Health at a Glance: Latin America and the Caribbean 2023

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Health at a Glance: Latin America and the Caribbean 2023

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Foreword

In the wake of the COVID-19 pandemic, societies and health systems in Latin America and the Caribbean (LAC) continue to face large-scale threats with far-reaching consequences for the health and well-being of its population. More than ever, health systems in the region need to be strengthened to not only deliver high performance in typical times, but also to be resilient against major shocks, such as pandemics, the effects of climate change, or financial crises.

While the pandemic laid bare the vulnerabilities of even the most highly funded and well-prepared health systems in high-income OECD countries, the tragic health outcomes of COVID-19 in the LAC region were in large part associated with structural limitations and chronic underinvestment in health. LAC countries had to tackle COVID-19 with far fewer doctors, nurses, and hospital beds than the average of OECD countries.

In such context, while policy responses mitigated the loss of many lives in the region, in 2020 and 2021 there were still 2.3 million more deaths in LAC than was expected for those years in absence of the pandemic. Furthermore, the weaknesses of the health systems in LAC were further compounded by a range of social challenges, including high levels of poverty, income inequality, and labour informality; large swaths of the population living in informal settlements without access to essential services; and the growing threats to the region's rich ecosystems that also affect the populations that are most directly integrated with them.

The consequences of climate change add a layer of complexity to health systems in a geographically diverse region, which includes high-altitude mountains and glaciers, the world's largest tropical rainforest, several small island nations, and megalopolises with tens of millions of people each. Health systems in the region must prepare for changing patterns of infectious diseases, exposure to extreme temperatures and catastrophic weather events, and rising sea levels, or risk dire consequences for societies in the region.

In the face of these multiple challenges, it is imperative to develop effective health strategies that consider the complex realities of the LAC region. The limited budget available for health in the region makes the task of providing high-quality health services more challenging, requiring innovative solutions that are based on data, evidence, and the best ideas. However, the investments that were needed to strengthen health systems are a fraction of what the pandemic cost the economies of LAC countries. Similarly, making health systems in the region greener and resilient to face the challenges of climate change is urgent. As we move forward, more and better investment in health will be necessary in order to ensure that the health requirements of the population are met with greater efficiency and focused on people's needs.

This volume, jointly prepared by the OECD and the World Bank, aims to offer an important contribution to these efforts by combining a retrospective analysis of lessons to be learned from the response to the pandemic in the region with a prospective look at how health systems can prepare for the future challenge of climate change. It further brings together the most complete and up-to-date set of data and indicators on all aspects of health systems in the LAC region. The OECD and the World Bank will continue to work together and reach out to key partners, such as the Pan-American Health Organization, to support governments and societies in the region to improve the performance of their health systems.

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Reader's guide

Health at a Glance: Latin America and the Caribbean 2023 is a joint publication by the OECD and the World Bank. This report was co-ordinated by Frederico Guanais, from the OECD Health Division, and Cristian A. Herrera and Edit V. Velenyi, from the World Bank. Chapter 1 was co-authored by Nicolas Larrain, Gabriel Di Paolantonio, Tom Raitzik Zonenschein, Rushay Naik, and Frederico Guanais from the OECD Health Division. Chapter 2 was co-authored by Yasna Palmeiro, Tomas Plaza Reneses, Edit V. Velenyi, and Cristian A. Herrera from the World Bank. Chapters 3 to 9 were co-authored by Gabriel Di Paolantonio, Frederico Guanais, Cristian A. Herrera, Nicolas Larrain, Rushay Naik, Tomas Plaza Reneses, Edit V. Velenyi, and Tom Raitzik Zonenschein. Alba Gasque and Anamaria Verdugo provided research assistance. The authors would like to thank Stefano Scarpetta, Mark Pearson, and Francesca Colombo from the OECD Directorate of Employment, Labour and Social Affairs, and Michele Gragnolatti and Juan Pablo Uribe from the World Bank.

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Structure of the publication

Health at a Glance: Latin America and the Caribbean 2023 is divided into nine chapters:

Chapter 1 on ***The impact of the COVID-19 pandemic on Latin American and Caribbean healthcare systems*** evaluates and compares countries' performance in mortality outcomes, pandemic response, system responsiveness and baseline structural capacities. By exploring the relationships between these items, the chapter informs about key determinants that played a role in defining the severity of the pandemic in the region.

Chapter 2 on ***Climate change and health*** examines LAC countries current level of health systems resilience to climate change, identifying trends in the region and providing key considerations for policy actions that countries can implement to strengthen it.

Chapter 3 on ***Health status*** highlights the variations across countries in life expectancy, excess mortality, infant and childhood mortality, and major causes of mortality and morbidity, including both communicable and non-communicable diseases.

Chapter 4 on ***Determinants of health*** focuses on non-medical determinants of health. It features the health of mothers and babies, through family planning issues, malnutrition, and adolescent health. It also includes lifestyle and behavioural indicators such as smoking, unhealthy diets, underweight and overweight, and drugs use, as well as water and sanitation. It also includes indicators on environment and climate risks.

Chapter 5 on ***Healthcare resources and activities*** reviews some of the inputs, outputs, and outcomes of healthcare systems. This includes digital health, the supply of medical technologies and hospital beds, as well as the provision of services surrounding pregnancy, childbirth and infancy.

Chapter 6 on ***Health expenditure and financing*** examines trends in health spending across LAC countries. It looks at how health services and goods are paid for, and the different mix between public funding, private health insurance, direct out-of-pocket payments by households and external resources. It also looks at financial protection measures such as impoverishment due to healthcare out-of-pocket payments.

Chapter 7 on ***Quality of care*** builds on the indicators used in the OECD's Health Care Quality Indicator programme to examine trends in healthcare quality improvement across LAC countries.

Chapter 8 on ***Health workforce*** has a look into the provision of doctors and nurses, as well as allied health professionals such as dentists, pharmacists, and community health workers. Attention is given as well to mental health workforce.

Chapter 7 on ***Ageing*** exhibits the demographic trends in LAC, both current and projected, as well as life expectancy and healthy life expectancy at age 65. Long-term care is also highlighted, with indicators on expenditure, end-of-life care, and mortality due to Alzheimer and other dementias.

Latin America and the Caribbean countries

For this second edition of *Health at a Glance: Latin America and the Caribbean*, 33 regional countries were included as seen in Table 1. Countries were selected based on their geographical location to either Latin America or the Caribbean, and if they are sovereign states.

Table 1. Latin American and Caribbean countries included and their ISO codes

Country	ISO Code	Country	ISO Code
Antigua and Barbuda	ATG	Guyana	GUY
Argentina	ARG	Haiti	HTI
Bahamas	BHS	Honduras	HND
Barbados	BRB	Jamaica	JAM
Belize	BLZ	Mexico	MEX
Bolivia	BOL	Nicaragua	NIC
Brazil	BRA	Panama	PAN
Chile	CHL	Paraguay	PRY
Colombia	COL	Peru	PER
Costa Rica	CRI	Saint Kitts and Nevis	KNA
Cuba	CUB	Saint Lucia	LCA
Dominica	DMA	Saint Vincent and the Grenadines	VCT
Dominican Republic	DOM	Suriname	SUR
Ecuador	ECU	Trinidad and Tobago	TTO
El Salvador	SLV	Uruguay	URY
Grenada	GRD	Venezuela	VEN
Guatemala	GTM		

Selection and presentation of indicators

The indicators have been selected based on being relevant to monitoring health systems performance, considering the availability and comparability of existing data in the LAC region. The publication takes advantage of the routine administrative and programme data collected by the World Health Organization, the World Bank Group, and the OECD, as well as special country population surveys collecting demographic and health information.

The indicators are presented in the form of easy-to-read figures and explanatory text. Each of the topics covered in this publication is presented over two pages. The first page defines the indicator, provides brief commentary highlighting the key findings conveyed by the data, and provides a few key references. On the facing page is a set of

figures. These typically show current levels of the indicator and, where possible, trends over time. In some cases, an additional figure relating the indicator to another variable is included. Where an OECD average is included in a figure, it is the unweighted average of the OECD countries presented, unless otherwise specified.

Limitations in data comparability are indicated both in the text (in the box related to “Definition and comparability”) as well as in footnotes to figures.

Health and health system’s situation can evolve rapidly, arguably even more so in low and middle-income countries than in high-income ones. Therefore, it is important to note that some indicators might not reflect the latest situation for some countries. The authors have collected the latest available data so the landscape depicted in each chapter and section of the publication shows the most updated scenario as possible.

Indicators from LAC countries that are OECD member or partner countries

Four LAC countries are OECD member states: Chile, Colombia, Costa Rica and Mexico. The OECD average includes all four LAC countries.

Brazil and Peru are currently in the process of accession to the OECD. Argentina is a partner country to the OECD.

For these seven LAC countries, some figures in this publication considered the data that has been reported directly to the OECD, instead of using international sources. This is to maintain consistency among what it is informed in other OECD publications (e.g. *Health at a Glance 2021,* https://doi.org/10.1787/ae3016b9-en) and what is available in the online database OECD Health Statistics on OECD.Stat at https://oe.cd/ds/health-statistics. These differences are noted in the footnotes of correspondent figures throughout the chapters.

Executive summary

Health at a Glance: Latin America and the Caribbean 2023 provides a cross-country assessment of national health systems performance in 33 Latin America and the Caribbean (LAC) countries with a comprehensive set of indicators on health and healthcare, and in-depth analyses in two special thematic chapters.

The first thematic chapter analyses the impact of the COVID-19 pandemic on LAC healthcare systems, and the second one focuses on climate change and health. While these two topics are different, together they illustrate a common thread: the vital importance of health systems resilience. With the hindsight of three years since the beginning of the pandemic and as countries emerge out of the crisis, COVID-19 has revealed the human, social, and economic costs that major health shocks can cause when health systems are not resilient enough. Looking towards the future, the ongoing climate change crisis has created major threats to natural environments and societies, with the potential for massive disruption to health systems which need to prepare accordingly.

As it is customary in the *Health at a Glance* series, the remaining seven data chapters in the report present health and health systems indicators across the LAC region. The main facts and findings of this publication, summarised below, highlight the urgency of addressing the structural challenges to health in LAC and the need to prepare health systems better to face emerging threats.

COVID-19 was tragic for LAC, but the loss of life would have been even higher in the absence of wide-scale public health measures and strong population adherence to preventive measures

- Combining 2020 and 2021, there were 2.3 million estimated excess deaths in LAC (the difference between expected and estimated deaths from all causes), representing 15% of the global excess deaths in a region that has 8.5% of the world's population. The excess mortality rate per 100 000 population in LAC for this period was of 174, higher than the OECD average of 114.
- Most excess deaths in LAC occurred among men (60% of the total) and people aged 60 or older (75%). Argentina, Venezuela, Chile, Cuba, Costa Rica, Panama, Uruguay, Jamaica, and Trinidad and Tobago had lower excess mortality, averaging 34% fewer excess deaths than the OECD average. Peru, Bolivia, Mexico, Ecuador, Saint Vincent and the Grenadines, and Guyana had high mortality, totalling 48% of the excess deaths in LAC while accounting for 29% of its population.
- Most countries with low excess deaths increased or maintained the strictness of their containment measures from 2020 to 2021. Countries with low excess deaths led the region in COVID-19 vaccination coverage by the third quarter of 2021, with coverage rates above 25%. On average, 80% of the LAC population accepted vaccination in 2021, and 78% of the population reported using a facemask all or most of the time when in public in mid-2020.

The severity of climate-related threats to health is growing faster than the capacity of LAC health systems to mitigate and adapt to a changing climate

- Yearly deaths of adults aged 65 and over attributable to heat exposure in LAC increased on average by almost 240% from 2000-04 to 2017-21. Between 2012 and 2021, the basic reproduction number (R0) for dengue increased by between 0.32 and 0.46, depending on the mosquito species, compared to the 1951-60 baseline.
- Only seven out of 25 LAC countries reported having ever conducted climate change and health vulnerability and adaptation assessments, which are vital for collecting and analysing data, conducting continuous situational analyses, and informing adequate action plans needed to build climate-resilient health systems.
- Climate-informed health early warning systems are essential tools for anticipating and preparing for climate hazards affecting health, but only four of 23 LAC countries reported having an early warning system in place for heat-related illness.

Under-resourced healthcare systems amplified the challenge of COVID-19, with severe health workforce shortages creating a bottleneck in healthcare delivery during the pandemic

- On average, in 14 LAC countries during 2020, 16% of urban households and 21% of rural households could not access any type of healthcare services when needed. In Ecuador, Peru, and Bolivia, these percentages were above 27% for urban households and reached 40% for rural households in Peru.
- There are, on average, two physicians per 1 000 people in LAC. Only Cuba, Uruguay, Trinidad and Tobago, and Argentina are above the OECD average of 3.5. Similarly, LAC has on average 3.6 nurses per 1 000 people, while the OECD average is 10.3.
- LAC countries have on average: 4.2 dentists per 10 000 people, below the OECD average of 7.2; 3.4 pharmacists per 10 000 people, lower than the OECD average of 8.8; and 4.4 community health workers per 10 000 people.

Quality of care was deeply disrupted by the pandemic, compounding a long-term dearth of data on quality of care

- In 2021, only 11 LAC countries complied with the minimum recommended immunisation level of DTP (90%), and only nine countries did so for measles. The average coverage was 82% and 83% for DTP and measles, respectively.
- The average five-year survival rate of lung cancer in LAC is 13.3% for patients diagnosed between 2010 and 2014, compared to 17.1% in the OECD. The LAC average five-year survival rate for stomach cancer stands at 23.7%, also below the OECD average of 29.6%.
- Age-sex standardised in-hospital case fatality of acute myocardial infarction within 30 days of admission was reported as low in Colombia (5.6%) and is highest in Mexico (27.5%) in the five countries that provided data. However, greater efforts are needed to develop appropriate health system information infrastructure and monitor care quality of care systematically.

Long-term improvement in life expectancy in LAC remains unequally distributed, and maternal and child health is much worse than the OECD average

- Despite COVID-19, life expectancy in LAC reached 75.1 years in 2021, an increase of 4 years since 2000, but below the OECD average of 80.4. Women have 5.5 years longer life expectancy than men, where 83.7% of new-born females are expected to live to age 65, and 74.2% of new-born males are expected to live as long.
- Highest life expectancies are in Chile (81.0 years for men and 83.8 for women) and Costa Rica (80.8 for men and 83.3 for women), both above the OECD average, while lowest life expectancies are in Haiti (64.3 for men and 66.5 for women) and Guyana (70.0 for men and 73.2 for women).
- Between 2000 and 2020, the average infant mortality rate has fallen by 38% from 24.2 to 15 per 1 000 live births in LAC but remains 2.7 times higher than the OECD average. The average maternal mortality ratio in the region was 97 deaths per 100 000 live births in 2020, 10 times higher than the OECD average.

Overweight, obesity, and rapid population ageing are driving a fast epidemiological transition towards non-communicable diseases

- Overweight is one of the most pressing health risk factors in LAC. The average body mass index increased between 2000 and 2017, reaching 26.9 for both men and 28.3 for women, above the threshold of 25 for overweight and approaching the obesity threshold of 30.
- The share of the population above 65 years old is expected to more than double by 2050, reaching over 18% of the LAC population. This is significantly lower than the 27.7% expected among OECD countries on average but ageing in the LAC region will dramatically affect healthcare. The share of older population will be particularly large in Barbados, Chile and Cuba, surpassing 25% in 2050.
- Non-communicable diseases were the most common cause of death in LAC, being responsible for almost 77% of all deaths. Cardiovascular diseases are the leading cause of death, with 218 deaths per 100 000 population in 2020, 61% higher than the OECD average. Cancer mortality has decreased in LAC by 2.3% since 2000, but not as fast as the 15.4% decrease observed in the OECD on average.

While health expenditure relative to GDP has increased in LAC, it remains insufficient and relies excessively on private spending

- Between 2010 and 2019, health expenditure per person in LAC grew faster than the average economic growth. On average, health spending grew 4.9% per year, while gross domestic product (GDP) grew 3.1% yearly. However, average health spending in LAC (USD PPP 1 155 per capita) still lags far behind the average level of spending of the OECD (USD PPP 3 999 per capita). As a share of GDP, health spending accounted for 6.9% in LAC on average in 2019, compared to 8.5% on average in OECD countries.
- Government and compulsory health insurance represented 57% of current expenditure on health in LAC in 2019, far below the average 74% in the OECD. Voluntary payment schemes reached 11% of health expenditure in 2019 compared to 6% on average in the OECD.
- On average, 32.4% of health spending in LAC was paid out-of-pocket in 2019, well above the OECD average of 20%. While most LAC countries decreased the share of out-of-pocket health spending between 2010 and 2019, approximately 1.7% of the population became poor because of it, and 12.7% of the population was pushed further below the poverty line.

1 The impact of the COVID-19 pandemic on Latin American and Caribbean healthcare systems

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Latin America and the Caribbean (LAC) were massively affected by the COVID-19 pandemic, with death tolls proportionally higher when compared to other regions. The most severe mortality-related outcomes were observed in the elderly, men, and those who were socio-economically disadvantaged. Meanwhile, major disruptions in routine healthcare provision exposed fragile health systems and exacerbated excess deaths. Countries that identified their weaknesses and implemented a comprehensive pandemic response were able to mitigate loss of life. Policies aimed at reducing the health and socio-economic impact of the pandemic and strengthening the healthcare sector proved highly effective, especially when accompanied by popular adherence to pandemic measures. At the same time, structural limitations amplified the challenge of COVID-19, with health workforce shortages presenting a major bottleneck in strategies to confront the virus.

1.1. Introduction

Three years have passed since the COVID-19 crisis galvanised attention to health systems worldwide. Between December 2019 and October 2022, 631 million cases and 6.59 million deaths were reported. Moreover, the re-prioritisation of healthcare resources to deal with the immediate pandemic response has affected regular healthcare, generating significant backlogs of postponed services in every level of care. An estimated 2 273 620 excess deaths were experienced in the region in 2020 and 2021 compared to the expected deaths for these years as estimated by WHO (WHO, 2022[1]). At the same time, social and economic effects driven by the loss of life and the multidimensional effects of containment measures will have long lasting implications for health systems and, ultimately, the people they serve.

The effect of COVID-19 in Latin America and the Caribbean (LAC) is proportionally much larger when compared to other regions of the world. By July 2022, LAC accounted for only 8.5% of the world population but 13% of the world's documented COVID-19 cases and 27% of the documented deaths (Herrera et al., 2022[2]). The health, social, and economic effects in the region have been catastrophic and have brought long-standing weaknesses and challenges of health systems to light (ECLAC, 2022[3]).

Previous literature has analysed extensively different aspects of the health and socio-economic impact of the pandemic (ECLAC, 2022[3]; Herrera et al., 2022[2]; OPS/PAHO, 2021[4]). However, there is still a significant knowledge gap in the understanding of the determinants of the pandemic impact and the characteristics of the most effective emergency responses.

In this chapter, we examine the mortality impact of the COVID-19 crisis and the factors that determined its severity across 33 countries in LAC[1] as well as, whenever feasible, the OECD average. Given that four LAC countries are part of the OECD (Chile, Colombia, Costa Rica and Mexico), and two more have started the accession process (Brazil and Peru) readers should be aware of some overlap between groups. The impact of COVID-19 is evaluated from the perspective of the performance of LAC health systems at three levels: Outcomes, process, and structure (Donabedian, 1988[5]).

- At the outcome level, the focus is on the mortality impact resulting from the COVID-19 virus itself and as extended consequences of the health emergency. Further, the chapter analyses disruptions to the routine provision of care as an intermediate outcome, in an effort to understand how the fragility of LAC health systems influenced the loss of life during the pandemic.
- At the process level, the analysis considers and compares the actions taken by the authorities to manage and mitigate the effects of COVID-19, together with the public response and adherence to these measures.
- At the structure level, the chapter builds on the analysis of variables defining care delivery, including health status, equipment, and human resources, explored in chapters three to nine of this publication. The analysis focuses on the main characteristics influencing preparedness to deal with the COVID-19 health emergency.

Assessing the pandemic impact in this order is essential for the objectives of the chapter. Starting at the outcome level allows for an analysis of the pandemic's most devastating consequence in the LAC region, the loss of life. Later, this is compared to performance in intermediate outcomes and at process level to understand the effectiveness of the pandemic response; and at the structure level, to examine the importance of baseline health system capacities.

The selection of indicators at each assessment level prioritises the availability of information for a wider set of LAC countries (Box 1.1) and actionability of these measures towards health system improvement (Carinci et al., 2015[6]). Given that no formal causal analysis is intended, the report considers these criteria to be most important for an accurate and comprehensive understanding of the performance of LAC countries during the pandemic.

Box 1.1. Key information sources for evaluating the impact of COVID-19 in Latin America and the Caribbean

Main data sources used in the chapter

- World Health Organization, including Estimates of Excess Mortality Associated With COVID-19 Pandemic; Pulse survey on continuity of essential health services during the COVID-19 pandemic; WHO COVID-19 detailed surveillance data dashboard; WHO Coronavirus (COVID-19) Dashboard; Global Health Expenditure Database 2020. (WHO, 2022[7]; WHO, 2022[8]; WHO, 2021[9]; WHO, 2020[10])
- The World Bank, including: COVID-19 High-Frequency Monitoring Dashboard; World Development Indicators. (The World Bank group, 2021[11]; The World Bank, 2022[12])
- COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (Dong, Du and Gardner, 2020[13])
- The University of Maryland Social Data Science Center Global COVID-19 Trends and Impact Survey, in partnership with Facebook (The University of Maryland Social Data Science Center & Facebook, 2020[14])
- Government Response Tracker (Oxford COVID-19 Government Response Tracker, 2022[15])
- Economic Commission for Latin America and the Caribbean, including: Public expenditure on Health and Social; Data from Household Surveys Database (BADEHOG) (ECLAC, 2021[16])
- A global database of COVID-19 vaccinations (Mathieu et al., 2021[17])
- OECD Health Statistics (OECD, 2022[18])

These sources complement data collected for *Health at a Glance: Latin America and the Caribbean*, including national statistics collected through questionnaires of the OECD, or directly extracted from national sources.

The chapter is organised as follows. LAC countries' performance at the outcome level is presented in Section 1.2. The analysis of routine and essential care disruptions is presented in Section 1.3. Process-level performance is assessed in Section 1.4, focusing on countries' pandemic response. Structural components and their effect on COVID-19 mortality impact is addressed in Section 1.5. Finally, Section 1.6 discusses the results of the assessments at the three levels in aggregate and provides policy recommendations for strengthening resilience of LAC health systems.

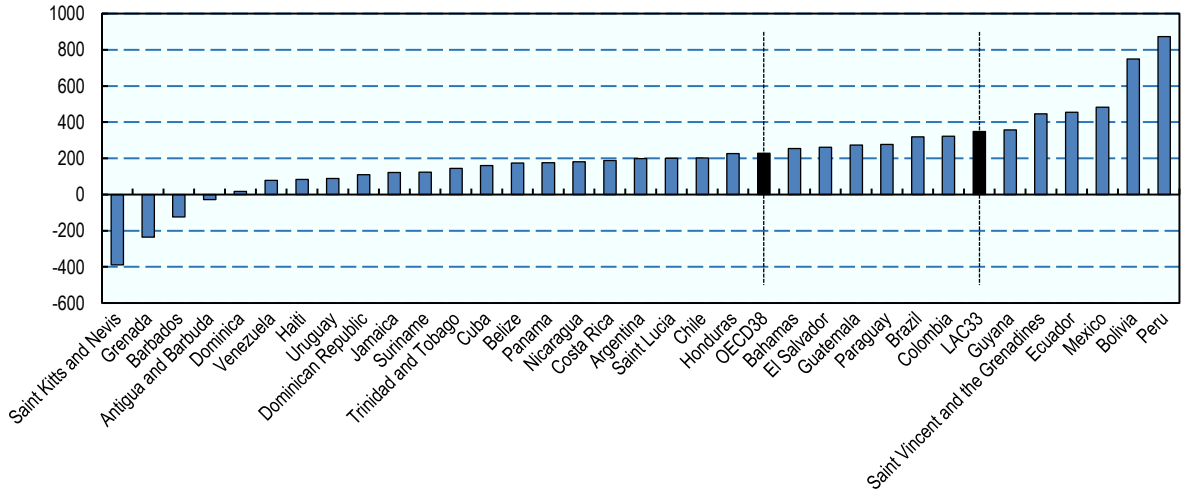
1.2. The death toll of COVID-19 was proportionally higher in Latin America and the Caribbean than in other regions

Excess mortality is calculated as the difference between expected and estimated deaths from all causes (Figure 1.1). In WHO's calculation of excess deaths, estimated deaths are based on historic data from five to 20 years before the pandemic (WHO, 2022[1]). Excess mortality is considered a more accurate indicator of the direct health impact of COVID-19 due to limitations in the cross-country comparability of COVID-19 crude mortality data (Box 1.2). It is estimated that LAC had 2 273 620 excess deaths combining 2020 and 2021, the later year being by far the deadliest of the pandemic (Figure 1.2). This represents 15% of the total excess deaths in the world (WHO, 2022[7]). Considering LAC only accounted for close to 8.5% of the world population in this period (UN, 2022[19]), the disproportionate effect of COVID-19 in the region is undeniable.

Figure 1.1 presents the accumulated estimated excess mortality per 100 000 population for years 2020 and 2021. Only six of the 33 countries experienced particularly high excess deaths above the LAC average: Peru, Bolivia, Mexico, Ecuador, Saint Vincent and the Grenadines, and Guyana. The cases of Saint Vincent and Guyana need to be taken with caution, as their small population might exacerbate the perceived impact of the number of COVID-19 related deaths. Peru experienced the highest impact within the group (and region) with 873 excess deaths per 100 000, 150% more than the LAC average. The average of these six countries is 560 excess deaths per 100 000 (60% higher than the LAC average). Together, this group accounted for 48% of all excess deaths in LAC in the period 2020-21, but only 25% of the region's population.

Figure 1.1. Twelve countries are above the OECD average of excess deaths

Estimates of cumulative excess deaths combining 2020 and 2021 per 100 000 population



Note: Excess mortality is calculated as the difference between expected and estimated deaths from all causes. Estimated deaths are based on historic data from 2015 to 2019 for countries reporting monthly deaths and from 2000 to 2019 for countries reporting annually. More information about the estimation method can be found in (WHO, 2022[1]). COVID-19 deaths in 2020 are reported for BOL, BRA, CHL, COL, CRI, ECU, GTM, MEX, PER, PRY, SUR, URY. Deaths in 2021 reported by BOL, CHL, GTM, SUR. COVID-19 deaths for rest of LAC33 are predicted. From OECD38; IRL, JPN and TUR use predicted deaths, the rest of OECD38 uses reported deaths.

Source: WHO (2022[7]), "Global excess deaths associated with COVID-19 (modelled estimates)", as of 25 March 2022, https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates.

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Box 1.2. Cross-country comparability of COVID-19 mortality data

Comparable data is specially limited in LAC

There is no standardised methodology in the region to measure COVID-19 deaths. Instead, several methods are used across the region, with some countries, like Peru, using up to three different classifications for determining COVID-19 deaths. In addition, because of limited capacity of local health authorities, there is a significant underestimation of COVID-19 mortality for deaths occurring outside of the hospital and in remote areas. Finally, the testing capacity to determine a COVID-19 infection had substantial heterogeneity in the region, making it impossible for some countries to accurately determine the presence or absence of the virus in all deaths occurring during the pandemic years.

Excess mortality as a proxy of health impact

Excess mortality is considered to have fewer limitations for cross-country comparability and hence is a more accurate indicator to compare the direct health effects of COVID-19 across countries. However, the indicator is not specific to COVID-19 and hence, susceptible to heterogenous underlying death rates related to any event and country characteristics. Second, because the indicator compares reported mortality against expected mortality based on previous years, it is not only susceptible to events at the time of analysis, but also to events at baseline. Finally, excess mortality depends on the accuracy of death reporting, and while some LAC countries made efforts at improving quality of death reporting during the pandemic (like Colombia), in many countries data quality is more difficult to assess. As such, is important to consider:

- Country specific events which might disturb the indicator of excess mortality at the time of analysis or baseline. For example, natural disasters or severe flu seasons. The calculation method for the indicator of the excess mortality in this report uses several baseline years (from 5 to 20 depending on the country specific reporting periodicity) to smooth these effects. However, countries with low performance in overall mortality might disturb the relationship between excess mortality and actual health system performance.

- Waves of infections and deaths had different schedules across countries. To account for these differences, we consider the cumulative excess deaths combining years 2020 and 2021.
- Lockdowns and other interventions can lead to negative excess mortality during the pandemic because of reduced risk for several mortality causes, such as injury or other communicable diseases (WHO, 2022[1]).
- Lastly, the selected estimation of excess deaths by WHO (WHO, 2022[1]) is only one of several estimations available in literature. Other estimations, such as the one by Wang et al. (Wang et al., 2022[20]), might lead to a different order than the one presented in Figure 1.1. For this reason, we consider the sensibility of our conclusions to different estimations of excess mortality.

Source: Morgan et al. (2020[21]), "Excess mortality: Measuring the direct and indirect impact of COVID-19", https://doi.org/10.1787/c5dc0c50-en; Wang et al. (2022[20]), "Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020-2021", https://doi.org/10.1016/s0140-6736(21)02796-3; WHO (2022[1]) Methods for estimating the excess mortality associated with the COVID-19 pandemic, https://www.who.int/publications/m/item/methods-for-estimating-the-excess-mortality-associatedwith-the-covid-19-pandemic.

Comparing the performance of the LAC region to the OECD average can be used as the boundary for defining a second group of countries, with excess mortality higher than the OECD average but lower than LAC average. Colombia leads this group with 323 excess deaths per 100 000 population. This is 8% lower than the LAC average and 40% higher than the OECD average. The group (Colombia, Brazil, Paraguay, Guatemala, El Salvador and Bahamas) has an average of 285 estimated excess deaths per 100 000 population, 25% above OECD average and 18% below LAC average. These six countries accounted for 41% of all the excess deaths in the region while representing 45% of the region's population.

The rest of the region can be interpreted as a third group of countries, with lower than OECD average excess deaths. This 21-strong group has an average of 81 estimated excess deaths per 100 000. This is 64% less than the OECD average. Together, this group accounted for 11% of the excess deaths and 30% of the region's population.

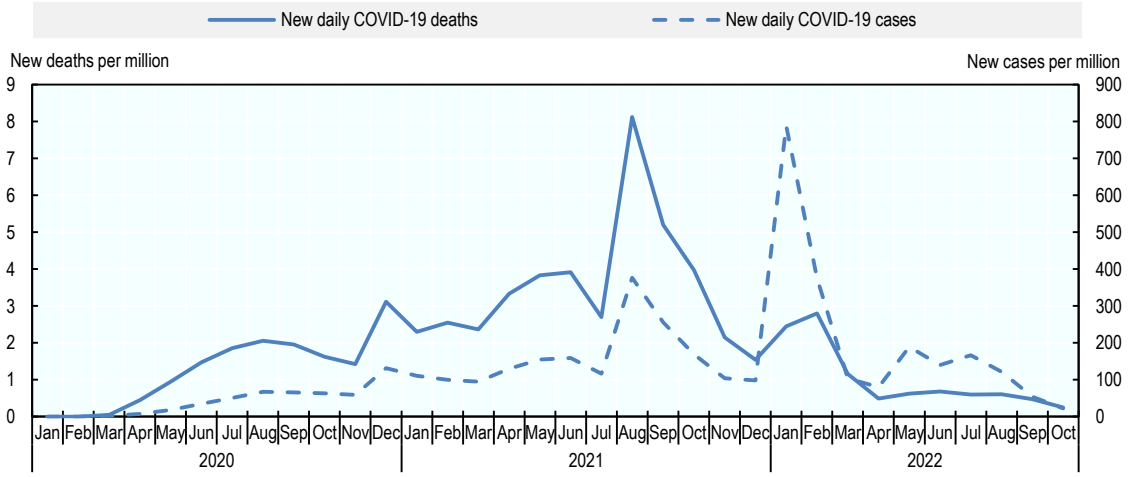
However, the group of countries performing better than the OECD average is composed by several countries affected by the limitations of the excess mortality indicator (Box 1.2). For countries affected by these limitations, the excess mortality indicator does not accurately represent the health impact of the pandemic and, hence, should not be used for comparison. In this line, countries suitable for comparison in the group that experienced milder health effects can be identified using the following three criteria:

- **Excess mortality accumulated in 2020 and 2021 below the OECD average**, given that these were the countries with the lowest excess mortality during the first two years of the pandemic.
- **Age-standardised mortality rate (all causes) below the LAC average in 2019**. This criterion enables filtering out countries where high overall mortality disturbs the accuracy of the excess mortality indicator to signal a positive pandemic response. Age-standardised mortality rate is taken from the Global Burden of Disease Collaborative Network (IHME, 2021, 2021[22]).
- **Countries with more than 500 000 inhabitants.** Finally, this criterion filters out countries where unintended consequences of the pandemic response, such as lower traffic and injury deaths are usually more volatile. Furthermore, estimations of excess mortality for countries with small population are considerably less precise (WHO, 2022[1]).

The resulting list of countries with positive outcomes in terms of the health effect of COVID-19 is composed (in order of population size) of Argentina, Venezuela, Chile, Cuba, Costa Rica, Panama, Uruguay, Jamaica, and Trinidad and Tobago. As presented by Herrera et al (2022[2]), a different estimation of excess mortality by the COVID-19 Excess Mortality Collaborators 2022 shows Venezuela as the only country in this group that considerably changes their relative position in the region and presents a higher than LAC average excess mortality. Consequently, conclusions regarding this country will be examined with care.

Figure 1.2. In LAC, 2021 was the deadliest year of the pandemic

Monthly average daily cases and deaths in LAC



Source: Dong, Du and Gardner (2020[13]), "An interactive web-based dashboard to track COVID-19 in real time", https://doi.org/10.1016/s1473-3099(20)30120-1.

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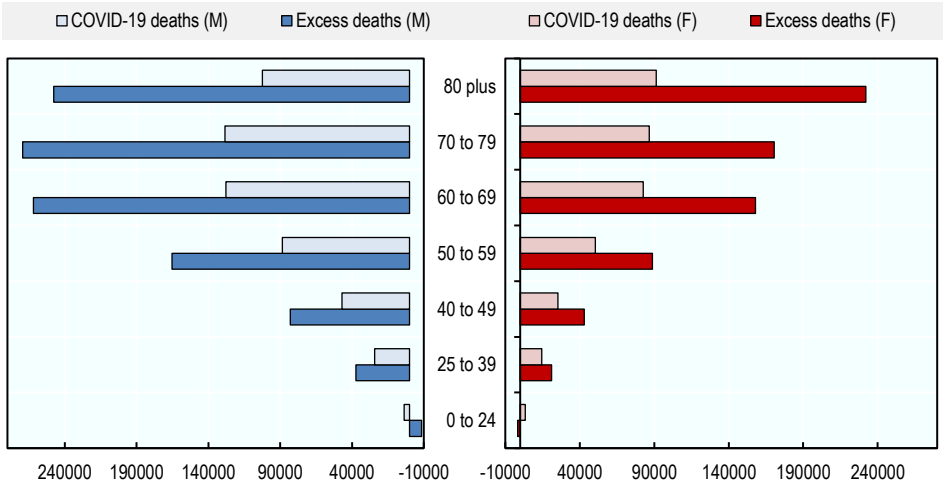
1.2.1. Mortality by COVID-19 was more severe in men, elderly people, and socio-economically disadvantaged groups

The stark differences between reported deaths and excess mortality (Figure 1.3), validates the use of excess mortality as a more accurate indicator of the pandemic effect on population health. Further, the age and sex stratification shows that males carried a heavier burden in terms of mortality during the pandemic, in line with previous studies (Huang et al., 2021[23]; Gebhard et al., 2020[24]; de Souza et al., 2021[25]; PAHO, 2021[26]). Finally, the difference between reported COVID-19 deaths and excess mortality during this period increased with age, either because of under-reporting COVID-19 deaths (OECD, 2021[27]) or due to deaths by other causes.

Figure 1.3. The gap between excess and COVID-19 deaths widens with age

Excess and confirmed deaths by age group and sex, cumulative 2020 and 2021



Note: Figure includes ARG, BHS, BRA, CHL, COL, CRI, DOM, ECU, GTM, JAM, LCA, MEX, PAN, TTO. COVID-19 deaths include confirmed and probable COVID-19 deaths.

Source: WHO (2022[7]), "Global excess deaths associated with COVID-19 (modelled estimates)", as of 25 March 2022, https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates; COVID-19 deaths: WHO COVID-19 detailed surveillance data dashboard based on WHO case report forms.

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Around 60% of estimated excess deaths were in men and 75% of estimated excess deaths were attributed to people aged 60 years or more. When comparing estimated excess deaths by 100 000 population, males aged 70 years or more had an 80% higher risk of death than females from the same age group. The risk of death for females is on average 50% lower for every age group. These findings are consistent with previous literature (OPS/PAHO, 2021[4]).

COVID-19 evidenced severe inequities in healthcare

Vulnerability and socio-economic inequities determined the burden of COVID-19 direct health impacts. This is clearly seen in the differences in mortality and hospitalisation of COVID-19 among vulnerable populations. As highlighted by ECLAC (ECLAC/PAHO, 2021[28]), socio-economic vulnerability is correlated with COVID-19 infection, severity of the disease, and death (de Souza et al., 2021[25]). Low-income areas had disproportionately high numbers of COVID-19 deaths in Brazil (Bermudi et al., 2021[29]) and Argentina (Macchia et al., 2021[30]). At the same time, higher education has shown a higher-than-expected protective effect during 2020 in Chile (Bilal, Alfaro and Vives, 2021[31]) and Brazil (SUS, 2022[32]). Studies exploring ethnic differences in COVID-19 deaths in 2020 in Brazil, Chile, Colombia, Mexico, and Peru, indicated that mortality affected non-white populations disproportionately (NU. CEPAL/German Agency for International Cooperation, 2021[33])). Further, a positive association has been found between countries with more COVID-19 cases and a higher migrant population (Migration data portal, 2022[34]). This is consistent with other sources, stating that migrants in Latin America are at a disadvantage in terms of pandemic preparation (Cabieses et al., 2020[35]).

Female health workforce was more exposed to the virus

The health workforce at the front line of the pandemic response is at higher risk of COVID-19 infection. During 2020, more than 1.3 million cases among health personnel were reported in the region and more than 6 000 died due to the disease (OPS/PAHO, 2021[4]). Women comprise a disproportionately greater share of frontline health personnel in the region: 86% of nurses in the region are female and 70% of the worldwide pandemic response front line are female (PAHO, 2021[26]; OECD, 2020[36]). This translates to 72% of COVID-19 cases (from March 2020 until January 2021) in health personnel being among women (OPS/PAHO, 2021[4]).

1.3. Severe disruptions to routine care evidenced fragile health systems

In 2020, COVID-19 disrupted all healthcare services worldwide at some level. During 2021, the disruption to essential health services remained in 90% of countries. Workforce shortages and supply chain disruptions were reported in more than 30% of countries responding to the WHO PULSE survey (WHO, 2022[8]). Primary and rehabilitative, palliative, and long-term care remained the most heavily affected services during this time (Kuehn, 2021[37]).

An important lesson from the pandemic is that health systems need to strengthen their resilience: the ability to prepare for shocks, absorb disruptions and recover as quickly as possible with minimal cost, and adapt by learning lessons to improve performance and manage future risks (OECD, 2023[38]). For this purpose, it is important to understand the extent to which COVID-19 altered the normal functioning of healthcare and how this reflected on health outcomes during the pandemic. Measuring the extent of disruption to healthcare services generates important information for minimising negative consequences and to recover as quickly as possible to respond to the next emergency.

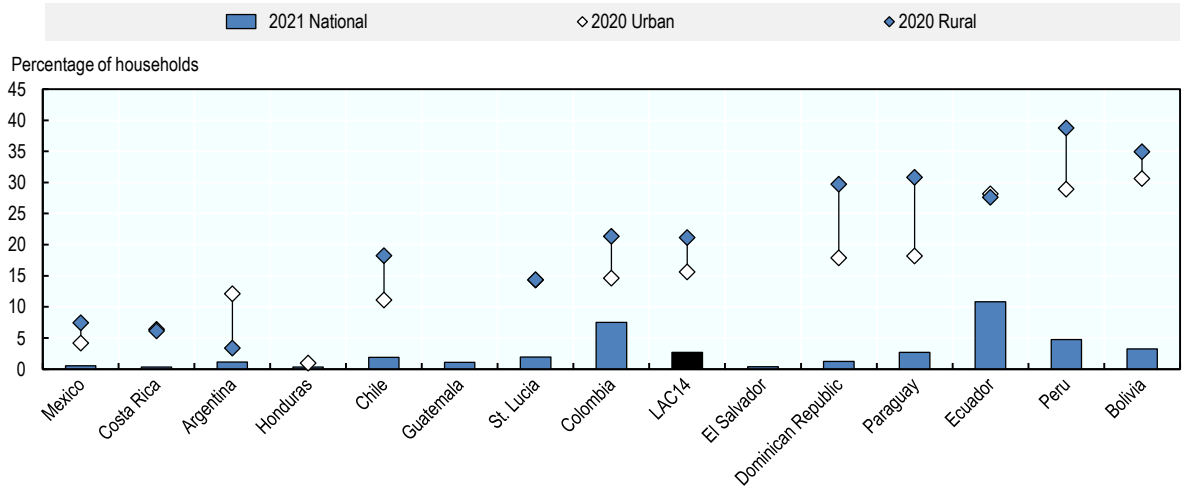
1.3.1. Foregone care was higher in countries with higher excess mortality

In 14 LAC countries on average during 2020, 16% of urban households and 21% of rural household reported not being able to attend healthcare services when needed (Figure 1.4). In Ecuador, Peru and Bolivia (three countries in the highest excess deaths group) this percentage was higher than 27% of households in the country. While the relation between the severity of the pandemic and the disruption of in healthcare is undoubtedly endogenous, the fact that the disruption presented in the graph was one year before the highest point of excess deaths in the region suggests that the early disruption of healthcare was a key determinant in the later severity of excess deaths.

Most countries showed important recovery capacities during 2021, where on average only 2.7% of households didn't receive medical care when needed. The biggest disruptions during the second year of the pandemic coincide with countries that had high excess deaths. On the contrary, in several countries with lower than OECD average excess deaths (Costa Rica, Argentina, Honduras and Chile) there were lower disruptions during 2020, with between 18% (rural Chile) and 3% (Rural Argentina) of households reporting disrupted care and almost none during 2021 (below 2%). The exception is Mexico that reported very low percentage of households perceiving disrupted care during the two years (less than 7.5%), but at the same time had the third highest estimated number of excess deaths in the region. These findings are congruent with those exposed by ECLAC (ECLAC, 2022[3]) and the World Bank (Herrera et al., 2022[2]).

Figure 1.4. Rural populations faced higher disruptions in health services

Proportion of households that did not receive healthcare services when needed, rural vs urban



Note: Data from high-frequency mobile surveys designed to be representative of the underlying population. Data from 2020 is an average of four rounds of survey occurring in 2020 (Round 1 between May and June, round 2 in June, round 3 between July and August, and round 4 in August).
Source: World Bank (2021[11]), COVID-19 High-Frequency Monitoring Dashboard, https://www.worldbank.org/en/data/interactive/2020/11/11/COVID-19-high-frequency-monitoring-dashboard.

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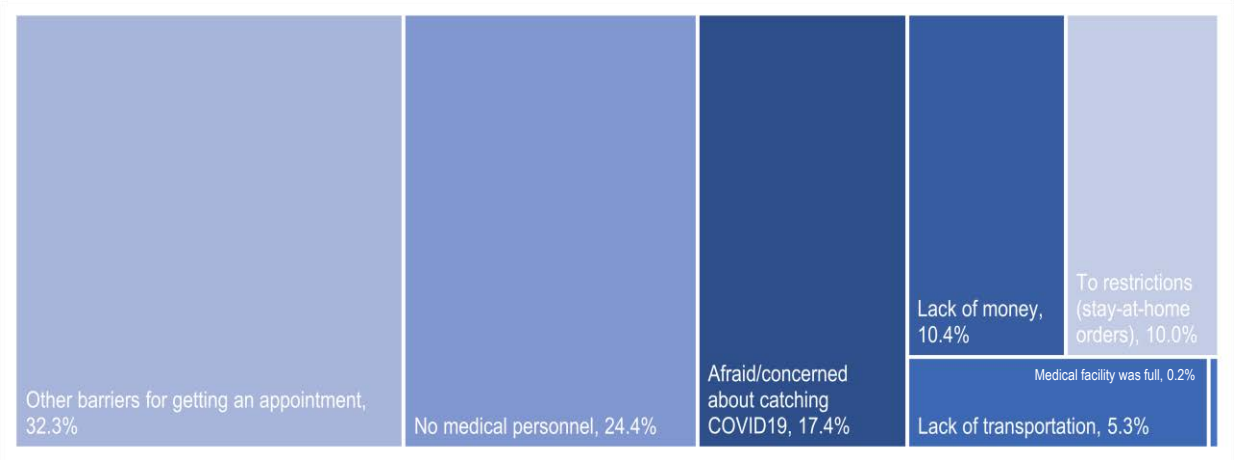
Reasons for people not receiving care when needed can be classified in two ways. The first relates to the supply of services, when no care is available. Understanding the extent of this effect allows countries to provide the appropriate focus on strengthening care provision. The other option is on the demand side when people do not seek care. The varying reasons behind this choice affect policy recommendations: those who elect to not seek care as a personal decision account for different considerations than those who did not seek care because of a perceived mandate such as a stay-at-home restriction. In the latter case, the communication strategy of the authorities is a critical issue, and authorities must ensure that options to access care are well-communicated to hard-to-reach populations.

Figure 1.5 shows that out of the households that did not receive medical care when needed, 24% attributed this to no availability of medical personnel. This is directly related to the redistribution of healthcare resources because of the pandemic. In the same category, 0.2% of households could not receive medical care because the health facility was full. Furthermore, the “other reasons” (32%) category includes answers to the questions “hospital/clinic did not have enough supplies or tests” and “medical facility was closed” as well as “other reasons”. In this sense, it can also be considered a supply-side barrier.

On the demand side, 17% of households reported not receiving medical care because of being afraid of catching COVID-19, while 10% reported lack of money. These reasons resonate with the heavy health, social and economic impacts of the pandemic, and consequent high levels of mental distress. Finally, restrictions and a lack of transportation affected 15% of households not receiving healthcare when needed.

Figure 1.5. Redistribution of healthcare resources led to disruptions

Proportion of households out of households that could not receive medical attention needed during 2020 in 14 LAC countries



Note: Data from high-frequency mobile surveys designed to be representative of the underlying population. "Other barriers for getting an appointment" includes the categories "hospital/clinic did not have enough supplies or tests" and "medical facility was closed". Data includes 14 LAC countries. Data is an average between waves 1 (May 2020) and wave 4 (August 2020).
Source: World Bank (2021[11]), COVID-19 High-Frequency Monitoring Dashboard, https://www.worldbank.org/en/data/interactive/2020/11/11/COVID-19-high-frequency-monitoring-dashboard.

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The impact of restrictions is particularly notable, as they are directly related to the planning of the authorities when imposing restrictions and remained fully within their control. Securing essential services such as transportation and correctly informing people of the nature of the restrictions is essential for the effectiveness of the pandemic response. Health systems also have space for action regarding the supply-related disturbances. The redistribution of resources during the pandemic response should secure services for important health needs. Finally, while health systems can only indirectly affect the disturbances related to the demand side, effective communication campaigns the distribution of protective equipment, and interventions for reducing the financial burden of healthcare, can be very effective in improving health systems responsiveness during a pandemic.

Essential services were severely affected

The pandemic disrupted several essential services. As exposed by the survey conducted by the University of Maryland in collaboration with Facebook (2020[14]), seasonal flu vaccination decreased in at least 10 countries (with available data[2]) between the flu season 2019 (June 2019 to Feb 2020) and the one in 2020 (after July 2020). The average decrease in the proportion of immunised population in these countries was to the order of 27%. On the other hand, Colombia and Honduras saw a small increase (2 percentile points) in the proportion of flu-immunised people. Furthermore, Diphtheria, tetanus toxoid and pertussis (DTP3) immunisation coverage[3] amongst children aged 1 decreased from 90% to 82% on average in LAC (Chapter 7 – Childhood vaccination programmes).

Additionally, in 2020, medical consultations decreased in Brazil (30%), Mexico (9% – estimated), Costa Rica (17%), and Chile (32%) (OECD, 2022[18]). Furthermore, medical consultations of children decreased 67% in Chile and antenatal consultations decreased 56% in Peru (OECD, 2022[39]).

Hospitalizations for non-COVID-19 related reasons diminished considerably. Even though data in the region is scarce, between 2019 and 2020 Chile and Costa Rica decreased their non-COVID related hospitalisation discharges by 23% (OECD, 2022[18]). In 2020, Peru and Guatemala (out of 24 LAC countries reporting data) reported disruptions larger than 5% to 24-hour emergency room services. By the end of 2021, the disruption reached more than 50% of services in both countries. At the same time, ambulance services reached disruptions of more than 26% (WHO, 2022[8]). Excess deaths in these two countries were among the highest in the region and peaked in the second half of 2021.

People with chronic conditions in LAC experienced important disturbances in routine care

While standardised and comparable data for the region is scarce, information can be obtained from individual cases. General care was drastically affected for people with cancer, heart attacks and strokes in Chile (Pacheco et al., 2021[40]). For example, from April to September 2020 diabetes consultations dropped 80% and hypertension consultations dropped 81% when compared to the previous year. A similar situation occurred in Mexico, where one source reports drops of 26% and 28% in diabetes and hypertension respectively (Arsenault et al., 2022[41]), while another reports drops of 32% for both types of consultations (Doubova et al., 2021[42]). In Peru, diabetes treatment dropped 8% during 2020, while no disruptions to hypertension treatment were recorded (INEI, 2021[43]). In Costa Rica, the decrease was of 32% for diabetes and 20% for hypertensive patients (CCSS, 2020[44]). Additionally, diabetes screening coverage rates decreased 32% and hypertension screening coverage rates decreased 23% in both Brazil and Chile (OECD, 2022[39]). In Mexico, a decline in diabetes and hypertension diagnoses was observed to the order of 17% and 22%, respectively (Doubova et al., 2021[42]).

In addition, large disparities in the level of disruption across socio-economic groups were observed in Peru, where patients with lower education (11.5%) presented a reduction in diabetes care almost twice as high as people with higher levels of education (6.3%) (INEI, 2021[43]).

In a research study surveying a group of 704 oncology physicians from 19 LAC countries, 70% of respondents reported a reduction of new patients, 72% noticed a decrease in follow-up consultations and 58% affirmed having changed the treatments offered to patients with cancer (Bernabe-Ramirez et al., 2022[45]). This is consistent with records showing cervical cancer screening decreases in Mexico (68%), Peru (49%), Brazil (45%) and Chile (9%) and breast cancer screening decreases in Mexico (79%), Peru (51%), Brazil (43%) and Chile (10%) (OECD, 2022[39]). Referrals for oncology patients were also affected: the study by Bernabe-Ramirez et al. (Bernabe-Ramirez et al., 2022[45]) found that 65% of surveyed doctors in LAC reported referral delays and 20% of them reported that surgeries had to be cancelled.

As a result of the disruption in cancer screening, registries management and cancer care services, recorded cancer cases decreased in Peru in 2020 by 50% when compared to the previous 4 year average (MINSA, 2021[46]). Furthermore, treatment for advanced-stage cancer decreased 37% between March 2020 and March 2021 (Chávez Amaya, 2021[47]). As a result, cancer mortality increased in the country by 5.3% when comparing 2020 with 2018 values (WHO, 2020[48]) (OECD, 2022[39]). In Chile, treatment for cervical cancer was reduced by 55% between 2019 and 2020 and a further 8% in 2021, with the reduction in services greater for patients using public health insurance (Superintendencia de Salud, 2022[49]). Brazil saw a decrease of 42% in oncological patient referral between 2019 and 2020 (Borges et al., 2020[50]).

Table 1.1 presents the proportion of countries by levels of disruption of essential healthcare services in 2021 (highest disruption reported during the year), disaggregated by excess deaths performance. Notably, countries experiencing lower than OECD average excess deaths had lower levels of disrupted services during 2021. The disruption in cancer treatment is particularly worrisome, given the immediate health impact it has on the population. Mental healthcare was also severely affected, where challenges included the limited capacity of health services to use virtual/telemedicine platforms to provide care to mental health patients (Antiporta and Bruni, 2020[51]).

Table 1.1. Disruption in healthcare services by excess mortality performance group

Proportion of countries by level of disruption in 2021

Healthcare service	Proportion of disrupted services	Excess deaths higher than OECD average (10 countries*)	Excess deaths lower than OECD average (selected) (8 countries**)
Cancer screening	Less than 5%	20%	50%
	5-25%	10%	13%
	26-50%	30%	0%
	More than 50%	40%	38%
Cancer treatment	Less than 5%	40%	37%
	5-25%	10%	25%
	26-50%	30%	13%
	More than 50%	20%	25%
Child mental health services	Less than 5%	37%	71%
	5-25%	13%	29%
	26-50%	25%	0%
	More than 50%	25%	0%
Antenatal care	Less than 5%	38%	82%
	5-25%	50%	18%
	26-50%	0%	0%
	More than 50%	12%	0%

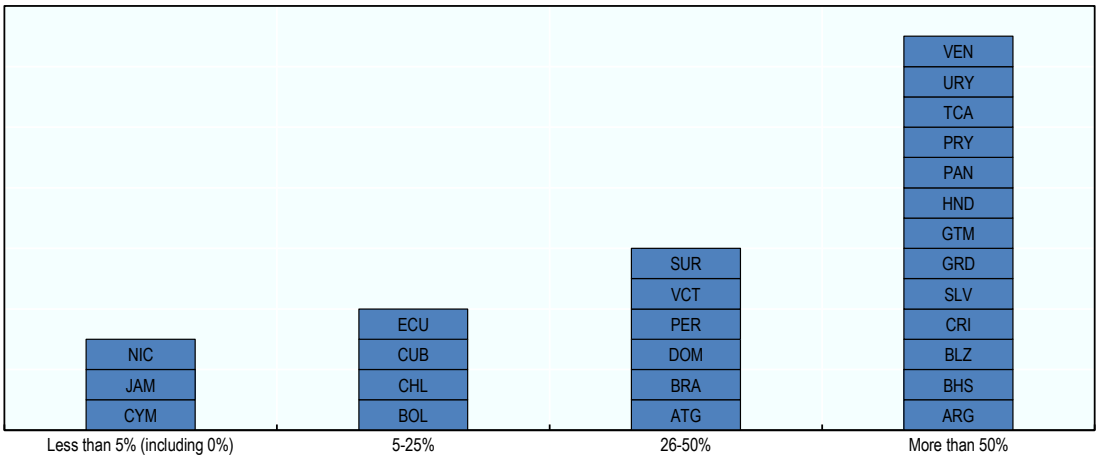
Note: * Data for Colombia and Guyana was not available. ** Data for Trinidad and Tobago was no available. Not all countries responded every question. Selected countries in the lower than OECD average excess deaths groups according to criteria explained in Section 1.2. If a country had two levels of disruption during 2021, the highest disruption is presented.
Source: WHO (2022[8]), Pulse survey on continuity of essential health services during the COVID-19 pandemic, https://apps.who.int/iris/handle/10665/351527.

Countries postponed elective surgeries to redistribute health resources

During 2021, elective surgeries were disrupted in 59% of countries reporting data to the WHO PULSE survey (WHO, 2022[8]). In LAC, 19 out of 27 countries in the survey reported disruptions larger than 25% (Figure 1.9). While most countries in the region severely decreased elective surgeries, some countries with higher than LAC average excess deaths, such as Peru, Bolivia, Ecuador and Saint Vincent, experienced disruptions of less than 50%. Disrupting elective surgeries can have accumulating consequences on health and well-being, especially in the long run. However, given its non-emergency status, it is an area were authorities can re-distribute staff and resources to provide care for patients with COVID-19, as they did for most countries in the world (Nepogodiev et al., 2022[52]).

Figure 1.6. Most countries severely disrupted elective surgeries during 2021

Maximum disruption March or December 2021



Note: Two waves of the PULSE survey are considered in the graph, those of March and December. The highest disruption between the two is reported.
Source: WHO (2022[8]), Pulse survey on continuity of essential health services during the COVID-19 pandemic, https://apps.who.int/iris/handle/10665/351527.

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The collapse of health systems and the death toll of COVID-19 affected mental health

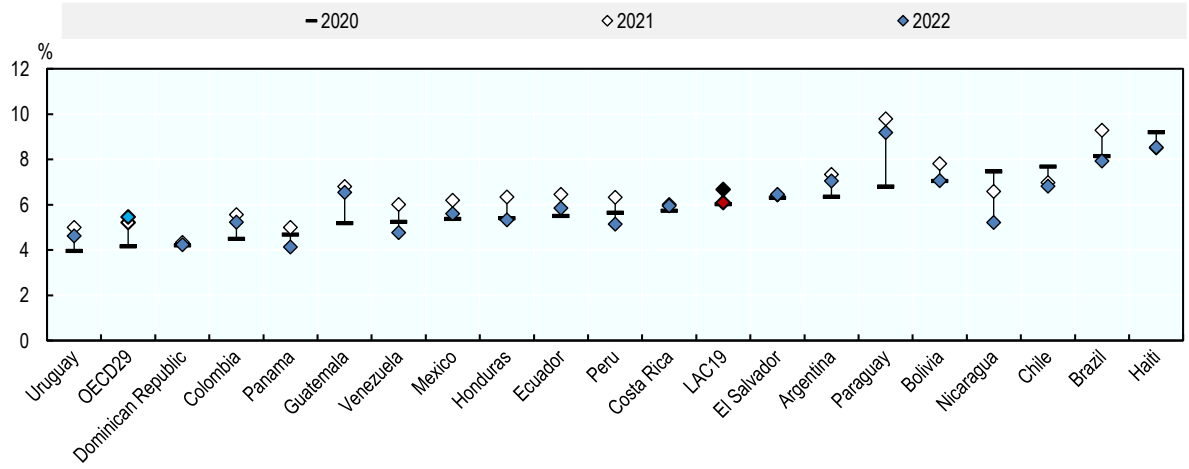
Population's mental health was directly affected by the state of emergency and restrictions to meet family, friends, and other social communities. Research in the region reported that the most frequent reactions to both the pandemic itself and the public health measures that countries implemented were anxiety, stress, and fear. Because of the urgency to intervene the pandemic generated, anxiety was considered by mental health experts to be the number one indirect health effect concern. Given the overwhelming situation and the collapse of healthcare systems, community-based mental healthcare and strengthening the capacities of non-specialised primary health providers were highlighted to be effective interventions to minimise the effect on mental health (Antiporta and Bruni, 2020[51]).

Figure 1.7 presents the percentage of the population out of a representative sample of Facebook users that self-reported feeling nervous over the three years of the pandemic. Only in three countries the level of nervous people decreased between 2020 and 2021, and for all other countries the peak of self-reported nervousness was reached in 2021, coinciding with the peak of reported COVID-19 deaths. In addition, the chart shows how the sense of normality started to settle during 2022, with nervousness levels decreasing compared to 2021 in all the countries in the region. Other factors may also have affected this indicator. The OECD average shows a peak of nervousness in the population in 2022. This could be related to the ongoing conflict in Ukraine, as well as the surge in COVID-19 deaths during the first months of this year.

The percentage of people that reported wanting more information on how to remain mentally healthy during the pandemic is a good indicator of the responsiveness of the systems in this topic. Among the 19 LAC countries with available data, 41% of the population on average reported wanting more information. In contrast, only 29% of the population reported this along 29 OECD countries. In Peru and Chile, about 50% of people in 2021 would have liked to have more information on mental health. In contrast, 30% and 34% of people in Uruguay and Argentina were in this situation (The University of Maryland Social Data Science Center & Facebook, 2020[14]).

Figure 1.7. The proportion of people in mental distress peaked in 2021

Respondents who reported feeling nervous most or all the time over the past 7 days



Note: Data is a representative sample of Facebook users. Data from April 2020 to June 2022.
Source: The University of Maryland Social Data Science Center (2020[14]), Global COVID-19 Trends and Impact Survey in partnership with Facebook, https://covidmap.umd.edu/.

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1.4. Countries that adopted a comprehensive pandemic response were able to minimise loss of life

Countries' pandemic response were in large part defined by the capabilities of their health systems, but also by structural factors that affected circulation of the virus in their countries. This analysis begins by comparing public health and social measures directed at mitigating the spread of the virus among the population. Second, a comparison of policies directed at strengthening the healthcare system is conducted, examining those put in place to treat COVID-19 patients as well as securing the provision of essential non-COVID-19 care during the pandemic.

1.4.1. Public health policies to mitigate the impact of the COVID-19 pandemic reduced excess deaths

The range of public health policies directed at mitigating the effects of the pandemic was summarised by the Oxford COVID-19 Government Response Tracker in four areas; containment and closure, economic, health system, and vaccination, and included 21 indicators (Oxford COVID-19 Government Response Tracker, 2022[15]). Most countries in LAC (26 out of 28 in the database) implemented all the containment and closure measures (eight indicators) at some point and at some level between 2020 and June 2022. However, the length and stringency of the measures varied between countries. Table 1.2 shows the length of time LAC countries implemented containment and closure measures at the strictest level. The most significant differences can be found in the lockdown indicator, where Chile leads the region with 426 days under orders of not leaving the house without a formal excuse. In contrast, nine countries did not implement the strictest level of lockdown for different reasons, one of them being complex legal procedures and congressional approval (Costa Rica). On average, countries that had lower than OECD average excess deaths had seven out of eight measures at the strictest level for longer than countries with higher excess mortality (Table 1.2). However, the average is heavily influenced by one or two countries in each group with exceptionally high or low values. Peru is a notable outlier in a counterintuitive direction, as the country implemented one of the strictest policies in the region but still had a low performance in terms of excess deaths.

Assessing the relationship between public health policies and excess mortality requires unravelling an important timing effect in pandemic response. On one hand, countries amid a COVID-19 surge of cases and deaths are pressured to strengthen their containment measures. On the other hand, if a country has stricter measures, it can minimise future surges in cases and deaths. Figure 1.8. presents the Containment Index for 27 countries in the region in the second quarter of three years of the COVID-19 pandemic (2020 to 2022). Six countries – Jamaica, Chile, Barbados, Suriname,

Venezuela, Costa Rica, and Uruguay – had stricter containment measures in the second quarter of 2021 than the year prior in 2020. All of these countries had lower-than-OECD-average excess deaths. Furthermore, except for Peru and Guyana, countries in the graph that had higher-than-OECD-average excess deaths during 2020-21 decreased the stringency of their containment measures in 2021 by more than 11% compared to the same quarter in 2020 (Peru and Guyana decreased 5 and 6% in this period, respectively).

Considering that the surge in COVID-19 deaths happened during 2021 (Figure 1.2), Figure 1.8. shows how LAC adopted a strict approach early in 2020, with most countries in the region having a higher containment index than the OECD average at this stage. The objective of this strategy was to minimise the initial spread of the virus, in line with the world-wide "Flattening the curve" approach (The Economist, 2020[53]; OECD, 2020[54]) and was somewhat effective in the short term. However, following a mix of economic and political exhaustion, lowered public adherence with containment measures, and public health prospects brought forth by the COVID-19 vaccine, many countries were not able to maintain the stringency of their measures during 2021 which directly affected the death toll of the pandemic. This hypothesis is supported by Figure 1.9, where it is shown that the containment index in the second quarter of 2020 has a counterintuitive positive correlation with the cumulative excess mortality during the pandemic, but this correlation is negative (as it should be) when considering the same index one year later.

Table 1.2. Length of public measures by excess mortality group

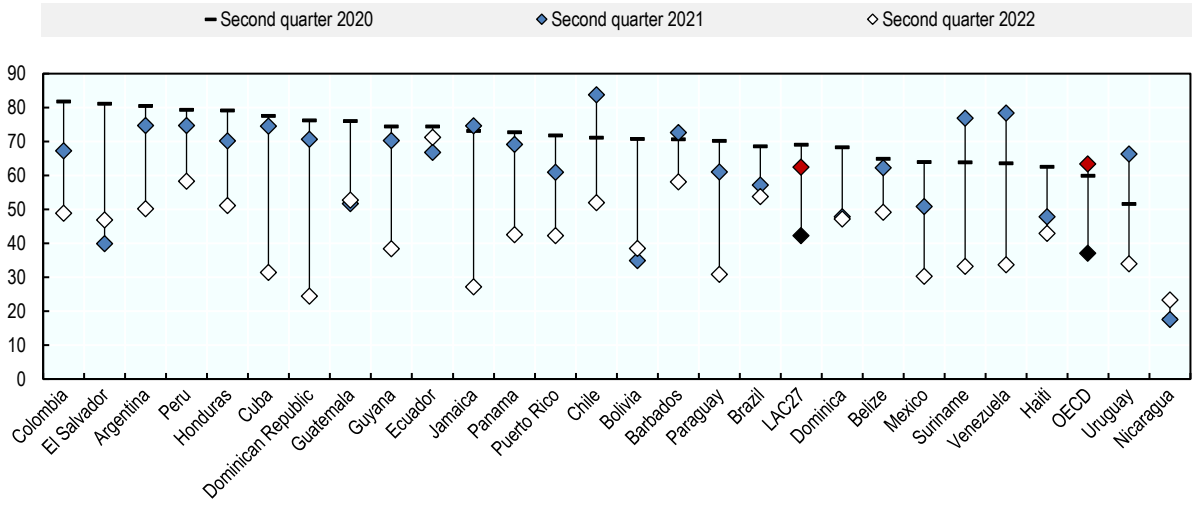
In number of days, from March 2020 until December 2021

Excess deaths groups	Country	People gatherings	Lockdown	School closure	Border closure	Internal movement	Workplace	Public events	Public transport
Less than OECD average (*)	Venezuela	543	47	601	383	487	439	605	37
	Uruguay	154	0	140	403	28	16	407	0
	Jamaica	332	71	136	86	654	87	631	161
	Trinidad and Tobago	526	0	331	481	252	136	651	111
	Cuba	561	38	515	178	602	241	613	461
	Panama	215	165	530	177	337	161	620	158
	Costa Rica	0	0	377	137	323	39	601	23
	Argentina	554	39	420	385	546	137	569	557
	Chile	323	426	465	226	647	431	564	209
	Average	**356**	**87**	**391**	**273**	**431**	**187**	**585**	**191**
Between OECD and LAC averages	Bahamas	556	17	390	99	502	141	443	152
	El Salvador	70	87	391	191	185	73	342	109
	Guatemala	560	0	336	153	211	132	535	252
	Paraguay	165	61	338	205	154	98	381	27
	Brazil	272	54	388	124	655	369	579	271
	Colombia	218	124	323	404	273	231	444	124
	Average	**307**	**57**	**361**	**196**	**330**	**174**	**454**	**156**
Over LAC average	Guyana	613	0	145	199	390	89	638	0
	Ecuador	375	28	352	133	338	122	601	131
	Mexico	42	0	525	0	636	285	385	0
	Bolivia	279	4	326	288	255	96	284	260
	Peru	623	220	250	199	456	112	660	243
	Average	**386**	**50**	**320**	**164**	**415**	**141**	**514**	**127**

Note: (*) Selected countries as defined in Section 1.2. Strictest level corresponds to the following: People gatherings: Limited to 10 people or less; Lockdown: Not leaving the house without a formal excuse and minimal exceptions; School closure: Complete closure of schools, online classes only; Border closure: Total border closure for foreign travellers with minimal exceptions. Internal movement: Restricted movement; Workplace: require closing (or work from home) all but essential workplaces (e.g. grocery stores, doctors); Public events: Required cancelling; Public transport: Require closing (or prohibit most citizens from using it).
Source: Oxford Government Response Tracker (2022[15]) as reported in Our World in Data: https://ourworldindata.org/grapher/covid-containment-and-health-index.

Figure 1.8. The stringency of containment measures did not align with waves of excess deaths for most countries

The index is calculated as the mean score of 13 response metrics, taking a value between 0 and 100



Note: The Containment index is a composite measure based on 13 policy response indicators including school closures, workplace closures, travel bans, testing policy, contact tracing, face coverings, and vaccine policy rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.
Source: Oxford Government Response Tracker (2022[15]) as reported in Our World in Data: https://ourworldindata.org/grapher/covid-containment-and-health-index.

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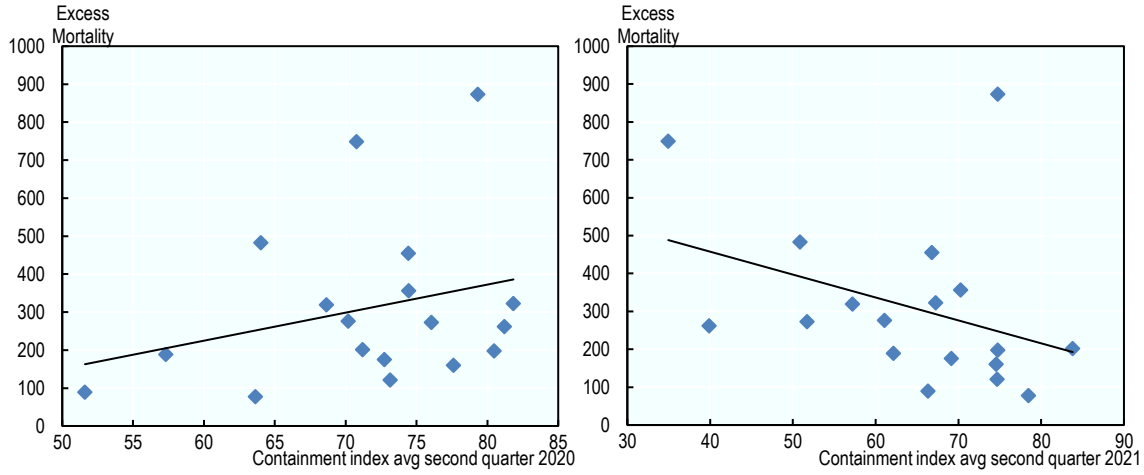
Figure 1.9. Stricter containment policies in the second quarter of 2021 are associated with lower excess mortality

Cumulative excess mortality 2020 and 2021 vs containment index in second quarter of 2020 and 2021



Note: Excess mortality measured as excess deaths (as estimated by WHO) per 100 000 population.
Source: Government Response Tracker (2022[15]) as reported in Our World in Data: https://ourworldindata.org/grapher/covid-containment-and-health-index; WHO (2022[7]), "Global excess deaths associated with COVID-19 (modelled estimates)", as of 25 March 2022, https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates.

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Box 1.3. Response to other epidemics or pandemics in LAC

2009 AH1N1 pandemic in Mexico and LAC

Latin America and the Caribbean has not been spared from previous epidemics and outbreaks, whether they be human-to-human infectious diseases or vector-borne diseases. For example, the 2009 pandemic of the infectious respiratory disease produced by the influenza A virus subtype H1N1 greatly affected the LAC region.

In a country-specific case, Mexico began preparing a National Influenza Preparedness Plan (NIPP) shortly after the SARS 2003 epidemic emerged in Asia. Completed in 2005, this plan was already being tested at a national level by 2006. In the absence of LAC regional health mechanisms, Mexico's NIPP was complemented with the North American Plan for Avian and Pandemic Influenza developed by the governments of Canada, Mexico, and the United States. This national plan allowed Mexico to face the 2009 AH1N1 pandemic with stockpiles of strategic medicines and personal protective equipment (PPEs), pre-tested risk communication campaigns, and networks to distribute vaccines more efficiently. Nevertheless, the preparedness for intensive care units' beds, ventilators, and the number of qualified personnel to use these tools were not sufficient, as has been the case during the COVID-19 pandemic. Furthermore, even if vaccines were available, they arrived late and in limited amounts, signalling another aspect to improve.

Many lessons that ought to have been learned from the 2009 AH1N1 pandemic were not applied consistently not only in Mexico but also in most of LAC. For example, the late involvement of the highest-level authorities convening after the arrival of SARS-CoV-2 to the region delayed inter-sectoral readiness. In addition, the slow reaction to acquire strategic medical resources such as PPEs, drugs, and laboratory supplies allowed regions affected before LAC to exponentially increase their demand for these goods, thus distorting global markets and making these medical supplies more scarce and more expensive, hindering the capacity of LAC countries to face the COVID-19 pandemic.

Epidemiological surveillance: The 2015-16 Zika virus outbreaks in the northeast of Brazil

The northeast of Brazil has experienced significant Zika virus outbreaks, which included cases associated with microcephaly and other birth defects. During certain peaks, more than 200 000 cases were reported in Brazil (by the end of 2016), having the highest number of cases worldwide as well as the most cases associated with birth defects (2 366). To track the evolution of this outbreak, a genomic and epidemiological surveillance effort was undertaken.

The ZiBRA mobile genomics laboratory screened 1 330 samples from patients in 82 municipalities across the federal states of Alagoas, Bahia, Paraiba, Pernambuco and Rio Grande do Norte, with the support of the Ministry of Health and other institutions. The samples that were provided by public health laboratories and the Fundação Oswaldo Cruz (FIOCRUZ) were screened for the presence of Zika virus using real-time quantitative PCR tests. The analyses undertaken with these samples allowed to estimate that Zika virus was present in northeast Brazil by early 2014 and was likely to have spread from there to other areas of Brazil and the rest of LAC.

Source: Di Paolantonio (2020[55]); "Fostering resilience in the post-COVID-19 health systems of Latin America and the Caribbean", https://www.oecd.org/about/civil-society/youth/Shaping-the-Covid-19-Recovery-Ideas-from-OECD-s-Generation-Y-and-Z.pdf; OECD (2022[39]), *Primary Health Care for Resilient Health Systems in Latin America*, https://doi.org/10.1787/743e6228-en.

Financial assistance to mitigate social and economic consequences of the pandemic was widespread

To facilitate adherence to containment measures, and to mitigate economic and social consequences of the pandemic, one of the most important policies implemented by countries worldwide were the direct transfers of resources to a large portion of the population (ECLAC, 2022[3]).

