Similarly, Brazil and Chile had declines of 28 percent and 26 percent in deaths for respiratory conditions, respectively. As discussed earlier, the incidence of respiratory illnesses might have fallen as a result of the preventive measures taken to combat COVID-19 (e.g., masking, hand washing, social distancing). For instance, social distancing and lockdowns showed an immediate positive effect on pediatric hospital admissions and respiratory tract infections in Finland, with levels declining by 65 percent (Kuitunen et al. 2020). In addition, a few studies have shown that respiratory virus, seasonal influenza, and flu outbreaks in the United States, Australia, Chile, South Africa, Singapore, Japan, and Germany decreased significantly in 2020 (Liang et al. 2020; Olsen et al. 2020; Sawakami, Karoko, and Song. 2021; Tanislav and Kostev 2022; Wan et al. 2021).

Other studies have also suggested that pandemic preventive measures had an even more beneficial impact on children. In Peru, acute respiratory infection in children under 5 years old decreased 73 percent in 2020 relative to the previous year and the 2015–2019 average, with the decline in prevalence larger in urban areas (75 percent less) than in rural areas (68 percent less) (Table 1; see also INEI 2020). From a cohort of asthmatic and non-asthmatic children ages 4 to 18 in Africa, the Americas, Asia, and Europe,<sup>17</sup> Papadopoulos et al. (2021) also found a decrease of between 14 and 50 percent in lower and upper respiratory tract infections. In China, respiratory infections in children under 18 years old decreased by 45 percent, and in Germany, diagnosis in 2020 of influenza and pneumonia decreased by 90 percent and 73 percent, respectively (Liu et al. 2021; Tanislav and Kostev 2022).

## Mental Health

The combination of strict lockdown measures (e.g., school closures, use of home offices, lack of outdoor activities) and the economic recession during the pandemic are associated with higher levels of anxiety, depression, and other psychological distresses (Ghosh et al. 2020; Khan et al. 2020; Kumar and Nayar 2021). Global estimates show an increase of 7.6 percent in the prevalence of depression and 25.6 percent in anxiety in 2020 (Santomauro et al. 2021). However, the risk of depression, anxiety, or any post-traumatic stress disorders varies across population groups. A few studies found that people were more likely to develop depression or anxiety if they were women, age 40 and under, had chronic conditions or psychiatric illnesses, were unemployed, or worked in healthcare services, particularly those at higher risk of exposure such as paramedics and first responders (González Ramírez et al. 2020; Pappa et al. 2020; Xiong et al. 2020). Moreover, international evidence has also shown that pregnant women during

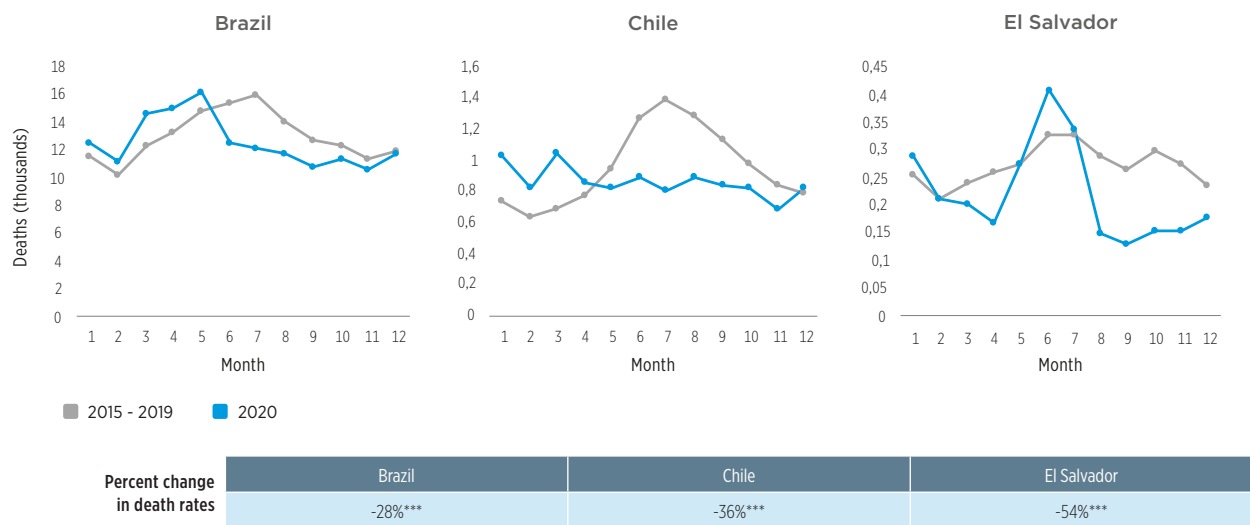
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17. The countries included in the study were Egypt in Africa; Mexico and the United States in the Americas; China and Hong Kong SAR in Asia; and Finland, France, Greece, Italy, Poland, Romania, Russia, Spain, and the United Kingdom in Europe.



the pandemic were more likely to develop depression and anxiety than pregnant women before the pandemic (Berthelot et al. 2020; Liu et al. 2021; Medina-Jimenez et al. 2020). While there is evidence of a deterioration in mental health among the population, preliminary evidence on deaths for mental and behavioral disorders in Brazil, Chile, and El Salvador shows that there were no significant differences in 2020 relative to the historical average (Table A3.2 in the Appendix).

**FIGURE 12 Change in Deaths from Respiratory Conditions Due to the COVID-19 Pandemic, Selected Countries, 2020 vs. 2015-2019**



Source: Authors' estimates based on administrative data of death certificates in all countries.

Note: The changes reported are derived from the regression results that can be found in the Appendix and represent the average change in 2020 relative to earlier years after controlling for month, year, and municipality fixed effects. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

## Health Beyond the Pandemic: Long COVID

Throughout the pandemic, some individuals who survived COVID-19, did not recover completely and experienced long-term effects. A few studies have identified that among mild (e.g., non-hospitalized) and severe cases of infection, those with symptoms for more than four weeks presented fatigue, headache, and heart palpitations (Augustin et al. 2021; Diaz et al. 2021; Marshall 2021). Other surveys have revealed a larger list of symptoms. Lopez-Leon et al. (2021) identified a total of 55 long-term effects, of which at least one persisted after two weeks of contagion in more than 80 percent of the infected



patients.<sup>18</sup> The most common symptoms were fatigue (58 percent), headaches (44 percent), and attention disorder (27 percent). Although not as common, cognitive decline (e.g., memory loss, and hearing loss) and an increase in neurological diseases (e.g., depression, and anxiety) were also identified in 10 percent of the patients. Despite these findings, more research on long COVID symptoms is needed to understand the severity and heterogeneity of symptoms and provide proper settings in primary care and community-based sites (Diaz et al. 2021).

Even though this phenomenon has been more common in adults, it also started to appear in children. According to emerging international evidence, the most prevalent symptoms among children were insomnia, respiratory symptoms, fatigue, muscle pain, and concentration difficulties. Some symptoms persisted beyond 60 days after infection, particularly among older children and those with a history of allergic diseases (Buonsenso et al. 2021; Osmanov et al. 2021). In a few studies in the United Kingdom, 4.4 percent of children had symptoms for more than four weeks, 7.4 percent of children ages 2 to 11 years had symptoms after 12 weeks, and 8.2 percent of children ages 12 to 16 years had symptoms after 12 weeks (Molteni et al. 2021; Office for National Statistics 2021). These preliminary studies suggest that attention must be given to long COVID as a potential source of ill health and an additional condition for which healthcare systems in the region must be prepared.

