

# Mexico's Response to COVID-19: A Case Study



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Chair

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ABBREVIATIONS	
CDC	Centers for Disease Control and Prevention
CENETEC	National Center of Technological Excellence in Health
ENSANUT	National Survey on Health and Nutrition
GDP	Gross Domestic Product
HCW	Health Care Workers
ICU	Intensive Care Unit
IMSS	Mexican Institute of Social Security
InDRE	National Laboratory for Epidemiological Diagnostic and Reference
INSABI	Institute of Health Institute for Wellbeing
INSP	National Public Health Institute
INEGI	National Institute of Statistics and Geography
ISSSTE	Institute for Social Security and Services for State Workers
MORENA	National Regeneration Movement
NCD	Non-Communicable Disease
NGO	Non-governmental Organization
NIH	National Institutes of Health
NPI	Non-pharmaceutical Interventions
PAHO	Pan American Health Organization
PPE	Personal Protective Equipment
RT-PCR	Reverse Transcription-Polymerase Chain Reaction
SARS	Severe Acute Respiratory Syndrome
SINAVE	National Epidemiological Surveillance System
SISVER	Epidemiological Surveillance System for Respiratory Diseases
SS	Secretariat of Health
US	United States
WHO	World Health Organization



## PREFACE

One year ago, at the time of this writing, WHO officially declared Covid-19 a pandemic, only a few weeks after declaring it a Public Health Emergency of International Concern. The year 2020 will surely be considered in history as the most calamitous one in health since the 1918 flu pandemic. It will also be remembered as having the worst economic crisis since the Great Depression. The social consequences of the pandemic will be felt for a long time to come.

The pandemic has affected everyone in the planet, directly or indirectly. It is estimated that over 10% of the global population has been infected so far. This average hides the fact that in many places in Europe, the US, Brazil and Mexico this proportion could be much higher. With over 10,000 deaths per week, Covid is now the 3<sup>rd</sup> main cause of death globally; in Mexico, it is currently the leading cause. Projections estimate that 4 million deaths due to Covid-19 will have occurred worldwide by July of this year. This figure does not account for the excess mortality related to non-Covid-19 cases that the pandemic has indirectly caused. But not all regions of the world have been similarly affected. Some countries have performed better than others. Understanding what elements made a difference and what lessons can be derived is the object of our case study.

This report was commissioned by the WHO Independent Panel to the Institute for Global Health Sciences at UCSF at the beginning of December 2020. The mission of the Independent Panel is “to provide an evidence-based path for the future, grounded in lessons of the present and the past to ensure countries and global institutions, including specifically WHO, effectively address health threats.” Several faculty members of our Institute and partner institutions in Mexico had been actively working on Covid-19 since the early days of the pandemic, so it was possible to bring their multidisciplinary expertise into this evaluation. The Covid-19 pandemic represents a rapidly moving situation, making this and other documents hastily obsolete in numbers, but hopefully valid in terms of lessons learned and recommendations for the short and long hauls.

Good governance implies the formulation and enforcement of policies to benefit the public. This is premised on institutional strength and effective leadership. Countries that had both of these conditions, like New Zealand and Norway, fared well. Poor leadership and lack of institutional strength are of course a bad combination—Mexico being a case in point. But even in places with solid institutions, like the US, bad leadership led to disastrous consequences in 2020.

Good communication is also essential in a crisis, and a component of good governance. Only by building trust and delivering solid information based on evidence will people respond to public health ordinances.

Moreover, citizens have a right to be informed truthfully by the authorities about the magnitude of the threat and of ways to be protected. Attitudes towards masking or hesitance to vaccines, for instance, are largely dependent of the quality of political leadership and execution, as well as the clarity and consistence of communications.

Science has again come to the rescue, by developing diagnostics and vaccines in record time. Testing has allowed to measure the extent of the pandemic, and in some countries, to trace contacts and effectively isolate and care for infected people. The magic of vaccines will eventually bring the pandemic under control, assuming that masking and other non-pharmaceutical interventions are enforced.

The notion that “No country will be safe until all countries are safe” needs to be hammered onto politicians and decision-makers everywhere. Vaccine nationalism is not only selfish but short-sighted. Virus variants will only increase in number and potential virulence in populations that are unprotected. Immunological equity should not only become a humanitarian desire, but a national security concern.

The World Health Organization has no legal instruments to enforce its recommendations and is vastly underfunded. A profound reform is needed to empower and resource the organization to effectively deliver on its promises. Similarly, public health systems everywhere are underfunded. An effective global epidemiological vigilance system needs to be supported by a more robust network of equipped laboratories and trained epidemiologists at the national and local levels.

It is no coincidence that countries with the worst performance in responding to the Covid-19 pandemic have populist leaders. They have in common traits such as minimizing the severity of the condition, discouraging the use of face masks, prioritizing the economy over saving lives, and refusing to come together with political opponents to mount a coherent response. They have also actively interfered in the implementation of sound health policies, for political reasons. The consequences in terms of human lives have been devastating. Therefore, some level of political accountability for poor leadership and performance needs to be instituted.

There are many lessons learned from this pandemic response that need to be incorporated into future pandemic preparedness. This will require more than just a plan; it will require the public health infrastructure, trained personnel, financial resources and competent leadership that were so painfully lacking in the terrible year of 2020.

Jaime Sepúlveda

# Introduction And Epidemiology



“It was my first shift working in the COVID triage area. As a dermatology resident, I hadn't been in an Emergency Room in a while. I was nervous. As I came in, I started counting patients but soon lost count, as many more were coming in. There were no available beds in the hospital, but we were accepting everybody, explaining to them that although we didn't have bed availability, we would examine them. The head nurse comes to me and lets me know a hospitalized patient just died. We have a bed! I thought, excited. We chose the sickest patient and within minutes, he was intubated. My next patient was a woman that had started with symptoms 15 days ago. She tells me that she got sick at the same time as her husband. She only has a fever and a cough, so I ask why she came to the ER. 'My sons pressured me,' she tells me and then pauses. I wait for her to continue. 'They pressured me because my husband just died and they got anxious, so they insisted that I came inside to be checked.' I tell her I'm sorry for her loss and she responds: 'Yes, me too; he is the person that just died so that the other man could get a bed.' I can't find words, so I hold her hand. She's not oxygenizing well and needs to be hospitalized, so we keep her in the ER. By morning, no beds have opened up, so I have to give her a referral for another hospital. As I give it to her, she looks at me and asks, 'does this mean I can't go to my husband's funeral?' I gather the strength I have left and tell her no, ma'am, you cannot.”

This story, told to us by a Mexico City healthcare worker, is the story of thousands of Mexicans who have been infected with SARS-CoV-2. It encapsulates the tragedy of too many families left bereft and the extreme conditions under which health workers have been caring for patients over the past year. Its purpose is to remind readers from the outset about the human suffering that lies behind the analysis and the statistics of the pandemic that this report will provide. With the world's 11<sup>th</sup> largest population, Mexico is, at the time of writing, the country with the third most reported COVID-19 deaths worldwide and the fourth highest excess mortality from all causes among those countries with available figures on total deaths.

Several defining features of Mexico's experience with the COVID-19 pandemic are reflected in the story: high rates of transmission within families, many of them living in crowded conditions in multigenerational housing, and all having to balance between health and economic needs given the lack of dedicated government support programs. Too little and too late testing. Delays in seeking medical care out of fear that once admitted to a hospital, people would contract the disease or die. A government communication campaign that prioritized keeping up appearances, and partisan politics, before health. Difficulties in finding a bed in overwhelmed hospitals at critical moments of the epidemic, even as official statistics continued to show availability. The need to resort to clinicians from all fields, junior staff, and medical residents to respond to the emergency, frequently without providing them with necessary training and quality Personal Protection Equipment (PPE). The extraordinary emotional distress among healthcare professionals. And ultimately, the heavy toll of an uncontrolled pandemic on an overstretched health system and society at large as the government failed to coordinate a national response and to implement sound policies to control infections, throwing the public health and service delivery components of pandemic management sharply out of balance.

This case study examines these and other important components of the COVID-19 pandemic and the national response in Mexico. It seeks to elucidate the reasons behind the high burden of disease in the country and produce insights and recommendations that can support a more effective response, both for the rest of this pandemic and for future health emergencies. In doing so, it builds upon the work of the scientific community across disciplinary fields, health professionals, journalists, civil society, the private sector, and government officials.

The goals and premises of this report are explicitly non-partisan. It is neither a rationalization of government decisions or of the pandemic's undeniably devastating impact in Mexico nor a political diatribe.

The report is critical where actions and decisions were found to be wanting (and cost lives as a result). The study's conclusions were arrived at after careful consideration of the facts, not preset; the narrative follows from the evidence, not the reverse. Conclusions and recommendations were independently reviewed by a diverse group of external experts. The purpose is to objectively understand how Mexico got here, help delineate the way forward in this pandemic, and inform future reforms to the national and international health architecture.

The report was commissioned by the World Health Organization Independent Panel for Pandemic Preparedness and Response and elaborated by a multidisciplinary team of academics under the leadership of the University of California, San Francisco's Institute for Global Health Sciences. The researchers have comprehensively reviewed and analyzed the scientific literature, government reports and press conferences, media articles, and existing case and comparative studies. They have also conducted original analysis of available data and conducted multiple interviews with key stakeholders from different social and government sectors, to ensure different viewpoints were considered.

The team wishes to thank all those who accepted to be interviewed and those who shared their first-hand experiences. The report is written in recognition of all those who have cared for an ill person and/or lost a loved one. In the face of the pandemic's sweeping toll, it is our collective duty to honor the sick and dead.

## Organization of the Report

The rest of this chapter is devoted to characterizing the health impact of the pandemic in Mexico. It focuses on the broad trends and numbers of the pandemic, situating Mexico in comparative perspective where appropriate. The goal of the chapter is to establish the fundamental empirical facts before analyzing the reasons behind them in the rest of the report.

Chapter 2 describes relevant aspects of the national context before the pandemic hit, including the health status of the population and key features of the country's health system, which was in a precarious condition due to a poorly implemented reorganization process and debilitating resource cuts on the verge of the emergency, falling on top of other long-term vulnerabilities. Chapter 3 reviews leadership and governance. It examines systemic problems in the emergency response model that led to failures in incorporating relevant scientific evidence and in following a precautionary approach in the management of the pandemic, as well as to prevalent coordination problems. Chapter 4 and 5 discuss communication and the public health response, respectively. Chapter 6 examines the preparation of the health system and service delivery. Chapter 7 describes the underfunding of the pandemic response, and Chapter 8 explains the progress and issues with vaccination so far. Chapter 9 presents conclusions and recommendations.

## The Impact of the Pandemic in Numbers

International and subnational comparisons of the burden of COVID-19 must take into consideration that the quality and availability of statistics varies across jurisdictions. Countries differ markedly in the structure of their health systems, the territorial reach of their healthcare infrastructure, their epidemiological surveillance models, and their viral testing regimes. Such differences may reduce the comparability between units and lead to imprecise conclusions, especially when relying on a single indicator of incidence.

Mexico's COVID-19 response  
Timeline



With respect to COVID-19, the number of cases and deaths across geographical units reflect not only the prevalence of disease, but the capacity and willingness to diagnose occurring infections. For this reason, analyses must take into account differences in measuring capacity and approaches toward diagnostic testing and cross-validate between different indicators. Finally, indicators must be analyzed with reference to the data generation process and comprehensively, rather than in isolation.

Adopting such a comprehensive view of the data confirms that Mexico is one of the worst-affected countries during the COVID-19 pandemic. Several metrics demonstrate the severe impact of the disease in the country and situate it among the worst performers internationally:

- A) Comparatively high numbers of reported cases and deaths, after accounting for differences in population size and testing levels.
- B) Comparatively high excess mortality from all causes, which reflects both the direct and indirect impact of COVID-19.
- C) Large inequities in the burden of disease across social groups and regions.
- D) Very high infection and mortality rates among health workers.

In the remainder of this chapter, we analyze each of these elements in more detail in order to properly characterize the course and toll of the pandemic.

Confirmed COVID-19 Infections

The first COVID-19 case in Mexico was confirmed by authorities on February 28, 2020, although in its current release, the official database includes one case with a positive test result a month earlier (SS). A year later, by mid-February 2021, more than 2 million infections have been confirmed, 94.6% of which were confirmed by RT-PCR or antigen test. The remaining 5.4% of patients were diagnosed with COVID-19 based on clinical presentation and epidemiological association, given the lack of a valid test result.

Figure 1 presents Mexico's epidemic curve and the number of patients analyzed for COVID-19, according to official data from the National Epidemiological Surveillance System (SS). Of all confirmed cases, 44% reported they had had contact with another person diagnosed with the disease. Infection rates across age groups have remained relatively stable throughout the pandemic, with a slight increase over time in the proportion of cases being reported for the population younger than 30 years of age. This group, which comprises half of the Mexican population, accounted for 21% of reported cases in mid-July of 2020 and 25% by mid-January 2021.

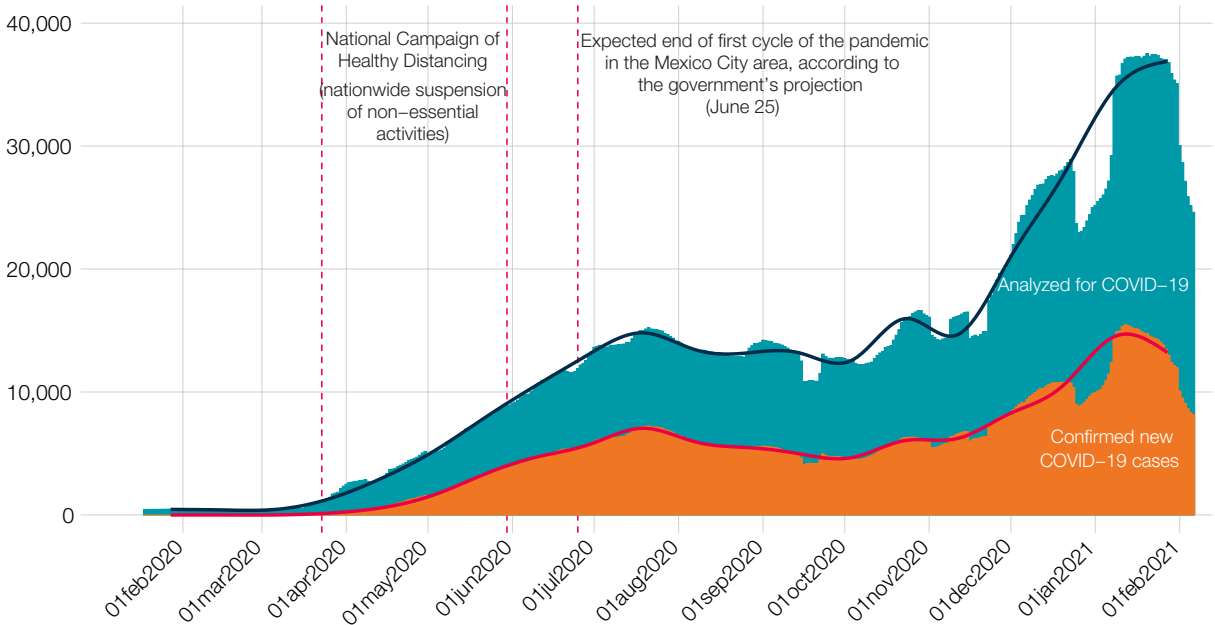
The epidemic curve displays two infection peaks, the first by mid-July of 2020 and the second by early to mid-January 2021, with the second exceeding the first by a ratio of 2:1. The first two vertical dotted lines in Figure 1 demarcate the period during which lockdown measures were in place at the national level, under the National Campaign of Healthy Distancing (March 23-May 30). The country then transitioned to a state-level alert system, with measures varying depending on the estimated epidemic risk across jurisdictions.

The national lockdown period was determined based on the federal government's epidemiological projections, which were shared with the public and predicted the curve would peak between the 6<sup>th</sup> and 8<sup>th</sup> of May (GobMX). As is clear from the graph, the projection was not met. The first peak came more than two months later, as cases continued to rise steadily until mid-July. The descent was also significantly less pronounced than expected. The federal government's projection, following a normal distribution, anticipated a steep decline in the epidemic curve after the peak and the end of the "first cycle" of the



pandemic by June 25 (marked with a vertical dotted line in [Figure 1](#)), when 95% of all expected cases would have already occurred ([Presidencia de la República](#); [El Universal](#)).

**FIGURE 1.** Daily new COVID-19 analyzed and confirmed cases



Cases are arranged according to the date patients with suspected COVID-19 were tested or first received attention at a health care unit. Source: Authors’ elaboration based on Dirección General de Epidemiología, Secretaría de Salud (data release of February 20, 2021).

Such a decline did not occur. Although reported cases decreased somewhat in the fall, more than 32,000 thousand weekly new cases were being detected even at the lowest point of the curve. This incidence rate, of approximately 100 cases per 100,000 population in a 28-day period, corresponds to the highest level of risk in the 4-level system employed by the United States’ Centers for Disease Control and Prevention (CDC) to alert travelers about health threats across locations ([CDC](#)). This means that after the first peak in July, Mexico’s epidemic curve stabilized for about three months at very high levels of COVID-19, pointing to a sustained inability to bring down transmission. Rather than two waves, Mexico has been hit by a single wave that has fluctuated between very high and extreme levels of COVID-19.

After the stabilization period in the fall, cases started to rise again in November, yet at a faster pace than during the first period of ascent. As we discuss later, authorities hesitated at this juncture to reinstate lockdown measures in the Mexico City area, despite evidence of re-acceleration of contagion and in violation of the government’s own alert-system guidelines ([NYTimes](#); [Aristegui Noticias](#)). This region contributed disproportionately to the second infection peak, when over 15,000 new cases were registered daily, more than double the cases seen in the first peak. The incidence rate for January 2021 reached 324 per 100,000 population, more than three times above the CDC’s threshold for “very high” COVID-19.

[Figure 1](#) also illustrates that confirmed cases represent a high proportion of all individuals analyzed for SARS-CoV-2 and whose result has been recorded in the national database. Public and private health establishments across the country register patients with suspected COVID-19 in the Epidemiological

Surveillance System for Respiratory Diseases (SISVER) as long as they meet the operational definition for suspected viral respiratory disease, which requires the presence of symptoms ([SS](#)). Under the guidelines, 10% of patients with mild symptoms, 100% of patients with severe symptoms (difficulty in breathing), and 100% of those meeting the criteria for severe acute respiratory infection undergo testing. Establishments with more resources may sample more than 10% of outpatients, but this has been rarely done in an underfunded public sector.

Additional tests conducted by laboratories outside the National Network of Public Health Laboratories and/or not meeting the operational definition are not recorded in the national epidemiological database. These include tests purchased by typically wealthier citizens and any testing financed by state governments but not matching the criteria for registration established by the federal Secretariat of Health. A few state governments conducted such additional testing, especially as antigen tests became more available. However, these efforts remain limited and, as we discuss later, they were not supported or were even obstructed by the federal government. The official figures therefore include most analyzed samples.

The high share of confirmed cases relative to studied patients, visible in [Figure 1](#), reflects the testing regime and epidemiological surveillance system implemented during the pandemic. By design, asymptomatic individuals and most with mild symptoms have not been tested; as a result, the vast majority of infections have gone uncounted. Whether this was a sound policy choice is later analyzed in the report. Here we simply note that the number of cases is considerably underestimated due to limited testing, as is clear from the test positivity rate. On average, 39.8% of tests performed from the beginning of the pandemic to mid-February 2021 were positive, with the rate exceeding 50% during the first peak in July of 2020. The positivity rate stayed below 45% during the second peak despite the higher levels of disease transmission, which suggests a slight relaxation of barriers to testing.

To contextualize Mexico’s comparative burden of infection it is therefore necessary to account for the extent of diagnostic testing. [Figure 2](#) shows the total number of tests per thousand population (along the horizontal axis) and the number of confirmed cases per million population (along the vertical axis), in a transformed (logarithmic) scale. The diagonal represents the average growth rate in detected infections as testing increases. Absolute differences between countries are larger than they appear visually due to the log transformation, but the graph helps identify which countries have a higher or lower than expected case burden relative to the rest of the world and to the amount of testing they conduct.

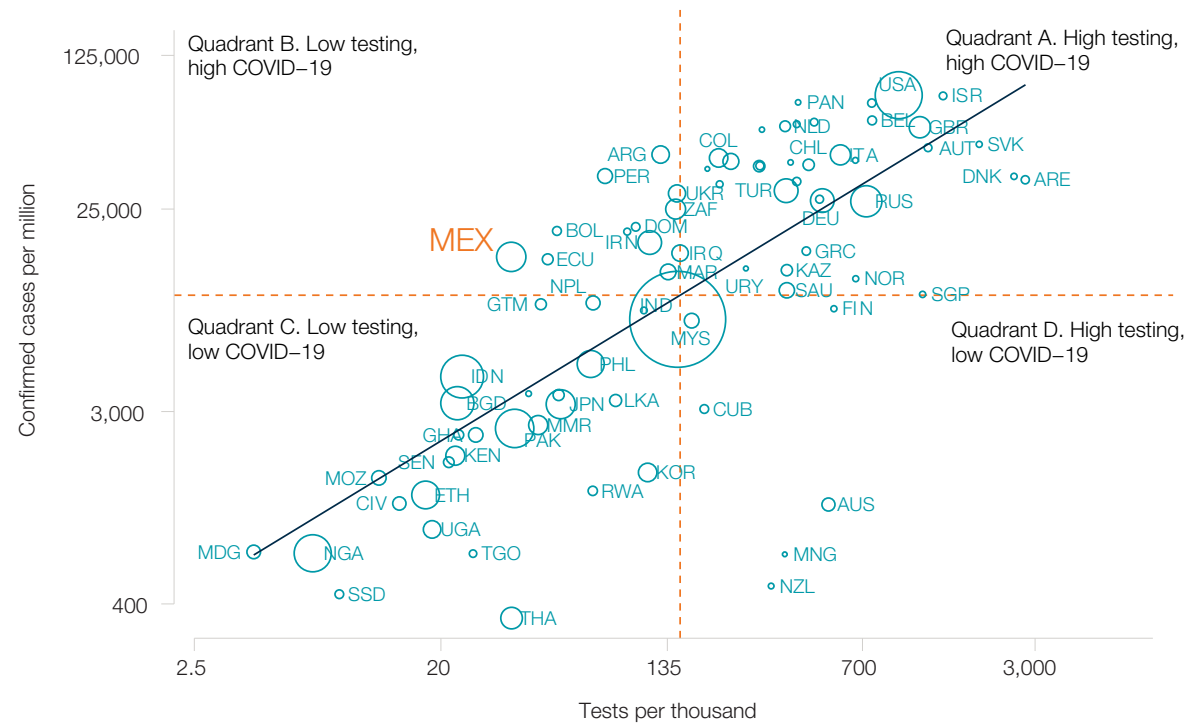
Mexico appears in the top left quadrant (B) with a considerably higher number of cases per million than would be expected considering its number of tests per population, alongside other Latin American countries like Ecuador and Bolivia. Mexico is the country with the largest positive vertical distance from the diagonal (with Peru and Argentina), suggestive of the highest rates of undetected infections.

A large, nationally representative serological survey fielded between August and November by the National Public Health Institute (INSP) which enrolled 9,400 households corroborates the extremely low detection rate. Based on the survey results, 25% of the Mexican population had developed antibodies against SARS-CoV-2 ([SS](#)). Of these, 70% were asymptomatic, 10% presented some symptoms that might have been consistent with COVID-19, and 20% presented clear COVID-19 symptoms. Results were presented as preliminary, with 75% of the sample analyzed. As of the end of February 2021, the full results of the study have not yet been released.

Under the assumption that all those infected since the beginning of the pandemic continued to have antibodies at the time of the serological survey, the most conservative estimates comparing reported cases with the survey results yield a ratio of about 1 infection in every 30 being reported (3.3%). For reference,

the CDC estimates that 1 in 4.6 infections (21.7%) were detected in the United States between February and December 2020 (CDC). In April, health authorities stated that under the sentinel system employed to monitor the epidemic, 1 in every 8 cases were diagnosed (SS). The serological survey provided evidence that the size of the pandemic is about four times larger than authorities had believed, and the capacity to diagnose infections considerably lower.

**FIGURE 2.** Total COVID-19 tests per thousand vs. confirmed cases per million  
(As of February 5–10, 2021. Log–log relationship)



The dotted lines mark the average in each variable for included countries. Axes are in logarithmic scale. The size of the circles is proportional to countries’ population. All countries with available information and more than 3 million population are included. Source: Authors’ elaboration based on data collected by Our World in Data.

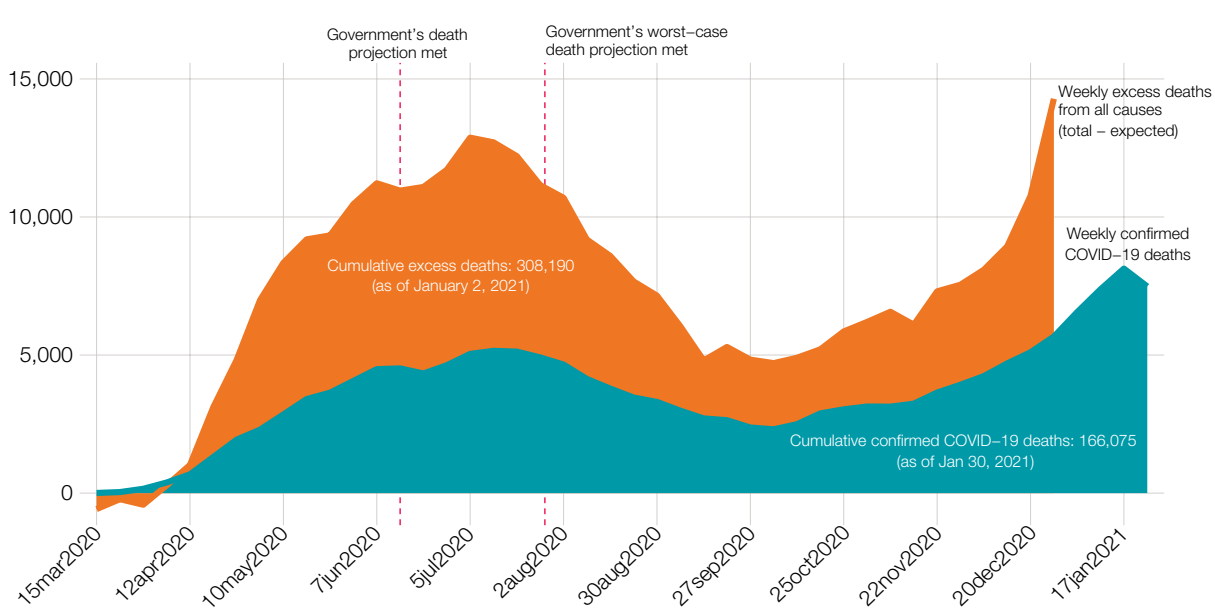
It should be noted that the serological survey’s field period ended in November, right as Mexico was entering the two months of highest transmission of all the pandemic. Assuming a similar detection rate and again a relatively long period immunity (i.e., a low rate of reinfections), reported cases between December 2020 and February 2021 would imply that about an additional 20% of the population may have already contracted the virus, on top of the 25% reported by the survey.

**COVID-19 Mortality**

Figure 3 presents the weekly number of confirmed COVID-19 deaths, plotted against the number of excess deaths from all causes. Figures on excess deaths come from the official calculations of an interinstitutional group established in May 2020 to compile these data, in a positive step toward transparency. The Secretariat of Health, the National Population Registry, the statistics agency (INEGI), and the Pan American Health Organization (PAHO) form part of this body (SS; SS DGIS).

Predictably, deaths follow the same pattern as the infection curve, with a second and higher peak in January 2021. Figure 3 includes two vertical dotted lines. The first marks the date when the number of expected COVID-19 deaths in one of the federal government’s initial projections was officially met (around 30,000 deaths) (Presidencia de la República). The second marks the worst-case scenario in the same estimations (60,000 total deaths). Again, the official projections were overly optimistic. By late February 2021, the number of confirmed COVID-19 deaths in the government’s worst-case (so-called “catastrophic”) scenario has been exceeded by a factor of 3.