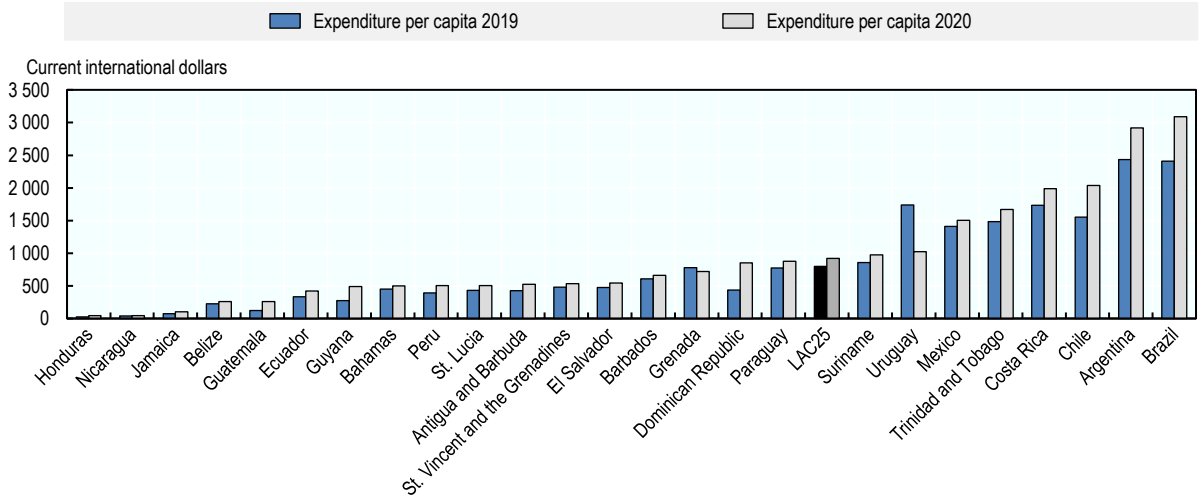
Figure 1.10 shows public spending per capita in social protection in 2019 and 2020 in the LAC region. Uruguay is the only country in the region (with available data) that considerably decreased (in nominal terms) the amount spent on social protection in 2020. This decrease is explained by the creation of the "Fondo Solidario COVID-19" an off-budget fund that centralised resources for the pandemic response (Restrepo, Palacios and Espinal, 2022[56]). Moreover, a

significant portion of economic relief expenses came from unemployment insurance (Amarante, 2022[57]). Other countries also implemented off-budget resource transfers to mitigate the economic effect of the pandemic which are not reflected in the figure. For instance, in Chile, people were allowed to withdraw 10% of their individual social pension scheme four times between 2020 and 2022.

Moreover, eight countries (Brazil, Argentina, Chile, Costa Rica, Trinidad and Tobago, Mexico, Uruguay and Suriname) spent over the LAC average in social protection in 2020, the same countries which were below the LAC average of excess deaths except for Mexico. On the other hand, Ecuador and Peru are at the lower end of social protection spending while being over the LAC average of excess deaths. The relation between the variables is, however, not so evident. Honduras, Belize and Jamaica (among others) had lower than the OECD average excess deaths, while having some of the lowest levels of per capita spending in social protection during 2020.

Figure 1.10. Most countries increased public expenditure in social protection

Public expenditure in social protection per capita, PPP (current international dollars)



Note: Social protection includes Sick leaves and disability allowances, old age, survivor family member allowance, family and children, unemployment, housing, social exclusion, research and development related to social protection, and other social protection expenditures.
PPP: Purchasing power parity.
Source: ECLAC (2021[16]), Public expenditure on social protection. PPP conversion values: World Bank World Development Indicators database, https://statistics.cepal.org/portal/cepalstat/dashboard.html?indicator_id=4409&area_id=2313&lang=es.

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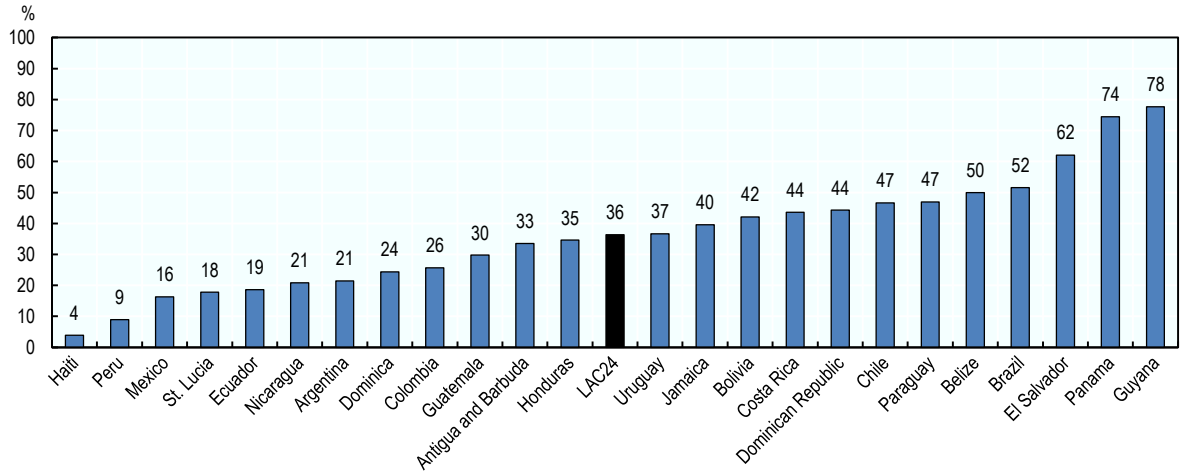
The scope of the social protection policies had a clear effect on the ability of countries to maintain as many people as possible complying with pandemic restrictions. Economies in LAC are marked by high levels of inequalities, a large middle class with low levels of household savings and high levels of debt and important labour informality (ECLAC, 2022[3]). In this sense, if more households were supported and could secure their livelihood, more would have been financially able to stay at home and limit the spread of the virus. Figure 1.11 shows the percentage of households that received any form of financial assistance during 2020-21. While the data is limited in informing about the amounts of the assistance, there are some patterns that proxy the relationship between public support to maintain public health measures and overall excess deaths. Some countries with lower performance in terms of excess deaths appear at the lower end of the graph, such as Peru, Mexico and Ecuador. However, countries like Guyana, El Salvador, Brazil and Paraguay provided financial assistance to more than 45% of households and still had higher than OECD average excess deaths.

Figure 1.11. Efforts were made to financially assist the population

Percentage of households that received any form of assistance since the start of the pandemic



Note: Data collected between 2020 and 2021. Data from high-frequency mobile surveys designed to be representative of the underlying population.
Source: World Bank (2021[11]), COVID-19 High-Frequency Monitoring Dashboard, https://www.worldbank.org/en/data/interactive/2020/11/11/COVID-19-high-frequency-monitoring-dashboard.

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1.4.2. Strengthening the healthcare sector was key to weather the pandemic

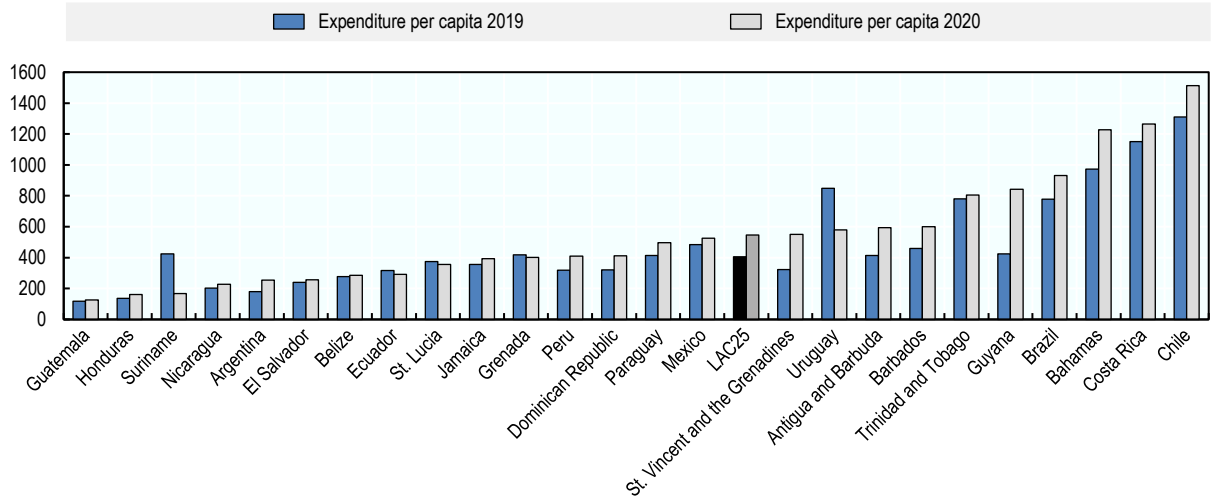
All countries in the region implemented policies to boost their budgets in health and to reorganise the system to better deal with the health emergency. While the average increase in public spending on health in the region in 2020 was nominally around 16% (12% when accounting for inflation) (ECLAC, 2021[16]), other important policies relate to enhancing the role of primary care, expanding the provision and incentives for healthcare workers, centralizing hospital care co-ordination and purchasing test kits, vaccines, respirators, protective equipment, and other supplies.

Countries increased public spending in health

Public expenditure in health in 2019 and 2020 is showed in Figure . The largest increases (without accounting for inflation) are found in Guyana (99%), St. Vincent and the Grenadines (71%), Antigua and Barbuda(43%) and Argentina(42%). Argentina is a special case, as the high inflation registered in 2020 (42% (OECD, 2023[58])) neutralises the nominal increase to zero. The highest per capita expenditures are found in Chile (1 514 USD PPP), Costa Rica (1 264 USD PPP), and Bahamas (1 228 USD PPP), three countries below or near the OECD average of excess deaths (Figure). Suriname and Uruguay are the only countries that significantly reduced their public health spending. For Suriname, the decrease responds to a general policy of fiscal austerity to deal with the economic crisis in the country (ECLAC/CEPAL, 2022[59]). Moreover, the creation of special funds for the pandemic (ECLAC/CEPAL, 2022[59]) might not be accurately reflected in the amount presented in the figure. In the case of Uruguay, the decrease is explained by the "Fondo Solidario COVID-19", off-budget fund that centralised resources for the pandemic response (Restrepo, Palacios and Espinal, 2022[56]). Other mechanisms to finance pandemic health expenditure that are not reflected in the figure include the use of emergency and disaster funds, like in Costa Rica, where these funds were used to cover for the public use of private care service capacities.

Figure 1.12. Most countries increased public expenditure in health

Public expenditure in health per capita, PPP (current international dollars)



Note: Public expenditure in health includes medical equipment and supplies, outpatient services, hospital services, public health services, R&D related to health, other health expenditure.
PPP: Purchasing power parity.
Source: ECLAC (2021[16]), Public expenditure on Health. PPP conversion values: World Bank World Development Indicators database, https://statistics.cepal.org/portal/cepalstat/dashboard.html?indicator_id=4409&area_id=2313&lang=es.

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In contrast to total public health spending, additional fiscal efforts to deal with the pandemic are better represented in the database of country fiscal measures between January 2020 and October 2021 in response to the COVID-19 pandemic by the International Monetary Fund (IMF, 2021[60]). However, there is no discernible correlation between the per capita amounts spent in COVID-19 additional fiscal efforts and levels of excess mortality, highlighting the importance of both the total spending, as a proxy of a stronger health system, and the early spending increase for a swift response.

The role of primary care in early detection, treatment, and follow-up of COVID-19

The WHO highlighted that gatekeeping and care-co-ordination for treatment and follow-up of COVID-19 patients are effective measures to improve the efficiency of health systems in responding to the pandemic (WHO, 2021[61]). In this principle, primary healthcare is an essential actor in countries' pandemic response. However, the overall response to the pandemic in LAC has been mainly centred on hospital care of severe COVID-19 patients. Despite countries having more emphasis in hospital care than primary care, the latter is likely to be an important determinant of better performance during the pandemic. In this sense, countries with stronger primary healthcare systems have shown signs of greater resilience during the pandemic (OECD, 2022[39]).

Primary healthcare (PHC) has been used in different capacities, summarised in prevention, early detection, and care management. Regarding prevention, PHC has been used to create awareness on COVID-19 risks and disseminating public health information, to identify and reach out to high-risk populations, and for contact tracing and quarantine supervision. In terms of early detection, PHC providers were a major actor in the countries' testing capabilities. Finally, PHC providers had an important role in the care for mild COVID-19 cases and patients with long-lasting symptoms ("Long COVID-19"), either in the healthcare facilities of co-ordinating community care through digital health and home visits.

Table 1.3 summarises the role of PHC in the pandemic response in seven LAC countries. Costa Rica, Argentina and Chile relied on PHC for more testing capacities than other countries in the group. At the same time, they had fewer excess deaths (lower than OECD average) when combining figures from 2020 and 2021. All countries in the assessment relied on PHC to care for mild COVID-19 patients and to co-ordinate care in the community with either home visits or telehealth and telemonitoring. Contact tracing and supervising quarantine was the least common capacity assigned to PHC. However, caring for long COVID in PHC has been overlooked by most countries in the assessment, with only small initiatives in this regard in Mexico, Costa Rica, Peru and Colombia (OECD, 2022[39]).

The availability of COVID-19 testing in these seven countries was rather limited at the start of the pandemic, together with limited laboratory and technical capacities to test at the needed scale. In addition, centralised guidance from ministries of health for COVID-19 diagnosis often came at a later stage, requiring local authorities to develop their own protocols early on (OECD, 2022[39]). On the other hand, while COVID-19 vaccinations were also limited when first available at large scale, guidelines were fairly organised for its implementation. Some countries included explicit guidelines for managing indirect health effects of COVID-19 at PHC level. In Colombia and Chile for example, mental health guidelines included recommendations on how to deal with gender-based and domestic violence (OECD, 2022[39]).

Table 1.3. The role of primary care in pandemic response

Selected Latin American Countries

	Informing and Educating about COVID-19	Identifying and reaching high risk population toward COVID-19	Contact tracing, and supervising quarantine since the beginning of the pandemic	PHC involved in immunisation for COVID-19	PHC facilities to carry out COVID-19 testing	Care for mild-COVID-19 cases
Costa Rica	Yes	Yes	Yes	Yes	Yes	Yes
Argentina	Yes	Yes	Yes	Yes	Yes	Yes
Chile	Yes	Yes	Yes	Yes	Yes	Yes
Brazil	Yes	Yes*	Yes*	Yes	Yes	Yes
Colombia		Yes	Yes			Yes
Mexico	Yes	Yes				Yes
Peru	Yes			Yes	Yes	Yes

Note: Countries are sorted according to the excess deaths during the pandemic. (*) The original table omitted these two capacities for Brazil, however, ordinance No.1444; No. 2045; No. 2 222, No.2358; No.2994 from 2020 (available at https://www.in.gov.br/inicio) assign incentives for PHC centres to deliver these capacities. Nevertheless, it is not clear if the incentives effectively triggered the capacities systematically at the national level.
Source: Adapted from "OECD Secretariat based on the 2021 Policy Survey on the role of primary health care during the COVID-19 pandemic" in OECD (2022[39]), *Primary Health Care for Resilient Health Systems in Latin America*, https://doi.org/10.1787/743e6228-en.

Countries revamped telemedicine and remote services during the pandemic

To mitigate the sharp reduction in patient consultations and disruption of routine care, telemedicine, and other practices for delivering services remotely were implemented in many countries in the region. Mexico, Chile and Argentina implemented initiatives to maintain drug adherence of patients, enable online refills, external pick-ups, community drug deliveries and electronic prescriptions (Arsenault et al., 2022[41]; OIT/ILO, 2021[62]). Panama started an initiative to co-ordinate home visits with telemedicine for daily monitoring of patients, while Uruguay established a free phone medical consultation service (OIT/ILO, 2021[62]).

National programs to co-ordinate electronic consultations with general practitioners and specialists were implemented in Argentina, Peru, Colombia, Guatemala, Panama, Uruguay, Mexico, Costa Rica and Chile (LeRouge et al., 2019[63]). The new national strategies involved updating legislation and guidelines to address challenges limiting the implementation of tele-medicine. In Costa Rica, from January to May 2020, out of 680 644 consultations registered at the first level of care, 188 108 (28%) were conducted through alternative methods of care (phone or video calls) (CCSS, 2020[64]).

The region focused on enhancing hospital care capacities

Countries in the region had different approaches to enhancing their hospital capacities, in line with their structural needs. Brazil focused on procuring ICU beds with the help of new legislation, allowing for the federal government to transfers funds for this purpose. Other countries opted for a centralised approach creating new intensive care in-patient facilities, either by revamping wards of existing hospitals, like the case of "Hospital Español" in Uruguay and the Hospital facilities of the "Caja de Seguro Social" (National Insurance Fund) in Panama, or by creating emergency modular hospitals in Argentina, Chile, Paraguay, Peru and Costa Rica. Additionally, some countries, like Costa Rica, temporarily converted whole hospitals and hospital wards for COVID-19 care. At the same time, countries worked to secure provision of essential supplies, medical equipment and personnel, and other basic utilities in their health

facilities at all levels. Other infrastructure, such as stadiums, hotels and clubs have been converted to health centres to deal with mild or potential COVID-19 cases (OIT/ILO, 2021[62]).

The co-ordination between authorities and public-private health facilities was crucial for maximising countries' capacities and efficiency to care for patients (COVID-19 and non-COVID-19) during the pandemic. Chile and Colombia adopted a centralised approach including management of public and private hospitals, in terms of hospital beds, mechanic ventilators and triage. Mexico secured a deal with a large private hospital network to treat for non-COVID-19 patients and decompress public hospitals to care for COVID-19 patients (OIT/ILO, 2021[62]). A similar situation happened in Costa Rica, where the institution managing healthcare (Caja Costaricence de Seguro Social") directed private providers to care for non-COVID-19 patients to concentrate COVID-19 care in public hospitals.

Health workforce played a crucial role in the pandemic response

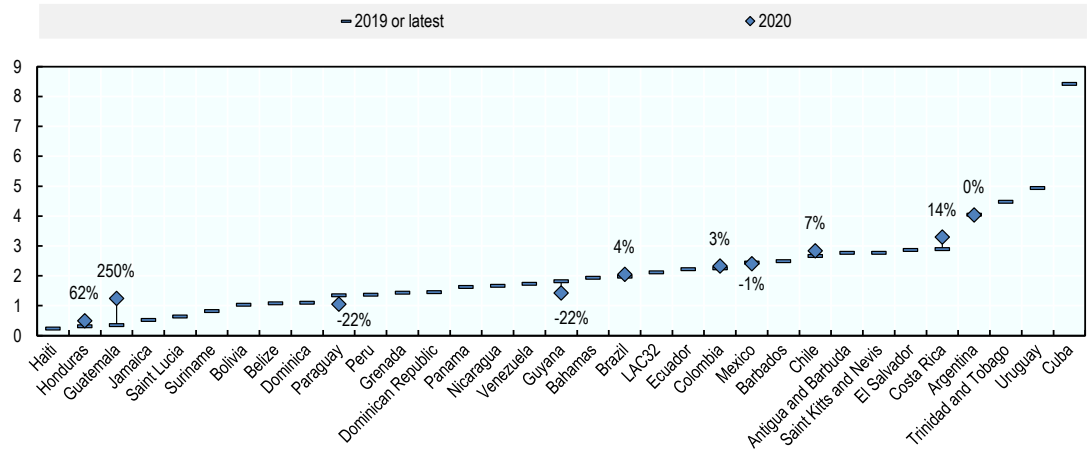
The COVID-19 pandemic evidenced the weaknesses of healthcare systems in the region to appropriately supply their medical facilities with healthcare personnel, particularly in rural areas and at the primary healthcare level. Countries in the region adopted new legislation to increase the amount and efficiently distribute healthcare workers for the pandemic efforts. For example, several countries created new criteria to allow for health workforces-in-training to work alongside professional staff in limited capacities. At the same time there was an observed increase in the budget for remuneration of healthcare workers. However, only a few countries focused the budget increase to strengthen PHC or in policies to strengthen human resources management in the long term. It is not clear if the increase and efficient management of healthcare workers will remain in the future as an effort to improve healthcare quality. The gender perspective regarding health workforce during the pandemic was overlooked, an especially important issue because of the disproportionate burden in women to care for COVID-19 patients and other functions related to the pandemic response (Cho and Levin, 2022[65]). On a positive note, the pandemic allowed for collaborative efforts between countries in the region aimed at improving the management, training, and planning of healthcare human resources.

Out of ten LAC countries with available data, six increased the rate of doctors per 1 000 inhabitants, while three countries decreased and one maintained said rate (Figure 1.13). There is a strong association between excess deaths and the baseline rate of doctors before the pandemic. The five countries in LAC with more doctors per population before the pandemic had lower than OECD excess deaths. A sixth country, Chile, was ninth in the region. All these countries had more than 2.7 doctors per 1 000 people, in 2019, 26% above the LAC average. At the same time, the two countries with highest rates of excess deaths, Bolivia and Peru, are among the lowest in number of doctors before the pandemic, with 1.03 and 1.37 per 1 000 population, respectively.

In terms of the changes in number of doctors to deal with the pandemic in 2020, two countries which substantially increased their number of doctors, Honduras and Guatemala, had lower than LAC average excess deaths despite being at the lower end of the region in number of doctors before the pandemic, and still below the LAC average in 2020. In contrast, countries that reduced their rate of doctors had higher than OECD (Paraguay) or higher than LAC average excess deaths (Mexico and Guyana). As mentioned previously, it is not clear if the increase in healthcare workers will remain in the future. For some countries, like Costa Rica, this will most certainly not be the case given that new hires were transitory and aligned with the virus waves.

Figure 1.13. Countries with more doctors per inhabitant had lower levels of excess deaths

Medical doctors per 1 000 inhabitants in 2019 or latest available year and 2020



Note: Labels indicate the proportional difference.
Source: WHO Global Health Observatory 2022; OECD Health Statistics (2022[18]) for OECD average, Argentina, Peru, Brazil and Mexico, https://doi.org/10.1787/health-data-en.

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Health workforce shortages during the pandemic have motivated other OECD countries to re-evaluate the scope of practice attributed to healthcare staff such as nurses and community health workers. Supported by literature (Maier, Aiken and Busse, 2017[66]), countries have recognised that non-physician healthcare workers with enhanced education and training can improve access to services, reduce waiting times, and deliver the same quality of care as doctors for limited services.

In this regard, several OECD countries used fast-track licenses and provided exceptional training to mobilise healthcare providers to address the COVID-19 pandemic. Australia, Austria, Finland, Latvia, Spain, Switzerland, the United Kingdom and the United States, for instance, created new roles and rearranged tasks from both physician and non-physician health workers to maintain care continuity for non-acute COVID-19 cases in the community or at home. LAC countries could follow this example and expand the role of community health workers and nurses to care for certain conditions, such as routine control of chronic diseases, to maximise capacity during health emergencies and minimise care disruptions. Brazil, for example, uses community health workers for improving medication compliance (OECD, 2021[67]).

Vaccination became the number one priority in LAC pandemic response

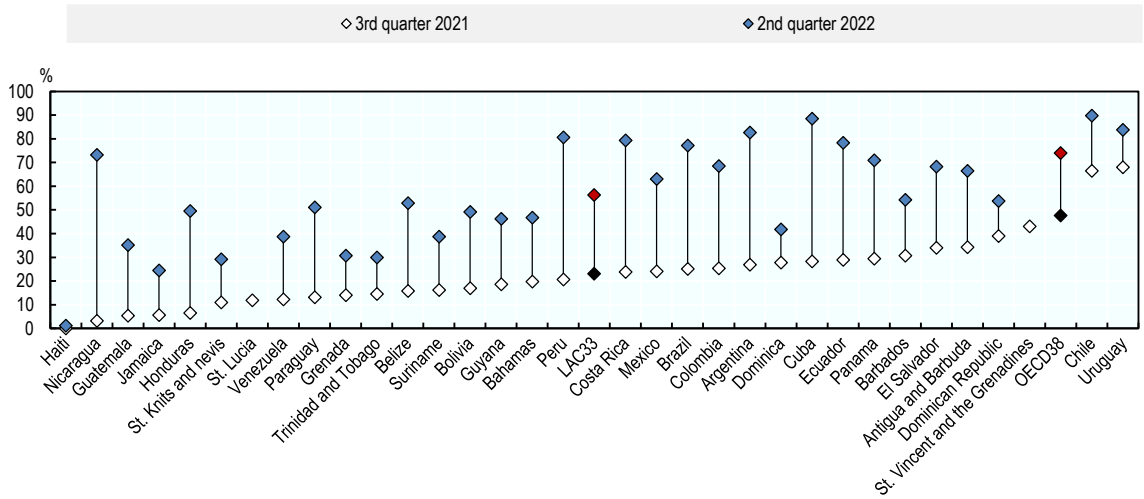
The COVID-19 vaccine first became available to the general population in the region in December 2020 in Chile, Costa Rica, Mexico and Argentina. Soon after, all the other countries in the region had access to the vaccine, where Haiti was the last country that started vaccinating people in July 2021. Consequently, especially during 2021, the focus of health authorities for containing the pandemic was given to quickly and efficiently rollout the COVID-19 vaccine. Figure 1.14 shows the percentage of the population fully vaccinated in two different moments of the pandemic. In Latin America and the Caribbean, the COVID-19 vaccine had, in general, a slower rollout compared to OECD countries. In part, this was due to procurement issues. Furthermore, the rollout in the Caribbean nations was lower than in the rest of LAC (ECLAC, 2022[3]). When comparing the vaccination rollout between excess deaths groups defined in Section 1.3, several of the countries in the best performing group (Chile, Uruguay, Argentina, Cuba, Panama and Costa Rica) had higher than LAC average vaccination coverage by the 3rd quarter of 2021. On the other hand, most countries in the lower performance groups (Bolivia, Peru, Mexico, Colombia, Guyana and Brazil, among others) had around the average or lower than average vaccination coverage at the same period.

Primary healthcare facilitated the implementation of COVID-19 vaccine distribution in Argentina, Peru, Brazil, Chile and Costa Rica (Table 1.3). The involvement of PHC in these capacities was deemed an effective strategy to increase the efficiency of the pandemic response. By contrast, PHC did not play a central role in COVID-19 vaccination in

Colombia and Mexico. The effectiveness of using PHC for the vaccination rollout is partially reflected in the share of the population fully vaccinated in the second quarter of 2022, a time where vaccines were widely available worldwide. While Mexico and Colombia had 63% and 69% of their population covered respectively, countries using PHC for vaccination rollout had more than 77% of their population covered by this time (Figure 1.14).

Figure 1.14. LAC had a slow start in vaccination, but quickly recovered by 2022

Proportion of people who received all doses prescribed by the initial vaccination protocol



Note: The indicator considers the entire population and does not adjust by countries' age structure or vaccinable population.
Source: Mathieu et al. (2021[17]), "A global database of COVID-19 vaccinations", https://doi.org/10.1038/s41562-021-01122-8, available at Ritchie et al. (2020[68]), "Coronavirus Pandemic (COVID-19)", Our World in Data, https://ourworldindata.org/coronavirus.

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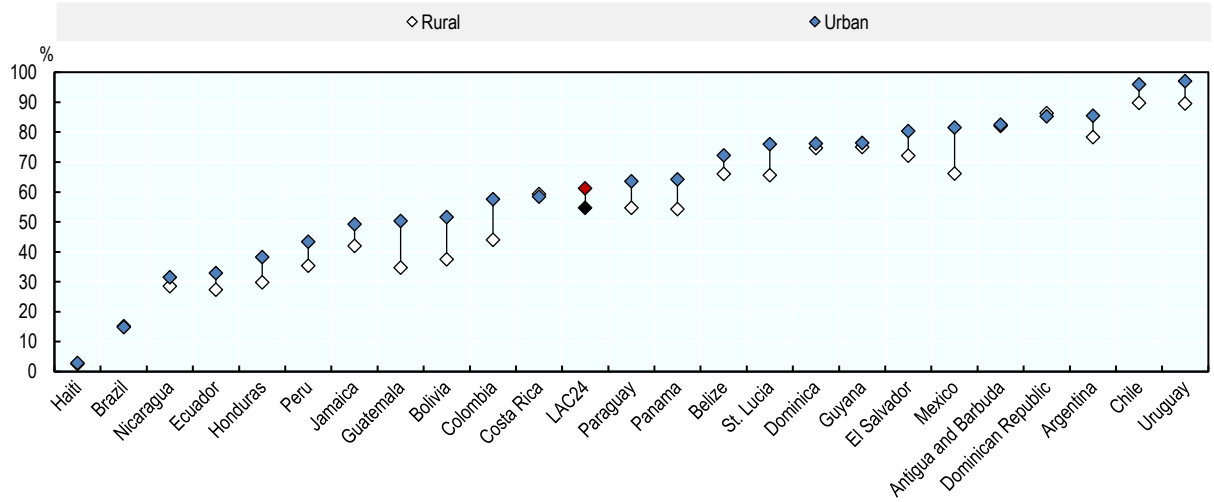
Being able to communicate the vaccination plan was crucial for a swift and efficient vaccine rollout. Figure 1.15 shows the percentage of respondents of a country representative sample that were aware of the procedure to get the COVID-9 vaccine in their country of residence during 2021. Uruguay, Chile, Argentina, Dominican Republic, and Antigua and Barbuda led the group with between 78% and 97% of people living in both urban and rural areas aware of how to receive the COVID-19 vaccine. Coincidentally, all these countries are in the best performing group in terms of excess deaths, and three of them capitalised on PHC for their vaccination efforts. On the other hand, countries that were less effective in communicating their vaccinations plans correlate with countries with levels of excess deaths over the LAC average. The difference between vaccination knowledge between rural and urban areas was more pronounced in Mexico, Guatemala, Bolivia and Colombia with a difference of up to 15 percentage points. At the same time, Mexico and Colombia did not rely on PHC for this purpose. On average, only 59% of the population knew how to get vaccinated in LAC in 2021, disaggregated to 61% of people in urban areas and 55% in rural areas. The community-based approach of primary healthcare lends a strong argument to capitalise on PHC for this purpose (OECD, 2022[39]).

Figure 1.15. Vaccine communication campaigns have room for improvement

Percentage of respondents that know how to get a COVID-19 vaccine, 2021



Note: Data collected in 2021. Data from high-frequency mobile surveys designed to be representative of the underlying population.
Source: World Bank (2021[11]), COVID-19 High-Frequency Monitoring Dashboard, https://www.worldbank.org/en/data/interactive/2020/11/11/covid-19-high-frequency-monitoring-dashboard.

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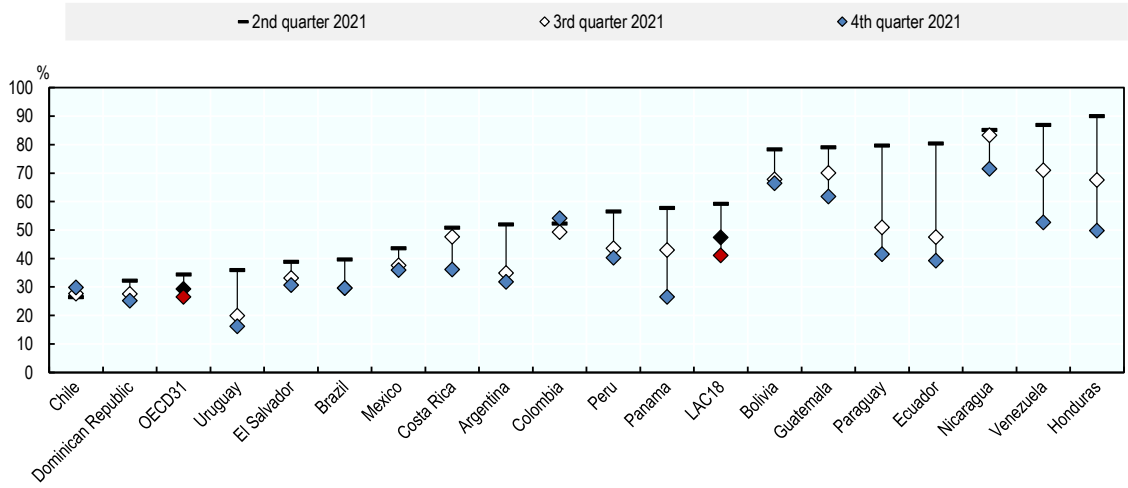
Effective implementation of vaccination plans entailed both the appropriate dissemination of information and the vaccination schedule. For a successful implementation, the potential barriers preventing people from getting a vaccine needed to be acknowledged and addressed. Figure 1.16 presents the proportion of people (out of Facebook users) that encountered barriers preventing them from getting vaccinated. Barriers included: not possessing adequate documentation, not being able to take time off work or school, no available appointments, restricted appointment times, and travel to the vaccination site, among others. Barriers in the first quarter of 2021 affected 59% of responders, significantly more than the OECD average at the same time (34% of responders). There are no evident patterns between vaccine barriers and performance in terms of excess mortality. Nevertheless, several countries (Chile, Dom. Republic, Uruguay and Argentina) with less than OECD average excess deaths are at the lower end of the graph, where only about 30% of responders reported barriers by the third quarter of 2021. However, countries with more challenging outcomes in terms of excess deaths, such as Brazil, Mexico, El Salvador and Peru, also present lower than LAC average percentages of people encountering barriers. At the other end of the graph, in Bolivia, Ecuador and Paraguay more than 75% of responders reported barriers to get vaccinated in the second quarter of 2021. While this situation improved dramatically for Ecuador and Paraguay by the third quarter of the same year, in Bolivia 66% of responders were still reporting barriers to get vaccinated by the fourth quarter. A similar situation occurred in Nicaragua, with Venezuela and Honduras also having a high percentage of the population reporting barriers.

Figure 1.16. Vaccination campaigns faced obstacles

Percentage of respondents that reported barriers to get the COVID-19 vaccine, 2021



Note: Data collected in 2021. Data is a representative sample of Facebook users.
Source: The University of Maryland Social Data Science Center and Facebook (2020[14]), Global COVID-19 Trends and Impact Survey, in partnership with Facebook, https://covidmap.umd.edu/.

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1.4.3. The population of LAC was willing to adhere to pandemic measures

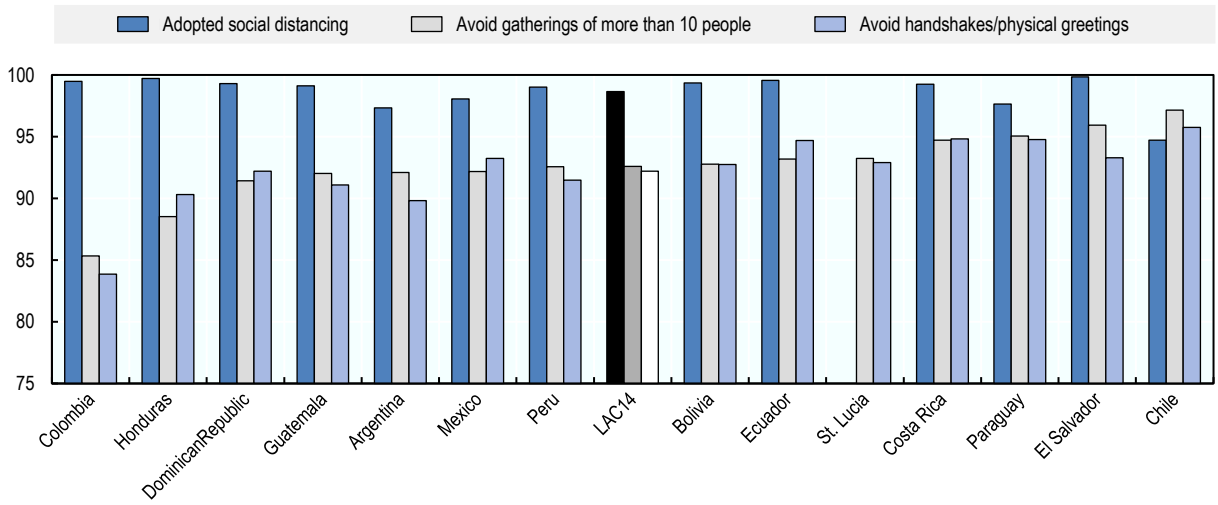
Adherence to physical distancing was high across the region, but not for other preventive measures

While regulations and public health mandates vary in the region and along the three (and counting) years of the pandemic, preventive recommendations were in place throughout 2020 and 2021 in all of LAC. In most countries, preventive measures were adopted by a significant majority of the population during this time. Among 14 LAC countries with available information (Figure 1.17), 98.6% of the population complied with physical distancing in 2020. Other preventive measures were not as popular. On average, 92.2% of the population complied with mandates to avoid gathering of more than ten people. In Chile this percentage increases to 95.7%, important considering the length of this mandate in the country (Table 1.2). In contrast, in Colombia adherence was 85%. A similar situation occurred with physical greetings (handshake, hugs) where on average 92.2% of the region complied with this measure.

Between May and July of 2020, there was substantial uncertainty about public health recommendations, restrictions and other mandates put in place to mitigate the effects of the pandemic. Campaigns were launched by governments to inform the population of actions to take. However, the knowledge of the population regarding actions taken by the government and authorities was, at this stage, quite low. Across the same 14 countries presented in Figure 1.17, on average 56.8% of the population knew that authorities were advising citizens to stay at home. However, only 6% on average knew about the temporary closing of business and schools, even though these measures were already being implemented at some level in each country. Imposing curfews or lockdowns was only known by 42% of the population on average, a percentage that diminished to 10.8% and 14.2% in Mexico and Bolivia, respectively. Perhaps the best indicators reflecting the lack of effectiveness in information campaigns in mid-2020 is the fact that, on average, only 11.1% of the population of these 14 countries (on average) knew that government or other authorities were disseminating knowledge about the COVID-19 pandemic.

Figure 1.17. Adherence to preventive measures varied

Proportion of respondents who adopted preventive measures during 2020



Note: Data collected between May and August 2020. Data from high-frequency mobile surveys designed to be representative of the underlying population.
Source: World Bank (2021[11]), COVID-19 High-Frequency Monitoring Dashboard, https://www.worldbank.org/en/data/interactive/2020/11/11/covid-19-high-frequency-monitoring-dashboard.

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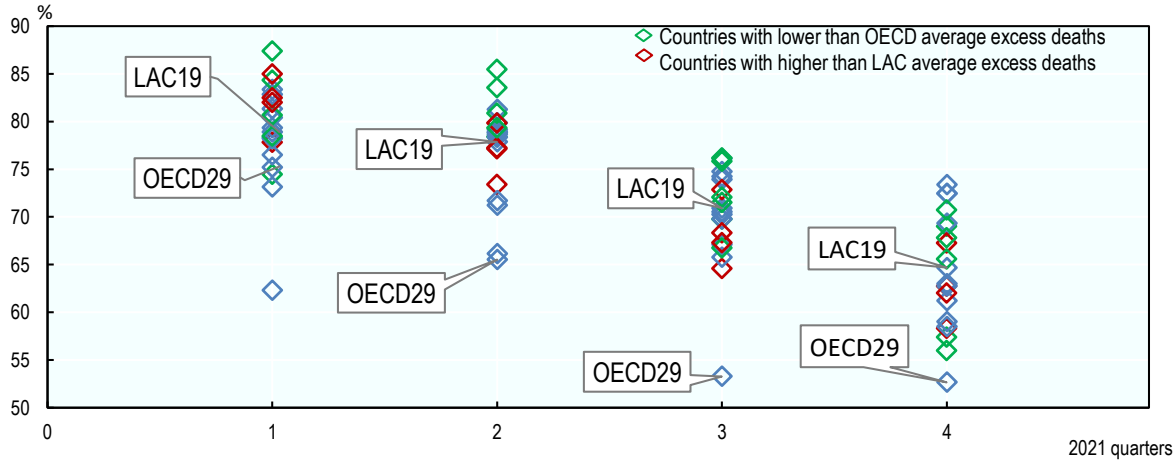
Physical distancing was widely adopted by LAC countries. However, data for the year 2021 shows that there is a clear diminishing adherence over time (Figure 1.18). This deviates from the trend in excess deaths that registered its peak on the 3rd quarter of 2021 and only diminished by the end of the year. Compared to an average of 75% of people on average across OECD countries, 78% of people complied with physical distancing measures in the LAC region in the first quarter of 2021. Afterwards, LAC countries maintained adherence to physical distancing throughout the year, diminishing slowly until only complied by 65% of the population, compared with 53% on average in the OECD (Figure 1.18). Among LAC countries, there was high heterogeneity in the level of adherence to this particular measure. Even though the patterns are not straightforward, the best performers in terms of excess deaths had higher than average adherence during quarters two and three (green diamonds are consistently higher than red diamonds in Figure 1.18), along with the rise in excess deaths (except for Uruguay in the 3rd quarter). On the other hand, countries with higher than LAC average excess deaths had lower than LAC average percentage of the population adhering to physical isolation during these six months (except for Mexico). The high levels of physical isolation resonate with the high levels of mental distress observed previously, a factor which most likely influenced willingness to adhere to the measure.

Figure 1.18. Most people avoided contact in 2021

Percentage of respondents who intentionally avoided contact with other people all the time or most of the time during 2021



Note: In red the countries with excess deaths higher than LAC33 average: Peru, Bolivia, Mexico, Ecuador. In green countries with excess deaths lower than OECD average, selected as explained in Section 1.3: Argentina, Venezuela, Chile, Cuba, Costa Rica, Panama and Uruguay. Data is a representative sample of Facebook users.
Source: The University of Maryland Social Data Science Center and Facebook (2020[14]), Global COVID-19 Trends and Impact Survey, in partnership with Facebook, https://covidmap.umd.edu/.

StatLink https://stat.link/1kil8n

The recommended or mandated use of face masks was also widely accepted in LAC countries since the start of the pandemic, where most countries report higher use than the OECD average. According to the survey by the University of Maryland in collaboration with Facebook (2020[14]), in the second quarter of 2020, 78% of the responders reported using a face mask all or most of the time when in public on average in LAC, compared to only 54% on average of OECD countries. One year later, during the second quarter of 2021, most countries reported their peak in face mask adherence, reaching 88% in LAC and 77% on the OECD average. Costa Rica presents an interesting case, as at the start of the pandemic it was the country with the lowest reported adherence (32%), but one year later it became the country that reported the highest adherence (92%), in line with the rise in cases and COVID-19 related deaths.

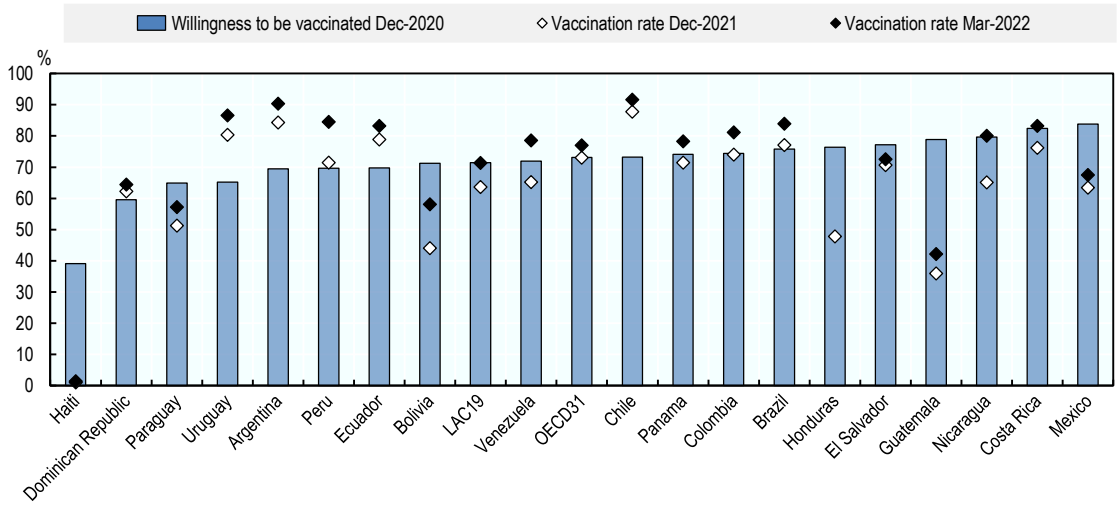
In most countries, vaccine hesitancy was not the main impeding factor for vaccination coverage

The COVID-19 vaccine is the single phenomenon that had the largest effect in the control of the pandemic. Vaccine acceptance was essential for an effective roll-out. Between June and July 2021, 80% of the population in 20 four LAC countries planned to get vaccinated against COVID-19 (The World Bank group, 2021[11]).

Based on a representative sample of Facebook users, Figure 1.19 shows how OECD countries, on average, reached all people that were willing to receive a COVID-19 vaccine in December 2020 after one year. In LAC, this level was reached three months after, in March of 2022. However, there is vast heterogeneity in the effectiveness of the vaccine rollout, and this is not explained by vaccine hesitancy. In 11 countries, a greater number of people were vaccinated with at least one dose than the proportion of the population reporting willingness to get vaccinated 12 to 15 months earlier. This speaks to the impact of effective communication and persuasion campaigns by health authorities. Two more countries (Nicaragua and Costa Rica) managed to reach the same level of coverage as people willing to receive a vaccine. On the other hand, Haiti, Paraguay, Bolivia, Honduras, Salvador, Guatemala and Mexico remained unable to reach the whole population that wanted to be vaccinated against COVID-19 and several of these countries had high levels of excess deaths.

Figure 1.19. Most countries effectively managed vaccination hesitancy

Proportion of people willing to receive a COVID-19 vaccine in 2020 and proportion of people with at least one dose of the COVID-19 vaccine



Note: Data for willingness to be vaccinated from a representative sample of Facebook users. Willingness to be vaccinated is considered out of respondents who definitely or probably chose to get vaccinated if a COVID-19 vaccine was offered to them, out of the respondents who have not been vaccinated.

Source: Vaccination acceptance from The University of Maryland Social Data Science Center and Facebook (2020[14]), Global COVID-19 Trends and Impact Survey in partnership with Facebook, https://covidmap.umd.edu/. Vaccination rate from Mathieu et al. (2021[17]), A global database of COVID-19 vaccinations, https://doi.org/10.1038/s41562-021-01122-8, available at Ritchie et al. (2020[68]), "Coronavirus Pandemic (COVID-19)", Our World in Data, https://ourworldindata.org/coronavirus.

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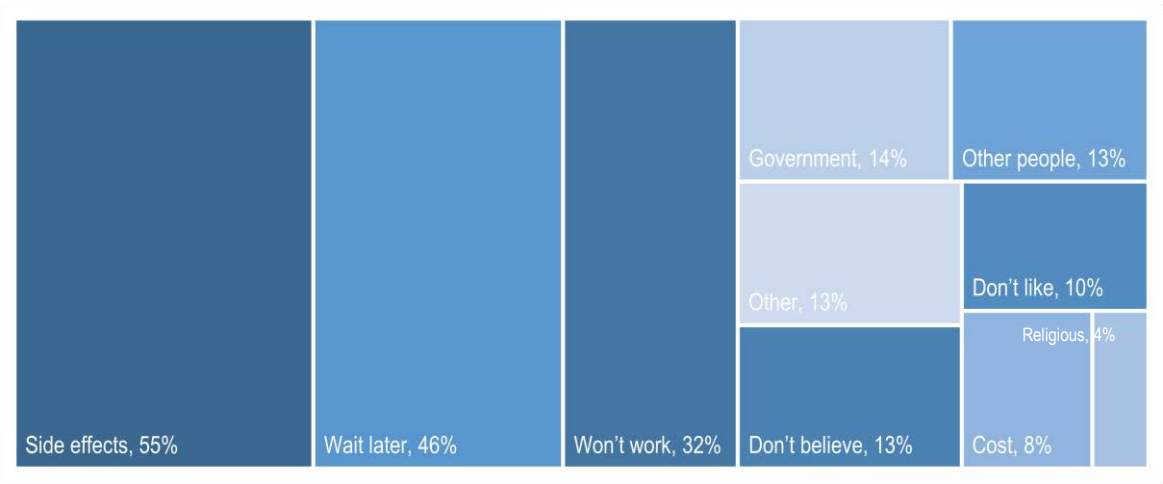
Drivers of vaccine hesitancy are diverse (Figure 1.20). Based on the same sample of Facebook users (The University of Maryland Social Data Science Center & Facebook, 2020[14]), out of the Latin American and Caribbean responders that were hesitant about the COVID-19 vaccine, 55% reported concerns over potential side effects to be the reason for their hesitancy. While some effects of the COVID-19 vaccine have been found, research after more than one and a half years of mass implementation has established that the benefits outweigh the risks by a significant margin. Moreover, 46% of hesitant responders reported wanted to wait to see if the vaccine is safe and might get it later. Finally, 32% of respondents that reported being hesitant did not think the vaccine was effective. All three main reasons driving vaccination hesitancy can be substantially overcome by effective communication campaigns disseminating the latest research on the safety and effectiveness of the COVID-19 vaccine.

Other important drivers of vaccine hesitancy relate to trust in the government (14%), trust in vaccination (13%), influence by other people (13%), and not liking vaccination (10%) (Figure 1.20). People trust international (World Health Organization) and local health authorities the most when related to COVID-19 vaccines Figure 1.21. In LAC, the average portion of the population that trusts these institutions is around 70%, while in the OECD this percentage is only 53%. On the other hand, only 40% and 26% of respondents in LAC and the OECD trust politicians regarding vaccination. The data suggests expertise being an important factor driving trust in vaccination, which is positive for population health management in a crisis situation. However, closer social relationships and kinship, like family, have significantly more trustworthiness in LAC than compared with the OECD average, where 63% of LAC respondents trust their families' opinions regarding the COVID-19 vaccine compared to only 40% in the OECD. High levels of trust in non-experts leaves space for disinformation to spread. For example, 8% of respondents in LAC in mid-2021 thought that masks were not necessary after being vaccinated. There was some variability between LAC countries in this respect, ranging from 5% in Bolivia, Brazil and Chile, to 12% in Haiti.

Figure 1.20. Vaccination hesitancy was mostly driven by side effects

Reasons for respondents to be hesitant about the COVID-19 vaccine, out of responders that don't want or are unsure about vaccination, 2021

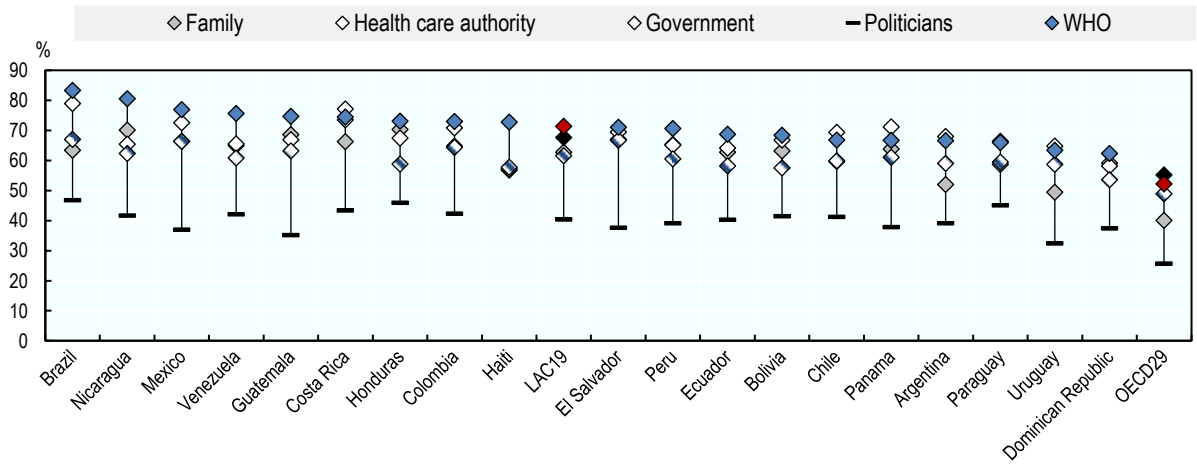


Note: Data is a representative sample of Facebook users. Multiple reasons were allowed.
Source: The University of Maryland Social Data Science Center and Facebook (2020[14]), Global COVID-19 Trends and Impact Survey in partnership with Facebook, https://covidmap.umd.edu/.

StatLink https://stat.link/qhzito

Figure 1.21. Expertise generates trust in the COVID-19 vaccine

Proportion of respondents more likely to get vaccinated if recommended by stakeholders, December 2020



Note: Data is a representative sample of Facebook users.
Source: The University of Maryland Social Data Science Center and Facebook (2020[14]), Global COVID-19 Trends and Impact Survey in partnership with Facebook, https://covidmap.umd.edu/.

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1.5. Structural components determined countries' response capacity

LAC countries baseline preparedness for the pandemic was at severe disadvantage when compared to other OECD countries. High levels of inequality and informality diminished the capacity of the population to adhere to public health measures, where those without access to social protection and health coverage faced additional barriers to

receive health when needed. The region also has high percentage of people living in inadequate housing or informal settlements, making them more vulnerable to the virus. While these topics are not analysed in depth in this chapter, chapters three to nine in this publication provide a comprehensive characterisation of LAC health systems. Instead, we focus on the main baseline characteristics influencing the level of excess deaths during the COVID-19 pandemic.

1.5.1. Under-resourced healthcare systems amplified the challenge of COVID-19

Latin American and Caribbean countries had very different structural characteristics at the start of the pandemic. Some of these characteristics are highly associated with excess deaths during of the pandemic, while others are not. There are no clear patterns between the level of health in LAC countries (see Chapter 3) before the pandemic and the number of excess deaths between 2020 and 2021. Counterintuitively, there is strong association between countries with older population (see Chapter 9 – figure 9.1) and better performance in excess deaths. This is largely explained by income per capita, associated with both ageing and the ability to better respond to the pandemic. In contrast, the level of resources available in the health system behaves as expected, where best equipped countries perform better in terms of excess deaths, even though resource levels are lower than the OECD average.

Healthcare expenditure per capita in LAC is far below the OECD average of 3 999 USD PPP (see Chapter 6 – Figure 6.1). The LAC average was 1 155 USD PPP, 28% that of the OECD average. These low levels of total health expenditure could signal why health systems in the region were under-resourced and less prepared to face the challenges of the COVID-19 crisis. There is a strong association between higher health expenditure per capita and low excess deaths. Seven out of the nine countries in the best performing group had higher than 1 500 USD PPP expenditure per capita in health (except for Venezuela and Jamaica). On the other hand, the six countries with higher number of excess deaths in the region had an average health expenditure of 781 USD PPP, led by Mexico (1 117 USD PPP) and with Saint Vincent and the Grenadines being the lowest (620 USD PPP).

Health systems in LAC would benefit not only from more expenditure, but also from better expenditure. In fact, wasteful expenditure is a major issue in the region, especially in the areas of clinical care, operational, and governance waste, hindering the path towards universal health coverage (OECD/The World Bank, 2020[69]). During the COVID-19 crisis, the on-going wasteful expenditure has exacerbated the lack of health expenditure, hindering the capacity of health systems in the region to reallocate scarce resources to increase health workforce and resources.

1.5.2. Healthcare capacity was a bottleneck in the strategy against COVID-19

LAC also lags the OECD average in terms of health workforce density. On average, LAC has 2.15 medical doctors per 1 000 population (latest data – 2017 to 2021) (see Chapter 8 – Figure 8.1). The OECD average in this period is 3.6 (68% more). As seen in 1.4.2, countries that performed best in terms of excess deaths had a higher density of doctors than countries that did not perform as well. The association with the number of nurses operates in the same direction (see Chapter 8 – Figure 8.4), but the correlation is weaker as the countries with the lower number of nurses per 1 000 population are situated in the middle group: with excess deaths above the OECD average but below the LAC average.

There are only three countries in LAC that have more hospital beds per 1 000 population than the OECD average (see Chapter 5 – figure 5.7). These are Barbados (5.8), Cuba (5.2), and Argentina (5.0), compared to the OECD average of 4.3. These three countries had strong performance in terms of excess deaths during 2020 and 2021. Likewise, countries with high excess deaths typically have a lower number of hospital beds than the LAC average (2.1 per 1 000 population), such as Peru (1.6), Bolivia (1.1), Mexico (1.4), Ecuador (1.5), Guyana (1.6), and Colombia (1.7).

Interestingly, some countries with similar numbers of hospital beds per 1 000 population had different performances in excess deaths. For example, Uruguay (2.8), Panama (2.3), Chile (2.1), Bahamas (2.9), and Brazil (2.3) had a similar rate of hospitals beds but major differences in the number of excess deaths, indicating that the efficiency of hospital bed management also played a crucial role. This trend is repeated when accounting for ICU beds capacity (OECD/The World Bank, 2020[69]). Among countries with low levels of excess deaths, Uruguay (19.9 beds) and Argentina (18.7 beds) have higher number of ICU beds per 100 000 population than the average of 22 OECD countries (12 beds) with available data. However, Chile (7.3 beds) and Costa Rica (2.7 beds), also countries with low number of excess deaths, have a considerably lower capacity. On the other hand, Brazil (20.6 beds) Colombia (10.5 beds) and Paraguay (10.3 beds) have more or similar levels to the OECD22 average but had higher levels of excess deaths. Finally, three countries with higher than LAC average excess deaths, Ecuador (6.9 beds), Mexico (3.3 beds) and Peru (2.9 beds), have low capacity of ICU beds (OECD/The World Bank, 2020[69]).

1.6. Discussion

While there is substantial variation in LAC countries' performance along the variables studied in the chapter, there are clear patterns among process and structure level performance and excess mortality. The assessment points towards fewer excess deaths being related to both the effective implementation and the comprehensiveness of the response, together with interventions to address identified weaknesses in response capacity and structural characteristics.

Table 1.4 puts together countries' performance on excess mortality with key variables summarizing pandemic response, systems responsiveness and structural characteristics affecting response capacity. The predominance of green at the top of the figure shows that a comprehensive pandemic response, performing above average in most categories, was associated consistently with lower levels of excess deaths. At the other side of the spectrum, countries with the highest number of excess deaths exhibit several variables where they are among the worst performing in the region. For these countries, a lower performance in these areas rendered these factors in the health system sufficiently weak for COVID-19 to severely disrupt care provision and reduce effectiveness of public health measures. However, low performance in some areas was not necessarily a weak point in dealing with the pandemic. Countries that recognised their shortcomings and put interventions in place to address them showed lower levels of excess deaths. For example, Chile and Costa Rica had around or below the median number of hospitals beds but addressed this challenge with centralised management of hospital capacities, including private providers, and based on triage and risk assessment.

Moreover, comprehensiveness in the pandemic response enhanced effective implementation of public health measures. Countries with lower excess deaths integrated the needs of the population and put complementary policies in place to mitigate the health and socio-economic effects of the COVID-19 response. This minimised the social cost of the pandemic and allowed countries to link the stringency of their public health measures with the infection waves and the idle capacity of their health system. When in 2021 the focus of the pandemic response shifted towards mass vaccination, countries that complemented a quick vaccine rollout with information campaigns enhanced the effectiveness of the measure by both easing public uncertainty and improving vaccine acceptance. In the same line, countries that addressed healthcare disruptions with centralised co-ordination of healthcare resources and a strong reliance on primary healthcare systems for promotion, prevention (including vaccination), treatment and follow-up of COVID-19 were able to stop the vicious cycle of health system disruption and excess deaths.

Counterintuitive outliers in both high and low performance groups enlighten the discussion about the many other potential variables influencing the pandemic effect. Venezuela and Jamaica had a good performance in terms of excess deaths but performed lower than most countries in most of the selected variables in Table 1.4. However, these countries had relatively strict containment measures, and increased their stringency in 2021 compared to 2020. Combined with the isolation the economic and political context in Venezuela carried and Jamaica's geography, these factors seemed to have been especially effective to mitigate the spread of the virus. Other island countries in the Caribbean with low levels of excess deaths might have benefited from the same effect. Venezuela's case needs to be interpreted with caution, because in other counts of excess mortality (Wang et al., 2022[20]) the country appears with higher than LAC average excess deaths. This might indicate that the country was not as effectively isolated as initially thought.

Table 1.4. Comprehensive pandemic responses were effective in minimising loss of life

Dashboard of pandemic performance, selected variables

Country	Excess deaths 2020-21	Containment Index Second quarter 2021	Financial assistance during the pandemic	Population fully vaccinated by Q3 2021	People who know how to get the vaccine in 2021	Disruption of services in 2020	Total health expenditure per capita in 2019	Hospital beds	Number of doctors
	Rate per 100 000 population	Containment Index (0-100)	Proportion of households	Proportion of population	Proportion of population	Proportion of people with foregone care	USD PPP	Number per 1 000 population	Number per 1 000 population
Venezuela	78	87		12%			385	0.8	1.7
Uruguay	89	69	37%	68%	96%		2145	2.8	4.9
Jamaica	121	73	40%	6%	46%		598	1.7	0.5
Trinidad and Tobago	145			15%			1835	3.0	4.5
Cuba	160	78		28%			2548	5.2	8.4
Panama	176	63	74%	29%	61%		2491	2.3	1.6
Costa Rica	189	60	44%	24%	59%	6%	1556	1.1	3.3
Argentina	198	79	21%	27%	84%	11%	2199	5.0	4.0
Chile	202	82	47%	66%	95%	12%	2297	2.1	2.8
Bahamas	254			20%			2228	2.9	1.9
El Salvador	262	27	62%	34%	77%	18%	782	1.3	2.9
Guatemala	273	51	30%	5%	43%	13%	529	0.6	1.2
Paraguay	276	55	47%	13%	61%	20%	950	1.3	1.1
Brazil	319	63	52%	25%	15%		1451	2.3	2.2
Colombia	323	68	26%	25%	55%	16%	1293	1.7	2.3
Guyana	356	61	78%	19%	76%		674	1.6	1.4
St. Vincent and the G.	446			43%			620		0.0
Ecuador	455	67	19%	29%	31%	28%	935	1.5	2.2
Mexico	483	45	16%	24%	78%	5%	1117	1.4	2.4
Bolivia	749	28	42%	17%	49%	32%	631	1.1	1.0
Peru	873	77	9%	21%	41%	31%	712	1.6	1.4

Note: Colour codes present a percentile scale in each column. Red represents the lowest performance (95th percentile), yellow represents the median performance (50th percentile) and green is the top performance (5th percentile) from countries in the table. Among countries with lower than OECD average excess deaths, only the ones selected in Section 1.2 are presented.
Source: Elaborated based on figures (ordered by column) 1, 9 (Q2-2021), 11, 13 (Q3-2021), 14 (National), 23 (2020-National) of this chapter, plus Chapter 6, Figure 6.1 and Chapter 8, Figures 8.1 and 8.4.

Mexico, on the other hand, has the third highest number of excess deaths in the region (fourth in the excess deaths estimation by (Wang et al., 2022[20])), but it has average or better than average performance in most of the selected variables in Table 1.4. However, though not reviewed extensively in this chapter, Mexico has high prevalence of important risk factors for COVID-19, namely obesity and chronic conditions prevalence (see Chapters 3 and 4). In addition, there are still enhanced problems with care fragmentation and universal access to services arising from the transition that started in 2018, with the removal of "Seguro Popular" and the creation of the new universal health programme (OECD, 2022[39]). Health systems characteristics like the latter were not extensively reviewed in this chapter because of a lack of consistent and comparable indicators for the region but might have an important influence in the pandemic effect. In particular, system fragmentation, information systems for epidemiological control and care co-ordination, and medical supply chain management seem to have had an important effect and were a central part of countries' pandemic response (OECD, 2023[38]). Moreover, while the emergency response of LAC countries was mainly managed at the central level of governance, the implementation of the response actions, together with the baseline preparedness of the health system, depended heavily in subnational governments. Following the shared responsibility central and subnational governments have on planning, financing, and delivering healthcare, future research studying the determinants of effective emergency response should explore the co-ordination and performance at and between these levels of governance.

1.6.1. Lessons learned for improving health system resilience in LAC

Combining the lessons of this chapter and extensively studied recommendations for improving health system resilience (OECD, 2023[38]; Herrera et al., 2022[2]; OECD, 2022[39]), we highlight important considerations that are of particular interest for improving health system resilience in the countries and topics examined in this chapter as follows:

- **Promote emergency readiness:** Improve co-ordination between providers (public and private) and enable centralised co-ordination in emergency situations. Introduce (or strengthen) mechanisms for swiftly releasing emergency funds. Prepare comprehensive response plans, considering the needs and perspectives of local communities, socio-economic costs of public health measures, mental health of the population, barriers and inequalities in care access and the importance of maintaining essential care services.
- **Promote workforce recruitment and strengthen primary care:** Workforce limitations proved to be an important constraining factor in the pandemic. Empowering healthcare workforces to deliver quality and comprehensive care can maximise staff capacity. At the same time, a strong primary health system minimised healthcare disruptions and expedited the implementation of public health measures (vaccination).
- **Promote governance, trust, and data collection:** Governance structures should integrate a whole-of-society approach for addressing shocks as severe as the COVID-19 pandemic. Trust is necessary for governance to be effective, and both communication campaigns and accurate decision making can improve confidence in government. Data collection and information systems are and will continue to be essential in informing accurate policy making and population health management during future shocks.
- **Promote population health and address health inequalities**: Addressed extensively in Chapters 3 to 9 of this publication, health and healthcare in LAC present several weaknesses compared to other OECD countries. Addressing health risks such as obesity and wider determinants of poor health, like poverty, sanitation, and unemployment, are critical to improving preparedness for the next shock. Moreover, given the important disruptions to healthcare during the pandemic, management strategies should be established to prevent further forgone care and the consequent worsening of conditions.

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Notes

[1] The full list of included countries can be found in the foreword.

[2] Countries with available data: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras and Mexico.

[3] Immunisation coverage reflects the percentage of children at age one that receive the final dose of the primary immunisation series in the respective vaccination programme in the recommended timeframe (Chapter 7).

2 Climate change and health: Strengthening health systems to promote better health in Latin America and the Caribbean

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The COVID-19 pandemic has highlighted the importance of building the resilience and adaptability of health systems to cope with shocks and rapidly changing conditions. As countries slowly emerge out of this crisis, they are at an opportunity to strengthen their capacity to mitigate and adapt to a changing climate, which is expected to increasingly affect the health of the population in a number of ways. This chapter examines LAC countries current level of health systems resilience to climate change, identifying trends in the region and providing key considerations for policy actions that countries can implement to strengthen this resilience. The chapter is organised following the six building blocks of the World Health Organization Operational Framework for Building Climate Resilient Health Systems and uses them to explore LAC countries along several dimensions.

2.1. Introduction

As introduced in Chapter 1, the COVID-19 pandemic has shocked Latin America and the Caribbean (LAC) in terms of health, economic and social impacts (Jaramillo, 2022[1]; OECD, 2020[2]). As countries slowly transition out of this crisis, they also have the opportunity to improve their preparedness and response capacity of their health systems to deal with concurrent threats to population health, including those associated with a changing climate which are expected to increasingly affect the health of the population.

Climate change hazards (e.g. heatwaves, heavy precipitation events, sea level rise) along with social vulnerabilities (e.g. weak climate governance and intersectoral policies) threaten the development of populations in every country. In particular, LAC faces overlapping climatic, social, economic, and political challenges that may have serious consequences to health systems and population health (Yglesias-González et al., 2022[3]), as well as for other health-determining sectors, such as energy, transport, and agriculture, among others. The interacting effects of climate hazards, high social vulnerability, and lack of preparedness might result in disruption of daily activities, direct damage to critical infrastructure, economic burden, higher mortality and morbidity rates, and the exacerbation of social inequities.

Health systems in LAC are already under great pressure not only because of the COVID-19 pandemic, but also because of low health expenditure, high out-of-pocket spending, low quality of care, limited access to health services, and health inequities between different demographic and socio-economic groups (OECD/The World Bank, 2020[4]). Therefore, to face the added challenges of climate change, health systems should be strengthened to continue protecting the population's health and well-being.

In order to mitigate the potential damages of climate hazards and promote better health for all populations, multiple and complementary actions should be taken. The first key step is to analyse the state of health systems and their preparation and resilience to face climate change challenges.

This chapter examines health systems resilience to climate change in LAC, identifying trends and providing key considerations for policy actions that countries can implement. The chapter also includes relevant best practices from OECD countries that are also in the process of strengthening their climate change resilience. To comprehensively analyse this information, this chapter is organised following the building blocks of the World Health Organization (WHO) Operational Framework for Building Climate Resilient Health Systems, composed of six building blocks, with leadership/governance and financing vital for an adequate health workforce, health information systems, essential medical products and technologies, and service delivery (WHO, 2015[5]).

2.2. Overview of climate change and health

2.2.1. Overview of climate change and health in Latin America and the Caribbean

The increase in atmospheric "heat-trapping" greenhouse gases (GHGs) has led to global warming and subsequent changes in the climate. Although LAC countries have not historically emitted a large amount of GHGs into the atmosphere (Friedlingstein et al., 2022[6]; Global Carbon Project, 2021[7]), the effects of a changing climate are global and affect every region and country in the world.

In LAC, the near-surface mean temperature has continue warming, being 0.78°C warmer in 2021 respect to 1961-90 period (WMO, 2022[8]). Hot extremes have become more frequent and severe, and rainfall patterns have changed with an increase in drought events in some countries (Brazil, Bolivia, Chile and Paraguay) and heavy precipitation events in others (Uruguay and Argentina) (IPCC, 2021[9]; WMO, 2022[8]). Glaciers have shrunk dramatically since 1980s, losing between 30% and 50% of their mass in the Andes (WMO, 2022[8]), affecting water use for human consumption, agricultural purposes, and hydroelectric power. Finally, sea level rise poses high risks to low lying areas, especially small islands in the Caribbean and coastal cities (WMO, 2022[8]).

The LAC region has already experienced and continues to experience several climate related health crises. For example, prolonged dry spells and excessive rains have affected crops in the Dry Corridor of Central America, leaving farmers and their families prone to hunger and malnutrition. Warming temperatures, changing weather conditions and more extreme weather from torrential rains to drought can fuel outbreaks of dengue, which have affected countries such as Nicaragua, El Salvador, Brazil, Paraguay, Colombia and Belize. The Caribbean region is particularly exposed to hurricanes, storms and similar extreme weather events, which have caused extensive damage to health infrastructure and killed and injured significant numbers of people. For example, Hurricane Mitch caused

11 374 fatalities in Central America in 1998, and over 10 000 people have died as a direct result of tropical cyclones in the Caribbean in the last 20 years.

As these impacts are strongly mediated by social vulnerabilities and adaptive capacity, adequate and timely responses to rapid- and slow-onset climate hazards are key. Low governance and limited policies on disaster risk management and climate preparedness and adaptation, coupled with deep social inequities, high levels of poverty and informality (CEPAL, 2022[10]; OECD/The World Bank, 2020[4]), and impoverished health systems are important factors that might determine devastating impacts of climate change on population health.

Impacts on human systems would disrupt the daily lives of populations, affecting their health, well-being, social development, and human capital. Some examples of negative impacts include excess mortality and a higher incidence of cardiovascular and respiratory diseases, heat-related illnesses, vector-, water-, and food borne diseases, and mental health disorders (Romanello et al., 2022[11]). It has been estimated that between 20% (Argentina) and 75% (Colombia, Ecuador, Guatemala and Peru) of all heat-related mortality might be attributed to human-induced climate change (Vicedo-Cabrera et al., 2021[12]).

2.2.2. Health systems and climate resilience

A health system is an interconnected set of organisations, institutions, infrastructure, resources, people, and activities, together with collaborations with other sectors and entities. Regardless of their specific structure, health systems aim to improve the health of populations (WHO, 2010[13]) while being responsive and efficient, and providing social and financial risk protection (WHO, 2007[14]).

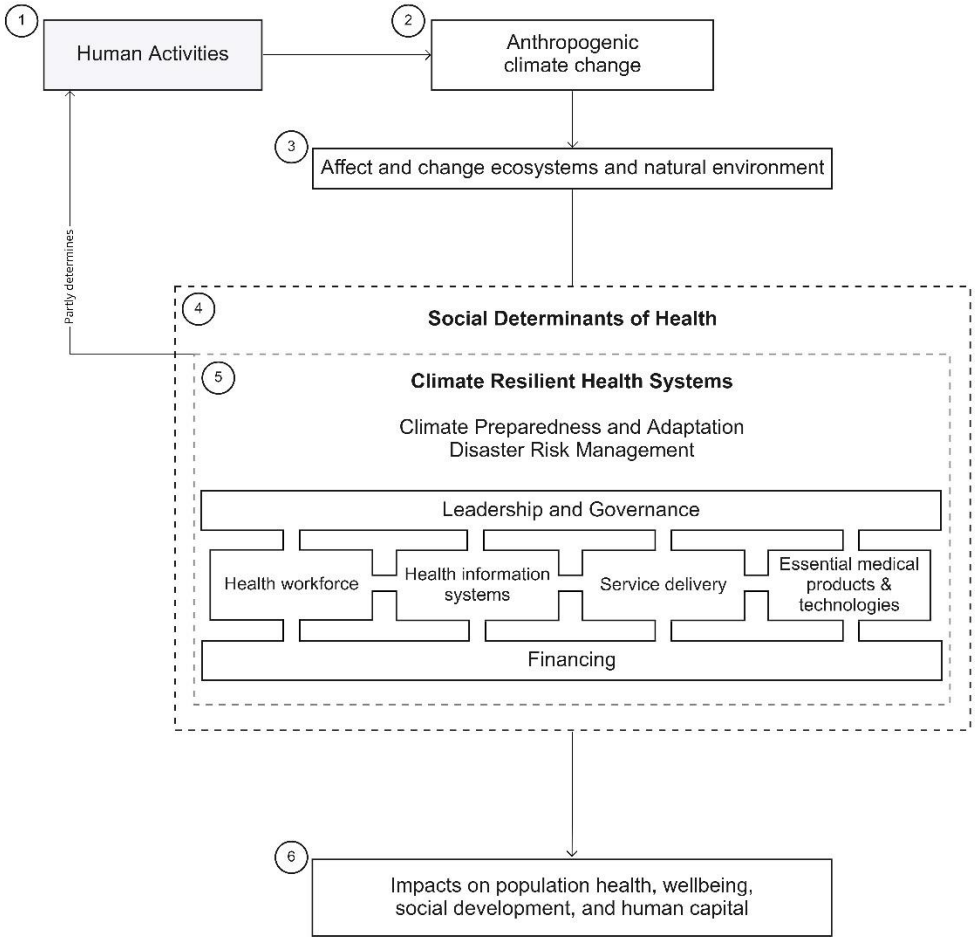
As health systems are challenged by a changing climate, they need to be prepared and resilient to face rapid-onset hazards or shocks (e.g. heatwaves) and slow-onset hazards or stresses (e.g. droughts) to protect gains and continue making progress towards universal health coverage (UHC). In this regard, a climatic preparedness perspective should be integrated into health systems functioning to build climate resilient health systems, which should be *"capable to anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stress, so as to bring sustained improvements in population health, despite an unstable climate"* (WHO, 2015[5]).