## Summary: The Effect of the COVID-19 Pandemic on the Health of the Population

In sum, the pandemic has had massive effects on the health of the population in Latin America and the Caribbean, directly and indirectly. Mortality rose sharply during 2020 and reduced estimated life expectancy at birth by as much as three years in some countries. Meanwhile, indirect effects of the pandemic on the health of the population have been mixed. Healthcare service disruptions seem to have affected people with chronic conditions and cancers in most countries. Child health improved in some countries but worsened in others. Respiratory illnesses are the one category that may have substantially improved during the year.

### 3.3 What Happened to Health Spending? Is It Sustainable?

Under the old normal, countries in Latin America and the Caribbean spent an average of US\$653 per capita on health, representing about 7 percent of GDP. Public funding for health in the region accounted for about 15 percent of government budgets or US\$370 per capita, which represents a little less than 60 percent of all health spending. The remainder, 40 percent, was out-of-pocket and private spending.

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18. Lopez-Leon et al. (2021) conducted a systematic meta-analysis that included studies from Europe, United Kingdom, United States, Australia, China, Egypt, and Mexico.



Thus, governments in the region have operated under the belief that they are spending significantly on health when, in fact, their ability to guide and improve the sector's effectiveness and efficiency is extremely compromised.

A crisis like the COVID-19 pandemic in 2020 can affect health spending in many ways, not only changing total spending – which could go up or down – but also changing its composition. The three major sources of health expenditures are government revenues, health insurance premiums (whether public or private), and out-of-pocket spending. Decisions on the use of government revenues are largely at the discretion of public authorities and can exhibit myriad patterns. For example, some governments might reallocate funds within the health budget toward treating COVID-19 patients and reduce other services to pay for intensive care unit treatment and vaccines, with the result that government health spending remains the same or even declines. In other cases, governments might allocate additional revenues to the COVID-19 response and even provide additional funding to support essential healthcare services and additional services to support frontline healthcare workers, with the result that government health spending could rise considerably.

Decisions on the use of health insurance premiums are somewhat more limited. If no actions are taken to respond to the crisis, insurance premiums might be collected on the basis of historical caseloads and paid out for a very different mix of services. This could lead to windfalls for insurance institutions in countries where fear of contagion and government restrictions on local transportation sharply reduce healthcare use, or it could lead to bankruptcy in countries where surges in COVID-19 patients coincide with a more “normal” pattern in care provision.

For several reasons, out-of-pocket spending is more likely to fall than increase in a crisis such as the pandemic. First, out-of-pocket spending is highly sensitive to household incomes, and the economic contraction in 2020 was particularly severe. Second, out-of-pocket spending generally requires physical movement to a healthcare facility or pharmacy, and local movement has been restricted in many countries. Third, individuals with health problems may have chosen cheaper forms of medical care or those that required less physical presence – such as bypassing consultation with a doctor to buy medications directly from a pharmacy, or consulting a doctor by telephone.

Of the three health revenue sources, government spending is the most critical in the case of a pandemic crisis because it can be countercyclical, can be spent on public goods,<sup>19</sup> and can be allocated on the basis of need, equity, and cost-effectiveness informed by social values and democratic debate.

In 2020, Latin American and Caribbean governments mobilized substantial fiscal resources to address the triple crisis generated by COVID-19 in health, the economy, and society. The average fiscal package in the

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19. A “public good” in economics is something that is non-excludable and non-consumable. In the case of a pandemic such as COVID-19, almost everything required to slow transmission has these characteristics. Vaccines may look like they are excludable and consumable – that is, someone might think “if I get vaccinated and there is a fixed supply, then I’m protected, and you aren’t.” However, the most significant impact of vaccines – herd immunity – is only achieved after reaching a high level of coverage among the entire population. In other words, vaccination seen as a collective action by 80 to 90 percent of the population creates protection from infection, which is non-excludable and non-consumable.





region was 8.5 percent of GDP, which offset declines in economic activity, expanded social welfare and cash transfer programs, and financed critical services in health. This spending also increased fiscal deficits, raising debt levels from an average of 58 percent of GDP in 2019 to 72 percent in 2020 (Cavallo and Powell 2021). The rapid increase in deficits and debt is expected to affect resources available for public health in 2022 and beyond. Indeed, recent projections by the International Monetary Fund show a mixed picture regarding countries' ability to increase their per capita government spending – including health spending – above pre-pandemic levels in the next couple of years (Kurowski et al. 2021). Furthermore, even in the case of countries that are able to return to past spending levels, growth in health expenditures is unlikely to be sufficient to finance the investments required to control and/or end the current pandemic, reestablish essential health services, and prepare for future threats (Kurowski et al. 2021).

Reliable data on healthcare expenditure more generally, and in Latin America and the Caribbean in particular, are extraordinarily rare. As a result, assessing the impact of the pandemic on government spending in the region with comparable cross-country data will not be possible until WHO concludes its Global Health Expenditure Data updating exercise. Most studies to date are based on projections or simulations (Kurowski et al. 2021). WHO (2021a) was able to obtain empirical data from only 22 countries, most of which were high-income countries. For the WHO sample, a few stylized facts stand out:

- Health spending per capita rose.
- The share of health spending in government budgets fell because other expenditures, such as cash transfers and business credit, rose by even more.
- Out-of-pocket health spending fell overall, but rose as a share of household incomes.

The only Latin American and Caribbean countries in the WHO sample were Chile, Colombia, and Mexico, and of these three, only Chile provided data that could distinguish general health expenditures from expenditures specifically targeted to COVID-19 prevention or treatment. According to this study:

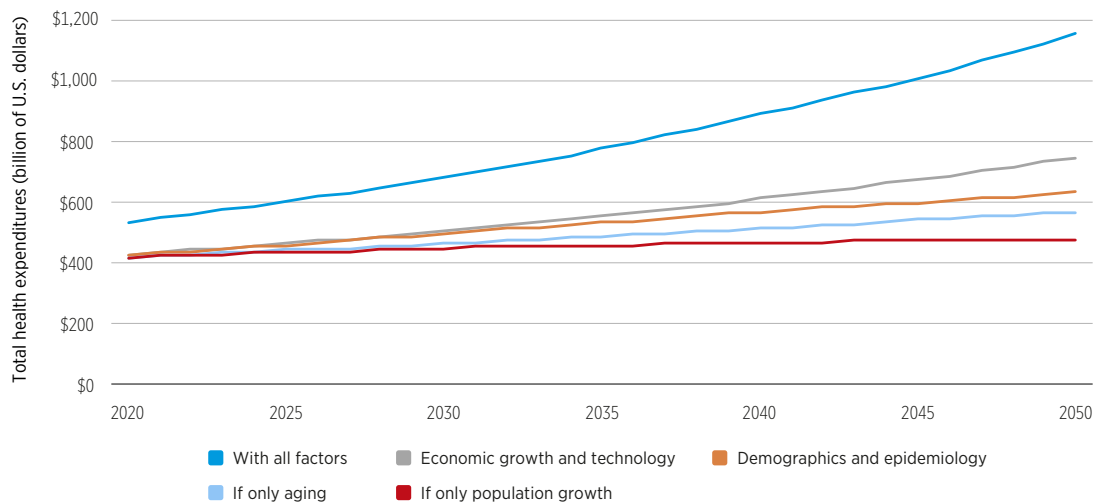
- Total health expenditures grew by about 4 percent in Mexico and 3.5 percent in Colombia, and fell by 5 percent in Chile.
- As a share of GDP, Chilean health spending rose slightly from about 9.2 to 9.3 percent, while Colombian spending rose from about 8 to 8.8 percent and Mexican spending rose from about 5.7 to 6.1 percent.
- Government and compulsory insurance spending rose in Colombia by about 5.1 percent and in Mexico by about 6 percent, and fell in Chile by about 2.5 percent.
- Voluntary insurance and out-of-pocket spending fell by almost 6 percent in Colombia and over 12 percent in Chile, but rose by about 1 percent in Mexico.
- Out-of-pocket spending per capita rose by more than total household consumption per capita in all three countries.