**FIGURE 3.** Weekly confirmed COVID-19 deaths and weekly excess deaths from all causes



Excess deaths are calculated as total deaths minus expected deaths (90th percentile) according to observed mortality for 2015-2019. Source: Authors’ elaboration based on National Epidemiological Surveillance System, Secretariat of Health (data release of February 20, 2021) and mortality data from INEGI and the National Population Registry.

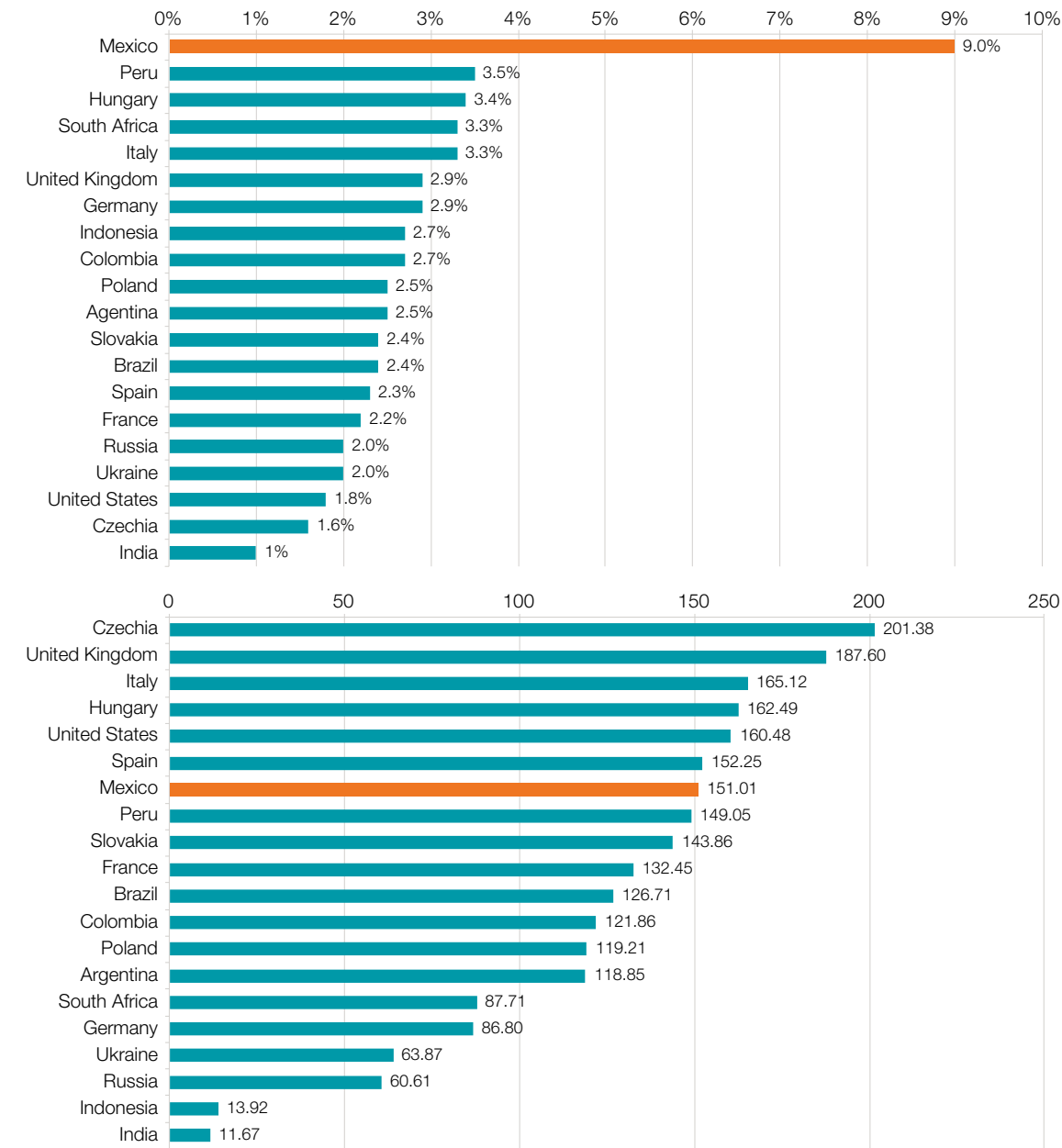
The projections were based on the proportion of people reportedly contracting the disease (attack rate), requiring medical attention, and dying during the original outbreak in the Hubei Province of China (IMSS; Presidencia de la República). Authorities considered that 0.1% of the population had contracted the virus by the middle of the outbreak and about 0.2% would have done so by the end. Extrapolating from that estimate, they expected that between 275 and 300 thousand people would contract the disease in Mexico, of which 70% would seek medical attention; 6% in that subgroup (about 10 thousand people) would become critically ill (Presidencia de la República; Presidencia de la República).

These were the figures that were first considered most likely, and the ones health authorities originally used to estimate the financial needs of the epidemic and prepare the health system (Presidencia de la República; Presidencia de la República). However, these calculations were based on assumptions that viral transmission would follow the evolution observed in Hubei Province, regardless of public health interventions enacted or other differences across potentially relevant factors. By June, as cases continued to rise, health authorities shifted from the scenario associated with a 0.2% attack rate to one in which 0.5% of the population contracted the disease. This alternative scenario had been initially considered too

pessimistic. The projection of 30,000 total deaths corresponded to this incidence proportion. In the worst-case scenario, a 1% attack rate would duplicate the total number of deaths.

Even this scenario proved too optimistic. Being the world’s 11<sup>th</sup> largest country by population size, by mid-February Mexico ranked third in confirmed deaths due to COVID-19 after the United States and Brazil, both of which conduct more testing and therefore have lower rates of underdiagnosis. Mexico is among the countries with the highest case-fatality ratio (deaths relative to confirmed cases) and confirmed COVID-19 deaths per population. [Figure 4](#) presents both of these indicators for the twenty most affected countries worldwide. The very high case-fatality rate again reflects Mexico’s exceptionally restrictive testing regime.

**FIGURE 4.** Observed case-fatality ratio and deaths per 100,000 population



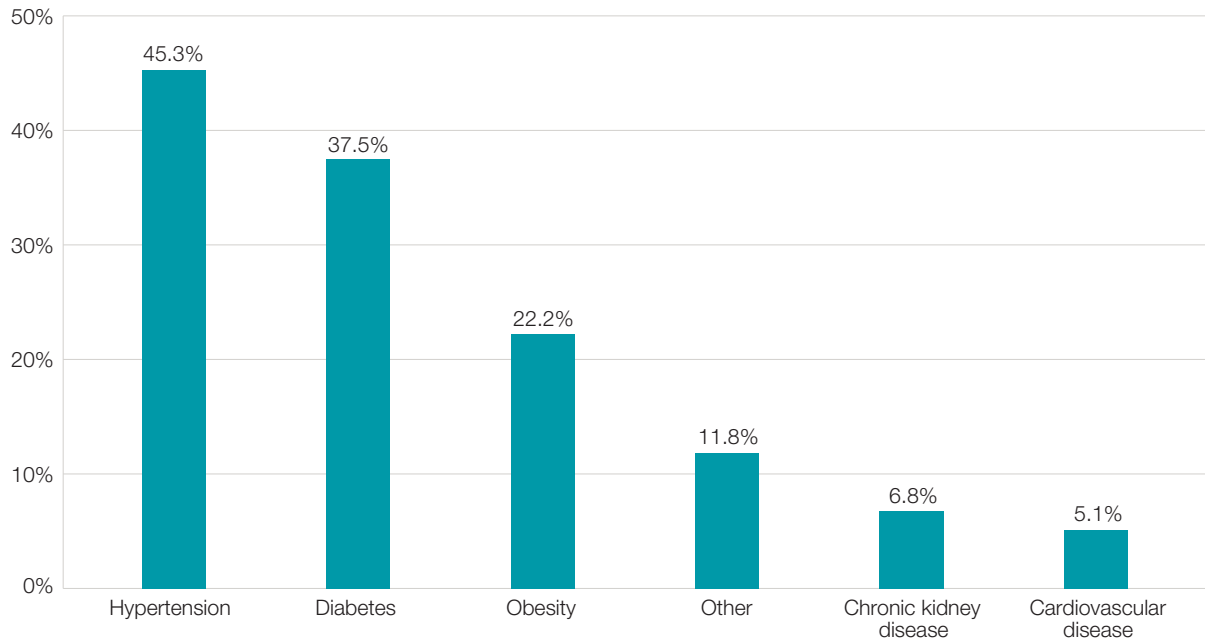
Source: [Johns Hopkins University & Medicine](#), Coronavirus Resource Center. As of February 26, 2021.

The distribution of deaths varies considerably across regions and patient characteristics. As elsewhere, mortality is disproportionately higher among men of older age and among patients with one or more preexisting comorbidities. On the aggregate, Mexico’s relatively young population (the median age is 29 years and persons 65 and older comprise 8.2% of the population) would predispose the country toward lower overall mortality relative to countries with an older population like the United States and most of Europe. However, the inability to control transmission of SARS-CoV-2 in a context of high prevalence of chronic conditions such as diabetes, obesity, and cardiovascular disease has contributed to the very high number of deaths officially reported — about 185,000 by the end of February ([INSP](#); [Barquera and Rivera 2020](#)). These vulnerabilities associated with the health status of the population and others related to the health system merited more coherent and decisive action toward controlling viral transmission.

Empirical studies of the risk factors for COVID-19-related hospitalization and lethality at the individual level among the Mexican population point to diabetes, early-onset diabetes, obesity, chronic kidney disease, hypertension, and immunosuppression (in addition to advanced age) ([Bello-Chavolla et al. 2020](#); [Parra-Bracamonte et al. 2020](#)). Our own analysis of the national epidemiological database indicates that at least one of these comorbidities was present in two thirds (66.6%) of all confirmed COVID-19 deaths as of February 26, 2021. [Figure 5](#) presents the share of patients with fatal COVID-19 that had different types of conditions.

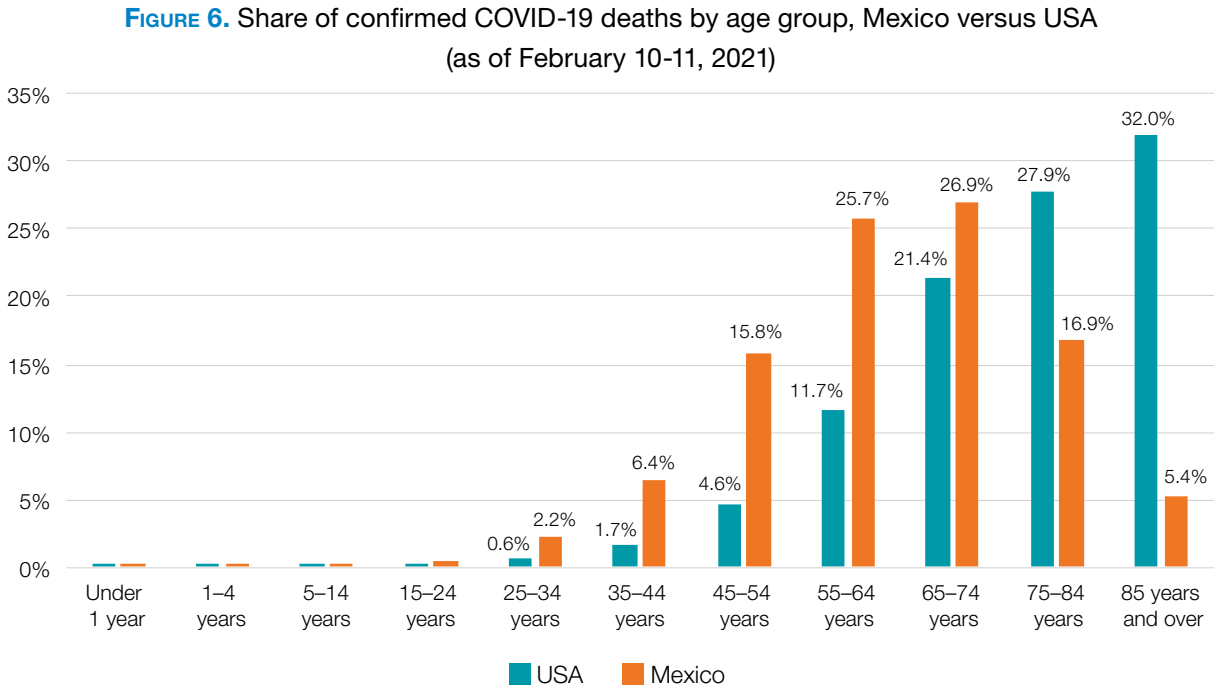
The most frequent comorbidities of patients diagnosed with COVID-19 in Mexico are hypertension (17.4%), obesity (14.6%), and diabetes (13.4%). Fatality ratios (proportion of deaths among those presenting the condition and diagnosed with COVID-19) for these comorbidities were 23.1%, 13.5%, and 24.9%, respectively.

**FIGURE 5.** Presence of comorbidities in patients with fatal COVID-19



The ‘other’ category includes chronic obstructive pulmonary disease, patients with immunosuppressed conditions, and other less-frequent comorbidities. Source: Authors’ elaboration based on Dirección General de Epidemiología, Secretaría de Salud (February 26, 2021).

The high prevalence of chronic diseases, in combination with suboptimal timeliness and quality of medical attention, have likely contributed to relatively high COVID-19 mortality among the non-elderly population in Mexico. 50.6% of all deaths have occurred among population less than 65 years old, compared to 18.7% in the United States. Figure 6 presents the contrast between these two countries in the age distribution of confirmed COVID-19 deaths.



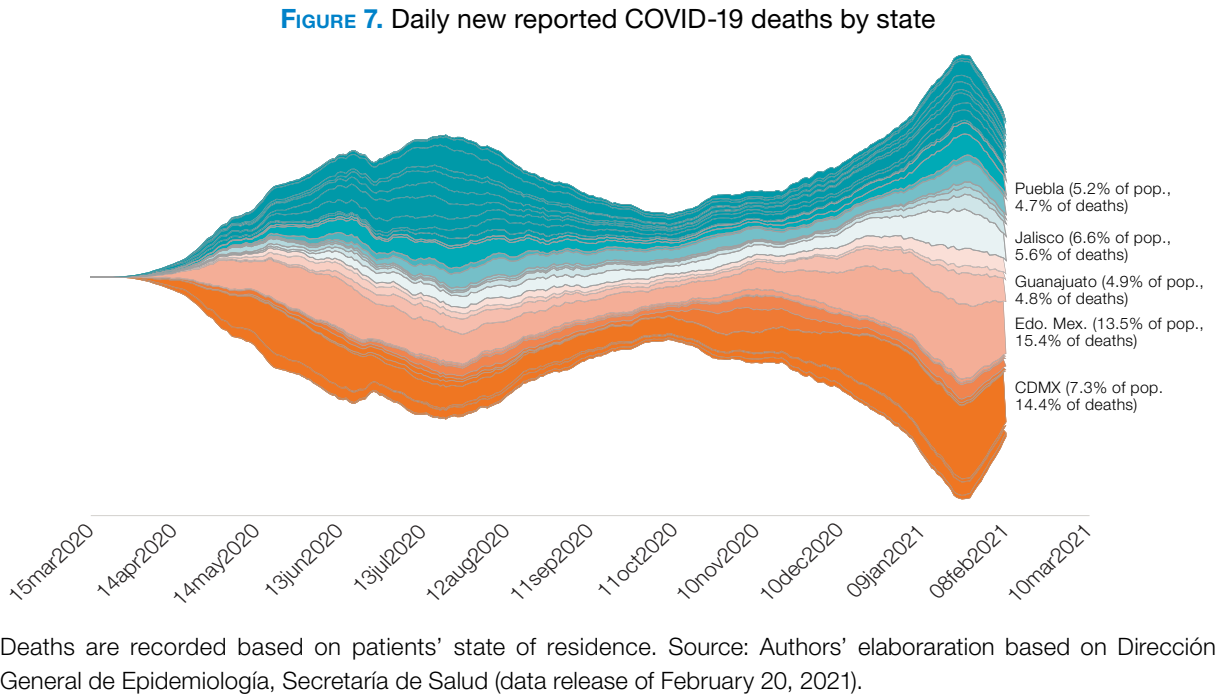
Source: Dirección General de Epidemiología, Secretaría de Salud and CDC.

Regionally, the Mexico City area has disproportionately contributed to mortality by COVID-19 in the country. Figure 7 shows deaths of patients diagnosed with COVID-19 across states and over time. Each segment in the graph represents one of Mexico’s 32 states. The area for each state is proportional to its relative contribution to the total number of deaths, according to patients’ state of residence, though not necessarily where they received medical attention. The vertical size of the graph at a given time point reflects the proportion of deaths that occurred in that date relative to total observed deaths since the beginning of the pandemic. The two peaks of the epidemic curve in July 2020 and January 2021 are again reflected in Figure 7, with the number of deaths in the second peak far exceeding those observed in the first.

The performance of states in terms of mortality is highly variable. With 7.3% of the country’s population, Mexico City accumulates approximately 14.5% of total confirmed COVID-19 deaths. Differences in the level of testing and underdiagnosis across states may partly account for this pattern, but excess mortality figures corroborate the disproportionate contribution of Mexico City. The State of Mexico that surrounds the capital and the northern state of Baja California, where the large city of Tijuana is located, are the two other states with the largest gaps between their share of total population and their share of COVID-19 deaths.

Notice that the disproportionate contribution of the Mexico City metropolitan area to the death toll increased starting in early December, when authorities’ miscalculations or tampering with the established epidemiological alert-system—which by December 4, signaled the highest level of risk—led them to

postpone the reintroduction of strict restrictions in the city until December 18. By then, on the verge of the winter holidays, transmission had already spiraled. This contributed to disproportionately high incidence of cases and deaths in the Mexico City area in the second peak of the pandemic.



Of the more populated states, the state of Jalisco in the center-west—whose capital Guadalajara is the country’s third-largest metropolitan area—appears as the best performer, with 6.6% of the country’s population and 5.6% of all COVID-19 deaths. The states of Michoacán, Oaxaca, Veracruz, and Chiapas also have fewer confirmed COVID-19 deaths relative to their population, but these are states where underdiagnosis is highest due to insufficient testing.

Excess Mortality

Figure 3 shows that confirmed COVID-19 deaths are only a fraction of excess deaths observed in the country since the beginning of the pandemic. Official figures report 326,609 excess deaths in 2020, 2.6 times the number of confirmed COVID-19 deaths for the same period. Statistics for January 2021, when COVID-19 deaths peaked, have not been released at the time of writing, but a considerable increase in the number of excess deaths associated with the pandemic is to be expected.

A considerable proportion of the 61.2% excess deaths of 2020 that have not been linked to a COVID-19 diagnosis are likely directly attributable to the disease, given very limited access to testing and diagnosis. It should again be noted that the INSP’s serological survey suggested that only about 1 in every 30 infections were detected. A preliminary revised estimate of COVID-19 mortality provided by INEGI and based on death certificates showed that up to August of 2020, official figures underreported the death toll caused by the disease by 45% at the minimum (INEGI). However, the figure is likely to be revised upwards, given that an important proportion of remaining excess deaths currently attributed to other diseases closely track the observed epidemic curve over time.

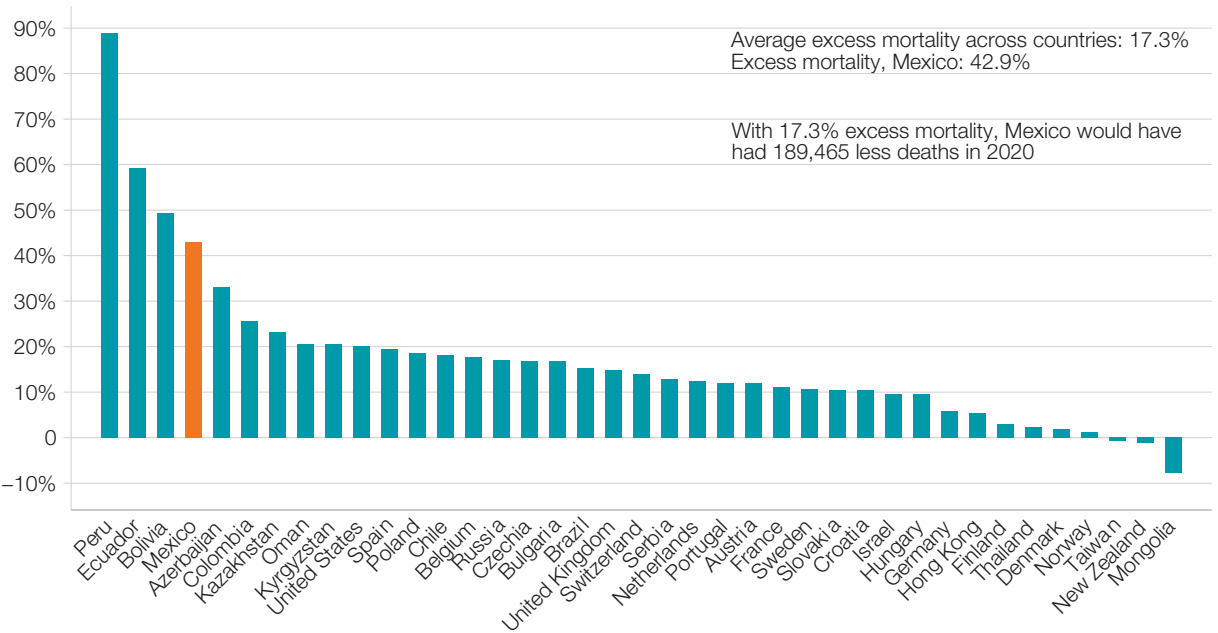


In addition to diagnosed and undiagnosed COVID-19 cases, the high number of excess deaths reflects a strong indirect impact of the pandemic on mortality via the disruption of care for other conditions (PAHO). Many patients have delayed or avoided seeking medical attention for other conditions out of fear of contracting the virus in medical establishments overwhelmed by COVID-19 patients. More importantly, uncontrolled viral transmission led a chronically overstretched health system to redirect its already scarce resources to the attention of patients sick with COVID-19.

Most regular procedures and primary health visits have been cancelled. Data from the Secretariat of Health indicate that by December 2020, diagnosis for malnutrition, heart conditions, uterine cancer, diabetes, and breast cancer had fallen by 56%, 45%, 34%, 27%, and 20% (Secretaría de Salud). During the first semester of 2020 alone, diagnoses for diabetes fell by 26% relative to the same period in 2019. Considering the increase in COVID-19 cases and hospital overflow in the winter months, balance in care for other conditions is unlikely to have improved.

As we discuss later, debilitating budget cuts and non-consensual, poorly implemented reforms further affected the health system’s functionality leading into the pandemic, and subsequently throughout 2020. All these elements together have contributed to Mexico’s very high excess mortality and paint a bleak picture for the immediate future, in terms of the consequences of delays in diagnosis and care for other conditions.

FIGURE 8. Excess mortality in 2020 relative to 2018-2019, all causes and ages



All countries with complete data for 2018, 2019, and 2020 and more than three million population are included. Source: Authors’ calculations based on World Mortality Dataset and Mexico’s Secretariat of Health.

Figure 8 depicts Mexico’s excess mortality in 2020 in comparison to other countries, using average deaths in 2018 and 2019 as a baseline to estimate the score, calculated as observed minus expected deaths, as a share of expected deaths. Figures come from the World Mortality Dataset (Karlinsky and Kobak 2021). Mexico ranks fourth in a global sample, with about 43% more deaths in 2020 than would have been expected relative to the 2018-2019 average, only after Peru, Ecuador, and Bolivia. The average for

countries included in the sample (all countries with more than 3 million population and complete mortality data for the past three years) is 17.3%. We estimate that if Mexico had performed as the average in the pandemic, around 190,000 deaths from all causes would have been avoided in 2020.

Excess mortality figures also display high subnational unevenness. Figure 9 shows weekly excess mortality across the 32 states throughout 2020. The parentheses contain the excess mortality share in each state for all of 2020. It should be noted that the states of Oaxaca and Chiapas, at the bottom of the graph with the lowest excess mortality rates, have experienced challenges recording deaths (SS). These are also poor, rural states in southern Mexico with low testing rates. Their figures must be interpreted with caution.

Mexico City and the surrounding State of Mexico appear again as the most affected regions, with very high excess mortality. Independent researchers who have directly analyzed data from death certificates have shown that Mexico City has the highest excess deaths per population in a list of cities or regions highly affected by the pandemic (Lima, Guayas, New York City, Madrid, Lombardia, London, Santiago, and Paris) (Romero and Despeghe 2021). Of this group, only Lima in Peru has a higher percentage score by mid-February 2021 (125% vs 200%). The researchers have argued the Mexico City government has raised obstacles for them to continue conducting the analysis (Nexos).

Figure 9 also shows states’ different epidemic curves across Mexico’s large territory. Although all states saw a first peak in excess mortality between May and July, patterns differ in the subsequent months. Some states experienced steeper declines in excess deaths than others. In addition, several states, especially those in northern Mexico, show a second peak in mortality in November. The graph stops by the end of 2020, when several states but not all display an upward trend toward a second peak that surpasses the first.

Inequities

As the wide regional differences analyzed here illustrate, the health impact of the pandemic has been highly uneven across social groups. Several forms of inequity are apparent. A first manifestation is access to a COVID-19 diagnosis for those infected with SARS-CoV-2. Our analysis of the official data points toward highly unequal access to diagnostic tests along socioeconomic lines.

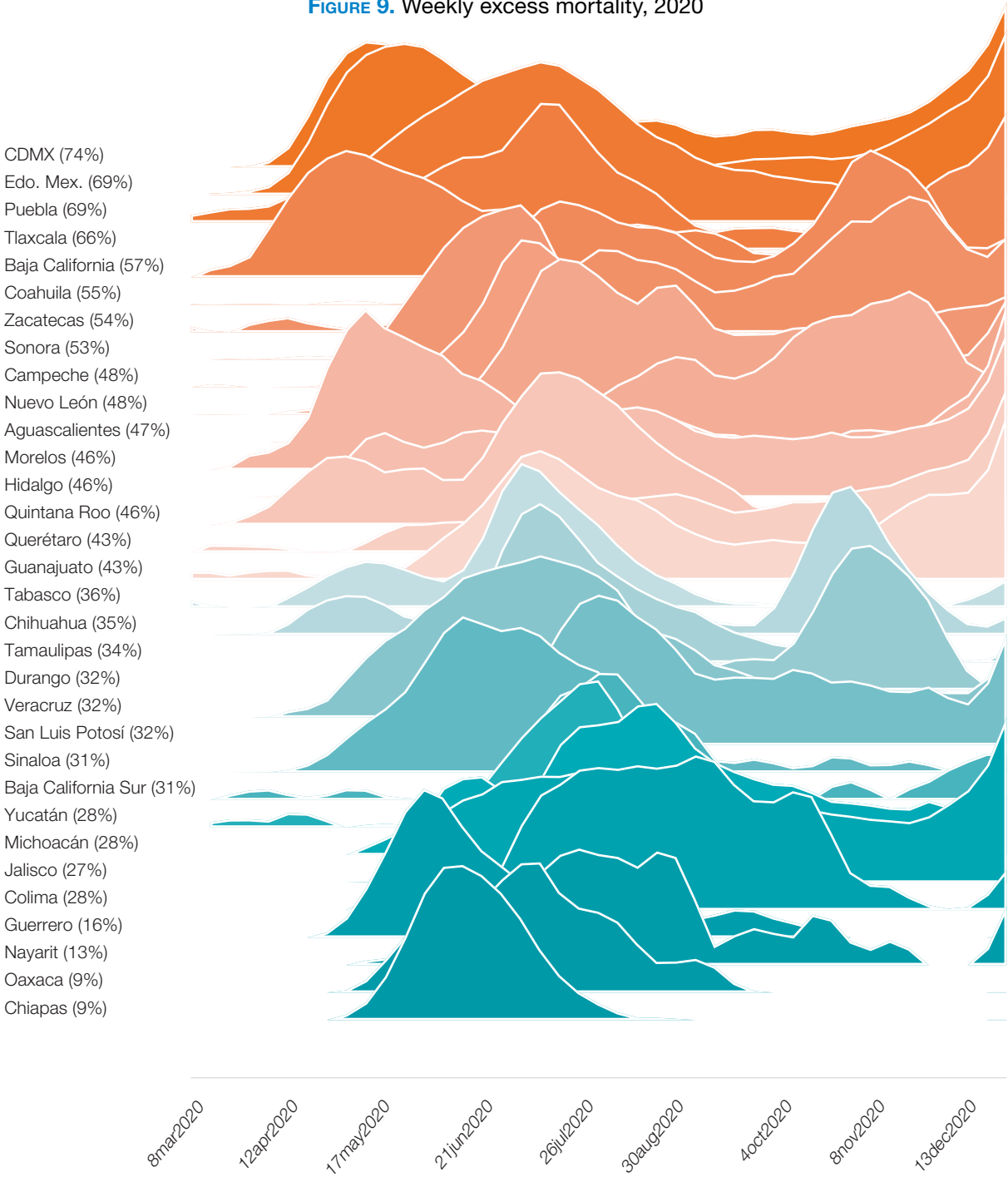
Figure 10 shows the raw association between the number of tests per thousand residents conducted throughout the pandemic in each municipality in the country and a socioeconomic marginalization index. The index includes measures of income poverty, education, residential crowding, rurality, and access to basic services like electricity and water. As is clear from the graph, the higher level of socioeconomic exclusion, the less testing has been conducted.