As shown in Figure 2.1, climate resilient health systems, along with other social determinants of health, play an important role in modulating the impacts of climate change on population health, well-being, social development, and human capital. Policies and actions to strengthen climate resilient health systems are anchored in the WHO six core building blocks of climate resilient health systems.

Building climate resilience generally involves different actors and sectors at the national, regional, and local levels. In this sense, intersectoral policies should focus on reducing overall social vulnerabilities by reducing poverty and social inequities, and providing universal access to essential services (e.g. health, education, clean water, nutritious food, safe transport). At the same time, specific policies in the health sector should strengthen health governance and leadership, promote climate-smart infrastructure, improve surveillance systems considering climate information, among other measures.

If governments take a whole-system approach, the efforts and investment in climate resilient health systems are expected to have several benefits, not only to improve climate resilience, but also to strengthen health systems as a whole, improve overall population health, promote universal health coverage and primary healthcare for all.

Figure 2.1. Diagram of relationships between anthropogenic climate change, impacts on human systems and populations, and climate resilient health systems



2.3. Climate change and health systems in Latin America and the Caribbean: Status and trends

This section presents the analysis of the status and trends of climate resilience of health systems in LAC under each of the six WHO climate resilient health systems.

2.3.1. Leadership and governance

Strong governance, political leadership, collaboration, and accountability are essential for managing climate-related hazards that affect health systems and health-determining sectors. The objectives and actions are focused on strengthening governance within the ministry of health; integrating climate change into health policies and programmes, and supporting cross-sectoral collaboration to promote health and well-being (WHO, 2015[5]).

National adaptation plans and national health and climate plans

Based on the identification of social vulnerabilities and opportunities for climate adaptation, national strategies on climate change and health should be planned and implemented to strengthen health systems and protect the health of the population. The National Adaptation Plan (NAP) process was established under the Cancun Adaptation Framework (UNFCCC, 2011[15]) and facilitates the identification of adaptation needs to subsequently guide the development and implementation of strategies to address them.

Based on the United Nations Framework Convention on Climate Change (UNFCCC) NAP portal, NAPs from 12 LAC countries have been published (UNFCCC, 2022[16]) and, in most of the documents, the health sector has been identified as a vulnerable sector to climate change; however, the degree of details and the integration between existing health sectorial plans, also called HNAPs, and the overarching NAP vary across the countries (WHO, 2021[17]). Four countries have developed national health and climate plans (NHCP) or HNAPs, and 14 are still developing them (Office of Climate Change, Government of Guyana, 2019[18]; WHO, 2021[19]; WHO, 2021[20]). Complementing NAPs, NHCPs, and HNAPs, there are other initiatives in the region that acknowledge the action on climate change and health; for example, the Caribbean Action Plan on Health and Climate Change was approved by Caribbean countries and territories in 2019 with the aim of strengthening co-operation, capacities, and resources to face the effects of climate change on health (PAHO, 2019[21]). Table 2.1 shows a summary of published NAPs, NHCPs, HNAPs, and other documents and initiatives by country.

Table 2.1. Published and official NAPs, NHCPs, HNAPs, and other documents or initiatives by country

Country	NAP submitted to UNFCCC*†	NHCP‡ or HNAP			Other documents
		Developed	Under Development	No / No participant	
Antigua and Barbuda				✓	
Argentina			✓		✓[a]
Bahamas			✓		
Barbados			✓		
Belize			✓		
Bolivia				✓	✓[b]
Brazil	✓ (2016)	✓			
Chile	✓ (2017)	✓			
Colombia	✓ (2018)		✓		
Costa Rica	✓ (2022)		✓		
Cuba		✓			
Dominica			✓		
Dominican Republic			✓		
Ecuador				✓	
El Salvador			✓		
Grenada	✓ (2019)			✓	
Guatemala	✓ (2019)			✓	
Guyana			✓	✓	
Haiti				✓	
Honduras				✓	
Jamaica			✓		
Mexico				✓	
Nicaragua			✓		
Panama				✓	
Paraguay	✓ (2022)			✓	
Peru	✓ (2021)		✓		
Saint Kitts and Nevis		✓			
Saint Lucia	✓ (2018)		✓		
Saint Vincent and the Grenadines	✓ (2019)			✓	
Suriname	✓ (2020)			✓	
Trinidad and Tobago				✓	
Uruguay	✓ (2019)			✓	
Venezuela				✓	

* Submitted up to August 2022 (UNFCCC, 2022[22]); † In brackets is the year of posting; ‡ from 2021 WHO HCCGS (WHO, 2021[19]); [a] Action plan on health and climate change that includes several adaptation measures (Ministerio de Salud y Desarrollo Social, Argentina, 2019[23]) and in it has announced the creation of a specific programme for climate change and health (Chesini and Orman, 2021[24]); [b] National adaptation mechanism that includes adaptation measures for the health sector (Ministerio de Planificación del Desarrollo, 2007[25]).

Overall, LAC countries have been working to develop climatic plans and strategies; however, it appears that the pace of climate change is faster than their development and implementation. Although countries recognise that the health sector is highly vulnerable to climate change, there is less evidence on concrete and context-specific policies and plans that integrate adaptation actions to strengthen health systems.

A key area priority for the future is the monitoring and evaluation of past and/or current NAPs, strategies, or action plans. Over the coming years, several NAPs and HNAPS will need to be updated, representing an opportunity to evaluate what was done, what was partially done, and what needs to be improved to build climate-resilient health systems.

National focal points

Under the UNFCCC, the appointment of national focal points aims to enhance countries' engagement and participation in UNFCCC relevant activities (UNFCCC, 2016[26]). By 2022, all LAC countries have designated at least one UNFCCC focal point, similar to OECD countries which have between one and five focal points (Table 2.2) (UNFCCC, 2022[22]). Most of the official national focal points are from the Ministry of Environment or Ministry of Foreign Affairs, but none are from the Ministry of Health. At the national level, most of the LAC countries have designated a climate change and health focal point within the Ministry of Health (WHO, 2021[19]), which can play an important role in cross-collaboration and intersectoral policies.

Table 2.2. Number of official UNFCCC focal points per country in LAC.

Countries	Number of focal points				
	1	2	3	4	More than 4 (n)
Antigua and Barbuda	✓				
Argentina		✓			
Bahamas			✓		
Barbados		✓			
Belize	✓				
Bolivia					✓ (8)
Brazil	✓				
Chile		✓			
Colombia				✓	
Costa Rica	✓				
Cuba	✓				
Dominica	✓				
Dominican Republic			✓		
Ecuador		✓			
El Salvador	✓				
Grenada	✓				
Guatemala				✓	
Guyana			✓		
Haiti	✓				
Honduras		✓			
Jamaica	✓				
LAC average		✓			
Mexico	✓				
Nicaragua	✓				
OECD average		✓			
Panama					✓ (10)
Paraguay		✓			
Peru	✓				
Saint Kitts and Nevis		✓			
Saint Lucia		✓			
Saint Vincent and the Grenadines	✓				

Countries	Number of focal points				
	1	2	3	4	More than 4 (n)
Suriname	✓				
Trinidad and Tobago		✓			
Uruguay	✓				
Venezuela			✓		

Source: UNFCCC (2022[22]), National focal points, https://unfccc.int/process/parties-non-party-stakeholders/parties/national-focal-point.

Joint memorandums of understanding between the health sector and health-determining sectors in relation to health and climate change policy

A co-ordinated and strong relationship between the health sector and health-determining sectors (e.g. agriculture, energy, and transport) is vital because several measures and actions that affect population health and well-being rely outside the health sector. The health sector should be a leading voice in ensuring that policies within health-determining sectors protect population health and well-being, as well as promote climate-resilient health systems. Joint Memorandums of Understanding (JMU) promote intersectoral collaboration and help articulate intersectoral policies that build climate resilient health systems.

Overall, the health sector in LAC have limited JMU with other sectors (Table 2.3). Cuba and Nicaragua have recognised having JMU with almost all the sectors under analysis, except for social services (WHO, 2021[19]).

Table 2.3. Number of LAC countries with joint memorandum of understanding between the health sector and health-determining sectors

Sectors	Yes	No	Unknown / Not applicable
Agriculture	2: Cuba, Nicaragua	18	4
Education	2: Cuba, Nicaragua	18	4
Energy	2: Cuba, Nicaragua	18	4
Environment	5: Bahamas, Brazil, Cuba, Grenada, Nicaragua	15	4
Meteorological	3: Brazil, Cuba, Nicaragua	18	3
Social Services	0	19	5
Transportation	1: Cuba	18	5
Urban Development and Housing	1: Cuba	18	5
Water, Sanitation, and Hygiene	2: Cuba, Jamaica, Nicaragua	18	4

Source: WHO (2021[19]), 2021 *WHO health and climate change global survey report*, https://apps.who.int/iris/handle/10665/348068.

When analysing the experiences of OECD countries, the situation is similar to that of LAC. However, Germany, the Netherlands, Israel, Portugal and Sweden stand out in having JMU with several health-determining sectors, especially national meteorological and hydrological services (WHO, 2021[19]). This intersectoral collaboration has allowed them to build capacity, establish climate-informed programmes, and enhance surveillance and climate-informed health early warning systems, among other measures (WHO, 2008[27]).

Overall, LAC countries have been working to improve leadership and governance at the intersection of climate and health; however, there are still many opportunities for improvement, especially regarding intersectoral collaboration to strengthen climate-resilient health systems. Strengthening this building block is fundamental because it is the basis to strengthen all other building blocks.

2.3.2. Health workforce

A skilled health workforce is essential to promote health, achieve better health outcomes, and build climate-resilient health systems. Health personnel are in direct contact with vulnerable populations during normal times and during emergencies, planning, organising, and implementing public health activities; developing public health policies; collaborating with other sectors, among other activities. They are a cornerstone of health systems. Therefore, in a changing climate, the health workforce needs to understand the challenges posed by climate change and be able to

prepare for and act in the face of climate-related events that affect the functioning of health systems. By training health personnel, developing adequate organisational capacities, and improving communication and awareness of climate change challenges, countries build climate-resilient health systems.

Number of healthcare workers by country

Having an adequate density of health workers underpins the provision of adequate health services, and consequently leads to better population health, which is even more important during health emergencies. On average, there are 2 medical doctors and 3.4 nursing and midwifery personnel per 1 000 population in LAC countries, which is well below the average in OECD countries (3.5 medical doctors and 9.7 nursing and midwifery personnel per 1 000 population). Chapter 8 of this publication contains detailed information on health worker density in the LAC region (WHO, 2022[28]).

When a shock hits, the entire provision of health services is significantly affected and there a surge of demand, which requires sufficient health personnel to be available. Unfortunately, LAC countries are inadequately prepared when it comes to medical countermeasures and personnel deployment during emergencies. Based on the 2021 Global Health Security Index (GHSI), LAC countries scored very low, with an average score of 9.09 out of 100, which is well below the average score of 30.26 (out of 100) in the OECD countries (Bell and Nuzzo, 2021[29])

Training and curricula on climate change and health

Training and inclusion of modules on climate change and health in LAC countries is limited. An analysis of 161 universities in 20 LAC countries showed that only one university in Brazil deliberately included and published one optative module on "climate change and health" in undergraduate medicine and nursing curricula (Palmeiro-Silva et al., 2021[30]). It is possible that the topic itself might have been included as individual lessons in other modules, such as public health and epidemiology; however, this information is not publicly available. Another international survey that considered members of the Global Consortium on Climate and Health Education showed that 63% of the respondents (n=84) offer climate-health education; however, only six members were from LAC at that time (Palmeiro-Silva et al., 2021[30]; Shea, Knowlton and Shaman, 2020[31]).

Over the last few years, several educational opportunities organised by academic institutions and non-governmental organisations from LAC and supported by the Pan American Health Organisation (PAHO) have been launched. For example, the Global Consortium on Climate and Health Education from Columbia University along with the Inter-American Institute (IAI) and the PAHO organised a free 5-weeks course called *"Climate and Health Responder Course for Latin America"* and focused on academic and research health communities in the region (Columbia University, 2022[32]). The 10-week *"Caribbean Climate and Health Responders Course"* was organised by the Global Consortium on Climate and Health Education, Earth Medic/Earth Nurse, and the Caribbean Institute of Meteorology and Hydrology, with focus on healthcare professionals, climate leaders and students (Columbia University, 2022[33]). Finally, the University of the West Indies with support from PAHO, Caribbean Community (CARICOM), and the European Union (EU) have launched a *"The Climate Change and Health Leaders"* fellowship training programme focused on intersectoral and multidisciplinary leaders from the Caribbean (The University of West Indies, 2022[34]).

More broadly in LAC, the PAHO and other academic institutions have organised different open online courses on climate change and health, aimed at increasing awareness among professionals in the region (PAHO-VCPH, 2022[35]). The IAI has organised a massive open online course called *"Cambio Climático y Global en América Latina"* (*"Climate and global change in Latin America"*) which introduces audiences to climatic sciences, mitigation, adaptation, and sustainability in LAC (IAI, 2020[36]). Another open course called *"Communicating Climate Change Effectively"* was launched in 2020 by CDKN, which was focused on professionals from different disciplines (CDKN, 2022[37]). Two open courses on planetary health which include the topic on climate change and health have also been prepared. One was organised by a partnership between the Institute of Advanced Studies of the University of São Paulo, TelessaúdeRS, Sociedade Brasileira de Medicina de Família e Comunidade and the Planetary Health Alliance (TelessaudeRS, 2020[38]). The second course was organised by the Chilean Society of Planetary Health (Sochisap, 2022[39]).

At the international level, the One United Nations (UN) Climate Change Learning Partnership has made several open courses on climate change, including its intersection with health. These are generally short courses, some of which are available in Spanish, Portuguese, and French (UNCCELEARN, 2022[40]). The World Bank has also organised an open course called *"From Climate Science to Action"* and includes regional information on sectoral impacts, and mitigation and adaptation measures (World Bank, 2022[41]).

The number of individuals that have benefitted from these initiatives is unknown and formal training has rarely been integrated into undergraduate or postgraduate health curricula, which highlights the need for additional investments and attention to this topic.

Communications with healthcare workers during a public health emergency

Communication of essential information during public health emergencies is vital to maximising efforts, facilitating and supporting decision making, and limiting the potential damage of the hazard (WHO, 2018[42]). Expedite, accurate, and clear communication with health personnel is therefore vital to protect population health and health systems during an emergency.

According to the 2021 GHSI on communications with healthcare workers during a public health emergency, LAC countries have an average score of 10.6 out of 100, while OECD countries scored an average of 31.6 out of 100. The best prepared LAC countries are Argentina, Peru, Chile, Mexico, and Saint Vincent and the Grenadines, while Australia, Belgium, Denmark, Finland, and the United States are the best prepared within OECD countries. This low score in LAC countries increases the risk of inadequate functioning and co-ordination of actors during an emergency, both vertically (e.g. from ministries of health to local health centres) and horizontally (e.g. health staff in a health centre). The resulting effects would range from a loss of trust, delayed critical decisions, inadequate resource allocation, misunderstandings and conflicts, and increased morbidity and mortality.

LAC countries need to improve their risk communication with health personnel and citizens to battle disinformation, gain public trust (OECD, 2020[43]), and strengthen their health systems. Risk communication that is accurate, clear, assertive, quick, and puts people at the centre is part of enhancing disaster risk management and resilience building, helping to engage actors in collective response. The experience of the COVID-19 pandemic showed that several countries had to implement practical strategies to improve public communication. For example, Chile and Korea had daily briefings to timely and consistently communicate essential information; in Belgium, Chile, Portugal and the United States public briefings were delivered by scientists and/or public health experts to support data and interventions on evidence (OECD, 2020[43]); and Canada, Chile and the United Kingdom built specific websites where daily statistics were presented to simplify data understanding (Bangdiwala et al., 2021[44]).

2.3.3. Health Information Systems

Health information systems (HISs) are a central element of health systems because they "*enable decision-makers to identify problems and needs, make evidence-based decisions on health policy, and allocate scarce resources optimally"* (WHO, 2008[45]). To face the challenges and impacts of a changing climate and protect population health, decision-makers and health personnel should understand critical information related to climate hazards, the location of vulnerable populations, and the range of resources to implement adaptation measures.

HISs are intrinsically linked to all health system building blocks, particularly new health technologies (Section 3.4) and service delivery (Section 3.5). For example, innovative platforms for service delivery would require robust health governance and integral health policies that allow for systems interoperability and security. At the same time, health personnel should be properly trained to maximise the benefits of new technologies and optimise healthcare delivery according to patients' characteristics and needs. The integration of a climate and health perspective to HISs would strengthen patient-centred healthcare delivery and reduce climate risks (e.g. minimising disruption to services during emergencies) (Rozenberg et al., 2021[46]).

Climate change and health vulnerability and adaptation assessments

One of the first steps in building climate-resilient health systems is to understand: i) which populations are most vulnerable to different climate-related health hazards, ii) the responsiveness of the health system to manage potential impacts on populations, iii) main vulnerabilities of the health system before and during an extreme event, and iv) the resources available for effective adaptation. Vulnerability and adaptation (V&A) assessments are vital for collecting and analysing data, conducting continuous situational analyses, and informing adequate action plans. The information from V&A assessments aims to inform and develop national adaptation plans, including sectorial ones.

Based on the 2021 WHO Health and Climate Change Global Survey (HCCGS) (WHO, 2021[19]), only seven LAC countries (out of 25 participating in the survey) have conducted climate change and health V&A assessments. Other national analyses on vulnerability to climate change have been performed by several countries, although sometimes they do not meet all the requirements to be considered formal assessments. Table 2.4 shows a summary of LAC countries that have declared or published their V&A documents.

Table 2.4. Vulnerability and adaptation assessments from LAC countries

Country	Vulnerability and Adaption Assessment‡			Other assessments
	Performed†	Under Development	No / No participant	
Antigua and Barbuda			✓	✓[a]
Argentina			✓	✓[a]
Bahamas				
Barbados			✓	
Belize			✓	✓[b]
Bolivia			✓	✓[a] ✓[c]
Brazil	✓(2020)			
Chile			✓	
Colombia			✓	✓[a] ✓[b]
Costa Rica		✓		✓[a] ✓[b]
Cuba	✓ (2020)			
Dominica	✓ (2017)			✓[a]
Dominican Republic			✓	✓[b]
Ecuador			✓	✓[a]
El Salvador			✓	✓[a] ✓[b]
Grenada	✓ (2016)			
Guatemala	✓ (2020)			✓[a] ✓[b]
Guyana			✓	
Haiti			✓	✓[a]
Honduras			✓	✓[a] ✓[b]
Jamaica		✓		
Mexico			✓	✓[b]
Nicaragua		✓		✓[a] ✓[b]
Panama			✓	✓[a] ✓[b]
Paraguay			✓	✓[a]
Peru		✓		✓[a]
Saint Kitts and Nevis			✓	
Saint Lucia	✓ (no date)			
Saint Vincent and the Grenadines			✓	
Suriname			✓	
Trinidad and Tobago	✓ (2019)			
Uruguay			✓	
Venezuela			✓	

‡ from 2021 WHO HCCGS (WHO, 2021[19]); † in brackets: completion of latest assessment; [a] V&A performed through The Regional Getaway for Technology Transfer and Climate Change Action for Latin America and the Caribbean (REGATTA) (UNEP-REGATTA, 2022[47]); [b] V&A performed through The Inter-American Development Bank (IADB, 2010[48]); [c] The document *"Avances en el conocimiento: Cambio climático y el desafío de la salud en Bolivia" ("Advances in knowledge: Climate change and the health challenge in Bolivia")* includes some areas of V&A (Providas, 2013[49]).

Small Island Developing States (SIDS) in the Caribbean, with support from the PAHO, have been working on strengthening their capacities, including the implementation of V&A assessments. They established the Caribbean Community Climate Change Centre in 2004, the Caribbean Public Health Agency in 2013, and the Caribbean Health Climatic Bulletin, among other initiatives, and are also part of the Special Initiative on Climate Change and Health in Small Island Developing States, which aims to ensure that by 2030 all SIDS health systems are resilient to climate variability and change (PAHO, 2019[21]). Combined efforts have led to Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago being awarded the 5-year EU/CARIFORUM Climate Change and Health Project, which enabled them to prepare climate change and health V&A assessments and the subsequent adaptation plans (PAHO, 2021[50]). Finally, Saint Lucia has shown great leadership by co-founding the initiative *"Adaptation Action Coalition Health"* which aims to adapt and build resilience to the impacts of climate change (WHO, 2021[51]). Nonetheless, more formal processes for V&A assessments are needed to inform subsequent measures and policies.

Other countries in the region, including Chile (Ministerio del Medio Ambiente, 2017[52]), Costa Rica (Ministerio de Ambiente y Energía, 2022[53]), Peru (Ministerio del Ambiente, 2022[54]), Dominican Republic (Presidencia de la República Dominicana, 2016[55]), Uruguay (MVOTMA, 2010[56]), and Venezuela (MINEA, 2017[57]) have named several vulnerability factors in their NAPs, nationally determined contributions (NDCs), or national communications, but they are not linked to previous V&A assessments or systematically analysed.

Overall, most LAC countries are carrying out or have performed formal or preliminary V&A assessments; however, some of them need to be updated in accordance with new challenges and further integrate health as the main area of examination. The completion of assessments that include context-specific and systematic evaluations of vulnerable populations and vulnerabilities of the health system helps decision-makers focus actions and resources on climate adaptation and resilience.

Box 2.1. Guidelines to perform vulnerability and adaptation assessments

The UNFCCC has compiled a training package on methods and tools for V&A assessments in English and Spanish that can be used by countries to develop their own assessments, including a chapter on human health (UNFCCC, 2007[58]). Also, Canada, the Czech Republic, Estonia, Germany, Lithuania, the Netherlands, Sweden, and the United States have performed specific climate change and health V&A assessments that can be used as methodological models. Particularly, the Government of Canada has specifically developed a workbook on climate change and health V&A assessment where different steps are described on how to analyse main vulnerabilities and identify measures to increase climate resilience of health systems; it is available in English and French (Health Canada, 2022[59]).

Argentina has also developed a document called *"Manual: Vulnerabilidad y Adaptación al Cambio Climático para la Gestión y Planificación Local" ("Guidelines: Vulnerability and Adaptation to Climate Change for Local Management and Planning"),* which guides the evaluation of main risks and vulnerabilities associated with climate change (Dirección de Cambio Climático de la Secretaría de Ambiente y Desarrollo Sustentable de la Nación Argentina, 2011[60]).

The World Bank has been supporting countries across the globe with the implementation of Climate and Health Vulnerability Assessments (CHVAs), Climate and Health Economic Valuations (CHEVs) and other related analytics. In LAC, the Haiti CHVA was completed in 2022.

Identification of vulnerable populations

Although climate change hazards may be similar globally, the impacts are different because of the differential exposure and vulnerability factors within the populations. In general, vulnerability assessment includes three components: the analysis of the exposure of the population to hazards, the degree of susceptibility (or to what extent people are affected), and the capacity to adapt or respond to hazards. Vulnerable populations are at a higher risk of suffering the negative effects of climate hazards, not only because of their effects on livelihoods and daily life, but also because of the cascading impacts on income, poverty, and poor health. In this regard, the identification of vulnerable populations is key to reducing the damage caused by climate hazards by intervening in any of the three vulnerability components.

People who live in areas with weak climatic policies, limited access to basic services, marginalised and poor communities, indigenous people, women, people above 65 and below 1 year of age, and outdoor workers are generally considered vulnerable populations (IPCC, 2022[61]). A particular concern in LAC countries is the combination of poor urban planning and rapid urbanisation rates of cities (Ezquiaga Arquitectura, Sociedad y Territorio S.L., 2015[62]), which increases the risk of adverse health effects from climate change hazards.

At the national level, the WHO and World Meteorological Organisation (WMO) have published an atlas of health and climate that identifies countries or areas with a high risk of negative climate-sensitive health outcomes, including malaria, dengue, and respiratory illnesses. In this document, most LAC countries are recognised as vulnerable to climatic and environmental changes, especially due to social vulnerabilities (WHO and WMO, 2012[63]). Complementary to this, the Lancet Countdown has estimated an increase in the exposure of vulnerable populations to heatwaves globally, and LAC countries have not been the exception. The number of heatwave exposure events in people over 65 years of age has increased across all LAC countries, especially in Colombia, Venezuela, Brazil, Bolivia, Paraguay, Suriname and Guyana (Romanello et al., 2021[64]; 2022[11]). Additionally, almost all countries in LAC have

a significant number of people exposed to sea level rise (SLR), with Brazil and Ecuador having the highest absolute number of people exposed (Romanello et al., 2021[64]). It has been estimated that more than 27% of the LAC population live in coastal areas and 8% of them are at high or very high risk of being affected by coastal hazards, including SLR (WMO, 2022[8]); however, proportionally and geographically, SIDS in the Caribbean are at a particularly high risk of SLR (Giardino et al., 2020[65]; IPCC, 2022[66]).

Because of the intertwined elements between climate-sensitive health outcomes and social vulnerability, countries have the opportunity to multiply the positive health effects of climate preparedness, build climate resilience, and reduce poverty and social inequities. In this sense, the health sector in collaboration with other health-determining sectors, such as housing and social services, might map and identify vulnerable populations allowing better prioritisation and focalisation of resources and efforts. It is also important to identify vulnerabilities within health systems, including weak communication processes or critical infrastructure that may be damaged due to climate hazards.

Mexico has published an online interactive atlas called *"Atlas Nacional de Vulnerabilidad ante el Cambio Climático" ("National Atlas of Vulnerability to Climate Change"* in English*),* where the degree of vulnerability to mudslides, dengue, floods, and tropical cyclones has been analysed and identified at the municipal level to inform local development strategies. The sensitivity index includes indigenous people, food poverty, individual characteristics (e.g. weight), and other agricultural factors (Gobierno de México/INECC, 2022[67]).

Similarly, Chile has also developed and published an online atlas of climatic risks called *"Atlas de Riesgos Climaticos" ("Atlas of Climatic Risks")* that explores different sectors, including agriculture, health and well-being, forests, tourism, and energy at the municipal level. In particular for health and well-being, it identifies the risks of floods, premature mortality due to temperature changes and heat, effects of heatwaves and coldwaves on human health, and water security by analysing the hazard, degree of exposure, and sensitivity of the population. This atlas supports national and regional governments in prioritising actions and focalising resources (Ministerio del Medio Ambiente, 2020[68]).

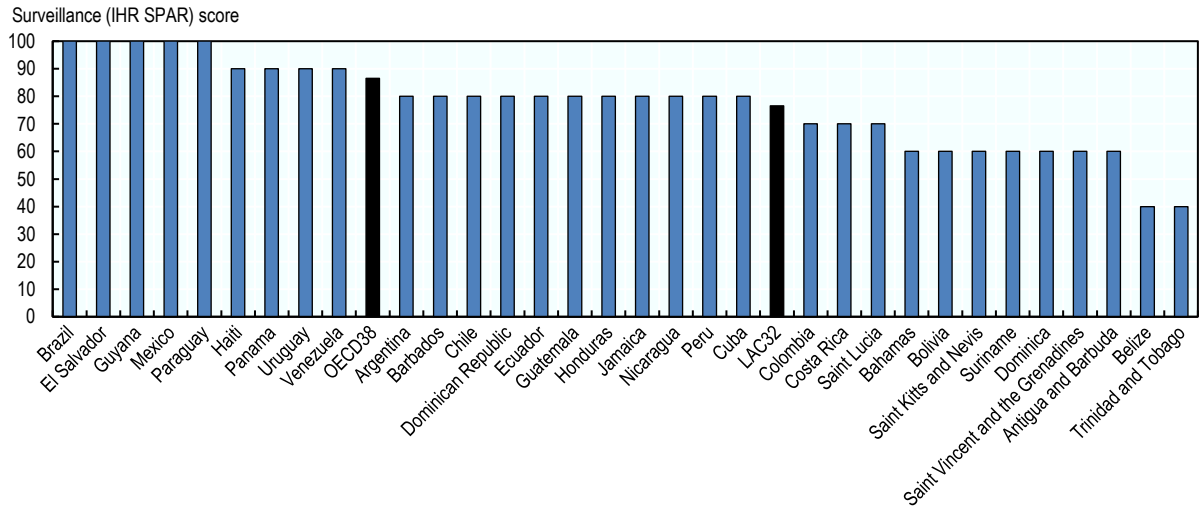
Panama has performed an spatial analysis of vulnerability to climate change, including an index on access to health centres at the *corregimientos* level (Calderón, Francisco and López, 2021[69]).

Ecuador also has analysed exposure and vulnerability maps and identified risks at the canton level. Although this is a very useful document, it should be updated according to new emerging vulnerabilities (D'Ercole and Trujillo, 2003[70]). Argentina has proposed the development of a national health and climate observatory to support adaptation policies related to population health; however, it is still unpublished (Ministerio de Salud, 2018[71]).

Surveillance and laboratory capacity

From a general perspective, surveillance systems in LAC have improved over time, but show important differences across countries. According to the WHO International Health Regulations (IHR) capacity score for surveillance, the average score for LAC countries in 2020 was 79.6 out of 100, with a minimum score of 40 (Belize and Trinidad and Tobago) and a maximum of 100 (Brazil, El Salvador, Guyana, Mexico and Paraguay). This average score was close to but below the average score of OECD countries, which reached 87.6 out of 100 (Figure 2.2) (WHO, 2022[72]).

Figure 2.2. Surveillance score (IHR SPAR) in LAC countries in 2020 (or latest year).



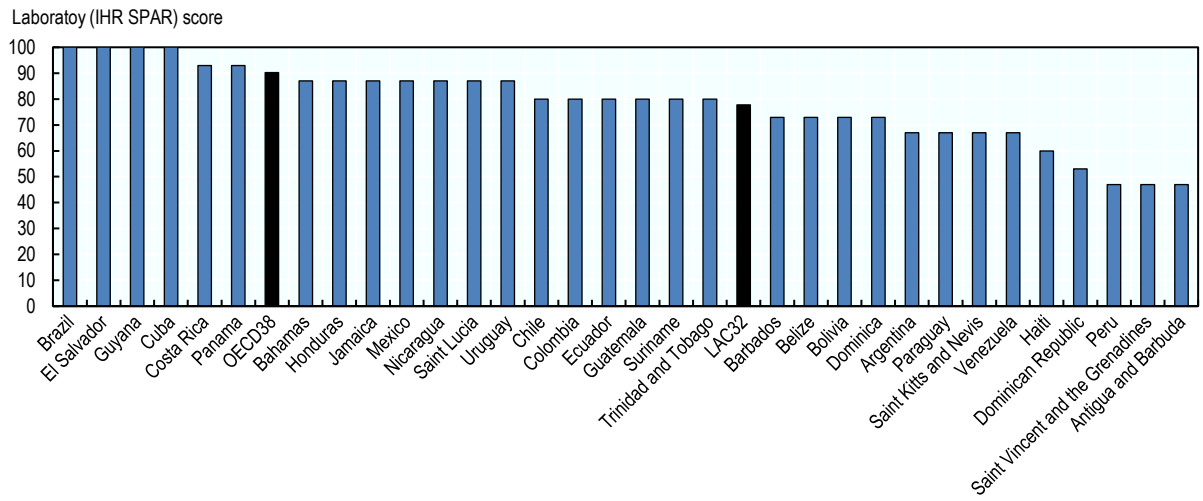
Source: WHO (2022[72]), Surveillance (IHR SPAR), https://www.who.int/data/gho/data/indicators/indicator-details/GHO/surveillance-ihr-spar.

StatLink https://stat.link/fu7iew

More detailed information on the existence of surveillance systems for climate-related diseases was collected by the 2021 WHO HCCGS. It shows that most participating LAC countries (n=25) have surveillance systems for non-communicable diseases (92%), vector-borne diseases (92%), malnutrition and foodborne diseases (83.3%), water-borne diseases (83.3%), zoonoses (83.3%), and airborne and respiratory illnesses (71%); however, fewer countries have surveillance systems for mental and psychosocial health (65.2%), injury and mortality from extreme weather events (33.3%), and heat-related illness (8.3%) (WHO, 2021[19]).

In terms of laboratory services, the average IHR score for LAC countries is 77.8 out of 100, with Brazil, Cuba, El Salvador, and Guyana being the top countries. However, most of the LAC countries are well below the OECD countries average of 90.3 out of 100 (Figure 2.3) (WHO, 2022[72]). Of particular interest is the laboratory capacity to perform analyses related to vector-borne diseases, especially dengue and malaria which are two diseases of special public health concern in LAC due to their endemic behaviour and their projections under climate change scenarios. Figure 2.4, left-hand chart, shows that 30 countries reported cases of dengue but only 15 confirmed the serotype (DENV-1, DENV-2, DENV-3 and DENV-4) in 2021 (PAHO, 2022[73]). The analysis and confirmation of the serotype is relevant for public health purposes because of the associated clinical outcomes within the population and subsequent measures (Aguas et al., 2019[74]). Complementary, malaria is a life-threatening parasitic disease which should be diagnosed and treated quickly after suspicion to prevent high mortality rate. An important aspect to analyse in Figure 2.4, right-hand chart, is the significant gap between the suspected and the confirmed incidence rates in 2020, which could indicate the limited laboratory capacity to perform rapid diagnostic tests or microscopy analyses in some countries (WHO, 2022[75]; WHO, 2022[76]).

Figure 2.3. IHR Laboratory services score (IHR SPAR) in LAC countries in 2020 (or latest year)



Source: WHO (2022[72]), Surveillance (IHR SPAR), https://www.who.int/data/gho/data/indicators/indicator-details/GHO/surveillance-ihr-spar.

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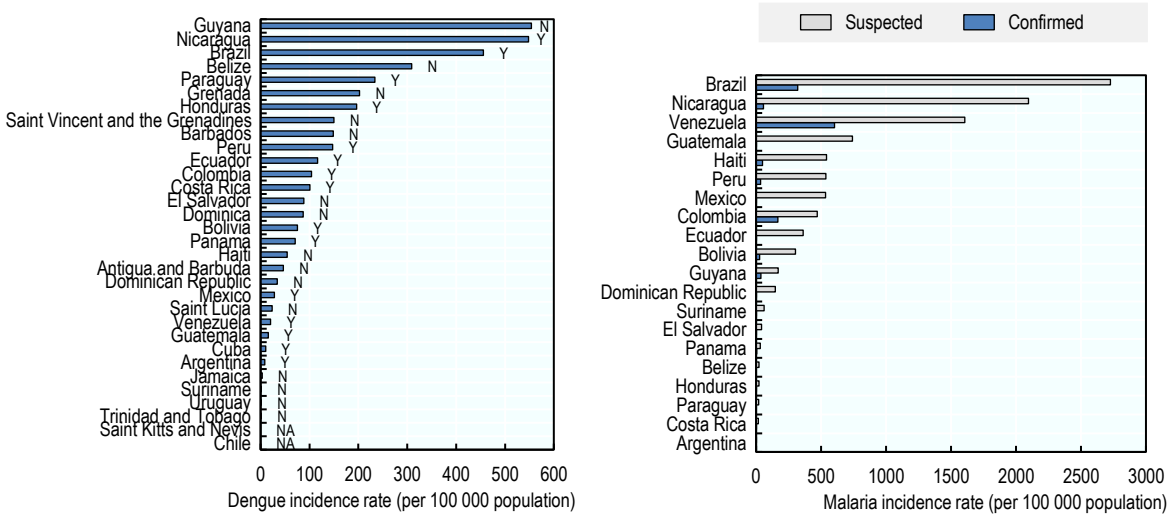
Figure 2.4. Surveillance capacity for dengue in 2021 and malaria in 2020 (or latest year) in LAC countries



Left-hand chart shows dengue incidence rate per 100 000 population and serotype confirmation (Y: Yes, N: No, NA: Not applicable). Right-hand chart shows malaria incidence rate per 100 000 population: Totals for suspected (grey) and confirmed by rapid diagnostic test or microscopy (blue).
Source: PLISA Health Information Platform for the Americas (PAHO/WHO, 2023[77]) and WHO Global Health Observatory (WHO, 2022[75]; 2022[76]; 2022[78]).

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Climate informed early warning systems for health

Early warning systems applied to health surveillance and preparedness are also a key tool when anticipating to climate-hazards and prevent damages (Box 2.2). In this regard, climate-informed health early warning systems (C-HEWS) in place are less common in LAC countries. Only six participating countries in 2021 WHO HCCGS have informed a current C-HEWS for vector-borne diseases (26.1%) and five for airborne and respiratory illnesses (21.7%). Very few countries have informed C-HEWS for heat-related illness (17.4%), injury and mortality from extreme weather events (13%), non-communicable diseases (8.7%), infectious diseases (8.7%), malnutrition and foodborne diseases (8.7%), water-borne diseases (8.7%), zoonoses (5%), and mental and psychosocial health (4.3%) (WHO, 2021[19]).

Box 2.2. Early warning systems for health in practice

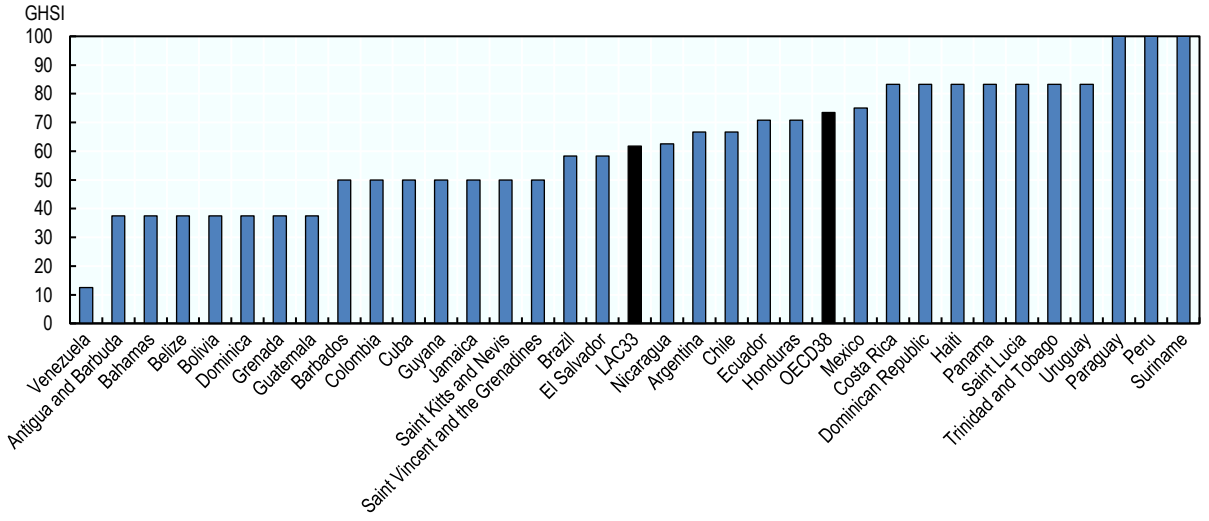
Important advances in C-HEWS have been done in several countries, although there is still great variability across them. For example, the EuroHEAT is an online tool that displays daily forecasts of heatwave probability (0-100%), informing about the upcoming ten days (EuroHEAT, 2022[79]). Similarly, the United Kingdom, through the UK Health Security Agency (UKHSA) and based on Met Office forecasts, provides the Heat-Health Alert Service from June to September. This service aims to help healthcare professionals cope through periods of extreme temperature or heatwaves by informing possible five response levels (Levels 0-4). Each level is associated with a series of actions, detailed in the Heatwave Plan for England, and include long-term planning, summer and heatwave preparedness and action, and a major national emergency (MetOffice, 2021[80]; UK Health Security Agency, 2022[81]). Another tool is promoted by the European Aeroallergen Network (EAN) and it forecasts pollen and fungal spore data for the European region (EAN, 2022[82]). In LAC, the *Servicio Meteorologico Nacional* in Argentina has launched an early warning system for heatwaves based on the impacts on population health. The SAT-OCS (*Sistema de Alerta Temprana por Olas de Calor y Salud*, in Spanish) has four levels of alert – green (no effect), yellow, orange, and red (extreme danger) – each of one indicating the potential effects of heatwaves on populations health (SMN Argentina, 2022[83]).

Risk communication planning and risk communication plan for specific use during a public health emergency

The COVID-19 pandemic demonstrated the importance of clear and adequate risk communication with the general public as well as with the health personnel. The lack of rapid and clear information left people looking for answers to several questions in a stressful context, where disinformation and rumours were commonly found on social media, threatening the effectiveness and compliance with the emergency measures being enacted against the pandemic (OECD, 2020[43]).

Based on the 2021 GHSI for risk communication, the best prepared countries in LAC were Paraguay, Peru and Suriname, while the countries that need to improve their risk communication planning are Antigua and Barbuda, Bahamas, Belize, Bolivia, Dominica, Grenada, Guatemala and Venezuela. The average GHSI for LAC countries was 61.73 out of 100, below the score of OECD countries which reached 73.46 out of 100 (Figure 2.5). In this case, Australia, Canada, Portugal, Slovenia and the United Kingdom led the group (Bell and Nuzzo, 2021[29]).

Figure 2.5. GHSI for risk communication in LAC countries in 2021



Source: Bell and Nuzzo (2021[29]), Global Health Security Index: Advancing Collective Action and Accountability Amid Global Crisis, https://www.ghsindex.org/.

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Complementarily, the risk communication plans specific to public health emergencies should also be improved in LAC countries. The average 2021 GSHI score for the region was 54.54 out of 100, where Argentina, Brazil, Chile, Costa Rica, Dominican Republic, Ecuador, El Salvador, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Saint Lucia, Suriname, Trinidad and Tobago, and Uruguay led the region as well-prepared countries. In the case of OECD countries, most of them are well-prepared, having an average score of 82.21 (Bell and Nuzzo, 2021[29]).

2.3.4. Essential medical products and technologies

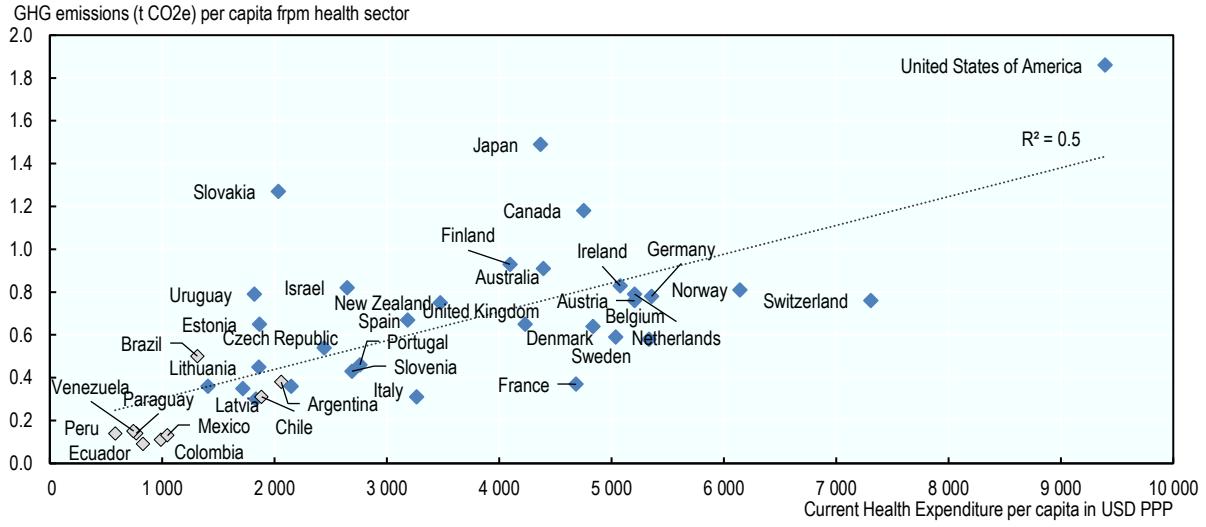
As activities derived from healthcare services and delivery contribute to GHGs emissions, it is essential that health systems incorporate sustainable practices and reduce their carbon emissions and environmental footprint (WHO, 2015[5]). Also, climate resilient health systems consider response protocols under climate risk conditions to adequately provide essential medical products and services, including new technology that could help health service response (e.g. eHealth).

GHG emissions of the health sector by country and sustainability of health operations

Although all actions from health systems are critical to improving population health and well-being, they have associated an important carbon and environmental footprint, which paradoxically threatens population health. It is estimated that between 4% and 10% of global GHG emissions come from the health sector; however, these estimates could vary significantly between countries and health centres. Globally, the main emitters of GHG in the health sector are the United States of America, China, and all countries from the European Union, which together represent approximately 56% of total emissions of the sector (HCWP/ARUP, 2019[84]).

International estimates show a strong association between the health expenditure per capita and the GHG emissions from the health sector per capita (Figure 2.6). OECD countries could double or even triple the health expenditure per capita (in PPP) as well as the total GHG emissions from the health sector compared to LAC countries (Lenzen et al., 2020[85]; WHO, 2022[86]). This information urgently calls for transformation in health services in the coming decades (Box 2.3). Some interventions to reduce the carbon and environmental footprint include passive solar heating and cooling strategies, energy efficiency, natural model ventilation, reducing water consumption, reducing general waste and waste anaesthetic gases, among others (World Bank, 2017[87]).

Figure 2.6. Per capita GHG emissions (t CO2e) from the health sector and current health expenditure per capita in USD PPP in 2015



Source: WHO (2022[86]), "NHA Indicators", WHO Global Health Expenditure Database, https://apps.who.int/nha/database/ViewData/Indicators/en and Lenzen et al. (2020[85]), "The environmental footprint of health care: a global assessment", https://www.doi.org/10.1016/s2542-5196(20)30121-2.

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The estimation of carbon or environmental footprints of health centres allows the identification of areas or activities responsible for large amounts of carbon emissions, as well as the subsequent planning of more sustainable health centres. For example, the Hospital General de Agudos Enrique Tornú de la Ciudad Autónoma de Buenos Aires in Argentina in 2015 found that of the total GHG CO_2e emissions, 43% were from direct activities, 29% from energy consumption, and 29% from other indirect emissions (Rodriguez-Smith and Titto, 2018[88]). Also, the Hospital Base de Puerto Montt in Chile found that from the total CO_2e emissions in 2016, 46% were from electricity consumption, 29% from the generation of residues, and 10% from clinical gas consumption, of which sevoflurane was the greatest contributor (Balkenhol et al., 2018[89]).

Box 2.3. Sustainable health centres in LAC

The Global Green and Healthy Hospitals (Red Global de Hospitales Verdes y Saludables) in Spanish, and Projeto Hospitais Saudáveis in Portuguese) is an international network of healthcare institutions that aims to transition to sustainable and climate-smart healthcare. Under a standardised framework and roadmap, participating institutions and organisations act upon ten interconnected sustainability goals to promote sustainable healthcare, including leadership, safer chemicals, reducing waste, better transport and buildings, and green purchasing (HCWH, 2022[90]). Several healthcare facilities from LAC have joined the initiative, including Brazil (37 facilities), Chile (29 facilities), Colombia (20 facilities), Argentina, Costa Rica, Ecuador, and Mexico. Among these centres, the most shared goals are waste, leadership, and energy. In relation to hospitals, Chile leads the group with 180 hospitals, followed by Colombia (178 hospitals), Brazil (176 hospitals), and Mexico (80 hospitals), then fewer hospitals have joined from Argentina, Costa Rica, Ecuador, Dominican Republic, Peru, Guatemala, Uruguay, Honduras, and Panama. The most common area to focus on is energy, waste, and leadership (HCWH, 2022[90]). The voluntary nature of this membership demonstrates the awareness of the responsibility that health centres have on GHGs emissions, as well as the leadership of health institutions to become more sustainable, greener, and healthier.

Specific initiatives have emerged from the network. For example, in 2019, the first Latin America *Huellatón* was co-organised by the Chilean Ministry of Health in collaboration with the Healthcare Without Harm Latin America team. The aim of this activity was to support hospitals in calculating and mitigating their carbon footprint (HCWH Europe, 2019[91]). Another initiative is called *"Menos huella, más salud"* (less footprint, more health), which aims to support hospitals and health centres in reducing their environmental footprint. For example, the Hospital San Rafael de Pasto in Colombia has reduced its environmental and water footprint by installing low consumption sinks and promoting composting to reduce waste. Similarly, the Dr. Rafael Angel Calderon Guardia hospital in Costa Rica has also reduced its water consumption and environmental footprint by installing water saving devices (HCWH and GGHH, 2021[92]).

Basic and new health technologies

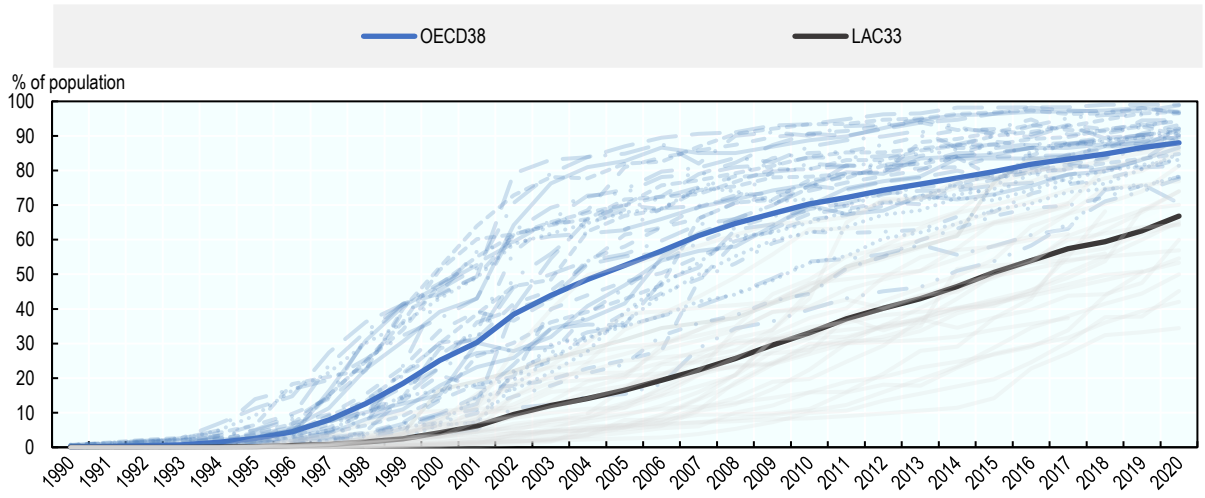
From the COVID-19 pandemic, several lessons can be learnt to strengthen technologies in the health sector, including digitalisation of health records for timely analyses, mobile applications, and telehealth consultations. These initiatives should also be accompanied by strengthening digital governance and processes for digitalisation, better digital security and interoperability, effective training of health personnel, and promotion of digital and health literacy within the population, among other barriers to overcome. Investments in digital health must also weighed against potential negative impacts such as the increase of GHG emissions or the generation of technological waste that can be challenging to manage, such as forever chemicals.

Health technologies may range from basic technologies that facilitate the access to healthcare services to more modern technologies, including telehealth. Nowadays, universal access to pre-hospital care via telephone seems to be a basic service health systems provide, and it has helped improve the delivery of care, efficiency of resources, and visit success rates (Sheffield University, 2010[93]; Wray et al., 2022[94]). In 2016, 75% of the LAC countries had access to pre-hospital care through national telephone numbers, while 21.42% (Argentina, Bolivia, Colombia, Dominican Republic, Panama and Paraguay) had partial coverage, and only one (Guatemala) had no coverage. In OECD countries, this situation improves, where more than 80% of countries had universal access, 13.2% had partial coverage and 2.6% had no coverage at all (WHO, 2020[95]).

A more modern approach to new health technologies might be seen in several LAC and OECD countries, from telehealth to artificial intelligence. A digital transformation process would strengthen climate resilience if health systems included a climatic preparedness and disaster risk approach across all building blocks and health policies. The number of OECD countries that have implemented electronic medical records (EMRs) have increased over time, where on average, 93% of primary care practices use EMRs across 24 OECD countries in 2021. Additionally, most patients are able to view and interact with their information on EMRs as well as to access to teleconsultations or video-conferencing (OECD, 2021[96]). From the start of the COVID-19 pandemic, the proportion of adults who reported teleconsultations (online or by phone) increased considerably, from 30% in mid-2020 to approximately 50% in early 2021 (OECD, 2021[96]).

Access to technological devices and the Internet is critical for the digitalisation of health systems and HISs (Box 2.4). Figure 2.7 shows that the percentage of people using the Internet in OECD and LAC countries has steadily increased from 1990 to 2020 but significantly varies across countries. In LAC, this percentage in 2020 was, on average, 66.7%, with Haiti showing the lowest proportion (34.5%) and Chile the largest (88.3%). The situation in OECD countries is quite different, where the average in 2020 was 88%, with Colombia having the lowest proportion (69.8%) and Iceland the largest (99%) (ITU, 2022[97]; World Bank, 2022[98]; WHO, 2022[72]). Access should increase to enable the digitalisation of health systems in the region, which would improve the access to care by shortening geographical barriers and facilitate communications with the general public and with the health personnel during routine activities and emergencies.

Figure 2.7. Proportion of population using the Internet in LAC and OECD countries from 1990 to 2020



Source: ITU (2022[97]), Core indicators on access to and use of ICT by households and individuals, https://www.itu.int:443/en/ITU-D/Statistics/Pages/stat/default.aspx; Word Bank (2022[98]), Individuals using the Internet (% of population), https://data.worldbank.org/indicator/IT.NET.USER.ZS; WHO (2022[72]), Surveillance (IHR SPAR), https://www.who.int/data/gho/data/indicators/indicator-details/GHO/surveillance-ihr-spar.

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Box 2.4. New e-health technologies in LAC

Although very scarcely, there have been several initiatives to incorporate new technologies in LAC countries prior to the COVID-19 pandemic (PAHO, 2019[99]). Brazil has expanded its telemedicine activities by using artificial intelligence and launching Telessaude Brazil programme focused on teleconsultations in primary healthcare, resulting in optimising waiting lists and expanding the access to healthcare (Haddad and Messina, 2021[100]). Uruguay and Costa Rica have implemented EHRs for patients (Bagolle et al., 2022[101]). Jamaica has launched the mobile health app *"Jamaica Moves"* that aims to track health status and promote healthier lifestyles (Bagolle et al., 2022[101]). Additionally, Chile has launched Hospital Digital, which is associated with a new healthcare model and aims to transform and modernise the public health system by offering digital services, such as *Saludablemente* and *Yo me Vacuno* (Ministerio de Salud - Chile, 2021[102]).

To support countries, the digital assessment toolkit guide, provided by the World Bank, gives a framework on how to assess different quantitative indicators, areas of digitalisation, and plan future digital health roadmap strategy and interventions (World Bank, 2021[103]). Complementary, the PAHO has launched a plan of action for strengthening information systems for health with the objective to *"strengthen the activities of Member States aimed at upgrading health systems through the use of interconnected and interoperable information systems"* (PAHO, 2019[99]).

Health technology assessments

The health challenges associated with climate change require the adoption of new health innovations and technologies either to provide better health services, be responsive during emergencies, or reduce the carbon or environmental footprints. However, these innovations sometimes may have important implications for health systems that should be identified and addressed appropriately. In this sense, health technology assessments (HTAs) allow a systematic evaluation of the consequences of the technologies to be introduced (Box 2.5).

HTAs are carried out in 15 of the responding LAC countries (Argentina, Belize, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guyana, Jamaica, Mexico, Paraguay, Peru, Trinidad and Tobago, and Uruguay), and their scope and coverage vary significantly across countries. Only a few LAC countries use HTA systematically (Belize, Brazil, Jamaica, Mexico, Paraguay, Trinidad and Tobago, and Uruguay) to make coverage decisions and no country reported to use HTA to determine reimbursement levels (Lorenzoni et al., 2019[104]).

Box 2.5. Net-zero NHS United Kingdom

Considering health systems as a whole, the National Health Service (NHS) in the United Kingdom has committed to be become more environmentally sustainable and net-zero by 2040 (NHS England, 2022[105]). The NHS is responsible for 4% of the country's GHG carbon emissions and the largest publicly funded health system in the world (Tennison et al., 2021[106]). Since 2008, the NHS has been working according to the UK Climate Change Act, conducting carbon footprints regularly and aiming to be the world's first net zero national health service. From 1990 to 2019, the CO_2e emissions have been reduced by 26%; however, there is still work to do up to 2040 and beyond. The NHS has a adopted a 4-steps analytical process to inform the targets and trajectories for net-zero, including current estimates of NHS carbon footprint, modelled projected scenarios, carbon reductions available across the system, and modelled interventions and carbon reductions. This approach would allow to have a clear understanding of the current situation of the system and what the potential future scenarios and interventions would be possible to follow to achieve net-zero (NHS England, 2022[105]).

2.3.5. Service delivery

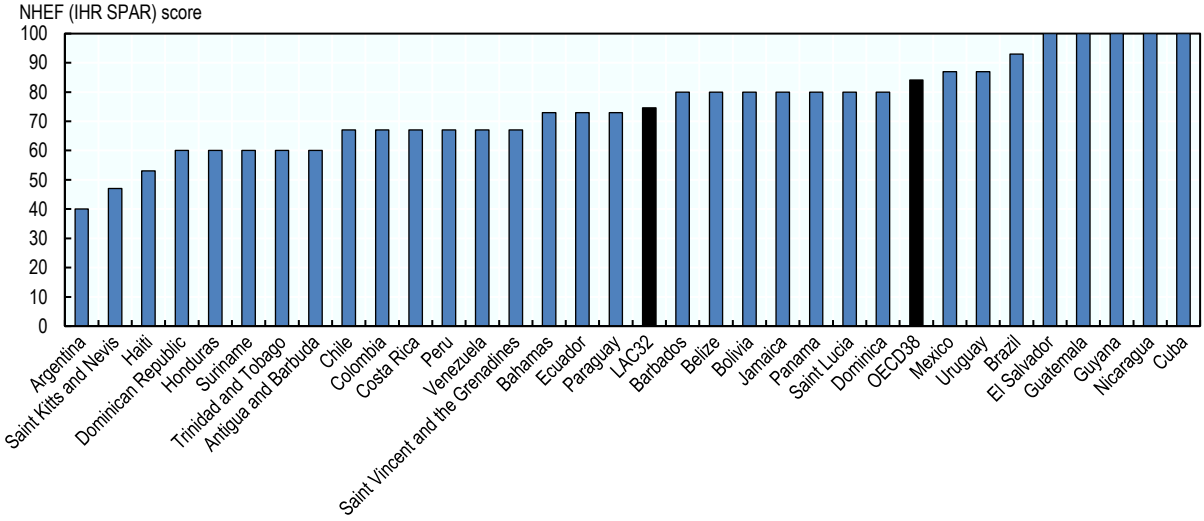
For health systems to be climate resilient, they should transform their traditional biomedical health models and integrate social and environmental determinants that mediate the effects of climate change on population health. Surveillance and management of these determinants are essential, particularly through collaborative and intersectoral public health programmes in which the health sector provides evidence, monitors health effects of climate change, defines regulatory standards, and co-ordinates health risk management. Climate-informed health programmes and preparedness and emergency plans contribute to resilient health systems and protect population health.

Disaster risk management and emergency preparedness

Strategic public health emergency preparedness frameworks are key to supporting, organising, and enabling the responsibilities and activities of health systems during an emergency, optimising their functions, effectiveness, and the analysis of the resources needed.

In terms of having a clear national health emergency framework (NHEF), LAC countries have improved over time; however, there are still significant differences across countries. Between 2019 and 2020, the IHR score in LAC countries was, on average, 74.6 out of 100, with Cuba, El Salvador, Guatemala, Guyana and Nicaragua being the most prepared countries and Argentina the least prepared. In contrast, OECD countries, the average was 84 out of 100, with a minimum of 33 and maximum of 100 (Figure 2.8) (WHO, 2022[107]).

Figure 2.8. National Health Emergency Framework (IHR SPAR) score in LAC countries in last year (2019-20)



Source: WHO (2022[107]), National Health Emergency Framework (IHR SPAR), https://www.who.int/data/gho/data/indicators/indicator-details/GHO/national-health-emergency-framework.

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Climate-informed health programmes

Health systems, at national or local levels, are responsible for developing health programmes that address climate-sensitive health risks (e.g. heat-related illnesses, vector- and water-borne diseases), as well as the health response during extreme weather events. National health plans or strategies and health programmes should progressively include critical information on climatic hazards and vulnerabilities as these affect the final health outcomes on the population (Box 2.6).

According to the 2021 WHO HCCGS, the proportion of countries that are developing or already developed climate-informed health programmes in LAC ranges from 4.2% to 29.2%, while in OECD this range goes from 0% to 54.6%. The three top areas which most countries are focusing on are health-related illnesses, injuries and mortality from extreme weather events, and vector-borne diseases (Figure 2.5) (WHO, 2021[19]).

Table 2.5. Proportion of countries in LAC or OECD that are developing or already developed climate-informed health outcomes by area.

Area	LAC countries	OECD countries
Airborne and respiratory illnesses	17.4%	27.3%
Heat-related illness	4.6%	54.6%
Injury and mortality from extreme weather events	13%	50%
Malnutrition and foodborne diseases	4.2%	0%
Mental and psychosocial health	4.4%	20%
Noncommunicable diseases	4.2%	27.3%
Vector-borne diseases	29.2%	25%
Waterborne diseases and other water-related health outcomes	16.7%	18.2%
Zoonoses	13%	10%

Source: WHO (2021[19]), WHO health and climate change global survey report, https://apps.who.int/iris/handle/10665/348068.

Box 2.6. Integrating climate change into health programmes

As a national strategy, Health Canada has developed HealthADAPT, which is a multi-year capacity-building programme that aims to help the health sector and communities to prepare for and respond to the impacts of climate change. Several projects focus on understanding the health vulnerabilities to climate change and developing adaptive capacity of health systems to limit the damage from climate change (Health Canada, 2022[108]).

Learning from the catastrophic event of 2003 heatwaves in Europe (Robine et al., 2008[109]), Austria, Belgium, Croatia, France, Germany, Greece, Hungary, Italy, the Netherlands, Portugal, Slovenia, Spain, Sweden and Switzerland have developed national or subnational health-heat action plans (HHAP) (European Climate Adaptation Platform, 2021[110]; WHO, 2008[27]). Germany, for example, has even included climate change in the strategic plan of the Ministry of Health, leading to some extent to an inclusion of the topic across all health programmes (WHO, 2015[111]). In 2022, Chile also included climate change as a topic in the national strategic plan up to 2030 (Ministerio de Salud, Chile, 2022[112]).

2.3.6. Financing

All plans, programmes, and activities to strengthen climate resilient health systems require financial resources. Climate finance capacity varies significantly between and within countries and, in general, the most vulnerable countries are often the least able to obtain sufficient financing support to implement adaptation and resilience actions.

Funding mechanisms, either at an international or national level, have to be implemented to support policies that boost the resilience of health systems as well as other sectors through activities oriented to improve health infrastructure, train health personnel, implement monitoring and emergency systems, and ensure food security, sanitation, and water supply (WHO, 2015[5]). Internationally, the UNFCCC, the Kyoto Protocol and the Paris Agreement call for financial assistance from Parties with more financial resources to those that are less well-endowed and more vulnerable. Nationally, countries should perform V&A assessments and promote adaptation capacities to allocate, apply for, and prioritise climate-smart healthcare investments. Several funds have been established to help countries with limited financial capacity to prepare and cope with climatic hazards and strengthen health systems.

The World Bank is engaging with international partners to develop innovations and policy action in this agenda, under the umbrella term Green Health Financing (GHF). These engagement seeks to strengthen all three health financing functions (resource mobilisation, risk pooling and strategic purchasing) with a focus on climate.

Resources to increase resilience to climate variability and climate change

In LAC, several international funding bodies have supported a wide range of adaptation projects. From the Adaptation Fund (AF), established under the Kyoto Protocol, 27 adaptation projects have been funded in LAC (up to August 2022), including projects focused on multiple sectors as well as agriculture, coastal management, disaster risk reduction, food security, rural development, and water management. On average, the grant amount per project is USD 5 403 755,

with a minimum of USD 10 000 and a maximum of USD 13 248 121. In general, the projects across all countries are mostly focused on enhancing adaptation and resilience and reducing vulnerability (Adaptation Fund, 2022[113]). The Global Facility for Disaster Reduction and Recovery (GFDRR) have funded 34 projects in LAC aiming at reducing disaster risk or enhancing resilience. The average granted amount per project is USD 509 654 (minimum of USD 49 943 and maximum of USD 1 833 744). The most common funding source is the Japan-World Bank Program for Mainstreaming Disaster Risk Management in Developing Countries, followed by the European Union (EU) – African, Caribbean and Pacific (ACP) Region Disaster Reduction Partnership Trust Fund (GFDRR, 2022[114]). None of the projects, either from the AF or the GFDRR is specifically focused on health systems or public. Figure 2.6 shows the recipients and number of projects awarded from the Adaptation Fund and the GFDRR.

Table 2.6. Recipients and number of projects under the Adaptation Fund (AF) and the Global Facility for Disaster Reduction and Recovery (GFDRR) up to 2022

Country	Projects under the AF			Projects under the GFDRR		
	1	2	3 or more	1	2	3 or more
Antigua and Barbuda			✓ (3)			
Argentina		✓				
Bahamas						
Barbados						
Belize		✓				
Bolivia				✓		
Brazil						✓ (3)
Central America					✓	
Chile		✓				
Colombia	✓					
Costa Rica			✓ (5)			
Cuba	✓					
Dominica	✓			✓		
Dominican Republic			✓ (3)	✓		
Ecuador		✓				
El Salvador	✓			✓		
Grenada						
Guatemala		✓				
Guyana						
Haiti	✓					✓ (3)
Honduras			✓ (3)	✓		
Jamaica	✓					
LAC						✓ (3)
Mexico	✓			✓		
Nicaragua	✓					
Panama		✓				
Paraguay	✓					
Peru			✓ (3)			✓ (4)
Saint Kitts and Nevis						
Saint Lucia	✓				✓	
Saint Vincent and the Grenadines				✓		
Suriname				✓		
The Caribbean						✓ (9)
Trinidad and Tobago	✓					
Uruguay	✓					
Venezuela						

Sources: Adaptation Fund (2022[113]), Projects Table View, https://www.adaptation-fund.org/projects-programmes/project-information/projects-table-view/ and GFDRR (2022[114]), GFDRR grants, https://www.gfdrr.org/en/grants?title=&field_grant_region_target_id=14&field_country_target_id=All&field_topics_term_target_id=All&field_sendai_tag_value=All&field_status_value=All&field_completion_date_value&field_start_date_value&page=1.

Focusing on health, food, and water security, the Green Climate Fund (GCF) have approved 17 projects of which 7 are focused on adaptation and 11 are cross-cutting projects in LAC. Most projects are related to new technologies applied to coral reefs, forest restoration, the agricultural sector, water management, and financial systems; however, none is focused on health systems. On average, the grant amount is USD 284 710 000 and includes Bahamas, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, and Trinidad and Tobago.

The GFC Readiness Programme, which provides resources to strengthen the institutional capacities of National Designated Authorities/focal points, has awarded four projects to LAC countries related to strengthening climate resilience of health systems. The project *"Developing a climate resilient health system in The Bahamas"* was awarded to Bahamas in 2020; the *project "Increasing health sectors capacities and strengthening co-ordination on climate action in Argentina at national and subnational levels"* was awarded to Argentina in 2020; the project *"Enhancing climate change resilience of health systems in the Caribbean"* was awarded to Jamaica, Guyana, Saint Kitts and Nevis, Saint Lucia, Haiti, Trinidad and Tobago, and Belize in 2020; and the project *"Building climate resilience into Trinidad and Tobago Healthcare System"* was awarded to Trinidad and Tobago in 2020 (Green Climate Fund, 2022[115]). The outcomes of these projects are still unpublished, and it is probable that standardised mechanisms of impact evaluation would be needed.

Other funds have also supported different adaptation projects, ranging from building resilience in agriculture, water management, ecosystems, coastal cities. Almost all countries in LAC have received funding from the Global Climate Change Alliance Plus (GCCA+) from the EU, Global Environment Facility (GEF), Least Developed Countries Fund (LDCF), MDG Achievement Fund, Pilot Program for Climate Resilience (PPCR) and the Special Climate Change Fund (SCCF). Unfortunately, from the title of the projects, none is focused on strengthening climate resilience of health systems. One mitigation project has been approved by the Clean Technology Fund (CFT) in Honduras and is titled *"GESP: Innovative Energy Solutions for Health Service Delivery in Honduras"* (Climate Funds Update, 2022[116]). The World Bank Group has also been one of the largest multilateral financier of climate action in developing countries, delivering record USD 31.7 billion in climate finance in fiscal year 2022 (World Bank, 2022[117]).

Complementary, based on the 2021 WHO HCCGS, 36% (n=9) of the participating countries have declared the Ministry of Health is currently receiving international funds to support climate and change work and plans. These countries are Bahamas, Belize, Colombia, Grenada, Guatemala, Guyana, Jamaica, Peru, and Saint Kitts and Nevis (WHO, 2021[19]).

There is no doubt that strengthening climate resilient health systems requires adequate and sustained financing. On one hand, and according to the principle of "common but differentiated responsibility", international support should be provided to countries that need it the most; however, every country needs to strengthen its own financial capacity to improve its climate resilience and prioritise resources according to its own vulnerabilities and capacities. Adequate strategic planning and strong intersectoral collaboration would optimise institutional efforts and financial resources by multiplying positive effects in different sectors as well as in all building blocks of health systems.

2.4. Conclusions

This chapter has examined the level of resilience of the health systems of the LAC countries to climate change, identifying trends in the region and providing key considerations for policy actions that countries can implement to strengthen this resilience.

LAC countries have a great opportunity to overcome the health and economic crises caused by the COVID-19 pandemic, as well as to build forward better considering the challenges imposed by the climate change. To promote climate resilient health systems as LAC countries recover from the COVID-19 crisis, they should focus on:

- **Leadership and governance:** The health sector should lead a positive transformation towards climate resilience within health systems and support other health-determining sectors. Health policies and programmes should integrate a climate resilient and disaster risk management perspective to strengthen health systems for current and future shocks and stresses. Specific collaborative agendas between the Ministry of Health and health-determining sectors, such as meteorological services or social services, should be carried out to better understand the effects of climate hazards on population health and be able to prepare for them, as well as identify the most vulnerable populations to better protect them. Some specific recommendations to strengthen leadership and governance are:

  - Designate a team on climate change and health within the health sector with leadership capacity, financial resources and links with other health-determining sectors. This team would be responsible for ensuring that intersectoral collaboration, policies, and activities are adequately performed.
  - Define and track key performance indicators that allow quantification of progress toward building climate resilience of health systems, including those indicators related to accountability.
- **Health workforce:** Formal development and training opportunities on climate change and health should be established through collaboration between institutions to enhance the technical and professional capacity of health personnel. Instances of formal education should be supported by academic institutions, and legally and financially recognised by ministries of education, health, and finance of each country. Some specific recommendations to strengthen the health workforce are:
  - Create an educational and training framework on climate change and health supported by a national committee that integrates ministries of health and education, as well as academic institutions and health centres. This framework would standardise training instances according to context-specific needs.
  - Apply this framework to establish risk communication protocols with the general public and health personnel before, during, and after extreme climatic events.
- **Health information systems:** LAC countries need to formalise and systematise their V&A assessments to better integrate climatic information into health programmes, surveillance systems and implement early warning systems. Countries should focus on risk communication as the basis of these efforts. Some specific recommendations to strengthen health information systems are:
  - Perform V&A assessments at the municipal level including spatial identification of vulnerable populations, which can be supported by community health workers.
  - Establish working groups between the health sector and the meteorological and environmental sectors in order to inform health programmes about climate hazards, integrate climate into surveillance systems and develop early warning systems for health risks.
- **Essential medical products and technologies:** Transitioning towards the sustainable and climate-smart transformation of health systems would strengthen leadership of the health sector in promoting better health for all, decrease disruptions during climate shocks and stresses, and reduce the environmental footprint of healthcare services. Some specific recommendations to strengthen essential medical products and technologies are:
  - Promote digitalisation of health systems and invest in interoperability and cybersecurity.
  - Develop a national framework that standardises the evaluation of sustainability of health centres, as well as guides improvement of buildings, optimisation energy and water consumption, and improve green waste management.
- **Strengthen PHC to ensure that climate-related health risks are addressed, and that health emergency response systems are climate resilient and adopt low carbon, climate-resilient service delivery**: LAC countries should strengthen their national health emergency frameworks, including climate emergency preparedness and response planning. To build climate resilience, LAC countries should emerge actively promote collaboration with health-determining sectors to include climate and social determinants of health in health programmes. Health emergency plans should be in full co-ordination with national and local emergency plans, which means that community-based preparedness and response are critical to protect health during emergencies. Complementarily, to reduce the current and future impacts of climate and environmental hazards, health programmes should integrate climatic information from design to implementation. Some specific recommendations to strengthen service delivery are:
  - Develop a national policy on disaster risk management that includes climate hazards and allows rapid articulation with regional and local circumstances.
  - Implement awareness campaigns on climate change and health targeted to the general public as well as health personnel.
  - Reduce air pollution by progressively incorporating clean cooking and heating systems, as well as improving public transport and creating cyclable and walkable cities and promoting low carbon diets. These actions would benefit health beyond climate change impacts, as they can help promote healthier food habits and physical activity.

  - Strengthen PHC to ensure that climate-related health risks are addressed (e.g. heatstroke), and that health emergency response systems are prepared to provide essential services despite climate-related hazards and risks.
- **Financing:** Countries should allocate more resources to prepare health systems for the impact of climate change and capitalise on synergies with other areas (e.g. pandemic preparedness) and sectors. Equally important, LAC countries should strengthen collaboration between them, as well as with diverse stakeholders, to obtain international financial support. Some areas to strengthen financing are:
  - Increase public spending for core public health services that protect the population from climate change.
  - Establish transdisciplinary working groups that can seek international funding to analyse public health problems and design and implement evidence-based policies.