Countries will continue to face pressures to increase health spending in the near future. Even before the pandemic, health spending was expected to rise in response to population growth, aging, the increase in noncommunicable diseases, economic growth, and the use of new health technologies. A study com-



missioned by the IDB and conducted by a multi-country team led by Johns Hopkins University estimates that health spending per capita will grow between 2 and 3 percent annually over the next 30 years in Latin America and over 4 percent annually in the Caribbean (Rao et al., 2022). The major contributing factor to this expenditure growth is economic growth and technology, though population growth, aging, and the increasing prevalence of some chronic illnesses are also significant factors (Figure 13).<sup>20</sup> While the region's health spending in 2018 was about US\$400 billion, it is expected to almost triple to over US\$1.2 trillion in 2050.

**FIGURE 13 Expenditure over Time in Latin America and the Caribbean by Contributing Factor (in billions of U.S. dollars), 2018/2019–2050**



Source: Rao et al. (2022)

**Note:** Economic growth and technology refers to a range of factors that lead to higher health spending, but which are difficult to disentangle, including the discovery of new treatments and technologies, rising prices for inputs, increasing salaries for medical professionals, changes in productivity (lower or higher), and changes in financial intermediation (lower or higher). Demographics and epidemiology include the multiplicative effect of population growth, aging, and age-specific prevalence.

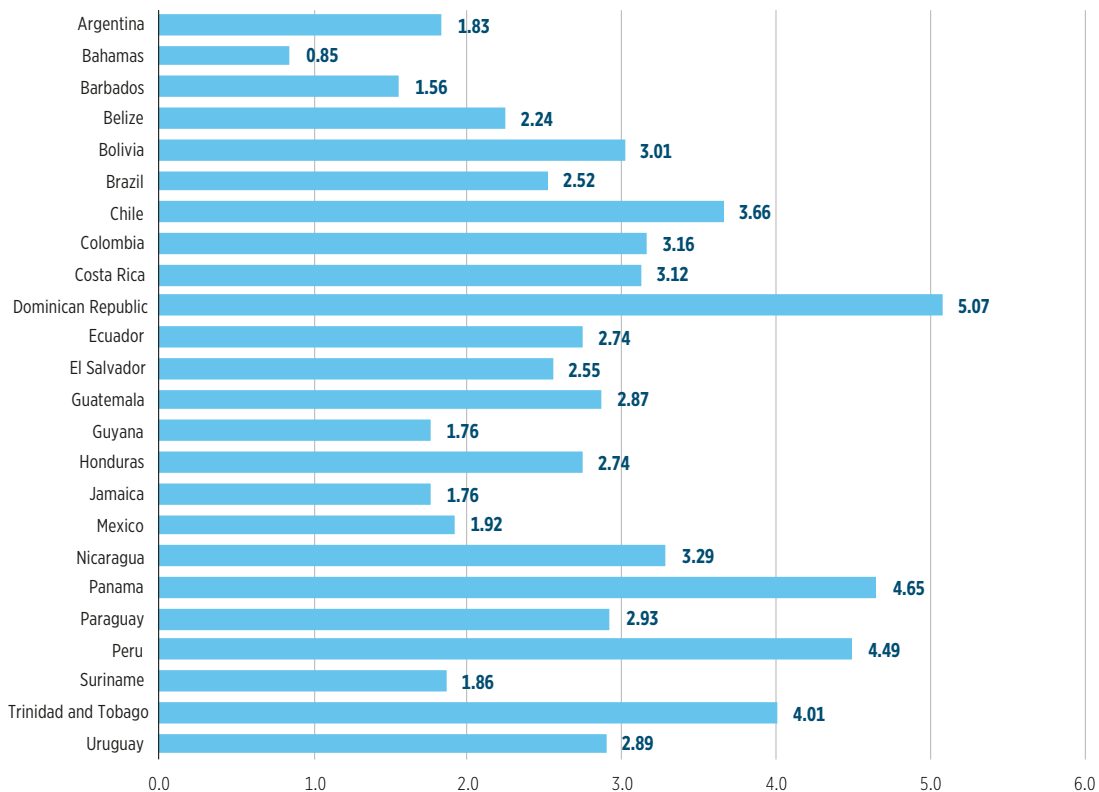
According to Rao et al. (2022), by 2030 health spending in the Dominican Republic, Panama, Peru, and Trinidad and Tobago is expected to grow on average by more than 4 percent annually (Figure 14). Argentina, the Bahamas, Barbados, Guyana, Jamaica and Mexico are projected to have more modest annual increases over the coming decade of less than 2 percent. These are baseline projections that can be used to consider the impact of different policies available to countries. For example, Rao et al. (2022) considers scenarios involving reductions in health risks, greater efficiency in service provision, and accelerated progress toward universal health coverage. Improvements in efficiency would have the

20. Rao et al. (2022) finds that economic growth and technology is the largest contributing factor to health spending growth in all of the region's countries except Mexico. The rising prevalence of disease – particularly diabetes – makes epidemiological trends the largest contributing factor in future health spending growth in that country.



greatest impact on reducing cost pressures, reducing health spending in 2050 by more than 10 percent in most countries relative to what it would be without greater efficiency. The savings are projected to be even higher – over 20 percent – in the Dominican Republic, Panama, Peru, and Trinidad and Tobago. Reducing the prevalence of hypertension would have the largest impact on reducing costs among the health risk reduction strategies in all countries except Brazil, where tobacco control would bring the largest gains. Still, these projections show that risk reduction mitigates spending pressures by a relatively small amount – less than 2 percent in most cases relative to expected levels of spending in 2050. Accelerating progress toward universal health coverage would have substantial effects on health expenditure in countries that are furthest from the goal – upwards of 20 percent – but would be more modest for countries closer to reaching universal health coverage.<sup>21</sup>

**FIGURE 14 Expected Annual Growth in Health Spending per capita in Latin American and Caribbean Countries, 2020 to 2030 (percent)**



Source: Rao et al. (2022).

21. The study by Rao and co-authors used the WHO index of universal health coverage (which ranges from 0 to 100) for this scenario and projected spending based on reaching an index of 90 by 2030. Note the WHO index is not the share of the population covered by healthcare services; rather it is an index number generated as the geometric mean of a subset of essential healthcare services for which data is generally available.



In addition to these trends, the pandemic has shown that countries may need to spend even more than previously estimated, for several reasons. First, countries will need to spend more (and more consistently) on public health functions such as epidemiological surveillance, emergency preparedness, vital registration, and research. While this was certainly well known within the health sector prior to the pandemic, its critical role in preserving the foundations for functioning economies and societies was not as widely recognized as it is today. Second, countries will most likely need to continue spending on COVID-19 because the virus continues to mutate, causing resurgences, while it seems unlikely that high population vaccination rates will be achieved on a global basis. These expenditures include healthcare services for treating COVID-19 patients along with vaccination deployment, boosters, testing, and contact tracing. Third, countries may find they have increased demand for healthcare services in the coming years due to the disruptions in prevention and management of chronic care during 2020 and due to a cohort of patients with new conditions (i.e., long COVID).