Given Mexico’s approach to testing, which requires the presence of symptoms, part of the association may obey to higher levels of transmission in more urban, wealthier municipalities. However, this is only a partial explanation. Sharp contrasts exist even within metropolitan areas. For example, the number of tests in the 16 municipalities of Mexico City averaged 173 per thousand residents from the beginning of the pandemic to January 31 of 2021. By contrast, the 18 adjacent urban municipalities of the State of Mexico, which are part of the same metropolitan area and together more populated than the city itself, average only 33 tests per thousand residents during the same period. Most of Mexico City’s lower-income, informal workers live in these municipalities and commute daily to the city on crowded public transport.

The observed pattern therefore points toward large inequities in access to testing, diagnosis, and proper care along socioeconomic lines. In addition, the possibility of following stay-at-home recommendations



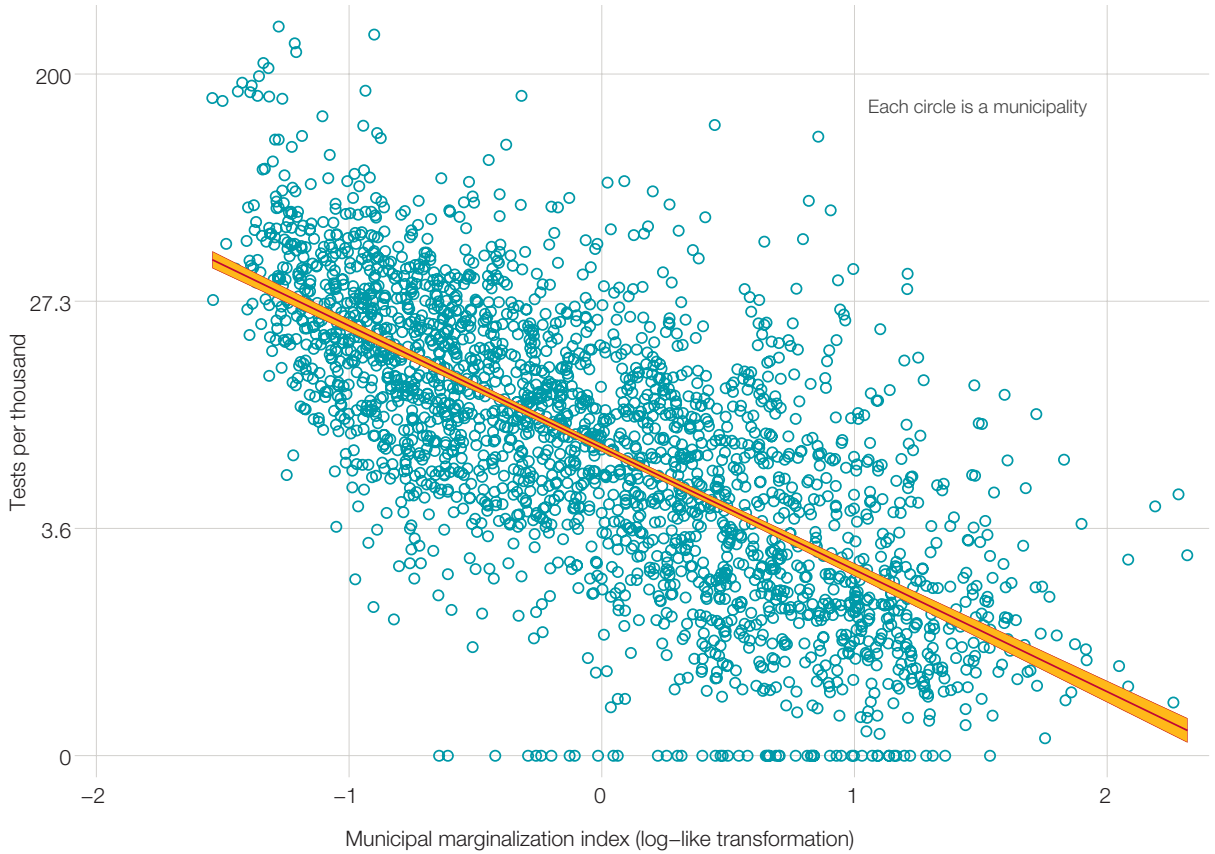
FIGURE 9. Weekly excess mortality, 2020



Excess deaths are calculated as total deaths from all causes minus expected deaths (90th percentile) according to observed mortality for 2015–2019. Source: Authors' elaboration based on data from the Secretariat of Health, INEGI, and the National Population Registry.

is strongly segmented by social class. This is reinforced by the lack of economic programs to support isolation and quarantining. An analysis of the spatial distribution of infections in Mexico City, where most health infrastructure is located, suggests that poorer neighborhoods have been most affected ([Jaramillo-](#)

FIGURE 10. Diagnostic tests per population vs. socioeconomic marginalization in Mexico's municipalities



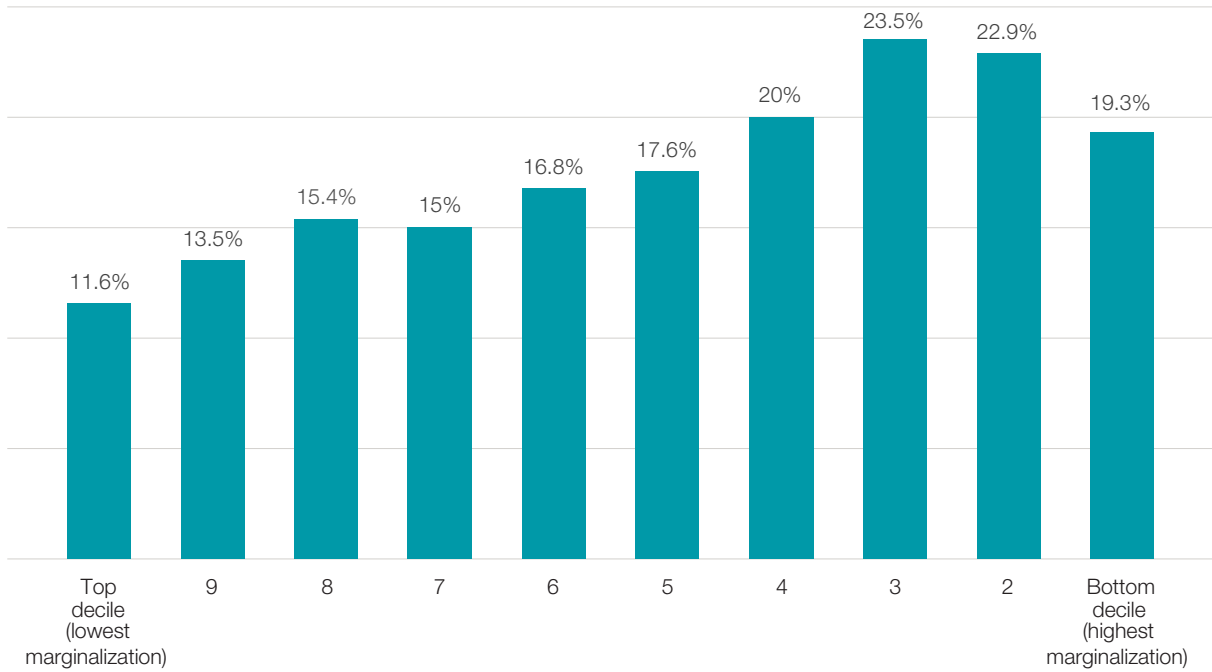
Axes are in logarithmic scale to normalize variance. Tests are recorded based on patients' municipality of residence. Linear prediction with 95% confidence interval. Source: Authors' elaboration based on Dirección General de Epidemiología, Secretaría de Salud (February 26, 2020) and Consejo Nacional de Población.

[Molina 2021](#)). The INSP's serological survey showed that presence of antibodies was lowest among those with a college education (21% versus 27%, 26%, and 24% for those with junior high, high school, and elementary education, respectively).

People living in municipalities with greater socioeconomic marginalization are also at greater risk of adverse outcomes ([Ortiz-Hernández and Pérez Sastré 2020](#)). [Figure 11](#) shows that among confirmed COVID-19 cases, the proportion of deaths tends to increase with the level of marginalization of the municipality where the patient lives. The unadjusted observed case-fatality ratio is also two times higher for the population who speaks an indigenous language, at 18.3% versus 9%, as of February 26.

Sharp differences also exist in death rates across health subsystems. Fragmentation in Mexico's health system has reproduced inequities during the pandemic. On average, 20% of COVID-19 patients hospitalized in the private sector (typically wealthier citizens) have died, a considerably lower proportion than in less well-provisioned and under-staffed public health systems. For reference, the percent that die among those hospitalized in the United States is 2.4% for the group between 18 and 49 years old, 10% for those 50 to 64, and 26.6% for those 65 or older ([CDC](#)).

**FIGURE 11.** Average observed case-fatality ratio at levels of municipal socioeconomic marginalization



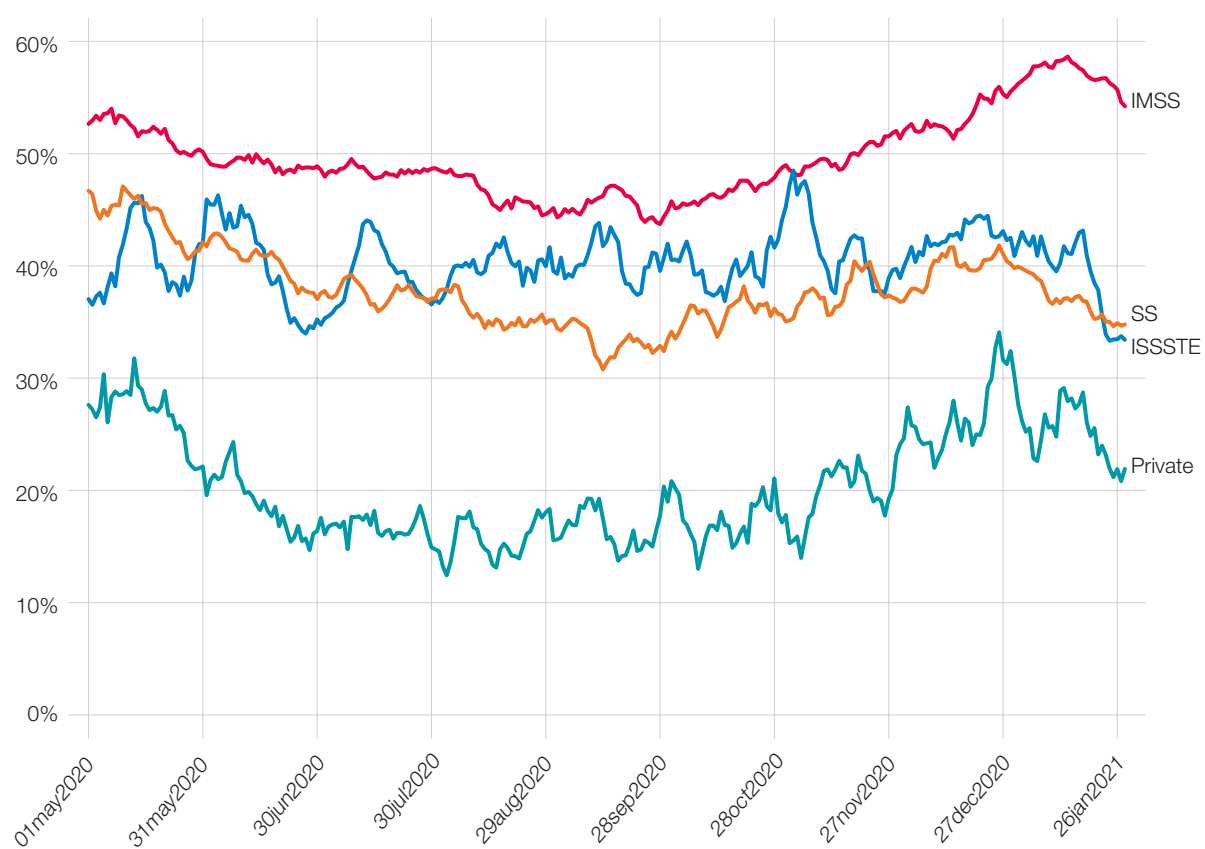
Cases and deaths are recorded according to patients’ municipality of residence. Municipalities with less than five confirmed deaths are excluded. Source: Authors’ elaboration based on Dirección General de Epidemiología, Secretaría de Salud and CONAPO.

However, hospital fatality rates also vary considerably across (and within) public health subsystems. IMSS—the social security institution for formal private sector workers—has maintained the highest hospital case-fatality rate throughout the pandemic, at around 50% or higher, versus 38% at ISSSTE (the system for public sector workers) and 37% at SS (health services for typically poorer informal workers and their families). [Figure 12](#) shows the evolution of fatality rates across subsystems over time. [Figure 13](#) shows the average hospital fatality rate across sectors in each state throughout the pandemic.

The overall fatality rate for hospitalized COVID-19 patients increased in December 2020-January 2021, coinciding with the second peak in the epidemic curve. At this juncture, hospitals in the Mexico City area were overwhelmed. Hospital overflow likely contributed to the observed rise. Moreover, oxygen shortages left many coping with the disease at home without necessary support ([NYTimes](#); [EL PAÍS](#); [Núñez 2021](#)). [Figure 13](#) illustrates how fatality rates also vary widely within subsystems across regions. Although IMSS is the sector with the highest hospital fatality rate in most states, rates fluctuate considerably.

Observed differences across service sectors remain after adjusting for patients’ sex, age, the presence of comorbidities, and the socioeconomic characteristics of the municipalities where they live ([Sánchez-Talanquer 2020](#); [Najera and Ortega-Avila 2020](#)). This suggests that uneven quality of care has been a major factor in explaining disease outcomes in Mexico. Based on available data and interviews conducted by the research team, factors such as old infrastructures, high volumes of patients, lack of sufficient staff (even as the number of beds or ventilators increased), drug shortages, inadequate training, and restrictive criteria for hospital admission have contributed to very high fatality rates. Frontline health workers confronted an extreme health crisis under highly unfavorable conditions.

**FIGURE 12.** Fatality rate among hospitalized COVID-19 patients across health subsystems



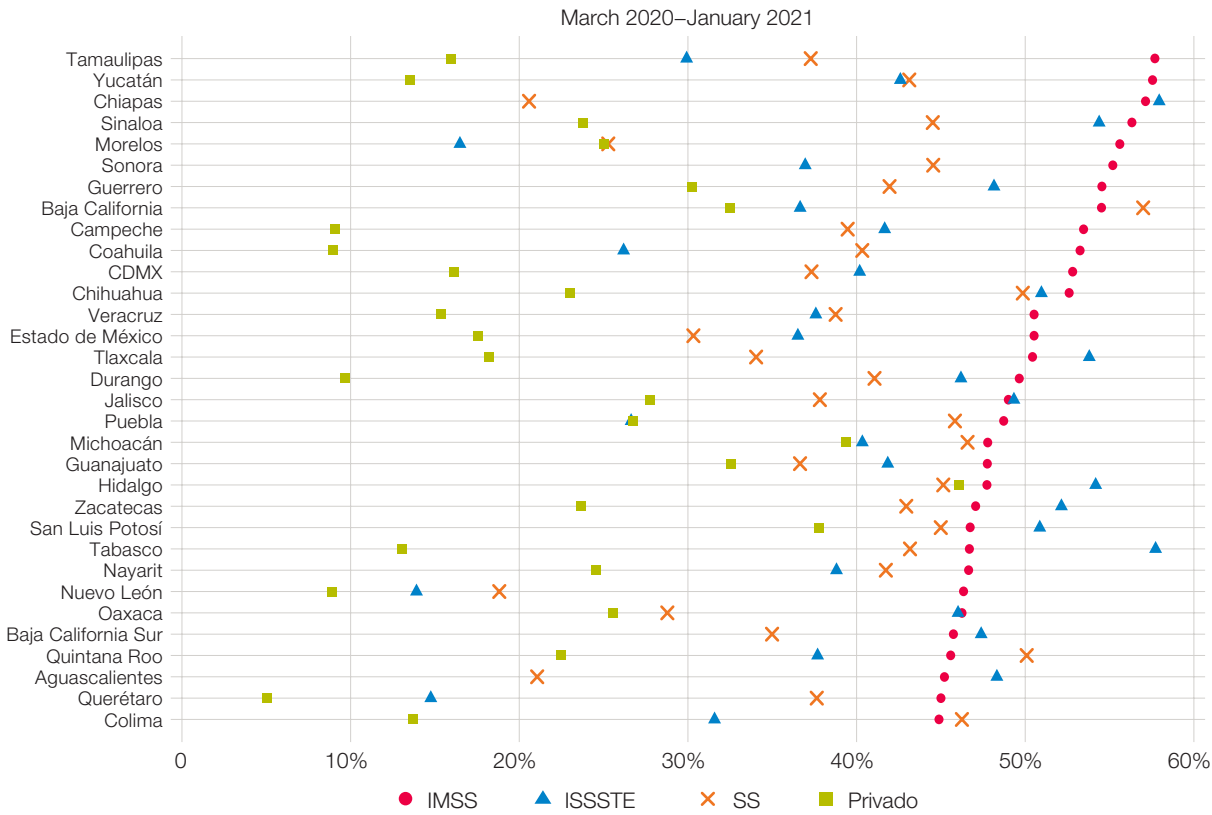
Source: Authors’ elaboration based on Dirección General de Epidemiología, Secretaría de Salud.

Barriers to hospitalization and delays in receiving care have also been at play. Throughout the emergency, the government prioritized hospital bed availability as a sign that the pandemic was under control. Across the health system, this created pressures not to admit patients until severe symptoms were already present. Messaging to the population also emphasized that the disease would not be different from a flu for the vast majority and that patients should avoid putting unnecessary demand on the health system, so as to leave room for those who needed it the most. Many patients were therefore already critically ill when admitted to a hospital bed.

According to the official epidemiological dataset, 10% of patients with a confirmed COVID-19 diagnosis died without access to hospitalization as of February 28, 2021. The proportion is as high as 27.7% in the southern state of Tabasco, 20.9% in Tlaxcala, and 20.8% in San Luis Potosí ([Figure 14](#)). Our analysis of the data indicates that male sex, younger age, and obesity are significant predictors of risk of dying without access to hospitalization among patients with confirmed COVID-19.

However, these figures only relate to those who were tested for COVID-19 and registered in the national epidemiological database. Media reports and excess mortality figures suggest that a significant number of citizens have contracted the virus and died at home. Based on its analysis of death certificates, INEGI estimates that by August 2020, some 58% of COVID-19 deaths had occurred out of hospital ([Animal Politico](#); [El Universal](#)).

**FIGURE 13.** Fatality rate among hospitalized COVID-19 patients across states and health subsystems



Source: Authors’ elaboration based on Dirección General de Epidemiología, Secretaría de Salud.

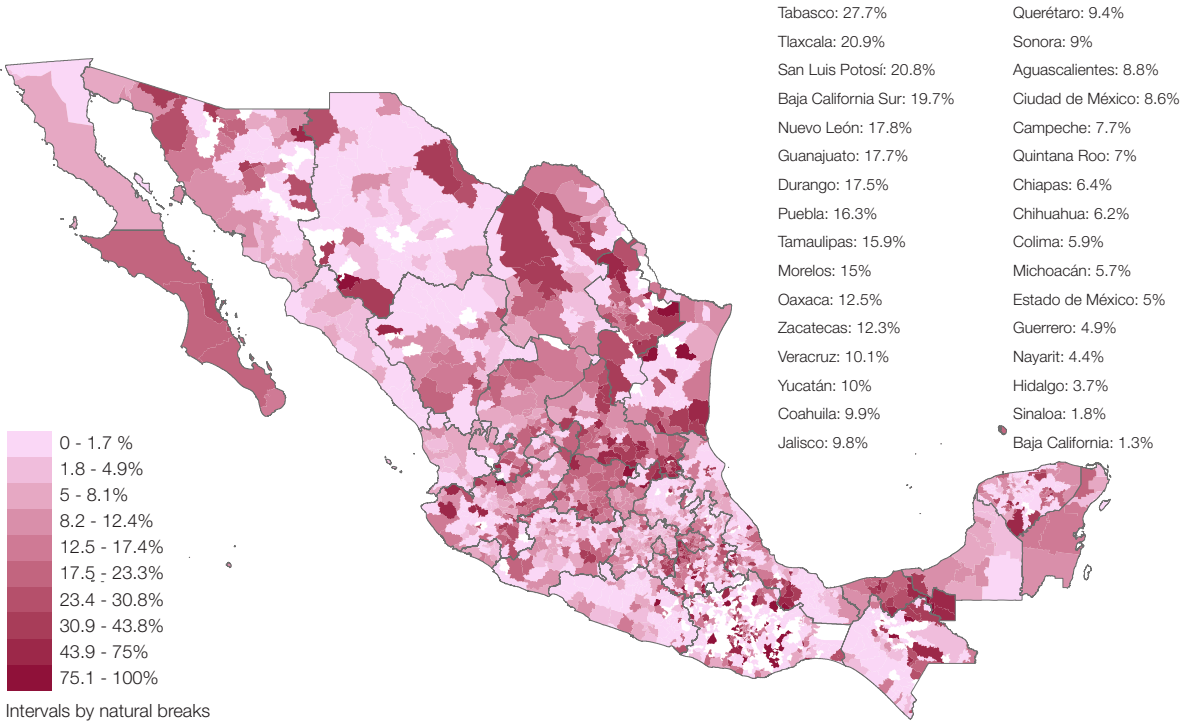
**Infection and Mortality Rates among Health Workers**

According to [PAHO](#), as of 2 February 2021, the WHO has been notified of 37 million cases of COVID-19 among health care workers (HCWs) from 183 countries and territories, a figure that represents 36% of total cases globally. The median age of these cases was 42 years and 68% were women. Data provided by the Mexican Secretariat of Health indicates that 224,898 HCWs in the country have tested positive for COVID-19, a figure that represents 23% of the total healthcare workforce ([SS](#)).

An [Amnesty International report](#) from September 2020 found Mexico had the highest absolute number of health worker COVID-19 deaths among countries with available information. Data recently collected by PAHO for the Americas points in the same direction. According to the released figures, shown in [Figure 15](#), Mexico alone accounts for 45% of all deaths among health care workers from 17 countries. Working conditions, the need to work multiple jobs, stress, and exhaustion are cited as potential causes ([Agren 2020](#)). The latest available report from the Secretariat of Health includes 3,284 deaths among HCWs in Mexico, as of February 15 of 2021 ([Secretaría de Salud](#)).

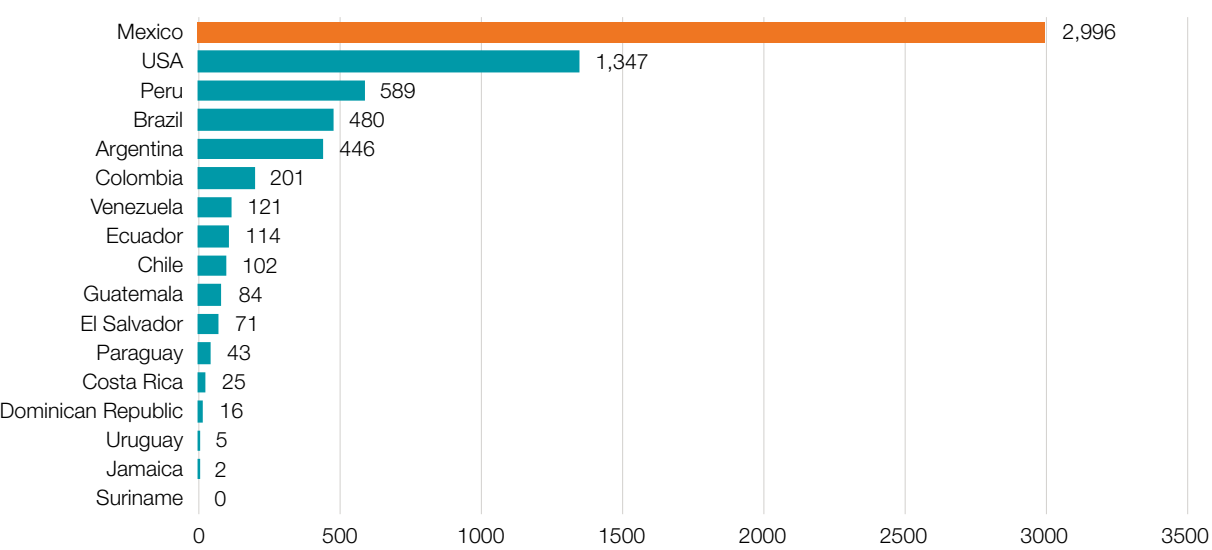
Official information from the Secretariat of Health indicates that nurses account for 40% of COVID-19 infections, physicians for 26%, and other types of HCWs for 30% (SS). However, physicians are at particular risk of adverse outcomes, accounting for 46% of all deaths, whereas 19% of deaths were among nurses. By July 2020, 9% of the 11,226 confirmed cases of COVID-19 among HCWs registered in the National Epidemiological Surveillance System in Mexico City required hospitalization, and approximately 2% developed severe disease ([Antonio-Villa et al. 2020](#)).

**FIGURE 14.** Percent of confirmed COVID-19 patients who died without hospitalization, as of February 28, 2021



Only patients with a COVID-19 diagnosis are included. The level of undercounting of out-of-hospital COVID-19 deaths varies across jurisdictions. The main reason is differences in the levels of testing. Source: Authors’ elaboration based on Dirección General de Epidemiología, Secretaría de Salud.

**FIGURE 15.** COVID-19 deaths among health care workers in the Americas, January 2020 to February 8, 2021



Source: PAHO, Epidemiological Update: Coronavirus disease (COVID-19), 9 February 2021.

The socioeconomic impact of the COVID-19 pandemic in Mexico

Mexico stands out as one of the countries which has spent the least in public funds to support the public health response and to enable community compliance with health directives. The lack of financial support for individuals and businesses not only structurally undermined the efficacy of health policy in the country but has had enormous social repercussions in both the short and long term.

Labor income fell sharply during the national lockdown in April and May, especially among informal workers. Once these workers returned to work in the streets, demand for their goods and services had diminished to all time low levels. The drop in household income pushed many into poverty and debt. At the end of 2019, just over 37% of the population, 47 million workers, could not afford one food-basket with its labor income (labor poverty) (CONEVAL). By June, five months into the crisis, this number increased by 11.7 million workers. By the end of 2020, as the economy slowly began to recover, there were still 51.3 million workers in labor poverty, approximately 41% of the population.

Between the fourth quarters of 2019 and 2020, poverty increased from 42 to 51% and extreme poverty from 7 to 13% (CONEVAL). A large segment of the vulnerable middle class, around 9 million people, fell below the poverty line in the midst of the crisis. Along with less income, food security collapsed to the lowest level in decades. In the middle of the crisis, it was estimated that only 27% of the population enjoyed food security (Signos Vitales).