LAC countries are in the process of strengthening the climate preparedness and resilience of their health systems; however, this chapter has highlighted some of remaining gaps. LAC countries have the potential to successfully build more equitable, accessible, and climate resilient health systems, but they need to adopt a proactive, holistic and collaborative approach, taking into account the important role of health-determining sectors, stakeholders, and international institutions, as well as health sector actors across all levels.

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3 Health status

Life expectancy at birth

In the Latin American and Caribbean (LAC) region, life expectancy at birth continues to rise on average despite the onset of the COVID-19 crisis, driven by the steady reduction in mortality at all ages, and particularly of infant and child mortality in all countries (see indicators "Infant mortality" and "Under age 5 mortality" in the following sections). These gains in longevity can be attributed to several factors, including rising living standards, better nutrition, and improved drinking water and sanitation facilities (see indicator "Water and sanitation" in Chapter 4). Healthier lifestyles, increased education, and greater access to quality health services also play an important role (Raleigh, 2019[1]).

Life expectancy at birth for the whole population across the LAC31 region reached 75.1 years on average in 2021, a gain of 3.9 years since 2000. In comparison, OECD countries gained 3.4 years during the same period (Figure 3.1, left panel). However, a large regional divide persists in life expectancy at birth. The countries with the longest life expectancy in 2021 were Chile and Costa Rica at around 81 years, closely followed by Barbados at just below 80 years. In contrast, three countries in the LAC region had total life expectancies of less than 70 years (Haiti, Guyana and Bolivia). In Haiti, a child born in 2017 can expect to live an average of fewer than 65 years.

Women tend to live longer than men do (Figure 3.1, right panel), but the degree of this disparity also varies across countries. The gender gap in life expectancy stood at 5.5 years on average across LAC31 countries in 2021, slightly higher than the OECD countries average of 5.4 years. The gender difference was particularly large in El Salvador, with a more than nine years gap, as well as in Venezuela, Brazil, Uruguay and Nicaragua, with gaps of seven years or more. Women also have greater rates of survival to age 65 (Figure 3.2), regardless of the economic status of the country. On average, across LAC countries, 83.7% of a cohort of new-born females would live to age 65, while only 74.2% of new-born males would live to age 65. Only in Costa Rica and Chile, more than 90% of new-born females are expected to live to age 65, still below the OECD average of 91.8%.

Higher national income – as measured by GDP per capita – is generally associated with higher life expectancy at birth (Figure 3.3). There were, however, some notable differences in life expectancy between countries with similar income per capita. For instance, Costa Rica and Chile had higher, and Guyana had lower life expectancies than predicted by their GDP per capita alone.

Gender-based differences in life expectancy can be explained by changes that occurred in the past century, such as reductions in maternal mortality, as well as the decrease in the total fertility rate, increased smoking by men, and the reduction in infectious diseases, all of which disproportionately benefited women (Goldin and Lleras-Muney, 2018[2]).

Socio-economic status and education play an important role in life expectancy, as seen in the case of a diverse range of LAC countries such as El Salvador, Peru and Honduras, where the higher educational background of mothers and household wealth are associated with better infant and child survival (see indicators "Infant mortality" and "Under age 5 mortality").

Definition and comparability

Life expectancy at birth is the best-known measure of population health status and is often used to gauge a country's health development. It measures how long, on average, a newborn infant can expect to live if current death rates do not change. Since the factors affecting life expectancy often change slowly, variations are best assessed over long periods of time. Age-specific mortality rates are used to construct life tables from which life expectancies are derived. The methodologies that countries use to calculate life expectancy can vary somewhat, leading to differences of fractions of a year. Some countries base their life expectancies on estimates derived from censuses and surveys, and not on accurate registration of deaths. Survival to age 65 refers to the percentage of a cohort of newborn infants that would survive to age 65, if subject to current age-specific mortality rates.

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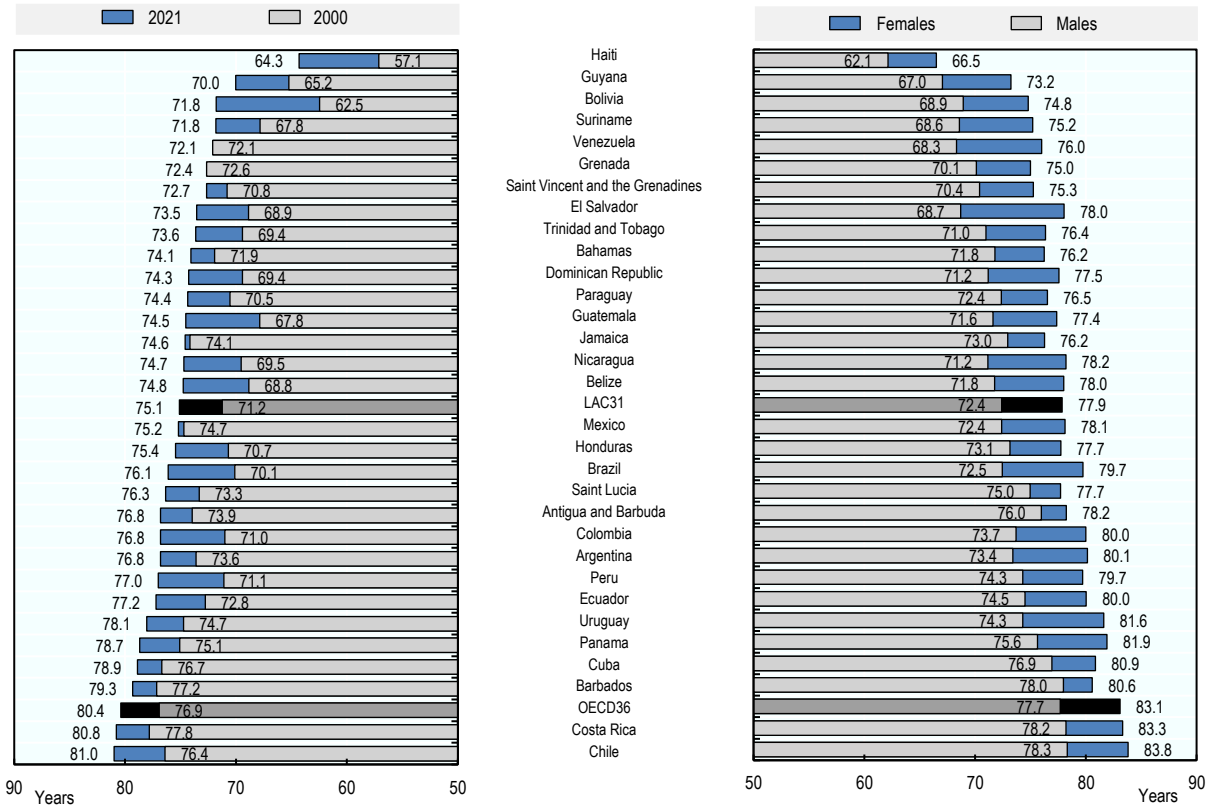
Figure 3.1. Life expectancy at birth, by sex, 2000 and 2021 (or nearest year)



Source: OECD Health Statistics 2022, The World Bank World Development Indicators Online 2022.

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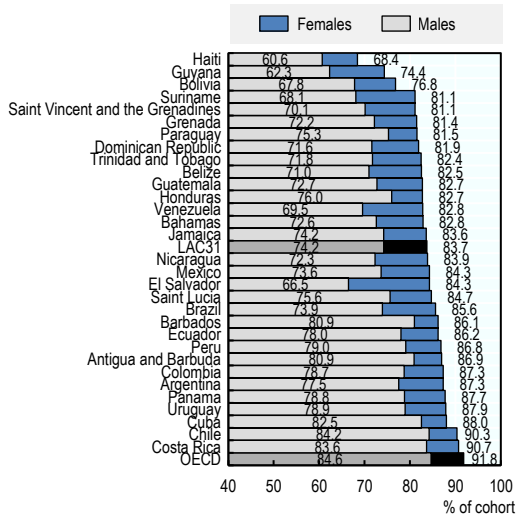
Figure 3.2. Survival rate to age 65, 2020 (or nearest year)



Source: The World Bank World Development Indicators Online 2022.

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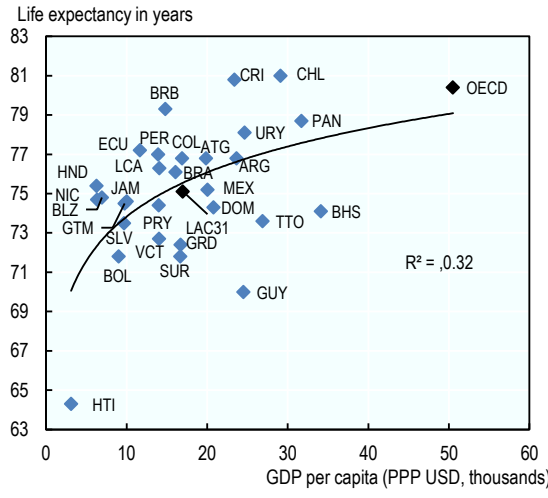
Figure 3.3. Life expectancy at birth and GDP per capita, 2021 (or nearest year)



Source: The World Bank World Development Indicators Online 2022.

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Excess mortality

Excess mortality measures whether – and if so, the extent to which – the total number of deaths from all causes is over and above what could normally be expected for a given period. Here, deaths in 2020 and 2021 are compared against the expected number of deaths for these years following a model based on data between 2015 and 2019, or 2000-19 depending on the reporting periodicity in the country (WHO, 2022[1]). Excess mortality has been particularly useful in providing a fuller understanding of the impact of COVID-19 across countries, since it is unaffected by country-specific variations in the recording of COVID-19-specific deaths, and accounts for both deaths directly attributable to COVID-19 and deaths indirectly linked to the virus (Morgan et al., 2020[2]).

In 2020 and 2021, across LAC33 countries, over 1.1 million excess deaths per year were recorded, compared to the expected number of deaths based on previous years. In comparison, the 38 OECD member countries experienced more than 1.5 million excess deaths per year in the same period when considering the figures reported by the WHO.

More people died in 2020 and 2021 compared with what was expected (numbers adjusted for population growth) in all but four LAC countries. Yearly excess mortality in 2020 and 2021 was highest in Peru, where 437 excess deaths per 100 000 population were recorded on average. Excess deaths per 100 000 population were also relatively high in Bolivia (375), Mexico (242), Ecuador (228), Saint Vincent and the Grenadines (222) and Guyana (178), all of them above the LAC33 average of 174 excess deaths per 100 000 population. By contrast, there were fewer all-cause deaths in 2020 and 2021 compared to the expectation in Saint Kitts and Nevis, Grenada, Barbados, and Antigua and Barbuda – all countries experiencing relatively few COVID-19 deaths (Figure 3.4).

Regarding excess mortality by age groups, all LAC countries for which data was available experienced higher mortality in the group of people aged 70 and over, when compared to groups of people aged 0 to 39 and 40 to 69, except for Mexico, in which the group of people aged 40 to 69 exhibited the highest excess mortality for the years 2020 and 2021. In LAC, as was the case in the rest of the world, the majority of COVID-19 deaths occurred amongst older population groups (as well as amongst those with certain chronic conditions, such as cardiovascular diseases and diabetes). These are also the population groups with the highest underlying risk of mortality. In addition, countries like Bahamas, Costa Rica, Dominican Republic, Guatemala, Jamaica, Saint Lucia, Panama, and Trinidad and Tobago experienced negative excess mortality for the group of people aged 0 to 39 during the years 2020 and 2021, possibly driven by the reduction of deaths related to road traffic or injuries prevented during lockdown periods (Figure 3.5).

Definition and comparability

Excess mortality is defined here as the average number of total deaths from all causes in 2020 and 2021, compared to the average expected number of deaths for these years estimated by the WHO based on previous years. More information about the estimation method for expected deaths can be found in "Methods for estimating the excess mortality associated with the COVID-19 pandemic" (WHO, 2022[1]). Figures are adjusted for population growth in age groups over time. This adjusted baseline could still be considered a somewhat conservative estimate of the expected number of deaths, since an ageing population would also be expected to push up the number of deaths observed each year.

National variations in underlying death rates related to various events require caution when comparing excess mortality at a given point in time. For example, significant country-specific events such as severe flu seasons, heatwaves, and natural disasters during the previous five years may have had a large influence on the number of deaths, affecting the underlying average. However, choosing a five-year comparator period (or 20 years for some countries) helps to mitigate such variations.

Variations in the onset and duration of the various waves of the COVID-19 pandemic will have an impact on analysing the linkages between COVID-19 deaths and excess mortality across countries. Nevertheless, taking the whole of 2020 and 2021 as an overall timeframe is considered a suitable period of analysis to examine differences in the evolution of COVID-19 in LAC countries.

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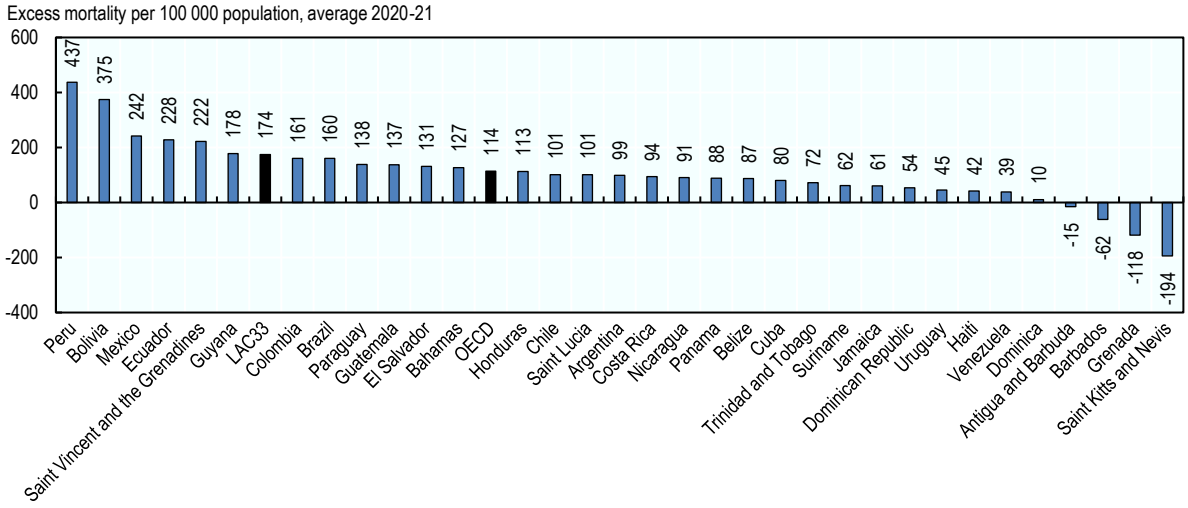
Figure 3.4. Excess mortality per 100 000 population, 2020 and 2021



Source: WHO (2022[3]), "Global excess deaths associated with COVID-19 (modelled estimates)", as of 25 March 2022, https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates.

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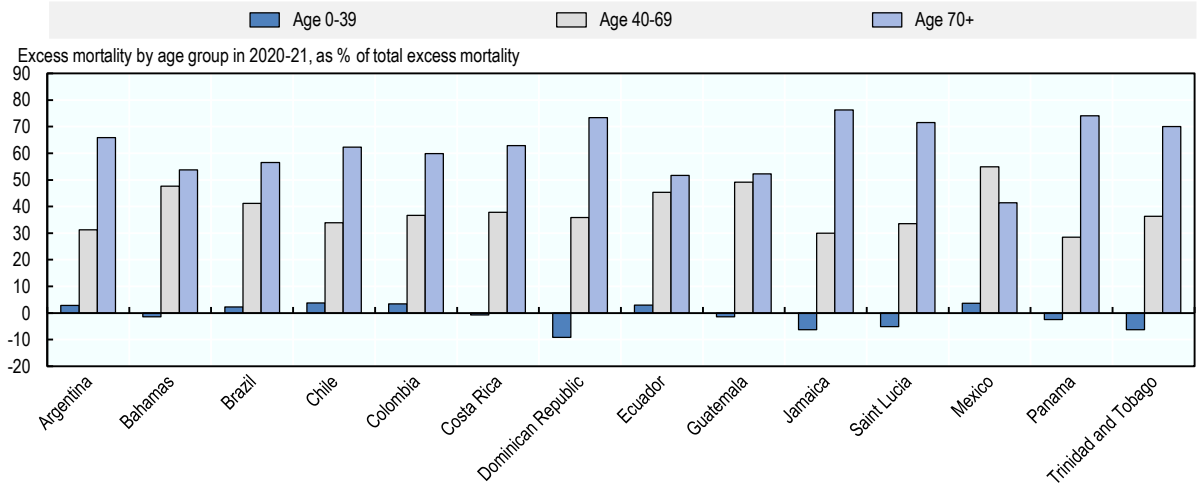
Figure 3.5. Excess mortality by age group, 2020 and 2021



Source: WHO (2022[3]), "Global excess deaths associated with COVID-19 (modelled estimates)", as of 25 March 2022, https://www.who.int/data/sets/global-excess-deaths-associated-with-covid-19-modelled-estimates.

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Infant mortality

Infant mortality, or deaths in children aged less than one year, reflects the impact of economic, social, and environmental conditions on the health of mothers and infants, as well as the effectiveness of health systems. Factors such as the education of the mother, quality of antenatal and childbirth care, preterm birth and birth weight, immediate new-born care, and infant feeding practices are important determinants of infant mortality (see section "Infant and young child feeding" in Chapter 4). The COVID-19 pandemic has indirectly resulted in the reduction of reproductive, maternal, neonatal, and child health (RMNCH) services and could therefore reverse the achievements made in the last decades in the region on reducing infant and maternal mortality (Castro, 2020[1]).

In 2020, the infant mortality average in LAC was 15 deaths per 1 000 live births. Infant mortality was lower in countries such as Cuba, Uruguay, Antigua and Barbuda, and Chile (under 7 deaths per 1 000 live births), while higher in the Dominican Republic, Dominica, and particularly Haiti (at almost 28, 32, and 47 per 1 000 live births, respectively) (Figure 3.6). Between 2000 and 2020, the average infant mortality rate has fallen by 38% in the LAC region, with most countries experiencing declines between 30% and 60% (Figure 3.6). Peru, Uruguay and Bolivia saw declines of over 30%. However, countries like Grenada, Venezuela, Saint Lucia and Dominica experienced increases in infant mortality rate, particularly the latter with an increase of 125%.

Across countries, important determinants of infant mortality rates are income status and the education of mothers. For instance, in Paraguay, infant mortality is 26 times higher in the poorest quintile compared to the richest quintile, while in El Salvador it is more than four times higher when mothers have lower levels of education than higher (no education or primary compared to secondary or tertiary education). Geographical location (urban or rural) is another determinant of infant mortality in the region, particularly in Guyana where infant mortality rate in rural areas reaches 39 deaths per 1 000 live births, compared to 7 deaths per 1 000 live births in urban areas (Figure 3.7).

Infant mortality can be reduced through cost-effective and appropriate interventions. These include immediate skin-to-skin contact between mothers and newborns after delivery, early and exclusive breastfeeding for the first six months of life, and kangaroo parent care for babies weighing 2 000g or less. Postnatal care for mothers and newborns within 48 hours of birth, delayed bathing until after 24 hours of childbirth, and dry cord care are important in reducing infant deaths. Management and treatment of neonatal infections, pneumonia, diarrhoea, and malaria are also critical. Oral rehydration therapy is a cheap and effective means to offset the debilitating effects of diarrhoea, and countries could also implement relatively inexpensive public health interventions, including immunisation and providing clean water and sanitation (see indicator "Water and sanitation" in Chapter 4 and "Childhood vaccination programmes" in Chapter 7). Reductions in infant mortality will require not only the aforementioned strategies but also that all segments of the population benefit from these improvements (Gordillo-Tobar, Quinlan-Davidson and Mills, 2017[2]).

Definition and comparability

Infant mortality rate is defined as the number of children who die before reaching their first birthday in a given year, expressed per 1 000 live births. Some countries base their infant mortality rates on estimates derived from censuses, surveys, and sample registration systems, and not on accurate and complete registration of births and deaths. Differences amongst countries in registering practices for premature infants may also add slightly to international variations in rates. Infant mortality rates are generated by either applying a statistical model or transforming under age 5 mortality rates based on model life tables.

Data on mortality by socio-economic conditions is from DHS surveys and MICS. These surveys allow for the disaggregation of household data by education level (no education and primary vs secondary and tertiary), income (lowest and highest quintiles of income) and rural and urban residency.

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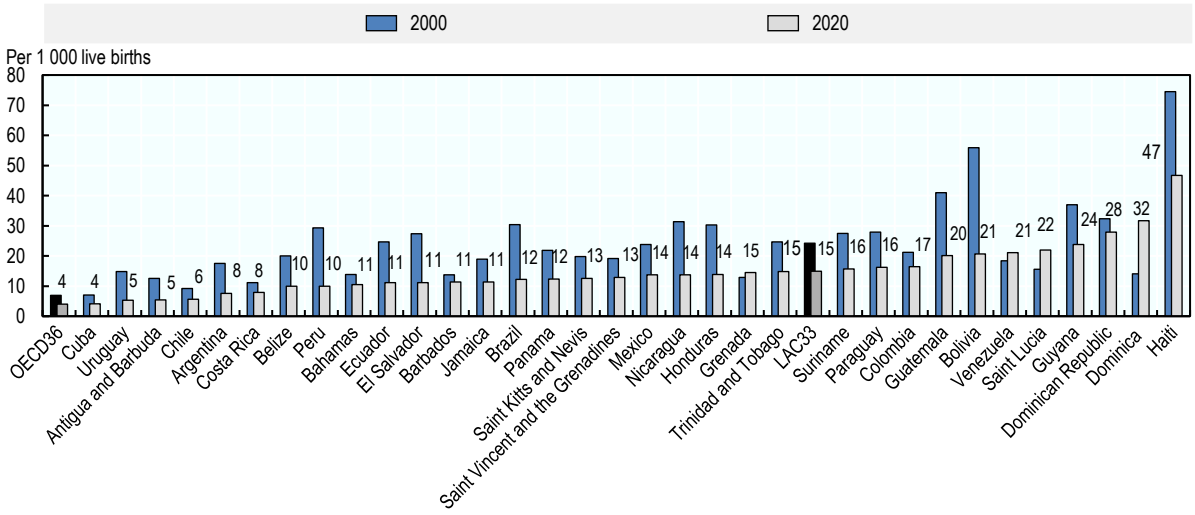
Figure 3.6. Infant mortality rates, 2000 and 2020 (or nearest year)



Source: The World Bank World Development Indicators Online 2022.

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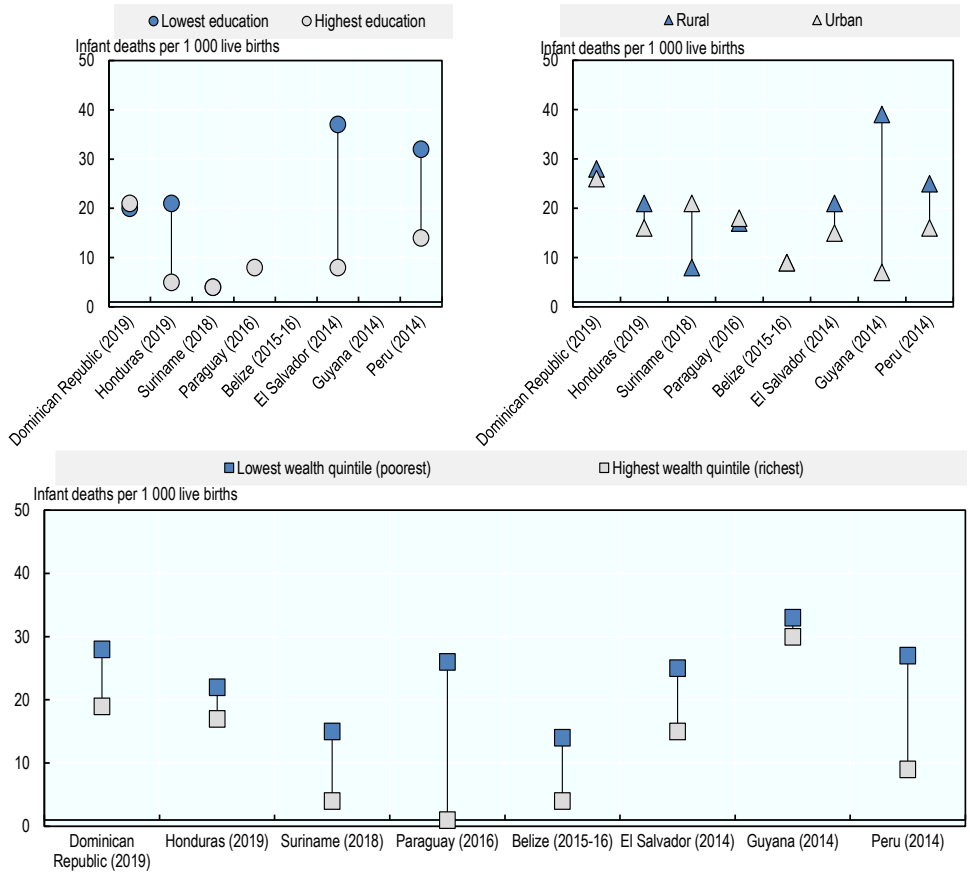
Figure 3.7. Infant mortality rate by socio-economic and geographic factor, selected countries and latest year available



Source: Demographic and Health Survey (DHS) and Multiple Indicator Cluster Survey (MICS).

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Under age 5 mortality

The under age 5 mortality rate is an indicator of child health as well as the overall development and well-being of a population. In 2019, 5.3 million children died worldwide before their fifth birthday (Perin et al., 2022[1]). As part of their Sustainable Development Goals (SDG), the United Nations has set a target of reducing under age 5 mortality to at least as low as 25 per 1 000 live births by 2030. The main causes of death amongst children under five include preterm birth complications (18%), pneumonia (12%), intrapartum-related complications (8%), and sepsis (7%). Undernutrition, suboptimal breastfeeding, and zinc deficiency are overlapping risk factors of childhood diarrhoea and pneumonia – the leading infectious causes of childhood morbidity and mortality (PAHO, 2017[2]).

In 2020, the global under-five mortality rate was estimated by the World Bank at 37 per 1 000 live births, while the average under-five mortality rate across LAC33 countries was 17 deaths per 1 000 live births (Figure 3.8). Cuba, Uruguay, Antigua and Barbuda, Chile, Costa Rica and Argentina achieved rates of less than 10 deaths per 1 000 live births. Mortality rates in Dominica, the Dominican Republic, Guyana and Bolivia were high, between 25 and 35 deaths per 1 000 live births, while rates in Haiti were very high, reaching 60.5 deaths per 1 000 live births. These countries also had the highest infant mortality in the region as seen in the previous section.

While under age 5 mortality has declined by an average of 42% in LAC countries between 2000 and 2020, progress varies significantly amongst countries. Countries such as Peru, Bolivia, Uruguay and El Salvador reported a drop of over 60%, while in Dominica the rate increased by 109%, in Saint Lucia by 33%, in Venezuela by 12%, and in Grenada by 6%. Haiti saw a reduction of 42% in the period, at the same level of the improvement in the region.

As is the case for infant mortality (see indicator “Infant mortality” in Chapter 3), inequalities in under-age-5 mortality rates also persist within countries. Under age 5 mortality rates consistently vary based on household income and mother’s education, and to a certain extent by geographical location. For example, in El Salvador under age 5 mortality was more than five times higher amongst children whose mother had no, or little education compared to those whose mother had more than secondary-level education. Inequality by education level was also large in Peru and Honduras. In Paraguay, disparities in under age 5 mortality according to income were also large, with children in the poorest 20% of the population 28 times more likely to die before their fifth birthday than those in the richest 20%. Inequalities in mortality rates based on geographic locations also exist, for example in Guyana under age 5 mortality is more than four times higher in rural areas than in urban areas (Figure 3.9).

To achieve the SDG target, countries can accelerate their efforts, for example by scaling effective preventive and curative interventions including early essential new-born care, vitamin A supplementation, vaccines for rotavirus and measles, safe water and improved sanitation, breastfeeding and adequate complementary food, handwashing with soap, and improved case management. An integrated approach targeting the main causes of post-neonatal deaths could produce a 14% reduction in the under age 5 mortality rate (PAHO, 2017[2]).

Definition and comparability

Under age 5 mortality is defined as the probability of a child born in a given year dying before reaching their fifth birthday and is expressed per 1 000 live births. Since under age 5 mortality is derived from a life table, it is, strictly speaking, not a rate but a probability of death. Age-specific mortality rates are used to construct life tables from which under age 5 mortality is derived. Some countries base their estimates on censuses, surveys, and sample registration systems, and not on accurate and complete registration of deaths. See indicator “Infant mortality” for definition of rate ratios.

Data on mortality by socio-economic conditions is from DHS surveys and MICS. These surveys allow for the disaggregation of household data by education level (no education and primary vs secondary and tertiary), income (lowest and highest quintiles of income) and rural and urban residency.

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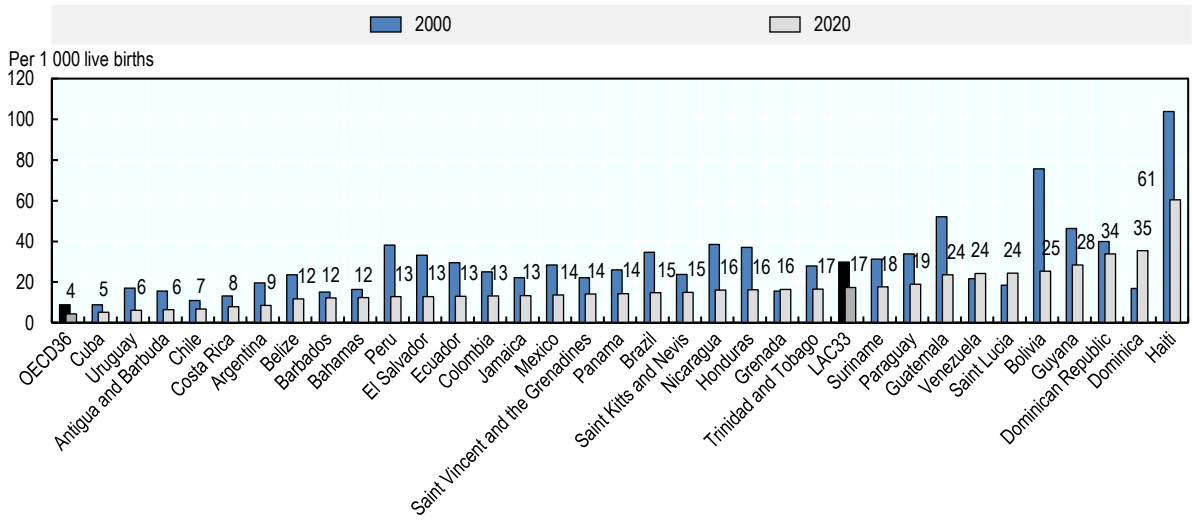
Figure 3.8. Under age 5 mortality rates, 2000 and 2020 (or nearest year)



Source: The World Bank World Development Indicators Online 2022.

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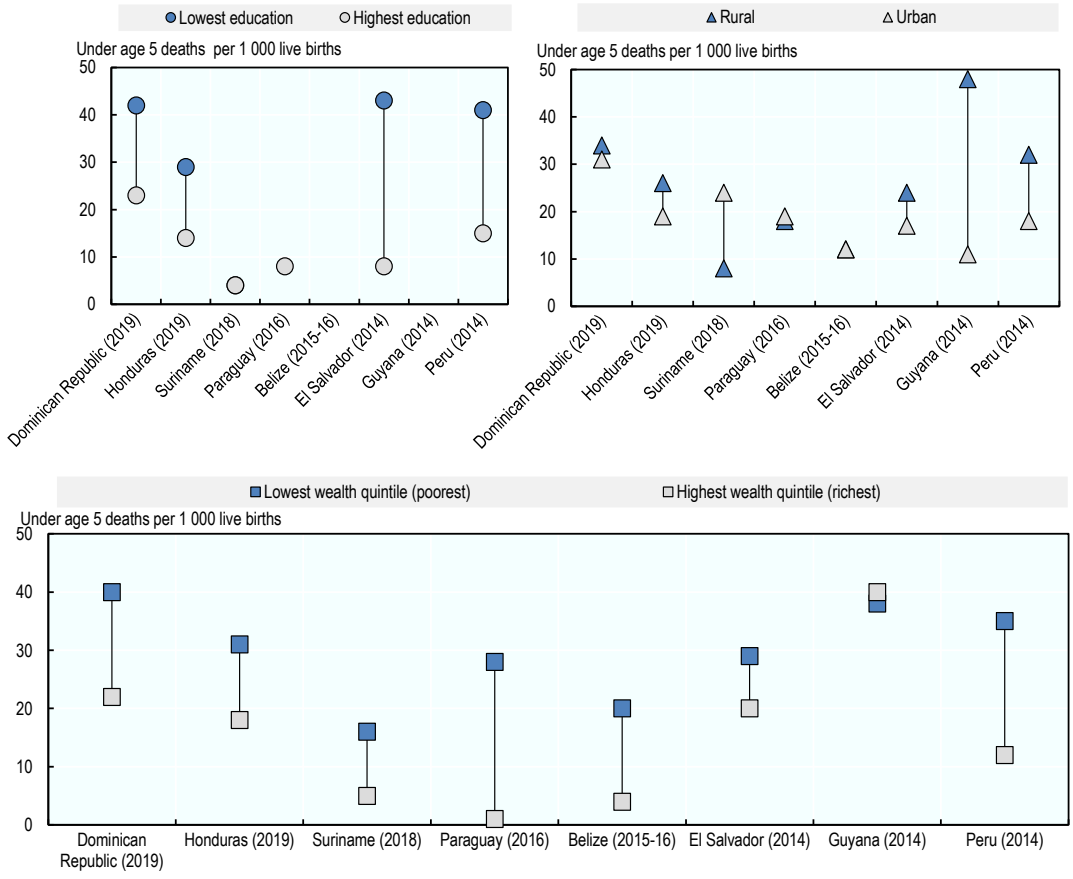
Figure 3.9. Under age 5 mortality rate by socio-economic and geographic factor, selected countries and years



Source: Demographic and Health Survey (DHS) and Multiple Indicator Cluster Survey (MICS).

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Maternal mortality

Maternal mortality – the death of a woman during pregnancy, childbirth, or within 42 days of the termination of pregnancy – is an important indicator of a woman's health status and to assess health system's performance. The Sustainable Development Goals set a target of reducing the global maternal mortality ratio to less than 70 per 100 000 live births by 2030. In LAC, around 7 400 maternal deaths occurred in 2019, most of them preventable (WHO, 2022[1]).

In 32 LAC countries, maternal mortality ratio (MMR) averaged 97 deaths per 100 000 live births in 2020, substantially higher than the 10 deaths per 100 000 live births in OECD countries (Figure 3.10). Estimates show Chile with low MMRs of 22, with high MMRs present in Haiti at 435, followed by Bolivia and Saint Kitts and Nevis with 217 and 179, respectively.

Despite high rates in certain countries, a reduction of -3.2% in maternal mortality has been achieved in the LAC region between 2000 and 2020, yet far below the reduction in OECD countries of -27% in the same period. In Nicaragua and Colombia MMR decreased by around 50%. Nevertheless, during the same period MMR increased in 17 countries, with Grenada (111%), Dominica (100%), Saint Lucia (83%), Saint Vincent and the Grenadines (78%), Belize (75%) and Barbados (73%) experiencing increases of more than 70%.

Across 31 LAC countries, maternal mortality is generally inversely related to the coverage of skilled birth attendance (Figure 3.11). This can be clearly seen since the country with the highest MMR, Haiti, was also the country with the lowest proportion of births attended by a skilled health professional (42%). On the other side, countries like Saint Kitts and Nevis, Guyana, and Suriname show high skilled birth attendance coverage (97% or more) but a relatively high MMR (all over 115), indicating challenges with quality of care. At the same time, most countries (25) had more than 95% of births attended by skilled health professionals.

Higher coverage of antenatal care (at least four times) is associated with lower MMRs, indicating the effectiveness of antenatal care across countries (Figure 3.12). Cuba deviates from the trend by having a low coverage of antenatal care (only 80% of pregnant women receives at least four visits) but a relatively low MMR of 50. Oppositely, Peru and the Dominican Republic show antenatal care coverage above 92% but MMR over 90 deaths per 100 000 live births, which might be linked with lower rates of skilled birth attendance but also with quality-of-care issues.

Risk of maternal death can be reduced through family planning, better access to high-quality antenatal care, and delivery and postnatal care by skilled health professionals. Addressing disparities in the provision of these essential reproductive health services to underserved populations must be included in any strategy. Furthermore, the broad health systems strengthening and universal health coverage agenda, along with multisectoral action (e.g. women's education, tackling violence) are collaborative efforts which are crucial to reducing maternal deaths in the LAC region (WHO et al., 2018[2]).

Definition and comparability

Maternal mortality is defined as the death of a woman while pregnant or during childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from unintentional or incidental causes. This includes direct deaths from obstetric complications of pregnancy, interventions, omissions, or incorrect treatment. It also includes indirect deaths due to previously existing diseases, or diseases that developed during pregnancy, where these were aggravated by the effects of pregnancy. Maternal mortality is here measured using the maternal mortality ratio (MMR). It is the number of maternal deaths during a given time per 100 000 live births during the same time. There are difficulties in identifying maternal deaths precisely. Many countries in the region do not have accurate or complete vital registration systems, and so the MMR is derived from other sources including censuses, household surveys, sibling histories, verbal autopsies, and statistical studies. Estimates should therefore be treated cautiously.

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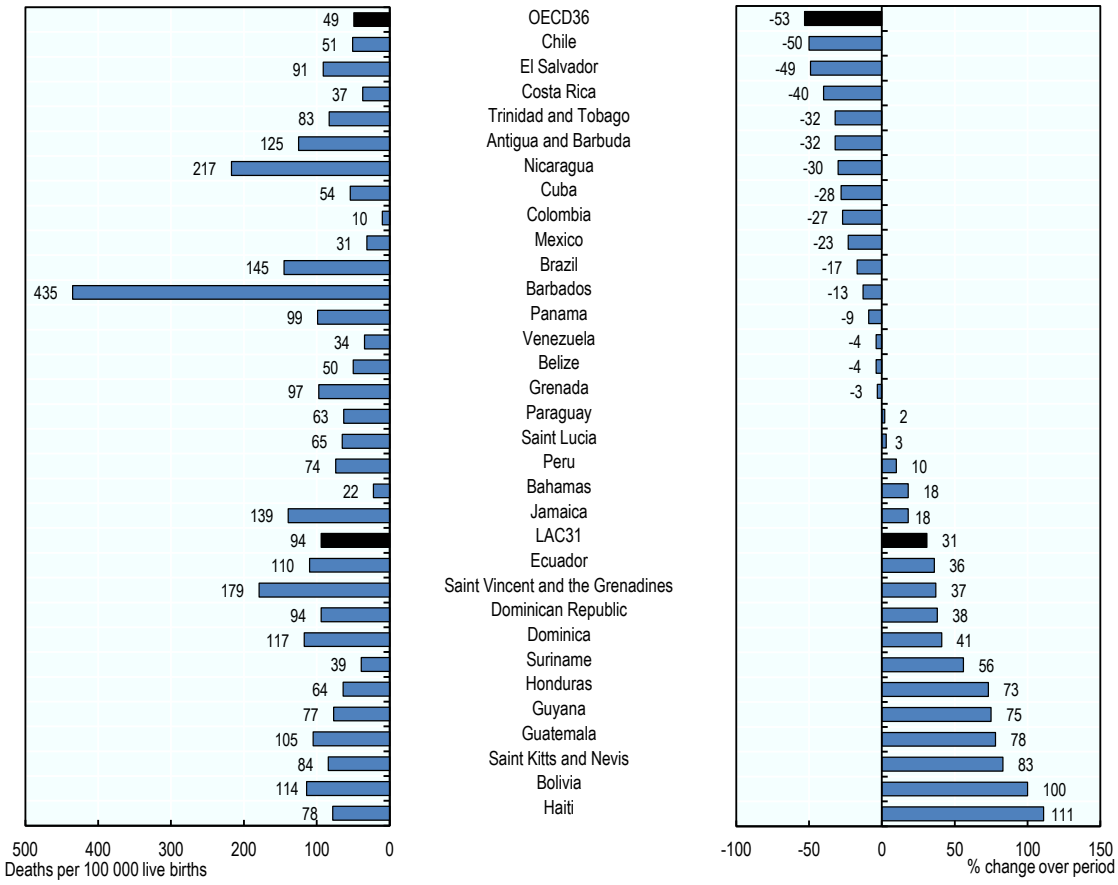
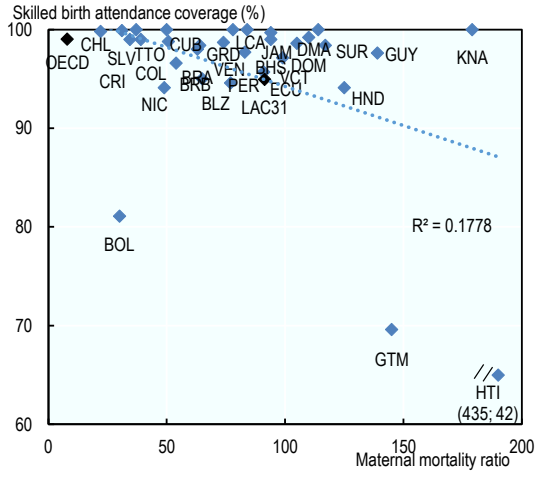
Figure 3.10. Estimated maternal mortality ratio, 2020, and percentage change since 2000



Source: Bill and Melinda Gates Foundation (2021), OECD Health Statistics 2022.

StatLink https://stat.link/5syfk3

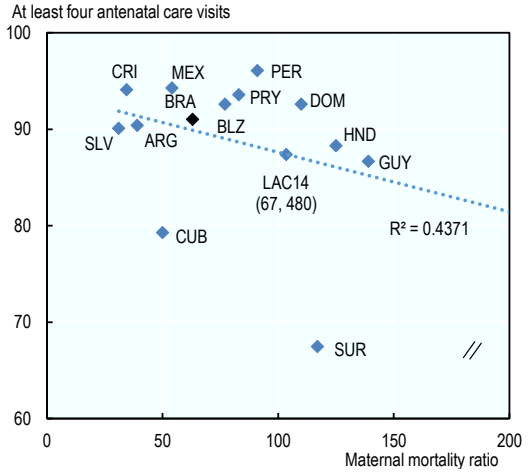
Figure 3.11. Skilled birth attendant coverage and estimated maternal mortality ratios, latest year available



Source: WHO GHO 2019.

StatLink https://stat.link/de4nuq

Figure 3.12. Antenatal care coverage and maternal mortality, latest year available



Source: WHO GHO 2019.

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Mortality from all causes

Cumulative development in countries is leading to an "epidemiological transition", whereby early deaths are replaced by late deaths, and communicable diseases are substituted by non-communicable diseases (Omran, 2005[1]). This is also the case in LAC, where the burden from non-communicable diseases amongst adults – the most economically productive age group – is rapidly increasing. In fact, higher levels of education, access to clean water and sanitation, as well as lower levels of overcrowding are linked to lower levels of communicable diseases and higher levels of mortality due to cancer, cardiovascular disease, and other non-communicable diseases (The SALURBAL group, 2021[2]).

There are wide disparities in adult mortality in the LAC region. For men in 2020, the probability of dying between ages 15 and 60 ranged from a low of 104 per 1 000 population in Chile to 267 per 1 000 in Guyana (Figure 3.13). It also exceeded 250 per 1 000 population in El Salvador and Haiti. Amongst women, the probability ranged from 55 per 1 000 population in Costa Rica to 192 in Haiti. Mortality was higher amongst men than women across all countries, and the ratio was higher in countries with overall lower mortality rates. Mortality rates for men were one and a half times the rates for women or higher in most countries. Across LAC31, the average probability of dying was 176 per 1 000 population for adult men and 102 per 1 000 population for adult women, still much higher than the average adult mortality in OECD countries (101 per 1 000 population for men and 52 per 1 000 population for women).

All-cause mortality for the entire population ranged from less than 500 per 100 000 population in Colombia, Peru, Panama, Costa Rica and Chile, to over 1 000 in Haiti and Guyana (Figure 3.14). The average all-cause mortality rate in the LAC region was more than 50% higher than the average amongst OECD member countries. Nonetheless, mortality for the entire population declined by an average of 14% in the LAC region between 2000 and 2019. The largest declines were in Colombia, Peru and Guatemala (over 30% decrease). Overall mortality for all populations is highly related with adult mortality across countries in the region; Haiti having the highest adult mortality for women and the second highest for men, as well as the highest all-cause mortality.

The share of deaths due to non-communicable diseases is increasing in LAC countries. Non-communicable diseases such as cardiovascular diseases and cancers were the most common causes of death, being responsible for almost 77% of all deaths, on average, across 31 LAC countries (Figure 3.15; see also section "Mortality from cardiovascular diseases" and section "Mortality from cancer" in Chapter 3). In OECD member countries, the average was higher at 86%, and the share was also increasing. However, communicable diseases such as respiratory infections, diarrhoeal diseases, and tuberculosis, along with maternal and perinatal conditions, also remained major causes of death amongst many countries in the LAC region, accounting for more than 11% of deaths in 2019. The remaining 12% of deaths are attributed to injuries and violence.

Definition and comparability

Mortality rates are calculated by dividing annual numbers of deaths by mid-year population estimates. Rates have been age-standardised to the UN World Population Prospects to remove variations arising from differences in age structures across countries. Complete vital registration systems do not exist in many developing countries, and about one-third of countries in the region do not have recent data. Misclassification of causes of death is also an issue. The WHO Global Health Estimates (GHE) project draws on a wide range of data sources to quantify global and regional effects of diseases, injuries, and risk factors on population health. WHO has also developed life tables for all member states, based on a systematic review of all available evidence on mortality levels and trends. The probability of dying between 15 and 60 years of age (adult mortality rate) derive from these life tables.

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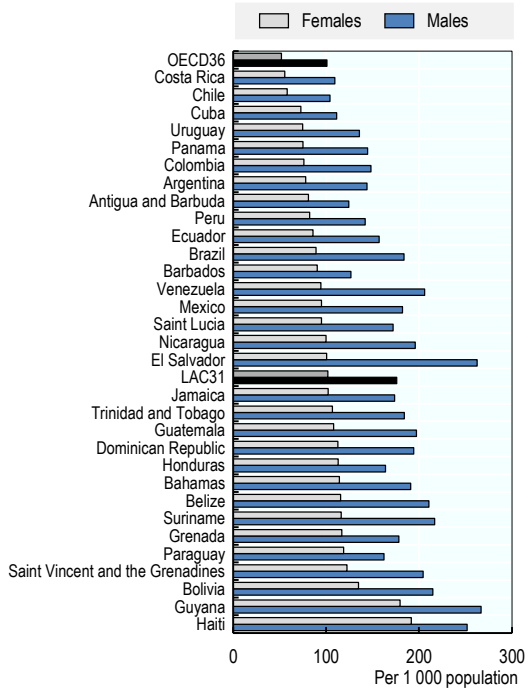
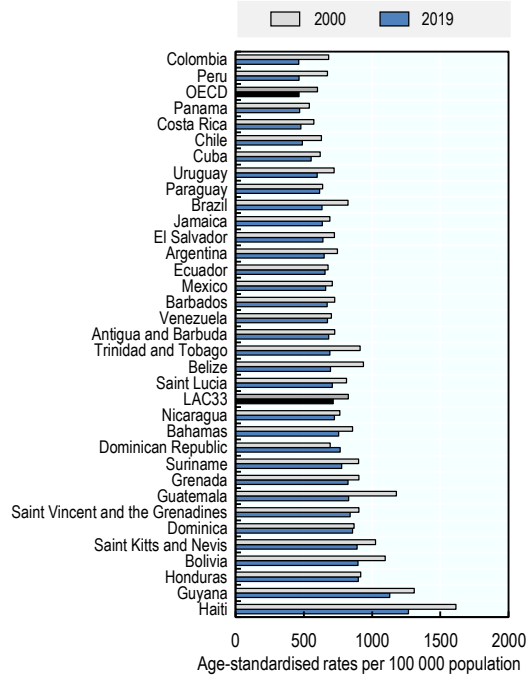
Figure 3.13. Adult mortality rate (probability of dying between 15 and 60 years per 1 000 population), 2020 (or nearest year)



Source: The World Bank World Development Indicators Online 2022.

StatLink https://stat.link/uzoa6c

Figure 3.14. All cause-mortality rates for all populations, 2000 and 2019 (or nearest year)



Source: Global Burden of Disease (2022), IHME.

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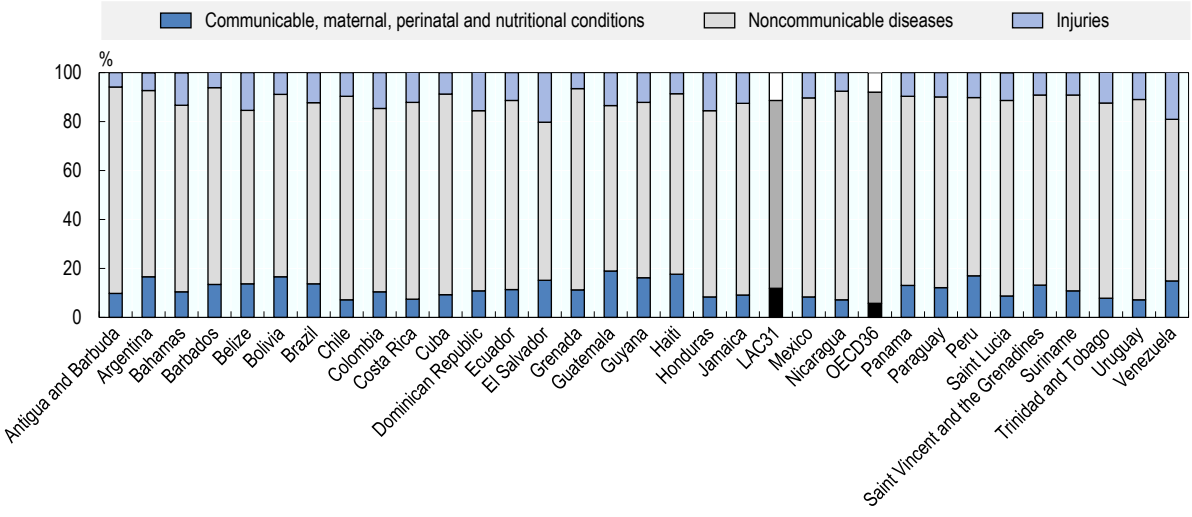
Figure 3.15. Proportions of all cause deaths, 2019 (or nearest year)



Source: Global Burden of Disease (2022), IHME.

StatLink https://stat.link/216wc0

Mortality from cardiovascular diseases

Cardiovascular diseases (CVD) are the number one cause of death globally and were estimated to have caused over 2 million deaths in the WHO Region of the Americas in 2019, accounting for 28% of all deaths (WHO, 2022[1]). CVD covers a range of diseases related to the circulatory system, including ischaemic heart disease (IHD) and cerebrovascular disease. Ischemic heart disease is caused by the accumulation of an atherosclerotic plaque in the inner wall of a coronary artery, restricting blood flow to the heart. Cerebrovascular diseases refer to a group of diseases that relate to problems with the blood vessels that supply the brain.

The majority of CVD is caused by risk factors that can be controlled, treated, or modified, such as high blood pressure, high blood glucose, high blood cholesterol, obesity (see section "Overweight or obese adults" in Chapter 4), lack of physical activity, tobacco use (see section "Tobacco" in Chapter 4), and alcohol consumption.

CVD is the leading cause of death in the LAC region (see section on "Mortality from all causes"). Average mortality from CVD decreased both in LAC and OECD between 2000 and 2020, although the reduction was considerably smaller in LAC (-16% versus -36%) (Figure 3.16). Countries like Belize, Colombia, and Trinidad and Tobago have experienced the largest decreases in CVD mortality rates of over -35% in the period, with Belize being the only LAC country above the OECD average reduction. Notably, Dominican Republic, Honduras, Ecuador and Jamaica were the only countries that have increased CVD mortality in the period, especially the Dominican Republic which went from 228 to 311 deaths per 100 000 population.

Mortality from CVD exceeded 400 deaths per 100 000 population amongst men in Guyana and Haiti in 2019 (Figure 3.17). Peru, Panama, Chile, Colombia and Costa Rica were the only countries below the OECD average of 164 male deaths per 100 000 population. For women, the highest rates were observed in Haiti and Guyana, with 475 and 399 deaths per 100 000 population, respectively. In contrast, Peru had the lowest figures for women in the region, with 77 deaths per 100 000 population being alongside Panama, Costa Rica and Chile the only countries below the OECD average of 112.

Together, IHD and stroke comprise 78% of all CVD deaths in all LAC countries combined, very similar to the 77% in OECD countries, but deaths due to haemorrhagic stroke in LAC are proportionally 40% more than those in the OECD (14% versus 10%) (Figure 3.18). IHD deaths represent over 60% of all CVD deaths in El Salvador, Mexico, Nicaragua and Guatemala, while 35% or less in Saint Lucia, Jamaica, Dominica, and Saint Kitts and Nevis. In Jamaica, stroke deaths take 45% of all CVD deaths, while these represent less than 25% in Costa Rica, Mexico, El Salvador, Colombia and Nicaragua.

Success of reducing the mortality rates from CVD in OECD countries owes to a decline in smoking rates, expanded health system's capacity to control high cholesterol and blood pressure, and greater access to effective care in the event of an acute episode such as a stroke or heart attack (see indicator "In-hospital mortality following acute myocardial infarction and stroke" in Chapter 7) (OECD, 2015[2]). As the proportion of older people increases in the LAC region (see section "Demographic trends" in Chapter 9), demand for healthcare will increase and the complexity and type of care that CVD patients require will change due to mounting multi-morbidity (OECD, 2022[3])

Definition and comparability

See indicator "Mortality from all causes" in Chapter 3 for definition, source, and methodology underlying mortality rates.

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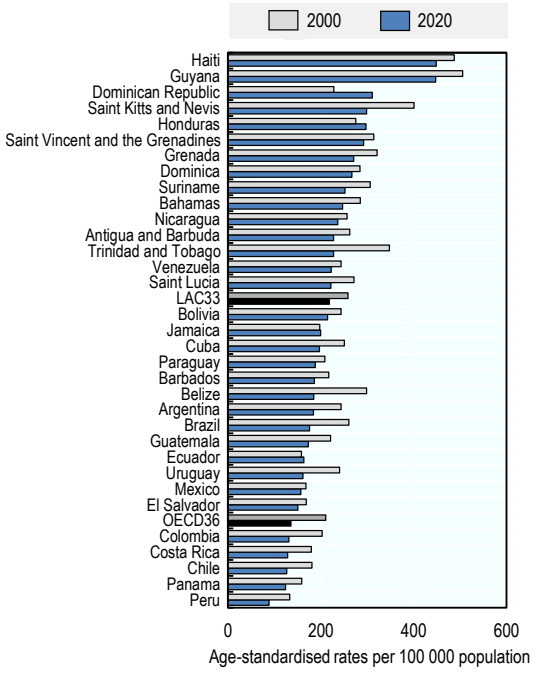
Figure 3.16. Cardiovascular disease, estimated mortality rates, 2000 and 2020 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

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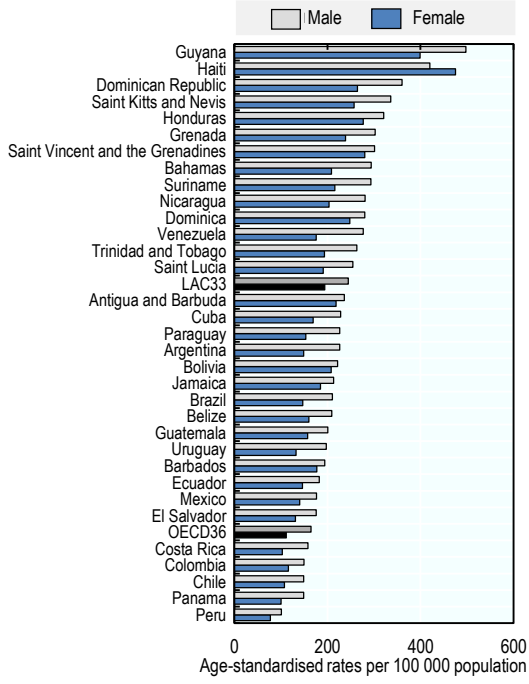
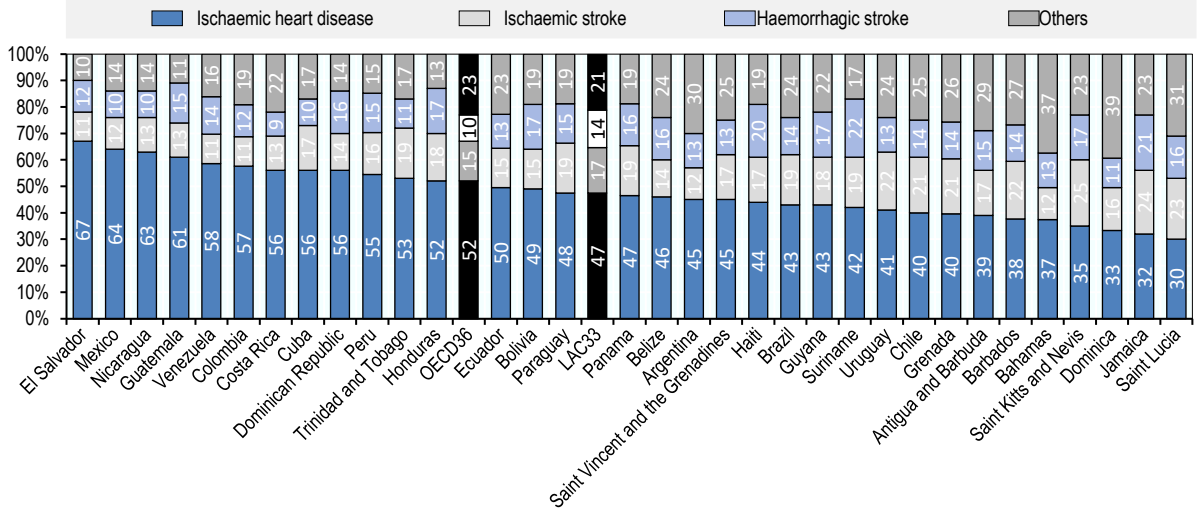
Figure 3.17. Cardiovascular disease, estimated mortality rates, by sex, 2020 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

StatLink https://stat.link/plerh1

Figure 3.18. Proportions of deaths per type of cardiovascular disease, 2019 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

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Mortality from cancer

Cancer is the second leading cause of death after CVD amongst LAC countries, producing over 670 000 deaths in 2018 in the region (Bray et al., 2018[1]). Cancer occurs when abnormal cells divide without control and invade other tissues. There are more than 100 different types of cancers, with most named after the organ in which they start. Only about 5% to 10% of all cancers are inherited, meaning that modifiable risk factors such as smoking, obesity, exercise, and excess sun exposure, as well as environmental exposures, explain as much as 90-95% of all cancer cases (Whiteman and Wilson, 2016[2]). Prevention, early detection, and treatment remain at the forefront of the tools to reduce the burden of cancer.

The regional average cancer mortality rate in LAC33 was 134 per 100 000 population in 2019, slightly above the average amongst OECD countries of 133 (Figure 3.19). Cancer deaths were less common in Mexico, Colombia, Panama and El Salvador with rates of less than 100 deaths per 100 000, and the highest in Dominica, Uruguay, Grenada, and Barbados being over 170 deaths per 100 000 population. Cancer mortality has decreased overall in the LAC region by 2.3% since 2000, although well below the reduction of 15.4% observed in OECD countries. However, 14 countries in the region increased its cancer mortality rate between 2000 and 2019, with Dominican Republic and Honduras showing the largest increases with 24% and 19%, respectively. On the other hand, Guatemala experienced the largest decrease in the region with 20%, over the OECD average reduction.

Cancer mortality rate was higher in men than in women in almost all LAC countries, except for Honduras (Figure 3.20). Dominica, Saint Lucia, Saint Kitts and Nevis, Uruguay, Bahamas and Grenada are the only LAC countries with a higher male/female ratio of cancer than OECD countries.

Respiratory system (trachea, bronchus, and lung), colorectal, and stomach cancers were the three most common cancer mortality sites in the LAC region on average in 2019, accounting for 14.8%, 14.1%, and 13.2% of cancer deaths, respectively (Figure 3.21). This is different from the average in all OECD countries, where respiratory system, colorectal, and breast cancers are the three most common cancer death sites with 29.4%, 16.3%, and 9.2%, respectively. Respiratory system cancer was responsible for more than 30% of cancer deaths in Cuba and Uruguay. Low-income countries tend to experience a lower share of respiratory system cancer deaths, below 9.7%. Stomach cancer deaths have higher shares in Bolivia, Guatemala, Ecuador and Dominica (over 20% of all cancer deaths) and the lowest in Trinidad and Tobago and Cuba (below 6%). Colorectal cancer is more prominent in some higher income countries such as Uruguay, Barbados and Argentina, although variations within the region are not as significant. Breast cancer represents a higher proportion of deaths in Barbados, Bahamas, Uruguay, Saint Kitts and Nevis, Grenada, Antigua and Barbuda and Dominica, all with more than 16%, and a lower share in Peru and Guatemala (below 6%). Finally, cervical cancer is responsible for over 14% of cancer deaths in Haiti, significantly higher that the LAC33 average of 7.4%. Cervical cancer is attributed a much smaller share of cancer mortality in OECD (1.8%).

As with cardiovascular disease, population ageing will lead to many more cases of cancer in coming decades, taxing underprepared health systems. Since resources needed to treat cancer are significant (e.g. skilled health workforce, expensive medicines, and technologies), cancer control planning in the LAC region will be more effective and efficient by targeting risk factors such as smoking, physical activity and overweight/obesity.

Definition and comparability

See indicator “Mortality from all causes” in Chapter 3 for definition, source, and methodology underlying mortality rates.

References

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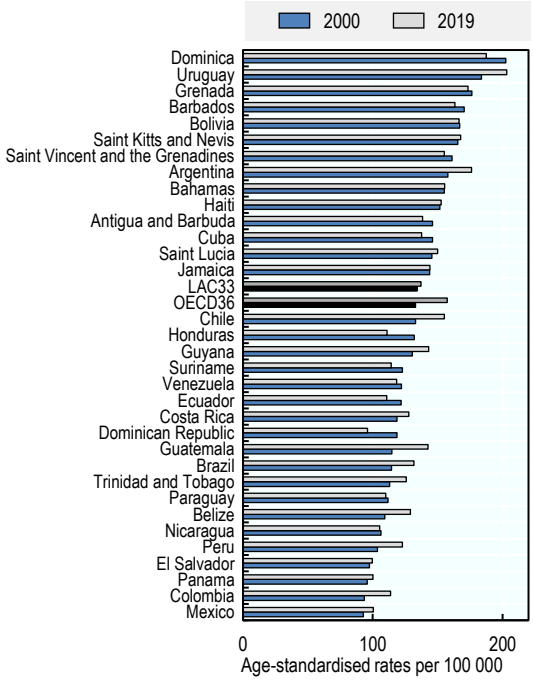
Whiteman, D. and L. Wilson (2016), “The fractions of cancer attributable to modifiable factors: A global review”, *Cancer Epidemiology*, Vol. 44, pp. 203-221, https://doi.org/10.1016/j.canep.2016.06.013. [2]

Figure 3.19. All cancers, estimated mortality rates, 2000 and 2019 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

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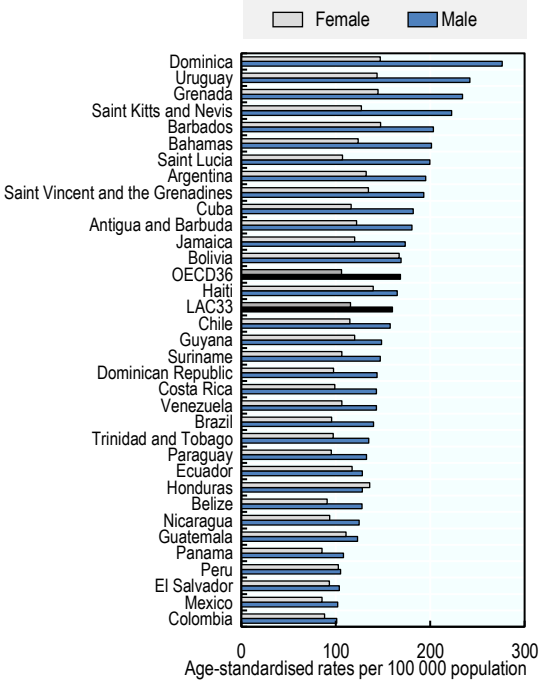
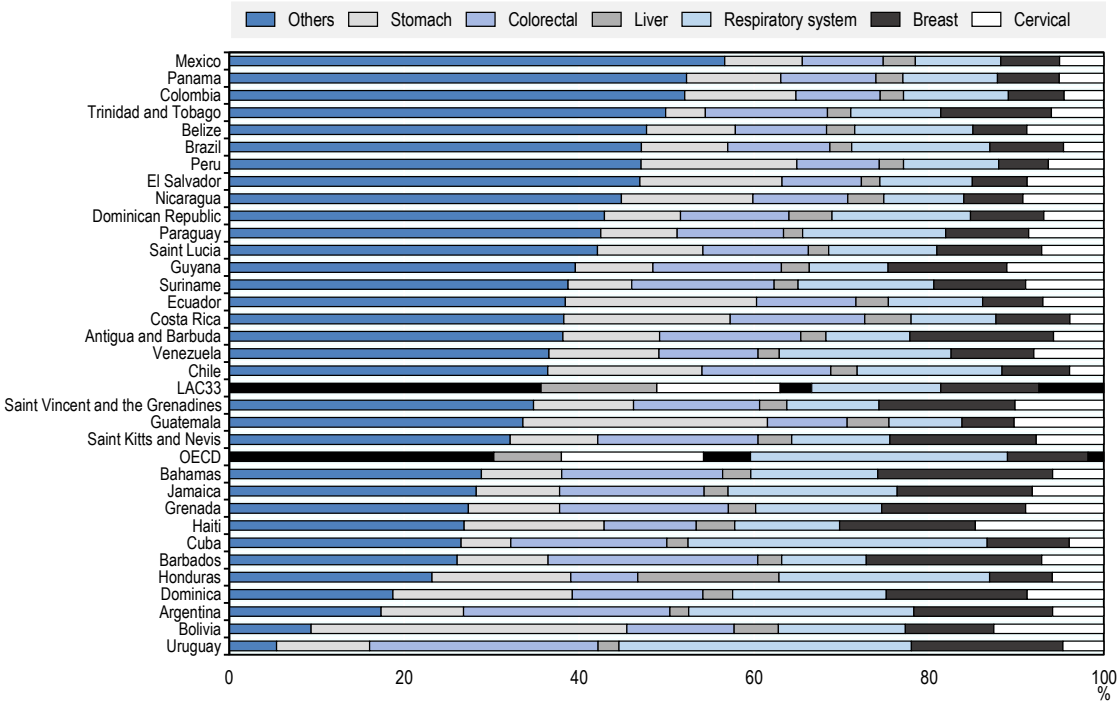
Figure 3.20. All cancers, estimated mortality rates, by sex, 2019 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

StatLink https://stat.link/6qftpl

Figure 3.21. Proportions of cancer deaths, 2019 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

StatLink https://stat.link/4paw8d

Mortality from injuries

In the WHO region of the Americas, injuries are a leading cause of death and disability for all age groups and took over 650 000 lives in 2019, accounting for 9% of all deaths (WHO, 2022[1]). The magnitude of the problem varies considerably across countries by cause, age, sex, and income group, but injury deaths, both intentional and unintentional, are largely preventable events.

Men had far higher mortality rates than women in the LAC region in 2019, with 102 deaths per 100 000 for men and 27 deaths per 100 000 for women, compared to 55 and 20 deaths per 100 000 respectively amongst OECD countries (Figure 3.22). Colombia shows the largest gender difference with an injuries mortality more than six times higher amongst men compared to women, followed by El Salvador and Saint Kitts and Nevis with rates more than five times higher. Conversely, Cuba and Bolivia show the lowest gender differences with injuries death gender ratios of 2 and 2.4, respectively.

Violent deaths were the most common cause of death due to injuries in the LAC region in 2019 and accounted in average for 26% of injury deaths, followed by road traffic deaths with 24%, and self-inflicted injuries with 12% (Figure 3.23). A different trend was observed in OECD countries where 28% of injury deaths were self-inflicted, 22% were due to road traffic crashes, and violent deaths represented 12%. However, the figure should be considered in the context of a corresponding global increase in the number of registered vehicles, suggesting that interventions to improve global road safety have mitigated the expected rise in the number of deaths (WHO, 2018[2]). Over half of all injury deaths could be attributed to interpersonal violence in Colombia and El Salvador, and the lowest proportion was observed in Peru, Bolivia, Uruguay and Chile, all below 11% of all injury deaths. In Ecuador, Paraguay, the Dominican Republic, and Peru, road traffic accidents represented over 35% of injury deaths and below 17% in Haiti, Saint Vincent and the Grenadines, Bahamas and Cuba. In Suriname, Uruguay, Guyana and Chile, self-inflicted deaths were over 25% of all injury deaths, and below 6% in Bahamas and Honduras.

Mortality from injuries due to violence shows an increase of 23% in LAC between 1990 and 2019, while the OECD had a decrease of -12% instead (Figure 3.24). The highest growth was observed in Belize, Venezuela, and Trinidad and Tobago with more than 130%, while the largest decrease occurred in Colombia (-54%), Chile (-53%) and Peru (-47%). Mortality due to self-harm injuries in the period also increased in LAC by 2%, opposed to the reduction of 22% in the OECD. Paraguay shows the largest increase by 77% and Chile exhibits the most pronounced decrease of -52%. Road traffic injuries deaths in LAC and the OECD experienced a decrease of 20% and 54% between 1990 and 2019, respectively. Only Paraguay, Jamaica, Guatemala and the Dominican Republic saw an increase, while the largest reduction was observed in Cuba and Saint Kitts and Nevis (over -50%).

OECD countries have notably implemented a “safe systems” approach to road safety, which includes education and prevention campaigns as well as vehicle design and safety, and also adopted new laws and regulations and the enforcement of these laws (ITF, 2017[3]).

Definition and comparability

See indicator “Mortality from all causes” in Chapter 3 for definition, source, and methodology underlying mortality rates. Injury deaths where the intent is not determined are distributed proportionately to all causes below the group level for injuries. Estimates for road injury deaths drew on death registration data, reported road traffic deaths from official road traffic surveillance systems and revised regression model for countries without usable death registration data (WHO, 2014[4]).

References

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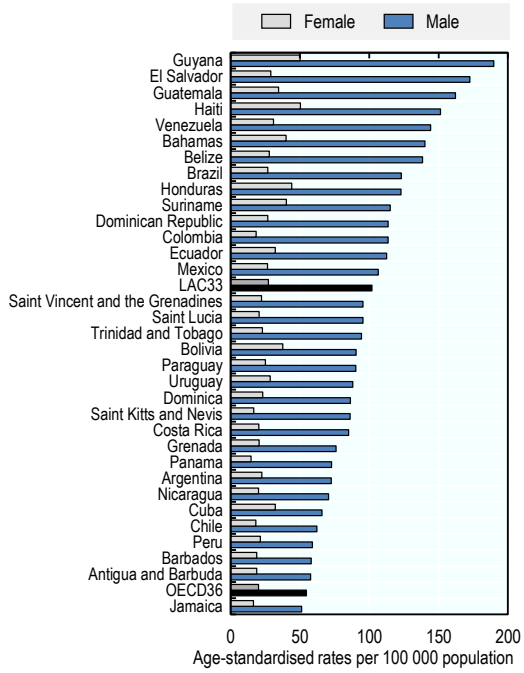
WHO (2014), *Global Health Estimates*, World Health Organization, https://www.who.int/data/global-health-estimates. [4]

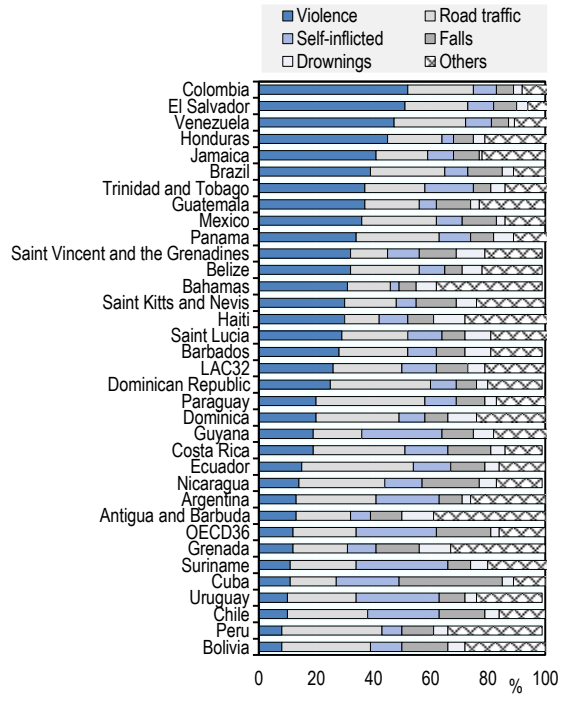
Figure 3.22. Injuries, mortality rates, male and female, 2019 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

StatLink https://stat.link/byn9fe

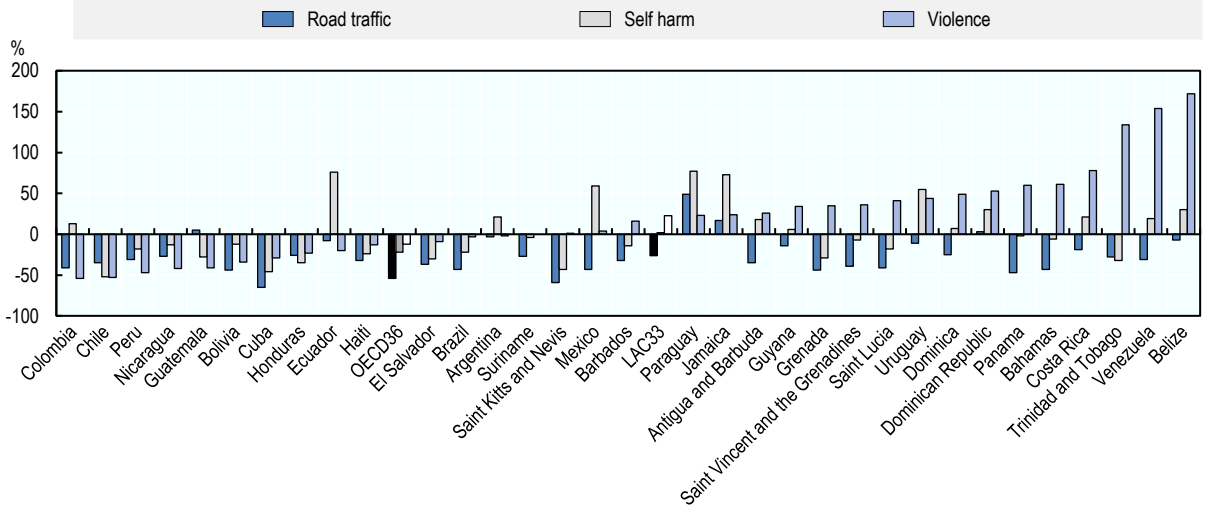
Figure 3.23. Proportions of injury deaths, 2019 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

StatLink https://stat.link/x0f45q

Figure 3.24. Growth rates of road traffic accidents, self-harm and violence mortality, 1990-2019 (or nearest year)



Source: Global Burden of Disease (2019), IHME.