In this challenging context, two strategies stand out: health taxes and healthcare efficiency. Health taxes generate a triple win for countries – reducing consumption of harmful products such as tobacco, sugars, alcohol, and fossil fuels; raising revenue for public spending; and improving equity (IDB 2021a; Wright, Smith, and Hellowell 2017). Nevertheless, opposition to such taxes by commercial interests makes it difficult to raise them to adequate levels. Finding ways to increase the efficiency of health spending and get more health for the money spent is always an option, although that can also be challenging. The strategies to improve efficiency are quite well known but are often abandoned when they threaten financial interests of those who would rather preserve the status quo. These strategies include eliminating waste, reducing fragmentation, adopting health technology assessment, reforming payment systems, integrating care, and effectively incorporating digital technologies (OECD 2017; Simoens and De Coster 2006; WHO 2012; Rodriguez and Fores, forthcoming). Without improvements in efficiency, maintaining and improving the health of the population will require annual growth rates for years to come of more than 3 percent in health spending in most countries – typically above the rate of GDP growth. Without such spending increases or significant improvements in efficiency, the risks to individual and population health will continue to rise.



# 4 Limitations

There were several limitations to this study. Not many studies have been conducted in Latin America and the Caribbean, and of the ones identified, few had empirical data on healthcare utilization and health outcomes for specific conditions (e.g., chronic conditions, mental health). Because some studies were not nationally representative and did not have reliable sampling strategies, findings are not necessarily generalizable. In future studies, when more research has been completed, it will be important to conduct a systematic review and meta-analysis to assess bias and produce more reliable and accurate conclusions.

The analysis of administrative data on hospital discharges and vital registration data on the cause of deaths also has limitations. In Brazil and El Salvador, the data only included public hospital networks, which makes it impossible to analyze healthcare services received by individuals with private insurance and creates potential bias if the pandemic led people to change care-seeking behavior – either by moving from private to public care or vice versa. In addition, the data collection and processing methodologies are heterogeneous across countries, meaning that further attention to how the administrative data have been produced in each country is needed, particularly when collected for research. The reliability of the data was also affected by values that appeared to be invalid or by unexplainable outliers (e.g., individuals hospitalized more than 365 days were omitted), as well as by missing information.

Although the analysis suggests that hospital discharges and mortality rates changed significantly in 2020 relative to the historical average, causation cannot be inferred from these data alone. It was only possible to control for a few simple characteristics (seasonality, time, municipality time-invariant characteristics), while many factors could contribute to the discontinuity between 2020 and previous years. Nevertheless, many of the changes identified were so large and so clearly coincident with the pandemic that the spread of COVID-19 does appear to be the most likely explanation for the change. A further limitation is that the analysis only considered the primary diagnostic ICD-10 codes, which could lead to underestimation of hospital discharges and fatality rates by conditions among individuals with comorbidity or multimorbidity. Finally, the study did not directly address the time dimension of the crisis. By looking at the effects over the course of an entire year, the analysis may have underestimated some of the strongest effects if they were concentrated in a period of weeks or months. Of course, *ex ante*, it was not possible to know what the proper lag structure would be for the impact of the pandemic (i.e., COVID-19 caseload) or government measures (i.e., stringency measures).



# 5 Discussion

This study and others have documented substantial declines in healthcare utilization in Latin America and the Caribbean during the first year of the COVID-19 pandemic. A prominent explanation for these declines is that the pandemic stretched healthcare systems beyond their limits, forcing them to reallocate significant resources to the surges in COVID-19 patients and to cope with the associated interruptions in the delivery of supplies and equipment, stresses and death among healthcare professionals, and disruptions to social and economic life. However, declines in utilization do not always indicate a problem in the supply of healthcare provision. In some countries or for particular conditions, healthcare services may have been available but were left unused because of changes in healthcare-seeking behavior. These demand-side changes, in turn, can reflect avoidance of healthcare facilities for fear of contagion or barriers to access created by public policies such as closing public transportation or imposing stay-at-home decrees. In addition to supply and demand factors, utilization can also fall when healthcare needs decline. Thus, if there are fewer accidents, emergency rooms will record fewer consultations and surgeries for external injuries. In general, supply and demand factors seem to be the most plausible explanation for the declines in healthcare service utilization in 2020, with the exception of a few particular healthcare needs associated with conditions such as traffic accidents and non-COVID-19 respiratory illness.

The declines in utilization documented here and in other studies were particularly sharp at the beginning of the pandemic, with the largest declines in services that were considered less critical, easier to postpone, or riskier in terms of further transmitting COVID-19. Thus, the largest declines were observed for services such as cancer screening and routine immunization. Pregnant women received antenatal care, but often made fewer visits and – where possible – relied more on remote communication. Professional birth attendance in facilities appears to have been sustained. Oncological treatments fell, but the decline was more pronounced for people with benign neoplasms than for those with malignant ones. Management of chronic conditions such as hypertension and diabetes appear to have been disrupted during the pandemic, as indicated by both direct and indirect evidence. In particular, hospitalizations for these conditions fell at the same time that intra-hospital mortality increased. The most plausible explanation is that people with severe conditions who, in previous years, would have been hospitalized, chose instead not to seek care. Hospitalizations for mental health conditions also declined, and much psychiatric care was shifted to remote consultations by telephone or via the Internet – though the extent to which remote consultations were able to substitute for in-person care is not known.

As noted earlier, declines in utilization are not always a negative sign. Hospitalizations and consultations for respiratory illnesses, in particular, appear to have declined during 2020 due to lower prevalence rather than supply or demand factors. This inference comes largely from noticing that fewer cases of seasonal flu occurred, as indicated by lower (or no) peaks in the number of reported cases of respiratory illness



in contrast to historical averages. Less pollution may also have contributed to the development of fewer acute conditions from asthma and other lung-related disorders.

The health of the population overall clearly deteriorated during the pandemic for both direct and indirect reasons. During 2020, there were at least 834,761 more deaths than would have been expected in a normal year – of which about 70 percent have been directly attributable to COVID-19. Mortality from COVID-19 was higher among men, people over 65 years of age, and those from disadvantaged social circumstances or ethnic groups. Increased mortality has reduced estimated life expectancy at birth by as much as three years in some countries, and it is unclear if, as in previous pandemics, life expectancy will rebound or remain lower.

Indirect effects of the pandemic on the health of the population have been mixed. People with chronic health conditions may have been the most affected by disruptions in healthcare services. Mental health clearly worsened. The impact of long COVID on those who survive severe cases is still unknown. The one positive impact of the pandemic on health may have been a reduction in respiratory illnesses other than COVID-19. Fewer hospitalizations and deaths from upper and lower respiratory illnesses among both adults and children can be plausibly attributed to the general policies of social distancing, masking, and hygiene that were put in place to reduce COVID-19 transmission.

Some of the decrease in healthcare utilization and the worsening of the health of the population can be attributed to too little investment in primary healthcare and prevention. For example, in the Dominican Republic, only 2.6 percent of health sector funds are allocated to preventive care (Rathe 2020). Several studies have documented an association between systems that emphasize preventive care with lower overall mortality and infant mortality, fewer avoidable hospitalizations, longer life expectancy, and fewer inequalities (IDB 2021a). Indeed, COVID-19 has shown that strong primary care is key to ensuring the timely and continuous management of chronic conditions, infectious diseases, sexual and reproductive health, and immunization efforts. In addition, primary care can fulfill an important role during health emergencies such as epidemics, including for testing and tracing, patient monitoring, and vaccination, among other services. This is why PAHO recommends that countries invest 30 percent of their health budget in primary care (PAHO 2021).