According to a nationally representative survey conducted by the national statistics agency in April 2020, 46% of the working population and 65% of households had already suffered income losses at the time of the survey (INEGI, ECOVID-ML). Only 5% of respondents reported receiving government support during the crisis. Women, younger people, and lower-income workers in the informal sector were the most affected by job losses. By July, 85% of the working population lacked the equipment to work from home, 41.6% experienced decreased income during the month, and only 6.6% said they had received economic support from a government program (INEGI, ECOVID-ML).

Among businesses, only 7% declared they had received government support to weather the economic crisis in April 2020, including tax deferrals, credit, and other types of support (INEGI, ECOVID-IE). Later in the year, only 5.4% of businesses declared they received support from governments during the month of August despite 79% reporting decreased revenue (INEGI, ECOVID-IE).

The health and economic government's response to the pandemic overlooked other aspects of people's wellbeing, with policies to address these challenges either ill-designed or non-existent. The decision to conduct an indiscriminate closure of schools has not changed. In other parts of the world, although schools closed at first, they began to re-open with extreme sanitary provisions and compulsory use of face masks, once testing was expanded and more precise information about

the dynamics of transmission became available. In Mexico, schools continue to be closed throughout the country one year after the pandemic emerged. Keeping children at home has had a detrimental effect on education performance and mental health and has put children in danger of domestic violence, child work, and sex abuse.

Various studies suggest there has been a drastic deterioration in the mental health of the population since the start of the pandemic. Preliminary studies indicate that 76% of children 6 to 12 show evidence of anxiety, 62% show discontent, and 51% aggressiveness. Over 30% of the population has shown signs of anxiety, and the incidence is higher among the poor (Signos Vitales). Domestic tensions and violence have also increased by 34.2% in 2020, while the number of 911 calls related to domestic violence reached 586,834 in the first 10 months of 2020 (REDIM).

Indiscriminate closure of schools has affected 4.8 million pre-school students, 14 million of primary school children, 6.5 million secondary school students, and 5.2 million high-school youngsters (REDIM). Academic achievement will be very different among students, since learning depends on access to internet and telecommunications as a prerequisite for access to educational services. 70.1% of the population older than 6 years have access to internet, but only 43% have computers at home. The variance between social classes is wide: only 13% of the poorer households have internet access, while 84% of the better off do (BID). The greatest problem in-house students have faced is the lack

of equipment (48%), lack of teachers' support (38%), and distraction of students (21%) (Signos Vitales). Students in the 12-18 years range have devoted 30% less time to study, and a 16% increase in attrition rate is expected in high-schools. The situation is much worse in rural areas (Parker). According to UNICEF, depending on age, gender, socioeconomic level and disability condition, many students who face a long closure of schools tend to abandon their studies and the loss of learning is high. Also, for many children schools represent their only source of nutrition, psychosocial assistance, and health services (UNICEF).

Consequently, several steps of the social mobility ladder have been cut off for the COVID-19 generation. The reduction in food security affects the first infancy the most, with long term consequences for their future performance. For those individuals unable to follow school work or whose achievement was inferior due to school closures, their chances at a successful life trajectory have diminished substantially. The pandemic has widened the gap in opportunities for the population, which in turn impacts life trajectories and affects social mobility. At least 48% of the inequalities in achievement in Mexico are caused by inequality of opportunities (CEEY). These differences are more than double in the south than in the north of the country.

Government inaction on the social and economic policy fronts to face the health emergency has therefore deepened already existing inequities and will reinforce the detrimental impact of the pandemic on this and the next generations.



**A parallel public health crisis: the COVID-19 pandemic and gender-based violence in Mexico**

Femicide, the killing of a woman or a girl on account of their gender, was officially recognized by Mexican law in 2012 (SEGOB). In 2015, there were 0.7 cases per 100 thousand women, by 2019 that number rose to 1.5 (ECLAC). The 2016 National Survey on the Dynamics of Household Relationships (ENDIREH) revealed that 44% of women aged 15 and over in Mexico have been victims of violence by their partners. Between 2000 and 2018, 32% of women who were victims of femicide died in their own homes (INEGI). Anger over structural violence against women led to a massive protest across the country on March 8<sup>th</sup> 2020, in recognition of International Women’s Day, followed by a nationwide strike “A Day Without Us” (NYT). Eleven days later, women across the country found themselves staying at home as part of the “Healthy Distancing” campaign to curb the pandemic.

A variety of programs and institutions designed to address gender-based violence have suffered cuts before and during the pandemic, including the National Institute for Women, the Executive Commission for Attention to Victims, and the National Institute for Indigenous Peoples (Gender and COVID-19 Observatory in Mexico). When questioned on rising domestic violence during the lockdown and his government’s inaction, the President claimed that 90% of calls to emergency services over domestic violence were “false” and added that “Mexican women have never been as protected as now” (Presidencia; The Guardian). Under the chief’s executive disdain for Mexico’s rising feminist movement, public policy at the federal level has failed to adapt to the realities of violence against women and the new risks created by the pandemic.

In 2020, calls to 911 lines related to “violence against women” increased by 73%, relative to 2019 (Secretaría de Seguridad). State governments have varied in the extent to which they adopted measures to address domestic violence during the pandemic. The Mexico City government

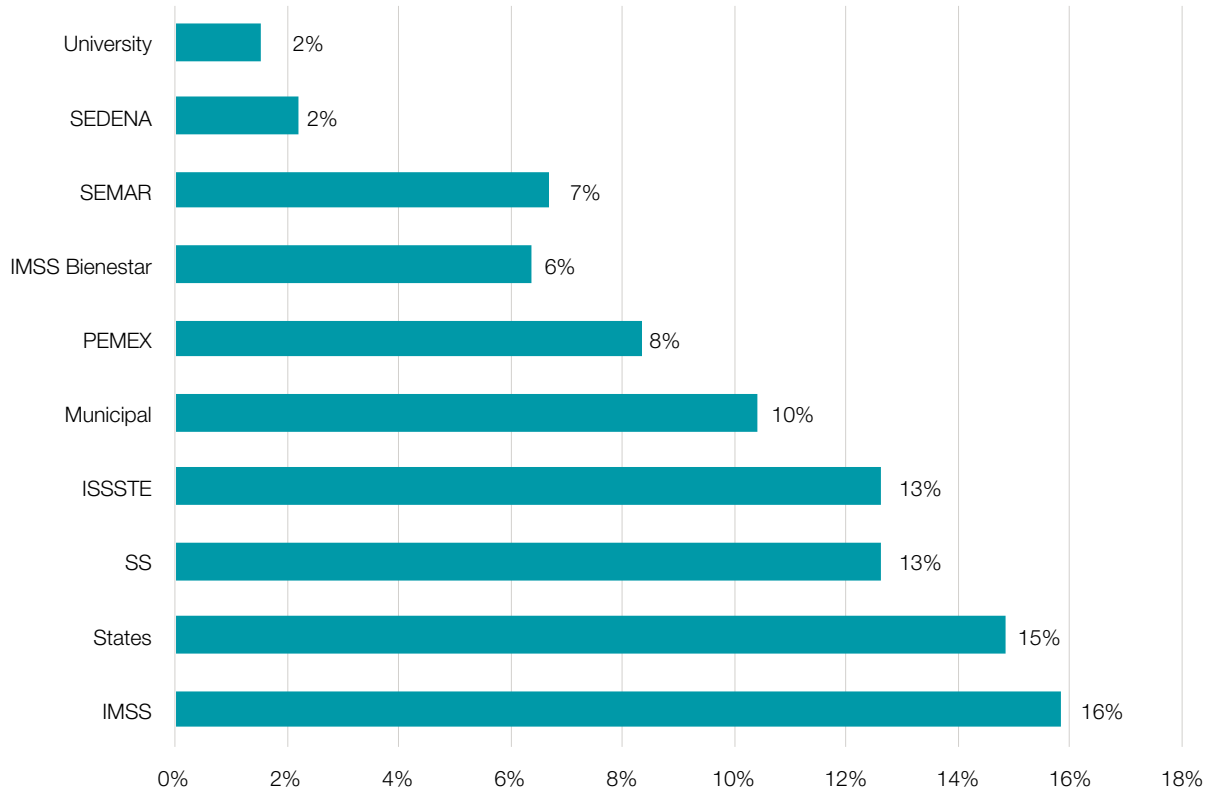
has released detailed information about phone calls made to a women’s emergency helpline “Línea Mujeres.” During the May shutdown, calls increased by 97% relative to the same month in 2019 (Intersecta; EQUIS Justicia para las Mujeres. National Network of Shelters).

Mexico saw feminicides rise by 7.7% between January and June 2020, compared to the same time period of 2019 (The Guardian). For women suffering domestic abuse, confinement at home has meant greater isolation from social support networks. The health emergency has also exacerbated gender-based inequalities in caring for children, the elderly, or the sick, as well as in involvement in household chores. Diagnosis for injuries due to domestic violence, which had increased by 6% from 2018 to 2019, saw a sharp 49% drop in 2020 (Secretaría de Salud). Estimates suggest that abortions fell by at least 25%, due mostly to restrictions on access to health services. The greatest drops in the number of performed abortions have occurred in municipalities with greater decreases in mobility (Foco Económico).

While the President has shown disregard for the reality reflected in these data, civil society organizations have created programs and tools to face the pandemic from a gender perspective. The Gender and COVID-19 Observatory in Mexico keeps track of government actions with regards to its human rights obligations and of the contributions of civil society for a more equal new normality. The National Network of Shelters served 48% more people in 2020 than in 2019. In November, a woman contacted the Network every hour to ask for support in a situation of violence (National Network of Shelters). The Center for Research and Gender Studies at the Autonomous National University (UNAM) has made available a repository with relevant academic literature, reports from international organizations, and infographics on gender violence during the pandemic (UNAM).

Information on COVID-19 cases among HCWs is not provided in a disaggregated database but through presentations. Unfortunately, important statistics such as HCWs cases and deaths by health subsystem were last made available in October of 2020. Authorities did not respond to freedom of information requests from the research team to update the data shown in Figure 16. The Figure presents the share of health care workers in each sector of attention that had contracted the virus by the cutoff date.

**FIGURE 16.** Percent of health care workers infected with COVID-19 across health subsystems (as of October 19, 2020)

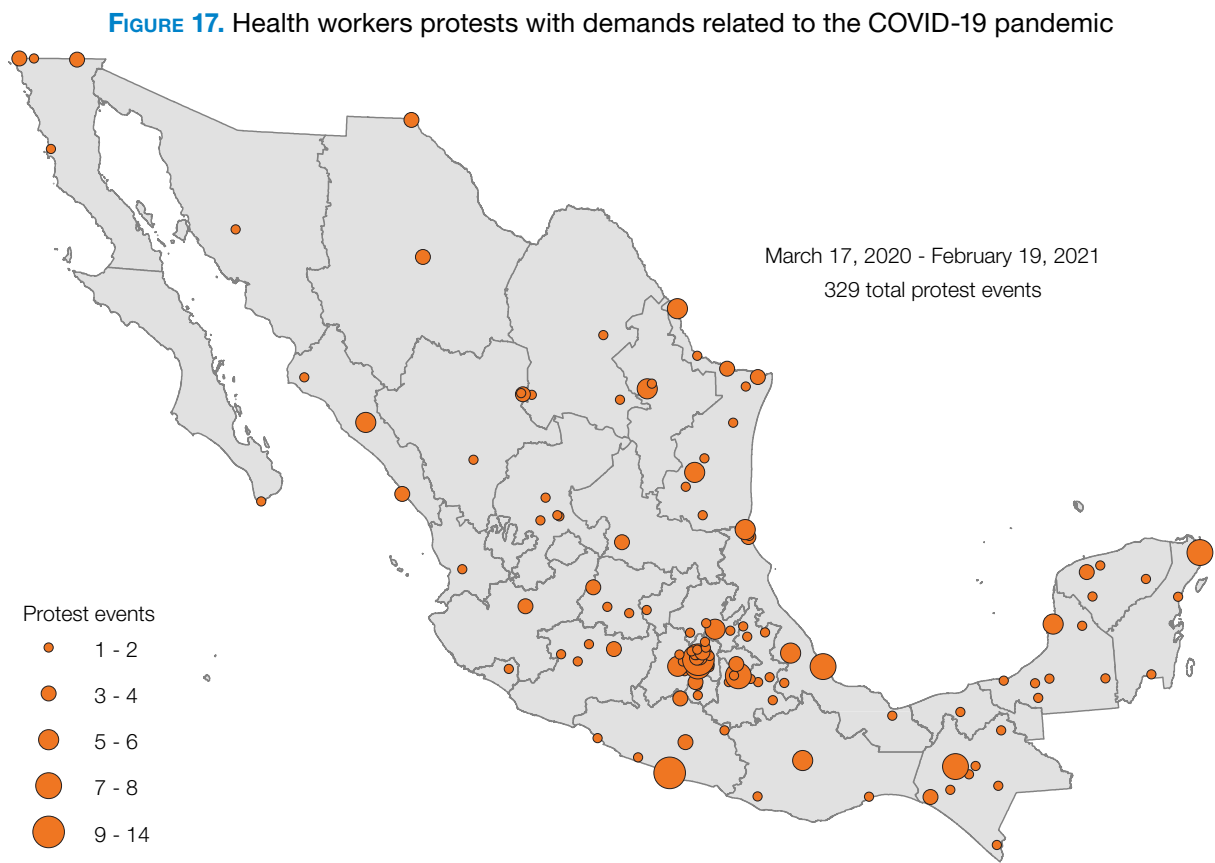


Source: Secretaría de Salud.

The lack of proper training and quality PPE distributed in a timely fashion has likely contributed to comparatively high rates of cases and deaths among health care workers. Throughout the pandemic, protests over PPE, working conditions, lack of tests, and shortages of medical supplies have broken out among HCWs across the country. As of February 19, we identified 329 different public protest events throughout the country with demands related to the pandemic. A map of these protest events appears as Figure 17.

In addition to increased risk of infection, studies have found that HCWs in Mexico face heightened risk of poor mental health in light of the pandemic. In a survey conducted among HCWs in Mexico between April and May of 2020, insomnia, depression, and post-traumatic stress disorder were more prevalent among frontline healthcare workers compared to those not treating COVID-19 patients. The primary risk factor for PTSD was personal COVID-19 status, with HCWs who were either suspect or confirmed positive having an increased odds (OR 2.2, 95% CI 1.8-2.7) of experiencing PTSD compared to HCWs with no history of symptoms (Robles et al. 2020).





Source: Authors’ elaboration with data from the Armed Conflict Location & Event Data Project (ACLED).

Media and civil society have sought to bring attention to the working conditions of HCWs. Some have reportedly suffered reprisals for raising demands against authorities ([Agren 2020](#)). Early in the emergency, medical staff acquired its own PPE out-of-pocket, as poor planning, distribution bottlenecks, and the low quality of equipment acquired by the government left them unprotected. In this key aspect, the Mexican government failed to coordinate an effective response to protect those on the front line of the pandemic.

Beyond HCWs, employees at funeral homes across Mexico have also been disproportionately infected with the virus as crematoriums and funeral homes have been overwhelmed during the pandemic. Among the 49,000 employees at registered funeral homes, 40% have contracted COVID-19 and 3,000 (6%) have died ([Animal Politico](#)). The country has seen shortages in death certificates and coffins, with the high demand for crematorium services resulting in multi-day delays in cremating corpses ([Milenio](#); [WSJ](#); [NYTimes](#)). In January 2021, following a surge in cases in Northern Baja California, crematoriums that were operating around the clock were reportedly breaking down from overuse ([Border Report](#)).

### The Bottom Line

- Data show that Mexico failed in its response to the pandemic relative to comparable countries. The country has among the highest rates of COVID-19 cases and deaths despite ranking at the bottom in testing. Such low testing implies that underdiagnosis and undercounting of COVID-19 deaths is very substantial.

- A seroprevalence survey points to failures in epidemiological surveillance and pandemic control. An exceptionally large number of infections go undetected (about 1 in every 30). Government projections about the course of the pandemic and expectations about the likely consequences of the emergency were overly optimistic, ill-founded, and led to poor planning.
- Uncontrolled viral transmission in a context of high prevalence of chronic conditions and no economic measures to support public health interventions has contributed to high death rates even among the non-elderly population. 50.6% of all deaths have occurred among population less than 65 years old, compared to 18.7% in the United States, a neighbor country strongly affected by the pandemic.
- Mexico ranked fourth worldwide in excess mortality in 2020. We estimate that had Mexico had an average performance in the pandemic, around 190,000 deaths from all causes would have been avoided in 2020. This figure does not consider the peak in deaths observed in January 2021.
- Mexico City has disproportionately contributed to mortality. The failure of authorities to follow established guidelines in the country’s epidemiological alert system contributed to very high mortality in the capital in December 2020 and January 2021.
- Available evidence points to a high share of out-of-hospital deaths (about 58%), large inequities in access to testing and medical care, high variation in quality of care, and a highly uneven burden of the disease across regions and social groups. Fatality rates among hospitalized COVID-19 patients are very high (around 50% at IMSS) and have not decreased substantially throughout the pandemic. Fragmentation in the health system has contributed to inequities.
- Cases and deaths have been disproportionately concentrated in municipalities with higher levels of socioeconomic marginalization, especially in urban areas. Among confirmed COVID-19 cases, the proportion of deaths tends to increase with the level of marginalization of the municipality where the patient lives.
- International comparisons indicate that Mexico records especially high numbers of health worker deaths, which evidence failures in preparation of the health system and significant underprovision.

# The National Environment

CHAPTER

2

## Epidemics and Pandemics in Modern History

### Mexico's handling of previous epidemics and pandemics

The world has seen several emerging diseases in the last few decades. By *emerging* we mean new diseases in humans (Zika, Covid-19), most of which have been transmitted from animals (zoonoses). There is a semantic difference with other conditions that had been eliminated from a region and have *re-emerged* (Dengue, cholera), and others that are *resurging*, after a period of low prevalence (measles, tuberculosis).

In the last four decades or so, Mexico has been exposed to a number of emerging, re-emerging, or resurging infectious diseases. For the purposes of this analysis, only a few examples are included to describe how previous administrations were successful in their control.

1. **Poliomyelitis.** Led by the Pan American Health Organization, the Western Hemisphere made a commitment in 1985 to eradicate poliomyelitis from the continent. Mexico achieved this goal in 1991. Epidemiological surveillance of acute flaccid paralysis, sewage monitoring and investigation of every single case of polio and contacts was a key factor in the success. National vaccination days (twice a year) plus intense

neighborhood vaccination around every case detected led to a decrease year by year.

2. **Measles.** In the winter of 1989, a huge epidemic of measles affected North America, with devastating consequences in Mexico. More than 6,000 children died of this preventable cause. It was thought at the time that 80% coverage of measles vaccine was adequate for control purposes, and that only one shot was needed. This tragic episode led to the creation of the Universal Vaccination Program. Serological surveys demonstrated that only 42% of the children in Mexico had their full vaccination schedules. By the end of 1992, over 90% of preschool children had completed schedules for all of the vaccines available at the time. Soon thereafter, the National Health Weeks were instituted, with a package of highly cost-effective interventions delivered at home for all children under five years of age. Measles was eradicated in Mexico by 1995.

3. **HIV/AIDS.** When there were only a few cases of AIDS reported in Mexico by 1985, the health authorities decided to create the National

Council of AIDS prevention (CONASIDA) and institute an aggressive campaign to promote condoms as a means of protection, working closely with communities affected. Acting early and aggressively meant that the epidemic stayed in a low prevalence—one of the lowest in the continent. Private blood banks and commerce of blood and its products were banned, effectively cutting an important source of transmission at the time.

4. **Cholera.** After a century of being cholera free, the Americas saw the re-emergence of cholera in 1991 as part of a new pandemic. The first cases were identified in Peru, with the epidemic rapidly expanding to neighbor countries. Health authorities in Mexico anticipated the arrival of cholera and instituted epidemiologic surveillance in borders, airports and seaports, in addition to training personnel and equipping 100 laboratories for rapid diagnosis. The first outbreak occurred in the mountains of Guerrero, brought by drug smugglers. The combination of epidemiological surveillance and outbreak control, along with a huge investment in a clean water program, led

to the disappearance of endemic cholera cases in 2001.

5. **AH1N1 pandemic flu (swine flu).** An outbreak of a novel flu virus appeared in Mexico in early 2009, spread worldwide and lasted until August 2010. It is estimated that about one-billion people became infected, with half million deaths. The public health response in Mexico was prompt and aggressive, leading to closure of schools and restaurants. Preparations for a potential pandemic of H5N1, from a previous administration, allowed to have a stock of antivirals in place, which helped in dealing with severe cases. New H1N1 vaccines were produced by the fall of 2009 and made available widely. On August 2010, WHO declared the end of the pandemic. Mexican authorities were praised for their effective handling of the epidemic and the transparency of data and sample sharing.

Blaming previous administrations for the chaotic situation of the health system has become a recurrent mantra of Mexico's current government. The examples above show that previous epidemiological emergencies were handled with speed and competence.

Features, Strengths, and Weaknesses of the Health System

Structures and Access

Instead of one single health system, Mexico has a patchwork of subsystems, both small and large. Coverage for medical services is tied to employment. Different public providers cater to different segments of the population and the comprehensiveness and quality of care depends on the funding capacity, the needs of its members, and the size of allocations from the public budget (Table 1).

TABLE 1. Main publicly funded health care subsystems

Employment-related coverage	Public subsystem/Institution
Social security	1) <b>Mexican Institute of Social Security (IMSS)</b> Established in 1943, it provides social security benefits, including full medical coverage, to formal private-sector workers and their families (51% of the population in 2020). IMSS runs its own network of hospitals and clinics, which is the largest network in the country and is funded by payroll taxes and federal government contributions.
	2) <b>Institute for Social Security and Services for State Workers (ISSSTE)</b> Founded in 1959, it is similar to IMSS but provides benefits for federal government workers and their families only. Public servants working for state governments and their dependents are affiliated with their local ISSSTE-type agency; only the largest states provide health coverage through their own independent network of health facilities. Together, federal and local ISSSTE networks cover 8.8% of the population.
Non-social security	3) Residents who are not covered by any of these social security subsystems (or other smaller public systems for the military, the navy, and workers of the national oil company) have access to services delivered by the state health secretariats. Until 2020, the population not covered by social insurance was covered by a public health insurance scheme, formerly known as Seguro Popular (SP). The SP was enacted in 2003 and rapidly expanded health coverage to citizens in the large non-salaried and informal sector of the economy and their families (35.5% of the population was covered by SP in 2020). This social program was mostly funded by the federal government but jointly administered by states and the federal government. Care was provided by federal and state hospitals and clinics.  The SP was scrapped by the AMLO government in January 2020, right on the verge of the pandemic, and replaced by the Institute of Health for Wellbeing (INSABI). Without formal rules of operation and transparent financial procedures for the commissioning of health care, INSABI has more discretion over the allocation of health resources across state providers and has declared its intentions to centralize management; this reverses a 40-year trend of devolution of health care responsibilities to the states. Some state governments, run by governors from parties in opposition to the federal government, refused to join the new scheme.

Source: Censo de Población y Vivienda 2020. INEGI

A large and mostly unregulated private health system coexists with the public health subsystems. Patients not satisfied with the quality of care from public providers seek private health care when affordable. The private sector also specializes in interventions not covered by public insurance schemes (e.g., long term care, cosmetic surgery, and traditional and alternative medicine) and to a lesser extent, caters to poor patients in remote areas where care is not available. A large, relatively low-cost private health industry of irregular quality has also proliferated in urban areas, as patients seek alternatives to overwhelmed and under-funded public services. The private sector is mostly financed through out-of-pocket payments, which account for 41% of total health spending in Mexico. Only 7.2% of the population holds private health insurance, accounting for 6% of total health spending in Mexico (OECD; AMIS).

Major improvements in health coverage were achieved in the past two decades under the Seguro Popular (SP) (Table 1), with the percent of the uninsured population decreasing from 38.4% in 2008 to 16.2% in 2018 (CONEVAL). Systematic evaluations also show that the SP effectively reduced catastrophic out-of-pocket expenses among the poor (King et al.). However, gaps remain. Some segments of the population still have no regular access to health care; limited budgets and services explain why out-of-pocket health expenditures are still high by OECD standards (OECD).

The public health care system was undergoing a major restructuring when the pandemic hit. The stated objective of the entering administration in 2018 was to provide all services and dispense all drugs free of charge, while eliminating corruption and moving to a unified healthcare system. The federal government formally eliminated the SP in December 2019 and pushed for a return to a centralized health system under the new Institute of Health for Wellbeing (INSABI), with reduced participation from states and the private sector.

Beyond the broad objectives of the reform, a lack of technical implementation capacity and experience in running public health care systems have affected the functionality of the health system. The reform built greater uncertainty in the health system and without the budget allocation rules of SP, increased discretion in funding. The new system now operates under tight resource constraints given a strict federal government austerity program.

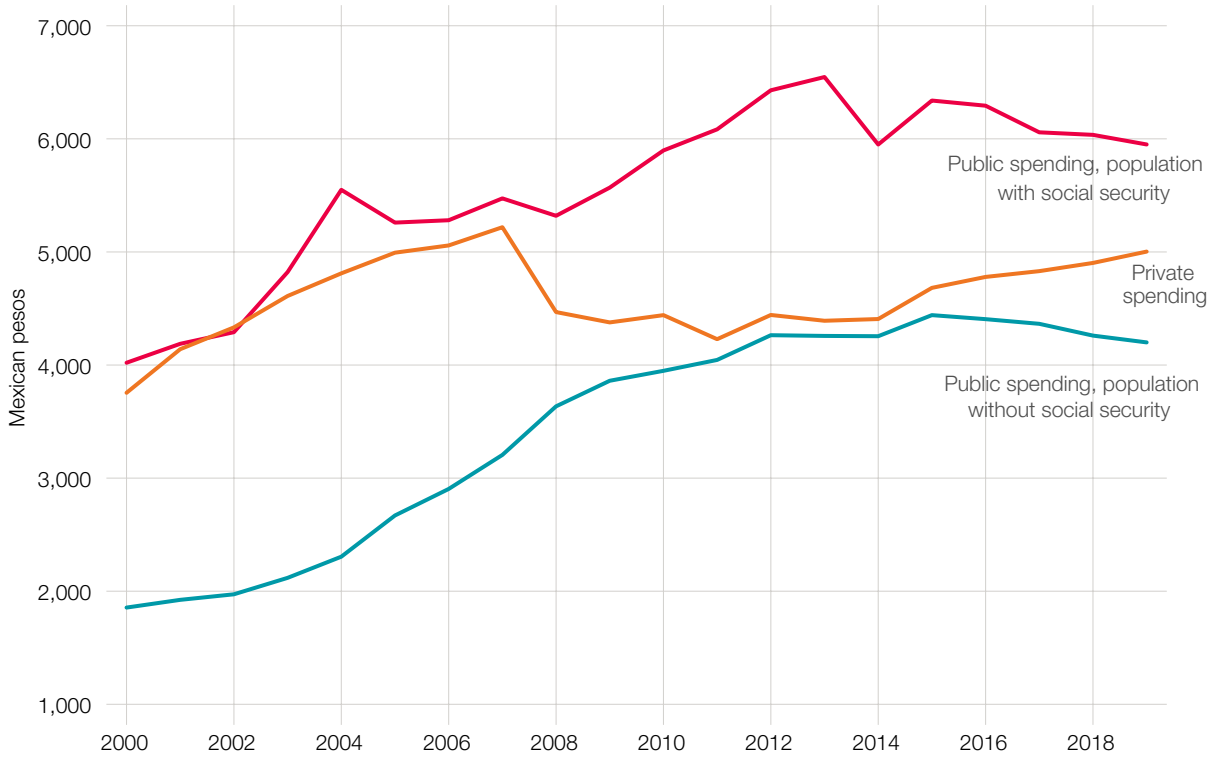
Administrative reforms to the health system included a hasty reorganization of the government procurement and distribution scheme that has caused significant shortages in drugs and medical equipment throughout 2019 and 2020 (Impunidad Cero; Animal Político). Drug shortages were repeatedly cited by health personnel and officials across subsystems as a major concern when treating patients with COVID-19 and other conditions in interviews conducted by the research team for this report.