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Mental health

For people to lead healthy and productive lives, good mental health is necessary. During the first phases of the COVID-19 crisis, substantial impacts on mental health were observed when populations across the LAC region and around the world experienced significant disruption to their daily lives, studies, and work. In March and April 2020, recorded levels of anxiety and depression in the general population were higher in almost all OECD countries compared to previous years (OECD, 2021[1]). People who were unemployed or experiencing financial difficulties reported higher rates of anxiety and depression than the general population during the COVID-19 crisis, a trend which already existed before the crisis and was magnified by the crisis in certain countries (OECD, 2021[2]). The mental health of young people was also hit particularly hard during the pandemic, with prevalence of symptoms of anxiety and depression rising dramatically, especially in late 2020 and early 2021 (OECD, 2021[3]). In LAC, mental and substance use disorders resulted in over 120 000 deaths in 2019, which accounted for 2% of all deaths in the region (WHO, 2022[4]).

When analysing figures before the pandemic, disability adjusted life years (DALYs) for mental health disorders per 100 000 population for LAC33 countries were 1 815 on average. Countries like Brazil, Guyana, Chile, Paraguay and Suriname had over 2000 DALYs for mental health disorders per 100 000 population. Colombia was the only country with a figure below 1 600 (Figure 3.25).

Treatment coverage for psychosis was 4.6% on average for LAC6 in 2019. Costa Rica had the highest coverage rate in the region amongst countries with available data at 8.6%, followed by Brazil and Mexico at 7% and 6.3%, respectively. Countries like Colombia, Chile and Ecuador all had a treatment coverage for psychosis below 3% (Figure 3.26).

Regarding deaths by suicide, LAC31 countries experienced 7.4 deaths per 100 000 population on average in 2019, below the OECD average of 9.9 deaths per 100 000 population. Only Guyana, Suriname, Uruguay, Haiti and Cuba had death by suicide rates above the OECD average, with Guyana showing 40.9 deaths by suicide per 100 000 population in 2019. Countries like Barbados, Antigua and Barbuda, Grenada, and Saint Vincent and the Grenadines had less than 2 deaths by suicide per 100 000 population in 2019 (Figure 3.27).

LAC countries could implement policies aimed at increasing mental health support similar to the ones observed in OECD countries since the start of the COVID-19 crisis. For example, most OECD countries have developed new mental health information and phone support lines providing tips on coping measures, and some countries have increased access to mental health services and/or funding (OECD, 2021[2]).

Definition and comparability

Following the definition from the WHO Global Health Observatory, one disability adjusted life year (DALY) can be interpreted as the loss of one year of full health. DALYs for mental health disorders are the sum of the years of life lost to premature mortality and the years lived with a disability due to mental health disorders in a population.

Coverage of treatment for psychosis is calculated as the total number of treated cases of psychosis from the Mental Health Atlas 2020 divided by the number of cases for schizophrenia and bipolar disorder from GBD. Caution is needed when comparing across countries as some may report number of treated cases and not the individual number of people treated.

The registration of suicide is a complex procedure, affected by factors such as how intent is ascertained; who is responsible for completing the death certificate; and cultural dimensions, including stigma. Caution is therefore needed when comparing rates between countries. Age-standardised mortality rates are based on numbers of deaths divided by the size of the corresponding population. The source is the WHO Mortality Database; suicides are classified as ICD-10 codes X60-X84 and Y870.

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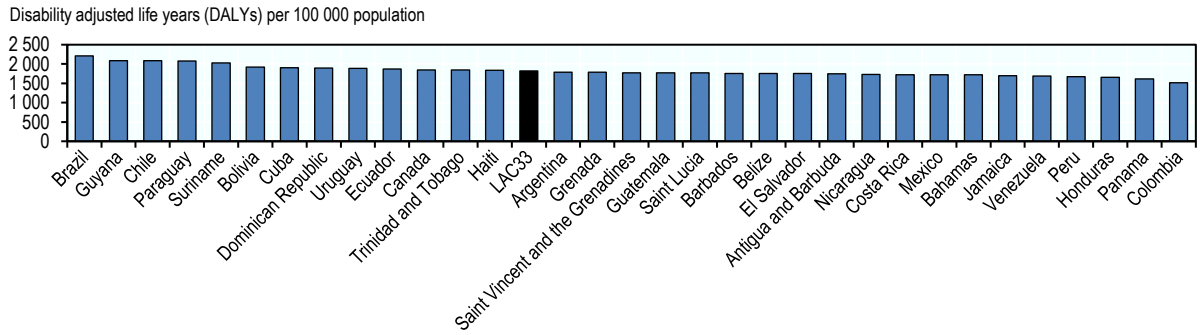
WHO (2022), *Global health estimates: Leading causes of death*, https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/ghe-leading-causes-of-death. [4]

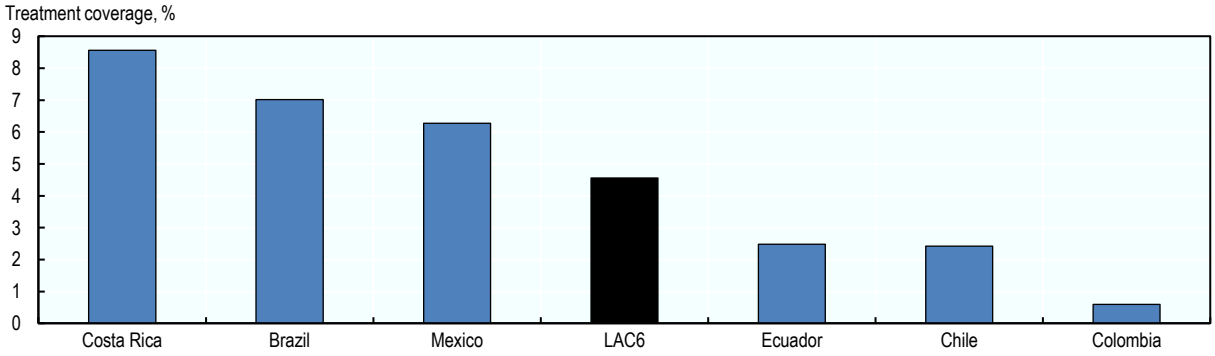
Figure 3.25. Disability adjusted life years (DALYs) for Mental Health disorders, per 100 000 population, 2019



Source: PAHO: The burden of mental disorders in the region of the Americas 2000-2019 (2021).

StatLink https://stat.link/7kvs8j

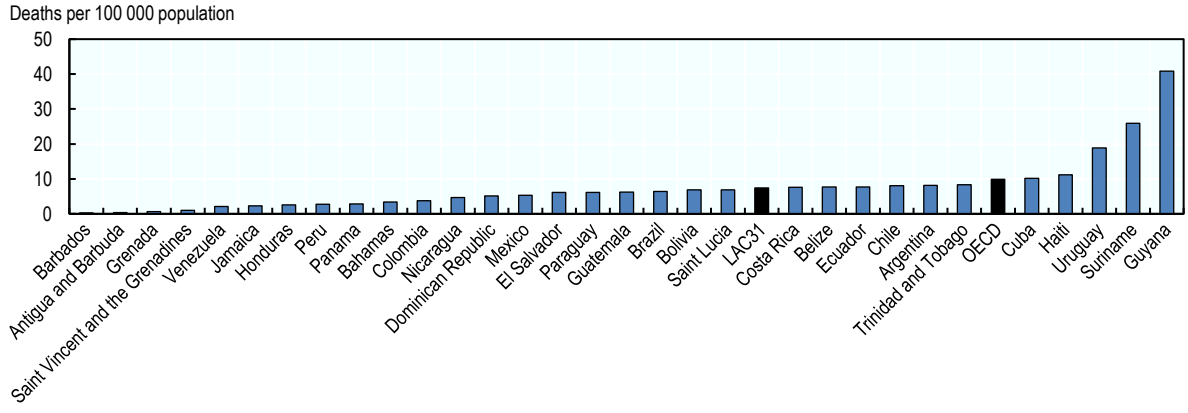
Figure 3.26. Coverage of treatment for psychosis, 2019



Source: Global Burden of Disease (2019), IHME; Mental Health Atlas 2020.

StatLink https://stat.link/eplhrd

Figure 3.27. Deaths by suicide, 2019



Source: WHO GHO 2021.

StatLink https://stat.link/4pnb6m

Tuberculosis

Globally in 2021, the total number of new cases of tuberculosis (TB) was estimated at 10.6 million, of which less than 3% are observed in the LAC region. The number of TB deaths was estimated at 1.6 million, with the WHO Region of the Americas experiencing the highest increase of TB deaths between 2015 and 2021 at 31% (WHO, 2022[1]). Most cases of TB are preventable if diagnosed and appropriate treatment is provided. TB was declared a global health emergency by WHO in 1993 and the WHO-co-ordinated Stop TB Partnership set targets of halving TB prevalence and deaths by 2015, compared with a baseline of 1990. The Sustainable Development Goals foresee the end of the epidemic of tuberculosis by 2030.

The highest incidence rate was seen in Haiti, Peru and Bolivia, with 168, 116, and 105 cases per 100 000 population in 2020, respectively (Figure 3.28). Low incidence rates, below three cases per 100 000 population, were reported in Saint Lucia, Antigua and Barbuda, Jamaica, Barbados, and Grenada.

The highest mortality rates due to TB (excluding HIV) were found in Guyana, Haiti, and Bolivia with over 10 deaths per 100 000 population in 2020. The lowest mortality rates are observed in Jamaica, Cuba, Bahamas, Costa Rica, Barbados, El Salvador, and Saint Vincent and the Grenadines, all below 1 death per 100 000 population (Figure 3.28).

Although the average TB detection rate in the region is generally high (74% of detection of all cases in 2020), there were many undetected cases in Grenada, Bolivia and Haiti, where detection rates were below 50% (Figure 3.29). High-quality TB services have expanded in LAC countries and many cases are treated, with excellent treatment success rates in Saint Vincent and the Grenadines and Saint Kitts and Nevis. In contrast, treatment success rate is the lowest in Grenada with 33%, followed by Argentina with 47%, well below the LAC29 average of 65%.

In general, the LAC region is rising to the challenges presented by TB, with incidence and mortality declining steadily since 1990 despite regional disparities. The average reduction of incidence in the LAC region between 2000 and 2020 was 26%. The strongest decline in this period was observed in Honduras and Bahamas with more than 70% reduction, while in Dominica incidence increased ten-fold, moving from 4.5 to 47 cases per 100 000 population between 2000 and 2020 (Figure 3.30).

The LAC region still faces important challenges in TB control, including providing services to those in greatest need, especially the poor and vulnerable. The most relevant strategies to develop in LAC countries include the implementation and expansion of early diagnosis with new rapid molecular tests, the epidemiological study of contacts, the use of shortened multi-drug resistance TB treatment regimens, the reduction of funding gaps and the need for greater technical expertise (PAHO, 2018[2]).

Definition and comparability

Tuberculosis (TB) is a contagious disease, caused by the *Mycobacterium tuberculosis* bacteria. Tuberculosis usually attacks the lungs but can also affect other parts of the body. It is spread through the air, when people who have the disease cough, sneeze, talk or spit. Most infections in humans are latent and without symptoms, with about one in ten latent infections eventually progressing to active disease. If left untreated, active TB kills between 20% and 70% of its victims within ten years depending on severity.

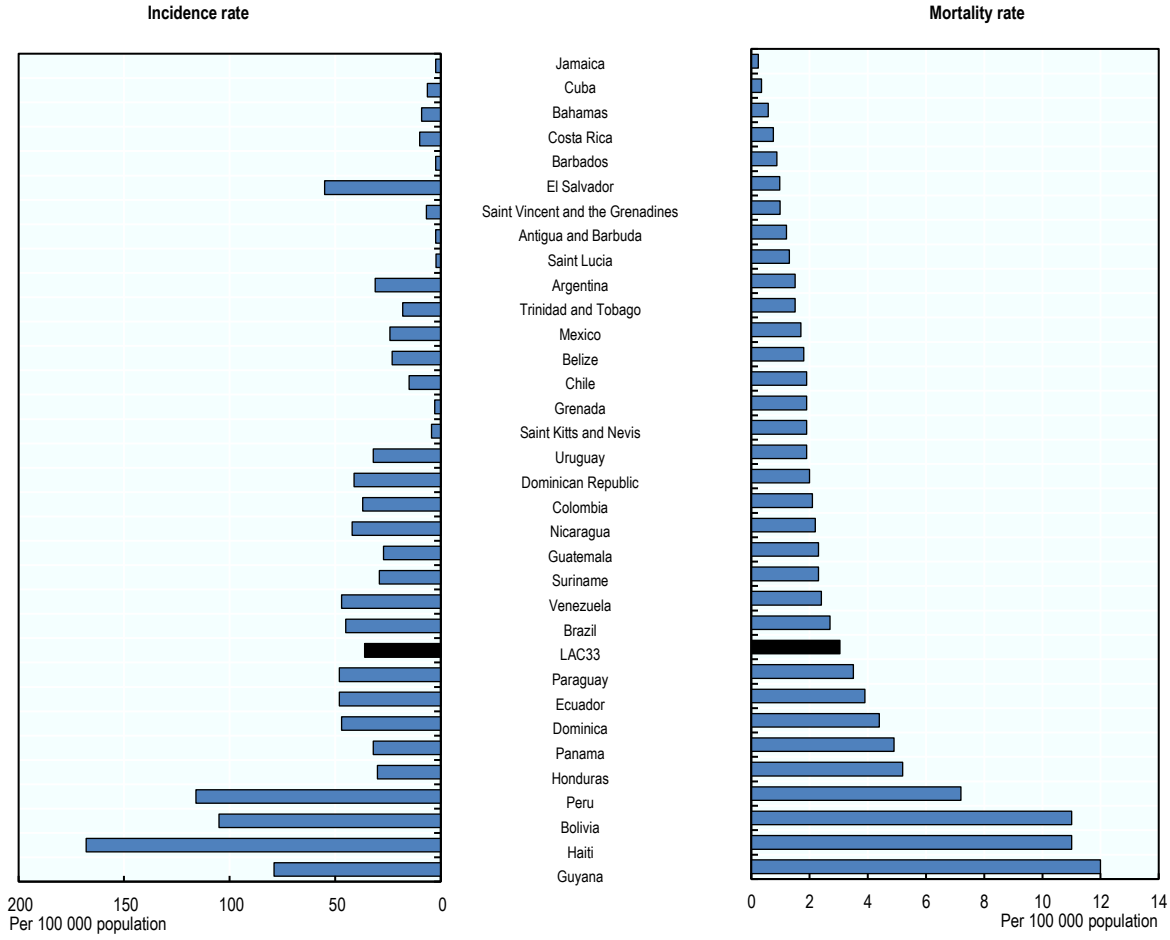
The TB incidence rate is the number of new cases of the disease estimated to occur in a year, per 100 000 population. The TB prevalence rate is the total number of persons with the disease at a particular time, per 100 000 population. TB mortality does not include TB/HIV as per ICD-10.

References

PAHO (2018), *Tuberculosis in the Americas 2018*, http://iris.paho.org/xmlui/bitstream/handle/123456789/49510/PAHOCDE18036_eng?sequence=1&isAllowed=y. [2]

WHO (2022), *Global tuberculosis report 2022*, World Health Organization, Geneva, https://apps.who.int/iris/handle/10665/363752. [1]

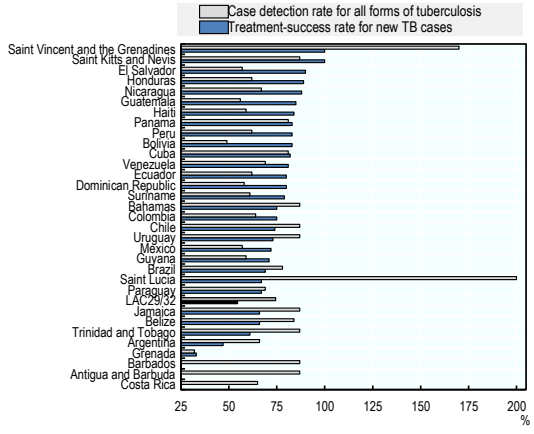
Figure 3.28. Estimate of the burden of disease caused by tuberculosis, 2020



Source: WHO Global Tuberculosis Report 2021.

StatLink https://stat.link/2z3l65

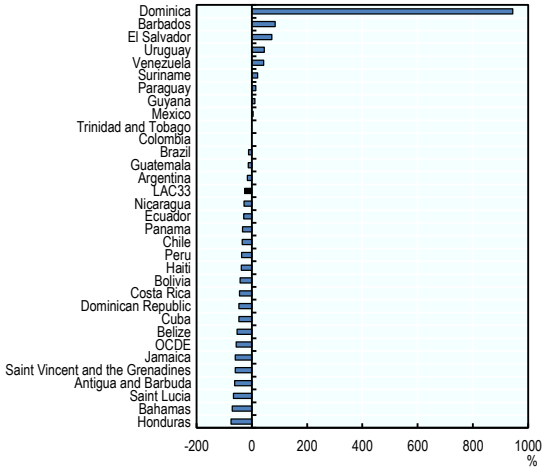
Figure 3.29. Tuberculosis treatment success for new TB cases and case detection, 2020 (or nearest year)



Source: WHO Global Tuberculosis Report 2021.

StatLink https://stat.link/n4oqp8

Figure 3.30. Change in tuberculosis incidence rate, 2000-20 (or nearest year)



Source: WHO Global Tuberculosis Report 2021.

StatLink https://stat.link/15gin9

HIV/AIDS

HIV/AIDS has had a substantial impact on health in the LAC region since the early 1980s. The Caribbean continues to be one of the most affected regions in terms of prevalence, second only to some African regions (UNAIDS, 2019[1]). The UN has set the goal of eliminating AIDS as a public threat in the 2030 SDGs, for which a target has been defined as reducing the number of new HIV infections and AIDS-related deaths by 90% relative to 2010 (UNAIDS, 2014[2]).

In LAC26, the prevalence in adults aged between 14 and 49 ranges from 0.2% in Guatemala and Honduras to 1.8% in Haiti in 2021 (Figure 3.31, left panel). Although overall prevalence in the region is relatively low, the number of people living with HIV is over 2.5 million in reporting countries, most of which live in Brazil with 960 000 people, followed by Mexico with 360 000 and Colombia with 170 000.

Expanded access to antiretroviral therapy (ART) has increased the survival rates of people living with HIV, but about half of the people eligible for HIV treatment do not receive it worldwide. In LAC24, the estimated coverage was particularly low (<50%) in Jamaica and Belize while it is over 70% in Haiti, Peru, Ecuador, Colombia, Guatemala, Brazil, Cuba and Argentina (Figure 3.32). This indicates that some countries with high prevalence (e.g. Haiti) are addressing the issue of treatment coverage, but the region remains substantially far from the goal of treating 90% of people living with HIV/AIDS.

However, the trend is positive in recent years, with most LAC countries reducing the incidence of HIV transmission. Between 2010 and 2021, Haiti and Bahamas reduced incidence rates by more than 50%, followed by Barbados, Nicaragua, Ecuador and the Dominican Republic, all of which have reduced the number of new cases of HIV infection by more than 25% (Figure 3.33). Among the five countries reporting an increase in incidence, Costa Rica experienced the highest growth at 17%, followed by Belize with 14%, and Peru, Cuba and Uruguay with 13%. In terms of prevalence, these countries (except for Belize) remain below the LAC average.

Strengthening the agenda on HIV prevention and treatment could further tackle the AIDS public health threat in the region. The UNAIDS 95-95-95 approach to 2025 is a key initiative, aiming to achieve targets of 95% of all people living with HIV knowing their HIV status, 95% of people with an HIV diagnosis receiving ART, and 95% of people receiving ART achieving viral suppression. The rapid scale-up of antiretroviral therapy in LAC presents an unprecedented opportunity to successfully implement antiretroviral-based interventions for prevention and treatment, and the integration of ART with other key services related to sexual and reproductive health and rights addressing hepatitis B and C, tuberculosis, provision of clean needles and syringes, medication-assisted therapy, and non-communicable diseases. The benefits of antiretroviral therapy and integrated services can only be fully realised if people living with HIV are diagnosed and successfully linked to care. This will require targeted efforts to remove barriers among populations disproportionately impacted by HIV/AIDS, including sex workers, their clients, men who have sex with men, transgender persons, and people who inject drugs, along with collaborations with stakeholders and civil society in at national and subnational levels (Bekker et al., 2018[3]).

Definition and comparability

Human immunodeficiency virus (HIV) is a retrovirus that destroys or impairs the cells of the immune system. As HIV infection progresses, a person becomes more susceptible to infections. The most advanced stage of HIV infection is the acquired immunodeficiency syndrome (AIDS). It can take 10-15 years for an HIV-infected person to develop AIDS, although antiretroviral drugs can slow down the process.

The HIV prevalence amongst adults aged 15 to 49 is calculated as the number of persons aged 15-49 estimated to be living with HIV divided by the total number of persons aged 15-49 in the country at this time.

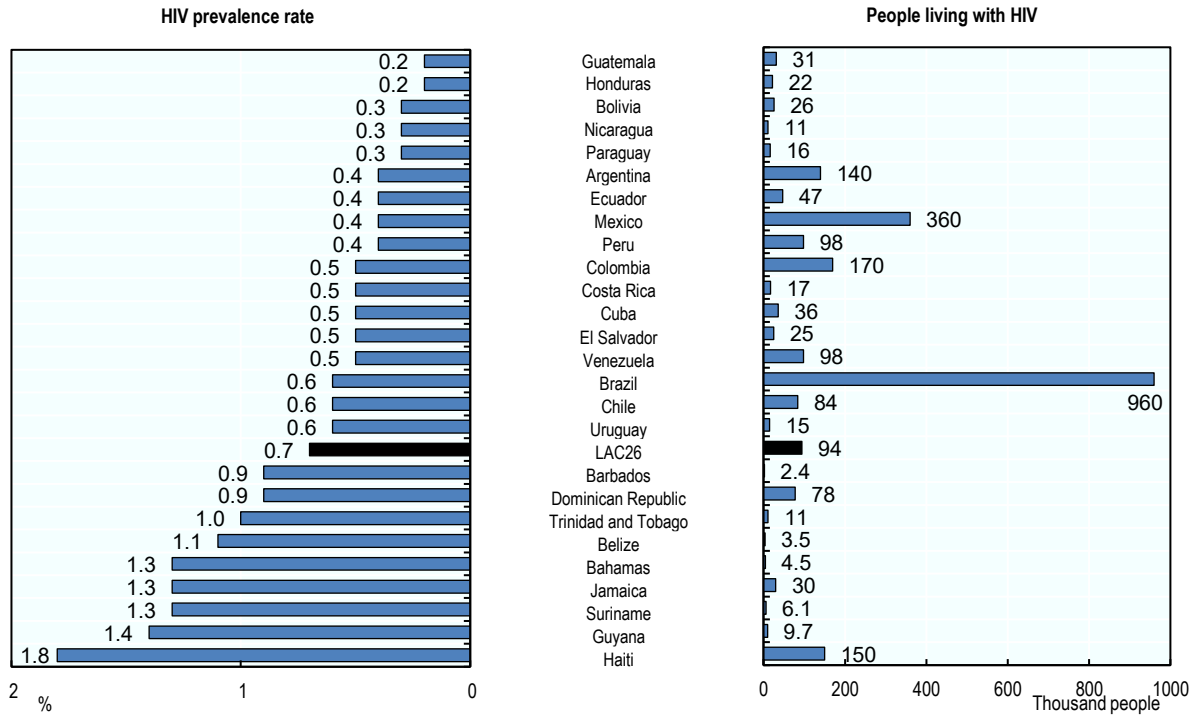
References

Bekker, L. et al. (2018), "Advancing global health and strengthening the HIV response in the era of the Sustainable Development Goals: the International AIDS Society—Lancet Commission", *The Lancet*, Vol. 392/10144, pp. 312-358, https://doi.org/10.1016/s0140-6736(18)31070-5. [3]

UNAIDS (2019), *AIDSinfo*, Joint United Nations Programme on HIV and AIDS, http://aidsinfo.unaids.org/. [1]

UNAIDS (2014), *90–90–90: an ambitious treatment target to help end the AIDS epidemic*, Joint United Nations Programme on HIV/AIDS, Geneva, https://www.unaids.org/sites/default/files/media_asset/90-90-90_en.pdf. [2]

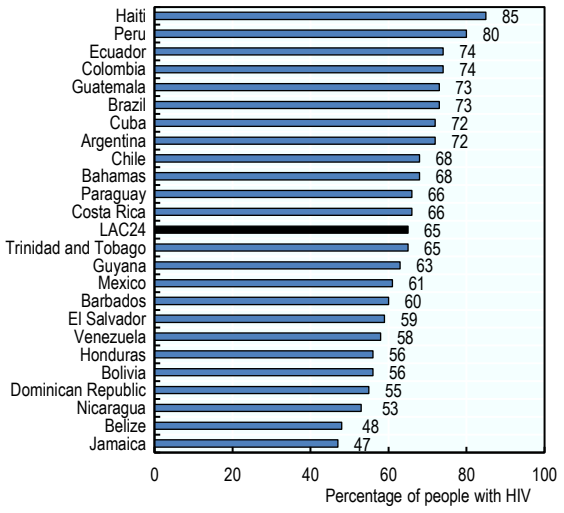
Figure 3.31. HIV Prevalence rate, percentage of adults aged 15-19, and people living with HIV, absolute number, 2021 (or nearest year)



Source: WHO GHO 2022.

StatLink https://stat.link/1bo9xl

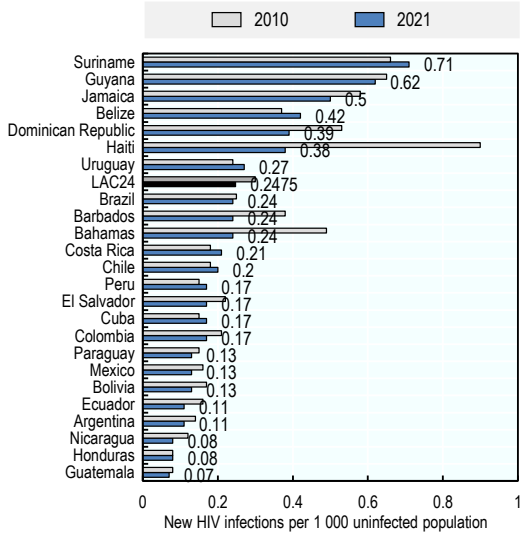
Figure 3.32. Antiretroviral therapy coverage amongst people living with HIV, 2021 (or nearest year)



Source: WHO GHO 2022.

StatLink https://stat.link/ivza4t

Figure 3.33. New HIV infections per 1 000 uninfected population, 2010 and 2021 (or nearest year)



Source: WHO GHO 2022.

StatLink https://stat.link/heyicx

Mosquito borne diseases

Malaria, dengue and Zika are three diseases that are transmittable by the bites of infected mosquitoes. They are present in LAC with varying degrees of incidence. Malaria is a tropical disease caused by a parasite transmitted by the female Anopheles mosquitoes. After a period spent in the liver, malaria parasites multiply within red blood cells, causing symptoms such as fever, headache, and vomiting. As part of the SDG targets, the UN set a goal to end the epidemic of malaria by 2030. Between 2000 and 2017, there has been a global reduction of 60% in malaria deaths, making it one of the biggest public health successes of the 21st century (The Global Fund, 2019[1]).

In the LAC region, country efforts have greatly reduced new cases of malaria to the point where it has been nearly or completely eradicated in Belize, Costa Rica, Guatemala, Honduras and Mexico, plus several countries no longer report incidence data. However, the region remains vulnerable to outbreaks. The biggest incidence in the region can be found in Guyana with 28 cases per 1 000 risk population in 2020 (Figure 3.34, left panel). Venezuela shows the largest number of estimated malaria deaths with 203 people dying in the country, followed by Haiti, Brazil and Guyana with 97, 42, and 28 deaths, respectively.

Dengue is a viral infection caused by the mosquito Aedes aegypti and remains a public health problem in the Americas despite the efforts countries to stop and mitigate it. Dengue causes a severe flu-like illness (e.g. high fever, headache, pain behind the eyes, nausea, vomiting, swollen glands, muscle and joint pains, rash) and sometimes can cause a potentially lethal complication called severe dengue. Incidence of dengue in the region is heterogeneous and is particularly high in Guyana with 554 cases per 100 000 population in 2021, followed by Nicaragua with 548, Brazil with 456, and Belize with 309 (Figure 3.35). Lethality of the disease also varies, but always below a level of 0.01% of cases resulting in deaths. The diseases did not cause any deaths during 2021 in most countries in the region.

Zika fever is a viral disease caused by Zika virus transmitted by the mosquito Aedes aegypti, consisting of mild fever, rash, headaches, arthralgia, myalgia, asthenia, and non-purulent conjunctivitis. Incidence of Zika is very high in Belize with 245 cases per 100 000 population in 2021. Barbados and Guatemala follow with 15 and 14 cases per 100 00 population. Several countries in the region did not report any Zika cases in 2021 (Figure 3.36).

Mosquito borne diseases disproportionally affect economically disadvantaged communities, which lack adequate prevention methods and modern sanitation and infrastructure. It is key that countries ensure good quality access and coverage amongst these communities to protect them from transmittable diseases like malaria, chikungunya, dengue, and zika. Outbreaks preparedness and control is crucial for a proper prevention and response, for which countries should develop their capacities and resources. For instance, the use of insecticide-treated nets and indoor residual spraying with insecticides are important preventive measures for at-risk populations to avoid mosquito bites. In fact, at-risk populations for dengue alone account for more than 3.9 billion people in around 129 countries, which results in 96 million people with symptomatic cases, of which 40 000 people are estimated to die every year (WHO, 2020[2]).

Definition and comparability

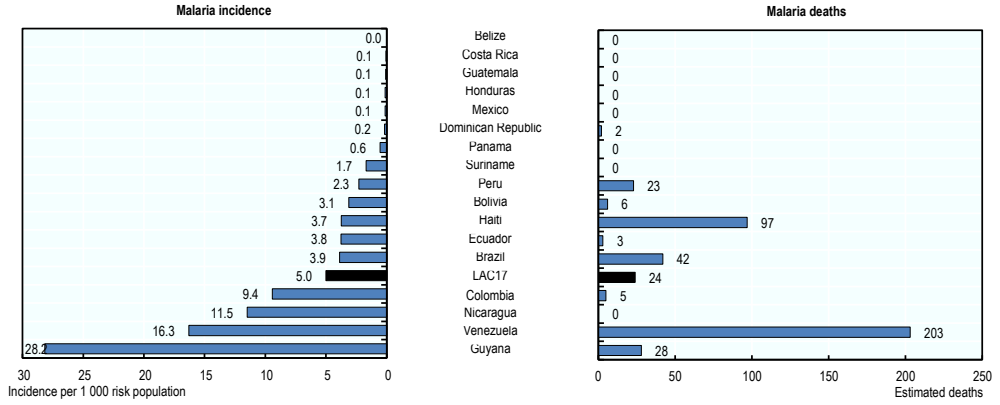
Underreporting of mosquito borne diseases cases and deaths remain a major challenge in countries with inadequate and limited access to health services and weak surveillance systems. The number of mosquito-borne diseases caused deaths were estimated by adjusting the number of reported cases for completeness of reporting, the likelihood that cases are parasite positive, and the extent of health service use.

References

The Global Fund (2019), *Malaria. The Global Fund to Fight AIDS, Tuberculosis and Malaria*, https://www.theglobalfund.org/en/malaria/. [1]

WHO (2020), *Vector-borne diseases*, https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases. [2]

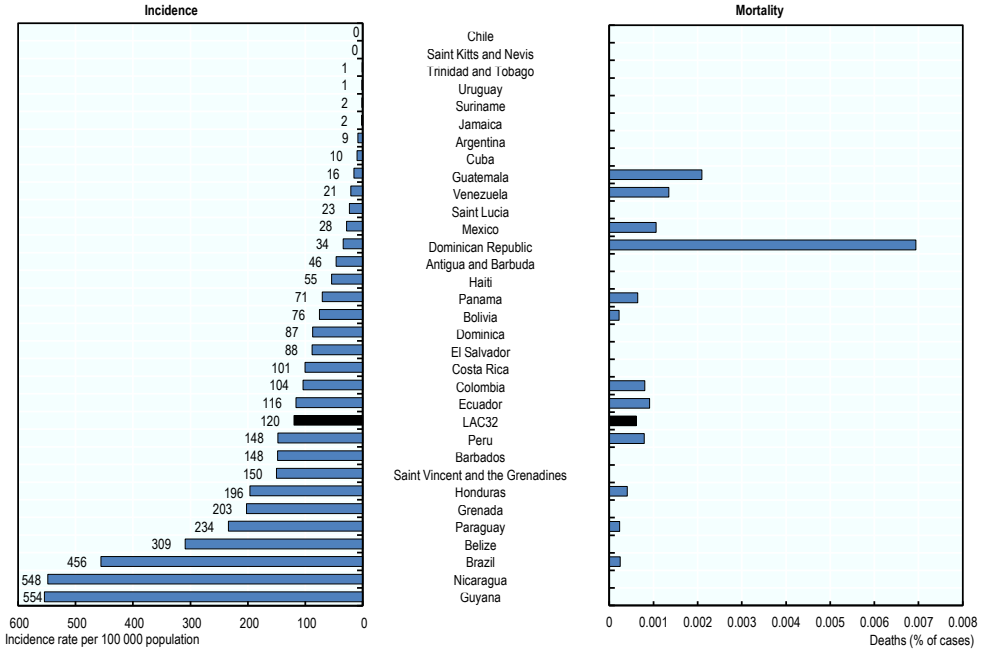
Figure 3.34. Confirmed malaria cases and estimated deaths, 2020 (or nearest year)



Source: WHO GHO 2022.

StatLink https://stat.link/mxg085

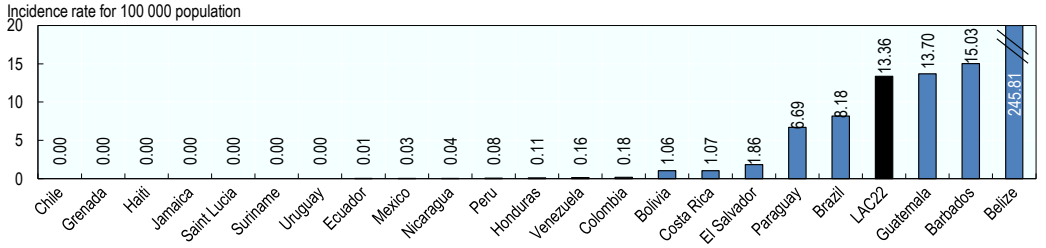
Figure 3.35. Dengue incidence and mortality, 2021 (or nearest year)



Source: PAHO 2022.

StatLink https://stat.link/y6g0dq

Figure 3.36. Zika incidence, 2021 (or nearest year)



Source: PAHO 2022.

StatLink https://stat.link/6mctkp

Diabetes

Diabetes is a chronic metabolic disease, characterised by high levels of glucose in the blood. It occurs either because the pancreas stops producing the hormone insulin (type 1 diabetes, insulting dependent diabetes, genetic predisposition), which regulates blood sugar, or through a reduced ability to produce insulin (type 2 diabetes, non-insulin dependent in most cases, lifestyle related), or through reduced ability to respond to insulin (insulin resistance). People with diabetes are at a greater risk of developing cardiovascular diseases such as heart attack and stroke. They also have elevated risks for vision loss, foot and leg amputation due to damage to nerves and blood vessels, and renal failure requiring dialysis or transplantation. Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980. The global prevalence of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population, and caused 1.5 million deaths in 2012, with an additional 2.2 million deaths due to higher-than-optimal blood glucose (WHO, 2016[1]). In LAC, more than 40 million adults (aged 20 and over) live with diabetes and about half of them are undiagnosed and unaware of developing long-term complications.

Amongst LAC countries, the prevalence of diabetes in adults in 2021 ranged from under 5% in Ecuador and Peru to 13% in Guatemala (Figure 3.37). On average, prevalence in LAC countries was 7.9%, an increase from 8.3% in 2010. Guatemala is the country that has experienced the largest increase, 3.8 percentage points, while prevalence in El Salvador has decreased around 3 percentage points in the 2010-21 period.

In the 2010-19 period, mortality attributable to diabetes mellitus in adults increased by 10% or more in countries such as Costa Rica, Venezuela, Dominican Republic, Saint Lucia, Honduras, Suriname, Mexico, and El Salvador. On average, it increased in LAC by 1%, in opposition to the OECD average reduction of 4% (Figure 3.38). Several countries experienced significant decreases of at least -10%, such as Grenada, Colombia, and Peru. In 2019, the country with the highest mortality was Trinidad and Tobago with 100.3 deaths per 100 000 population, followed by Guyana and Saint Vincent and the Grenadines, with 96.9 and 83.6, respectively. Cuba and Costa Rica are the only LAC countries below the OECD average of 12.8 deaths per 100 000 population.

Policy initiatives can be directed towards both reducing diabetes prevalence and mortality. Strengthening the integral response to NCDs, including diabetes, particularly at primary-care level is a key action. In general, countries with strong primary care systems obtain better diabetes results (e.g. Costa Rica, Cuba). For diabetes, this includes the implementation of guidelines and protocols to improve diagnosis and management, ensuring equitable access to essential technologies for all population groups (e.g. insulin). Most of countries in LAC have programmes devoted to diabetes, which is a relevant step toward its control (WHO, 2016[1]). Prevalence must be addressed by targeting risky behaviours (e.g. unhealthy diet and sedentarism are the main ones, as well as alcohol and tobacco consumption).

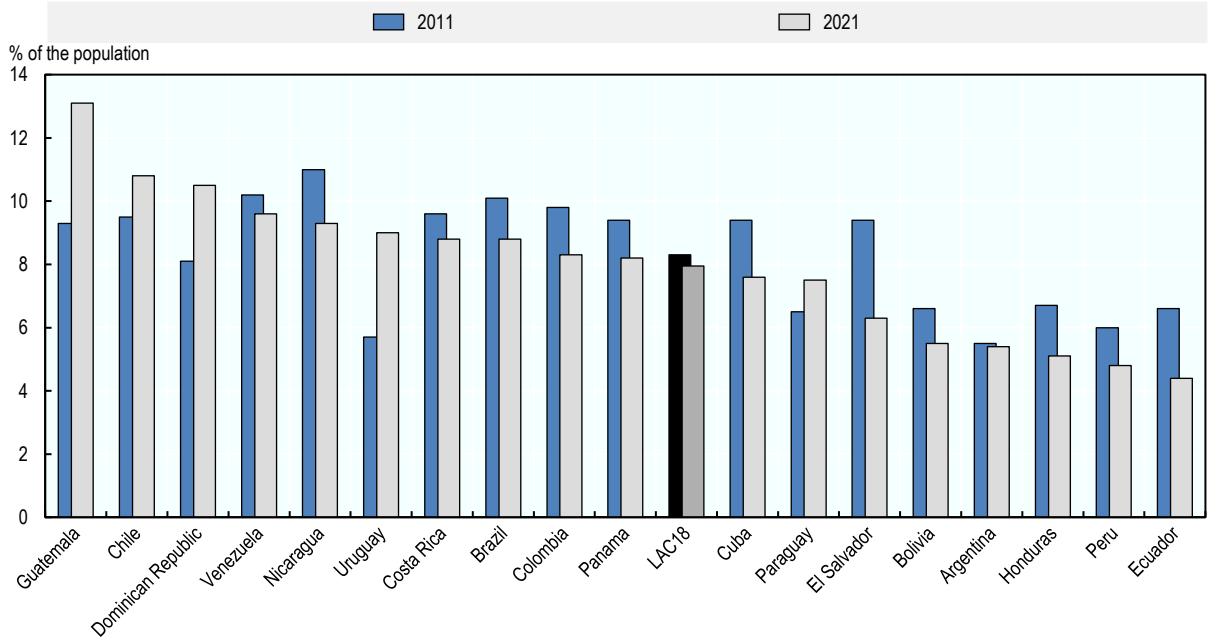
Definition and comparability

Diabetes prevalence refers to the percentage of people ages 20-79 who have type 1 or type 2 diabetes. Accurate diabetes estimates at the national and global levels rely heavily on the quality and availability of data sources. Data sources were searched and selected according to established criteria, and the standardised, age-specific prevalence of both diabetes and impaired glucose tolerance (IGT) were estimated. For countries where data sources were not available, prevalence was extrapolated based on data sources from similar countries. Mortality rates per 100 000 population were based on data on deaths attributable to diabetes mellitus in adults from IHME Global Burden of Disease (GBD).

References

WHO (2016), *Global report on diabetes*, World Health Organisation, Geneva, https://apps.who.int/iris/handle/10665/204871. [1]

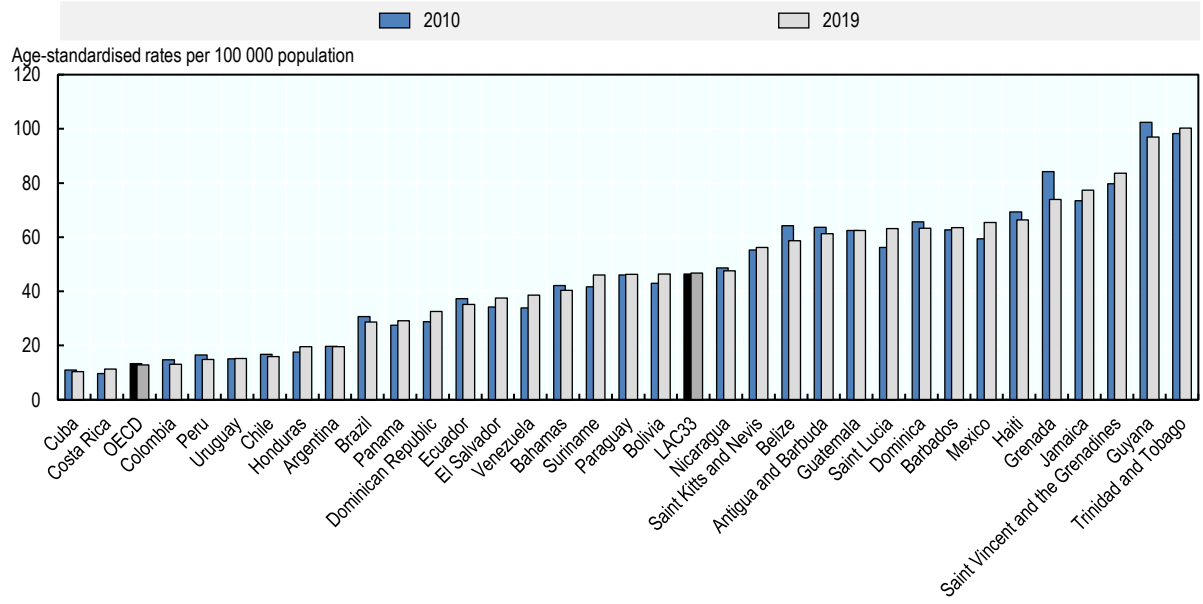
Figure 3.37. Diabetes amongst adults aged 20-79 years, age-adjusted prevalence, 2010 and 2021



Source: International Diabetes Federation. Diabetes Atlas 2021.

StatLink https://stat.link/9nfthi

Figure 3.38. Mortality rates for diabetes mellitus, 2010 and 2019



Source: Global Burden of Disease (2019), IHME.

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4 Determinants of health

Family planning

The WHO estimates that 1.1 billion women of reproductive age have a need for family planning, from which 270 million are not using a modern contraceptive method (WHO, 2020[1]). The SDG targeting reproductive healthcare services aims to provide universal access by 2030, and to integrate reproductive and sexual health into national agendas, strategies, and programmes. The global agenda for sexual and reproductive health and rights is linked to gender equality and women's well-being, affecting newborn, child, adolescent and maternal health, and their roles in shaping future economic development and environmental sustainability (Starrs et al., 2018[2]).

Reproductive health involves having a responsible, satisfying, and safe sexual life, along with the freedom to make decisions about reproduction. This includes accessing methods of fertility regulation and appropriate healthcare through pregnancy and childbirth, providing parents with the best chance of having a healthy, happy, and prosperous baby when they are ready to start or extend their family.

The prevalence of contraceptive use varies widely in the LAC region. In Colombia, Nicaragua, Ecuador, Brazil, Uruguay, Chile, Peru, Venezuela and Honduras, over three-quarters of married or in union women of reproductive age report using any contraceptive method (Figure 4.1). However, both Haiti and Paraguay report that less than 40% of married women or in union of reproductive age use any contraceptive methods. Regarding modern methods of contraception, less than 50% of women are using them in Haiti, Paraguay, Guyana, Suriname, and Trinidad and Tobago.

In LAC countries with data, demand for family planning is generally satisfied at higher rates amongst women living in urban areas, with higher income and education levels (Figure 4.2). These differences are particularly stark in Belize and Guyana, with up to 38% lower access in the least advantaged groups. Some countries such as Paraguay and Honduras report less significant differences with similar access in the three categories. In most cases where both least and more socially advantaged women report high access to family planning (over 80-85%), the rates tend to be similar between groups. This supports the fact that providing wide availability to family planning services contributes not only to more access but also to reduced social inequalities in the utilisation of these services.

LAC countries can continue improving the information and services related to sexual and reproductive health, which should be accessible and affordable to all individuals. Modern family planning interventions can be further incorporated in the essential services package to provide universal coverage, paying special attention to the poorest and most vulnerable people. In addition, countries must also take actions beyond the health sector to change social norms, laws, and policies to uphold human rights and promote gender equality (Starrs et al., 2018[2]; WHO, 2020[1]).

Definition and comparability

Contraceptive prevalence is the percentage of women who are currently using, or whose sexual partner is currently using, at least one method of contraception, regardless of the method used. It is usually reported as a percentage of married or in union women aged 15-49. Modern methods of contraception include combined oral contraceptives ("the pill"), progestogen-only pills ("the minipill"), implants, injectables, patches, vaginal ring, intrauterine device (copper and levonorgestrel), male and female condoms, vasectomy, tubal ligation, lactational amenorrhea method, emergency contraception pills, standard days method, basal body temperature method, two-day method, and symptom-thermal method. Traditional methods consider the calendar or rhythm method, and the withdrawal or coitus interruptus.

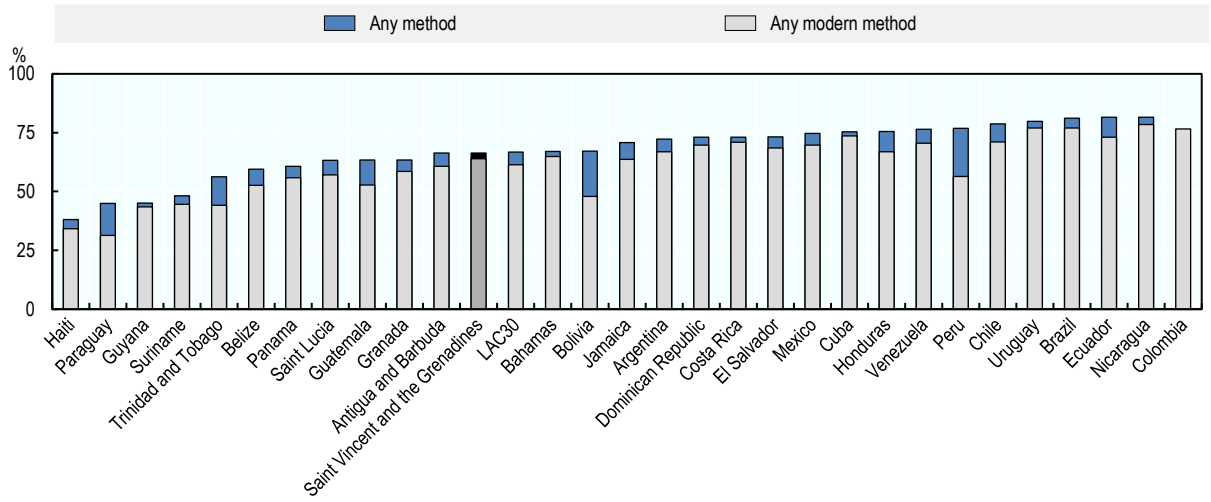
Women with a demand for family planning satisfied are those who are fecund and sexually active, are using a method of contraception, and report wanting more children. It is also reported as a percentage of married or in union women aged 15-49. Information on contraceptive use and unmet need for family planning is generally collected through nationally representative household surveys. The most commonly used survey formats are the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS).

References

Starrs, A. et al. (2018), "Accelerate progress-sexual and reproductive health and rights for all: report of the Guttmacher-Lancet Commission.", *Lancet (London, England)*, Vol. 391/10140, pp. 2642-2692, https://doi.org/10.1016/S0140-6736(18)30293-9. [2]

WHO (2020), *Family planning / Contraception Key Facts*, World Health Organisation, https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception. [1]

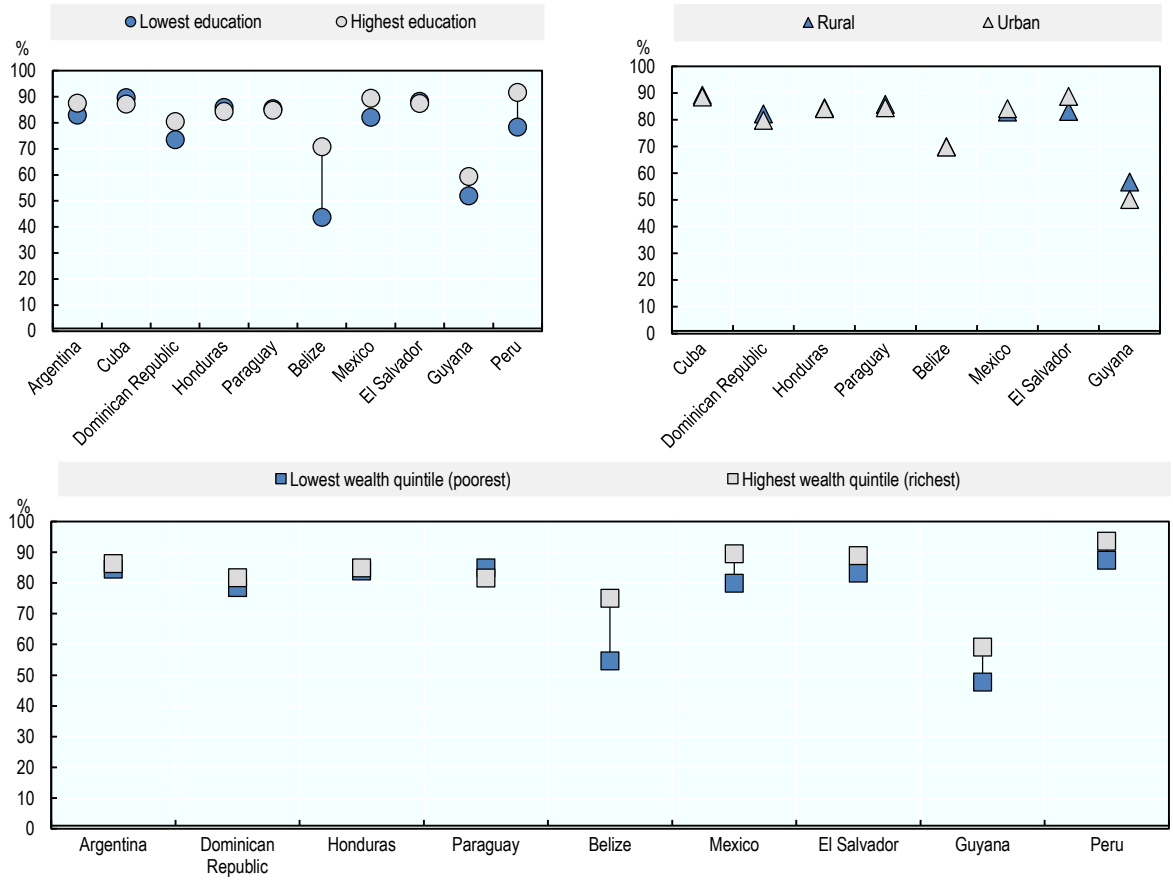
Figure 4.1. Contraceptive prevalence, married or in-union women, 2020 or latest available estimate



Source: UNPD Family Planning Indicators 2020.

StatLink https://stat.link/0a2j4s

Figure 4.2. Demand for family planning satisfied by socio-economic characteristics, any method, selected countries, latest available estimate



Source: DHS and MICS surveys, various years.

StatLink https://stat.link/2vkde3

Infant and young child feeding

Feeding practices of infants and young children heavily influence their chances of short-term survival and their capacity to realise their long-term potential. They contribute to healthy growth, decrease rates of stunting and obesity and lead to higher intellectual development (Victora et al., 2016[1]). Starting at the beginning of a woman's pregnancy to the second birthday of her child, the first 1 000 days represent a key opportunity to ensure wellness and create the foundations of a productive and healthy life. Breastfeeding is often the best way to provide nutrition for infants. Breast milk provides infants with nutrients they need for healthy development, including the antibodies that help protect them from common childhood illnesses such as diarrhoea and pneumonia, the two primary causes of child mortality worldwide (see indicators on "Child mortality" in Chapter 3). Breastfeeding is also linked with better health outcomes as children grow older (Rollins et al., 2016[2]).

In LAC26, most of the countries reporting data have exclusive breastfeeding lower than the WHO goal with an average of 31% of children exclusively breastfed in the first 6 months of life (Figure 4.3). Over half of infants are exclusively breastfed in Peru, Uruguay, Bolivia and Guatemala, while the rate is lower than one in five in Barbados and less the one in ten in Suriname, Venezuela, Dominican Republic and Saint Lucia.

After the first six months of life, an infant needs additional nutritionally adequate and safe complementary foods, while continuing breastfeeding. In 24 LAC countries with data, 84.6% of children receive any solid, semi-solid and soft foods in their diet after the first six months of life, with Jamaica, Ecuador and Trinidad and Tobago below 75%, and Costa Rica, Argentina, Brazil, Peru, Cuba, Uruguay, Haiti and El Salvador above 90%. Moreover, in average, 43% of children in LAC continued breastfeeding until having 2 years old, a rate below 30% in Dominican Republic, Trinidad and Tobago, Cuba, Brazil, Saint Lucia and Suriname, and above 60% in Guatemala, Peru, El Salvador and Bolivia (Figure 4.4).

Exclusive breastfeeding is more common in lower and lower-middle income countries rather than higher income in LAC, as well as amongst poorer rural women with lower education than richer women with higher education living in cities (Figure 4.5). However, in countries such as Argentina, Dominican Republic, Jamaica and Suriname, women living in urban areas breastfeed exclusively more than women in rural areas. In Argentina and Jamaica more educated and wealthier women also show higher rates of exclusively breastfeeding, while the same is true for Suriname in the case of wealthier women.

Key factors that can lead to inadequate breastfeeding rates are broad and encompass several dimensions of society. They include unsupportive hospital and healthcare practices and policies, lack of adequate skilled support for breastfeeding, specifically in health facilities and the community, aggressive marketing of breast milk substitutes, inadequate maternity and paternity leave legislation, and unsupportive workplace policies (Rollins et al., 2016[2]).

Definition and comparability

Exclusive breastfeeding is defined as no other food or drink, not even water, other than breast milk (including milk expressed or from a wet nurse) for the first six months of life, except for oral rehydration salts, drops, and syrups (vitamins, minerals, and medicines). Thereafter, to meet their evolving nutritional requirements, infants should receive adequate and safe complementary foods while continued breastfeeding up to two years of age or beyond.

The usual sources of information on the infant and young child feeding practices are household surveys. They also measure other indicators of infant and young child feeding practices such as minimal meal frequency, minimal diet diversity and minimum acceptable diet. The most used survey formats are the Demographic and Health Surveys (DHS) and the Multiple Indicator Cluster Surveys (MICS).

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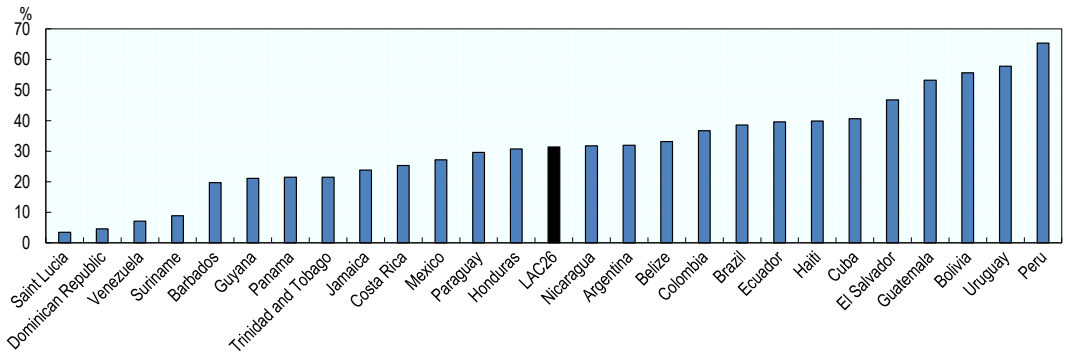
Victora, C. et al. (2016), "Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect", *The Lancet*, Vol. 387/10017, pp. 475-490, https://doi.org/10.1016/s0140-6736(15)01024-7. [1]

Figure 4.3. Infants exclusively breastfed in the first six months of life, 2019 or nearest year



Source: WHO GHO 2022.

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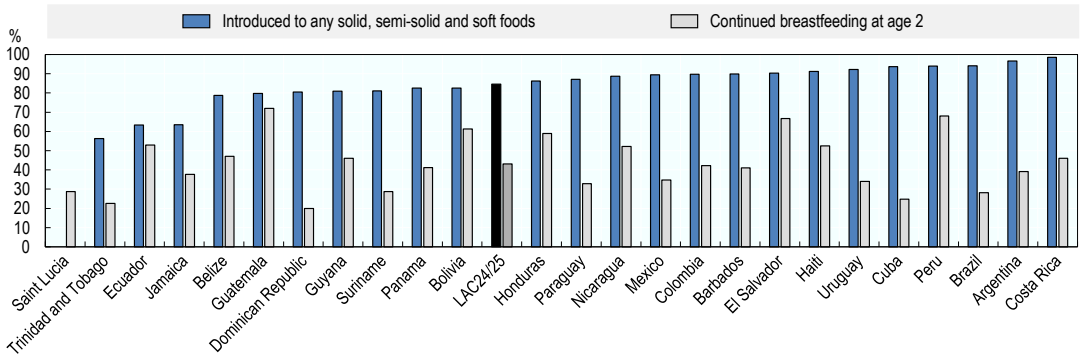
Figure 4.4. Feeding practices after six months of age, selected countries, various years



Source: UNICEF aggregate with National Statistics office data, MICS, DHS.

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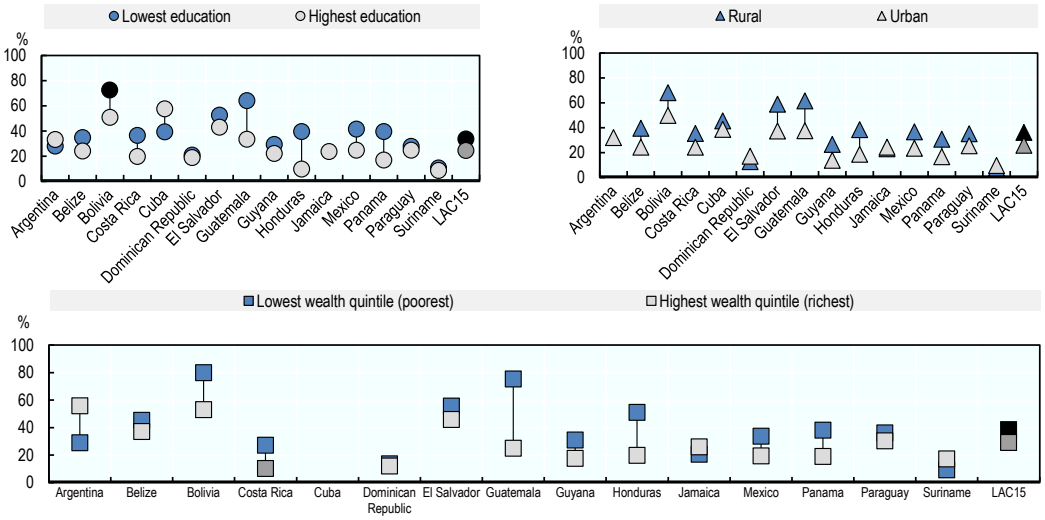
Figure 4.5. Infants exclusively breastfed in the first six months of life, by select socio-economic and geographic factors, various years



Source: DHS and MICS surveys, various years.

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Child malnutrition

A key component of human capital is healthy and well-nourished people throughout their lives, but many children are not able to access sufficient, safe nutritious food and a balanced diet that meets their needs for optimal growth and development, to enable an active and healthy life. Globally, it is estimated that 150.8 million children are stunted, 50.5 million are wasted, and 38.3 million are overweight (Development Initiatives, 2018[1]). Hence, many countries are facing a double burden of malnutrition – characterised by the coexistence of undernutrition along with overweight, obesity or diet related NCDs – a health challenge on the rise in many LAC countries. Child malnutrition also contributes to poorer cognitive and educational outcomes in later childhood and adolescence, which in turn affect lifelong potential and heavily determines the socio-economic status of the individual.

The UN SDG target 2.2 sets that by 2030 end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under five years of age, and includes an indicator on childhood overweight. Subsequently, in April 2016, the United Nations General Assembly proclaimed 2016-25 the UN Decade of Action on Nutrition to eradicate hunger, and malnutrition in all its forms (undernutrition, micronutrient deficiencies, overweight, or obesity) and reduce the burden of diet-related NCDs in all age groups (UN, 2019[2]).

Stunting rates in LAC are generally lower than in other world regions but it is still a significant problem in several countries. In average, 11.4% of children below five years of age are stunted in LAC27 (Figure 4.6). The rate is nearly 43% in Guatemala and around 20% in Ecuador, Haiti and Honduras, while is lowest in Chile and Saint Lucia below 3%. Wasting rates are also lower than in other regions with an average of 2.6% amongst children below five years of age, but Barbados, Guyana, and Trinidad and Tobago have significantly higher rates than average being over 6%. The lowest rates are observed in Chile, Peru and Guatemala, all below 1%.

Countries with higher stunting prevalence tend to have higher than average under-5 mortality, reflecting the fact that about half of all deaths before the age of 5 can be attributed to malnutrition (Figure 4.7). Guatemala deviates significantly from the trend by having a stunting rate almost four times the LAC average and an under-5 mortality rate 6 points over the LAC average. This is mainly due to the high poverty rate and large inequality in the country, which causes that half the population cannot afford the cost of the basic food basket. This adds to the effects of natural disasters and climate change that damages food production (WFP, 2019[3]).

Childhood overweight and obesity is shaping up to be one of the most significant challenges of the century. In LAC27, the average prevalence of overweight amongst children under age 5 is above 8% (Figure 4.8). The highest rates are observed in Argentina and Paraguay having 12% or more, followed by Barbados, Trinidad and Tobago, Panama, Uruguay, and Cuba, where more than one child out of ten is overweight. In turn, rates are lower than 5% in Haiti and Suriname.

Definition and comparability

The WHO definition of children overweight is weight for height greater than 2 standard deviations above WHO child growth standard median. The WHO definition of children obesity is weight for height greater than 3 standard deviations above the WHO Child Growth Standard median.

Stunted growth (low height for age) reflects failure to reach linear growth potential because of long-term suboptimal health and/or nutritional conditions.

Wasting usually indicates recent and severe weight loss, because a person has not had enough food to eats and or they have had an infectious disease such as diarrhoea which as cause d them to lose weight.

References

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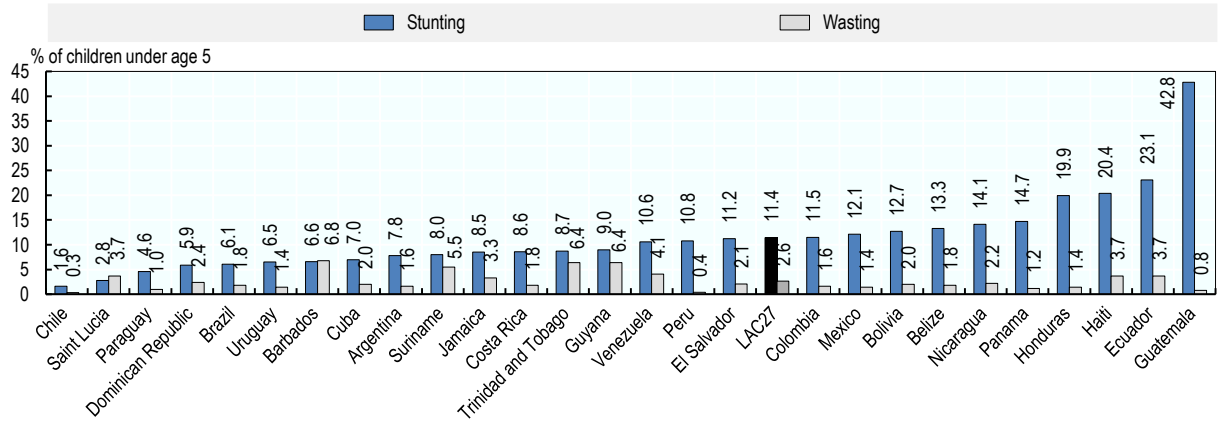
UN (2019), *United Nations Decade of Action on Nutrition 2016-2025*, https://www.un.org/nutrition/home. [2]

WFP (2019), *Guatemala: World Food Programme*, https://www.wfp.org/countries/guatemala. [3]

Figure 4.6. Prevalence of stunting and wasting amongst children under age 5, 2020 or latest year available



Source: WHO GHO 2022.

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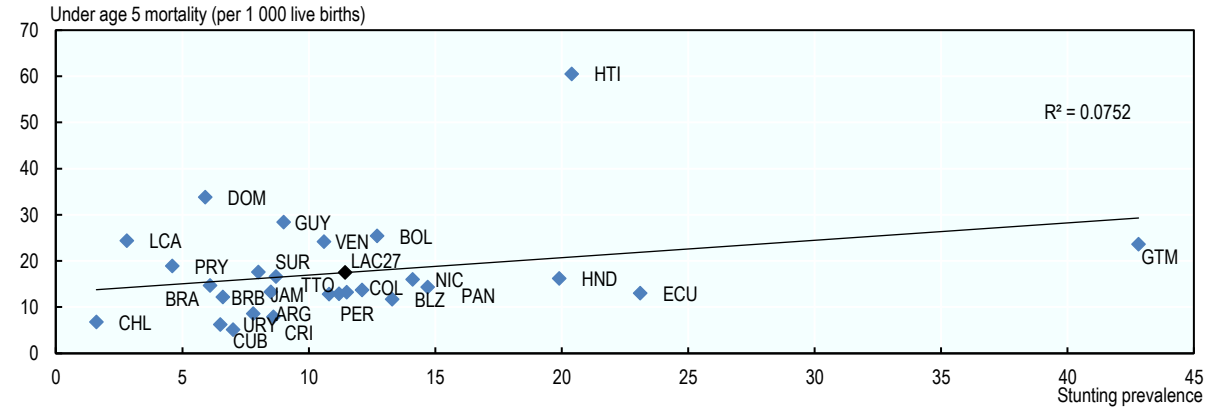
Figure 4.7. Under age 5 mortality and stunting prevalence, 2020 or latest year available



Source: WHO GHO 2022, World Bank 2022.

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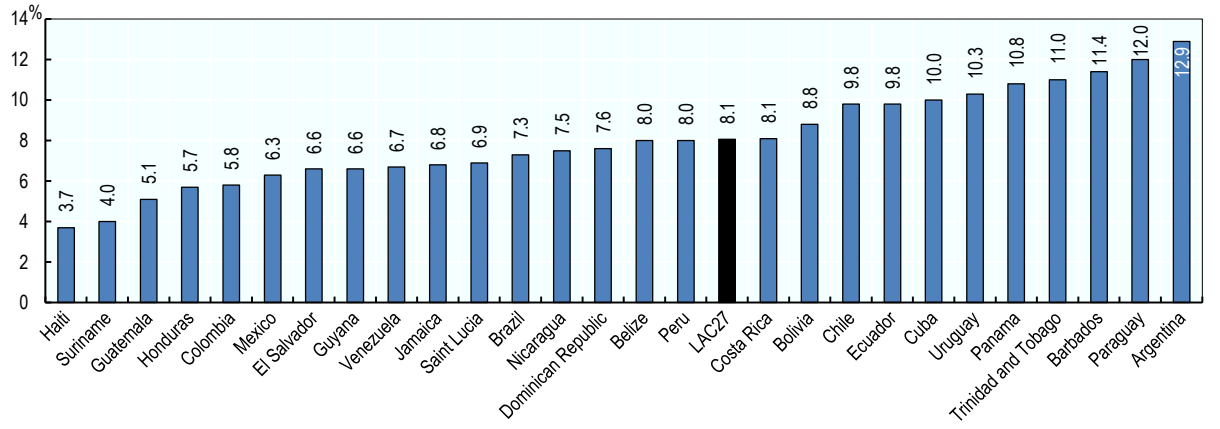
Figure 4.8. Prevalence of overweight amongst children under age 5, 2020 or latest available year



Source: WHO GHO 2022.

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Adolescent health

Adolescence is a fundamental transitional phase in human development as it represents a change from childhood to physical, psychological, and social maturity. During this period, adolescents learn and develop knowledge and skills to deal with critical aspects of their health and development while their bodies mature. Adolescent girls, especially younger girls, are particularly vulnerable because they face the risks of premature pregnancy and childbirth (UNICEF, 2017[1]). In the present, there are two clear transitions regarding adolescent population: demographic transition, with an increase in the number of adolescents (aged 10-24 years) from 1.53 billion in 1990 to 1.8 billion in 2016; and epidemiological transition, which has seen a decrease in the number of countries classified as multi-burden moving to be classified as NCDs predominant (Weiss and Ferrand, 2019[2]).

Risk factors for NCDs, the leading cause of premature adult deaths, are often acquired in adolescence. Overweight and obesity are one these key risk factors. In LAC, the median BMI for females is of 22.5, and for males it is of 21.7, both above the OECD averages of 21.8 for females and 21.4 for males (Figure 4.9). Countries like Bahamas and Chile exhibit mean BMI for females above 24, and mean BMI for males above 23, while Cuba, Guyana, and Trinidad Tobago are the only countries in LAC that have lower mean BMIs for both male and female adolescents than the respective OECD averages.

In addition, interpersonal violence is another issue that affects adolescents in the region, and especially males. Venezuela, El Salvador and Brazil have rates above 90 deaths per 100 000 population for male adolescents aged 15-19, both above the LAC average at 33 and the OECD average at less than 10. Peru, Cuba, Antigua and Barbuda, Grenada and Chile are the only countries in the region below the OECD average. For male adolescents aged 10-14 the death rates are notably lower than for those aged 15-19, however countries like El Salvador have a death rate due to interpersonal violence for this group that is almost ten times higher than the OECD average at 1.1 (Figure 4.10).

Another key issue for adolescents worldwide is the high prevalence of pregnancies during youth. In LAC, the average adolescent birth rate is 53 births per 1 000 adolescent women, which is almost five times the rate observed in OECD countries, that stand in 12 births per 1 000 adolescent women (Figure 4.11). Notably, all LAC countries are situated above the OECD average. The highest adolescent birth rate is found in Nicaragua with 103 births per 1 000 adolescent women (1 out of 10 teenage girls will give birth), followed by Honduras with more than 97 births. On the other hand, Chile and Saint Lucia have the lowest adolescent birth rates in the region with 23 and 25, respectively.

Definition and comparability

The most frequently used measure of underweight, overweight and obesity is the Body Mass Index (BMI). This is a single number that evaluates an individual's weight in relation to height and is defined as weight in kilograms divided by the square of height in metres.

The WHO definition of children aged between 5-19 years overweight is weight for height greater than 1 standard deviation above WHO Growth Reference median. The WHO definition of children aged between 5-19 years obesity is weight for height greater than 2 standard deviations above the WHO Growth Reference median.

Death rates due to interpersonal violence only take into account male adolescents aged 10-14 and 15-19.

Adolescent birth rate is defined as the annual number of births to women aged 15-19 years per 1 000 women in that age group. It is also referred to as the age specific fertility rate for women aged 15-19 years.