COVID-19 has caused important setbacks in the provision of essential health services. Although in most countries service provision rose again during 2021, it still has not reached pre-pandemic levels in many cases. Even in countries where healthcare services have been fully reactivated, the decline in utilization for preventive services, screening, and treatments during 2020 generated a backlog. The expected increase in undetected cancers due to a backlog in screening, for instance, could lead to an increase in the use of expensive drugs and treatments. Similarly, the coronavirus has contributed to an increase in the prevalence of other illnesses, such as mental health and long COVID. Furthermore, the pandemic is still with us, requiring continued or increased efforts related to testing and tracing, surveillance, vaccination, and treatment. Overall, as Latin America and the Caribbean moves forward, its healthcare systems will have to cope with greater demand in terms of both “old” and “new” population needs that will have to be addressed simultaneously.



# 6 Policies for Going Beyond Normal

When the pandemic began, many people paraphrased the title of Gabriel Garcia Marquez's novel, *Love in the Time of Cholera*, to refer to different aspects of life under these trying circumstances. However, it might be more appropriate to reference *100 Years of Solitude*. Though the author was not describing a century of social distancing to control a global pandemic, COVID-19 is beginning to look less like a defined crisis and more like an undefined, evolving, and continuing threat – one that may very well be with us for 100 years. Facing that prospect can lead to despondency or to action. By learning how the region has responded thus far to the pandemic and keeping in mind the long-standing problems of the old normal, a case can be made for action on both urgent reforms and new priorities – that is, a case to go beyond normal. But what will that look like? Based on the findings in this study and the broader literature on health systems, a number of pathways stand out.

The countries that responded best to the initial outbreak of COVID-19 were those that had built more robust and equitable healthcare systems, and which had learned from previous epidemics to prepare for future health emergencies. In this regard, there are several lessons from this analysis.

First, countries need to *invest in health*. Before the pandemic, health was recognized as important because of its contributions to individual and social wellbeing, individual productivity and economic growth, and higher returns on other human capital investments such as education (IDB 2021a, 1). However, the pandemic has shown in the most dramatic way possible that health is absolutely primary. Without continuing investment in detection and control of infectious diseases, new outbreaks will continue to threaten everyone's health, regardless of wealth or healthcare access. And without investing in health, economic and social activities will face periodic disruptions on massive scales. In the old normal, countries invested insufficiently in public health and preparedness, and many countries invested too little in making healthcare service access equitable and effective.

Second, investments will have to be made specifically in *emergency preparedness*. Despite the current context of fiscal restrictions, countries must prioritize investments that make them increasingly resilient to and capable of facing emergencies and natural disasters. Such an effort must include:

- Making long-term investments in R&D and, to the extent possible, local manufacturing capacity to develop and produce essential medical goods in a more agile manner, including diagnostic methods and vaccines
- Investing in surveillance, early warning systems, and laboratory networks to detect and monitor infectious diseases and new biological threats





- Improving logistics and domestic supply chains to ensure resilience in the face of unexpected events, including (i) improving data-driven “real-time” processes, (ii) improving procedural redundancies, (iii) increasing inventory, suppliers, and storage capacity, and (iv) collaborating between private and public stakeholders
- Introducing or strengthening regulations for infection control
- Strengthening public health, including investments in health information systems and human resources
- Establishing effective mechanisms for planning and coordinating operations, as the pandemic has shown that leadership, enforcement, coordination, and communications with the public are perhaps the most important aspects of emergency preparedness and should not be overlooked by governments.

Third, as a complement to emergency preparedness, the region’s countries need to *face the long-term challenge of making faster progress towards universal health coverage*. Such an initiative is also important in its own right. The region has an unfinished agenda in terms of assuring access to better-quality, more cost-effective, and more equitable health services for the population. The policies to achieve this are known, but in many places and at many times they have been neglected or implemented poorly. Such policies include:

- *Strengthening primary care*. Although primary care has been a priority for Latin American and Caribbean countries, in practice most health budgets remain focused on curative care, and most resources are directed to hospitals.
- *Promoting integrated healthcare networks*. Strong primary healthcare requires that all healthcare services be organized in networks so that patients can get continuous and coordinated access to appropriate levels of care. Such networks need strong information systems, fluid communication among healthcare teams, and a management model that is responsive to health impact.
- *Improving the quality of care* by closing gaps in health infrastructure, medical equipment, and inputs, investing in human resources, and implementing strategies focused on enhancing health processes. These strategies include (i) optimizing clinical and administrative processes and emphasizing transparency and accountability, and (ii) continuously monitoring and evaluating quality, linked to the accreditation of services as well as the development of career plans for human resources.
- *Investing in human resources*. Healthcare workers are the most valuable part of healthcare systems, and they cannot be effective without appropriate training, attention to their working conditions, and care for their physical and mental health. This kind of support requires continuous investment in people, including (i) offering attractive career paths and salaries, (ii) modernizing curriculums, (iii) improving working conditions, (iv) providing adequate tools and supplies to help workers carry out their functions, and (v) implementing professional certification and recertification programs to ensure that people learn and upgrade their skills.

Fourth, implementing these well-established and necessary improvements in the healthcare system has an added dimension that is clearly demonstrated by the pandemic and the evidence presented above: healthcare services need to be able to *continue providing essential health services even during health emergencies*. This requires investments in preparedness beyond responding to a new pandemic.



It requires plans to address allocation decisions during an emergency regarding physical, human, and financial resources. For example, healthcare facilities need emergency plans to safely provide care during epidemics and guidance on how to implement alternative approaches to healthcare, such as telemedicine or in-home delivery of medications. But maintaining healthcare supply is not enough. Engagement with people in the community is necessary to assure that people will continue to seek necessary healthcare. This involves maintaining public confidence in public health authorities, conducting extensive public outreach (accessible to diverse groups), and providing guidance on when and where to seek care safely (Czeisler et al. 2020).

Fifth, countries have to *increase the efficiency of public health spending*. There are several policies that have been shown to be effective in this regard, including:

- Increasing attention to preventive healthcare policies and services, which can slow or reverse the growing incidence of certain noncommunicable diseases such as diabetes, in turn avoiding costly hospitalizations that become necessary when such illnesses progress and become acute conditions. Preventive interventions should ideally take place at the primary level of care instead of in hospitals.
- Integrating healthcare networks to ensure not only early detection but also appropriate and timely management and treatment of chronic conditions and other illnesses.
- Improving the quality of care and reducing medical errors and the provision of unnecessary interventions (e.g., oversupply of consultations, diagnostic exams, and other procedures).
- Allocating resources to more cost-effective treatments and medicines, which can free up resources to assure better access, quality, and equity. For instance, in Latin America and the Caribbean, health systems often finance expensive cancer medicines with uncertain levels of effectiveness, or with benefits that are uncertain or not necessarily worth the risk they entail.<sup>22</sup> Meanwhile, gaps persist in the coverage of extremely cost-effective interventions, such as PAP smears and mammograms.
- Implementing strategies to achieve more efficient and affordable prices for pharmaceuticals, such as promoting unbranded generics, centralized purchasing, and price regulation of medicines.
- Implementing new provider payment methods such as strategic purchasing, a powerful tool to encourage the provision of certain services (e.g., preventive and cost-effective services), as well as promoting the adoption by health teams of good practices such as adherence to clinical standards or responsible prescription of medicines.
- Reducing fragmentation in health financing, increasing risk pooling, and improving overall financial management.