Health Financing and Health Resources

The Mexican health care system has been chronically underfinanced. At 5.5% of the GDP in 2018, with a peak in spending of 6.1% on average between 2012-16 (Figure 18), health expenditures have been insufficient for responding to the needs of an ageing population with a high prevalence of chronic conditions and increased expectations of access to quality care. The public component of health expenditures rose consistently during the 2000s, from 2.0% in 2000 to 3.1% in 2013 (OECD).

However, budget cuts and austerity measures since the mid-2010s have reversed this trend. Total public health spending returned to 2.8% in 2019, making Mexico the country with the smallest percentage of public financing in total health spending among OECD countries. Mexico’s total share of GDP spent on health, considering all sources of funding, is also amongst the lowest in OECD countries (OECD). Limited fiscal space has been the main obstacle to expanding social spending, including for health. Total government revenues (tax and non-tax revenue) stand at 23.7% of GDP (compared to the OECD average of 38.2%) (OECD).

**FIGURE 18.** Per capita spending on health  
(Constant prices, 2018=100)



Source: Authors’ elaboration based on Sistema de Cuentas en Salud, Secretaría de Salud.

Because of decades of low spending in health, Mexico has low numbers of medical facilities, most of which are poorly equipped and understaffed. In 2019, Mexico registered 2.9 nurses, 2.4 doctors, and 1.4 beds per 1,000 population. In contrast, the OECD averages were 8.8, 3.5, and 4.7 per 1,000, respectively (Table 2). The low national averages mask an even greater concern: the highly uneven distribution of health resources at the subnational level. Wealthier localities such as Mexico City or the state of Nuevo Leon report three to four times the average number of registered doctors (CONEVAL; IMCO). And IMSS, one of the pillars of the health system, has half the number of beds per thousand enrollees than the national average (only 0.67 beds per thousand, down from 0.80 almost a decade ago) (IMSS).

One of the greatest impediments to a prepared medical response system is a shortage of trained health personnel. In the case of relevant specialists during the COVID-19 pandemic, Mexico has 726 certified pneumologists, half of them in the Mexico City metropolitan area. Twenty-four states (out of 32) register less than 10. Similarly, 56% of the 1,199 specialists working in critical care are concentrated in the Mexico City area, and 15 states report less than 10.

Perhaps the most relevant bottleneck for short term effective quality care is a shortage of qualified nurse personnel. While the population has grown and aged, the already low number of nurses has increased at a slow pace, and between 2018 and 2019 it registered a reduction of 864 fewer nurses nationally and roughly 4,000 fewer nurses for the subsystem coordinated by the Secretariat of Health (Siarhe, Salud). Although a fair increase in the number of nurses was recorded in 2020, particularly for the public subsystems, Mexico is still at least three times below the OECD standard of nurses per thousand population (8.8). Reversing the

trend will require medium-term coordinated efforts to expand professional training and keep nurses from migrating abroad in search for better pay.

**TABLE 2.** Comparative performance of health systems

	Mexico	US	OECD
Health spending per person (USD PPP 2018)	1,138	10,586	3,994
Health spending (share of GDP)	5.5	16.9	8.8
Coverage of the core set of services	89.3	90.8	-
Out-of-pocket (OOP) (share of household consumption)	3.6	2.8	3.3
% of households with catastrophic health expenditures	5.5	7.4	5.8
Hospital beds (per 1000 population, 2018)	1.4	2.8	4.7
Practicing doctors (per 1000 population)	2.4	2.6	3.5
Practicing nurses (per 1000 population)	2.9	11.7	8.8

Source: OECD (2019), [Health at a Glance 2019](#): OECD Indicators, OECD Publishing, Paris.

Chronic resource insufficiencies therefore aggravated in the years leading up to the pandemic. The new government of Lopez Obrador, elected in 2018, reinforced this trend with aggressive cuts and layoffs of health workers in temporary contracts. In March 2019, the Secretariat of Health reported the layoff of at least 30% of workers, as part of the new government’s efforts to generate savings (GobMX). By 2020, the health budget per capita accumulated a 26.4% loss relative to its 2015 maximum, regressing to levels seen a decade before. Even more concerning, the budget cuts included epidemiological surveillance units.

**Epidemiological Surveillance and Epidemic Control Capacity**

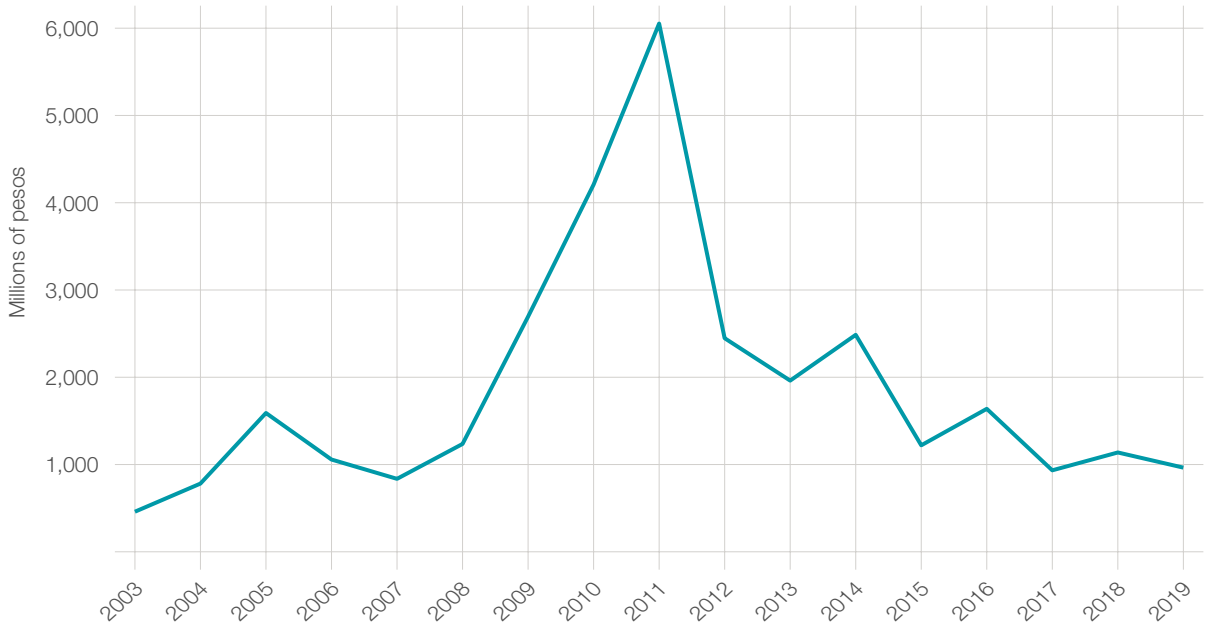
The National Epidemiological Surveillance System (SINAVE) is the backbone of a health system’s capacity to detect epidemiological threats and to guide response efforts during pandemics. Mexico has built an important surveillance system in recent decades based on the accumulated experience from previous events, from the polio eradication efforts in the 1980’s to the A/H1N1 pandemic in 2009. The SINAVE is supported by the sentinel network comprising more that 475 primary health care clinics and hospitals across the country and the National Laboratory for Epidemiological Diagnostic and Reference (InDRE), which leads a network of state laboratories and supports the National Health and Nutrition surveys taking place every few years since 1987 (SINAVE).

The SINAVE’s capacity and readiness for active surveillance is largely determined by its budget availability. Active surveillance mode entails both SINAVE expert teams conducting field examinations in targeted communities, rather than waiting for test reporting from patients that seek care at clinics or hospitals in the sentinel network, and the laboratory capacity to identify new circulating strains of viruses and other pathogens. Mexico has four laboratories equipped and certified as Biosafety Level 3, but these initially lacked the necessary protocols and reagents for the diagnosis of the new SARS-CoV-2 virus. While public health spending on epidemiological surveillance peaked after the A/H1N1 pandemic in 2011 at more than 3 times its pre-pandemic average, the spending momentum was short lived. By 2017 spending levels



were back to the long-term average, reverting much of the SINAVE’s readiness capacities (Figure 19). In addition, the budget of the Epidemiology General Directorate fell by 10.2% in real terms from 2019 to 2020, for a cumulative percent drop of 47.8% since its peak in 2016.

**FIGURE 19.** Real public spending on epidemiological surveillance  
(Constant prices, 2018=100)



Source: Authors’ elaboration based on Subsistema de Cuentas en Salud, Secretaría de Salud. Spending on epidemiological surveillance for all health subsystems is included except IMSS, which does not report disaggregated data on this task. More aggregate figures including IMSS display the same pattern.

**Quality of Health Care**

Although much progress has been made in recent years, Mexico still faces important challenges in quality of health care. While the epidemiological transition from infectious to chronic conditions has rapidly changed the pattern of health needs, the health care system has been slow to respond. Fertility rates plummeted since the 1970s but the inertial medical educational system kept training young doctors to be pediatricians and obstetricians while the demand outpaced the need for cardiologists, endocrinologists, and oncologists. Primary health care centers are slowly being repurposed to treat and control chronic conditions, such as diabetes and hypertension, but the system still pivots around large general hospitals overwhelmed by patients whose point of entry to health care continues to be the emergency room. Avoidable hospital admissions for diabetes are almost double the OECD average and at 27.5%, and 30-day mortality after a heart attack is almost four times the OECD average. The system is especially ill-prepared to introduce patient-centered integrated models of care. The fragmented nature of the health system compounded by workers moving in and out of the informal labor market generates gaps in coverage over time. Additionally, the mix of private and public care leads to discontinuity and poor monitoring of home-based care and prevents orderly referrals from primary to hospital services, most importantly in the treatment of NCDs.

**Health Status of the Population**

It is well documented that the age and health status of a population affects the severity of COVID-19 disease outcomes. Though some findings on population susceptibility to infection and death remain controversial, multiple studies have established a clear relationship between predisposing health conditions and risk of severe disease and death (Jordan et al. 2020; Yang et al. 2020; de Lusignan et al. 2020; Docherty et al. 2020; Moazzami et al 2020). Consequently, any assessment of the pandemic in Mexico must be contextualized within the health of the population in the country.

In the past 50 years, life expectancy in Mexico has increased by more than 20%, with life expectancy at birth now being 78.5 for females, and 72.6 for males. This increase is largely attributable to interventions targeting infectious diseases and maternal and child health. In 2015, the mortality rate was 12.5 deaths per 1,000 live births for children under one year of age, and 15.1 for children under 5 (PAHO). The maternal mortality rate was 34.6 deaths per 100,000 live births, a decrease of 56% since 1990 (Rodríguez-Aguilar 2018). Despite progress in health indicators such as these, the overall health of the country still lags in comparison to other OECD countries, with progress slowing over the past two decades (Table 3).

**TABLE 3.** Comparative statistics on health status and risk factors

	Mexico	US	OECD
Population (millions, 2019)	124.9	328.0	-
Life expectancy at birth	75.4	78.6	81.0
Infant mortality 2017 (per 1,000 live births)	12.1	4.8	3.5
Overweight and obese (% of adult population)	72.5	71.0	58.2
Overweight and obese (% of 5–9-year-olds)	37.5	43.0	31.4
Diabetes (type I and II among adults)	13.1	10.8	6.4
Top 3 causes of death	<ul style="list-style-type: none"><li>• IHD</li><li>• Diabetes</li><li>• CKD</li></ul>	<ul style="list-style-type: none"><li>• IHD</li><li>• Lung Cancer</li><li>• COPD</li></ul>	<ul style="list-style-type: none"><li>• IHD</li><li>• Alzheimer’s and other dementias</li><li>• Stroke</li></ul>
Top 3 health risk factors	<ul style="list-style-type: none"><li>• High fasting plasma glucose</li><li>• High BMI</li><li>• High blood pressure</li></ul>	<ul style="list-style-type: none"><li>• Tobacco</li><li>• High blood pressure</li><li>• High fasting plasma glucose</li></ul>	

IHD- Ischemic Heart Disease, CKD- Chronic Kidney Disease, COPD- Chronic Obstructive Pulmonary Disease, BMI- Body Mass Index. Source: [OECD](#) (2019), [Health at a Glance 2019](#); OECD Indicators, OECD Publishing, Paris.

Further exacerbating the health outcomes in the country, Mexico remains one of the most unequal upper-middle-income countries, with access to healthcare and quality of healthcare directly tied to income level (Ortiz-Hernández et al. 2015). Other social determinants of health, including literacy, housing status,

**TABLE 4.** Risk factors for severe COVID-19 outcomes juxtaposed with the leading burdens of disease in Mexico

Disease	Disease Burden in Mexico (IHME)	COVID-19 risk factors for severe disease and death, OR (95% CI)
Cardiovascular disease	<b>CVD is the number one cause of death in Mexico:</b> 6% of total DALYs and 20% of total deaths, with an estimated 68.5% caused by ischemic health disease ( <a href="#">Mendoza-Herrera et al. 2019</a> ); the burden of disease is associated with a decrease of physical inactivity ( <a href="#">Medina et al. 2020</a> ).	CVD is associated with an increase in disease severity. Studies have found that patients with CVD have two times the odds of having severe disease (OR 2.04, 95%CI 1.01–3.08) and 5 times the odds of death (OR 5.16, 95%CI 4.10–6.22) ( <a href="#">Degarege et al. 2020</a> ); a meta-analysis of seven studies found diabetes was the second most prevalent comorbidity among patients with severe SARS-CoV-2 infection ( <a href="#">Yang et al. 2020</a> )
Diabetes	<b>Diabetes is the number two cause of death in Mexico:</b> 8% of total DALYs with a prevalence of 10.4% among the population 20+ years of age ( <a href="#">ENSANUT</a> ); diabetes is the leading cause of death and disability combined.	Diabetes is associated with an increase in disease severity. A meta-analysis of 12 studies found patients with diabetes had nearly twice the odds of severe illness (OR 1.65, 95% CI 1.23–2.08) as well as death (OR 2.11, 95%CI 1.35–2.87) ( <a href="#">Degarege et al. 2020</a> ); a second meta-analysis of 13 studies found the pooled prevalence of diabetes was 22% among COVID-19 patients (95%CI 12%-33%) ( <a href="#">Moazzami et al. 2020</a> )
Chronic kidney disease	<b>CKD is the number three cause of death in Mexico:</b> An estimated 14.5 million people have CKD with an estimated 65,033 annual deaths and an incidence rate of 394.2; as of 2017, CKD affects 7.4% of the population aged 65+. ( <a href="#">Agudelo-Botero et al. 2020</a> ).	CKD was found to be associated with increased risk of infection in a UK-based study, where patients with CKD had twice the odds of testing positive for COVID-19 than those patients without (OR 1.91, 95%CI 1.3-2.79) ( <a href="#">de Lusignan et al. 2020</a> ); the OpenSAFELY study conducted in the UK also found that patients with severe forms of CKD were at higher risk of COVID-19-related mortality than patients with other known high-risk groups ( <a href="#">Williamson et al. 2020</a> ).
Obesity (BMI>30)	<b>Obesity is the second leading risk factor for death and disability in Mexico:</b> The overall prevalence of 36.1% among the population 20+ years is the second highest prevalence worldwide after USA. 1 in 10 Mexicans die of diabetes annually, one of the highest rates worldwide, due to poor prevention, detection, and disease management ( <a href="#">ENSANUT</a> ); 75.2% of the adult population is obese or overweight, with 36.1% of the adult population being obese (BMI>30), though prevalence is increasing. 35.6% of children between 5 and 11 were obese or overweight and 38.4% for those between 12 and 19 years of age.	Obesity (defined by as BMI>30 kg/m²)( <a href="#">PAHO</a> ) is associated with more severe outcomes. A UK-based study found that risk of death increased as BMI increased (HR 1.92, 95%CI 1.72, 2.13) ( <a href="#">Williamson et al. 2020</a> ); a study out of Italy found obese patients had higher odds of severe disease (OR 2.32; 95% CI: 1.31-4.09), ICU admission (OR 4.96, 95%CI 2.53-9.74) and among those with a BMI ≥ 35 kg/m², a significantly higher (12 times) the odds of death (OR: 12.1; 95% CI: 3.25-45.1) ( <a href="#">Rottoli et al. 2020</a> ); A meta-analysis including 5 studies found the pooled prevalence of obesity was 29% among COVID-19 patients (95%CI 14%-47%) ( <a href="#">Moazzami et al. 2020</a> )

Hypertension	<b>Hypertension is the third leading risk factor for death and disability in Mexico:</b> The overall prevalence is 18.4% among the population 20+ years ( <a href="#">ENSANUT</a> ); in a study of 8,351 adults participating in the 2016 national survey on health and nutrition (ENSANUT), 40% of participants were unaware of their hypertensive status ( <a href="#">Campos-Nonato et al. 2018</a> ).	Hypertension is associated with an increase in disease severity. A meta analysis of 13 studies found patients with hypertension had more than twice the odds of death compares to those without hypertension (OR 2.60, 95% CI 1.95–3.25) and a higer odds of severe disease outcomes (OR 1.70, 95% CI 1.30 –2.10 ( <a href="#">Degarege et al. 2020</a> ); a separate meta-analysis of eight studies including 46248 patients also found those with hypertension had higher odds of experiencing the most severe disease (OR 2.36, 95% CI 1.46 -3.83) ( <a href="#">Moazzami et al. 2020</a> )
Chronic obstructive pulmonary disease	<b>COPD is the sixth leading cause of death in Mexico:</b> The overall prevalence estimated in the 2004 PALATINO study in Mexico City was 11.9%, though more recent studies as late as 2018 suggest the prevalence has slightly decreased to 7.8% of population 40+ years in Mexico City ( <a href="#">Menezes et al. 2005</a> ); COPD accounts for 2% of total DALYs	Though there was some debate early on in the pandemic, the <a href="#">US CDC</a> includes COPD as a risk factor for COVID-19; a US-based study of 15,586 symptomatic COVID-19 patients found 9% had COPD and these patients had an increased odds for hospitalization (OR 1.36, 95%CI 1.15-1.6), invasive mechanical ventilation (OR 1.49, 95%CI 1.28-1.73) and ICU admission (OR 1.20, 95%CI 1.02-1.4) ( <a href="#">Attaway et al. 2020</a> )

OR: odds ratio; CI: confidence interval.

and diet are adversely affected by poverty. Multiple studies have demonstrated a strong association between poverty and health in Mexico for both communicable and non-communicable diseases ([Mendoza-Herrera et al. 2019](#); [Tezoquipa et al. 2005](#); [Barraza-Lloréns et al. 2002](#)). Among those NCDs are psychiatric diseases, which are more prevalent among people from low socioeconomic status households. Studies have also demonstrated a clear association between socioeconomic inequities and COVID-19; a UK-based study found that high socioeconomic deprivation level was associated with increased risk of COVID-19 infection, as was living in an urban settlement (OR 4.59) ([de Lusignan et al. 2020](#)).

Mexico is in the last stages of an epidemiological transition, as the disease burden shifts from one characterized by high mortality related largely to infectious diseases, to one with lower mortality and with Non-Communicable Diseases (NCDs) as the main cause of death and disability. This epidemiological transition translates to a double burden of disease; the country struggles to prevent, detect and treat NCDs, while large portions of the population in rural areas or urban slums continue to experience morbidity and mortality attributable to communicable diseases. As of 2019, the top ten causes of death and disability in Mexico are, in descending order: ischemic heart disease, diabetes, chronic kidney disease, cirrhosis, stroke, chronic obstructive pulmonary disease, interpersonal violence, Alzheimer’s disease, lower respiratory infections, and road injuries ([IHME](#)). Several of these risk factors, including a high burden of chronic diseases, have predisposed large portions of the Mexican population to severe COVID-19 outcomes. Risk factors for severe COVID-19 illness and COVID-19 mortality include older age, cardiovascular disease, diabetes, chronic respiratory disease, hypertension, cerebrovascular disease, cancer and chronic kidney disease. These risk factors must be considered when assessing risk in Mexico since they represent the leading burden of disease and causes of death. Six of these risk factors are among or directly related to the ten leading causes of death in Mexico ([Table 4](#)).

High body-mass index (BMI) and high fasting plasma glucose are the two risk factors driving the most death and disability in Mexico, and are risk factors for fatal COVID-19. Beyond metabolic risk factors, environmental and behavioral risks, which also have implications during the COVID-19 pandemic, are also contributing to morbidity and mortality in Mexico. The Mexican diet and food ecosystem has changed substantially over the past several decades due to economic globalization, including transformations following the enactment of the North American Free Trade Agreement, as well as urbanization and other influencing factors that increased the availability of and demand for obesogenic foods ([Jacobs and Richtel 2017](#)). The most recent health and nutrition survey in Mexico, ENSANUT, found that 86% of the people in the country reported consuming non-dairy sugary drinks daily in 2018. Compounding this problem, a considerable share of the population leads a sedentary lifestyle; 29% failed to engage in at least 150 minutes of physical activity per week ([ENSANUT](#)).

Alcohol and tobacco use have remained the sixth and eighth leading risk factors for death and disability in Mexico between 2009 and 2019, though alcohol use increased by nearly 30% within the decade ([IHME](#)). During the pandemic, several states in Mexico temporarily banned the sale of alcohol to discourage gatherings; however, an estimated 70 individuals died in 2020 following the consumption of unregulated alcoholic beverages which were tainted ([NYT](#)). Experts have cautioned that increased alcohol consumption may further contribute to domestic violence during the pandemic, at a time when Mexico was already grappling with gender-based violence.

Among the environmental risks contributing to health consequences in Mexico is the threat of air pollution, which remained the ninth leading risk factor of death and disability between 2009 and 2019. The World Bank estimates that 5.9% of all annual deaths in Mexico are associated with air pollution, equating to approximately 33,000 deaths in 2019 ([IHME](#)). Chronic and acute exposure to predominantly outdoor air pollution including nitrogen dioxide, sulfur dioxide, ozone, and particulate matter (both  $\leq \text{PM}_{2.5}$  and  $\leq \text{PM}_{10}$ ), has increased the risk of pulmonary conditions in Mexico. The WHO suggested level for average outdoor fine particulate matter is a concentration of  $10\mu\text{g}/\text{m}^3$  but average concentrations in Mexico City are estimated to be  $25\mu\text{g}/\text{m}^3$ , and in the range  $20\text{--}36\mu\text{g}/\text{m}^3$  in Puebla, Toluca, and Monterrey cities ([CCC](#)). Several studies have suggested associations between COVID-19 health outcomes and air pollution ([INECC](#); [Félix-Arellano et al. 2020](#)).

CHAPTER

3

# Leadership and Governance

“Good governance”—the ability to formulate and enforce rules and policies in benefit of the public (Fukuyama 2013; Holmberg et al. 2009)—is premised on institutional strength and effective leadership. Factors like inherited levels of state capacity, the strength of health systems, and social conditions are important determinants of health outcomes during emergencies; so are leadership and the institutional arrangements governing the design and implementation of responses to public threats.

Crises intensify the weight of leadership. Although by definition those in positions of authority hold power resources to influence the course of events, established procedures and constraints tend to limit the role of agency in ordinary times. The logic changes during emergencies and other moments of great risk. High levels of uncertainty and unforeseen circumstances disrupt regular institutional routines, widen the scope for choice, open different possible paths, and increase the contingency and gravity of actions. In crises, the stakes are higher, institutional constraints looser, and the public more attentive (Ansell et al. 2014).

At these critical moments, the decisions of political leaders and top government officials therefore have the potential to heavily influence outcomes. Sound judgment and the deployment of adequate procedures for emergency management are critical to minimize damage. Moreover, only national leaders are in a position to set common goals and coordinate large-scale institutional and social action, of the type needed in a pandemic. One of the key responsibilities of political leaders when crises hit is to facilitate the mobilization and alignment of different stakeholders’ actions (Ansell et al. 2014).

This section of the report reviews leadership and governance during the COVID-19 pandemic in Mexico. We find major deficiencies in decision-making procedures that led to failures in risk assessment, policy design, and the adaptation of policy as the circumstances of the pandemic changed, initial assumptions were invalidated, and adopted strategies proved unsuccessful.

Our assessment identified the following flaws in the decision-making process and the model for emergency management:

- Excessive concentration of authority and capacity to make decisions over the management of the pandemic in a single unit of government within the executive branch.
- Insufficient deliberation of the said decisions and marginalization of relevant collegiate bodies responsible for health policy.
- Failure to submit key public health decisions to independent supervision and expert consultation.
- Failure to implement effective mechanisms for the constant review of emerging scientific evidence, given the high levels of uncertainty and to ensure the timely adaptation of policy as knowledge about the new virus evolved.
- The politicization of technical aspects of risk assessment, planning, and implementation, facilitated by a lack of autonomy of important health institutions and a broader process of institutional erosion in the bureaucratic apparatus.
- Marginalization of scientific bodies and universities, civil society organizations, and the private sector in several aspects of the pandemic response, with the partial exception of hospital reconversion and health service delivery.
- Lack of institutional devices and political will to facilitate coordinated and concerted action across levels of government in Mexico’s federal system.

These flaws in the decision-making process and the model for emergency management, in turn, contributed to Mexico’s high burden of disease through the following mechanisms:

- Key decisions about how to confront the health crisis were based on unwarranted assumptions, without sufficient evaluation and judgement of the risks that such assumptions entailed.
- Emergency management failed at “cognition”—the capacity to recognize the degree of emerging risk and, based on that insight, trigger a proportionate emergency response (Comfort 2007).
- Flawed policies became resistant to change as “groupthink” tendencies (Rosenthal et al. 1991) emerged among officials invested with discretionary authority over the management of the pandemic. When their initial assumptions and decisions proved costly, officials acquired high stakes in blame avoidance and playing the political-bureaucratic “blame game” for self-preservation (Hood 2010).
- Public health policy failed to incorporate new knowledge about the virus and became divorced from scientific evidence, especially with respect to infection control measures.
- The response to the pandemic remained fragmented between levels of government and polarized along partisan lines.
- Financial and partisan-political considerations exerted disproportionate influence over strategies to manage the pandemic, at the expense of necessary public health measures.
- The relationship between the federal government and relevant stakeholders became contentious with regard to pandemic management, which generated contradictory information, undermined cohesion during the emergency, and exacerbated collective action problems in the response.
- Under an exclusionary decision-making process, society and different areas and levels of government lacked a common sense of purpose, forged around clear and shared objectives and steps to contain the virus. Instead, a sense of inevitability about the severe impact of the pandemic in the country took root.

Problems in the Emergency Response Model:  
Discretionary Decision-Making, Political Subordination,  
and Lack of Deliberation

Mexico’s Constitution of 1917 established the *Consejo de Salubridad General* (General Health Council) as the top collegiate body responsible for policy and decision-making during health emergencies. The Council is directly dependent on the President, who appoints and removes the members, and is headed by the Secretary of Health. The chairs of the National Academy of Medicine and the National Academy of Surgery hold seats in the Council, which is responsible for issuing recommendations and mandatory health measures at the national level.

However, the General Health Council, as other collegiate bodies and institutions, has played a secondary role during the COVID-19 emergency. As the timeline at the beginning of this report shows, the Council convened its first session on March 19, 49 days after the WHO declared the coronavirus outbreak a public health emergency of international concern, 20 days after the first confirmed case was officially reported in Mexico, and 8 days after the WHO’s characterization of COVID-19 as a pandemic. By July, the Council—although purportedly in “permanent session”—had only met five times (Cárdenas et al. 2020). This body has failed to perform its key stewardship role throughout the pandemic.



The Council’s *de facto* sidelining must be understood with reference to Mexico’s current political context. Already before the pandemic, the country was undergoing a process of concentration of power in the national executive, following President López Obrador resounding 2018 electoral victory and his coalition’s control over majorities in both houses of Congress. Analysts have pointed to the erosion of checks and balances and the weakening of autonomous institutions under the current administration, a process facilitated by President AMLO’s popularity, personalistic leadership style, and strong antiestablishment mandate (Becerra and Woldenberg 2020; Sánchez-Talanquer 2020).