References

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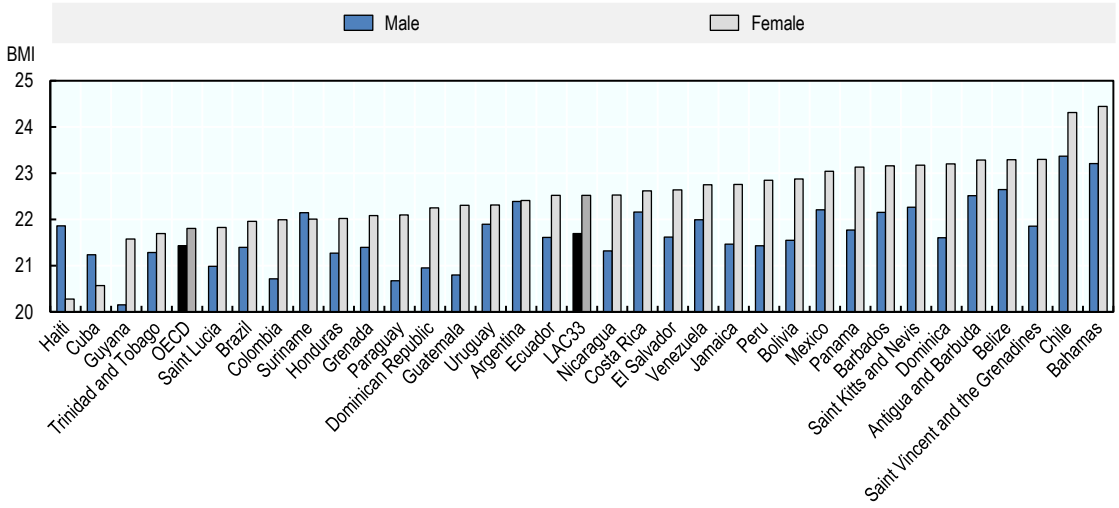
Weiss, H. and R. Ferrand (2019), *Improving adolescent health: an evidence-based call to action*, Lancet Publishing Group, https://doi.org/10.1016/S0140-6736(18)32996-9. [2]

Figure 4.9. Mean BMI for adolescents aged 15 years old, per sex, 2019



Source: NCD Risk Factor Collaboration (NCD-Risk), 2020.

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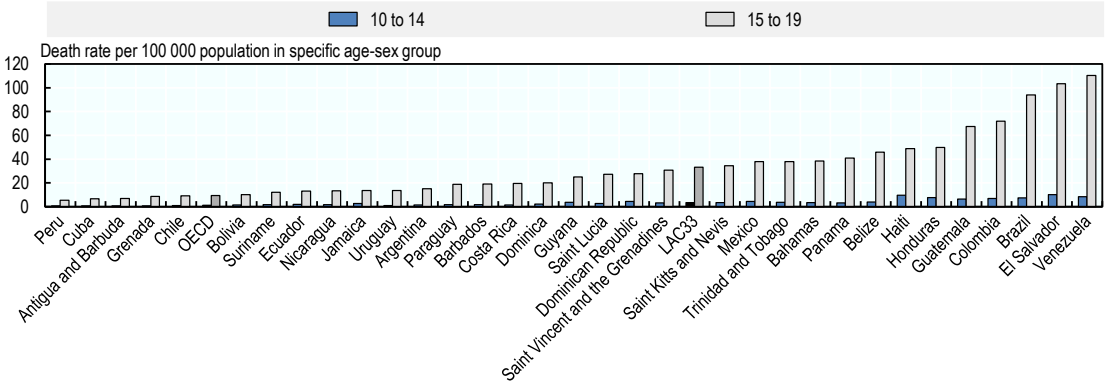
Figure 4.10. Death rates due to interpersonal violence in male adolescents aged 10-14 and 15-19, 2019



Source: GBD, 2019.

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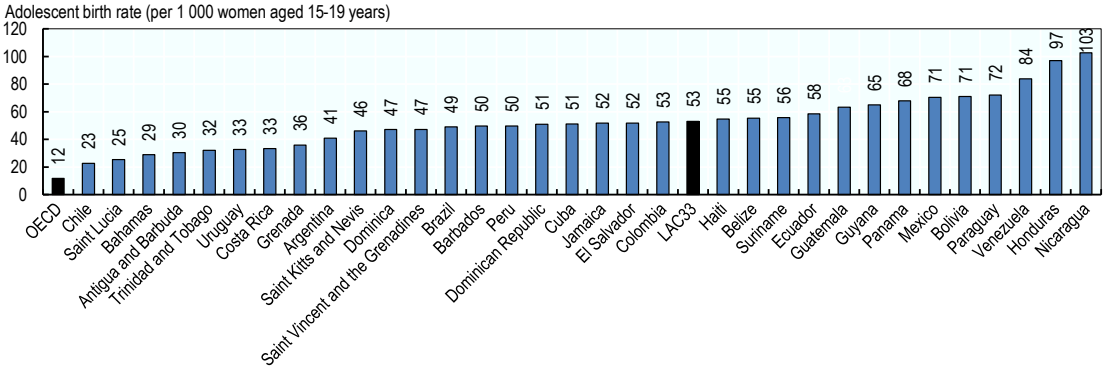
Figure 4.11. Adolescent birth rate, latest year available



Source: WHO GHO 2022.

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Overweight and obese adults

Overweight and obesity are major public health concerns as the global epidemic has far-reaching consequences for individuals, society, and the economy. Obesity is an established risk factor for numerous health conditions, including hypertension, high cholesterol, diabetes, cardiovascular disease, respiratory problems, skeletal diseases, and some forms of cancer, and mortality also increases progressively once the overweight threshold is crossed. Therefore, obesity and overweight reduce life expectancy, increases healthcare costs, decreases workers' productivity, and lowers countries' GDP (OECD, 2019[1]). In 2019, 38.2 million children under age 5 were overweight or obese; while over 340 million children and adolescents aged 5-19 were overweight or obese (WHO, 2021[2]).

In LAC countries, mean BMI for both genders have increased in the 2000-17 period for residents of urban settings. Male BMI went up from 25.4 in 2000 to 26.9 in 2017, while female BMI increased from 26.8 to 28.3 in the same period. Figures for both genders are higher than the OECD averages at 26.8 for males in 2017 and 25.8 for females. In LAC, mean BMI for females that are residents in urban settings is higher than the one for males, which is not the case for the average of OECD countries. LAC averages are approaching the threshold for a person to be considered obese (BMI of 30 or higher). Saint Kitts and Nevis, Saint Lucia, and Belize are the LAC countries with the highest averages of mean BMI for both genders, while Cuba and Haiti have the lowest averages and are the only two countries in the region below the average for both genders from the OECD (Figure 4.12).

When observing the patterns by gender and residential area, we observe how mean BMI in LAC is increasing at a faster rate for women than for men, widening the gap from 1990 to 2017, and especially in rural settings. On OECD countries this gap has also widened albeit at a slower pace, and the mean BMI for males is higher in both urban and rural settings, while the contrary is true for LAC countries (Figure 4.13 and Figure 4.14). In LAC countries, this increase in mean BMI seems to be particularly marked in countries from the Caribbean.

Social determinants of health such as poverty, inadequate water and sanitation, and inequitable access to education and health services underlie malnutrition. A key driver of the increasing obesity epidemic is a changing food environment, in which nutrient poor and energy dense processed foods are aggressively marketed, readily available and often cheaper than healthier alternatives. Countries such as Mexico, Chile, Peru, Brazil, Uruguay and Ecuador, have managed to develop some policies related to taxing sugar sweetened beverages and front-of-package labelling, along with regulating food advertising to children. These efforts can be complemented with policies such as menu labelling, workplace anti-sedentary interventions and mass media campaigns, as not only they are effective but also have a positive return on investment (OECD, 2019[1]).

Definition and comparability

The most frequently used measure of underweight, overweight and obesity for adults is the Body Mass Index (BMI). This is a single number that evaluates an individual's weight in relation to height and is defined as weight in kilograms divided by the square of height in metres.

Based on the WHO classification, adults with a BMI below 18.5 are considered to be underweight/thinness and 25 or over are overweight. Adults who have BMI between 20 and 30 are considered to have pre-obesity. A BMI 30 or over are defined as obese.

In many countries, self-reported estimates of height and weight are collected through population-based health surveys while other countries take measurements amongst the population. These differences limit data comparability. BMI estimates from health examinations are more reliable, and generally result in higher values than those from self-reported surveys.

References

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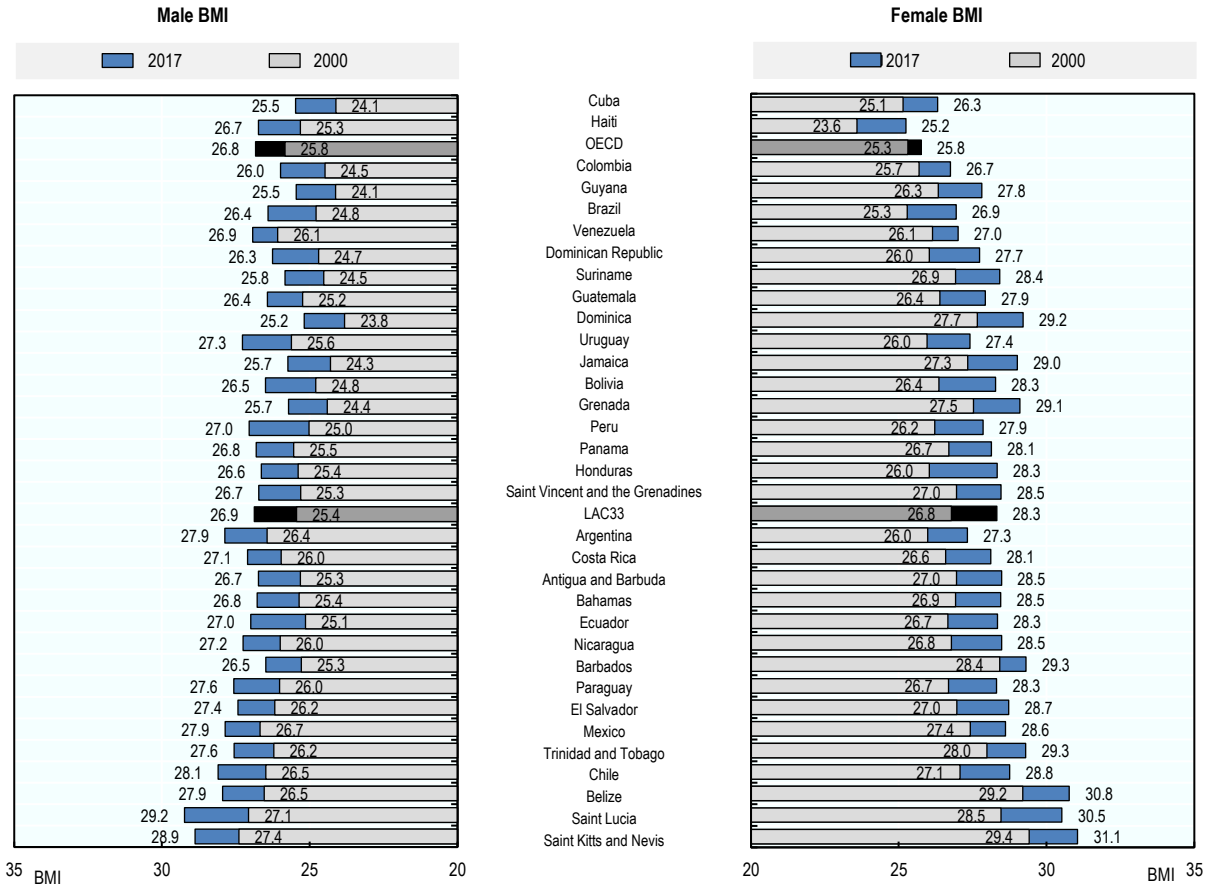
WHO (2021), *Obesity and overweight fact sheet*, https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight. [2]

Figure 4.12. Mean BMI for residents of urban settings, by sex, 2000 and 2017



Note: Only urban residents were considered for this indicator. The order of countries is based on the average of Male BMI and Female BMI.
Source: NCD-RIsC, 2019.

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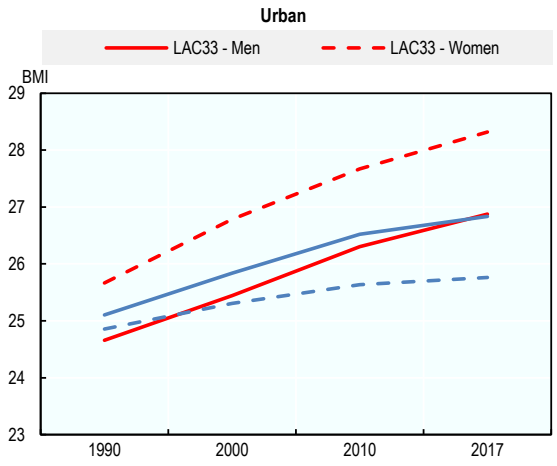
Figure 4.13. Trend in BMI change between LAC and OECD averages in urban population, 1990-2017



Source: NCD-RIsC, 2019.

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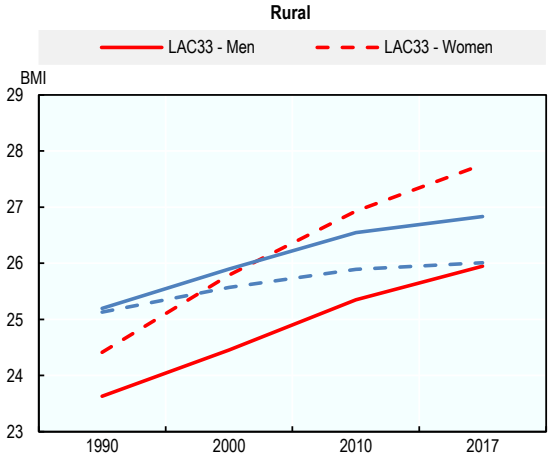
Figure 4.14. Trend in BMI change between LAC and OECD averages in rural population, 1990-2018



Source: NCD-RIsC, 2019.

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Water and sanitation

Exposure to drinking water, sanitation, and hygiene behaviours (WASH) are vital to individual health, livelihood and well-being. Diarrhoea, respiratory infections, malnutrition, schistosomiasis, soil-transmitted helminth infections, and trachoma are some of the diseases associated to inadequate WASH. In 132 low- and middle-income countries, an estimated 829 000 WASH-attributable deaths and 49.8 million DALYs occurred from diarrhoeal diseases in 2016, equivalent to 60% of all diarrhoeal deaths (Prüss-Ustün et al., 2019[1]). Over half a million children under age 5 die every year due to diarrhoeal disease. The estimation is that 88% of that burden is attributable to WASH and is mostly concentrated on children in developing countries. Better access to water and sanitation is fundamental to better health but it also contributes to social and economic progress, one of the many links to human capital described in this publication. It helps drive higher educational enrolment rates, improves the standard of living and lower healthcare costs necessary to maintain a productive workforce (UNICEF/WHO, 2017[2]).

Access to basic sanitary facilities has grown in LAC over recent years (Figure 4.15). In 2020, more than three out of four people living in rural areas and almost nine out of ten people living in urban areas in LAC countries have access to basic sanitation. However, in Haiti and Bolivia only around 25% and 44% of people living in rural areas have access to basic sanitation for adequate excreta disposal, respectively, meaning that open defecation is still common. Urban basic sanitation in these two countries increases to 46% and 75%, respectively, but still substantially below the LAC average. Progress has been particularly rapid in Ecuador and Paraguay, with an increase of 18 percentage points in the proportion of the population living in rural areas with access to basic sanitation between 2010-20. Bolivia and Panama reported the largest increases of 16 and 11 percentage points in the population living in urban areas with access to basic sanitation during the same period. El Salvador, Guatemala, Jamaica and Saint Lucia were the only countries in LAC reporting a decrease in the percentage of the population having access to basic sanitation in urban areas from 2010-20.

Between 2010 and 2020, most countries in LAC improved access to basic drinking water. Only Jamaica, Haiti, and Nicaragua experienced small decreases. On average, nearly nine in ten persons in rural areas and nearly all persons in urban areas have access to improved water sources in LAC. Only Haiti and Nicaragua lagged behind with less than two-thirds of the population living in rural areas having access to basic water sources. In Haiti, the rate was 43%, meaning that less than half of the rural population had access to drinking water. Access was significantly improved in Paraguay, El Salvador and Peru, each reporting an increase of the population living in rural areas having access to basic drinking water of more than 20% between 2010-20 (Figure 4.16).

Definition and comparability

People that use improved sources of drinking water that required no more than 30 minutes per trip to collect water are classified as having at least basic drinking water services. An improved drinking-water source is constructed so that is protected from outside contact, especially from faecal matter, improved sources include piped water, public taps, boreholes, and protected dug wells or springs (UNICEF/WHO, 2017[2]).

People that use an improved sanitation facility that was not shared with other households are classified as having at least basic sanitation services. Improved sanitation facilities hygienically separate excreta from human contact, using flushing to piped sewer systems, septic tanks, or pit latrines, along with improved pit latrines or composting toilets (UNICEF/WHO, 2017[2]).

The WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation (JMP) database includes nationally representative household surveys and censuses that ask questions on water and sanitation, mostly conducted in developing countries. Generally, developed countries supply administrative data.

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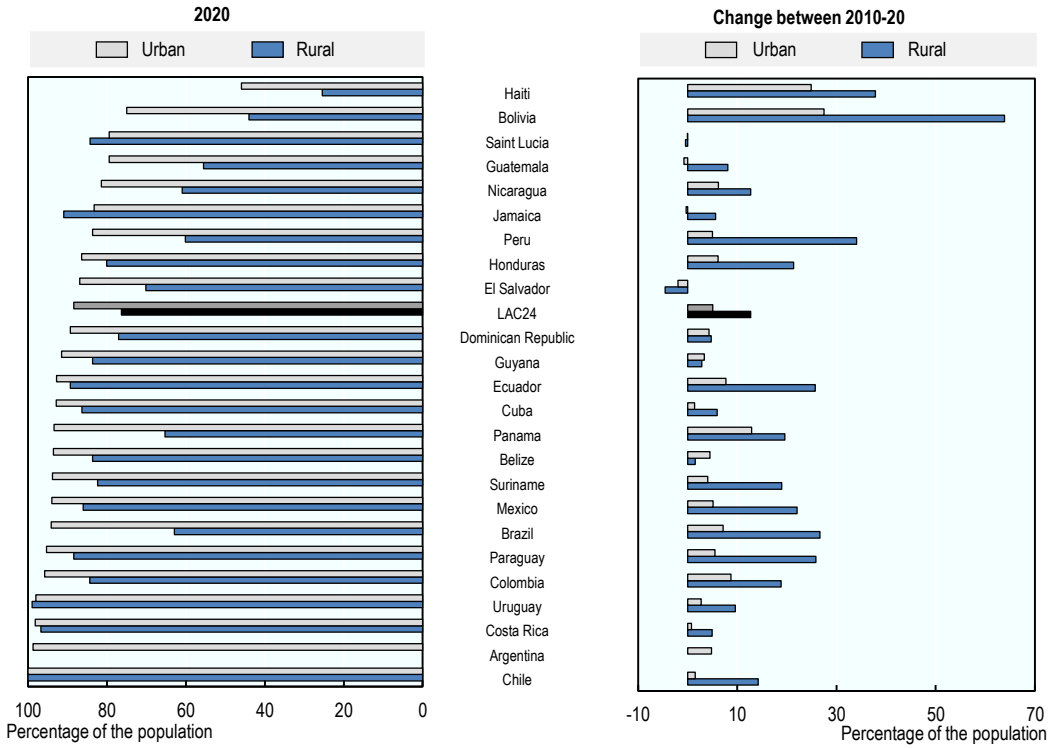
Figure 4.15. Access to basic sanitation, 2020 and change between 2010-20



Source: WHO GHO 2022.

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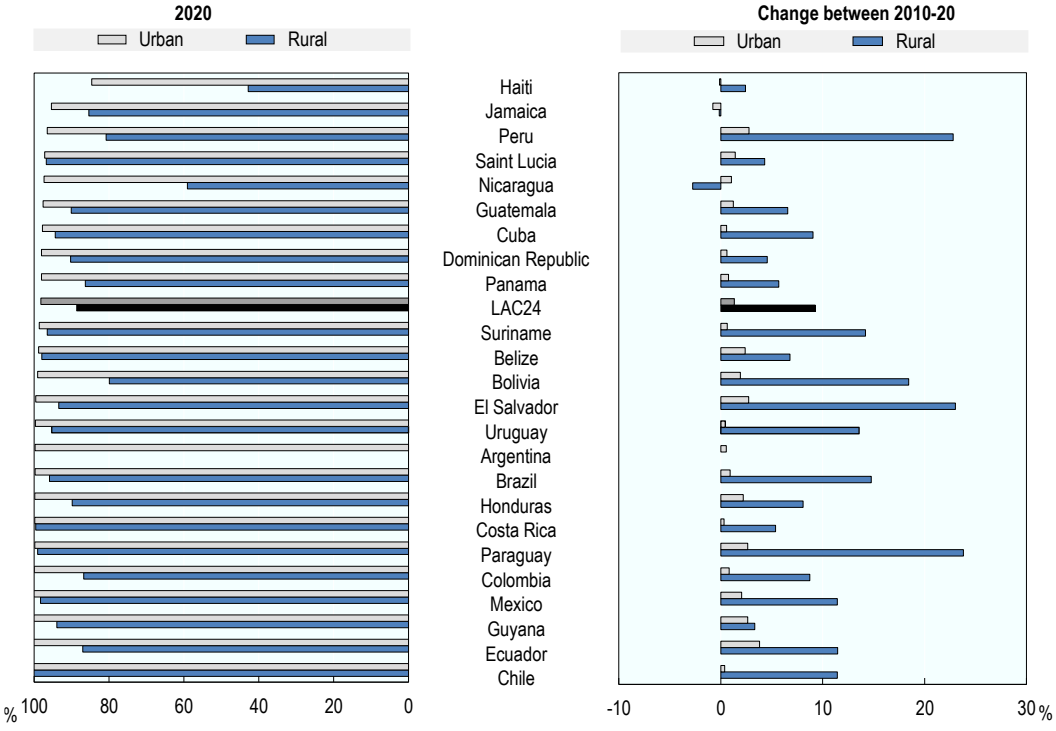
Figure 4.16. Share of the population with access to basic drinking water, 2020 and change between 2010-20



Source: WHO GHO 2022.

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Tobacco

Tobacco use is the second leading risk factor for early death and disability worldwide, claiming more than 8 million lives every year, out of which about 1.2 million are the result of non-smokers exposure to second-hand smoke (WHO, 2023[1]). The negative effects of smoking spread out beyond individual and population health affecting the economy as well. Worldwide in 2019, the prevalence of daily smoking was 29.6% for men and 5.3% for women, representing 21.1% and 33.8% reductions, respectively, since 2007 (WHO, 2021[2])

The proportion of daily tobacco smokers varies greatly across countries but close to one in five men aged 15 and above in the LAC22 smokes daily, a rate lower than the OECD average of more than in four men of the same age group (Figure 4.17). Rates are particularly high in Chile and Argentina, where around three out of every ten men smoke, being the only two countries in the region with a rate higher than that of the OECD. The lowest rate amongst men is observed in Panama, being the only country below 10%. Rates are lower amongst women with 6.5% smoking daily, slightly more than a third of the OECD average of 18%. Chile is at the top with over one women of every four smoking, followed closely by Argentina and Uruguay. The lowest rates for women are found in Guatemala, El Salvador, Belize and Barbados, all below 2%. Guatemalan women smoke 12 times less than men do.

Tobacco use in LAC is expected to be around half of that in the OECD by 2025, with total prevalence for LAC22 at 10.7% and at 19.2% for the OECD. Chile and Argentina are the only countries in the region to show estimated trends of tobacco use above the OECD average. Countries like Panama, Peru, El Salvador and Haiti all show estimated trends for tobacco use below 7% (Figure 4.18).

Increasing tobacco prices through higher taxes is one of the most effective interventions to reduce tobacco use, by discouraging youth from beginning cigarette smoking and encouraging smokers to quit. A recent review of studies conducted in LAC countries found that tax increases effectively reduce cigarette use and can also be expected to increase cigarette tax revenue (Guindon, Paraje and Chaloupka, 2018[3]), which can be used in complementary interventions. The average taxation in LAC is 50% for a pack of 20 cigarettes (Figure 4.19). The countries with the highest taxation on tobacco are Brazil, Chile and Argentina with more than 75%, but these are not the countries with the highest prices. The most expensive tobacco can be found in Cuba with a price of USD 12.50, while the cheapest one is observed in Paraguay with a price of USD 0.31.

LAC countries can strengthen its regulations to reduce tobacco use by fully implementing the WHO Framework Convention on Tobacco Control. For this, WHO's strategy MPOWER can be followed to Monitor tobacco use and prevention policies; Protect people from tobacco use; Offer help to quit tobacco use; Warn about the dangers of tobacco; Enforce bans on tobacco advertising, promotion and sponsorship; and Raise taxes on tobacco (WHO, 2022[4]).

Definition and comparability

Adults smoking daily is defined as the percentage of the population aged 15 years and over who reported smoking every day. Estimates for 2020 were based on data obtained from a broad range of health and household surveys, including the Global Adult Tobacco Survey (GATS). Results were age-standardised to the WHO Standard Population.

Estimated 2025 tobacco use amongst youth is derived from the Global Youth Tobacco Survey 2022. It is defined as the percentage of young people aged 13-15 years who are estimated to consume any tobacco product at least once during the last 30 days prior to the survey.

References

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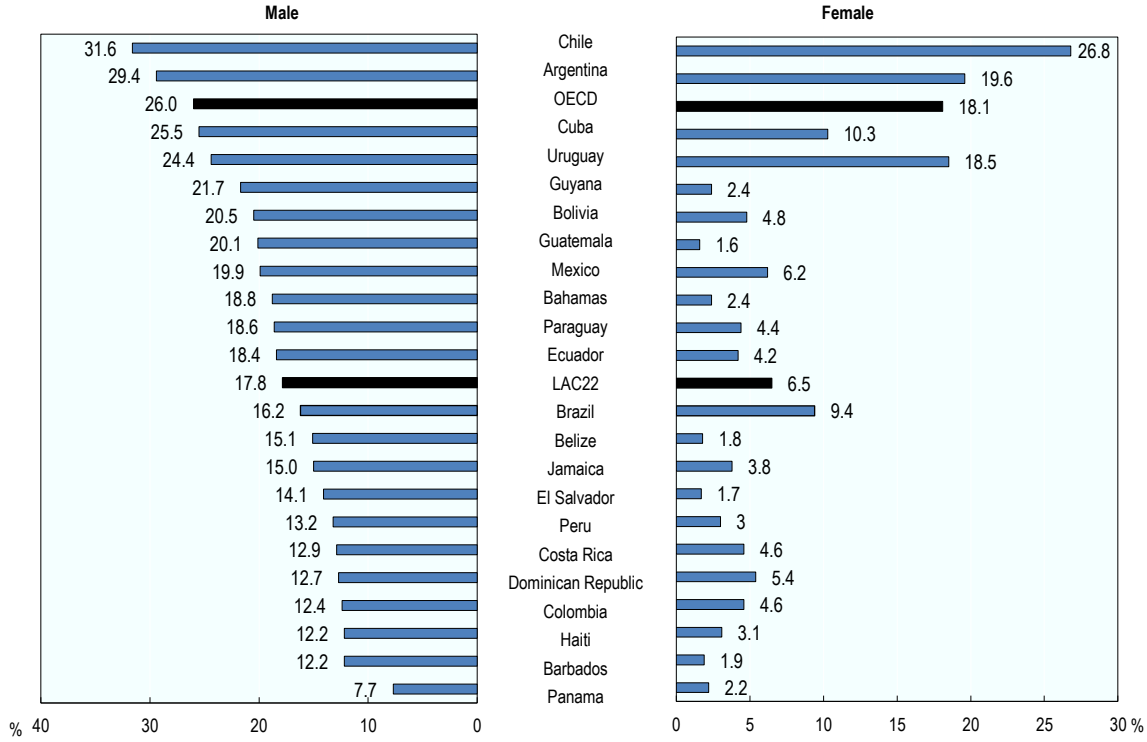
WHO (2023), *Tobacco*, https://www.who.int/news-room/fact-sheets/detail/tobacco. [1]

WHO (2022), *Tobacco fact sheet*, https://www.who.int/news-room/fact-sheets/detail/tobacco. [4]

WHO (2021), *WHO report on the global tobacco epidemic 2021: addressing new and emerging products*, World Health Organization, Geneva, https://apps.who.int/iris/handle/10665/343287. [2]

Figure 4.17. Age-standardised prevalence estimates for daily tobacco smoking amongst persons aged 15 and above, 2020



Source: WHO global report on trends in prevalence of tobacco use, 2021.

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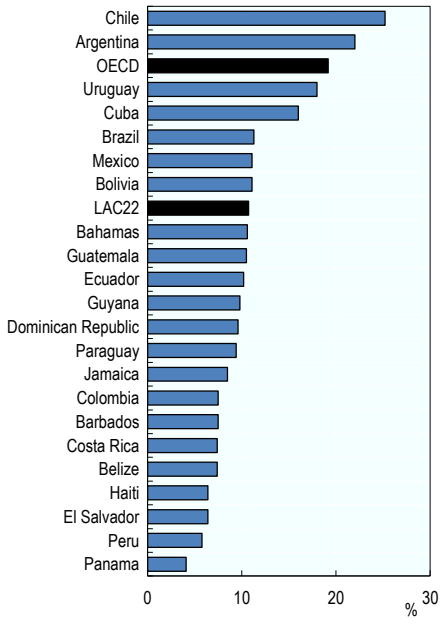
Figure 4.18. Estimated prevalence of tobacco use amongst youth aged 13 and 15, 2025



Source: Global Youth Tobacco Surveys 2022.

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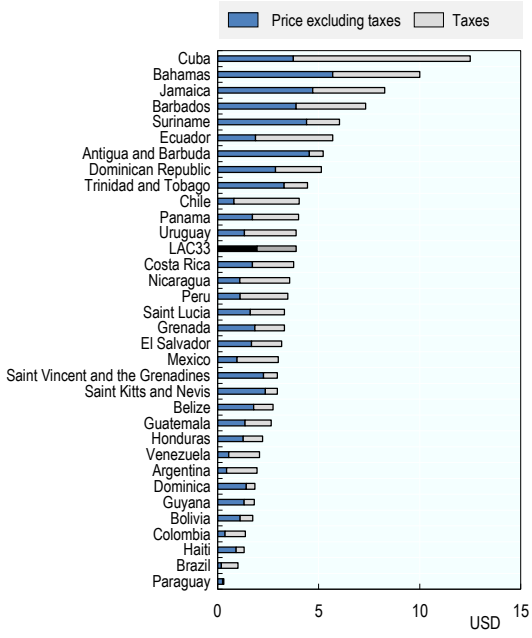
Figure 4.19. National taxes and retail price for a pack of 20 cigarettes of the most sold brand, 2020



Source: WHO GHO 2022.

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Road safety

Approximately 1.3 million people die each year as a result of road traffic crashes, and these represent the leading cause of mortality amongst people aged 5-29 years. There is great disparity by income, with 93% of deaths resulting from road traffic happening in low- and middle-income countries (WHO, 2022[1]). The burden of road traffic injuries falls disproportionately on vulnerable road users – pedestrians, cyclists, and motorcyclists. Road injuries will cost the world economy USD 1·8 trillion (constant 2010 USD) in 2015-30, which is equivalent to an annual tax of 0.12% on global gross domestic product (Chen et al., 2019[2]). The SDG 3 target aims to halve the number of global deaths and injuries from road traffic crashes by 2020, while SDG 11 relates to providing access to sustainable transport systems for all, improving road safety, and expanding public transport.

In 2019, LAC30 countries reported 18.2 deaths per 100 000 population due to road traffic accidents (Figure 4.20). In Dominican Republic and Venezuela, there were over 64 deaths per 100 000 population because of road traffic injuries in 2019, followed by Venezuela and Saint Lucia with over 29 deaths. On the other end, Saint Vincent and the Grenadines, Bahamas, Grenada, Barbados, Cuba, and Trinidad and Tobago had the lowest road traffic death rates, at less than 10 deaths per 100 000 population.

The five key risk factors in road traffic deaths and injuries are drinking and driving, speeding, and failing to use motorcycle helmets, seat belts and child restraints (Table 4.1). In addition, distracted driving is a growing threat to road safety considering the use of mobile phone and other in-vehicle technologies. Texting causes cognitive distraction and both of manual and visual distraction as well. Even talking on mobile phones without holding or browsing a phone can reduce driving performance (WHO, 2022[1]). Since hands-free phone and hand-held phone are equally at risk of cognitive distraction, some national laws regulate both of the ways of using mobile phones (Table 4.1). Drinking and driving, especially with a blood alcohol concentration level of over 0.05g/dl (grammes per decilitre), greatly increases the risk of a crash and the possibility that it will result in death or serious injury. Furthermore, lower limit BAC limits (0.02 g/dl) for young people and novice drivers can reduce the risk of road crashes. Enforcement through random breath testing checkpoints is highly cost effective and can reduce alcohol-related crashes by approximately 20%.

Wearing a seat belt can reduce fatalities amongst front-seat passengers by up to 50% and amongst rear seat car passengers by up to 75%. A national law does not exist in Antigua and Barbuda, while several other countries do not require that all the occupants of a car wear a seat belt. Child restraint systems, such as child seats for infants and booster seats for older children, decrease the risk of death in a crash by about 70% for infants and up to 80% for small children. However, mandatory child restraint national laws exist only in 16 LAC countries.

In high-income countries, speed contributes to about 30% of road deaths, while in some low and middle-income countries speed is the main factor in about half of road deaths. Speed limits are enforced by a national law in all LAC countries except in Venezuela. However, in several countries speed limits are not adapted at the local level (Table 4.1).

Wearing a motorcycle helmet correctly can reduce the risk of death by almost 40% and the risk of severe injury by over 70%. When motorcycle helmet laws are enforced, helmet-wearing rates can increase to over 90%. However, four countries do not have a regulation mandating helmet use. Motorcycle helmet wearing rate is very low in Dominican Republic, Guatemala and Jamaica, and in rural areas of most countries. Only Brazil, Chile, Colombia, Costa Rica, Cuba and Surinam report motorcycle helmet use over 80% in rural areas.

Definition and comparability

To calculate road injury mortality data, countries were classified into four groups: (1) Countries with death registration data completeness of at least 80%. For these countries' death registration, projection of the most recent death registration, reported death or projected reported deaths were used. (2) Countries with other sources of information on cause of death. For these countries a regression method was used to project forward the most recent year for which an estimate of total road traffic deaths was available. (3) Countries with population less than 150 000 and which did not have eligible death registration data. For these countries the death reported in the survey were used directly, without adjustment. (4) Countries without eligible death registration data. For these countries a negative binomial regression model was used. For more information about this process, see the report Global Status Report on Road Safety (WHO, 2018[3]).

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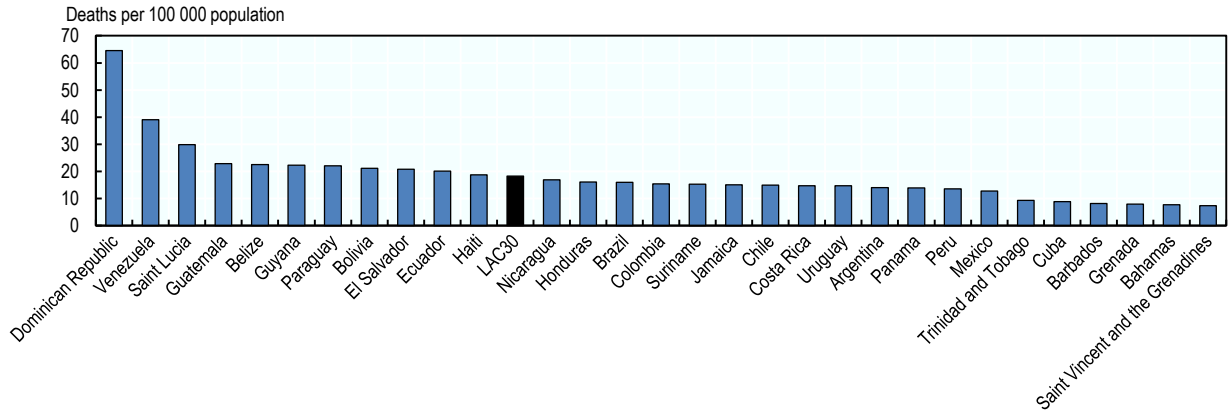
Figure 4.20. Road traffic death rates, 2019



Source: WHO GHO 2021.

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Table 4.1. Existence of a national legislation on five main risk factors of road traffic deaths, latest year available

Country	Drink Diving		Seatbelt		Child restraint	Speed limit			Motorcycle helmet		Mobile phone use
	National law	Road traffic deaths to alcohol (%)	National law	Applicability to all occupants	National law	National or local law	Rural (km/h)	Urban (km/h)	National law	Motorcycle helmet wearing rate (% drivers / % passengers)	National law on hand-held/hand-free mobile phone use
Antigua and Barbuda	Yes	17.95	No		No	National	64	32	No		No
Argentina	Yes	18.13	Yes	Yes	Yes	Both	110	60	Yes	65/44	Yes
Barbados	Yes	17.06	Yes	Yes	Yes	National	80	80	Yes		Yes
Belize	Yes	20.70	Yes	No	No	National	88	40	Yes		No
Bolivia	Yes	20.84	Yes	No	No	Both	80	40	Yes	52/3	No
Brazil	Yes	19.52	Yes	Yes	Yes	Both	110	80	Yes	83/80	Yes
Chile	Yes	16.68	Yes	Yes	Yes	Both	100	60	Yes	99/98	Yes
Colombia	Yes	20.34	Yes	Yes	No	Both	120	80	Yes	96/80	Yes
Costa Rica	Yes	19.69	Yes	Yes	Yes	National	60	50	Yes	98/92	Yes
Cuba	Yes	18.82	Yes	Yes	No	National	90	50	Yes	95/90	Yes
Dominica	Yes	18.97	Yes	Yes	No	None			No		No
Dominican Republic	Yes	20.75	Yes	Yes	Yes	National	60	60	Yes	27/2	Yes
Ecuador	Yes	20.34	Yes	Yes	Yes	Both	120	60	Yes	90/12-52	Yes
El Salvador	Yes	20.75	Yes	No	Yes	National	90	50	Yes		Yes
Grenada	Yes	20.26	Yes	No	No	National	64	32	Yes		No
Guatemala	Yes	21.68	Yes	No	No	Both	80	60	Yes	36/11	Yes
Guyana	Yes	20.84	Yes	No	Yes	National	64	64	No	50/20	Yes
Honduras	Yes	21.92	Yes	Yes	No	National			Yes		Yes
Jamaica	Yes	19.11	Yes	Yes	Yes	National	80	48	Yes	6/2	No
Mexico	Yes	20.39	Yes		No	Both	20-90	20-70	No	83/55	No
Panama	Yes	19.23	Yes	Yes	No	National	100	80	Yes		Yes
Paraguay	Yes	20.49	Yes	Yes	Yes	Both	110	50	Yes		Yes
Peru	Yes	20.34	Yes	Yes	Yes	Both	60	60	Yes	70/8	Yes
Saint Lucia	Yes	19.85	Yes	No	No	National	24	24	Yes		Yes
Suriname	Yes	20.26	Yes	Yes	Yes	National	80	40	Yes	95/92	Yes
Trinidad and Tobago	Yes	18.49	Yes	No	Yes	National	80	50	Yes		Yes
Uruguay	Yes	18.32	Yes	Yes	Yes	Both	90	45	Yes	80/71	Yes
Venezuela	Yes	19.85	Yes	Yes	Yes	None			Yes		Yes
LAC28		19.70					82.25	53.125			

Note: Speed limit regulation in 2015 (Global status report on road safety, 2015).
Source: WHO Global Status Report on Road Safety (2018), CONAPRA 2015 for Mexico; Brazilian Ministry of Health.

Drug use

Drug use disorders are a growing cause of short- and long-term health problems, economic cost, and social burden. In 2020, an estimated 284 million people, or 5.6% of the global population aged 15-64, had used drugs in the previous year, while more than 38 million people are estimated to be suffering from drug use disorders (accounting for 13.6% of people who used drugs in the past year). In addition, in 2019 there were more than half a million deaths and 31 million years of "healthy" life lost because of the use of drugs. More than half of the drug related deaths were attributed to liver diseases (UNODC, 2022[1]). Substance abuse refers to the harmful or hazardous use of psychoactive substances, illicit drugs. Psychoactive substance use can lead to dependence syndrome.

Cannabis is globally the most commonly used psychoactive substance under international control. Worldwide, there were an estimated 209 million past-year users of cannabis in 2020, corresponding to 4.1% of the global population aged 15-64, while the estimate for users of cocaine-type substances was of 21 million for the same period (UNODC, 2022[1]). There is an increasing demand of treatment for cannabis use disorders and associated health conditions in high- and middle-income countries, and there has been increased attention to the public health aspects of cannabis use and related disorders in international drug policy dialogues. In 13 LAC countries with data, on average 6.3% of the population reports using cannabis regularly. Prevalence of cannabis use is significantly higher in Jamaica (18%), followed by Uruguay (14.6%), and Chile (12.1%). The lowest consumption is found in Peru, Mexico, Bolivia, Haiti and Colombia, all with less than 3% prevalence (Figure 4.21, left panel).

Traditionally coca leaves have been chewed by people in the Andean countries of South America for thousands of years. The main alkaloid of the coca leave, cocaine, was isolated relatively recently in about 1860. Cocaine was then used in patent medicines, beverages and "tonics" in developed countries in Europe, North America, and in Australia until the early 1900s. It is now widely available as an illicit recreational drug. Regarding cocaine, prevalence in 12 LAC countries with data is 0.91%. Uruguay has the highest rate in the region in 2.1%, followed by Ecuador and Argentina (both at 1.7%), and Costa Rica (1.2%), while cocaine use in most LAC countries is under 1% of the population (Figure 4.21, right panel).

Regarding mortality, Honduras and Guatemala have the highest drug-related death rates, but still almost four times lower than the OECD countries average. Mortality due to drug use disorders has increased in the region in the 2000-19 period, going from 0.41 to 0.45 age-standardised deaths per 100 000 population, lower than the increase on average in OECD countries, which went from 2.1 to 5.8 deaths per 100 000 population in the same period. Countries like Argentina and El Salvador have the lowest rates in the region, below 0.2 deaths per 100 000 population. Brazil, Dominican Republic, and Chile experienced the biggest percentual increases during the 2000-19 period, with rates going up 170% or more, similar to the increase of the OECD average at 175%. Saint Kitts and Nevis, Antigua and Barbuda, and Dominica exhibited a reduction on mortality due to drug use disorders above 30% (Figure 4.22).

Definition and comparability

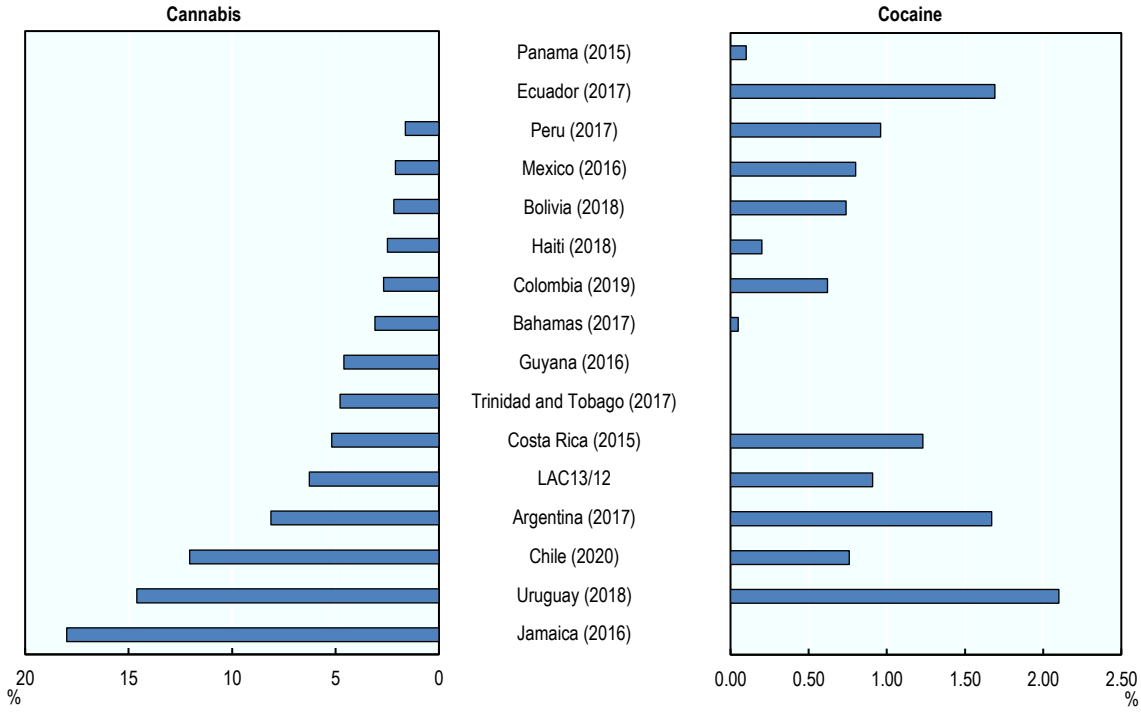
Quality of reporting is higher in more developed countries, which suggests a certain degree of under reporting of prevalence in low- and middle-income countries. Mortality figures are observed and not estimated, so they also do not take into account differences in reporting between countries.

Data on the prevalence of cannabis and cocaine consumption was taken from the United Nations Office on Drugs and Crime (UNODC). Data on mortality due to drug use was estimated by the Global Burden of Disease (GBD) programme based on national data. Consumption of cannabis and cocaine refers to at least one time use in the year previous to the survey.

References

UNODC (2022), *World Drug Report 2022*, https://www.unodc.org/unodc/en/data-and-analysis/world-drug-report-2022.html. [1]

Figure 4.21. Prevalence of cannabis and cocaine consumption, percentage of the population, various years



Source: UNODC 2022.

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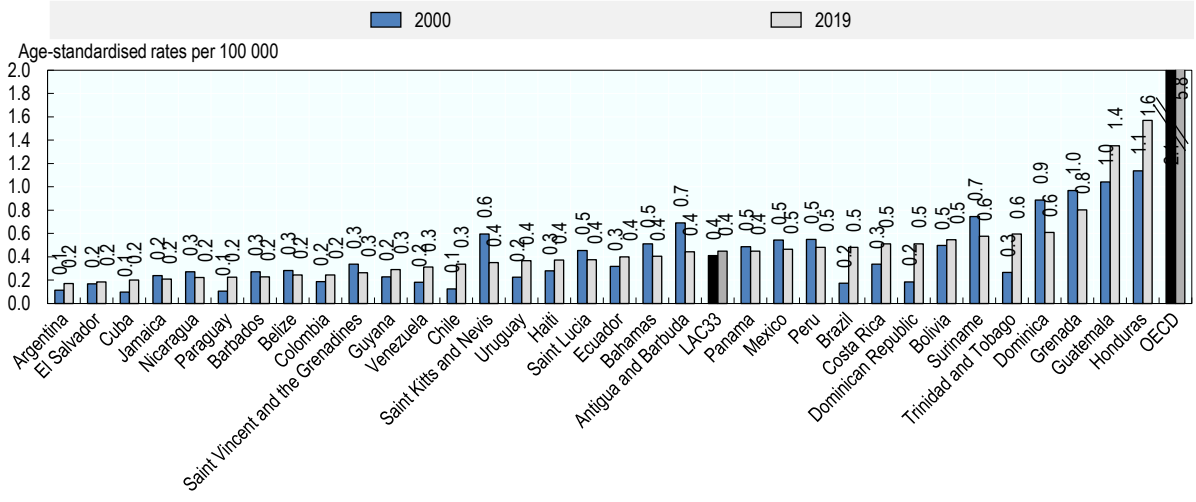
Figure 4.22. Mortality due to drug use disorders, 2000 and 2019



Source: Global Burden of Disease (2019), IHME.

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Environmental and climate risks

Climate change is one of the biggest challenges for humankind. It is linked to many different types of environment distress, such as extreme temperatures, spread of tropical diseases and their vectors, and air pollution. Air pollution is already the most significant environmental health risk and a major cause of death and disability, and its future impact is likely to be even greater if adequate policy action is not developed. Projections have estimated that outdoor air pollution may cause between 6 million and 9 million premature deaths a year worldwide by 2060, and cost 1% of global GDP as a result of sick days, medical bills, and reduced agricultural output (OECD, 2015[1]).

In LAC27 countries, the annual number of deaths of adults aged 65 and over attributable to heat exposure has increased on average by almost 240% when compared the period 2000-04 to 2017-21. Ecuador experienced the highest percentual increase, at 1 147%, followed by Honduras (547%) and Dominican Republic (457%). Uruguay, Argentina and Costa Rica showed the lowest increases in the region, all below 100% (Figure 4.23).

The basic reproduction number (R0) for dengue, mosquito-borne disease transmitted by the Aedes aegypti and Aedes albopictus species of mosquitoes as vectors, increased in LAC when comparing the period 2012-21 to 1951-60. On average, LAC33 had an increase in the R0 associated to the Aedes aegypti species by 0.32, and by 0.46 for the Aedes albopictus species. Ecuador, Peru and Colombia exhibited the highest increases, with dengue R0 related to both species increasing by more than 0.8, while Jamaica, Dominican Republic and Haiti experienced decreases related to both species ranging from -0.03 to -0.17 (Figure 4.24).

In LAC31 countries, mortality rates attributed to household and ambient air pollution in 2016 were on average 40.2 age-standardised deaths per 100 000 population for females and 56.2 for males. Mortality rates for men were higher than for women across all LAC countries with available data. Haiti had the highest mortality rates for both women and men at 172 and 198 deaths per 100 000 population, respectively. Uruguay, Bahamas and Costa Rica had the lowest mortality rates in the region, with less than 20 deaths per 100 000 population for women, and less than 30 for men (Figure 4.25).

Inter-sectoral policies are needed to address the impact of climate change. Countries can start planning to address pollution and its impacts on health, for instance, by creating partnerships with various international, national, and local stakeholders, including local city authorities and ministries of industry, environment, transport, and agriculture, as well as regional bodies as those existing in Latin America and the Caribbean. Reducing crop burning and lowering emissions from motor vehicles and industries would lower ambient air pollution. Health systems can also contribute, by preparing for new diseases that can develop with new climate and biodiversity conditions, promoting consumption of sustainably grown and sourced food, and reducing the carbon footprint of health facilities. In addition, health providers can reduce the environmental footprint in hospitals and in nursing homes by encouraging healthier food consumption, waste reduction, and efficient energy use (Landrigan et al., 2018[2]; OECD, 2017[3]).

Definition and comparability

Ambient (outdoor) particulate matter pollution results from emissions from industrial activity, households, cars, and trucks, which are complex mixtures of air pollutants, many of which are harmful to health. Of all these pollutants, fine particulate matter, even at low levels, has the greatest effect on human health. Polluting fuels include solid fuels such as wood, coal, animal dung, charcoal, crop waste, and kerosene.

References

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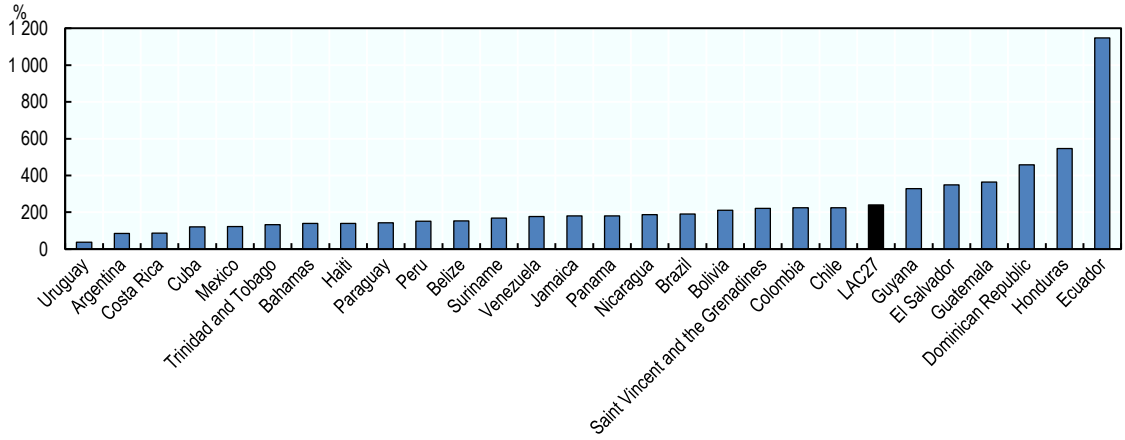
Figure 4.23. Percentage change in the annual number of deaths of adults aged 65 and over attributable to heat exposure, from 2000-04 to 2017-21



Source: The Lancet Countdown report, 2022.

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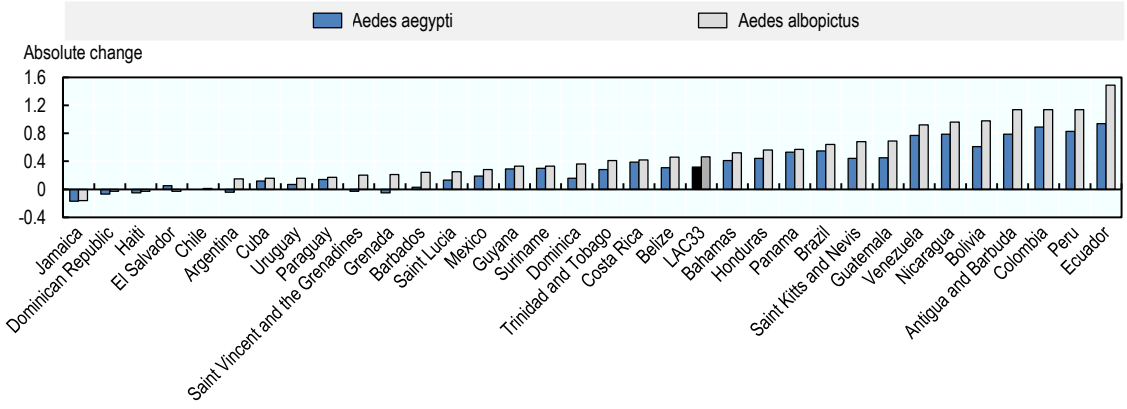
Figure 4.24. Absolute change in basic reproduction number (R0) for dengue transmission by Aedes aegypti and Aedes albopictus mosquitos in 2012-21, compared to 1951-60 baseline



Source: The Lancet Countdown report, 2022.

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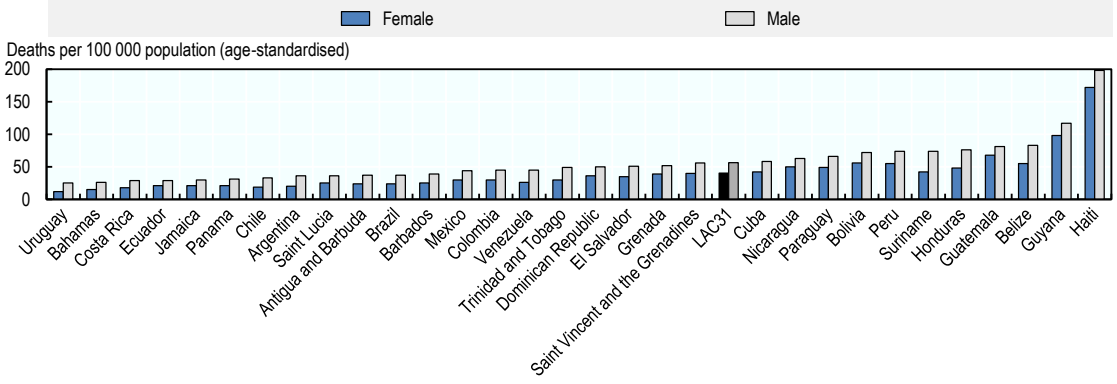
Figure 4.25. Mortality rate attributed to household and ambient air pollution, by sex, 2016



Source: The World Bank World Development Indicators Online 2022.

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5 Healthcare resources and activities

Digitalisation of health information

Timely and accurate health data and information can allow those making decisions to achieve a safe, effective, responsive, and patient-centred care, that is also cost-effective and accessible. New digital health services and applications are possible thanks to a wider use of health data and information that is easier to understand and valid for a range of uses and users. These new digital health services, ranging from telehealth to artificial intelligence, may lead to better access to healthcare and increase patient satisfaction, especially amongst those patients that face the most barriers to traditional in-person care services such as those living in remote areas in LAC (OECD, 2021[2]).

This digital transformation could be useful to improve healthcare access and quality in Latin America and the Caribbean. Countries in LAC could also facilitate the establishment and integration of regional health bodies through the digitalisation of health, thanks to the real time communication and resource dissemination that have been highlighted by the COVID-19 crisis (Di Paolantonio, 2020[3]).

LAC3 countries had on average 65% of primary care practices using EMRs, compared to 93% in OECD24 countries. Only Costa Rica, reporting that all public primary care facilities are using EMRs, had a higher coverage rate than the OECD on average. Mexico had the lowest coverage amongst LAC3 countries with less than a third of primary care practices reporting using EMRs (Figure 5.1).

Two main aspects of people-centred health systems are consulting individuals on their healthcare as well as giving them access to their health data and information. Partly due to the COVID-19 crisis, patients and providers are more and more interested in using digital tools to improve individual health and facilitate patient engagement with health systems. In five LAC countries, 41.6% of individuals aged 16-74 used the internet to seek health information in the three months preceding the survey, compared to 58.6% on average in OECD38 countries (Figure 5.2).

However, important demographic and socio-economic differences in seeking health information online are in place (Oliveira Hashiguchi, 2020[4]). Older adults, individuals with lower levels of educational attainment, as well as those from households with lower incomes were less likely to search for health information online. Both health and digital health literacy are key to guarantee that the digital transformation leaves no one behind.

Definition and comparability

An electronical medical record (EMR) is a computerised medical record created in an organisation that delivers care, such as a hospital or physician's office, for patients of that organisation. Ideally, EMRs should be shared between providers and settings to provide a detailed history of contact with the healthcare system for individual patients from multiple organisations. The figures presented on EMR implementation come from a 2021 survey of OECD countries to which 24 OECD member countries responded, including three members from LAC. The survey was carried out in 2012, 2016, and 2021.

The Information and Communication Technology (ICT) Access and Usage by Households and Individuals database provides a selection of 92 indicators, based on the second revision of the OECD Model Survey on ICT Access and Usage by Households and Individuals. The indicators originate from both an OECD data collection on OECD and accession countries or key partners (such as Brazil), and Eurostat statistics on households and individuals for the OECD countries that are part of the European statistical system (which are presented here as part of the OECD38 average).

References

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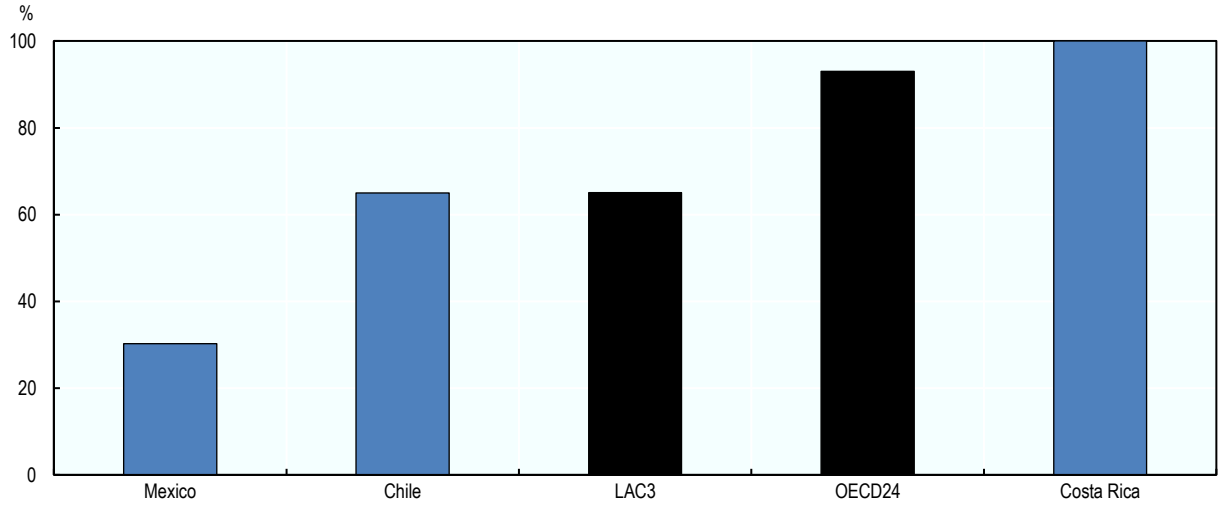
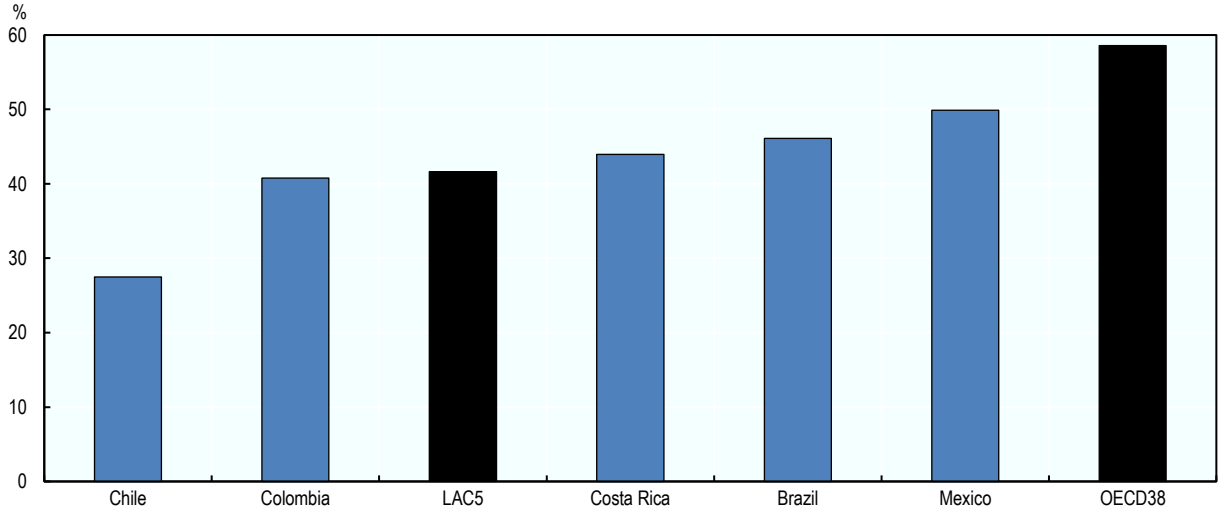
Figure 5.1. Proportion of primary care physician offices using electronic medical records, 2021



Source: OECD survey of electronic health record system development and use, 2021.

StatLink https://stat.link/8l0sh2

Figure 5.2. Percentage of adults searching for health information online, 2021 or latest available year



Source: OECD ICT Access and Usage by Individuals 2022.

StatLink https://stat.link/ajurst

Medical technologies

The Sustainable Development Goal 5 calls for safe, effective, and appropriate medical technologies, which over the past century has profoundly influenced service delivery and health outcomes, and have been a dominant factor in the growth of healthcare expenditure (Lorenzoni et al., 2019[1]). Computed tomography (CT) scanners and magnetic resonance imaging (MRI) units help doctors diagnose a range of conditions by producing images of internal organs and structures of the body. MRI exams do not expose patients to ionizing radiation, unlike conventional radiography and CT scanning. Mammography is used to diagnose breast cancer, and radiation therapy units are used for cancer treatment and palliative care. This equipment is fundamental for an adequate response to diseases, but a balance must be stricken to ensure financial sustainability, as they are expensive technologies.

There are substantial differences in the availability of technologies across LAC countries. Usually, the higher the income level the higher the availability of medical equipment, but this does not seem to be the general pattern in the region. Other factors such as health spending and healthcare planning influence investment and availability.

Brazil has the highest number of CT scanners with 28 per million population, followed by Chile with 23, and Antigua and Barbuda with 22 (the latter is explained partially by the country's small population). However, they remain below the OECD average of almost 30. On the other hand, Haiti and Nicaragua have less than one CT scanner per million people (Figure 5.3).

For MRI units, Brazil has the largest number with 14.5 units per million population, followed by Chile. Antigua and Barbuda, and Saint Lucia reporting 11 or more units per million population. Several countries such as Barbados, Dominica, Saint Kitts and Nevis, Ecuador, Nicaragua, Colombia, Paraguay, Costa Rica, and Honduras report less than one unit per million population (Figure 5.4).

Panama reports the highest number of mammographs with 279 units per million females aged 50-69, as opposed to Paraguay, Cuba and Haiti with less than 20 mammographs available per million females aged 50-69 (Figure 5.5).

In the LAC region, only Antigua and Barbuda, with over 10 units per million population has a higher density of radiotherapy units than the 7 units per million population reported in OECD countries (once again the former is explained partially by the country's small population). Trinidad and Tobago, Barbados, Uruguay, Suriname and the Bahamas are the only other countries reporting over 5 units per million population, while Belize, Dominica, Grenada, Saint Kitts and Nevis and Saint Lucia report having none (Figure 5.7).

In general terms, LAC countries still have space to put more investment into medical technologies to improve equitable access for the population. At the same time, such expansion in access can be accompanied by the development of regulatory frameworks in the areas of registration, assessment and purchasing rules as well as in clearly orienting the clinical use of medical technologies based on the best available scientific evidence. For instance, some OECD countries promote rational use of diagnostic technologies by implementing clinical practice guidelines to reduce the use of unnecessary diagnostic tests and procedures. The guidelines include, for example, avoiding imaging studies such as MRI, CT or X-rays for acute low back pain without specific indications (OECD, 2017[2]).

Definition and comparability

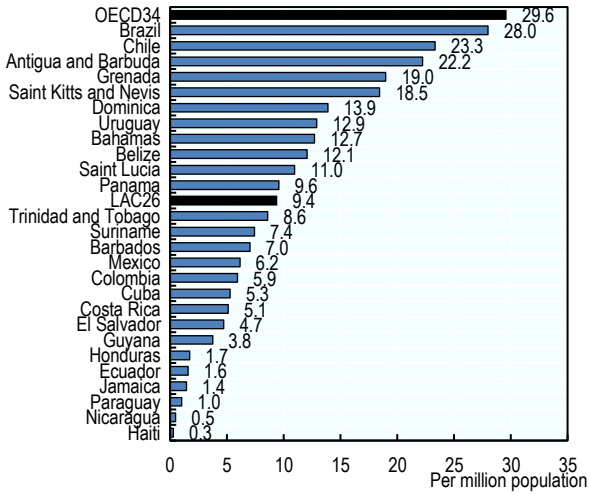
The data covers equipment installed both in hospitals and the ambulatory sector and public and private sectors in most countries. However, there is only partial coverage for some countries, with some countries referring only to equipment in the public or private sector.

References

Lorenzoni, L. et al. (2019), "Health Spending Projections to 2030: New results based on a revised OECD methodology", *OECD Health Working Papers*, No. 110, OECD Publishing, Paris, https://doi.org/10.1787/5667f23d-en. [1]

OECD (2017), *New Health Technologies: Managing Access, Value and Sustainability*, OECD Publishing, Paris, https://doi.org/10.1787/9789264266438-en. [2]

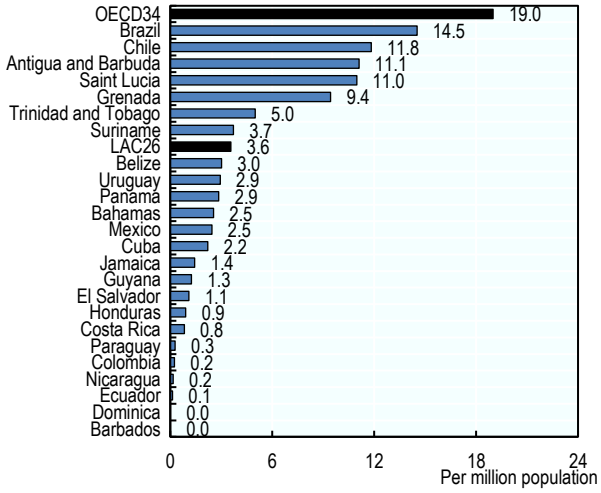
Figure 5.3. Computed tomography scanners per million inhabitants, latest year available



Source: Global Atlas of Medical Devices 2022; OECD Health Statistics 2022 for Brazil, Colombia, and OECD average.

StatLink https://stat.link/kzohjg

Figure 5.4. MRI units per million inhabitants, latest year available

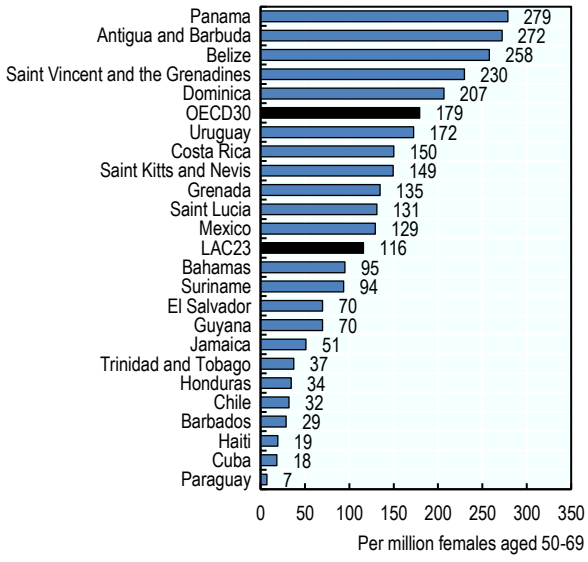


Note: Figures for Costa Rica only represent MRI units in public facilities.

Source: Global Atlas of Medical Devices 2022; OECD Health Statistics 2022 for Brazil and OECD average.

StatLink https://stat.link/gyvhj8

Figure 5.5. Mammography units per million females aged 50-69, latest year available



Source: Global Atlas of Medical Devices 2022.

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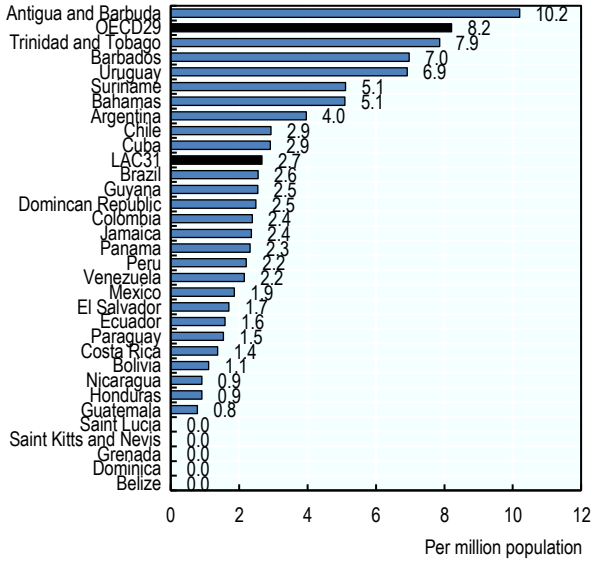
Figure 5.6. Radiotherapy units, latest year available



Source: Global Atlas of Medical Devices 2022.

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Hospital care

In most countries, hospitals account for the largest part of overall fixed investment and hospital beds provides an indication of the resources available for delivering inpatient services. However, the supply of hospital beds influence on admission rates has been widely documented, confirming that a greater supply generally leads to higher admission numbers (Roemer's Law that a "built bed is a filled bed"). Therefore, beside quality of hospital care (see Chapter 7), it is important to use resources efficiently and assure a co-ordinated access to hospital care. Increasing the numbers of beds and overnight stays in hospitals does not always bring positive outcomes in population health nor reduce waste.

The number of hospital beds per capita in LAC is 2.1, lower than the OECD average of 4.3, but it varies considerably (Figure 5.7). More than five beds per 1 000 population are available in Barbados, Cuba, and Argentina, while the stock is equal or less than one per 1 000 population in Guatemala, Haiti, Honduras, Venezuela, Nicaragua and Mexico. These large disparities reflect substantial differences in the resources invested in hospital infrastructure across countries.

Hospital discharge is at an average of 51.2 per 1 000 population in 11 LAC countries with data, compared with the OECD average of 147.8 (Figure 5.8). The highest rates are in Chile and Bolivia, with over 85 and 66 discharges per 1 000 population in a year, respectively, while in Peru, Colombia, Panama and Mexico there are less than 40 discharges per 1 000 population, suggesting delays in accessing services. In general, countries with more hospital beds tend to have higher discharge rates and vice versa. However, there are some notable exceptions. El Salvador and Bolivia have a low number of beds but a relatively high discharge rate, while Argentina has a higher density of hospital beds than the OECD average but a discharge rate lower than the LAC11 average.

In nine LAC countries with data, the average length of stay (ALOS) is 5.47 days, lower than the OECD average of 7.42 (Figure 5.9). The longest ALOS is of 6 days Chile, Colombia and Jamaica, while the shortest length of stay is under 4.4 days in Mexico. The ALOS assesses appropriate access and use, but caution is needed in its interpretation. Although, all other things being equal, a shorter stay will reduce the cost per discharge and provide care more efficiently by shifting care from inpatient to less expensive post-acute settings. Longer stays can be a sign of poor care co-ordination, resulting in some patients waiting unnecessarily in the hospital until rehabilitation or long-term care can be arranged. At the same time, some patients may be discharged too early, when staying in hospital longer could have improved their health outcomes or reduced chances of re-admission (Rojas-García et al., 2017[1]).

When having a look specifically at mental health beds, LAC26 has on average 39 beds per 100 000 population, from which more than 31 are in mental hospitals, this is around a quarter of the density in OECD countries on average, with over 160 mental health beds per 100 000 population, from which more than 186 are in mental hospitals. Only Barbados in LAC26 has a higher density of mental health beds than the OECD average, with more than 190 beds per 100 000 population. Bolivia, Guatemala, Haiti, and Venezuela have less than 3 mental health beds per 100 000 population (Figure 5.10).