A sixth important lesson is that the *digital transformation of the health sector is vital*. The potential of digital technologies has become evident during the pandemic in many ways, including to strengthen epidemiological surveillance, facilitate access to and use of services (e.g., telemedicine), facilitate com-

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22. For example, in 2002 the organization Prescrire identified 112 drugs that it described as “more dangerous than useful.”



munication, and provide data for decision-making in real time. Countries need to do much more to invest in the digital transformation of health by developing, implementing and/or strengthening the following:

- Governance, regulation, and standardization of healthcare technology to address such issues as privacy, cybersecurity, interoperability, and responsiveness to patients
- Electronic health records to facilitate information-sharing among healthcare providers, which in turn can improve the quality of care, reduce medical errors, and reduce the duplication of tests and exams
- Telemedicine services to improve access to and use of quality healthcare
- Artificial intelligence to support decision-making at the point of care and reduce medical errors
- New apps and other digital solutions to complement conventional public health initiatives such as contact tracing and encourage healthy behaviors
- Electronic prescription to improve the quality of the prescription of medicines and help promote adherence to treatment.

Seventh, *many health problems that were considered “normal” before the pandemic have now been shown to actually be avoidable*, and therefore represent unnecessary suffering and death. For example, reduced transportation led to fewer traffic accidents, and reduced economic activity showed just how much pollution – and associated ill health – is caused by the use of fossil fuels, incomplete combustion, and inadequate pollution controls. Furthermore, in the old normal, death and suffering from seasonal flu was rarely noted to be a crisis deserving of significant public policy action. But the interventions to slow or control the transmission of COVID-19 seem to have also resulted in a substantial reduction of respiratory conditions and infections. Because seasonal flu is typically much less infectious than COVID-19, smart policies may be able to interrupt transmission without causing substantial economic or social disruption. For example, it may be possible that more extensive vaccination and utilization of masks, testing, and contact tracing could substantially reduce the health burden of respiratory illness without requiring more disruptive measures such as lockdowns or school closings. In other words, going beyond normal in this case means looking at the burden of illness before the pandemic and discarding conventional notions about what is or is not acceptable, unavoidable, or inevitable.

Finally, the eighth lesson is that international cooperation and solidarity are more important than ever, and that Latin American and Caribbean countries must *revive and strengthen regional integration*. COVID-19 showed once again that infectious diseases do not respect borders and that countries must define joint action frameworks to tackle the challenges imposed by such crises. For instance, access to COVID-19 vaccines has been extremely unequal and has affected countries’ abilities to control the pandemic. A series of factors are behind this problem, including production constraints, difficulties in providing manufacturers sufficient liability protections, and purchases by high-income countries that reserved production capacity. As the region prepares for the future, it might want to consider strategies to negotiate technology transfer agreements and improve local or regional manufacturing capability.

In this context, there are many areas where countries can work together to strengthen their response to future public health threats, such as increasing investments in R&D and technology transfers, increasing



regional capacity for the production of vaccines and other essential health technologies, strengthening logistics associated with the storage and distribution of inputs for production, aggregating purchasing, homogenizing regulation, and revisiting and/or reinforcing trade agreements. To this end, countries must work with a medium- to long-term vision to strengthen their own capacity, coordinate and cooperate in policy matters, and generate synergies among key players, including the private sector.

Latin America and the Caribbean has a long history of regional “firsts.” For example, it was the first region in the world to eliminate smallpox, and it the first to have an inter-governmental compact against corruption, negotiated by the Organization of American States. In this context, the countries of the region can – and should – work together to make progress on universal health coverage, improve the region’s health, and prepare for the next global emergency.



# Appendices

## Appendix 1

### Description of Groups of Selected Conditions for Analysis

TABLE A1.1. ICD-10 Codes of Selected Conditions

Condition	ICD-10 codes
COVID-19	B342, B972, U071, U049 in Brazil U071, U072 in Chile U071, U072 in Mexico
Deliveries	080-084
<b>Neoplasms</b>	
Malignant	C00-C97
Benign	D10-D36
<b>Chronic conditions</b>	
Diabetes mellitus	E10-E14
Hypertensive diseases	I10-I15
Ischemic heart diseases	I20-I25
Mental and behavioral disorders	F00-F99
Respiratory conditions	J00-J99

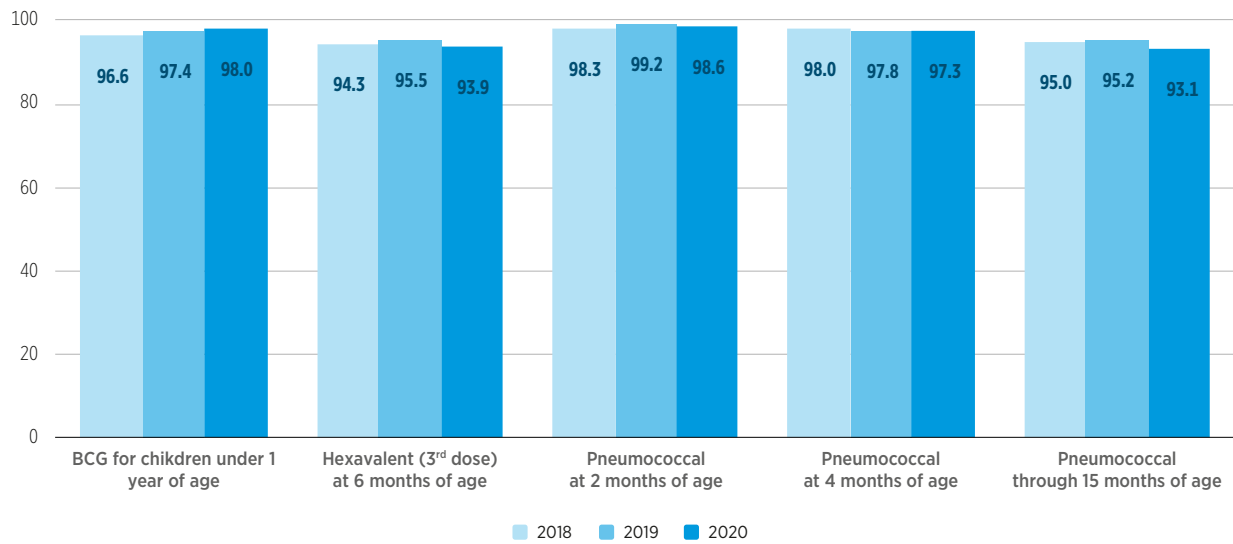
Source: WHO (2019).



## Appendix 2

### Non-COVID Healthcare Services

FIGURE A 2.1. Vaccine Coverage in Chile, 2018–2019



Source: Department of Statistics and Health Information, Chile. Available at: <https://deis.minsal.cl>.