The cultivation of leadership as the capacity for discretionary command and control has been replicated in the management of the pandemic. Rather than relying on the General Health Council and summoning the broader public health and scientific communities to face the crisis, the President placed responsibility over both the technical management of the pandemic and communication to the public on the Undersecretariat of Prevention and Health Promotion, a unit within the Secretariat of Health directly under his command. Under this crisis management model, policy became heavily dependent on a group of officials politically and administratively subordinated to the President, simultaneously playing both technical and political communication functions, and working under pressure without independent expert supervision.

Such concentration of responsibility and authority in a single unit of government provided society and institutional actors with clear reference point during the emergency. It also allowed authoritative decisions to be made. However, as a strategy for crisis management in the face of great uncertainty, it sacrificed the advantages of multilateral deliberation and exacerbated the potential for error and misjudgment, all at a time when wrong choices could produce severe negative consequences. Moreover, it made the technical assessment and decision-making components of pandemic management vulnerable to political interference.

When initial assumptions and policies failed, the officials in charge became personally invested in defending their early choices. Public debate and the pandemic response itself became overly personalized. Given a lack of institutional checks and collective expert deliberation, officials tended to double down on their mistakes. External criticism and recommendations were readily dismissed as partisan bickering regardless of their scientific merit. In September 2020, for example, six former Secretaries of Health published a report analyzing the response to the pandemic and issuing recommendations (Chertorivski et al. 2020), which authorities rejected in all and scorned publicly (El Universal).

The current government’s antiestablishment rhetoric and disdain for inherited institutions also prevented collaboration with experienced officials from previous administrations whose expertise could have strengthened the emergency response. Mexico’s health community remained dispersed in a polarized political climate and was not summoned to work together toward a common goal. Independent civil society organizations and the private sector also tended to be alienated, given prior clashes during 2019, ideological considerations, and the government’s frequent vilification of critics.

The government also antagonized broad segments of the scientific community, as it continued to deliver aggressive resource cuts and implement reforms that undermined scientific research and the autonomy of universities. In October 2020, the President’s party (MORENA) and allies passed a bill broadly opposed by the scientific community that eliminated trust funds supporting research (Pérez and Gutiérrez 2020). Several Senators and staff contracted the virus in the Senate’s session to pass the reform (El País). Congress itself, controlled by the President’s partisan coalition, has failed to perform oversight functions over the executive regarding the response to the pandemic.

Within government institutions, fear of political reprisal suppressed dissenting voices. The lack of autonomy of key health institutions—like National Health Institutes and the Federal Commission for Protection

against Health Risks (Mexico’s equivalent of the United States’ FDA)—inhibited horizontal collaboration, deliberation, and decision-making. Officials and medical professionals across different agencies and health institutions were compelled to toe the line even when they privately disagreed with key decisions regarding the response to the emergency. Existing precedents reinforced these fears. In February 2020, for example, the General Director of the National Institute of Neurology and Neurosurgery was deposed after health care workers protested shortages of medical equipment, supplies, and drugs during a visit of members of the federal cabinet to the Institute (Animal Político).

Overall, Mexico’s crisis management approach concentrated excessive authority over both the public health response and political communication within a single unit of the federal government that lacked necessary margins of autonomy and independence. This governance model:

- Favored discretionary decision-making and increased risks of misjudgment.
- Failed to prevent political considerations and preconceived ideas about the new virus and disease from driving technical aspects of policy.
- Prevented learning from mistakes and incorporating new evidence in a timely manner.
- Hampered trust building.
- Sacrificed the benefits of collaborative governance (Ansell and Gash 2007), including the articulation of clear and shared goals, coordination among relevant stakeholders, and cooperation around common strategies to contain the virus and minimize the various negative impacts of the pandemic.

Disregard for Scientific Evidence and Data

Deliberation and decision-making in the appropriate collective bodies, together with independent expert supervision of health policy, could have prevented one of the problems at the core of the government response to the pandemic—namely, the failure to give proper heed to science and to err on the side of caution on matters for which definitive scientific evidence was lacking. Risks of subordination of technical processes to political considerations would have also been reduced.

In this section, we identify the ten main aspects in which public health policy failed to follow or properly incorporate evidence and to apply a precautionary approach when the science was uncertain—i.e., to opt for the course of action least likely to produce serious or irreversible damage.

1. Severity of the COVID-19 Disease

Health authorities’ public statements and decisions indicate that they miscalculated the real risks posed by the coronavirus and the COVID-19 disease. This failure tarnished all other aspects of the pandemic response. The “three Cs” of emergency management—communication, coordination, and control—are premised on cognition, or the ability to detect and calibrate the level of risk and create a common knowledge base for collective action (Comfort 2007).

In February 2020, when the pandemic had already declared the outbreak a public health emergency of international concern, Mexico’s designated COVID-19 czar reassured the population that according to the available data, the coronavirus was of low virulence compared to influenza (Instituto de Salud para el Bienestar). On the same day the first case was confirmed in the country, President López Obrador stated publicly that the priority was not to exaggerate, arguing that only 2,500 deaths had been confirmed

throughout the world, whereas influenza caused 15,000 deaths in Mexico every year ([Presidencia de la República](#)).

Under an overly concentrated and hierarchical model, institutional procedures failed to correct for the potential biases in emergency managers' and leaders' reasoning in the face of an emerging threat. In conditions of uncertainty, decision-makers tend to draw on held beliefs and potentially similar past situations to decide on the course of action. These, however, are subject to human error and bias, which emphasizes the need for expert deliberation, multidisciplinary collective thinking in diverse and independent groups, and objective analysis by technical areas.

In Mexico's case, political animosities and the President's willingness to distance his government from previous administrations appear to have contributed to the underestimation of the disease. From the outset, he explained that the lesson of the 2009 H1N1 pandemic was that it was best not to overreact, as in his view officials from an administration he opposed had done. Mexico's COVID czar reinforced the point arguing that "invariably, new diseases appear graver than they end up being" ([Presidencia de la República](#)).

In late February, the Secretary and Undersecretary of Health—the top two officials in charge of the emergency, although the first would be nearly absent in the emergency—emphasized that this was the seventh coronavirus known to infect humans and that in general, they did not cause severe illness. As the first case was confirmed, they again reassured the population that "it is not a serious disease, more than 90% are mild cases, mild means indistinguishable from a common cold." On the same day, health authorities indicated that for 95% of cases the new coronavirus did not put life at risk or affect the body's functionality. Considering this, they stated, the country was not in a situation "where it needed to start counting beds" ([Presidencia de la República](#); [Secretaría de Salud](#)). By mid-April, the official in charge of the pandemic response continued to assert that the virus could be as lethal as the flu, despite warnings from health experts that authorities were underestimating the threat ([WSJ](#); [Sánchez-Talanquer et al. 2020](#)).

In short, the dominant notion among decision-makers came to be that the virus was a conventional respiratory disease that would not pose a significant threat to the population, except for a small proportion of individuals with weakened immune systems. Their initial planning and choices were largely driven by this assumption. Even the most critical scenarios they considered were too optimistic because they attributed high certainty to parameters and premises that were in fact unknown. Misplaced certainty is one of the key factors behind a flawed policy response.

## 2. Acquired Immunity

Similar issues arose with respect to COVID-19 immunity. Because decision-makers underestimated the gravity of the disease, failed to properly contemplate the possibility that COVID-19 generated left long-term sequelae ([del Rio et al. 2020](#)), and did not incorporate the possibilities for new and more serious mutations into the response plan, they seem to have considered collective immunity as a potentially low-damage way out of the crisis, as long as hospital capacity was maintained (it was eventually overwhelmed).

Hinting at the promises of immunity, the designated COVID czar explained in March that from a pragmatic point of view, it was "almost preferable" for the President to contract the virus, as most likely he would spontaneously recover and become immune ([Presidencia de la República](#)). Likely reflecting the beliefs of decision-makers, the federal government's official COVID-19 website continues to assert that "Mexico is going through the natural history of an infection" and "the body's own defenses manage to eliminate it (the virus)", except for a "few people who do not have good defenses."

At other times, officials were more cautious in their messaging and recognized that there was scientific uncertainty about the strength and length of immunity to SARS-CoV-2 ([Presidencia de la República](#)). However, this uncertainty and the potential societal cost of widespread transmission were not duly assimilated into communication and policy.

Preconceptions about the virus were also compatible with government priorities about minimizing the financial cost of the pandemic response. As explained in the section on financing of this report, Mexico's government has made a priority of not acquiring debt and implementing austerity measures throughout the public administration. On the political side, this appears to have reinforced bias in favor of health policies that implied a relatively low-cost, hands-free approach.

From the outset, health authorities deemed efforts to stop or contain the virus futile and a waste of scarce resources, arguing instead for a mitigation approach and the preparation of the health system to care for the small minority that would require medical attention ([Presidencia de la República](#)). As we explained in Chapter 1, they estimated different scenarios based on the evolution of the epidemic in Hubei Province in China. In the models considered to be most likely, no budget reallocations or additional resources were needed to face the crisis. In the worst-case scenario, officials in charge of the pandemic response estimated about 1 million dollars would be required to finance preparation of the health system.

This was the information originally presented to the public and to the President, who has made containing government spending a central objective of his administration. In April 2020, the COVID czar asserted that the initial strategy to confront the crisis, defined in January, was sound and would remain for the entire pandemic ([Presidencia de la República](#)).

Any reconstruction of the facts must take into consideration that especially early in the pandemic, information was scarce and contradictory. Policymakers were everywhere operating in a context of high uncertainty. Little was, and in many respects is still known, about COVID-19 and its potential short-term and long-term consequences. However, in such a context, Mexican officials made risky rather than conservative assumptions about the disease. Lacking built-in checks, the model for crisis management they adopted failed to correct these assumptions.

## 3. Effectiveness of Masks

Communication regarding this and other important aspects is further analyzed in the next section of this report. Here we simply note that from a leadership and governance perspective, top officials' refusal to wear masks and recommend their universal use is one of the main manifestations of: a) the disconnect between scientific knowledge and public health policy; and b) the failure to follow the precautionary principle in the regulation of risk (in case of uncertainty about the consequences of different alternatives, choose the path likely to produce the least damage).

During the first several months of the pandemic, federal authorities repeatedly objected to the use of face masks. The President initially ridiculed the general use of face masks as an exaggeration, making references to measures adopted during the influenza H1N1 pandemic in 2009. Officials justified their position on the basis that scientific evidence for the effectiveness of masks to reduce transmission was lacking ([Milenio](#)) and promoting its use would generate shortages for health personnel.

As scientific evidence and pressure from critics accumulated, top health authorities eventually moderated their active opposition, but still only hesitantly and ambiguously favoring its use—when at all. By mid-July, the government's COVID-19 website continued to assert that face masks were not a source of protection. To date, no national mask mandate has been issued. Authorities argue that it would open the door to human rights violations ([Excelsior](#)).

Leaders’ refusal to incorporate the use of masks into their behavior and policy on the basis that definitive scientific evidence in its favor is insufficient is paradoxical, considering that in other aspects, they took as near certainties assumptions about the new disease for which evidence was lacking. The common denominator is an ill-considered approach at risk management.



“Should I wear a mask? Face masks are not a source of protection, since the eyes are uncovered and are also a route of entry for the disease. They serve to prevent the patient from spreading drops of saliva, but it is not necessary to make an excessive purchase, partly because that causes a shortage and affects medical and health personnel who do need them.”

Banner on the right: “The body’s own defenses manage to eliminate it (the virus).”

Source: <https://coronavirus.gob.mx/preguntas-frecuentes/>. Date: 7/15/2020.

4. Asymptomatic and Pre-Symptomatic Transmission

Uncertainty about the extent of pre-symptomatic and asymptomatic disease transmission was especially high during the initial months of the pandemic and has not fully dissipated (He et al. 2020; Slifka and Gao 2020), although from relatively early in 2020 studies started to point to a non-trivial contribution of people without symptoms to outbreaks, sufficient to warrant policy attention.

On several occasions, officials in charge of the response in Mexico made assertions inconsistent with this need. In late April 2020, for example, health officials disseminated information indicating that transmission became possible starting with the first symptoms and increased as the disease progressed, making the likelihood of pre-symptomatic transmission “almost nil” (@HLGatell). At other times, they recognized the parameters were unknown (Presidencia de la República).

However, scientific uncertainty about viral dynamics did not translate into the elaboration of different pandemic planning scenarios. The public health policies decided upon at the beginning of the emergency, based on specific assumptions, remained in place with little revision or adaptation as new evidence emerged about the biological and epidemiological characteristics of COVID-19. In a reflection of authorities’ initial

beliefs, the FAQs section of the federal government’s COVID-19 website continues to assert at the time of writing that the risk of contracting the virus from someone without symptoms is very low.



“Is it possible to get COVID-19 by contact with a person who does not have any symptoms? The main form of spread of the disease is through respiratory droplets expelled by someone when coughing. The risk of getting COVID-19 from someone with no symptoms is very low. However, many people who get it have only mild symptoms. This is particularly true in the early stages of the disease. Therefore, it is possible to catch it from someone who, for example, only has a mild cough and does not feel sick, therefore the most important thing is to follow basic prevention measures.”

Source: <https://coronavirus.gob.mx/preguntas-frecuentes/>. Date: 3/5/2021.

5. Potential Airborne Transmission

Scientific evidence of potential airborne transmission of SARS-CoV-2 has accumulated over the course of the pandemic. Studies have warned that inter-personal distance is not enough to prevent contagion in indoor environments with inadequate ventilation and air cleaning (Morawska and Cao 2020; Setti et al. 2020). On October 5, the CDC updated their website to incorporate this possible form of transmission (CDC). Although the relative contribution of different transmission pathways is still a matter of scientific debate, the very possibility that infectious viral particles linger in indoor air merited interventions and messaging to reduce potential risk of spreading through this channel.

Officials’ presumptions about the new virus, however, again drove public health guidance and officials’ own behavior before the public. For practical purposes, transmission through smaller particles suspended in the air over long distances and time has remained a blind spot. Recommended precautions have not been duly adapted, even when measures had potential to do good without doing harm and as leading scientific sources have emphasized the importance of advising people how to navigate risk in indoor settings (The Lancet Respiratory Medicine 2020).



Such disregard also occurred elsewhere; the WHO itself has been questioned on the issue. However, as evidence accumulated, Mexican officials failed to update their priors and remained fixated on their beliefs, in part due to a crisis management approach that pressured them to defend their earlier decisions and statements.

To exemplify, in June 2020, the Nobel-laureate Mexican chemist Mario Molina and coauthors published an article that identified airborne transmission as a dominant route for the spread of COVID-19 (Zhang et al. 2020). Inquired about the publication, the country’s COVID czar praised it as a valuable addition to the scientific literature but emphasized the limits of the article’s research design; more importantly, no changes in policy were contemplated even as this and other evidence suggested the need for a change of approach (Tang et al. 2021).

In July, 239 scientists issued a letter calling the WHO and relevant health authorities to recognize the potential for airborne spread and act accordingly (Morakswa et al. 2020; NYT). A new letter appeared in Science in October (Prather et al. 2020). Again inquired about the issue, authorities considered that though theoretically suggestive, incorporating this perspective into policy implied costly engineering modifications to buildings, for which as they had already explained, the standard of evidence had not been met (Presidencia de la República).

Simple recommendations like emphasizing natural ventilation in Mexico’s generally mild weather were not contemplated and have, in general, not been assimilated into health messaging. To date, federal guidelines on ventilation, particle filtration, and air circulation and disinfection to limit transmission risk indoors have not been issued.

Again, institutional procedures to ensure timely policy adaptation to emerging evidence were lacking. At the time of writing, recommendations and mitigation strategies remain centered on preventing contact transmission and spread through droplets over short distances.

6. Importance of Expanded Testing, Contact Tracing, Supported Isolation, and Localized Interventions for Infection Control

Mexico’s epidemiological surveillance and testing policies are examined in more detail in Chapter 5. Here, however, we list this element of the pandemic response as one of the key instances in which authorities’ initial preconceptions and chosen policies failed to align with scientific evidence.

From early in the pandemic, widespread testing coupled with contact tracing and isolation programs were identified as an effective strategy to contain transmission (Hellewell 2020). Proactive testing is crucial for the early detection of outbreaks that reduces the burden on healthcare systems (Cheng et al. 2020, Kucharski et al. 2020). Cross-national analyses suggest that COVID-19 mortality rates are negatively associated with the number of tests per population (Liang 2020).

Despite the growing evidence on the need for expanded testing as part of a broader, proactive program to contain viral spread, health authorities denied its usefulness as a tool for infection control. They dismissed efforts to detect local outbreaks, break transmission chains, and slow transmission through testing and associated targeted interventions as futile and impractical passed a certain, very small number of cases at the very beginning of an epidemic (Senado de la República). The working assumptions since the first case was detected were that: a) stopping the virus was impossible given the speed of transmission (Presidencia de la República); and b) there was little use in learning about infections other than to monitor the aggregate evolution of the pandemic (Presidencia de la República).

Federal health authorities remained fixated on these beliefs and wedded to a restrictive testing policy even as the virus continued to spread beyond projected scenarios and public pressure mounted. With

respect to isolation and quarantining, authorities have left it as voluntary, citing concerns over potential human rights abuses and people’s economic well-being (Senado de la República)—although as reviewed in Chapter 7, no special economic support measures have been adopted.

Ultimately, some states in the country with more individual resources, like Mexico City and Jalisco, deviated from the federal government’s approach and adopted their own testing programs, in an effort to detect outbreaks, support self-quarantining and isolation, and improve access to a diagnosis. However, absent support for a more proactive approach at infection control from the national government, these efforts remained local, uncoordinated, and limited.

### Resuelve tus dudas

Si tienes dudas o necesitas consultar algo, puedes llamar al 800 00 44 800.

¿Quiénes forman los grupos de riesgo?

¿Se contagia por el sudor?

¿Debo usar cubrebocas?

¿Debo desinfectar toda mi casa, escuela o lugar de trabajo?

¿Puedo contagiarme de una persona sin síntomas?

¿Mis mascotas pueden contagiarse?

¿Debo aislarme si tuve contacto con un caso confirmado?

El aislamiento es una medida voluntaria: a nadie se le puede obligar, ni siquiera a los casos confirmados. Por fortuna, todos han aceptado la cuarentena para no diseminar la enfermedad.

Hay muchos casos de personas que decidieron ponerse en cuarentena al comprobar que estuvieron cerca de alguien que se enfermó de COVID-19.

**“Should I self-isolate if I have contact with a confirmed case?** Isolation is a voluntary measure: no one can be forced, not even confirmed cases. Fortunately, everyone has agreed to quarantine so as not to spread the disease. There are many cases of people who decided to self-quarantine after learning that they were close to someone who became ill with COVID-19.”  
Banner on the right: “Mexico is going through the natural history of an infection.”  
Source: <https://coronavirus.gob.mx/preguntas-frecuentes/>. Date: 3/5/2021.

Resource constraints and the federal government’s prioritization of low public spending, avoiding borrowing, and not suspending any of its existing projects to liberate resources may have again favored policies that entailed a hands-free, low-financial-cost approach to pandemic management. Officials often justified the restricted use of testing for diagnosis of severe cases and sentinel surveillance purposes on the grounds that conducting more diagnostic tests represented an inefficient and wasteful use of scarce resources (Presidencia de la República; Excélsior; El País).

## 7. Regulation of Travel and Border Control Measures

Several studies relate the speed of spread of SARS-CoV-2 to domestic and international travel ([Gonne and Hubert 2020](#); [Kraemer et al. 2020](#); [Murano et al. 2021](#)). Governments have had to balance economic and rights-based considerations when adopting restrictions in this and other domains. Beyond travel bans, governments have adopted screening procedures for travelers and testing requirements to supplement other infection control measures.

Though other countries were quick to implement travel restrictions early in the pandemic, with the U.S. imposing a ban on travel for non-U.S. citizens who had been to China in the past 14 days as early as January 31, Mexico did not restrict any international travel. Since June 2020, air travelers complete a questionnaire to confirm they have not been at risk of contracting the virus ([El Universal](#)), but few restrictions and lax enforcement have allowed the virus to circulate freely. With its liberal approach toward international and domestic travel, Mexico became an attractive destination for international visitors seeking to escape more stringent measures in their home countries ([BBC](#); [NYT](#)).

Some state governments formally requested the federal government to adopt more stringent measures to contain the importation of the virus, for example cancelling international flights from cities with high incidence of cases. However, federal authorities denied these petitions ([SCT-Jalisco state government](#)). Inquired about new more contagious variants being detected in several countries in recent months, authorities have reiterated that no border controls are necessary ([INSABI](#)), considering that sick people do not tend to travel ([Secretaría de Salud](#)).

Regulation of travel is discussed in more detail in the section on the public health response below. Here we bring attention to the issue, however, as another manifestation of the federal government's failure to attune policy to scientific evidence and risk levels, in particular with regard to infection control measures.

## 8. New Variants

At the time of writing, some of the initial failures in risk assessment appear to be reproduced with respect to new SARS-CoV-2 variants of concern. Cases of the B.1.1.7 variant that emerged in the United Kingdom were detected in Mexico in January ([Animal Político](#)). Authorities' approach has been to maintain public health policies and recommendations unchanged.

Their perspective is that though new variants may have increased virulence, definitive evidence is still lacking and, in any case, the applicable measures to control spread are the same ([INSABI](#)). They have also emphasized that most mutations are innocuous and that the probability of them being biologically relevant, in terms of the capacity to inflict damage, is very low ([Presidencia de la República](#)).

Some states in the country appear to be taking a more cautious approach and have partnered with universities to conduct strain surveillance ([El Financiero](#)). Notifications of potentially relevant mutations have been submitted to the national epidemiological diagnosis center (INDRE). It is unclear, however, if a national SARS-CoV-2 strain surveillance policy is in place. No specific guidelines have been made public.

Although scientific knowledge about SARS-CoV-2 variants is constantly evolving, this messaging suggests that health authorities may be again failing to gauge risk and act out of precaution, rather than out of assumptions about the virus whose scientific certainty has not been established.

## 9. Epidemiological Risk and Public Health Measures

A final manifestation of authorities' disregard for evidence in some of their decisions regarding the pandemic response concerns the disconnect, at critical junctures, between objective levels of epidemiological risk

and public health restrictions. In Chapter 1, we showed that the National Campaign of Healthy Distancing ended on May 30, with cases on the increase and without evidence that transmission had been brought under control. Although data did not match official projections that had anticipated the pandemic's first wave to have run its way by then, authorities ended the national confinement period. Concerns about the social and economic effects of a generalized lockdown likely drove the decision.

A color-coded alert system that assigned a level of risk to each of the 32 states substituted the national lockdown ([Diario Oficial](#)). Under this system, federal authorities weekly estimate risk based on a set of indicators and inform the public and state governments, which implement the appropriate public health measures. The system itself is not problematic. In principle, it allows for a more regionalized approach to the pandemic. However, considering the low levels of testing and potential issues with the representativeness of the sentinel surveillance model at the subnational level, it is questionable whether some of the indicators employed are an accurate representation of the reality of the epidemic in particular regions.

Lack of transparency in the estimation, especially during the early stages of implementation of the color-coded system, generated frictions with state governments, as we discuss below. An additional problem is that some of the indicators employed to assess risk, including confirmed cases and deaths, are updated with considerable delay. Greater investment in health information systems is more than warranted.

Yet the main issue we identify in this component of our assessment is that the estimation of epidemiological risk—and with it, the set of corresponding public health policies—has failed to adhere to strictly technical considerations, and in fact to the federal government's own guidelines ([Secretaría de Salud](#)). As mentioned in Chapter 1, following the official methodology and using data from the relevant (publicly available) health information systems, Mexico City reached the highest level of risk on December 4, 2020 ([NYT](#)), which entailed the suspension of all non-essential activities in the city ([Diario Oficial](#)).

However, federal health authorities and the Mexico City government (from the President's same party) informed the city remained at a lower risk level and continued to permit non-essential activities until December 18. An official memo sent by federal health authorities to Mexico City's mayor with the indicators used to calculate risk has been released to justify the decision ([NYT](#)), yet levels for two of the ten employed indicators (the test positivity rate and the share of available beds with ventilators) are inconsistent with data from: a) the health information systems that, as per the guidelines, are the basis for the calculations; b) federal authorities' daily press conferences; and c) Mexico City's mayor own reports to the public for the relevant dates.

Authorities have failed to provide an explanation for this violation of the official guidelines ([Aristegui Noticias](#)) and to respond to freedom of information requests related to this issue. When controversy emerged, they argued that the color in the color-coded alert system that defines the stringency of policies was relatively irrelevant ([Presidencia de la República](#)). Economic considerations and top political officials' unwillingness to suspend activities in the city in the lead to the December holidays appear to have led to this instance of subordination of technical processes regarding the estimation and communication of epidemic risk to political considerations.

Confirmed COVID-19 cases and deaths and excess deaths rose exponentially in Mexico City in the following weeks ([Romero-Zavala and Despeghe 2021](#)). As analyzed in Chapter 1, the capital has disproportionately contributed to Mexico's poor performance during the pandemic and saw extreme levels of transmission during the second peak in December 2020-January 2021, which overwhelmed hospitals and caused oxygen shortages.

Mexico City's government has experimented with proactive infection control measures that deviate from the federal government's approach, including expanded testing and targeted interventions in affected



neighborhoods to attempt to control outbreaks, among others. Unlike other leaders, the mayor and local officials appear in public wearing masks and actively promote their use. Yet such initiatives and efforts have been overcome by the political ascendancy of the national executive over the local government, with which it is partisanly aligned.

More broadly, this consequential event manifests one of the important failures in the adopted strategy for emergency management—namely, the insufficient autonomy and protection of technical processes from discretionary political decisions. Such entanglement has contributed to a costly disconnect between health policy and scientific evidence and data.

10. Vaccination

A final instance in which decision-making has failed to follow evidence and technical guidelines concerns the initial rollout of the vaccination program. The government’s own technical advice group recommended prioritizing health care workers and then vaccinating the population based on risk of death ([Grupo Técnico Asesor de Vacunación Covid-19](#)). However, federal authorities have deviated from this plan, targeting rural municipalities and teachers in a state without a severe outbreak without detailing the selection criteria ([INSABI](#)). Vaccination is discussed in greater detail in Chapter 8.

Delayed, Undecisive Action and Lack of Coordination

One of the main consequences of national health authorities’ failure to properly assess risk was the early fragmentation of the pandemic response. As other countries in Latin America that detected their first cases by late February 2020, Mexico enjoyed an initial time advantage relative to countries in Asia or Western Europe that experienced the first large outbreaks. Yet as is clear from the timeline at the beginning of this report and as we discussed with respect to the convening of the National Health Council, the federal government was slow to react relative to international developments and even to the detection of the first infection in the country. The declaration of COVID-19 as an epidemic and a sanitary emergency—the legal bases to trigger special health measures and other actions throughout the government apparatus, and also a symbolically important act—occurred until March 23 and March 30, respectively ([Diario Oficial](#); [Diario Oficial](#)).

Such a delay and the underestimation of risk that it pointed to would be highly consequential, as it damaged national authorities’ capacity to lead a national response ([Sánchez-Talanquer et al. 2020](#)). Coupled with partisan conflicts over the current administration’s centralizing thrust and its disdain for political opponents, the initial delay generated political polarization over the pandemic response from the outset, eroded the credibility of health authorities among relevant stakeholders, and triggered uncoordinated action across the country.

In light of the federal government’s passivity, some educational institutions and state and local governments started to implement preventive measures on their own initiative ([El Financiero](#)). By the time federal authorities announced the suspension of classes, for example, ten states had already done so ([Expansión](#)), and political tensions over the emergency response had already developed.

Disagreements between federal and several state governments, typically those controlled by opposition parties, remained throughout the pandemic and exacerbated as conditions worsened. Given that states and the federal government have shared jurisdictional responsibility over health policy during crises, the lack of effective coordination mechanisms hampered the response. Some state governments set parallel

coordination devices to confront the crisis and oppose federal government policy ([La Jornada](#), [Cejudo 2020](#)). However, these broke along partisan lines and could not substitute a national, concerted effort to confront a common threat.

Collegiate institutions like the National Health Council could and should have provided for that national coordination. Yet its *de facto* absence during the crisis and the overconcentration of responsibility over national policy in a single unit within the Secretariat of Health, politically responsive to the President, eroded the conditions for concerted action from all public institutions and governments. It also tended to personalize controversies and decisions, in detriment of institutional forms of governance.