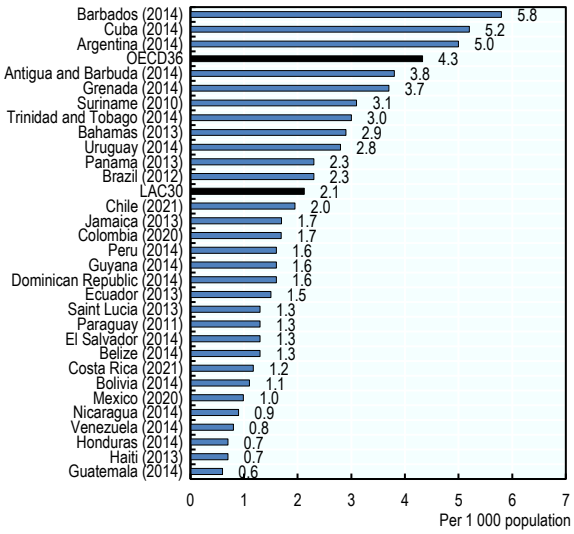
Definition and comparability

All hospital beds include those for acute care and chronic/long-term care, in both the public and private sectors. A discharge is defined as the release of a patient who has stayed at least one night in hospital. It includes deaths in hospital following inpatient care but usually excludes same-day separations. The discharge rates presented are not age-standardised, not considering differences in the age structure of the population across countries. The figures reported for ALOS refer to the number of days patients spend overnight in an acute-care inpatient institution. ALOS is generally measured by dividing the total number of days stayed by all patients in acute-care inpatient institutions during a year by the number of admissions or discharges. There are considerable variations in how countries define acute care, and what they include or exclude in reported statistics. For the most part, discharges and ALOS data in the LAC region cover only public sector institutions.

References

Rojas-García, A. et al. (2017), "Impact and experiences of delayed discharge: A mixed-studies systematic review", *Health Expectations*, Vol. 21/1, pp. 41-56, https://doi.org/10.1111/hex.12619. [1]

Figure 5.7. Hospital beds per 1 000 population, latest year available



Source: OECD Health Statistics 2022; World Bank World Development Indicators 2022.

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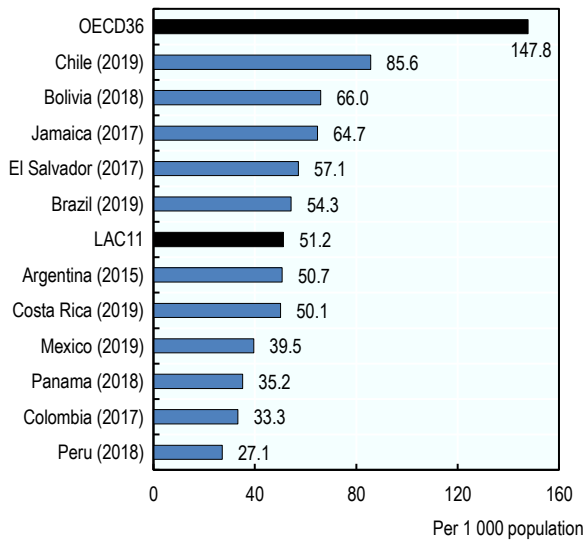
Figure 5.8. Hospital discharges per 1 000 population, latest year available



Source: OECD Health Statistics 2022; National sources.

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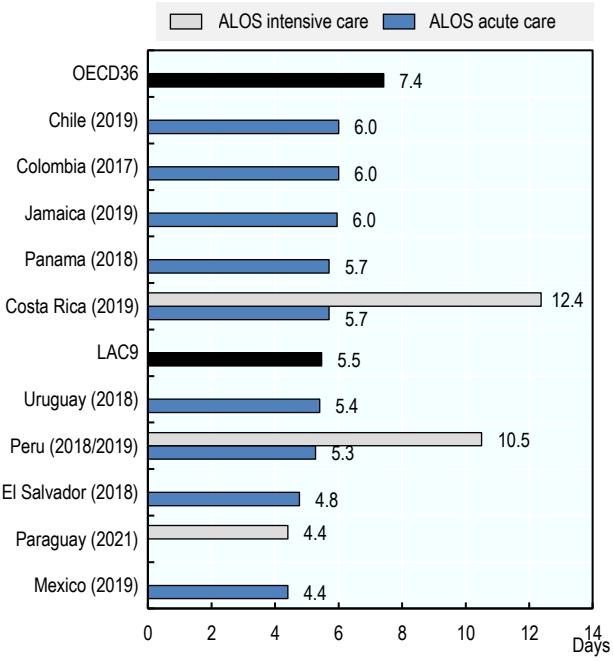
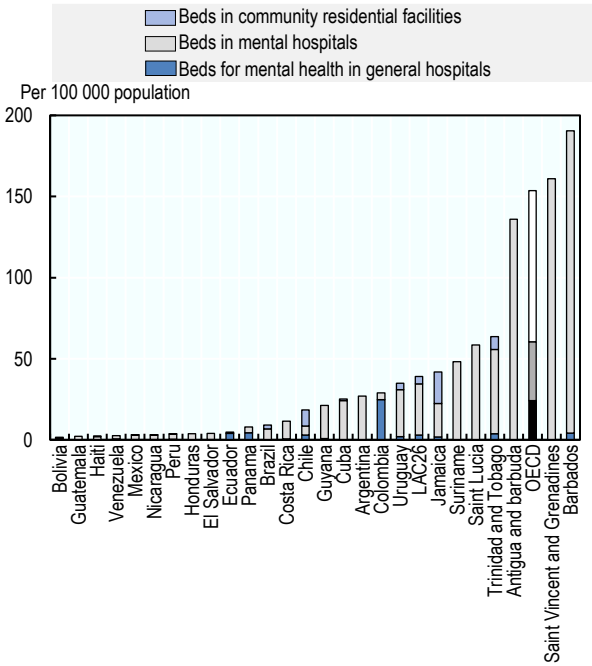
Figure 5.9. Average length of stay for acute care in hospitals, latest year available



1. Most countries only reporting data from public health facilities. Chile reports data for all hospitalisations.
2. Averages for OECD and LAC are for ALOS for acute care.
Source: OECD Health Statistics 2022; OECD questionnaire from countries.

StatLink https://stat.link/geftpd

Figure 5.10. Mental health beds, per 100 000 population, 2016 or last available year



Source: WHO Mental Health Atlas 2020.

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Pregnancy and birth

The health of both mothers and their babies benefit from antenatal care delivered by skilled health professionals and access to health facilities for delivery, as they reduce the risk of birth complications and infections (see indicators "Family planning" and "Infant and young child feeding" in Chapter 4) (Measure Evaluation, 2019[1]). The Sustainable Development Goal 3.7 aims to ensure universal access to sexual and reproductive healthcare services, including for family planning, information and education, and the integration of reproductive health into national strategies and programs by 2030.

In LAC countries, most pregnant women receive the recommended four visits, but access to antenatal care varies across countries and across socio-economic groups. Countries such as Honduras, Paraguay, Mexico, and El Salvador have nearly complete coverage for the population belonging to the highest income quintile (over 97.5% of mothers have four antenatal visits), but inequalities exist: mothers in the lowest income quintile had around 10 and 18 percentage points lower coverage, respectively, compared to mothers in the highest income quintile. At the other end, in Haiti, the average coverage of four antenatal care visits is less than 50% in the lowest income quintile. Furthermore, Haiti has the largest inequality amongst countries with data, with 38 percentage points of difference between mothers in the lowest and the highest income quintile. In contrast, Costa Rica shows a high coverage and the lowest income inequality (Figure 5.11).

Most women in LAC had births assisted by a skilled health professional such as a doctor, nurse, or midwife. However, less than 14% of women from the lowest income quintile in Haiti were assisted by a skilled health professional, with most deliveries assisted by untrained birth attendants. Traditional birth attendants are important in several other countries especially in rural settings. Inequalities between mothers in the lowest and the highest income quintile are the largest in Haiti and Guyana, showing a difference of 68 and 20 percentage points of higher coverage, respectively, in favour of the richest group. The lowest inequality is found in Suriname and the Dominican Republic, with a similar high coverage across all socio-economic groups (Figure 5.12).

Delivery in health facilities varies across countries (Figure 5.13). In LAC13 countries with data, 91.9% of deliveries occurred in established healthcare facilities. In Cuba, Argentina, and Colombia over 99% of deliveries take place at a health facility. In Haiti, most deliveries take place at home (59.5%), while Honduras and Guyana are the only other countries with available data in the region having a rate of deliveries taking place at home above 5%.

Definition and comparability

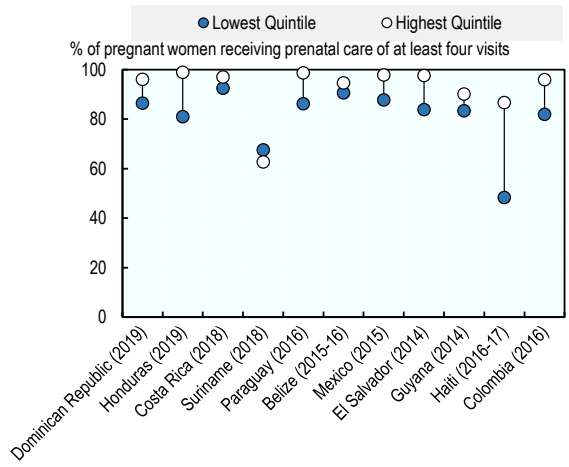
The major source of information on care during pregnancy and birth are health interview surveys. Demographic and Health Surveys (DHS), for example, are nationally representative household surveys that provide data for a wide range of indicators in the areas of population, health, and nutrition. Standard DHS Surveys have large sample sizes (usually between 5 000 and 30 000 households) and typically are conducted every five years, to allow comparisons over time. Women who had a live birth in the five years preceding the survey are asked questions about the birth, including how many antenatal care visits they had, who provided assistance during delivery, and where the delivery took place.

The income inequality data on antenatal care and skilled birth attendance was obtained from the Health Equity and Financial Protection Indicators (HEFPI) dataset compiled and maintained by the World Bank.

References

Measure Evaluation (2019), *Indicator Compedium - Antenatal Care Coverage*, https://www.measureevaluation.org/rbf/indicator-collections/service-use-and-coverage-indicators/antenatal-care-coverage. [1]

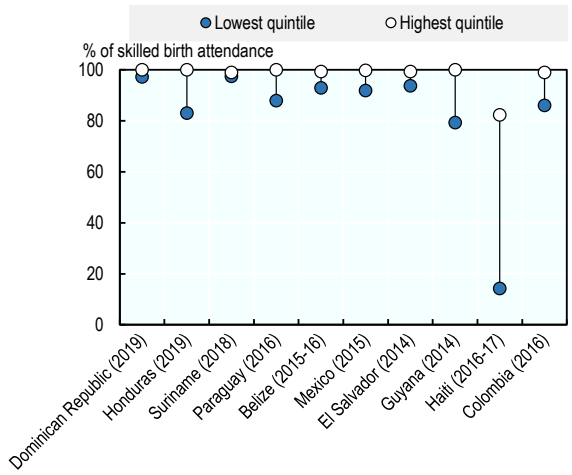
Figure 5.11. Provision of care during pregnancy and birth, first and fifth income quintile, latest year available



Source: DHS and MICS surveys.

StatLink https://stat.link/n2tkep

Figure 5.12. Births assisted by skilled health professionals, first and fifth income quintile, latest year available



Source: DHS and MICS surveys.

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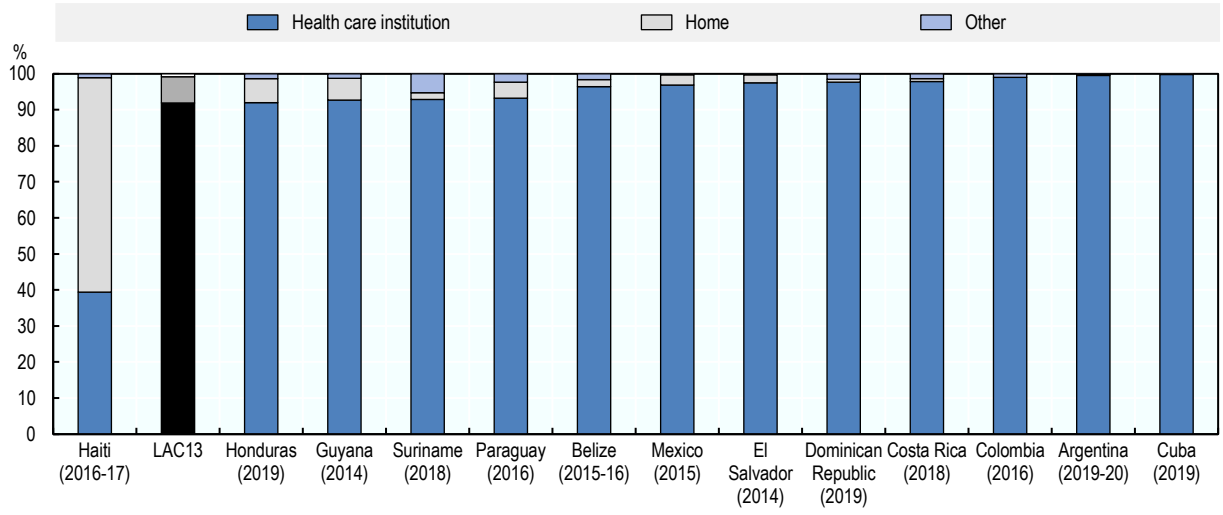
Figure 5.13. Place of delivery, latest year available



Note: Values for "other" category are the difference between a 100% and the deliveries taking place at healthcare institutions or at home.
Source: DHS and MICS surveys.

StatLink https://stat.link/4ywi5z

Infant and child healthcare

In the LAC region, around one-third of the deaths in the first year of life occur during the neonatal period (i.e. during the first four weeks of life or days 0-27) and childhood diarrhoea and pneumonia are the leading infectious causes of childhood morbidity and mortality (PAHO, 2017[1]). Effective health systems can greatly limit the number of infant deaths, particularly by addressing life-threatening issues during the neonatal and childhood period. Basic care for infants and children includes promoting and supporting early and exclusive breastfeeding (see indicator "Infant and young child feeding" in Chapter 4), identifying conditions requiring additional care and counselling on when to take an infant and young child to a health facility (Tomczyk et al., 2019[2]). Several cost-effective preventive and curative treatments exist, including zinc and vitamin A supplementations, vaccination, oral rehydration therapy (ORT) for diarrhoea, and appropriate antibiotic treatment for acute respiratory infection (ARI). Access to these services leads to better infant and child health.

Appropriate treatment could also prevent deaths from diarrhoea and pneumonia. One of the effective treatments for childhood diarrhoea is zinc supplementation. According to data from 13 LAC countries, access to zinc supplementation for children aged under 5 years is markedly low in Peru, Guyana, Guatemala, and the Dominican Republic at 1% or less, while El Salvador and Honduras have coverage rates above 30%. The LAC13 average stands at 11% (Figure 5.14).

In addition, dehydration caused by severe diarrhoea can be easily treated with ORT. In average, less than half of children aged under 5 years with diarrhoea receive ORT in 22 LAC countries with data, with Argentina, Bolivia, Cuba, Guyana, Haiti, Paraguay, Peru and Venezuela having 40% or less. The coverage is the highest in Nicaragua, at 95%. Income inequalities are high in Honduras where 59% of children in the highest income quintile receive ORT when they need it, while only 43% of children in the lowest income quintile do (Figure 5.15). Notably, children in the lowest income group receive a higher coverage than in the highest income group in Bolivia and the Dominican Republic, which suggests that the health system can target the most vulnerable population.

Access to appropriate medical care for children with ARI can also be improved in many countries in the region. Although on average more than three-quarters of children with symptoms are taken to a health facility, less than half of them receive antibiotic treatment (Figure 5.16). It is important to stress the relevance of rational antibiotic use, both due to the health implications of antimicrobial resistance development and as a source of waste in health systems (OECD/The World Bank, 2020[3]).

There is a correlation between treatment coverage for diarrhoea and ARI. Antibiotic treatment for ARI is particularly low in Haiti and Guyana, where the treatment for diarrhoea is also low. This suggests an urgent need to further expand access to care to treat leading causes of child mortality in these countries.

Definition and comparability

Prevention and treatment coverage data are usually collected through household surveys. Accuracy of survey reporting varies and is likely to be subject to recall bias. Seasonal effects related to the prevalence of diarrheal disease and ARI may also affect cross-national data comparisons. The prevalence of ARI is estimated by asking mothers whether their children under five had been ill with a cough accompanied by short, rapid breathing in the two weeks preceding a survey, as these symptoms are compatible with ARI.

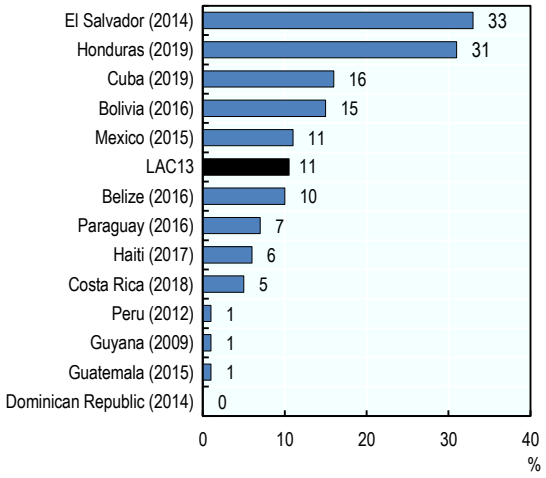
References

OECD/The World Bank (2020), *Health at a Glance: Latin America and the Caribbean 2020*, OECD Publishing, Paris, https://doi.org/10.1787/6089164f-en. [3]

PAHO (2017), *Health in the Americas+, 2017 Edition. Summary: Regional Outlook and Country Profiles*, Pan American Health Organization, Washington, D.C., https://www.paho.org/salud-en-las-americas-2017/wp-content/uploads/2017/09/Print-Version-English.pdf. [1]

Tomczyk, S. et al. (2019), "Factors associated with fatal cases of acute respiratory infection (ARI) among hospitalized patients in Guatemala", *BMC Public Health*, Vol. 19/1, https://doi.org/10.1186/s12889-019-6824-z. [2]

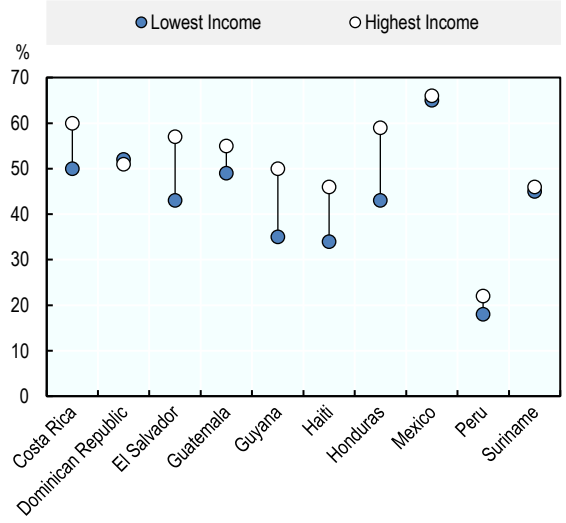
Figure 5.14. Children aged under 5 years with diarrhoea who received zinc supplements (%), latest year available



Source: DHS and MICS surveys.

StatLink https://stat.link/uwdotq

Figure 5.15. Children aged under 5 years with diarrhoea receiving ORT (%), latest year available



Source: MICS surveys; National sources.

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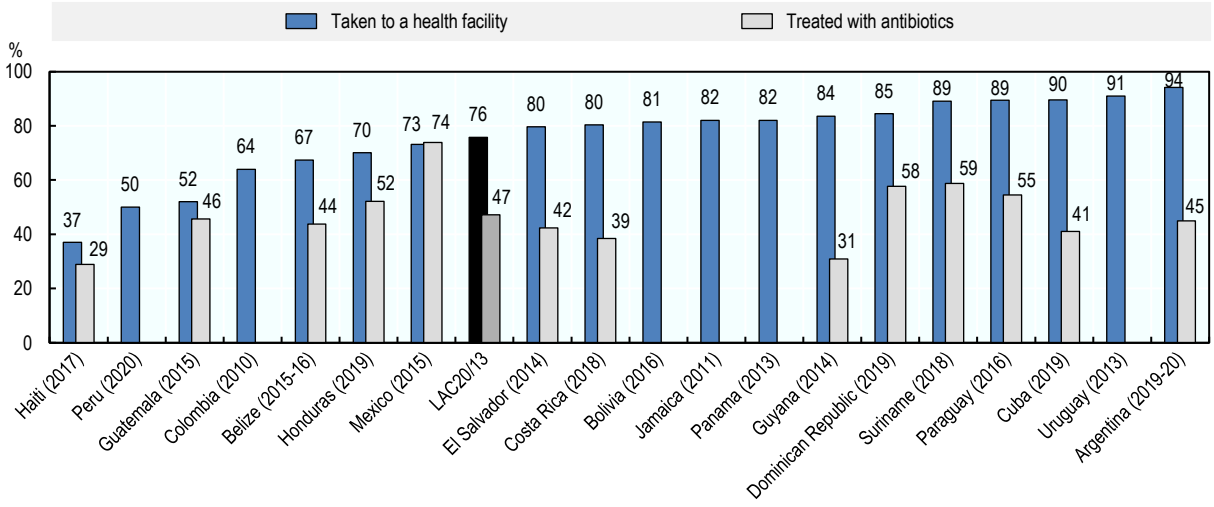
Figure 5.16. Children aged under 5 years treated in a healthcare facility and who received antibiotics, latest year available



Source: MICS and DHS surveys, UNICEF data aggregates.

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6 Health expenditure and financing

Health expenditure per capita and in relation to GDP

The level and trend of health spending in a country can be explained by demographic, social, and economic factors, but also by the financing and organisational arrangements of the health system.

The average OECD current health spending per capita in 2019 was around four times that of LAC countries (USD PPP 3 999 versus 1 155). A wide variation in per capita healthcare spending levels can be observed in LAC (Figure 6.1), ranging from Haiti's health spending per capita of only 143 international dollars (current USD PPP) to Cuba's 2 548 international dollars (current USD PPP). On average, 60% of health spending in LAC countries comes from government and compulsory insurance schemes, while the remaining 40% is covered by out-of-pocket payments, voluntary payment schemes, and external resources. In contrast, government and compulsory insurance schemes in OECD countries are responsible for 77% of health spending.

On average, between 2010 and 2019, the growth rate in per capita health spending was 4.9% per year in LAC, higher than the 3.1% observed for the gross domestic product (GDP) (Figure 6.2). The growth in health spending was more rapid in Bolivia, Panama and Guyana – more than twice the average rate for the region. Venezuela reported decreasing rates in current health spending between 2010-19.

Overall health spending growth and economic performance can explain how much countries spend on healthcare over time. Current health expenditure accounted for 6.9% of GDP in the LAC region in 2019, an increase of around 0.5 percentage points from 2010. The OECD countries averaged a current health expenditure of 8.5% of the GDP in 2019. This indicator varied from 4.3% in Saint Lucia to up to 11.1% in Cuba and 9.7% in Suriname (Figure 6.3). Generally, the richer a country is, the more it spends proportionally on health. Between 2010 and 2019, the share of health in relation to GDP declined by 1.5 percentage points in Venezuela, whereas it increased by 4.7 percentage points in Suriname and 2.6 in Chile.

As a proportion of GDP, Panama and Bolivia were the highest spenders on capital investment in 2019, with more than 0.8% of their GDP going on construction, equipment, and technology in the health and social sector (Figure 6.4). However, capital spending can be significantly lower: in Cuba, Bahamas, Honduras and Antigua and Barbuda accounted for less than 0.1% in 2019. On average, capital investments represent 0.3% of GDP across LAC, compared to 0.4% in OECD countries in 2019.

Definition and comparability

Health expenditure is given by the sum of expenditure on total healthcare services, medical goods dispensed to outpatient, public health services, health administration, and health insurance, by nationals in the country or abroad. Imports for final use are included, and exports for final use are excluded.

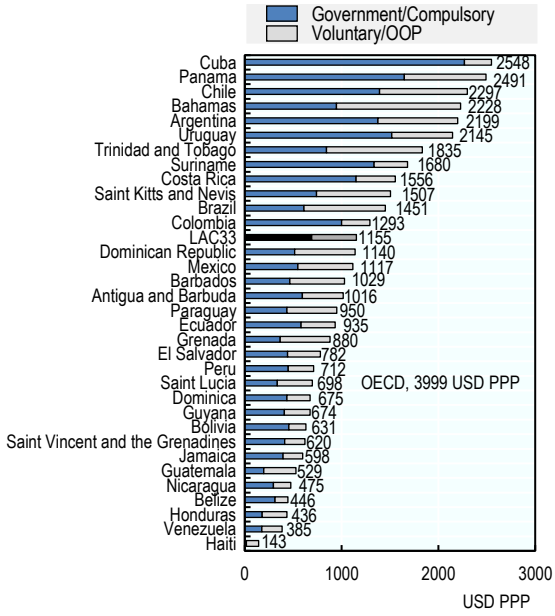
Healthcare financing can be analysed from the point of view of financing schemes, financing agents, and types of revenues. Health financing schemes are defined in the System of Health Accounts (OECD/Eurostat/WHO, 2017[1]) and include government schemes, compulsory health insurance, voluntary health insurance, and private funds such as households' out-of-pocket payments, NGOs, and private corporations. Out-of-pocket payments are expenditures borne directly by patients and include cost-sharing arrangements and any informal payments to healthcare providers. The economy-wide (GDP) PPPs are used as the most available conversion rates.

Gross fixed capital formation in the health sector is measured by the total value of the fixed assets that health providers have acquired during the accounting period (minus the value of the disposals of assets) and that are used repeatedly or continuously for more than one year in the production of health services. Gross fixed capital formation is reported by many countries under the System of Health Accounts.

References

OECD/Eurostat/WHO (2017), *A System of Health Accounts 2011: Revised edition*, OECD Publishing, Paris, https://doi.org/10.1787/9789264270985-en. [1]

Figure 6.1. Total health expenditure per capita (USD PPP), 2019



Source: WHO Global Health Expenditure Database 2020; OECD Health Statistics 2019 for Brazil, Chile, Colombia, Costa Rica and Mexico.

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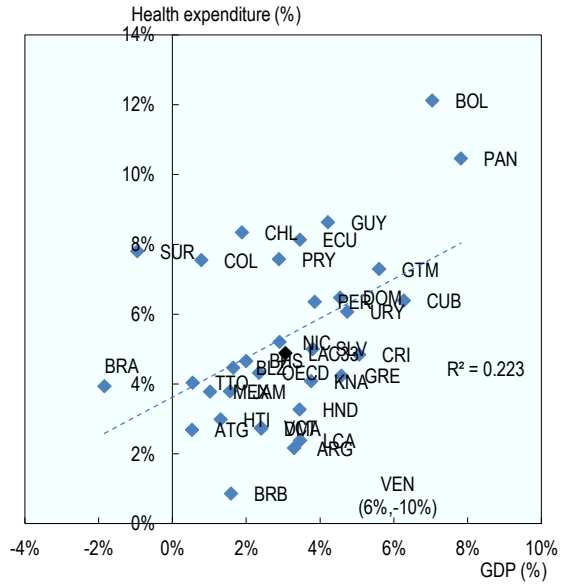
Figure 6.2. Average annual growth rate in current health spending and GDP per capita, 2010-19



Note: Average growth rate in USD for countries with GHED data, and current prices in PPP for countries OECD.stat data.
Source: CHE from OECD Health Statistics 2022 for OECD members, average and Brazil, rest from WHO GHED 2022. GDP per capita data from the World Bank.

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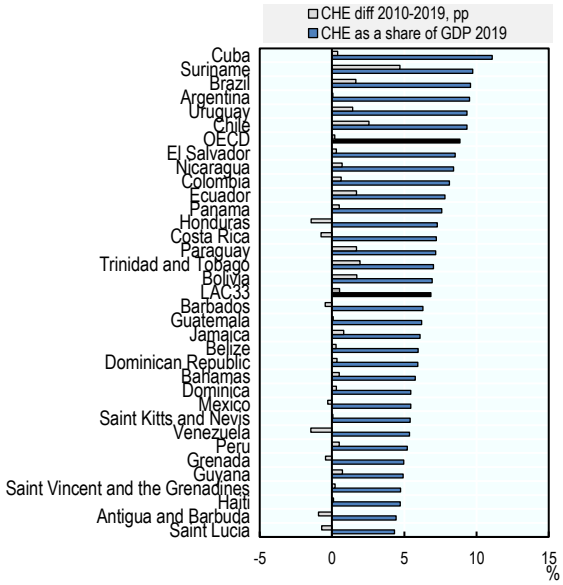
Figure 6.3. Change in total expenditure on health as a share of GDP, 2010-19



Source: WHO GHED 2022; OECD Health Statistics 2022.

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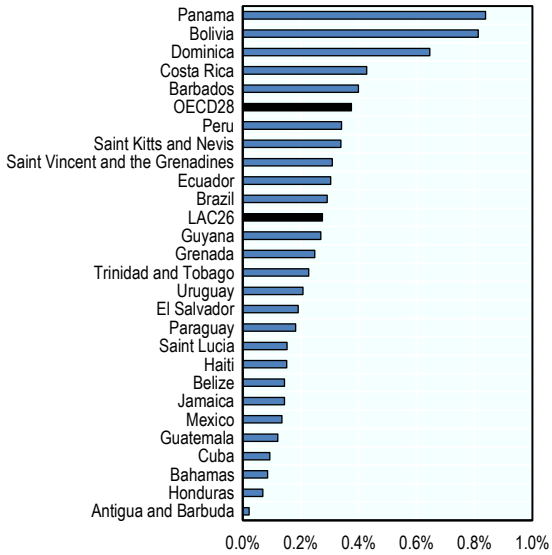
Figure 6.4. Health Capital Expenditure (HK) percentage Gross Domestic Product (GDP), 2019



Source: Sources: WHO GHED 2022; OECD Health Statistics 2022.

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Financing of healthcare from government and compulsory health insurance schemes

Health system financing arrangements can be broadly classified according to their compulsory or voluntary nature. Countries that predominantly finance healthcare through government schemes provide care coverage to individuals based on their residency. In other cases, systems that are financed with compulsory health insurance schemes (either through public or private entities) linked to the payment of social contributions or health insurance premiums, provide care coverage based on affiliation. In addition to these, a varying proportion of healthcare spending consists of households' out-of-pocket payments – either as standalone payments or as part of co-payment arrangements – as well as various forms of voluntary payment schemes such as voluntary health insurance. In the LAC region, substantial fragmentation in health systems often leads to coexisting financing schemes and in some cases, overlap. There is substantial heterogeneity in financing arrangements in LAC, where most standard models of public financing exist in the region (Lorenzoni et al., 2019[1]).

Figure 6.5 reports the expenditure financed by general government health expenditure (which includes government expenditure and funds linked to compulsory health insurance) as a share of GDP in 2019 and its trend in the 2010-19 period. The countries with the highest share are Cuba (9.9%), Suriname (7.7%), Colombia (6.3%), and Uruguay (6.1%). The countries with the lowest share are Grenada and Haiti, with 2.1 and 0.6%, well below the LAC average of 4%. On average, between 2010 and 2019 the LAC region increased its share of public expenditure as a percentage of GDP by 0.57 percentage points. Suriname reported an increase of 5.5 percentage points in the period, whereas nine countries saw a decrease: Honduras (-1.1), Barbados (-0.85), Antigua and Barbuda (-0.54), Costa Rica (-0.53), Haiti (-0.26), Mexico (-0.2), El Salvador (-0.15), Venezuela (-0.12) and Grenada (-0.05).

In the majority of LAC countries, general government health expenditure constituted the main source of funding in 2019 (regional average of 57%) (Figure 6.6). Cuba has the largest share with 89%, followed by Suriname with 80% and Colombia with 77%, the only three countries over 75%. On the other side, the lowest share was observed in Haiti (12.2%) and Guatemala (37.1%). On average, general government health expenditure as a share of current health expenditure grew by 4 percentage points in the LAC region between 2010 and 2019. This increase is influenced by Suriname, an outlier with an increase of 35 percentage points. Behind Suriname, the second largest increase was observed in Ecuador (16 percentage points), while reductions happened in 11 countries, led by Barbados (-9) and Honduras (-6).

Several factors including, among others, the type of system in place, the fiscal space, and the policy and political priority of the health sector determines the size of public funds allocated to health. Relative budget priorities may also shift from year to year as a result of political decision-making and economic effects. In 2019, general government health expenditure as a share of total government expenditure stood at 14% in LAC, while it was 15% in OECD countries (Figure 6.7). In Costa Rica, Panama, and Uruguay more than 20% of public spending was dedicated to healthcare. On the other hand, six Caribbean countries allocated less than 10% of government expenditure to health (Saint Vincent and the Grenadines, Grenada, Saint Lucia, Dominica, Saint Kitts and Nevis, and Haiti). In the 2010-19 period, public health expenditure as a share of government expenditure increased the most in Suriname (6.3 percentage points), while it decreased the most in Costa Rica (-7.6 percentage points). At the same time, Costa Rica is the country with the highest share of government expenditure allocated to health in the region in 2019 (24.1%).

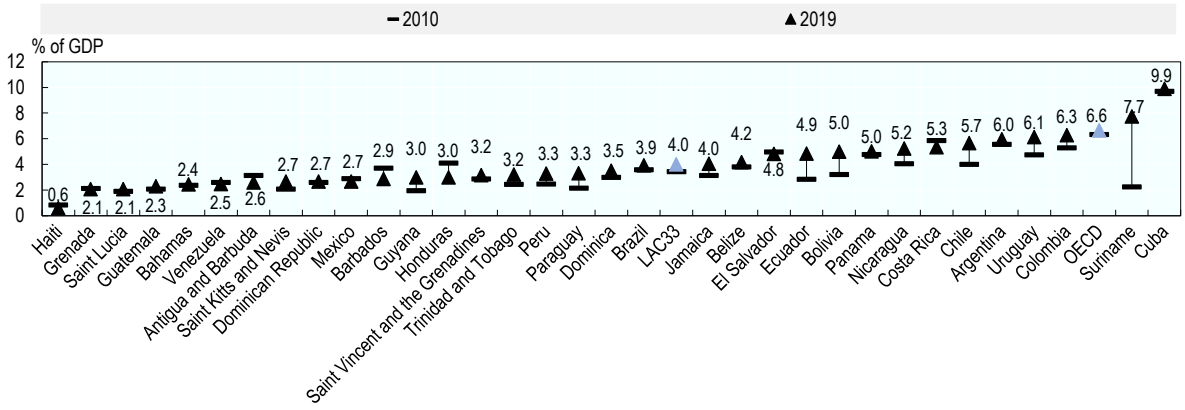
Definition and comparability

The financing classification used in the System of Health Accounts provides a complete breakdown of health expenditure into public and private units incurring expenditure on health. General government health expenditure includes government expenditure and social security funds. Relating spending from government and compulsory insurance schemes to total government expenditure can lead to an overestimation in countries where private insurers provide compulsory insurance.

References

Lorenzoni, L. et al. (2019), "Health systems characteristics: A survey of 21 Latin American and Caribbean countries", *OECD Health Working Papers*, No. 111, OECD Publishing, Paris, https://doi.org/10.1787/0e8da4bd-en. [1]

Figure 6.5. Change in health expenditure by government scheme and compulsory insurance scheme as a share of GDP, 2010-19



Source: WHO Global Health Expenditure Database 2022, OECD Health Statistics 2022 for OECD countries, OECD average, Argentina and Brazil.

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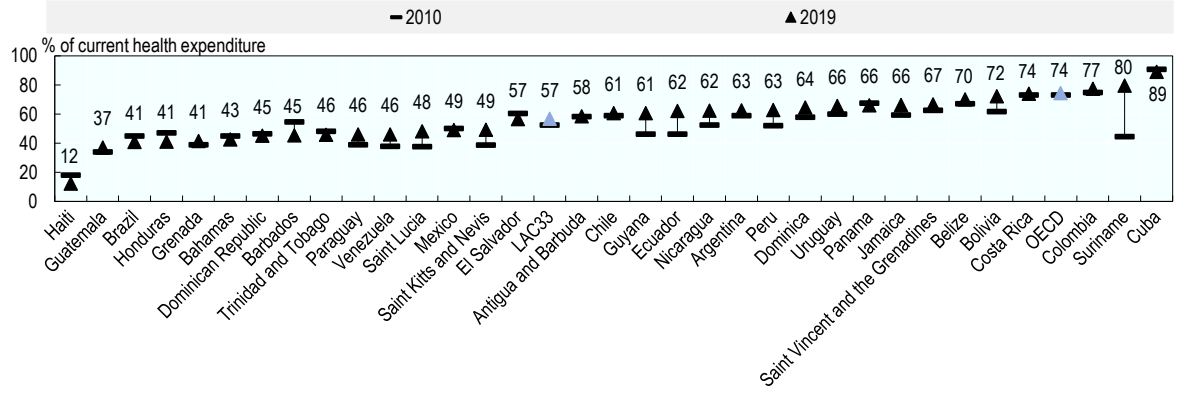
Figure 6.6. Change in government share of current expenditure on health, 2010-19



Source: WHO Global Health Expenditure Database 2022; OECD Health Statistics 2022.

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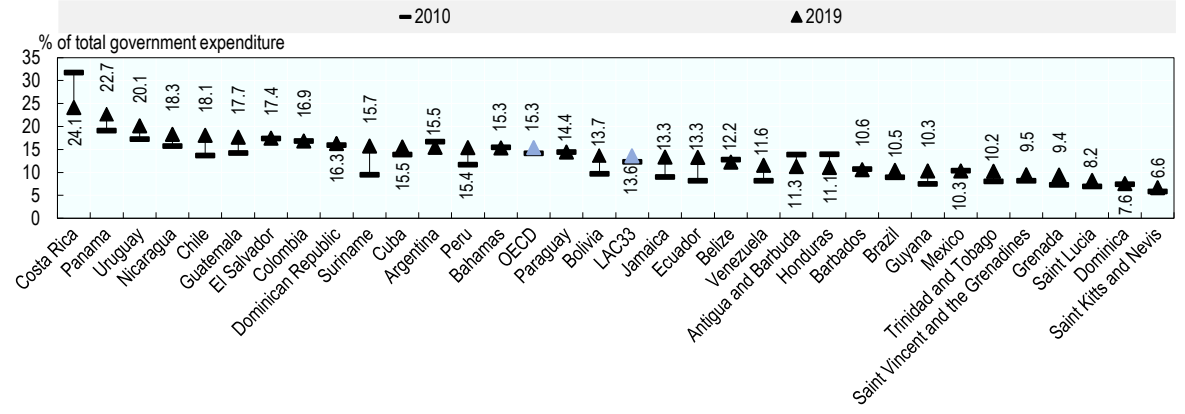
Figure 6.7. Change in government health expenditure as a share of total government expenditure, 2010-19



Source: WHO Global Health Expenditure Database 2022.

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Financing of healthcare from households' out-of-pocket payments, voluntary payment schemes and external resources

Private health expenditure refers to the health spending from non-public agents, and it is often divided between out-of-pocket expenditure (OOP), voluntary payment schemes and external sources. OOP expenditure refers to direct payments for healthcare, while voluntary payment schemes refer to payment of private insurance premiums, which grant coverage for services from private providers. External resources are the funds for health received from different donors or similar sources.

On average in 2019, 32.4% of health spending was paid out-of-pocket in the LAC region, well above the OECD average of 20% (Figure 6.8). The highest presence of OOP is observed in Guatemala (56%), Grenada (54%), and Honduras (52%). These are the only three countries in the region with more than 50% of total health spending coming from OOP. On the other end, Cuba (11%), Colombia (14%), and Uruguay (16%) present the lowest share of OOP spending.

Between 2010 and 2019, the share of OOP as a percentage of total health spending increase the most in Haiti (10 percentage points), Barbados (9 percentage points) and Honduras (6 percentage points) and five more countries also experience increases in a smaller scale (Figure 6.8). On the other hand, 27 countries experienced decreases in the share of OOP. The decrease was greatest in Venezuela (-20) and Ecuador (-17). OOP expenditure above 20% of current health expenditure is considered problematic, as it indicates high vulnerability to catastrophic health expenditure in the event of an emergency. The extent to which people in LAC risk falling into poverty due to catastrophic health expenditures is further examined in the next section, "Financial Protection".

Figure 6.9 shows that in 2019, health expenditure by voluntary payment schemes represented – on average – 11% of current expenditure on health in LAC, above the OECD average of 6.0%. This share increased in most countries from 2010-19, particularly in Venezuela where it increased by 12 percentage points. On the other hand, in Uruguay, Guyana and Surinam it decreased by more than 7 percentage points. Less than 1% of current health expenditure was from voluntary payment schemes in Cuba and only 1.6% in Dominica, while it was the highest in Haiti (45%), Venezuela (36%), Bahamas (31%) and Brazil (31%) the only three countries above 30%. Private health insurance is an important source of secondary coverage in most countries, either supplementing coverage of goods and services not included in the basic benefit package, complementing coverage by covering costs, or duplicating coverage for those patients looking for private care.

The share of health expenditure coming from external sources in 2019 is under 1% in 23 out of 32 countries with available data. This particular source is only important for financing health in Haiti (41%) (Figure 6.10).

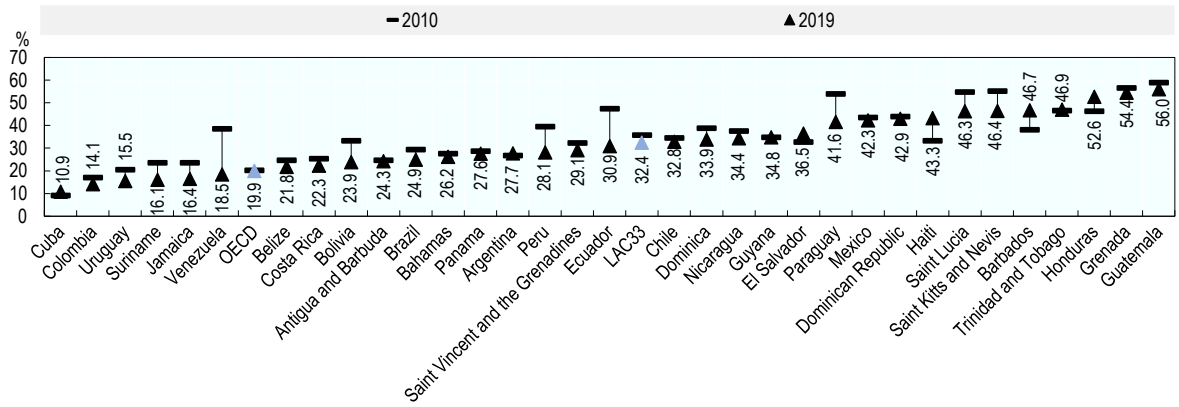
Definition and comparability

The financing classification used in the System of Health Accounts provides a complete breakdown of health expenditure into public and private units incurring expenditure on health. Private sector comprises pre-paid and risk pooling plans, household out-of-pocket expenditure and non-profit institutions serving households and corporations. Out-of-pocket payments are expenditures borne directly by the patient. They include cost-sharing and, in certain countries, estimations of informal payments to healthcare providers.

Voluntary healthcare payment schemes include voluntary health insurance, Non-profit institutions serving households (NPISH), and enterprise financing schemes. Data on voluntary insurance coverage was taken from the responses provided by countries to the 2018 Health System Characteristics Survey in Latin America and the Caribbean.

External funding for health is measured as Official Development Assistance disbursements for health from all donors. Disbursements represent the actual international transfer of financial resources. Disbursements for health are identified by using the classification of the sector of destination codes 121 (health, general except 12181, medical education/training and 12182, medical research), 122 (basic health), and 130 (population policies/programmes and reproductive health except for 13010 Population policy and administrative management), and 510 (general budget support) (www.oecd.org/dac/stats/aidtohealth.htm). General budget support for health is estimated by applying the share of government expenditure on health over total general government expenditures to the value reported in ODA. Given that disbursement money is spent over several years by countries, funds disbursed at year t are compared to total health expenditure in year t+1.

Figure 6.8. Change in out-of-pocket spending as a share of current expenditure on health, 2010-19



Source: WHO Global Health Expenditure Database 2022; OECD Health Statistics (2022) for OECD countries, Argentina, and Brazil.

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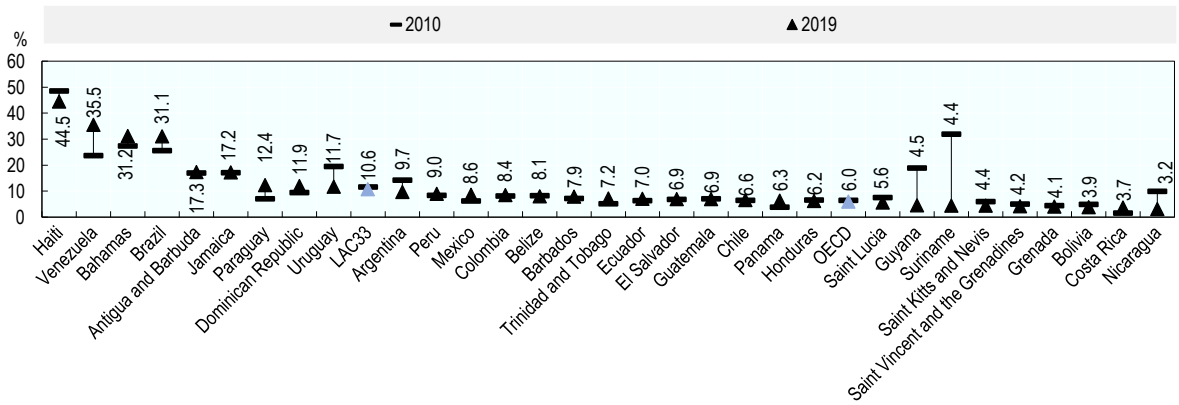
Figure 6.9. Change in health expenditure by voluntary healthcare payment schemes as a share of health expenditure, 2010-19



Source: WHO Global Health Expenditure Database 2022; OECD Health Statistics (2022) for OECD countries, Argentina and Brazil.

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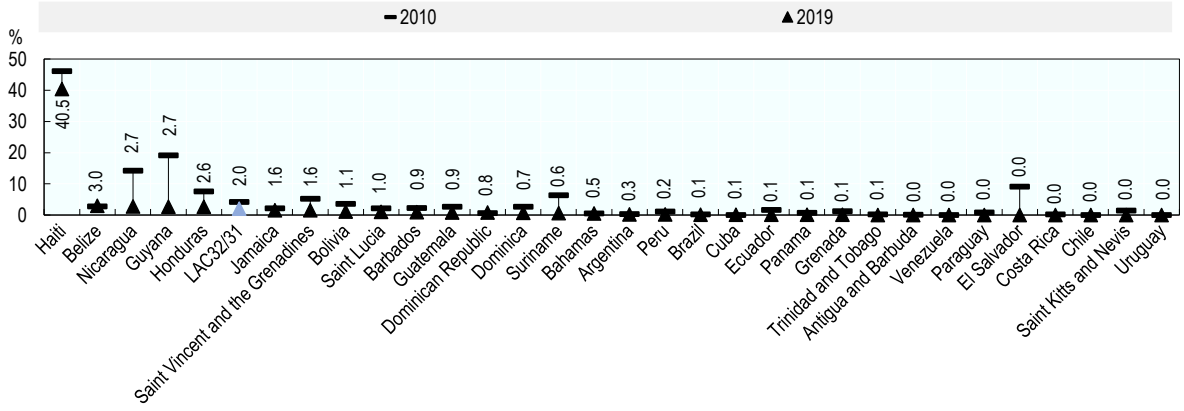
Figure 6.10. External resources as a share of current health expenditure, 2010-19



Source: WHO Global Health Expenditure Database 2022.

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Financial protection

As reported in the previous section on private and external expenditure, high levels of out-of-pocket (OOP) spending in the region present a challenge not only for governments looking to improve access but also to individuals, household, and communities. High OOP means that the population is directly financing a substantial part of care when they need it, which in turn can push them into poverty or financial hardship. The global incidence of catastrophic spending at 10% or more of OOP relative to household income or consumption has been estimated at 9.7% in 2000, 11.4% in 2005, and 11.7% in 2010. This means that globally 808 million people in 2010 incurred catastrophic health spending (Flores et al., 2018[1]).

Figure 6.11 shows the proportion of the population that is pushed into poverty because of OOP health spending. On average, 1.7% of the LAC population is poor because of OOP health spending. This number is under 2% of the population in 11 countries, and 0% in El Salvador and Mexico. On the other hand, Argentina (3%), Haiti (4%), and Nicaragua (5%) have the highest proportion of people going into poverty because of health spending.

As high OOP expenditure on health can take people into financial ruin, Figure 6.12 shows the proportion of households that have been pushed further below the poverty line. In 22 LAC countries, 12.7% of the population on average was pushed further below the poverty line by OOP healthcare expenditure. This proportion is highest in Nicaragua (21%), Brazil (20%), and Paraguay (18%), indicating low effectiveness in health financial protection policies. Trinidad and Tobago (2%) and El Salvador (3%), on the other hand, have the lowest proportion of the population going further into poverty because of OOP health spending.

To ensure adequate access and coverage for all groups, governments must implement efforts to protect households against excessive OOP expenditures that can drive people into poverty (WHO, 2018[2]). Wasteful spending in LAC health systems is taking resources that could be spent on more and better healthcare. System fragmentation is not only a relevant source of waste but also creates barriers to expanding access and financial protection. Fragmentation of funding schemes limits the pooling of funds and, the existence of more effective insurance mechanisms and limits the health system's solidarity. Because poorer people have the largest potential for health gains (Moreno-Serra and Smith, 2012[3]), low financial protection severely affects healthcare system performance.

Definition and comparability

Data on financial protection indicators was taken from the Global database on financial protection assembled by WHO and the World Bank, updated in 2021. The dataset has grown over time from the first dataset published in 2000 which pulled data from 42 surveys and one type of survey, covered just 42 countries, and included just 34 indicators, which all concerned maternal and child health. In 2013, for the first time, the database included household out-of-pocket health expenditures, noncommunicable disease indicators (NCD), and data from high-income countries. The 2018 database follows this trend by employing over 1 600 surveys, covering 183 countries, and encompassing multiple years of data, richer NCD data, and more extensive data on household out-of-pocket expenditures.

The poverty line is defined here as the higher of the USD 1.90 (USD 2011 PPP) poverty line and a 60% of median consumption poverty line (%). The latter definition for poverty accounts for the high heterogeneity in LAC countries income and prices.

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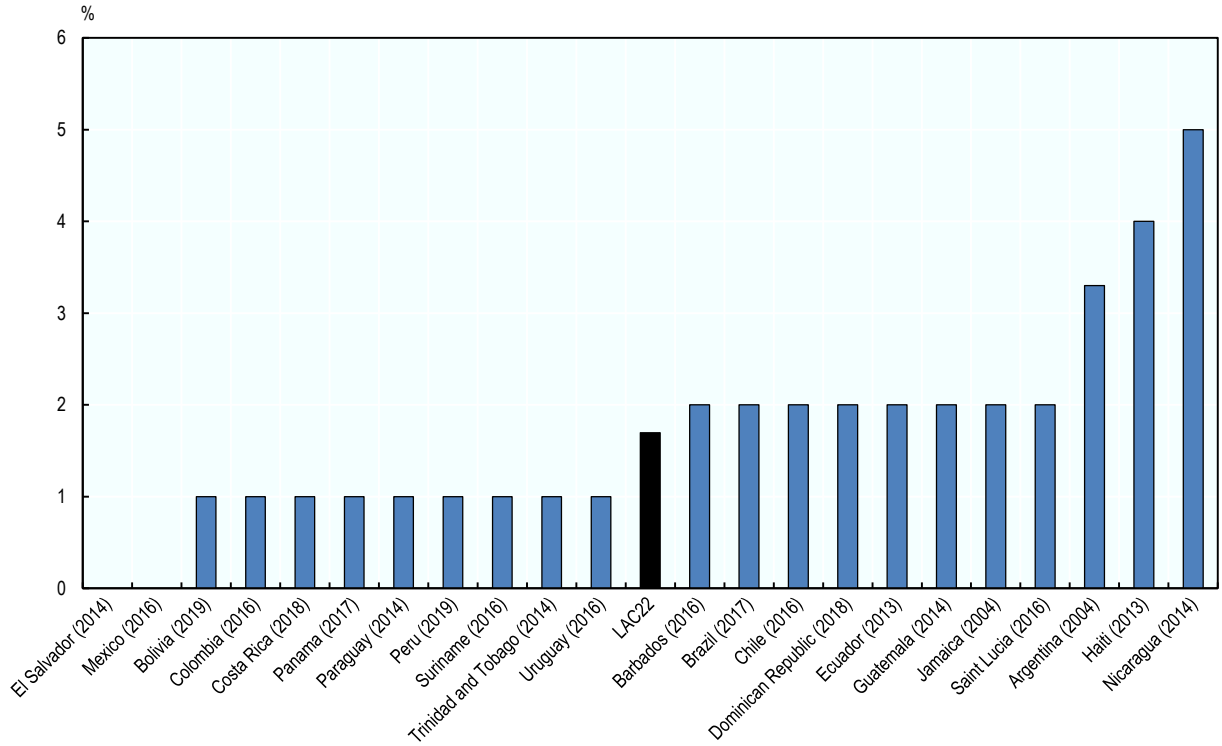
Flores, G. et al. (2018), "Progress on catastrophic health spending in 133 countries: a retrospective observational study", *Articles Lancet Glob Health*, Vol. 6, pp. 169-79, https://doi.org/10.1016/S2214-109X(17)30429-1. [1]

Moreno-Serra, R. and P. Smith (2012), *Does progress towards universal health coverage improve population health?*, Lancet Publishing Group, https://doi.org/10.1016/S0140-6736(12)61039-3. [3]

WHO (2018), *Health financing*, World Health Organization, https://www.who.int/health-topics/health-financing. [2]

Figure 6.11. Proportion of population pushed into poverty by out-of-pocket spending in healthcare



Source: World Bank Global monitoring report on financial protection in health 2021.

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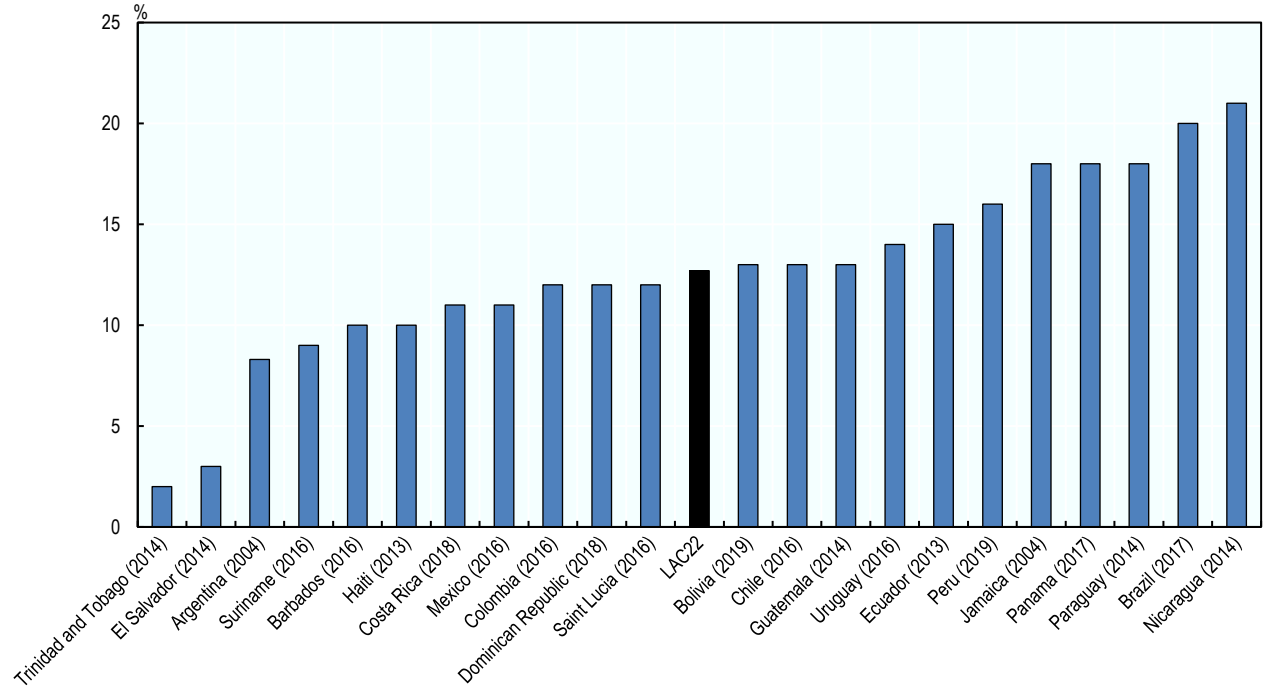
Figure 6.12. Proportion of population pushed further into poverty by out-of-pocket spending in healthcare



Source: World Bank Global monitoring report on financial protection in health 2021.

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7 Quality of care

Childhood vaccination programmes

Childhood vaccination programmes are one of the most effective and cost-effective health policy interventions (Chan et al., 2017[1]). Consequently, childhood vaccination is central to country's disease prevention strategy. Vaccines prevent 2 million and 3 million deaths worldwide each year, and an additional 1.5 million deaths could be avoided if vaccination campaigns reached a global scale.

The WHO recommends vaccination coverage for 90% of children for effective prevention against DTP. Despite generally high overall rates, only 11 out of the 33 LAC countries complied with this recommendation in 2021 (Figure 7.1). Likewise, only 9 out of 33 adhere to the target set by WHO for measles vaccination in 2021 (Figure 7.2). In 2018, 12 countries complied with these targets. High national coverage rates may not be sufficient to stop disease spread, as pockets of low vaccination coverage in specific populations and geographical areas can lead to outbreaks. The regional average is 82% and 83% coverage for DTP and Measles, respectively. Down from the average 90% coverage of 2018. Fifteen countries for DTP and 20 for measles have coverage rates over 75% but below the recommended 90%, which, although high, is insufficient to ensure interruption of disease transmission and protection of the whole population. Three countries, Brazil, Venezuela and Haiti, have coverage below 70% for DTP and five countries (Paraguay, Venezuela, Ecuador, Haiti and Suriname) are below this threshold in measles vaccination coverage.

Hepatitis B vaccination is recommended for all children worldwide and reaching all children with at least three doses of hepatitis B vaccine should be the standard for all national immunisation programmes (WHO, 2014[2]). Figure 7.3 shows the percentage of children aged one who are vaccinated for hepatitis B. The average coverage rate is 81% for 2021, 10 base points lower than the OECD average (91%) and below the recommended 90%. Fourteen countries have below 80% coverage and two countries, Venezuela and Haiti are below 60%.

Frequent barriers to vaccination in LAC countries are related to individual or group influences (e.g. beliefs and attitudes, mistrust in the health system, lack of physician recommendation, dearth of official information against misconceptions) and "contextual influences" (e.g. lower socio-economic and educational status, advanced age, religious and cultural beliefs, fear of adverse events and vaccine misinformation) (Guzman-Holst et al., 2020[3]). Supported by misleading information available to a significant portion of the population, a growing public mistrust in the safety and efficacy of vaccination is an area of concern that should be addressed to strengthen vaccination strategies.

Definition and comparability

Vaccination rates reflect the percentage of children at either age one or two that receive the final dose of the primary immunisation series in the respective vaccination programme in the recommended timeframe. Childhood vaccination policies differ slightly across countries. Thus, these indicators are based on the actual policy in a given country. Some countries administer combination vaccines (e.g. MR for measles and rubella), while others administer the vaccinations separately. Some countries ascertain vaccinations based on surveys and others based on administrative data, which may influence the results.

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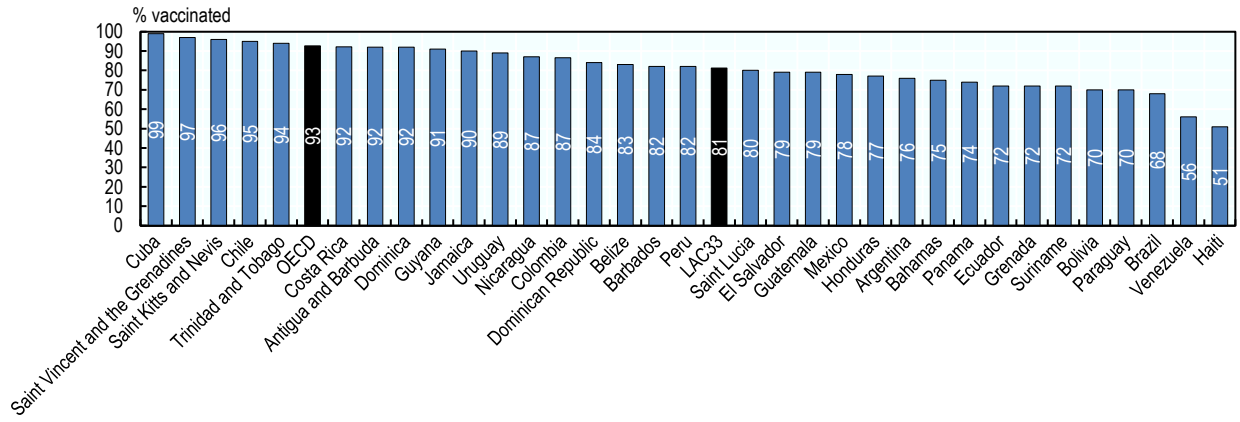
WHO (2014), *Resolution WHA67.6. Hepatitis. In: Sixty-seventh World Health Assembly, Geneva, 19–24 May 2014*, World Health Organization, http://apps.who.int/gb/ebwha/pdf_files/wha67/a67_r6-en.pdf?ua=1. [2]

Figure 7.1. Vaccination rates for diphtheria, tetanus toxoid and pertussis (DTP3) children aged around 1, 2021



Source: WHO GHO 2022; OECD Health Statistics 2022.

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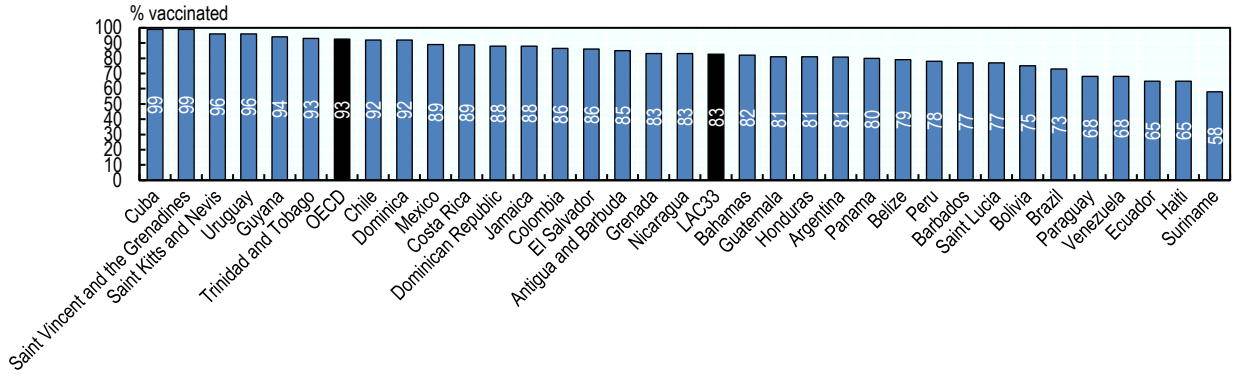
Figure 7.2. Measles-containing-vaccine first-dose (MCV1) immunisation coverage among 1-year-olds (%), 2021



Source: WHO GHO 2022; OECD Health Statistics 2022.

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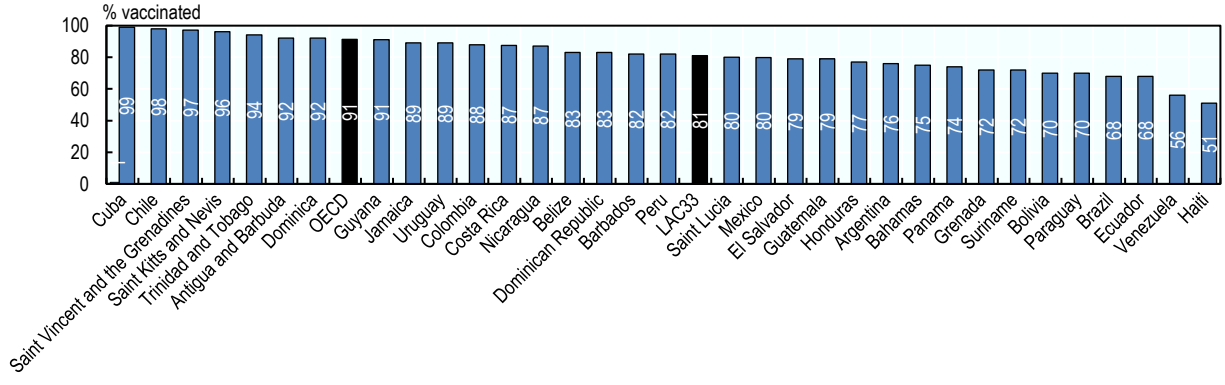
Figure 7.3. Hepatitis B (HepB3) immunisation coverage among 1-year-olds (%), 2021



Source: WHO GHO 2022; OECD Health Statistics 2022.

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In-hospital mortality following acute myocardial infarction and stroke

Ischaemic heart diseases and stroke were two major causes of death in Latin America (see Chapter 3). These diseases carry significant health, economic, social, and non-financial costs associated with both mortality and the persistent disabilities suffered by many survivors. The quality of treatment following acute myocardial infarction (AMI) and stroke has advanced greatly over the past decades, thanks in part to the introduction of new technologies such as cholesterol and blood pressure lowering medications, thrombolysis, and angioplasty (OECD, 2015[1]). The case-fatality rate for both AMI and stroke is a useful measure of acute care quality. It reflects the processes of care, such as effective medical interventions, including early thrombolysis, angioplasty, or treatment with aspirin when appropriate and co-ordinated and timely transport of patients. At the same time, the measure could be also influenced by individual characteristics such as the typical severity of the AMI and stroke cases presented to hospitals.

Compared to the OECD average (6.9%), the age-sex standardised in-hospital case fatality of AMI within 30 days of admission was reported as low in Colombia (5.6%) and is highest in Mexico (27.5%) (Figure 7.4). For ischaemic stroke, the lowest case-fatality rates were reported in Costa Rica (6.7%) and in Brazil (11.7%), below the OECD average of 12.3%. Chile reported the highest rate of 15.2%, while Colombia was also over the OECD average (Figure 7.5).

Fatality rates for haemorrhagic stroke are significantly higher than for ischaemic stroke, but in 2021 countries that achieve better survival for one type do not necessarily do well in the other. Costa Rica leads the region with a rate of 8.1%, lower than the OECD average of 22.2%. Colombia (15.6%) and Chile (16.3%) have lower than OECD average rates. Mexico reported a 29.9% rate in 2017 (Figure 7.6).

Only five countries in the region could provide this type of quality-of-care data. This is less than in the previous edition of *Health at a Glance Latin America and the Caribbean*. Creating accurate and comparable quality-of-care indicators is an essential capacity to improve system performance. Greater efforts should be put in place to develop appropriate health system information infrastructure, along with building the capacities to produce and use the performance information.

While LAC countries have made important efforts in promoting healthier lifestyles to reduce the burden of cardiovascular disease (CVD), greater attention must be given to improving the quality of care provided to CVD patients. For instance, policies ensuring comprehensive primary care in compliance with recommended guidelines and financially accessible to everyone are key. at the same time, a system of accountability and transparency of healthcare can provide an accurate setting for important quality improvements. Such policies need to be supported by national frameworks to improve the quality of acute care for CVD, together with standards for the measurement and continuous quality improvement of emergency services and care provided in hospitals (OECD, 2015[1]).

Definition and comparability

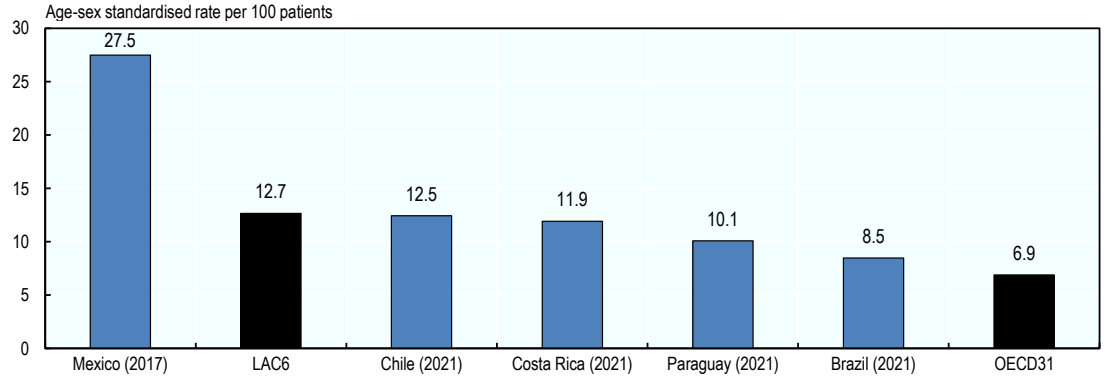
The in-hospital case-fatality rate following AMI, ischemic and haemorrhagic stroke is defined as the number of people who die within 30 days of being admitted to hospital out of 100 patients admitted to hospital with these conditions. This indicator is based on unique hospital admissions and restricted to mortality within the same hospital, differences in practices in discharging and transferring patients may influence the findings. Standardised rates adjust for differences in age (45+ years) and sex and facilitate more meaningful international comparisons.

Data presented here do not take account of patients that are transferred to other hospitals during their care or reflect patients who died out of hospitals within 30 days. Using a unique patient identifier patient data can be linked across hospitals and with death registers to generate more robust indicators for national monitoring and international comparison. Currently, very few countries in Latin America and the Caribbean can track patients in this way and hence this form of indicator is not shown here.

References

OECD (2015), *Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264233010-en. [1]

Figure 7.4. In-hospital case-fatality rates within 30 days after admission for AMI, patients 45 years old and over, 2021 (or nearest year)



Source: OECD Health Statistics 2020 and national data sources.

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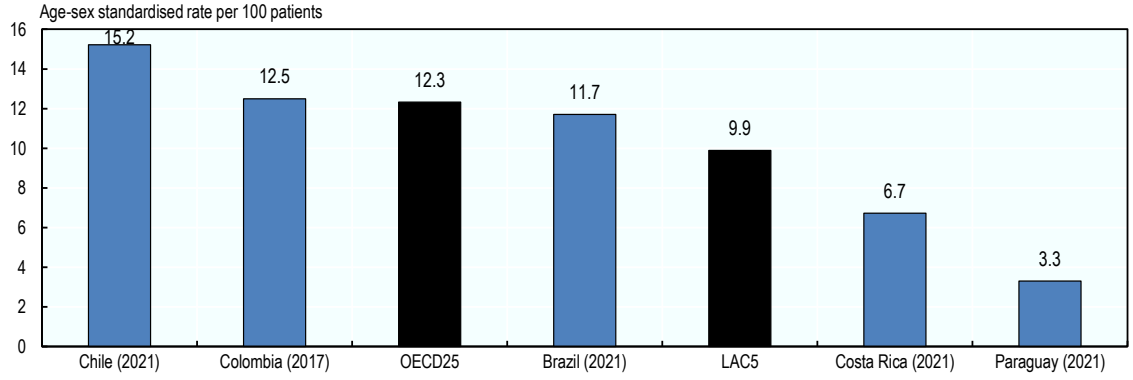
Figure 7.5. In-hospital case-fatality rates within 30 days after admission for ischemic stroke, patients 45 years old and over, 2021 (or nearest year)



Source: OECD Health Statistics 2020 and national data sources.

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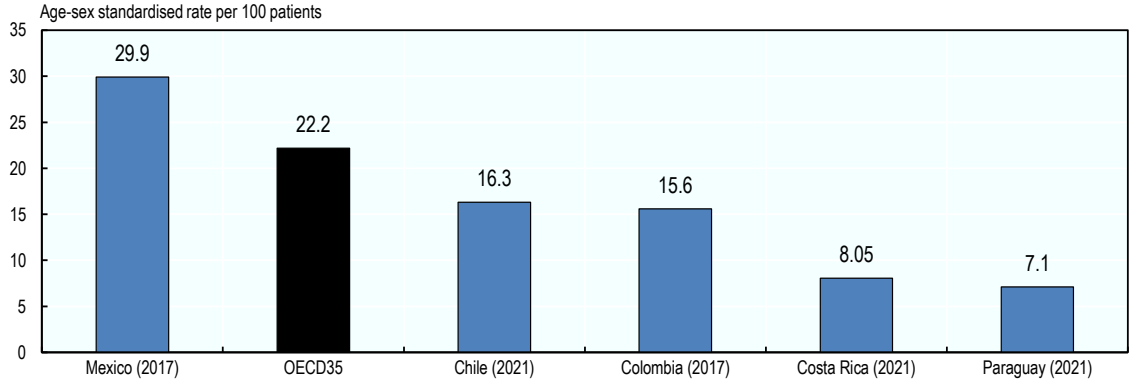
Figure 7.6. In-hospital case-fatality rates within 30 days after admission for haemorrhagic stroke, patients 45 years old and over, 2021 (or nearest year)



Source: OECD Health Statistics 2020 and national data sources.

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Cancer survival

After cardiovascular disease, cancer care is the second cause of death in LAC (see Chapter 3). Bray et al. estimated that cancer was the cause of 670 000 deaths in 2018 in LAC (Bray et al., 2018[1]). While prostate, breast and colorectal cancer are the main cancers in the region, cancer types with low five-year survival rates are a good indicator of the quality of advanced cancer care in a country's health system.

Lung (90 000, 7% of all cancers) and stomach (67 000, 5% of all cancers) cancer were the fourth and fifth most common cancers in the region in 2018 (Jemal et al., 2019[2]). However, Lung cancer's high mortality rate makes it the leading cause of death (81 000, 12% of all cancer deaths), while stomach cancer accounts for 8% of all cancer deaths (52 000 in 2018).

The average five-year survival rate of Lung cancer in OECD countries is 17.1% for patients diagnosed between 2010 and 2014. This rate is just 13.3% in LAC. Cuba has the highest survival rate among LAC countries with available data with 30.1% of lung cancer patients surviving after 5 years. Costa Rica (20.1%) is the only other country in the region with a higher than OECD average survival rate. Chile has the lowest recorded five-year survival rate with only 4.6%, half the LAC average survival rate and 73% lower than the OECD average (Figure 7.7).

For stomach cancer, the LAC average five-year survival rate stands at 23.7% of patients diagnosed between 2010 and 2014. The OECD average (29.6% of patients) is 25% higher. As with Lung cancer, Chile has the lowest five-year survival with only 16.7% of stomach cancer patients surviving after 5 years. Costa Rica (40.6%) and Cuba (35.7%) lead the region and again are the only two countries with five-year survival rates higher than the OECD average (Figure 7.8).