**TABLE A 2.1. Change in Hospitalization Rates per 10,000 People Due to the COVID-19 Pandemic by Condition, Selected Countries, 2020 vs. 2015–2019**

	Brazil			Chile			El Salvador			Mexico		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID	
	Coefficient	Percent		Coefficient	Percent		Coefficient	Percent		Coefficient	Percent	
<b>Total</b>	52.61	-11.59*** (0.187)	-22.03%***	70.6	-20.95*** (0.694)	-29.68%***	55.0	-22.13*** (0.820)	-40.26%***	19.48	-6.33*** (0.182)	-32.5%***
<b>Deliveries</b>	5.63	-0.03 (0.034)	-0.53%	6.16	0.02 (0.112)	0.40%	7.8	0.12 (0.170)	1.54%	3.72	-0.51*** (0.050)	-13.58%***
<b>Neoplasms</b>	3.36	-0.91*** (0.034)	-27.06%***	4.28	-1.71*** (0.151)	-39.94%***	1.7	-0.67*** (0.110)	-39.93%***	1.46	-0.52*** (0.085)	-35.3%***
Malignant neoplasms	2.69	-0.51*** (0.031)	-18.96%***	3.15	-1.05*** (0.135)	-33.39%***	1.3	-0.43*** (0.100)	-33.29%***	1.18	-0.33*** (0.084)	-27.83%***
Benign neoplasms	0.61	-0.38*** (0.014)	-61.99%***	1.04	-0.62*** (0.039)	-59.28%***	0.39	-0.24*** (0.050)	-62.19%***	0.27	-0.18*** (0.012)	-67.8%***
<b>Chronic conditions</b>	2.43	-0.32*** (0.026)	-13.17%***	2.33	-0.51*** (0.092)	-22.04%***	2.5	-1.13*** (0.150)	-45.98%***	0.64	-0.28*** (0.021)	-43.58%***
Diabetes mellitus	0.75	-0.08*** (0.013)	-10.66%***	1.05	-0.06 (0.065)	-6.06%	1.4	-0.57*** (0.090)	-39.52%***	0.44	-0.18*** (0.016)	-40.78%***
Hypertensive diseases	0.52	-0.07*** (0.011)	-13.37%***	0.23	-0.10*** (0.030)	-43.83%***	0.78	-0.45*** (0.090)	-57.88%***	0.11	-0.05*** (0.011)	-40.25%***
Ischemic heart diseases	1.16	-0.17*** (0.018)	-14.71%***	1.05	-0.35*** (0.056)	-33.21%***	0.24	-0.11*** (0.030)	-46.28%***	0.08	-0.05*** (0.008)	-62.56%***
<b>Mental and behavioral disorders</b>	1.44	-0.27*** (0.022)	-18.75%***	1.51	-0.42*** (0.072)	-27.67%***	0.83	-0.44*** (0.060)	-53.19%***	0.16	-0.09*** (0.011)	-57.79%***
<b>Respiratory conditions</b>	6.60	-3.29*** (0.058)	-49.9%	7.69	-4.96*** (0.183)	-64.5%***	5.09	-4.32*** (0.190)	-84.84%***	0.78	-0.22*** (0.030)	-28.08%***
<b>N</b>		401,040			24,912			18,864			176,520	

Source: Authors' estimates based on administrative data.

Note: Mexico and El Salvador only include Ministry of Health hospitals. Brazilian data include all public hospitals. Chilean data are from both public and private hospitals. The results reported are derived from the regression model specified in the methodology and the coefficients represent the average change from March–December 2020 relative to 2015–2019 after controlling for month, year, and municipality of residence fixed effects. The percentage represents the coefficient over the historical 2015–2019 average. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.



**TABLE A 2.2. Changes in Healthcare Utilization, Selected Countries, 2020 vs. 2015–2019**

	2015–2019	2020	Δ %
<b>Brazil</b>			
Health promotion and prevention actions	466,720,939	196,931,616	-57.8
Diagnostic procedures	921,988,909	785,339,586	-14.8
Clinical procedures	1,480,863,843	981,036,408	-33.8
Surgical procedures	64,662,474	23,833,428	-63.1
Organ, tissue, and cell transplants	1,728,223	1,363,618	-21.1
Medicines	926,164,500	1,122,546,380	21.2
Orthotics, prostheses, and special materials	6,615,602	7,563,730	14.3
Complementary actions of healthcare	30,651,821	27,654,275	-9.8
<b>Chile</b>			
Control of sexual and reproductive health	2,177,456	1,147,279	-47.3
Medical consultations for gynecology and obstetrics	65,038	27,917	-57.1
Admissions and pregnant women to the prenatal program	172,022	120,957	-29.7
Deliveries attended	152,563	106,760	-30.0
Specialty consultations	9,060,187	4,920,822	-45.7
Cardiovascular program health checks	5,210,073	2,123,895	-59.2
Mental healthcare	3,676,563	1,849,442	-49.7
Mental health program care	4,006,033	2,143,540	-46.5
<b>Dominican Republic</b>			
Emergencies attended	5,027,674	3,585,909	-28.7
External inquiries	7,497,003	3,371,282	-55.0
Surgeries	275,250	218,676	-20.6
<b>El Salvador</b>			
Preventive care	2,776,949	1,611,359	-42.0
Breast cancer screenings	205,959	123,016	-40.3
Cancer screenings (excluding breast cancer)	253,650	129,720	-48.9
Prenatal care check-ups	70,206	58,162	-17.2
Infant preventive care	73,131	65,377	-10.6
<b>Mexico</b>			
Preventive healthcare measures	250,553,626	128,935,823	-48.5
Cervical cancer detection	2,625,019	1,097,982	-58.2
Breast cancer detection	6,252,016	3,392,911	-46.4
Diabetes detection	13,481,110	7,269,540	-46.1
AIDS detection	106,689	79,256	-25.7
Arterial hypertension detection	12,364,503	6,529,636	-47.2
<b>Peru</b>			
Prenatal care by a health professional (%)	97.7	98.1	0.4
Institutional delivery (%)	92.1	94.3	2.4
Delivery care in a health facility (%)	92.4	94.6	2.4
Delivery care by a health professional (%)	93.1	95.7	2.8
Cesarean births (%)	33.3	36.3	9.0
Use of any contraceptive methods (%)	75.7	77.4	2.3
Modern	54.5	55.0	0.9
Traditional	21.1	22.3	5.5
<b>Uruguay</b>			
Polyclinical consultations	14,588,175	8,810,476	-39.6

Source: Administrative records from DATASUS in Brazil, Department of Health Statistics and Information (DEIS) in Chile, National Statistics Office (ONE) in Dominican Republic, National Integrated Health System (SINADIS) in Uruguay, and the Online Morbidity and Mortality System (SIMMOW) from the Ministry of Health in El Salvador. Survey data in Peru are from the Demographic and Family Health Survey (DHS).





**TABLE A 2.3. Change in Hospitalization Rates per 10,000 People and Intra-hospital Mortality for Chronic Conditions (Diabetes, Hypertension and Ischemic Heart Disease) Due to the COVID-19 Pandemic by Condition, Selected Countries, 2020 vs. 2015–2019**

	Brazil			Chile			El Salvador			Mexico		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID	
	Coefficient	Percent		Coefficient	Percent		Coefficient	Percent		Coefficient	Percent	
<b>Hospitalization rates</b> <i>per 10,000 population</i>	2.43	-0.32*** (0.026)	-13.17%***	2.33	-0.51*** (0.092)	-22.04%***	2.5	-1.13*** (0.150)	-45.98%***	0.64	-0.28*** (0.021)	-43.58%***
N	401,040			24,912			18,864			176,520		
<b>Intra-hospital mortality</b> <i>per 10,000 hospitalizations</i>	502.00	59.37** (18.975)	11.83%**	285.7	36.85 (41.101)	12.9%	831.90	241.20** (106.980)	28.99%**	682.1	215.67*** (48.871)	31.62%***
N	305,338			21,358			14,729			84,812		

Source: Authors' estimates based on administrative data.

Note: Mexico and El Salvador only include Ministry of Health hospitals. Brazilian data include all public hospitals. Chilean data are from both public and private hospitals. The results reported are derived from the regression model specified in the methodology and the coefficients represent the average change from March–December 2020 relative to 2015–2019 after controlling for month, year, and municipality of residence fixed effects. The percentage represents the coefficient over the historical 2015–2019 average. The number of observations differs between estimates because intra-hospital mortality is defined only for municipalities where hospitalizations for chronic conditions occurred. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.