We identified the following as the main contentious issues regarding the pandemic response between levels of government:

- Timing of first public health measures like school closures and restrictions on mass gatherings.
- Quality of PPE and other medical supplies ([La Jornada](#)).
- Appropriateness of mask mandates ([Milenio](#)).
- Inconsistencies between data reported by the states on cases and deaths and the information published by the federal government ([Animal Político](#)).
- Controversies regarding the estimation of epidemiological risk and the color-coded system after the national lockdown period ([Expansión](#)).
- Authorization for state governments to purchase and import diagnostic tests and associated materials to expand testing ([Jalisco government](#)).
- Regulation of international travel and border controls ([Aristegui Noticias](#)).
- Lack of financial support for state and local governments and the population to respond to the pandemic ([Milenio](#)).
- Exclusion of state and local governments from implementation efforts in the vaccination program ([El Universal](#)).
- Complaints about discretionary decision-making and lack of communication with subnational authorities.

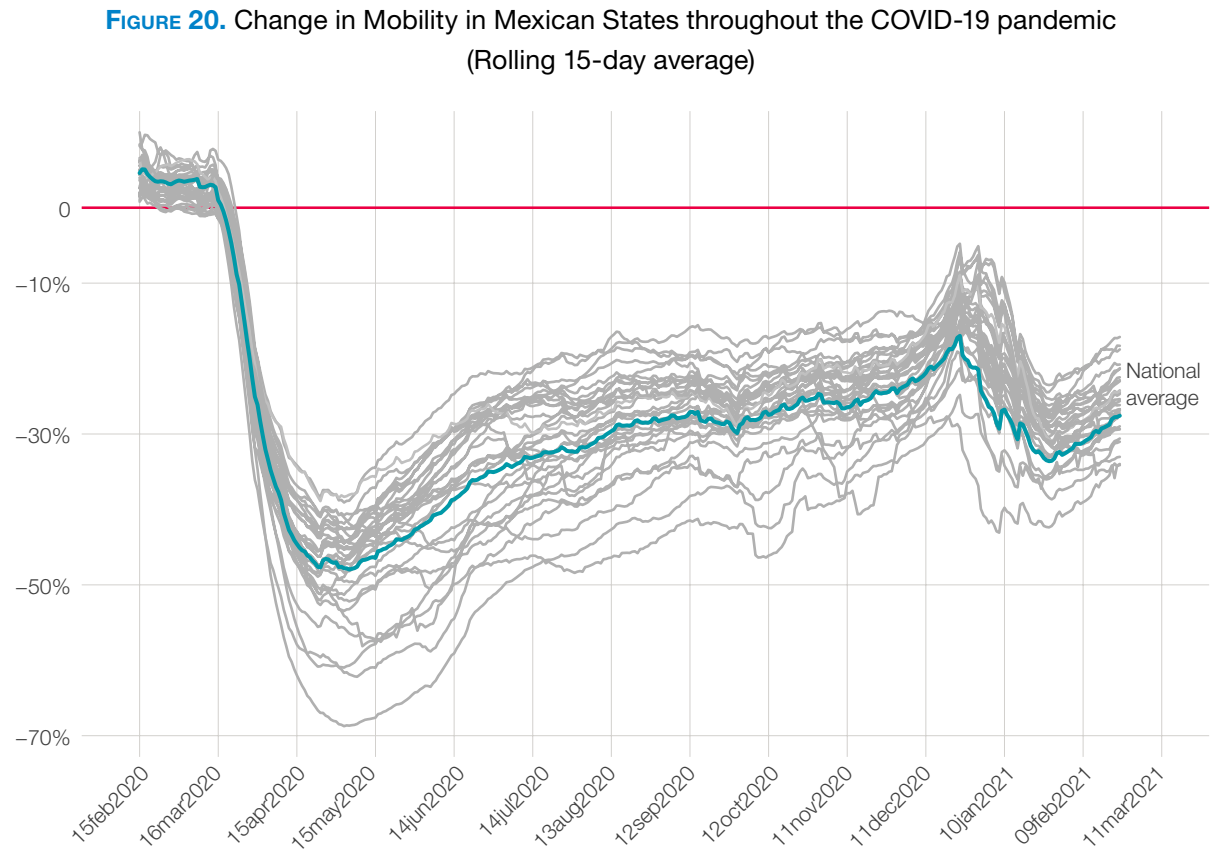
In short, coordination was a casualty of the lack of a shared understanding between national authorities and some subnational governments regarding the level of threat and the necessary actions. Bitter partisan conflicts exacerbated these disagreements. As we discussed in Chapter 2, the federal government continued to implement major centralizing reforms to the country’s health system throughout 2020. Clashes over the distribution of resources and the federal government’s reforms ultimately led 10 out of 32 state governors to form a “Federalist Alliance” to coordinate opposition. In July, 9 governors from this group demanded the COVID-19 czar’s resignation ([Animal Político](#)).

Moreover, the federal government’s hands-free approach to infection control *de facto* transferred the bulk of responsibility over public health measures to the states. Although states are considered health authorities under the Constitution, their actions have lacked the guidance, coherence, and coordination that national health institutions are meant to provide. In some instances, the lack of central support has been aggravated by federal opposition to state initiatives, including increased testing, the adoption of mask mandates, and the regulation of travel.

The lack of coordination in the pandemic response is reflected in high heterogeneity in the timing, type, and rigor of public health policies implemented across the country ([Trujillo et al. 2020](#)). With weak

national guidelines and debates about federal health authorities’ failure to heed to scientific evidence, states have faced collective action problems and adopted different rules during the crisis, depending on their own institutional capacities, understanding of the evidence, and partisan alignments. As [Figure 20](#) shows, decreases in population mobility have also been highly variant across states during the pandemic. Even during the period of national lockdown, levels of mobility ranged from approximately -35% to -70% percent. At its lowest, the national average stayed above -50%.

Overall, then, national authorities have failed to perform their stewardship role during the pandemic. A politically polarized national environment, weak inter-partisan cooperation, and the federal government’s propensity to opt for non-consensual forms of decision-making fractured Mexico’s response to the emergency.



Source: Authors’ elaboration using data from Google Community Mobility Reports. Each line is one of Mexico’s 32 states.

The state of Jalisco’s response and the clashes with the federal government

Government responses to the emergency have been far from homogenous in Mexico’s federal system. The absence of coordination and cooperation has been the common denominator, especially where partisan conflict has intersected with the vertical separation of powers. Governors from opposition political parties have clashed with the federal government over the pandemic response and contested health system reforms that continued to be implemented during the emergency. In some instances, states have broken with federal government policy and followed their own approach at managing the pandemic.

The state of Jalisco in the center-west, whose capital Guadalajara is the country’s third largest city, provides an example. Jalisco convened its state-level Epidemiological Surveillance Committee in January 2020 and closed schools and cancelled mass events before national authorities issued general orders. Other committees to coordinate the response with the private sector, unions, churches, and civil society organizations have also been convened.

Political tensions developed with the federal government over key aspects of health policy, polarizing debate and generating conflicting messaging. The state government requested the federal government to regulate international travel to the state ([Jalisco government](#)), but the petition was denied several weeks later ([SCT](#)). The federal government’s testing and epidemiological surveillance policies became another source of conflict. In April 2020, state officials sought to expand the number of tests but faced bureaucratic hurdles to import necessary supplies raised by federal authorities. In some instances, the federal government did not respond to formal requests from the state governor ([Jalisco government](#); [Jalisco government](#)).

When the state government secured access to a greater number of tests than those provided by national authorities, it partnered with the University of Guadalajara to analyze samples, drawing on the university’s laboratory capacity. However, these and

other laboratories in the state were denied access to the Epidemiological Surveillance System for Respiratory Diseases (SISVER), where tests and cases are reported. The SISVER platform has remained accessible only to laboratories in the National Network of Public Health Laboratories (one in every state), for tests conducted under the restrictive guidelines of the sentinel epidemiological surveillance model chosen by national health authorities.

The Jalisco state government therefore set a parallel system to register tests and cases, known as [Radar Jalisco](#), which integrates information from all public and private laboratories in the state with capacity to analyze samples for SARS-CoV-2. State health authorities have promoted an “active surveillance” model that includes testing beyond the criteria set by the national sentinel system. As of early March 2021, 224 thousand COVID-19 cases have been detected in the state under [Radar Jalisco](#), although the national SISVER system reports only 79 thousand. Tests conducted under the national criteria and registered in the SISVER system account for only 24% of tests conducted in the state, and a 22-point difference exists in the reported test positivity rate ([Radar Jalisco](#)).

Within Mexico, Jalisco appears as a good performer in terms of the burden of disease. With 6.6% of the country’s population, the state accounts for 5.6% of all confirmed COVID-19 deaths, despite having one of the largest metropolitan areas in the country (as of March 2, 2021). Its excess mortality score for 2020 was 27%, compared to the national figure of 45%. However, the state government has also been criticized for the consequences of some of its policies. The state acquired debt to finance the response and special economic and social programs ([La Jornada](#)), which again contrasts with the federal government’s approach. In May, protests broke out after a man reportedly arrested for not wearing a face mask in public died in police custody in one of the state’s municipalities ([The Guardian](#)).

# Communication and Trust

CHAPTER

4

Effective communication—clear, consistent, regular, proactive, and based on evidence—is key to minimize damage from an infectious disease. Citizens also have a right to be informed honestly and truthfully by their governments. The specialized literature emphasizes the importance of a human-centered perspective that prioritizes what people want, need, and deserve to know (Dickman et al. 2014). Building trust and delivering the right message is essential in crisis communication (Seeger 2006).

Official spokespeople must have the technical knowledge but also skills to communicate effectively, listen, and empathize with others (CDC). Unconditional adherence to truth and evidence is a must. Technical communication about the emergency must also stay clearly differentiated from partisan politics and ideological debates. Taking a stand on divisive issues, yielding to political animosities, or letting partisan or ideological considerations infiltrate health communication is doomed to produce messaging potentially harmful to health and/or erode credibility and trust. Alienating relevant stakeholders and segments of society can aggravate the consequences of an already dangerous threat.

In turn, political leaders must:

- Lead by example and reinforce public health guidance.
- Avoid vacuums or wrong, false, imprudent messaging.
- Build cohesion to mobilize a collective response.
- Combat misinformation.
- Urge stakeholders to replicate the public health message and comply with recommendations.
- Use their symbolic powers—reinforced during crises—to build trust, create a shared sense of purpose, and direct and reassure the public. Political elites’ leadership role is iconic for the broader government and social response effort to face the crisis (Ansell et al. 2014).

Under these criteria, communication by national authorities during the COVID-19 pandemic in Mexico has been inadequate and misleading in important aspects concerning risk and coping strategies, with harmful consequences. We identify certain positive aspects in the federal government’s communication strategy, as well as important steps toward transparency. On balance, however, these were overwhelmed by a politicization of health messaging; a failure to objectively communicate risk at critical junctures; a failure to incorporate relevant scientific evidence into health messaging in a timely manner; and as circumstances deteriorated, a propensity to cover up policy missteps and engage in scapegoating, contributing to communication noise.

### Strengths of Public Health Communication and Transparency

On the positive side, we note that a clear channel was established for constant communication with the public through dedicated, daily press conferences and reports. Spokespeople were appointed from early on. Media, civil society, governments at all levels, and citizens had a clear reference point to turn to for guidelines and information about the course of the pandemic. The federal government made efforts to avoid information vacuums, centralize communication, and maintain control over the narrative. Lack of communication was not an issue.

Responsible officials made use of visual aids and responded media questions in their daily conferences, allowing for this form of clarification and accountability to take place. They also presented information fluently and expressively, which especially early in the pandemic, contributed to an impression of experience and command over the situation. Although at times sacrificing the simplicity of the message, efforts were also made to educate the public on epidemiological concepts and trends.

Importantly, when personal attacks emerged against health workers (BBC), authorities appropriately repudiated the violence and called for the population to recognize their work in the emergency (Presidencia de la República). And in a positive step toward transparency for which the federal government deserves recognition, the Secretariat of Health released the official case-level COVID-19 epidemiological database (updated daily) to the public (Secretaría de Salud). This allowed the scientific community, the media, and civil society to conduct independent analysis of the pandemic and to validate—and sometimes complement or reinterpret—the information provided by health authorities.

Since the dataset was first released in April 2020, scientists and interested parties have made valuable contributions to the understanding of the pandemic in Mexico. Our own analysis in this report has drawn extensively from this source. Given the importance of open data for transparency, accountability, trust, and scientific research, we believe the same policy should be adopted at once for the vaccination program. At the time of writing, disaggregated data on the progress of vaccine administration throughout the country have not been released.

Finally, some important health guidelines were effectively communicated, in particular the need for frequent hand-washing and inter-personal distancing. We review Mexico’s successful “Healthy Distance” communication campaign in the box below. Of note, millions of households in Mexico lack access to clean,

#### Susana Distancia and the COVID-19 Health Squad

Mexico created a successful physical distance communication campaign through cartoons. The main heroine, “Susana Distancia” (a pun that translates to “your healthy distance”), became the face of the containment efforts and went viral (Efe; GobMX; GobFB). The creative approach turned into a catch phrase. Soon millions of people were talking about healthy physical distancing.

Following the success of Susana Distancia, the government unveiled the “COVID-19 Health Squad,” composed of 5 diverse heroines. Each heroine represents a stage in the “Epidemiological Stoplight”, a monitoring system that indicates the COVID-19 risk category for each individual state:

- Refugio (refuge): red tier, stay home.
- Prudencia (prudence): orange tier, avoid going out.
- Esperanza (hope): yellow tier, take hygiene measures when going out.
- Aurora: green tier, the new normal.



Despite the accomplishments of this communication campaign, responsibility has been put on citizens without necessary complementary messaging and actions on the government side, like free widespread testing, paid isolation, or inspections to ensure safety for workers. The message leaves COVID-19 prevention solely in the hands of citizens. Additionally, the campaign only speaks to physical distancing measures, leaving out other behaviors such as masking, isolation, quarantining, maintaining air circulation in indoor spaces, and when and how to seek care. The government could use this successful strategy to cover such behaviors.



piped water, including 21% of indigenous language speaking Mexicans, making handwashing campaigns difficult to achieve nation-wide (UNESCO).

Communication Failures: Politicization, Wrong Messaging, and Setting a Bad Example

Despite maintaining a constant flow of information and the mentioned strengths, systematic flaws in the federal government’s message and failed judgement on the part of top political leaders, reflected in their verbal and nonverbal communication to the public, have contributed to the devastating impact of the pandemic in Mexico. The flaws we identified in the leadership and governance section above carried over to public health messaging and deeply marred communication and trust building:

- Because authorities failed to recognize the potential severity of the threat, they failed to properly communicate risk and to provide the population with adequate information to confront it.
- The tendencies toward overly concentrated, discretionary decision-making worked against correcting communication mistakes and ensuring the timely adaptation of health messaging to emerging scientific evidence.
- Lack of coordination between levels of government reinforced polarization regarding the pandemic response and generated mixed messaging.
- The emergency management model and divisive leadership style of top political officials prevented inclusive communication that broadly engaged stakeholders and society in a collective effort. The national executive continued to antagonize political adversaries and opposition governments, vilify critics, and cultivate polarization in the public sphere through the crisis.
- The lack of necessary levels of autonomy of health authorities and institutions with respect to the national executive lend itself to the politicization of health communication, in detriment of objectivity and broad-based trust.
- Several political leaders, starting with the President, acted irresponsibly on repeated occasions, defying science and health guidance.

Rather than using their symbolic powers and popular appeal to bolster compliance with necessary public health measures, top political leaders have often set a bad example and sent wrong signals to the public through their behavior. The President continued to hold rallies, physically interact with supporters, and visit restaurants at least three weeks after the first case was reported (Vox; Aristegui Noticias; Animal Político). He and his staff have also appeared holding meetings in indoor spaces without wearing masks throughout the pandemic (El País). In their daily press conferences, including those to inform the public about the pandemic, officials practice physical distancing, but do not wear masks.

Due to the President’s resistance, mask wearing unnecessarily became a political issue. Federal health authorities reluctantly moderated their opposition to mask wearing by mid-2020, but their messaging has been timid and inconsistent out of a continued belief in its limited effectiveness and to avoid contradicting the President. As late as December 2020, the President insisted that health authorities in charge of the pandemic response have assured him that wearing a mask is not necessary as long as he keeps a healthy distance (Presidencia de la República). Questioned by the press after contracting the virus in

January 2021, he declared he would continue not wearing a mask, as he could no longer spread the virus (Crónica).

The failure to lead by example and to follow (and update) public health guidelines is reflected in the high numbers of political leaders who have contracted the virus. As of February 28, 2021, 17 top federal government officers have tested positive to COVID-19, including the President and the Undersecretary of Prevention and Health Promotion, the COVID-19 czar (Table 5). 18 out of 32 governors have also contracted the virus. Congress has continued to hold sessions without wearing masks, and numerous Congresspeople and staff became infected. Of 500 deputies, 95 have reportedly tested positive for the SARS-CoV-2 coronavirus and two have died. 35 of 128 Senators have also fallen ill with COVID-19, and 2 have died (Expansión). As mentioned, several contracted the disease during a session to eliminate trust funds supporting academic research, a measure broadly opposed by the scientific community.

TABLE 5. Federal government top officials who have tested positive for COVID-19

Irma Eréndira Sandoval	Secretary of Public Administration	April 27, 2020
Ricardo Sheffield	Federal Consumer Attorney	May 2, 2020
Zoé Robledo	Mexican Institute of Social Security	June 7, 2020
Arturo Herrera	Secretary of Finance and Public Credit	June 25, 2020
Rabindranath Salazar	Undersecretary of the Interior	June 30, 2020
Rocío Nahle	Secretary of Energy	August 13, 2020
Víctor Villalobos	Secretary of Agriculture	August 18, 2020
Jorge Arganis Díaz	Secretary of Communications and Transportation	September 10, 2020
Rosa Icela Rodríguez	Secretary of Security and Citizen Protection	September 17, 2020
Raquel Buenrostro	Head of the Tax Administration Service	October 6, 2020
José Rafael Ojeda	Secretary of the Navy	Twice: October 18, 2020, and February 23, 2021
Jesús Ramírez Cuevas	Spokesman for the Mexican President	January 10, 2021
Andrés Manuel López Obrador	Mexico’s President	January 24, 2021
Luis Cresencio Sandoval	Secretary of National Defense	February 17, 2021
Hugo López-Gatell	Undersecretary of Prevention and Health Promotion and Mexico’s coronavirus czar	February 20, 2021
Juan Antonio Ferrer	Head of the Institute of Health for Well-being	February 23, 2021

Source: Expansión.

Beyond the message sent through their own behavior, political leaders have also made statements and communicated beliefs about the virus that lack scientific support. In one of the most conspicuous examples, during the first weeks of the emergency the President pulled out two religious amulets and suggested they were protective against the disease (La Jornada). In June 2020, the Secretary of the Interior claimed that she did not wear a mask because she used drops of “citric nanomolecules” that destroyed the virus (Animal Político).

On several occasions, political leaders’ messages have also contradicted those of health authorities, as Table 6 illustrates. Conflicts between state governments and national authorities also generated



inconsistent messaging. In June, the WHO advised Mexican officials about the need for consistent messaging (WHO).

More consequentially, the failure to incorporate scientific evidence and apply a precautionary approach when the science was not definitive led, in all the domains reviewed in the previous section, to mistaken or misleading messaging. Lack of communication was not an issue, but wrong and incomplete information was. Authorities repeatedly minimized the crisis in public, created false expectations about the end of the pandemic, wrongly announced the country had flattened the curve, misrepresented the level of control over infections, and denied that Mexico was one of the most affected countries (La Jornada; El Universal; Verificado).

TABLE 6. Contradictory messaging between political leaders and government officials

	Physical distancing	Pandemic peak	New outbreaks
President	Some say we should stop hugging because of coronavirus. But we should hug. Nothing is going to happen. (03/04/2020)	Now we have to mentally prepare ourselves to go out, regain our freedom completely, and assume our responsibility (...) I know that it is important to keep a healthy distance (...) I am responsible. (06/12/2020)	There are no outbreaks, there are some states where contagion has increased, but we cannot speak of a new outbreak. (10/20/2020)
COVID-19 czar	Healthy distance is the distance that we need to keep from one another because if someone is infected, distance will prevent contagion. (03/14/2020)	Right now the whole country is at the highest level of risk of contagion (...) we should not go out, congregate in public squares, or do our work or school activities normally. (06/12/2020)	The epidemic in Mexico is still active. We accumulate 12 weeks in decrease, but in the most recent it is no longer going down at the same speed. (10/20/2020)

The figure on the next page shows one of the most serious examples of such harmful messaging. The Secretariat of Health clarified that this campaign was not supposed to be launched, and it represents an extreme example. However, the image widely circulated in social media early in the pandemic and contributed to the perception among government critics that the government was not taking the crisis seriously, fracturing trust from early on.

Assumptions about the forms of viral transmission have prevented precautionary messaging that clearly and repeatedly inform citizens what to do to protects themselves from potential infection in poorly ventilated indoor spaces, and about potential transmission by asymptomatic and pre-symptomatic individuals. The risks of long COVID-19, which were not contemplated by authorities in pandemic planning scenarios, have not been properly communicated to the public, nor have the steps and strategies for patients dealing with prolonged disease.

Moreover, the politicization of public health communication has led to messaging that misrepresents the real level of risk to cultivate optimism and preemptively deny government blame for the impact of the pandemic. When asked to explain the high number of cases and deaths, officials have exclusively attributed it to the poor state of the health system before the new administration assumed office in 2018 and to the high incidence of chronic diseases among the population, rationalizing and maintaining their policy decisions (Animal Político). Over time, messaging has also increasingly emphasized individual responsibility in preventing infection, which though relevant, carries the attention away from systemic determinants of Mexico’s high burden of disease. Health authorities have not publicly recognized any mistakes in the pandemic response.



“COVID-19 is not an emergency situation. There is no need to cancel mass events, work, or school activities. We should avoid panic buying. Continue with your regular activities but reinforce preventive measures. Remember, the disease caused by the coronavirus is not serious.” Source: (Verne, El País). Date: 03/15/2020.

In daily reports and press conferences, data and statistics are often presented in ways that suggest an improving situation, even when other available indicators fail to point in the same direction. For instance, seeming decreases in the number of deaths that depend on the delay in reporting have been used to signal trend changes that then fail to materialize (Rico-Jaime 2020). The indicators presented to the public have also changed over time, depending on the overall picture they draw.

In several instances, daily conferences to inform the public about the evolving public health situation became spaces to discredit political opponents and critics of the government’s pandemic response. Regardless of the



“Visit the doctor only in case of emergency.” Source: <https://coronavirus.gob.mx/prevencion/>. Date: 03/5/2021.

merits of such criticism, the politicization of health communication has alienated relevant stakeholders and damaged trust among segments of society that do not identify with the party currently in power.

One of the most harmful communication mistakes has been the lack of clear, prudent, and correct information for infected individuals about how to act upon contracting the disease. Driven by assumptions that COVID-19 would not be different from regular respiratory infections and by fears of hospitals reaching a saturation point, authorities disseminated information that encouraged patients to weather the disease at home and not seek medical attention unless grave symptoms presented ([Televisa](#)). They emphasized that the disease was not serious for 90% of cases and would pass by itself, and therefore patients should contribute to maintaining hospital capacity by staying at home.

Although such messaging has moderated over time, information for infected individuals and patients with other conditions is still incomplete and often misleading. At the time of writing, the federal government's COVID-19 website lists four main preventive recommendations: handwashing, coughing or sneezing into your elbow, not spreading misinformation, and visiting a doctor only in case of emergency.

Under this type of messaging, many citizens have failed to seek timely medical care for both COVID-19 and other conditions. Given difficulties in getting a test, many have also avoided visits to medical establishments even when feeling sick, for fear of simply having a cold and contracting the virus. Interviews conducted by the research team and other sources suggest that a significant proportion of patients have sought medical attention only when gravely ill, contributing to high mortality rates among hospitalized patients. As we examined in Chapter 1, the national statistics agency estimated that some 58% have died out-of-hospital ([El País](#)).

# Public Health Response

CHAPTER

5

A close look at the COVID-19 response in the country suggests that health officials in Mexico failed to capitalize on lessons learned from the influenza pandemic, including decisions regarding public health responses. In the absence of effective therapeutic interventions or widely available vaccines to prevent the spread of SARS-CoV-2, non-pharmaceutical public health interventions (NPIs) were initially the only effective measure available to slow transmission (Kucharski et al. 2020).

From the beginning, the COVID-19 public health response in Mexico was reactive rather than proactive. The government’s response strategy decided against actively finding cases to disrupt transmission chains, and instead focused on maintaining hospital availability and physical distancing measures. As discussed previously, health authorities adhered to a highly restrictive testing policy, which prohibited accurate measurement, monitoring, and control of the pandemic. Isolation and quarantining remained voluntary, financially unsupported, and underemphasized.

By focusing on a downstream approach instead of active case finding and robust infection control measures, community spread in Mexico became unmanageable. As we review in the next chapter, the government increased hospital and ICU bed capacity and made bed availability the primary indicator of the country’s control of the pandemic, as well as an indicator to determine risk in the color-coded alert system (IMSS, GobMX). Lack of control over infections threw the pandemic response out of balance, but as discussed above, authorities failed to follow the ample scientific evidence in favor of NPIs to proactively detect outbreaks, among other evidence-based interventions.

In this section, we describe the public health response to the pandemic in Mexico including surveillance, the testing response, and NPIs.

Sentinel Surveillance in Mexico

The government relied on a sample-based sentinel surveillance model to monitor the evolution of the pandemic (Modelo Centinela) (Ulloa et al. 2020). Sentinel surveillance refers to the collection of disease data at specific locations that are meant to provide a representative sample for the general population (SS). The system draws on infrastructure developed to monitor influenza outbreaks.

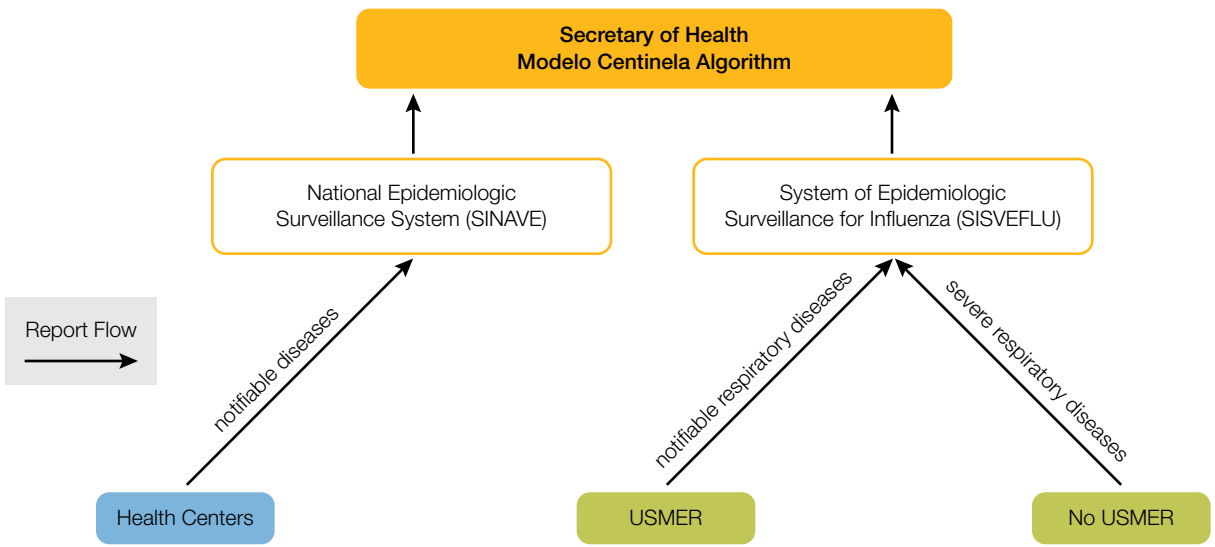
Specifically, Mexico has used two preexisting systems to estimate the burden of the COVID-19 pandemic. The first is the National Epidemiological Surveillance System (SINAVE), which is the case reporting system used to monitor all reportable diseases in Mexico (142 diseases including dengue and tuberculosis). The second is SISVEFLU, a subsystem of SINAVE designed to detect and prevent outbreaks of respiratory diseases (SS; SS; Ulloa et al. 2020; SS) (Figure 21).