Colorectal cancer causes almost 65 000 deaths per year in LAC (Bray et al., 2018[1]). While the term colorectal includes cancer starting both in the Colon and the Rectum, five-year survival rates are importantly higher for Colon cancers. Costa Rica leads the group of five LAC countries with available data with 93.5% of patients surviving after 5 years. Together with Brazil (88.2%), they are above the OECD average of 85.7%. Ecuador has the lowest survival rate for Colon cancer among those with data, with 67.3% (Figure 7.9).

Melanoma of skin accounts for 18 881 new cancer cases in LAC every year, and about 5 650 deaths (Bray et al., 2018[1]). Figure 7.10 presents the five-year survival rate of patients diagnosed with melanoma of the skin. The LAC six countries with available data are below the OEDC average rate of 83%. Costa Rica has the highest five-year survival in the group with 77.2%, while Ecuador has the lowest with 57.9%.

Definition and comparability

Five-year net survival refers to the cumulative probability of cancer patients surviving five years after diagnosis, after correction for the risk of death from other causes, which varies widely between countries, over time, by age and sex. Net survival is expressed as a percentage in the range 0-100%. The period approach is used to allow estimation of five-year survival where five years of follow-up are not available for all patients. Cancer survival estimates for all ages combined are age-standardised with the International Cancer Survival Standard weights. Data collection, quality control and analysis were performed centrally as part of the CONCORD programme for the global surveillance of cancer survival, led by the London School of Hygiene and Tropical Medicine (Allemani et al., 2018[3]). Where national data were not available, the CONCORD programme analysed the available data from regional registries, but in most countries the analyses were based on national coverage, facilitating international comparison.

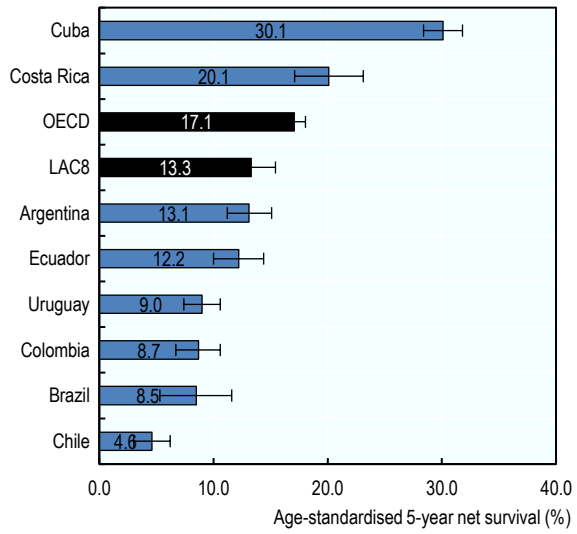
References

Allemani, C. et al. (2018), "Global surveillance of trends in cancer survival 2000–14 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries", *The Lancet*, Vol. 391/10125, pp. 1023-1075, https://doi.org/10.1016/S0140-6736(17)33326-3. [3]

Bray, F. et al. (2018), "Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries", *CA: A Cancer Journal for Clinicians*, Vol. 68/6, pp. 394-424, https://doi.org/10.3322/caac.21492. [1]

Jemal, A. et al. (eds.) (2019), *The Cancer Atlas, 3rd edition*, American Cancer Society, Atlanta, http://www.cancer.org/canceratlas. [2]

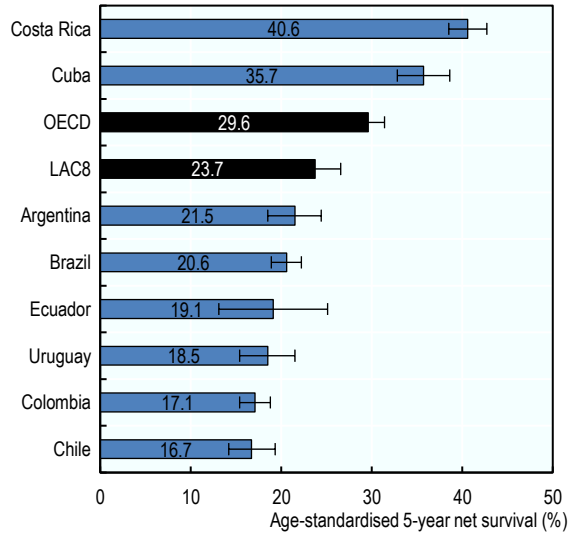
Figure 7.7. Lung cancer 5-year net survival (%), adults (15-99 years), 2010-14



Note: National coverage in Costa Rica and Cuba. Survival estimates are considered less reliable for Colombia: see Allemani et. al. (2018[3]) for more information.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://stat.link/ajb8wq

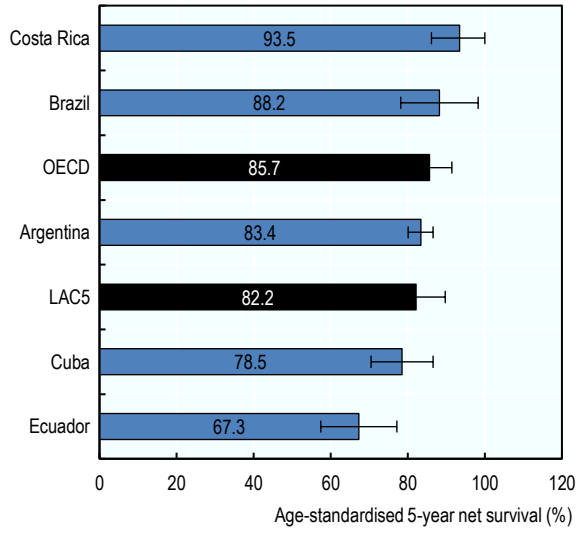
Figure 7.8. Stomach 5-year net survival (%), adults (15-99 years), 2010-14



Note: National coverage in Costa Rica, Cuba and Uruguay. Survival estimates are considered less reliable for Colombia: see Allemani et. al. (2018[3]) for more information.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://stat.link/280nq3

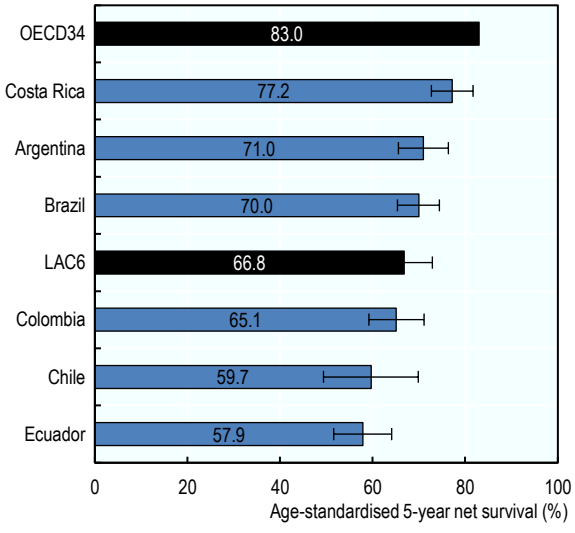
Figure 7.9. Colon cancer 5-year net survival (%), adults (15-99 years), 2010-14



Note: National coverage in Costa Rica, Cuba and Uruguay. Survival estimates are considered less reliable for Colombia: see Allemani et. al. (2018[3]) for more information.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://stat.link/v4m5lb

Figure 7.10. Melanoma of the skin 5 years net survival rate (%), adults 15-99 years old, 2010-14



Note: National coverage in Costa Rica, Cuba and Uruguay. Survival estimates are considered less reliable for Colombia: see Allemani et. al. (2018[3]) for more information.
Source: CONCORD programme, London School of Hygiene and Tropical Medicine.

StatLink https://stat.link/0uosti

Avoidable hospital admissions

Strengthening primary healthcare is one of the most effective interventions for improving healthcare systems efficiency and population health. Functions of the primary level of care include health promotion and disease prevention, serve as the first point of contact for managing new non-emergency health issues, and referring patients to specialist care and hospital-based services when appropriate. A high-performing primary care system that provides accessible and high-quality services can reduce acute deterioration in people living with four long-term conditions that are widely prevalent in LAC; asthma, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), high blood pressure and diabetes, and reduce unnecessary admissions to hospital. For this reason, measuring the number of hospitalisations with these diseases as the main diagnosis is and indicator of the capacities of the healthcare system to provide necessary care at an early stage in the primary level. Because of the postponement of non-emergency services in 2020 due to the COVID-19 pandemic, hospitalisation rates in 2021 might include the effect of countries' efforts to clear the backlog of services and not purely reflect the quality of the health system to minimise avoidable hospitalisations. In this line, figures should be interpreted with caution.

Figure 7.11 shows hospital admission rates per 100 000 population for asthma and COPD for six LAC countries with available data. All LAC6 countries present lower hospitalisations rates than the OECD average (32.2 for Asthma and 151.2 for COPD). Peru presents the lowest hospitalisation rates for these conditions with 1.6 and 0.8 for asthma and COPD per 100 000 population, respectively. Further, public health mandates related to COVID-19, such as physical distancing and facemask use, can have an influence in hospitalisation rates for asthma and COPD (Alqahtani et al., 2021[1]).

Figure 7.12 shows admission rates for CHF and hypertension. As with asthma and COPD, the graph reveals that the reporting LAC6 countries have lower rates than the OECD average. Costa Rica reports the lowest rate for both conditions-related admissions per 100 000 population, just 5 for CHF, and 6 for hypertension.

Figure 7.13 displays admission rates for diabetes. Chile (92), Costa Rica (104) and Brazil (120) report admission rates closer to the OECD average (119), while Mexico's is higher at 208 admissions per 100 000 population. Colombia and Peru stand below the OECD average at 55 and 26 admissions respectively.

Figures presented in this section suggest that six LAC countries have been successful at minimising avoidable admissions. However, the stark differences with the OECD average makes it important to consider the possibility that the differences in access to healthcare drive a certain degree of underutilisation of hospital resources. Health systems must find an adequate balance to ensure the least wasteful level of hospital utilisation while ensuring adequate access across the entire population. LAC countries must continue to invest in building primary care capacity in order to minimise waste and prepare for a heavier burden caused by the increased prevalence of chronic conditions brought on by the population ageing phenomena observed in LAC (see Chapter 9).

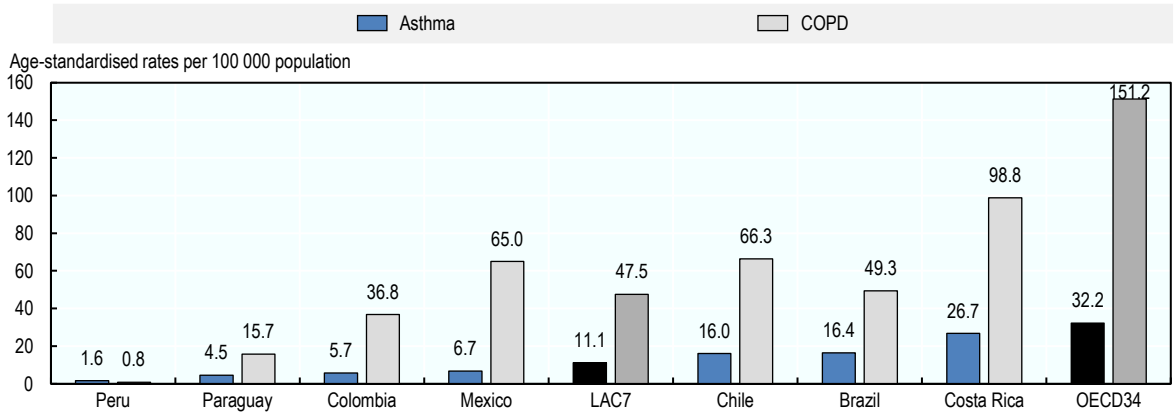
Definition and comparability

The indicators are defined as the number of hospital admissions with a primary diagnosis of asthma, COPD, CHF, hypertension and diabetes among people aged 15 years and over per 100 000 population. Rates are age-sex standardised to the 2010 OECD population aged 15 and over. Admissions resulting from a transfer from another hospital and where the patient dies during the admission are excluded from the calculation as these admissions are considered unlikely to be avoidable. Disease prevalence and availability of hospital care may explain some, not all, variations in cross-country rates. Differences in coding practices among countries may also affect the comparability of data. For example, the exclusion of "transfers" cannot be fully complied with by some countries. Differences in data coverage of the national hospital sector across countries may also influence indicator rates. Differences in coding practices across countries must be considered as a possible source of bias, for instance, in the case of hypertension.

References

Kielbassa, A. (ed.) (2021), "Reduction in hospitalised COPD exacerbations during COVID-19: A systematic review and meta-analysis", *PLOS ONE*, Vol. 16/8, p. e0255659, https://doi.org/10.1371/journal.pone.0255659. [1]

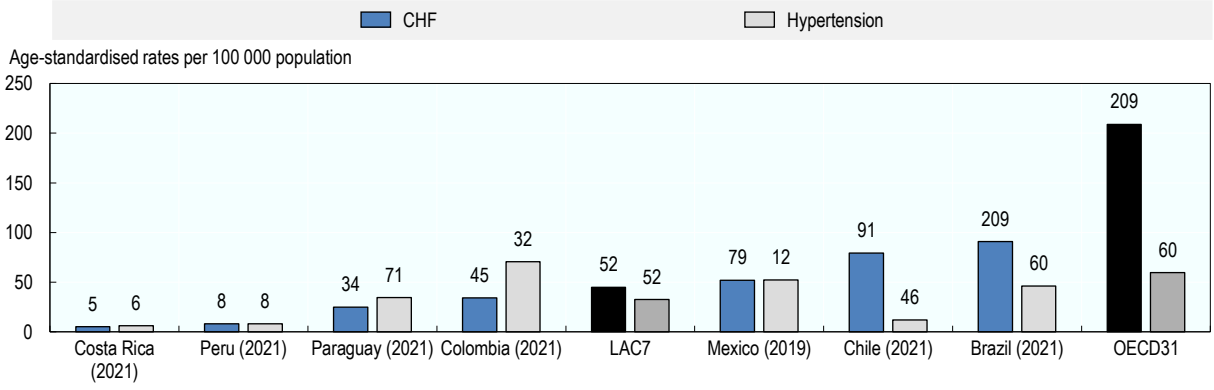
Figure 7.11. Asthma and COPD hospital admissions in adults, 2021 (or nearest year)



Source: OECD Health Statistics 2021 and Ministries of Health of Brazil, Colombia and Peru.

StatLink https://stat.link/wdzpmu

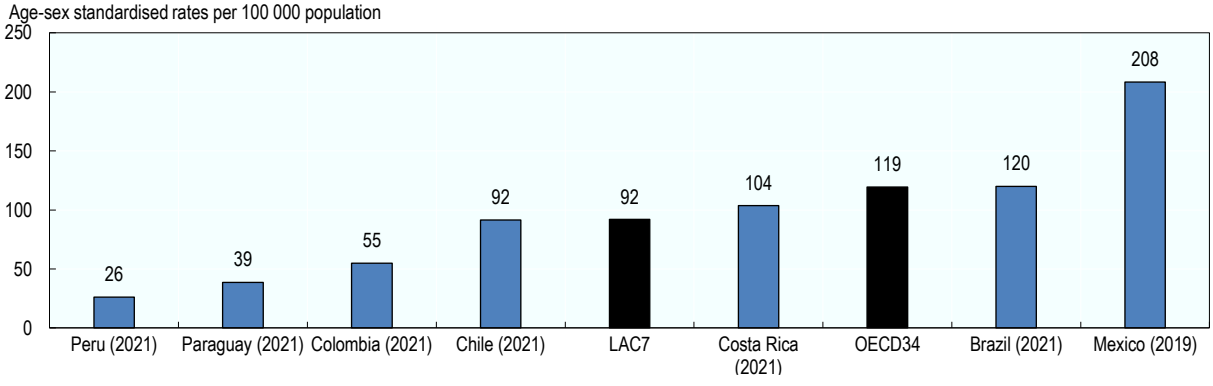
Figure 7.12. Congestive heart failure (CHF) and hypertension hospital admissions in adults, 2021 (or nearest year)



Source: OECD Health Statistics 2022.

StatLink https://stat.link/9ub4yc

Figure 7.13. Diabetes hospital admissions in adults, 2021 (or nearest year)



Source: OECD Health Statistics 2022 and national data sources.

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8 Health workforce

Doctors

Physicians, including general and specialist practitioners, comprise a central component of the health workforce and the improvement of health outcomes. In all levels of care, doctors provide curative and preventive care to patients and provide an essential touchpoint for access to other parts of the health system. Primary healthcare is a particularly vital part of healthcare delivery in Latin America and the Caribbean and is undergoing rapid change: as resourcing needs grow, and complex care becomes more prevalent around the world, novel organisational models of primary care are adjusting towards integrated, team-based systems (OECD, 2020[1]).

Across the region, a wide variation was observed in the proportion of doctors adjusted for population, including all general practitioners and physician specialities. Cuba, with approximately 8.4 doctors per 1 000 people, maintained the highest rate of physicians when compared to all 33 countries in the Latin American and Caribbean region. Haiti measured the lowest rate of physicians, at 0.2 physicians per 1 000 people. An average of 2.0 physicians per 1 000 people was observed in the region, with 12 of 33 countries measuring at or above the figure. When compared to the average of OECD member states observed at a rate of 3.5 physicians per 1 000 population, Cuba, Uruguay, Trinidad and Tobago, and Argentina were the countries in the region observing rates above this measure (Figure 8.1).

When measuring the share of the physician workforce identifying as women, most countries in the region perform near or above the OECD average of nearly 50% in observed member states. With approximately 65% of physicians identifying as women in the country, the Dominican Republic features the highest rate in the region. Brazil, at nearly 42%, features the lowest rate in the region (Figure 8.2).

In three countries in the region, updated data on the ageing physician workforce was available. Compared to an OECD average of approximately 21% of physicians reported between the ages of 55 and 64 years of age, only Mexico scored higher at just over 22%. Chile and Colombia reported a share in this age range below this average, each at approximately 13%. In the share of physicians at or above 65 years of age, Chile features an older share of physicians at 13% compared to the OECD average just over 12%. In contrast, Colombia and Mexico reported a smaller cohort of physicians in this age range, at rates just under 5% and over 3%, respectively (Figure 8.3).

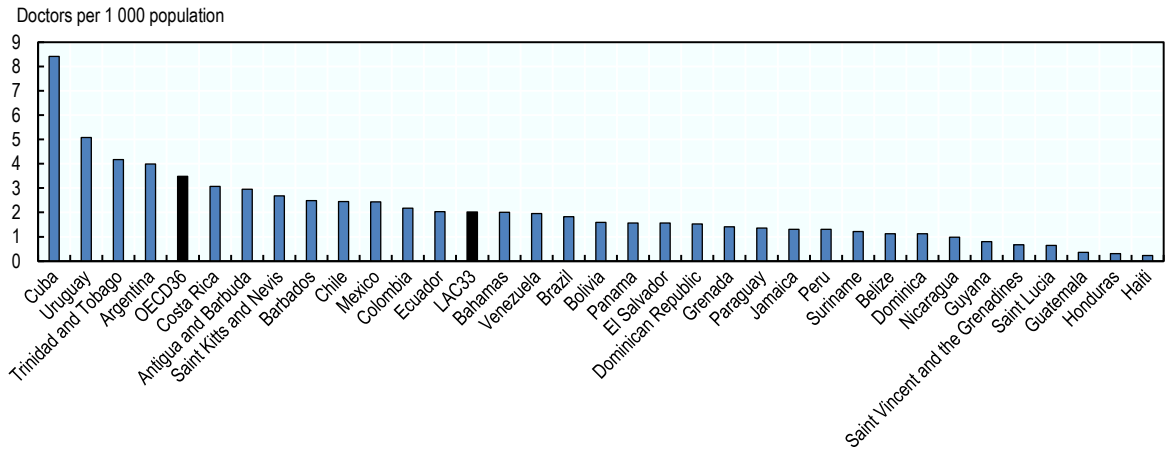
Definition and comparability

Doctors comprise all physicians providing services for patients, including both generalist and specialist care providers. OECD Health Statistics include practising physicians, interns and resident physicians, salaried and self-employed physicians in all service provision contexts, foreign physicians licensed to practice and actively practising in reporting countries. Data from national sources without central registers of providers report only physicians employed in the public healthcare system; private providers are not reflected. Breakdowns of physicians by age and gender are reported for practising physicians only.

References

OECD (2020), *Realising the Potential of Primary Health Care*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/a92adee4-en. [1]

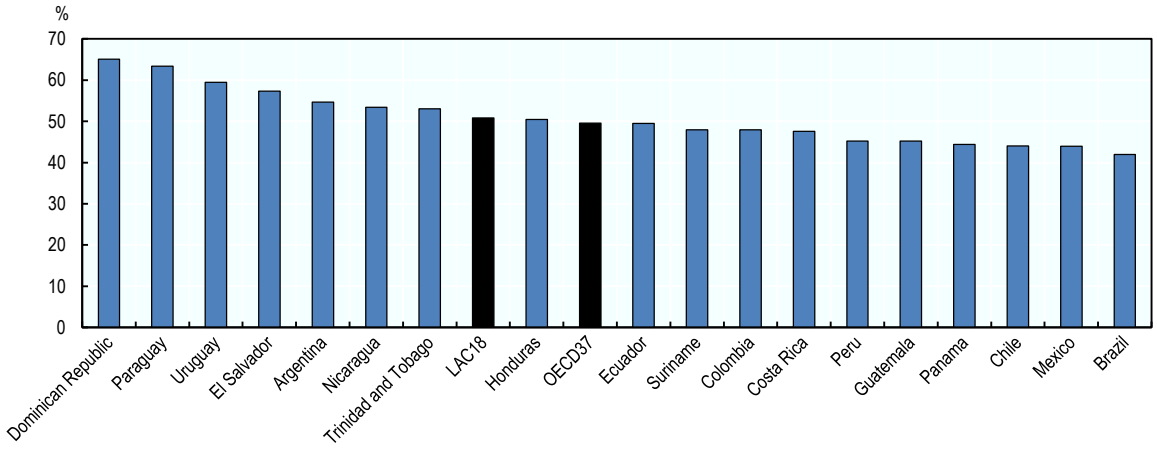
Figure 8.1. Doctors per 1 000 population, latest year available



Sources: WHO GHO 2022; OECD Health Statistics 2022 for OECD average; Ministries of Health for Argentina, Peru, Brazil and Mexico.

StatLink https://stat.link/mw7n9k

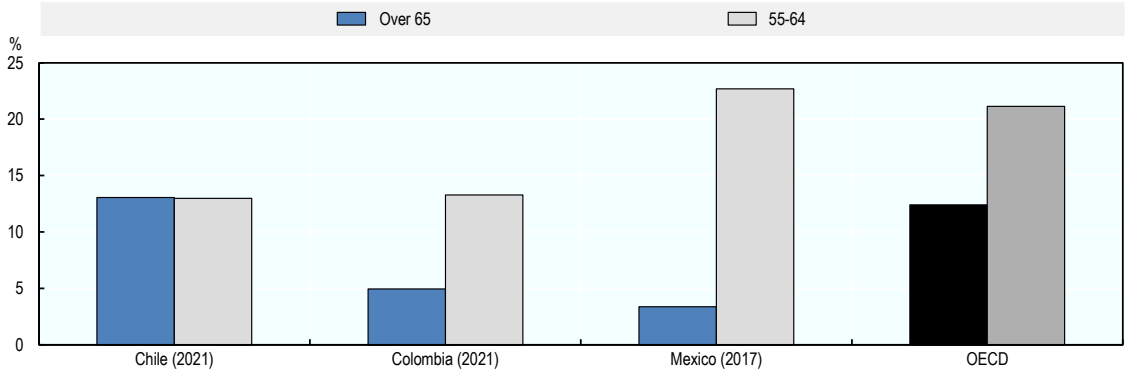
Figure 8.2. Share of women in the physician workforce, percentage, latest year available



Source: WHO GHO 2022; OECD Health Statistics 2022 for OECD countries (except Costa Rica) and average.

StatLink https://stat.link/vmwloc

Figure 8.3. Share of people aged 55 years or more in the physician population, percentage, latest year available



Source: OECD Health Statistics 2022.

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Nurses

Nurses, including midwives, are an integral component of primary and tertiary care provision across the Latin American and Caribbean region. While roles in both care settings differ by country, nurses and midwives tend to feature in the front lines of tertiary care provision, a context brought to the forefront by persistent capacity challenges in the face of the COVID-19 pandemic. Although countries in the region have tended to feature a lower density of nurses and midwives by population compared to OECD counterparts, recent OECD research notes that seven Latin American and Caribbean countries have reported improved densities of both care professions in national reports (OECD, 2022[1]).

While OECD member states average a high rate of nurses when adjusted for population at approximately 10.3 nurses per 1 000 people, some variation is observed in countries of the region. Antigua and Barbuda, reporting a rate just under 9.1 nurses per 1 000 people, is the highest in the 33 countries of the region. Haiti featured the lowest rate of nurses when adjusted for population, at approximately 0.4 nurses per 1 000 people. Overall, the LAC region observed a rate of under 3.6 nurses per 1 000 people (Figure 8.4).

The ratio of nurses to doctors is an indicator of the quality of patient care in the clinical environment. Among OECD member states, the average is 2.7 nurses for every doctor when adjusted for population. Several countries in the region feature ratios above this figure, including Dominica, the highest in the region at 5.5 nurses per doctor in the country. The lowest in the region, Colombia, observed a ratio of 0.6 nurses per doctor. Overall, accounting for differences in population, a ratio of 1.9 nurses to every doctor was observed on average for the Latin American and Caribbean region (Figure 8.5).

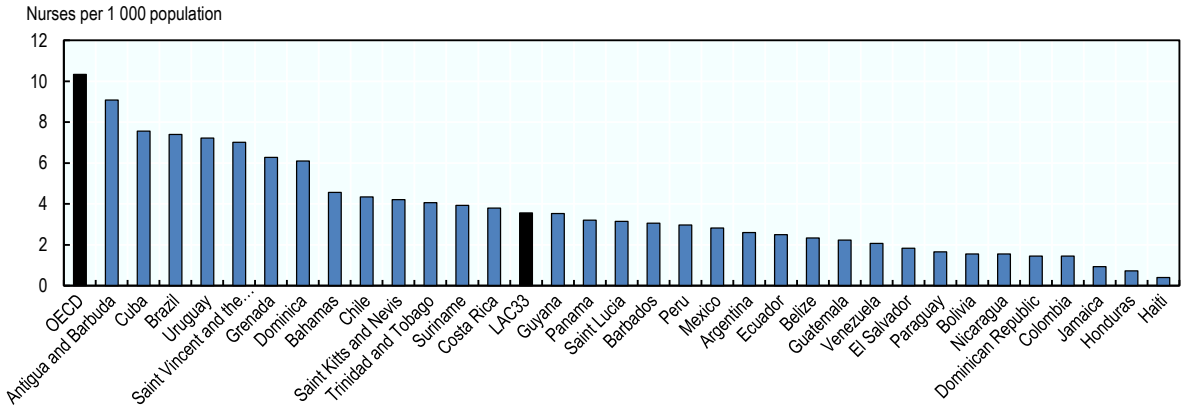
Definition and comparability

Counts for nurses in this report include practising nurses and midwives as reported in OECD Health Statistics. Nurses comprise all professional nurses and associate professional nurses practising and providing services directly to patients. Nursing professionals include those assuming responsibility for the planning and management of the care of patients, and may supervise other healthcare workers, work autonomously or in teams, and apply preventive or curative measures. Nursing associate professionals work under the supervision of medical, nursing, and other health professionals. Nursing aids, assistants, and personal care workers who do not have any recognised qualification or certification in nursing are excluded. Midwives working most of the time as nurses are reported as nurses. Midwives include those practising and providing services directly to patients, such as midwifery professionals and midwifery associate professionals. Nurses working most of the time as midwives are reported as midwives. Data for counts reported separately under nurses and midwives were included together. Population figures for the calculation of ratios were sourced from the United Nations World Population Prospects (WPP) for the year of the latest data reported in each country.

References

OECD (2022), *Primary Health Care for Resilient Health Systems in Latin America*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/743e6228-en. [1]

Figure 8.4. Nurses and midwives per 1 000 population, latest year available



Source: WHO GHO 2022.

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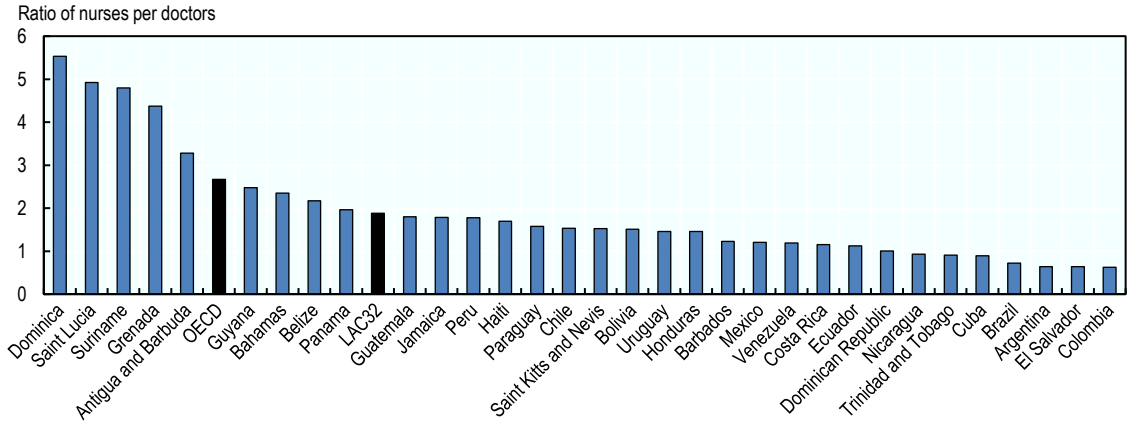
Figure 8.5. Ratio of nurses to doctors, latest year available



Note: Ratio is derived from data reported for nurses per 1 000 population and doctors per 1 000 population.
Source: WHO GHO 2022; OECD Health Statistics 2022 for OECD average; Ministries of Health for number of doctors in Argentina, Peru, Brazil and Mexico.

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Allied health professionals

In addition to doctors, allied health professionals provide major health services for a wide variety of needs, supporting ancillary health outcomes tied to quality of care. As continuity of care and integrated care become key considerations in primary healthcare, new team-based organisational models of care place a greater emphasis on a wider range of providers, including dentists, pharmacists, and community health workers (OECD, 2020[1]). In Latin America and the Caribbean, the importance of allied health professionals is heightened since the COVID-19 pandemic: the latest OECD research on primary healthcare in the region notes that an expansion of community health worker schemes may support improved health workforce availability where pressures on health system capacity persist (OECD, 2022[2]).

Across allied health professions, data availability was varied for countries in the region. Accounting for differences in population, several countries performed above the average for OECD member states in the share of practising dentists. With an average in the OECD observed at just under 7.2 dentists per 10 000 people, seven countries featured rates above this measure, ranging upwards of 16.7 dentists per 10 000 people in Cuba. Haiti featured the lowest number of dentists in the region, at just over 0.2 dentists per 10 000 people. For the 33 countries in the Latin American and Caribbean region, an average rate of over 4.2 dentists per 10 000 people was observed (Figure 8.6).

Regarding pharmacists, an average of nearly 3.4 pharmacists was observed in the 20 countries of the Latin American and Caribbean region reporting data. Compared to the OECD average of just over 8.8 pharmacists per 1 000 people, only Costa Rica – an OECD member country – performed above, reporting over 12.0 pharmacists per 1 000 people. Jamaica reported the lowest rate of pharmacists in the region, at approximately 0.15 pharmacists per 1 000 people (Figure 8.7).

Community health workers (CHWs) comprise an essential component of the healthcare workforce in the Latin American and Caribbean region, with significant variation in their density as a result of varying roles in primary healthcare delivery across countries. Well above other countries in the region, Brazil reported nearly 16 CHWs per 10 000 people, while Guatemala reported the lowest figure among countries reporting data, at just over 0.1 CHWs per 10 000 people (Figure 8.8).

Definition and comparability

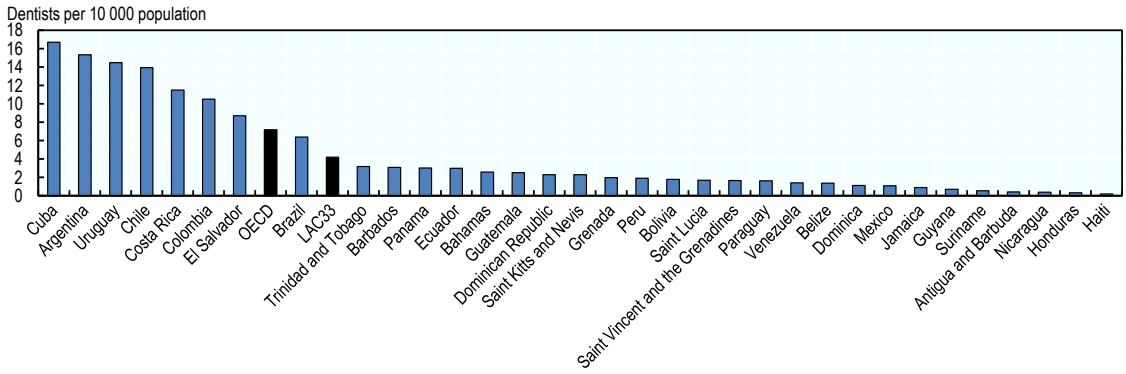
Allied health professionals comprise several professions in OECD Health Statistics. Dentists include all practising providers licensed to practice, including stomatologists, dental, and maxillofacial surgeons, regardless of salaried or self-employed status. Interns under postgraduate dental specialist supervision are included. Dental students are excluded. Pharmacists include all practising professionals who prepare, dispense, or sell medicaments and drugs for patients and provide advice. Pharmacists working in hospitals are included. Pharmacists irrespective of salaried or self-employed status are included, as are foreign pharmacists licensed and actively practising in reporting countries. Community health workers are defined by the World Health Organization Global Health Observatory, including all community health workers in a given national area, either practising actively or registered in the health occupation.

References

OECD (2022), *Primary Health Care for Resilient Health Systems in Latin America*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/743e6228-en. [2]

OECD (2020), *Realising the Potential of Primary Health Care*, OECD Health Policy Studies, OECD Publishing, Paris, https://doi.org/10.1787/a92adee4-en. [1]

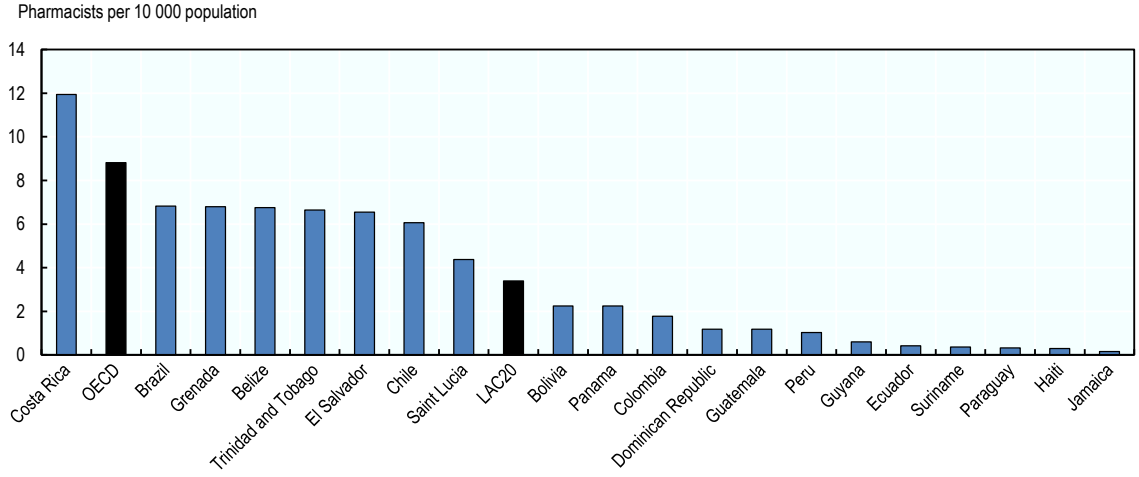
Figure 8.6. Dentists per 10 000 population, latest year available



Source: WHO GHO 2022; OECD Health Statistics 2022 for OECD average and Mexico.

StatLink https://stat.link/amyrdx

Figure 8.7. Pharmacists per 10 000 population, latest year available



Source: WHO GHO, 2022; OECD Health Statistics 2022 for OECD average.

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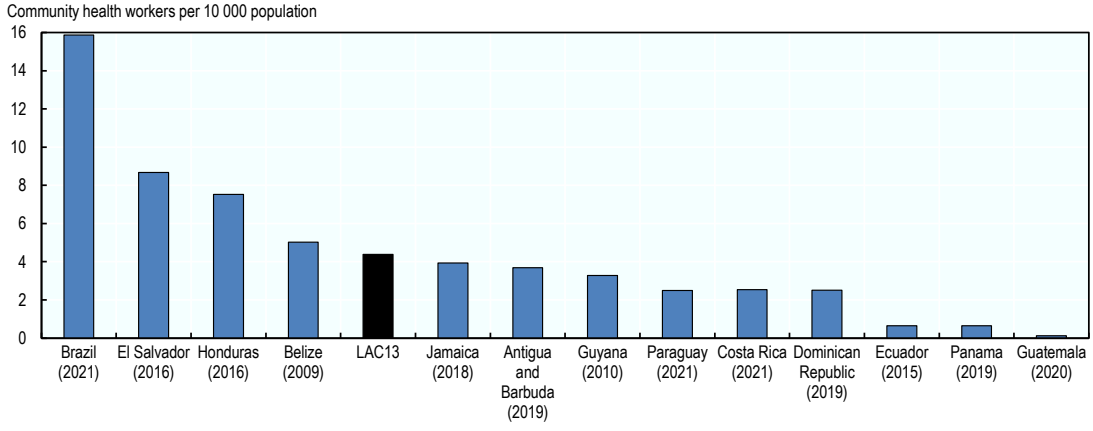
Figure 8.8. Density of community health workers, per 1 000 population, latest year available



Source: WHO GHO; Ministries of Health for Brazil and Costa Rica.

StatLink https://stat.link/6cet4v

Mental healthcare workers

Mental healthcare workers comprise a unique category of the health workforce, including psychologists, psychiatrists, and nurses working in the sector of mental healthcare. In the advent of the COVID-19 pandemic, mental health needs have emerged as a growing health burden requiring complex and specialised care and remains a major challenge as persistent workforce capacity constraints limit the resilience of health systems in Latin America and the Caribbean. The sustainability of the mental healthcare workforce remains at risk: a recent study of mental health workers in 17 countries of the region during the first 100 days of the pandemic noted that the mental health of workers themselves was under severe strain (Agrest et al., 2022[1]).

Across professions in mental healthcare, wide variations in density by population were observed among countries in the Latin American and Caribbean region. With particular regard to rates of psychologists adjusted for population, this variation is significant. While OECD member states averaged approximately 40 psychologists per 100 000 population, this measure was surpassed by four countries in the region: Argentina, Costa Rica, Colombia, and Antigua and Barbuda. Of note, the former three countries surpassed this average several times over: Argentina reported a rate of over 286 psychologists per 100 000 people, with Costa Rica (135 psychologists per 100 000 people) and Colombia (128 psychologists per 100 000 people) following behind. At approximately 0.26 psychologists per 100 000 people, Belize features the lowest observed rate of psychologists in the region. Overall, of the 31 countries in the region reporting data on psychologists, an average of 23.9 psychologists per 100 000 people was observed (Figure 8.9).

Regarding psychiatrists, countries in the region generally perform below the average in OECD member states when adjusted for population, set above 18.0 psychiatrists per 100 000 people. Uruguay, noting an observed rate of 15.7 psychiatrists per 100 000 people, is the highest in the Latin American and Caribbean region, while Haiti reported a rate just above 0.1 psychiatrists per 100 000 people –the lowest observed rate. Among countries in the region reporting data, an average of approximately 3.4 psychiatrists per 100 000 people was observed (Figure 8.10).

The rate of nurses working in mental healthcare provide an indicator for workforce capacity in the primary and tertiary sectors. While the Latin American and Caribbean regional average was observed at just above 17.2 nurses per 100 000 people, several countries performed well above this measure. Colombia reported the highest rate in the region, with just under 147.2 nurses per 100 000 people. Of the 23 countries in the region reporting data, Saint Vincent and the Grenadines reported the lowest figure of 0.0 nurses working in the mental health sector per 100 000 people due to its low total population, with Haiti reporting 0.02 nurses in the sector at the next-lowest positive reported figure (Figure 8.11).

Definition and comparability

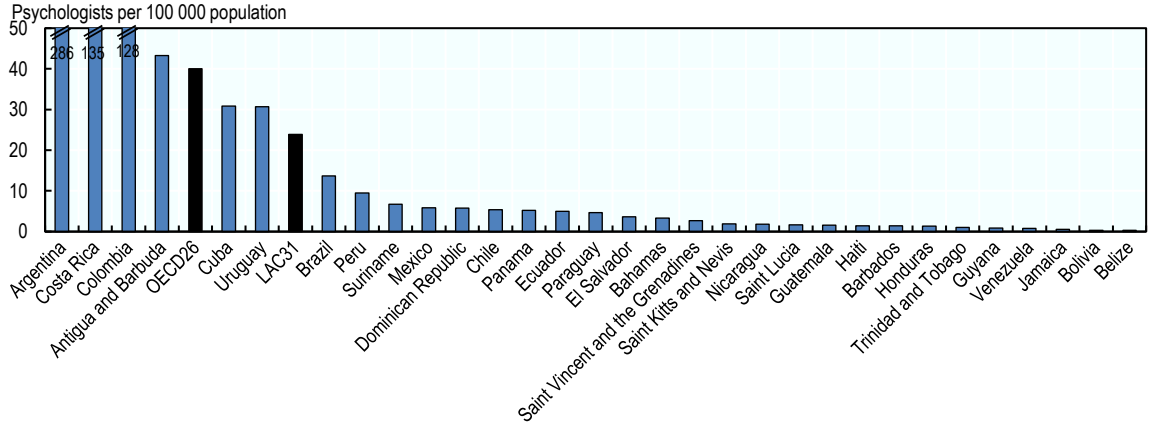
Mental healthcare professions are defined uniquely in the World Health Organization Mental Health Atlas 2020. Psychologists are defined as professionals with completed formal training in psychology at a recognised post-secondary school for a diploma or degree in psychology, with reported data including only those working in mental healthcare. Psychiatrists are defined as medical doctors with at least two years of postgraduate training in psychiatry at a recognised teaching institution, including training in subspecialities of psychiatry. Nurses working in the mental healthcare sector includes health professionals with formal training for a diploma or degree in nursing, working in mental healthcare settings, comprising mental hospitals, psychiatric units in general hospitals, mental health community residential facilities, mental health day treatment facilities, mental health outpatient facilities, or other residential facilities not specifically defined as mental health facilities with most residents having diagnosable mental health conditions.

Population figures for the calculation of rates were sourced from the United Nations World Population Prospects (WPP) for the year of the latest data reported in each country.

References

Agrest, M. et al. (2022), ""About Navigating Chaos": Latin American and Caribbean Mental Health Workers' Personal Impact Due to SARS-CoV-2 in the First Hundred Days", *International Journal of Public Health*, Vol. 67, https://doi.org/10.3389/ijph.2022.1604359. [1]

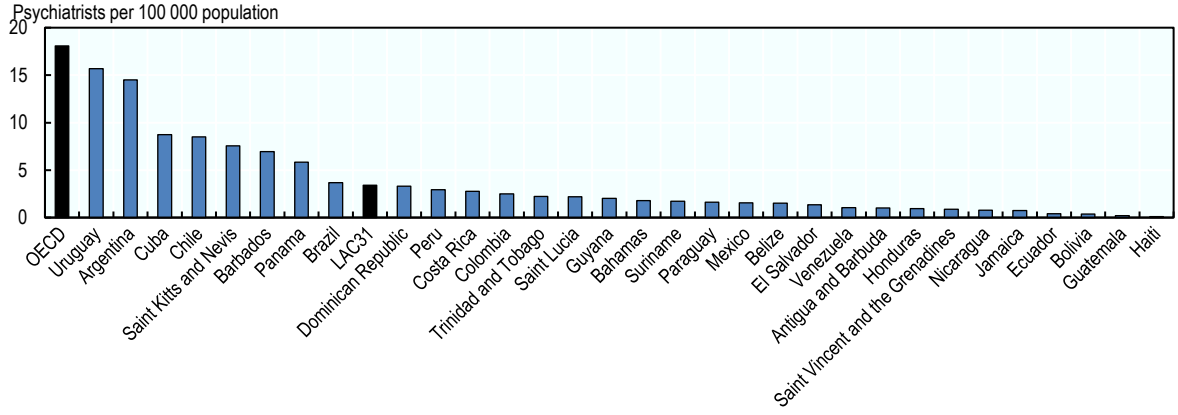
Figure 8.9. Psychologists per 100 000 population, latest year available



Source: WHO Mental Health Atlas 2020.

StatLink https://stat.link/in06ge

Figure 8.10. Psychiatrists per 100 000 population, 2020 or latest year available



Sources: WHO Mental Health Atlas 2020; OECD Health Statistics 2022 for OECD member countries.

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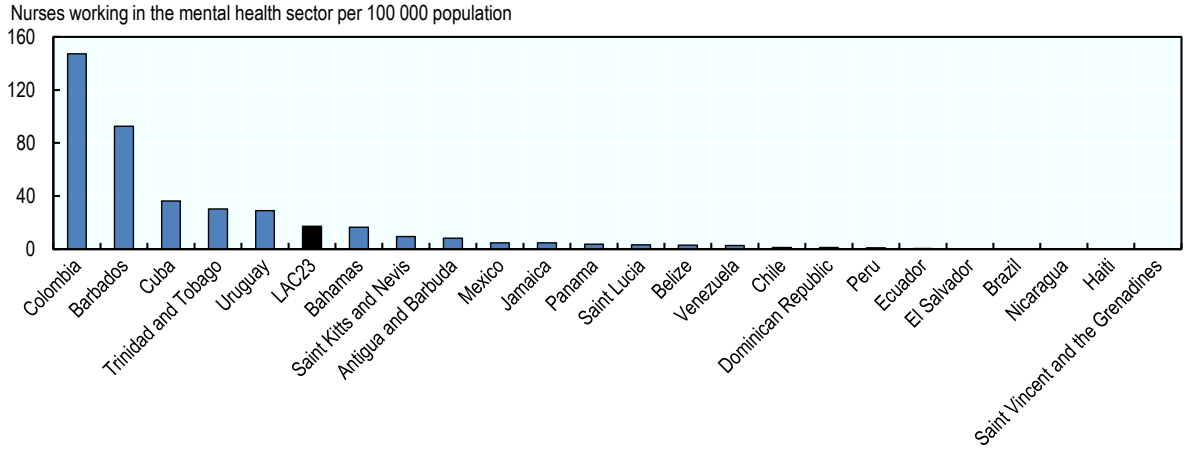
Figure 8.11. Nurses working in the mental health sector per 100 000 population, latest year available



Source: WHO Mental Health Atlas 2020.

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9 Ageing

Demographic trends

A substantial demographic transition is underway in the LAC region, with a considerable increase in the share of older adult population in the upcoming decades. Although this process can be observed across the world and is strongly related to better outcomes in health and other policy areas, it poses serious challenges to pension systems, labour markets and the delivery of healthcare. The LAC region has seen life expectancy increase by around 4 years since 2000 (see section "Life expectancy at birth" in Chapter 3). Wider access to reproductive health through modern and varied contraceptive methods (see section "Family Planning" in Chapter 4), in addition to increased access to education and feminine participation in labour markets (Cabella and Nathan, 2018[1]), has also led to a decrease in the fertility rate from 2.6 to 2 births per woman, below the level of replacement rate of 2.1, necessary to maintaining current population numbers.

The share of the population 65 years and older is expected to more than double by 2050, reaching over 18% in LAC33 (Figure 9.1, left panel). This will still be lower than the 27.7% expected among OECD countries, which are deeper in the population ageing process. In LAC, the share of the older population will be particularly large in Barbados, Chile and Cuba, surpassing 25% in 2050. In the lower end, Haiti and Bolivia will be the only countries in the region with less than 10% of their population aged over 65 years old. Women tend to live longer than men, and therefore the proportion of older women will likely be even higher. The speed at which this process is already occurring will be unprecedented and have significant social consequences. Jamaica, Honduras and Belize are the countries where this increase in the share of the older population will be the most accentuated, with the three of them experiencing over 150% increases from 2021 to 2050.

The growth of the share of the population 80 years and older will be even more drastic (Figure 9.1, right panel). On average, the share of this age group is expected to grow 280% by 2050 in LAC33, reaching an average of 4.9% across the region. The largest rises will be in Antigua and Barbuda, and Colombia, which will see at least a quadrupling of this age group. In countries like the Bahamas, Jamaica, Trinidad and Tobago, Costa Rica and Brazil, more than three-fold increases are expected in 2050. National rates also showcase socio-economic disparities in ageing processes. Between residential areas, for instance, it is expected that urban population will go through a faster and more accelerated demographic transition.

In parallel with an increase in the older adult population, the share of working-age adults tends to decrease, aggravating even further the challenges faced by LAC countries during demographic transitions. The ratio of working-age population to people over 65 in LAC will be four times in 2050 compared to eight times in 2022 (Figure 9.2), while in the OECD, this rate will decrease from 3.6 in 2022 to 2.2 in 2050. The situation is particularly severe in Cuba, Barbados, Chile and Antigua and Barbuda, with dependency ratios expected to fall below 2.5 in 2050.

Although non-LAC OECD countries are currently facing more advanced population ageing processes, the speed at which this transition is happening in the LAC region requires more urgent planning for health systems to absorb the changing population needs for the upcoming decades. An integrated response that also addresses pension systems reform, labour markets and how healthcare systems are financed – particularly for long-term care services (see section "Long-term care" in this chapter) – is necessary to ensure the financial sustainability of the system (Álvarez, 2020[2]). Moreover, older age often reinforces pre-existing inequities based on income, education, gender, and urban/rural residence, highlighting the importance of equity-focused policy making in the future (OECD, 2017[3]).

Definition and comparability

Population projections and estimates of current population by age and sex are extracted from the most recent "medium-variant" projections from the United Nations World Population Prospects – 2022 revision.

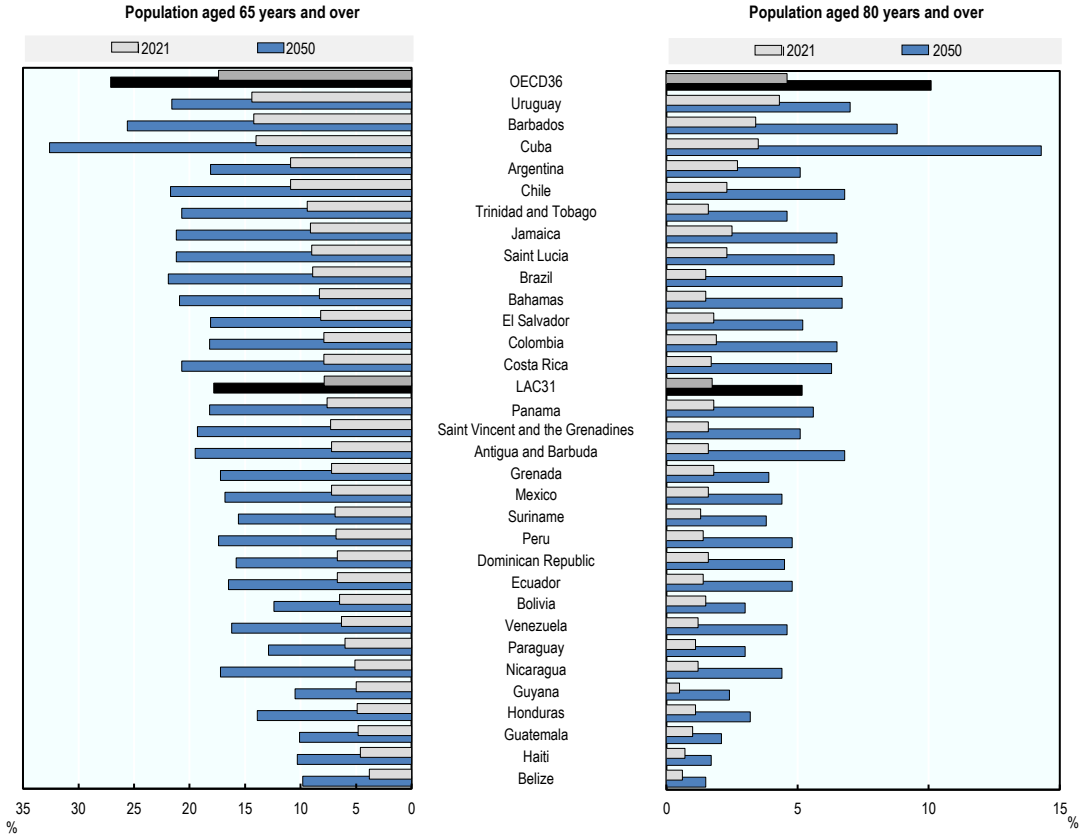
References

Álvarez, F. (2020), *Los sistemas de pensiones y salud en América Latina: los desafíos del envejecimiento, el cambio tecnológico y la informalidad*, CAF, Caracas, http://scioteca.caf.com/handle/123456789/1652. [2]

Cabella, W. and M. Nathan (2018), *Challenges Posed by Low Fertility in Latin America and the Caribbean*, United Nations Population Fund, https://lac.unfpa.org/sites/default/files/pub-pdf/Baja%20fecundidad%20en%20ALC%20%28jun%202018%29%20version%20web%20ingl%C3%A9s.pdf. [1]

OECD (2017), *Preventing Ageing Unequally*, OECD Publishing, Paris, https://doi.org/10.1787/9789264279087-en. [3]

Figure 9.1. Current estimate and projected share of the population aged 65 and 80 years or older, 2022 and 2050



Source: United Nations World Population Prospects, 2022.

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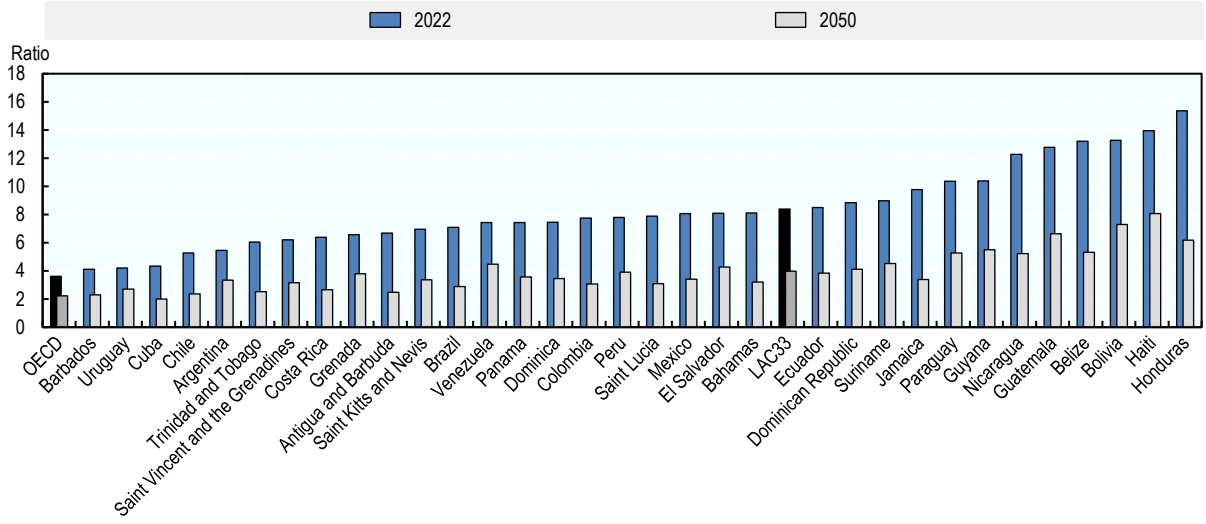
Figure 9.2. Current estimate and projected rate of population aged 15-64 to population aged 65 or older, 2022 and 2050



Source: United Nations World Population Prospects, 2022.

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Life expectancy and healthy life expectancy at age 65

OECD countries have seen remarkable gains in life expectancy at age 65 for both men and women in the last five decades. In 2021, people aged 65 years old were expected to live a further 19.9 years, a 5.7 years increase when compared to 1970 values (OECD, 2021[1]). Although the average increase in life expectancy at age 65 has also seen a considerable increase in the LAC region, this increase has notably been lower than in OECD countries, amounting to 1.5 years for men and 2.8 years for women (4.5 and 5 years in the OECD average, respectively), to a total of 13.7 and 16.8 years, respectively (see Figure 9.3). In addition, even though the vast majority of countries have experienced increases for this indicator, Saint Vincent and the Grenadines, Bolivia, Mexico and Jamaica saw a decrease in the life expectancy for population aged 65 when compared with 1970s values. Apart from Saint Vincent and the Grenadines, the COVID-19 pandemic appears to be the main reason behind a recent downturn in life expectancy at age 65 for these four countries, as pre-pandemic values were following a similar upward trend to what has been observed across the region. This recent decrease can indicate how some countries could have prepared more targeted policies to support older, higher-risk population during the pandemic (see Chapter 1).

While life expectancy in the LAC region has increased by 3.9 years since 2000 (see "Life expectancy" section in Chapter 3), that increase in the average number of years lived by the overall population does not necessarily reflects years lived in good health. Health-adjusted life expectancy (HALE) measures the average number of years a person aged 60 is expected to live in full health based on current rates of ill health and mortality. Methods for estimating HALE vary, but most measurements are based on the average per capita all-cause years lost due to disability (see the "Definition and comparability" box). In OECD countries, a 60-year-old woman is expected to live, on average, a further 19.2 years of a healthy life, while men are expected to live only close to 17 years. In the LAC region, averages for HALE at age 60 are close to 2 years below the OECD values for both women and men, at 17 and 15.1 years, respectively. Country estimates range from 12.7 and 11.4 for men in Haiti and Guyana, respectively, to over 19 years for women in countries such as Chile, Costa Rica and Panama (see Figure 9.4).

When comparing HALE years with life expectancy at age 65, there is a slightly smaller gap between men and women for years lived in good health. While the LAC average difference between men and women for the latter is 3.1 years, the former is closer to 1.9 years. In some LAC countries, such as Haiti, Bolivia and Peru, this gap is below half a year. In addition, studies have noted how there is a clear de-coupling of life expectancy, and HALE increase in LAC in the last three decades, with considerably smaller increases for years lived in good health (Robledo, Cano-GutiéRrez and Garcia, 2022[2]). However, it is important to note that the effect of the COVID-19 pandemic is not covered by the HALE estimates, as the latest data available by the time of publication refers to 2019.

Definition and comparability

The WHO method for calculating healthy life expectancy combines standard life table information on mortality and a variety of health status information. The most commonly used method is computed by subtracting the probable duration of disability (all-cause years lost due to disability – YLD) to perform important activities from the life expectancy data.

It is important to note that HALE estimates presented in this section refer to 2019 values, and therefore do not take the expected decrease in HALE some countries might have experienced during the pandemic.

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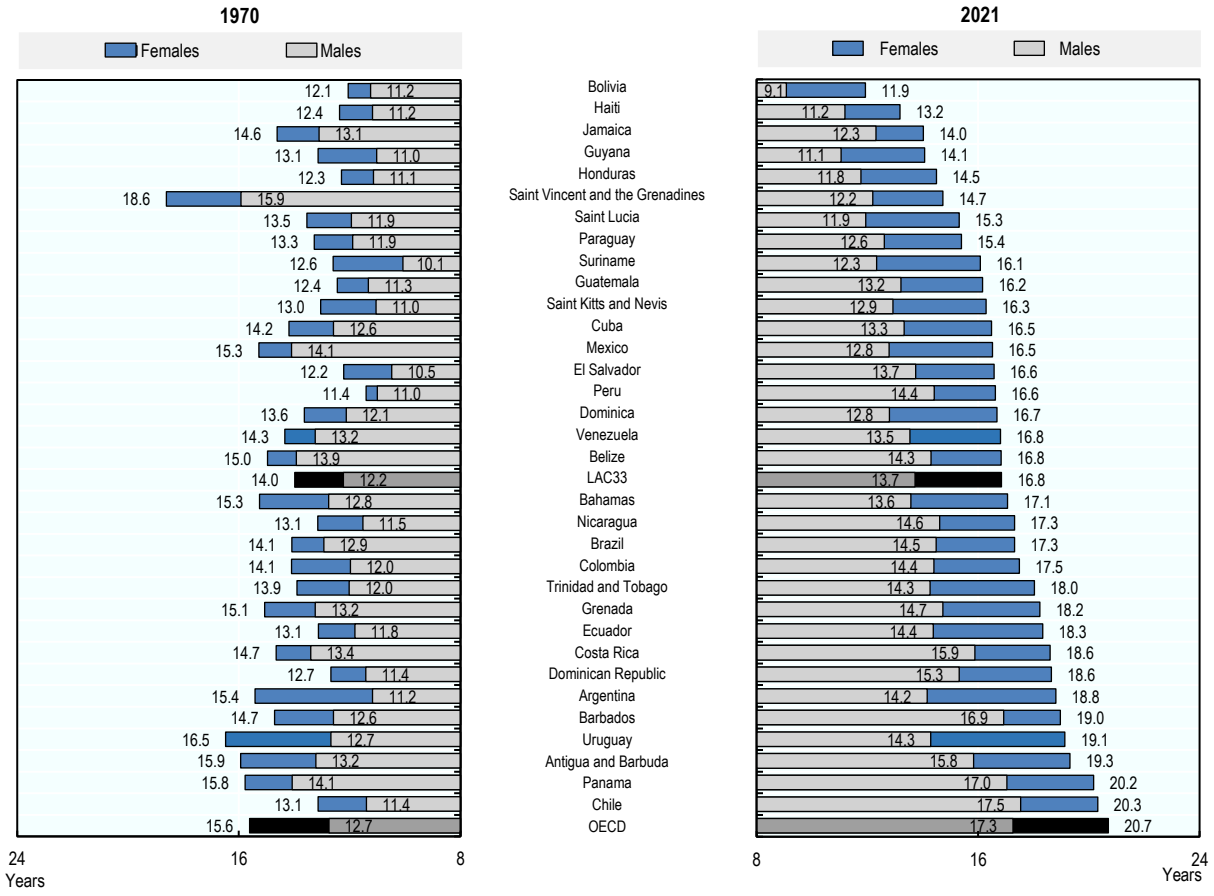
OECD (2021), *Health at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en. [1]

Robledo, L., C. Cano-GutiéRrez and E. Garcia (2022), "Healthcare for older people in Central and South America", *Age and Ageing*, Vol. 51/5, https://doi.org/10.1093/ageing/afac017. [2]

Figure 9.3. Life expectancy at age 65, by sex, 1970 and 2021



Source: UN World Population Prospects 2022.

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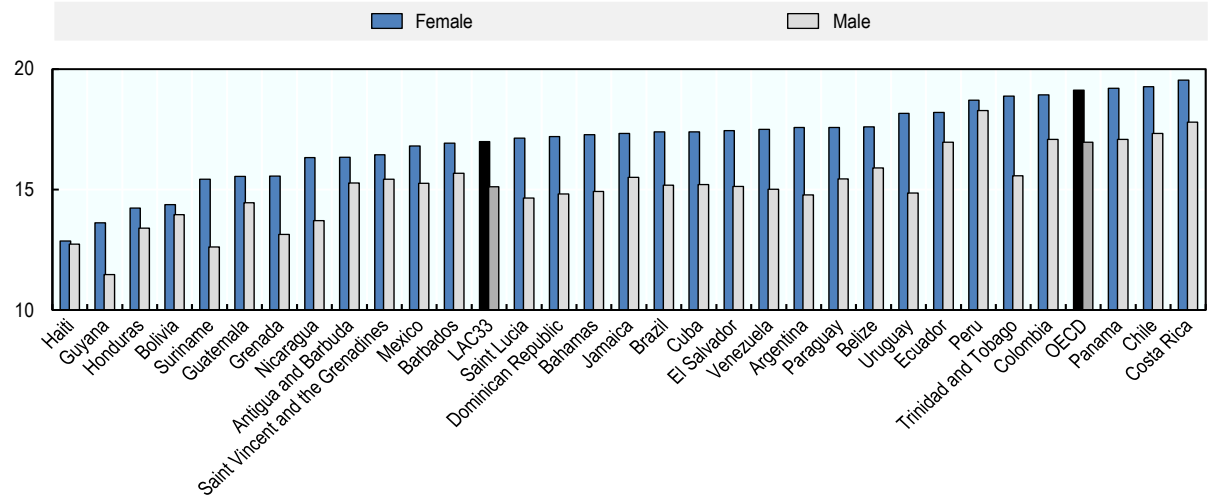
Figure 9.4. Healthy life-years at age 65, by sex, 2019



Source: WHO GHO 2022.

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Long-term and end-of-life care

The rapid pace in which LAC countries are experiencing a demographic transition towards a larger share of their populations living for 65 years or more (see "Demographic trends" section) will generate important long-term consequences for how governments set priorities, organise, and pay for their healthcare systems. A recent study of six LAC countries has shown that the percentage of adults aged 65 or older who required assistance to perform basic or intermediate activities of daily living ranged from 18.1% in Argentina to over 37% in Brazil, which showcases the already high current demand for such services in a more formal fashion (Matus-Lopez and Chaverri-Carvajal, 2021[1]).

LAC countries with available data have spent on average close to a tenth of the share of health budgets that is dedicated to LTC in OECD countries, which stood at around 14% in 2019 (see Figure 9.5). Amongst LAC countries, Saint Kitts and Nevis, Costa Rica, Trinidad and Tobago, the Dominican Republic, Guyana, and Paraguay spent less than 1% of their budgets in LTC. The highest expenditure share for LTC comes from Barbados, a country well advanced in the demographic transition when compared with the rest of LAC countries, with 15.7% of its population having more than 65 years old in 2021, compared with the 8.8% LAC average.

The majority of deaths in the region occur in the hospital setting, with an average of 58.7% in countries with available data, ranging from 45.8% in Chile and Costa Rica to 69.5% in Brazil (see Figure 9.6). Although the place of death is widely recognised as a relevant measurer of quality of care and the patient's house is usually the preferred place of death, other factors such as the availability of and access to skilled end-of-life care professionals, in addition to each countries' cultural preferences for one or the other option are important variables to be taken into consideration.

Another important aspect of elderly care that requires further examination and will considerably influence the areas of priority work for healthcare in the next decades in the LAC region is the treatment for dementia. Estimates of prevalence rates for this group of diseases do not tend to vary considerably from one country to another. Still, recent estimates have already indicated that LAC countries have similar or even higher rates than the OECD average. The average mortality rate for Alzheimer's and other dementias in LAC stood slightly lower when compared with the OECD average, at 22.3 deaths per 100 000 population in 2019. The highest national rates were observed in Honduras and Brazil, at 27.4 and 25.6, respectively. (see Figure 9.7).

Definition and comparability

Long-term care is defined as the support needed by people in a wide-ranging number of life facets and activities over a prolonged period of time. Such activities can include bathing, eating, getting out of bed and multiple other daily chores, also known as activities of daily living (ADL) (OECD, 2011[2]). The primary goal of LTC systems is to alleviate pain and suffering in patients and to support them in managing long-term dependencies that emerge with old age or chronic conditions. In order to ensure country comparison, the WHO Global Health Expenditure Database utilises the System for Health Accounts (2017[3]) joint Eurostat-OECD-WHO publication as its main methodological framework for calculating health expenditure. Long-term care services can comprise a wide-ranging package offered by healthcare systems, including management of symptoms through medical and nursing care in inpatient and outpatient settings, ADL support and assistance services and other social services aimed at promoting leisure and social activities for LTC patients. National administrative definitions and financing regulations for LTC services may affect the expenditure measurements.

Percentage shares of deaths occurring at home and in hospitals are reported directly by countries and through estimate models, with potential differences in methodologies. In addition, both values do not necessarily add up to 100, as each country may compile different categories of places of death.

References

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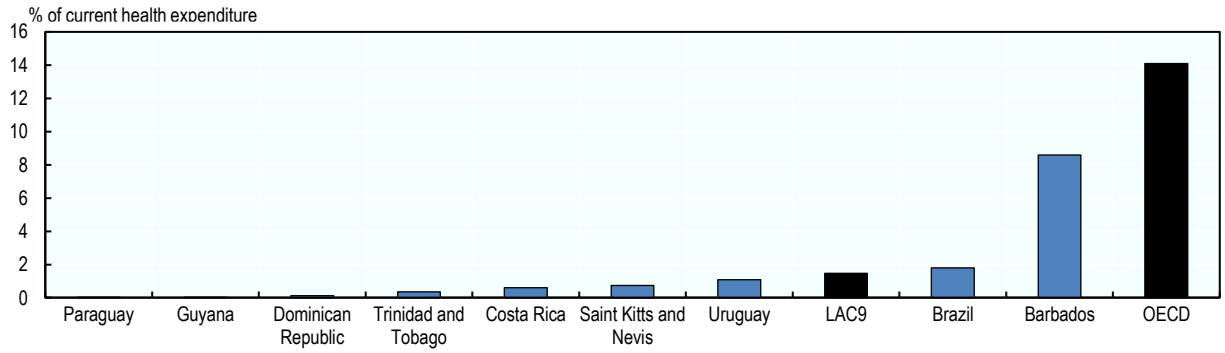
Figure 9.5. Expenditure in long-term care services as a share of current health expenditure, 2019 (or latest year)



Source: WHO Global Health Expenditure Database 2022.

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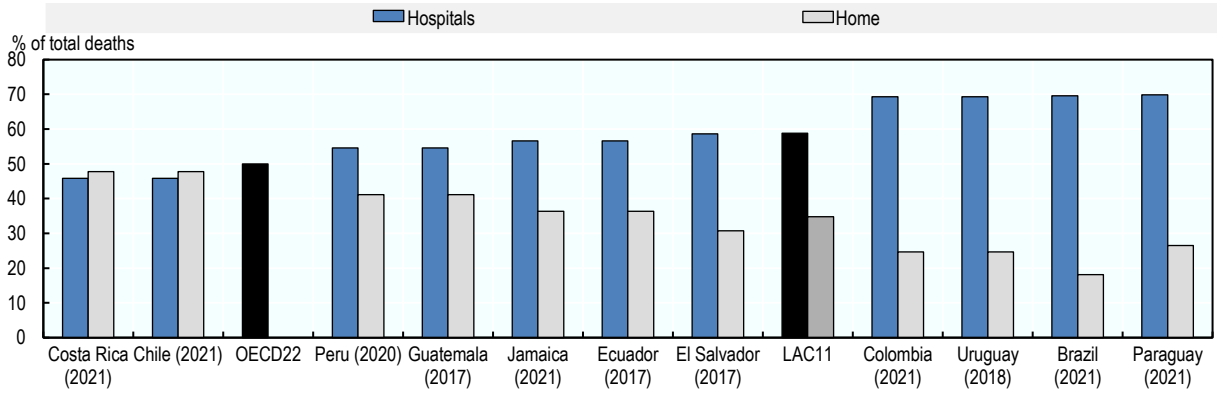
Figure 9.6. Share of deaths occurring in hospitals and at home, 2021 or latest year



Source: Data for Brazil, Jamaica, Peru, Costa Rica, Colombia and Chile from OECD questionnaires for HAG LAC 2023, OECD average from *Health at a Glance 2021*, https://doi.org/10.1787/ae3016b9-en and other countries from Seitz et al (2022[]), "Place of death and associated factors in 12 Latin American countries: A total population study using death certificate data", https://www.doi.org/10.7189/jogh.12.04031.

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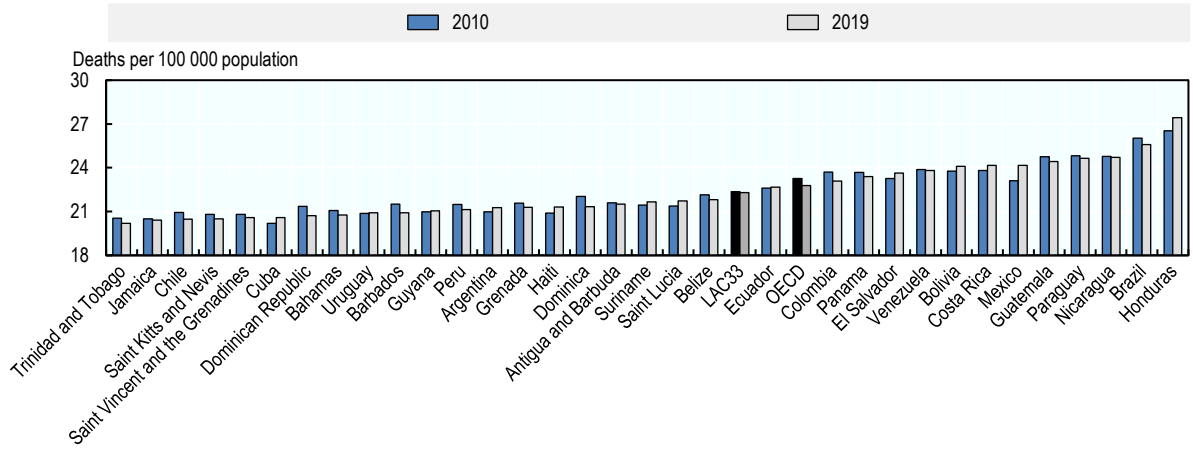
Figure 9.7. Death rate for Alzheimer's and other dementias per 100 000 population, 2010 and 2019



Source: GBD 2019.

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Health at a Glance: Latin America and the Caribbean 2023

This second edition of *Health at a Glance: Latin America and the Caribbean*, prepared jointly by OECD and the World Bank, presents a set of key indicators of health status, determinants of health, healthcare resources and utilisation, healthcare expenditure and financing, quality of care, health workforce, and ageing across 33 Latin America and the Caribbean countries. Each of the indicators is presented in a user-friendly format, consisting of charts illustrating variations across countries, and over time, brief descriptive analyses highlighting the major findings conveyed by the data, and a methodological box on the definition of the indicators and any limitations in data comparability. This edition of *Health at a Glance: Latin America and the Caribbean* also provides thematic analyses on two key topics for building more resilient health in the LAC region: the impact of the COVID-19 pandemic on LAC healthcare systems, and climate change and health.

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