## Appendix 3

### Health of the Population

TABLE A 3.1. Excess Deaths during 2020 in 17 Latin America and the Caribbean Countries

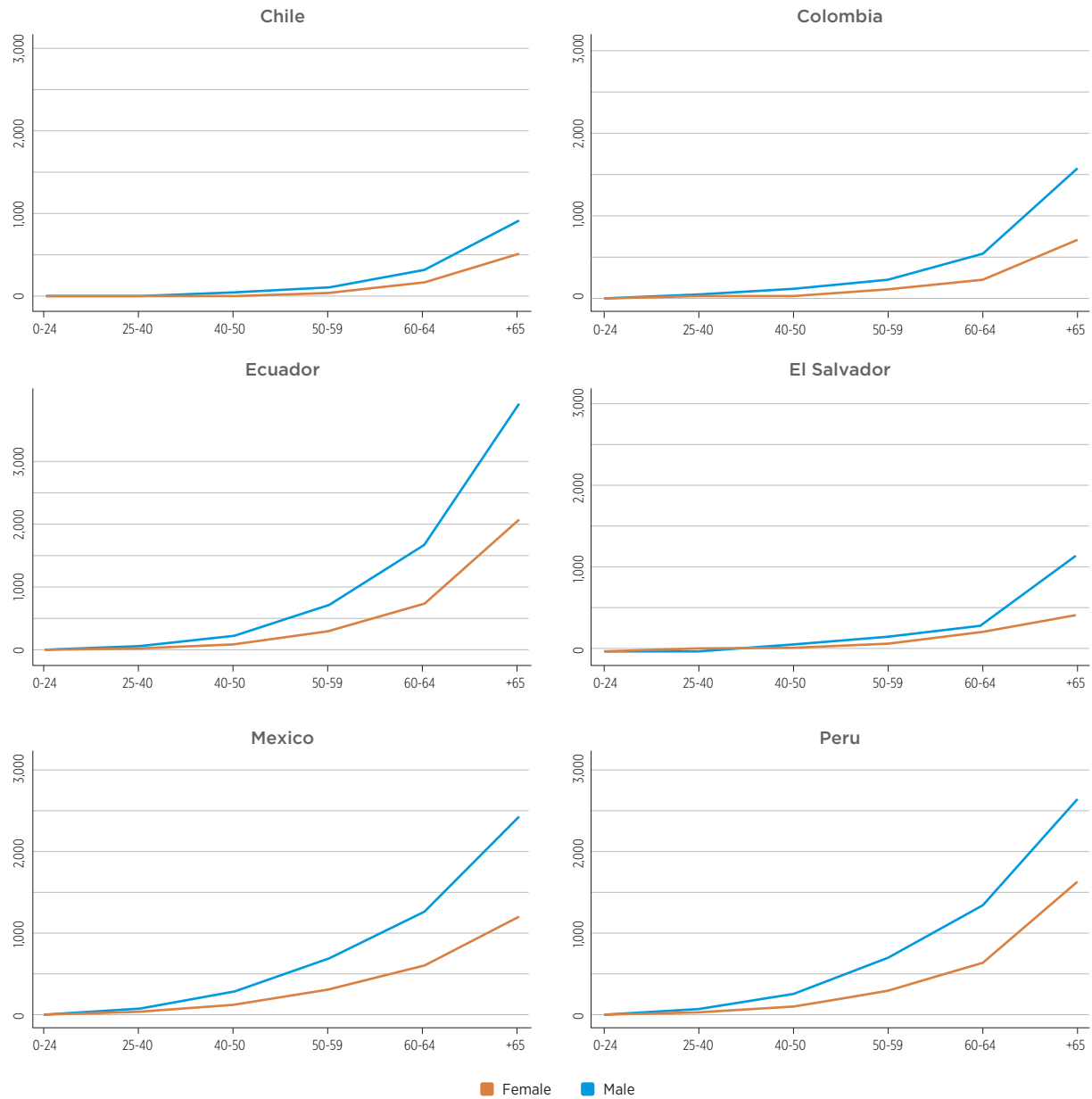
Country	Total Deaths	Excess Deaths	Per 100,000 People
Latin America and the Caribbean	4,169,058	834,761	144
Mexico	1,076,984	315,315	242
Brazil	1,581,645	210,147	98
Peru	214,527	86,911	261
Colombia	304,218	54,177	106
Argentina	378,995	49,570	109
Ecuador	116,795	40,218	225
Bolivia	75,306	23,482	198
Chile	127,455	14,315	75
Guatemala	97,384	14,255	78
El Salvador	33,852	8,667	133
Nicaragua	23,581	7,001	104
Panama	23,876	4,977	114
Paraguay	36,672	3,351	46
Costa Rica	26,209	1,665	32
Jamaica	16,763	338	11
Belize	2,158	205	51
Uruguay	32,638	167	5

Source: The Economist's tracker for COVID-19 excess deaths, available at <https://github.com/TheEconomist/covid-19-excess-deaths-tracker>.

Note: Data for El Salvador and Nicaragua until August 2020, and for Jamaica until November 2020.



**FIGURE A 3.1. Excess Deaths per 100,000 People by Age and Sex in Selected Countries, 2020**



Source: Ibañez and Schady (Forthcoming).



**TABLE A 3.2. Change in Death Rates per 10,000 People Due to the COVID-19 Pandemic by Condition, Selected Countries, 2020 vs. 2015–2019**

	Brazil			Chile			El Salvador		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID		Average 2015–2019	Change Post-COVID	
	Coefficient	Percent		Coefficient	Percent		Coefficient	Percent	
<b>Total</b>	5.44	0.37*** (0.033)	6.8%***	5.08	0.37*** (0.098)	7.26%***	5.37	-0.08 (0.210)	-1.49%
Malignant neoplasms	0.86	-0.05*** (0.013)	-5.84%***	1.24	-0.12** (0.050)	-9.44%**	0.36	-0.09* (0.050)	-24.78%*
<b>Chronic conditions</b>	1.03	0.05*** (0.013)	4.86%***	0.85	0.05 (0.036)	6.06%	0.69	0.22*** (0.070)	32.11%***
Diabetes mellitus	0.29	0.04*** (0.007)	13.85%***	0.19	0.03** (0.013)	13.94%**	0.19	0.03 (0.040)	15.47%
Hypertensive diseases	0.25	0.03*** (0.006)	11.77%***	0.29	0.03 (0.020)	10.65%	0.16	0.08** (0.040)	50.62%**
Ischemic heart diseases	0.48	-0.02* (0.010)	-4.13%*	0.38	-0.01 (0.026)	-1.42%	0.33	0.11** (0.050)	33.01%**
<b>Mental and behavioral disorders</b>	0.06	0.01 (0.004)	17.08%	0.09	-0.00 (0.011)	-3.7%	0.12	-0.03 (0.020)	-24.18%
<b>Respiratory conditions</b>	0.66	-0.18*** (0.011)	-27.46%***	0.55	-0.20*** (0.026)	-36.03%***	0.45	-0.24*** (0.050)	-53.85%***
<b>N</b>		401,040			24,768			18,864	

Source: Prepared by the authors based on administrative data on death certificates in all countries.

Note: Percentage change comes from a model of monthly municipal death rates from 2015 to 2020 based on a dummy from March-December 2020 controlling for the month, year, and municipal effects. The percentage change is obtained by dividing the coefficient on the pre-COVID-19 average municipality death rate. Standard errors are clustered at the municipality level. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.



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