As part of the SISVEFLU, 475 Influenza Health Monitoring Units (USMIs) throughout the country collect data on influenza-like diseases (GobMx). USMIs are required to register suspected or confirmed influenza cases or deaths within 24 hours (SS). For the COVID-19 pandemic, USMIs were renamed as USMERs (Respiratory Disease Monitoring Health Units) and SISVEFLU as SISVER (Epidemiological Surveillance System for Respiratory Diseases).

Sentinel surveillance of COVID-19 is based on the following sampling procedure (SS, GobMx):

- Laboratory samples of 10% of suspected cases with mild symptoms (outpatients) in USMERs
- 100% of suspected cases with severe symptoms (difficulty breathing).
- 100% of cases meeting the definition of Severe Acute Respiratory Infection (inpatients) in all health establishments (USMERs and non-USMER centers).

FIGURE 21. Modelo Centinela Diagram (Adapted from Nexos)



All deaths in USMERs are directly reported in SISVER, while non-USMER centers email details for their analysis (SS). Guidelines emphasize that non-USMER units must only analyze severe cases to prioritize efficient allocation of resources. In January 2021, guidelines were updated to mandate samples for 10% of patients with mild symptoms also in non-USMER units (SS).

The purpose of sentinel surveillance is to gather high-quality data from sample sites (the USMERs). The data can be used to characterize transmission trends. However, this information only includes people who seek attention at a limited number of hospitals, and therefore the data are not representative of the broader population or inclusive (Medium, Ornelas-Aguirre and Vidal-Gómez-Alcalá 2020). Moreover, sentinel surveillance also does not include data from private sector laboratories or others outside the national network.

In practice, the model has vastly underestimated the true burden of COVID-19 (even considering its nature as a sample). The surveillance system has mainly captured cases of severe disease. Studies and reports have shown the inaccuracy of the surveillance system (New York Times, Ornelas-Aguirre and Vidal-Gómez-Alcalá 2020). At one point, the number of cases found using the sentinel model needed to be multiplied by a factor of 8.2 to approximate the number of cases, as explained by the pandemic spokesperson (BBC). The INSP’s serological surveys later found that in fact only about 1 in every 30 infections were detected (including asymptomatics) (ENSANUT COVID-19).

In addition, the system lacks subnational representativeness since it was designed to detect emerging respiratory pathogens at the national level. However, the color-coded alert system that determines the level of risk for each state is partly founded on the cases detected under the sentinel surveillance model. A further obstacle to sound decision-making has been the large delays in case reporting and data processing within health information systems. Between two and three weeks are necessary to reach a relatively stable estimate of the number of COVID-19 cases and deaths for any given day. Such delays have prevented policymakers and the public from having an accurate picture of the epidemic in real time (Animal Político, Gutiérrez-Pulido et al. 2020). In a rapidly changing epidemic, decisions have been based on outdated information.

Leaving the accuracy of the sentinel model aside, its passive monitoring approach is divorced from infection control objectives that are critical for COVID-19. The model was presented as a satisfactory



replacement for mass testing. According to the government spokesperson, the system was “more effective than testing millions of Mexicans” (BBC). However, this perspective limited the use of tests to obtaining an aggregate picture of the evolution of the disease, relinquishing it as a tool to support the early detection of outbreaks and other targeted interventions to control transmission.

Despite growing evidence that the epidemic was not being appropriately monitored and that a passive surveillance approach was inadequate to deal with COVID-19, health authorities remained committed to a limited testing regime and openly questioned the need or convenience of expanding diagnosis and laboratory capacity. Country leadership insisted that the goal of testing was only epidemiological surveillance and not infection control; mass testing was suppressed on the pretense of maintaining the integrity of the model.

In short, the sentinel surveillance system should not have precluded the use of widespread testing and other infection control measures. The parameters to estimate the real burden of disease based on its data have been insufficiently transparent and often inaccurate. As noted above, official predictions about the likely course and size of the epidemic have vastly underestimated the real burden of COVID-19.

Testing

As of February 2021, Mexico ranks #156 in testing per million population among countries worldwide, out of 203 countries with available data (Worldometers). The positivity rate has consistently remained in the 30-50% range, pointing to significant underdiagnosis and uncontrolled transmission since the first cases were detected. About 39 total tests per thousand people were conducted nationwide during the first year of the pandemic (excluding tests not reported in the national database) (Our World in Data). Given the number of confirmed cases and estimates of community transmission rates, the country faces a challenge of too many individuals to test, with too little infrastructure, including personnel able to conduct the tests (Science).

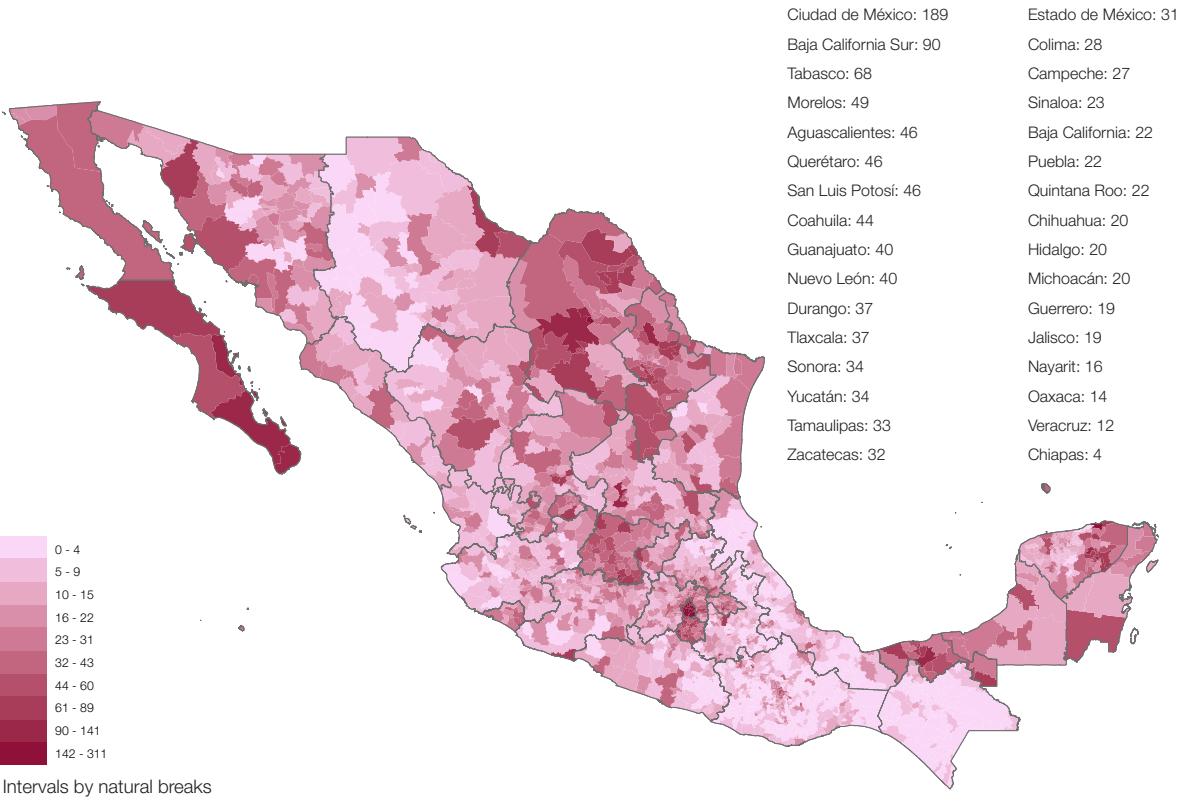
However, in May of 2020, the government spokesperson explained that few COVID-19 tests were being conducted in Mexico as part of a technical decision, and not a budget constraint (Latinus). As recently as last August, the COVID-19 czar denied that a relationship exists between the extent of testing and control over the epidemic (Forbes). Testing schemes have been more coordinated and comprehensive in several opposition-run states in the north and in central Mexico, where governors have collaborated to share information and work with the private sector (Reuters).

As discussed in Chapter 1, there are sharp inequities in access to testing that can hardly be explained away by the distribution of the disease (Figure 22).

NPIs Related to Testing: Isolation and Quarantine

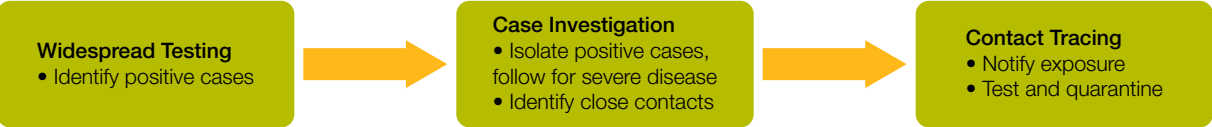
Limited testing precluded the ability to implement other infection control measures including isolation of positive cases and contact tracing (Figure 23). Proactive testing, case identification, and contact tracing are at the core of infection control, yet all three measures were blatantly dismissed as ineffective, with many states relying more heavily on blunt measures to control transmission. Mexico City was one of the only states to implement a modest contact tracing strategy in June 2020. Authorities later tried a digital solution for contact tracing, but judging by the levels of transmission and deaths, results have been limited at best (CDMX).

FIGURE 22. Tests per thousand population across municipalities during the COVID-19 pandemic (RT-PCR and antigen tests. January 2, 2020 - March 2, 2021)



Additional testing conducted by a few state governments and by private laboratories outside the National Network of Public Health Laboratories is not included. Federal criteria for testing and registration into the Epidemiological Surveillance System for Respiratory Diseases require the presence of symptoms. Source: Authors’ elaboration based on Dirección General de Epidemiología, Secretaría de Salud.

FIGURE 23. Infection control interventions cascade (CDC)



Communication campaigns focused on physical distance and not proactive infection control measures. Clear guidelines on how to adequately isolate and self-monitor after testing positive or quarantine after exposure were not provided. Moreover, individuals who tested positive and were at higher risk of hospitalization and death have generally not been followed to assess the progression of the disease.

In addition, as we discuss in the chapter on financing, no policies were put in place at the federal level to alleviate the economic burden for households with identified positive cases or close contacts. As a result, there were no incentives, and most often the possibility, to stay home and alone after infection or exposure. School closures and similar measures have also aggravated the problem of residential crowding, which



has likely contributed to high rates of transmission within families. Approximately 10% of households were affected by overcrowding before the pandemic (INEGI).

Masks

Due to the misleading and politicized messaging described above, usage has been uneven across states. In December 2020, nine state governors from opposition parties reiterated their support for mandatory masking in public spaces (AP). As of February 2021, 27 out of 32 states have adopted a mask mandate (Crónica) despite the federal government’s stance. Surveys indicate that mask wearing increased after the second peak of the pandemic; by February 2021, 66% of respondents reported always wearing a mask in public spaces, up from 45% in August of 2020. 71% of respondents also disapproved of the President’s unwillingness to wear a mask (El Financiero).

Lockdowns and Physical Distancing

The country’s first and only national lockdown, which suspended all non-essential activities as well as in-person education, started March 23 and ended May 30. A phased and state-based reopening began on June 1, although most states remained at the highest alert level given increasing cases and deaths. In fact, restrictions began to ease in the country just as COVID-19 cases and deaths began to peak.

Estimates of change in mobility by state (compared to baselines during the January 6 to February 3, 2020 period) show a country-wide decrease in population mobility between mid-March and May, largely corresponding with the national lockdown, before gradually increasing over the next 8 months. However, when comparing changes in mobility in Mexico to other countries in Latin America, for the majority of 2020 the country had an overall smaller decrease in mobility than the Latin America average (Figure 24).

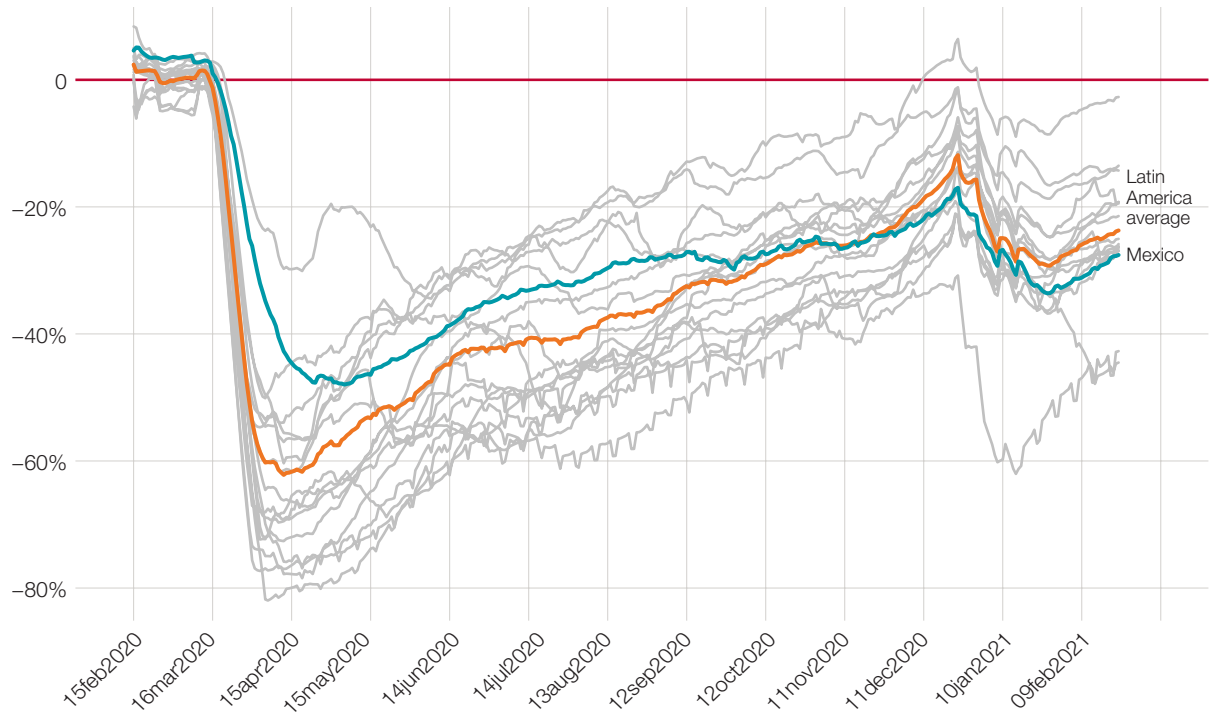
In a cross-sectional study of adults older than 65 years in Mexico City, 58% of participants decided to follow stay-at-home orders early on in the pandemic, except for essential errands for basic needs. The decision to stay home was associated with income level, with middle-income level participants having three times the odds of low-income level groups to stay at home. The relationship was partially mediated by perceived severity of COVID-19 (Irigoyen-Camacho et al. 2020).

On March 14, the Secretariats of Public Education and of Health announced that the April 5-11 academic vacation for Holy Week would commence early, on March 23, and extend through April 17. As mentioned above, several states had already suspended classes by March 15. The government initially planned for classes to resume in person on April 20; however, schools remained closed and in August, the government announced that the 2020-2021 academic year would begin with distance learning. In the interim, Mexico established a commission to ensure sanitation of schools, the Comisión de Salud en los Consejos de Participación Escolar (GoB MX).

A 2018 Teaching and Learning International Survey conducted among OECD countries found that 58% of teachers in Mexico felt they were adequately able to support their students using digital information and communication technologies; however, among school principals surveyed, 44% reported having inadequate digital technology and 53% reported insufficient internet access (OECD).

Inequities in access to technology and internet connectivity across households in Mexico prompted the government to launch a distance education program with classes broadcasted on free television stations (GobMX). The former Secretary of Social Development cited evidence that more than 90% of households in Mexico have a television; however, ownership of televisions and access to reliable service is lower in poorer states such as Oaxaca and Chiapas (Reuters; PRI). For this reason, classes are also broadcast on radios. As of February 2021, schools continue to be closed and no clear timeline has been established to ensure children return to the classroom.

FIGURE 24. Change in mobility in Latin America throughout the COVID-19 pandemic  
Rolling 15-day average



Source: Authors’ elaboration using data from Google Community Mobility Reports. Each line is a country in Latin America.

The government enacted restrictions to both formal and informal dining establishments, though restrictions have been less well enforced for informal food stands (Bloomberg). Initially, no tax breaks were announced, though states such as Mexico City announced some payroll tax breaks in 2021 for those restaurants that have complied with dining restrictions.

Few policies on restricted gatherings were implemented on time. The Mayor of Mexico City came under fire as a massive music festival “Vive Latino” was allowed to happen in mid-March. After cases related to the event were identified, the Secretary of Health encouraged authorities not to cancel massive events since it was an extreme measure that would only generate panic. Massive events were canceled beginning with the national lockdown, but medium and small sized gatherings were allowed. Additionally, there was no control or oversight on social events such as weddings, which continued even at the peak of the pandemic (El País; AA).

## Other NPIs

Following the national lockdown period, authorities transferred responsibility for implementing NPIs to the states, with the color-coded risk system as guidance for necessary measures. Throughout 2020, Mexico saw high heterogeneity in the number of health policy measures undertaken by each state and their stringency. In general, states governed by the National Regeneration Movement (MORENA) tended to follow the federal government's lead and underperform in NPI implementation.

In a measurement of how strict policy measures have been for school and workplace closures, restrictions on public gatherings, transport restrictions, and stay-at-home orders, the Oxford COVID-19 Government Response Tracker found that by February 2021, Mexico scored 72 points on a scale of 0-100, where 100 is the strictest. Of note, this composite measure of government stringency of COVID-19 policies considers the response level of the strictest sub-regions within a country, and does not reflect considerable variation in policy response across different states, which as mentioned, partially reflects coordination problems ([Our World in Data](#)).

### Border and Travel Restrictions

In March of 2020, Mexico and the U.S. agreed to restrict cross-border movement to “essential” travel only; however, flights were never suspended into the country and movement restrictions for U.S. citizens entering Mexico were loosely enforced. By November, half a million traveled to Mexico from the U.S., 236,000 arriving in Cancun, 100,000 in Los Cabos, and 50,000 in Mexico City ([NYT](#)). In response to lax federal restrictions and in anticipation of cross-border transmission from American travelers to Mexico, several governors of states along the border took initiatives to curb transmission. For instance, the government of the state of Sonora established border controls to prevent people from Arizona traveling to Mexico over their July 4th holiday ([Star Telegram](#)). As of February 2021, Mexico effectively has no border closures, travel bans, or quarantine measures in place, using only a loose screening system for arriving travelers.

Despite evidence proving the opposite, health officials have insisted that restricting travel has no clear effect in reducing cases. In 2020, Mexico was the third most visited country, with 25 million tourists, a 44% drop from 2019. Mexican tourism benefited from restrictions in other countries. According to the International Air Transport Association (IATA), Mexico is one of the few countries where air travel is classified as “not restricted.” Mexico has not only attracted tourists but also become a quarantine solution for people who want to travel somewhere else but cannot do so directly because of travel restrictions. The United States prohibits travelers to enter if they have been in Europe, Brazil, South Africa, China, and Iran, but travelers from Mexico are welcome. Consequently, many travelers wait out the required period in Mexico ([BBC](#)).

# Preparation of Health System and Service Delivery

Access to quality medical care, the second line of the pandemic response, was largely ignored by federal and local authorities resulting in grave consequences, many of which are still to come. When prevention efforts to decrease new infections fell short, the medical care system bore the burden of the pandemic, quickly leading to overwhelmed hospitals, stressed and exposed health workers, and shortages of equipment and supplies. The immense burden that fell on the health care system meant immediate and long-lasting effects to health outcomes of both COVID-19 patients and other patients that were either displaced or delayed accessing care out of fear of infection inside hospitals and clinics.

## Expansion of Hospital Capacity

The first wave of the epidemic overwhelmed the capacity of public and private hospitals to provide intensive care to patients with respiratory failure. The problem was exacerbated as infected individuals had to be cared for in isolation. The already limited public hospital capacity was segmented into COVID-free, hybrid, and COVID only facilities. The first response came from high-specialty hospitals with ICUs well equipped and staffed to treat COVID-19 complications. However, bed rotation was slow given the average length of stay for intubated patients could go up to 30 days (Latinus). As more patients reached the emergency rooms, hospitals had to repurpose general hospital beds with the capacity to ventilate patients, stretching thin both specialized staff and equipment. Dedicated COVID-19 hospitals displaced non-COVID-19 patients to other hospitals, and in many cases, patients were discharged prematurely.

Public hospitals were already functioning at full capacity before the pandemic hit. Non-COVID-19 and hybrid hospitals had to postpone non-urgent hospitalizations and elective surgery was essentially brought to a halt, as these hospitals prepared to receive the more critically ill referred from the COVID-19 only facilities. In parallel, the private sector experienced a similar forced adaptation into hybrid hospitals. Only the ABC hospital, a large non-for-profit private hospital in Mexico City with two campuses, managed to dedicate one hospital entirely to COVID-19 patients. Across the country, private hospital ICUs quickly filled with patients with private health insurance, while other beds emptied as patients delayed seeking care out of fear of contagion.

Under the leadership and brokerage of Funsalud, a private sector health policy think tank, 146 private hospitals across the country collaborated to provide the main public health institutions with non-complex hospitalization services at reduced rates (El Economista). A list of nine clusters of non-complex interventions to be outsourced to the private sector can be found here. Paradoxically, this initiative of private–public collaboration not only realigned the mismatch of demand and supply for public and private hospital beds but also reversed the policy trend of no private involvement in the outsourcing of public sector delivery of care, most recently implemented at the beginning of the year with the INSABI reforms.

The second wave was much worse not only in the case-load but on the profile of patients reaching hospitals. After suspending all non-essential activities in late March under the “Stay at Home” orders, the federal government used hospital bed occupancy rates as the main indicator to guide the color-coded plan to re-open the economy. The alarmingly high mortality rates observed in public hospitals (see Chapter 1 of this report), which the press and social media drew attention to, were compounded by calls from authorities for the public to stay at home.

Consequently, many individuals were discouraged from seeking timely care and therefore accessing oxygen therapy or other pharmaceutical interventions at early stages of disease progression, when

treatment can make a critical difference. 58% of all COVID-19 patients that died never made it to the hospital (AnimalPolítico), and a large proportion of those that reached a hospital bed and died never had access to the ICU. Even before the first peak of the pandemic, between February and June 2020, at least 45% of those who died in one of Mexico City’s best provisioned hospitals did not receive full support due to lack of ICU bed availability (Olivas-Martínez et al. 2021).

As discussed in Chapter 1, the pandemic has thrown deep inequities in access to health care into sharp relief. Our analysis of the national epidemiological dataset indicates that as of March 2, 2021, residents of municipalities in the lowest socioeconomic marginalization quintile (20% wealthiest municipalities) account for 17.7% of all COVID-19 deaths, whereas residents of the 20% most marginalized municipalities account for 25.2%. Considering that more diagnostic tests have been conducted among the former group (23% of the total vs.19.5%), the unevenness in the burden of disease may be even more marked than these figures suggest.

Among those who died with a confirmed COVID-19 diagnosis, the time elapsed between the first contact with a health unit and the time of death decreases with the level of marginalization of the municipality of residence (8.5 days, on average, for those in the 20% wealthier municipalities versus 7.5 days for those living in the 20% most marginalized). Moreover, as discussed in Chapter 1, a high percentage of those who died did so out-of-hospital, despite efforts at hospital reconversion.

The expansion of hospital beds became a central issue since early in the pandemic. Hospital conversion alone did not guarantee response capacity in large metropolitan areas like Mexico City. Other alternatives emerged, such as the public-private collaboration that enabled the opening of the Temporary COVID-19 Unit installed at Centro CitiBanamex (Box below).

### Successful public-private collaboration: Temporary COVID-19 Unit at Centro CitiBanamex in Mexico City

The Temporary COVID-19 Unit installed at Centro CitiBanamex, a large and idle convention center in Mexico City, has become an outstanding example of a public-private collaboration on the pandemic response and a model for effective early hospital care interventions. The Temporary Unit was planned in April 2020 during the peak of the first wave, with the first patient received in early May. Initially, the Unit had a hospitalization capacity of 246 beds. By the end of January 2021, at the peak of the second wave, it had become the largest treatment facility for COVID-19 patients in the country with a hospitalization capacity of 607 patients and operating at more than 90% occupancy. More than 7100 patients have been treated at Centro CitiBanamex. As of February 2021, it was being operated by more than 623 clinical and operational staff.

The Temporary Unit has also become a model of staged care. It operates under a referral process whereby patients are evaluated and triaged at eight community outposts located next to the local Secretariat of Health general hospitals. Patients are initially admitted after referral for monitoring and early confinement. In the case of mild to severe symptoms and complications, patients are treated early to control comorbidities, primarily hypertension and diabetes, with oxygen therapy and anti-inflammatory and anticoagulants drugs. For patients at more critical stages, patients are moved to the intensive care unit, intubated if necessary, or referred to a network of more than 40 reference specialty hospitals in Mexico City. Over the course of the pandemic this model of care has been adapted with information on new best practices made available nationally and internationally.

This unit is a good example of fast expansion of hospital capacity and effective coordination with local authorities, led by the Fundación Carlos Slim and Fundación CIE. Together, these organizations have mobilized financial and in-kind donations from more than 88 institutional and individual donors. This kind of collaboration would have been more helpful if planned earlier and promoted and replicated more actively in other cities throughout the country. However, this was not initially considered as part of the governmental response plan; rather, it resulted primarily from non-profit organizations and the private sector's initiative and outreach to local governments.

## Access to Essential Medicines, Supplies and Equipment, and Quality of Care

The epidemic has revealed a need to improve human resource capacities to prevent, diagnose, report, and treat complicated patients. Healthcare personnel lacked disease-specific guidelines, protocols, and training to identify patients at risk and refer patients to hospital care and treatment in intensive care units.

The National Center of Technological Excellence in Health (CENETEC) is responsible for convening experts, issuing clinical guidelines, and monitoring adherence across the whole health care system. At present, CENETEC has focused on disseminating available resources, including PAHO resources, and guidelines to treat COVID-19 patients developed by the Coordinating Commission of National Institutes of Health early during the pandemic. At the same time, IMSS has developed internal treatment algorithms (IMSS). In June 2020, the Federal Government published general recommendations for treating infected patients (Salud). However, to date, no sectorial detailed evidence-based clinical guidelines have been produced to support clinical practice in health care settings.

The austerity measures implemented in 2020 led to the elimination of one of the two undersecretariats at federal Secretariat of Health (similar austerity measures also occurred at all other major federal departments). CENETEC, along with most centers dedicated to health care policy, regulation, planning of medical services, and training of health professionals, was thrown into disarray, which negatively affected the stewardship function the Secretariat of Health plays in health care delivery.

In terms of access to key inputs, the pandemic put the government procurement system, which had already been subject to a series of reforms, under even more strain, on top of the public spending austerity measures and budget cuts. Administrative reforms to the government procurement scheme were initiated as soon as the current administration took office at the end of 2018. The health sector was one of the first areas to experience the effects of the crusade against corruption set fully in motion in 2019. The centralized procurement process through public bids that had been run by IMSS for many years was suddenly suspended. IMSS, as the largest and most experienced purchaser, had pooled the budgets of most large federal health institutions, including ISSSTE, the federal Secretariat of Health, some national institutes of health, and state level providers. The process had been strengthened in 2009 in procurement and competition areas under the advice of the OECD and the Mexican antitrust agency, COFECE. While there were challenges, the process had delivered good value for money and a reliable service.

In 2019 the procurement responsibilities (initially of all goods and services) were transferred to the Secretariat of Finance. The President's distrust of and consequent fight with drug distribution companies and local pharma led to a severe shortage of essential drugs in the country. Additionally, the changes

in the procurement process generated tensions with the states and disruptions in medicine distribution throughout 2019 and 2020.

In addition, the drug and medical devices regulatory agency, the Federal Commission for the Protection Against Sanitary Risks (COFEPRIS by its acronym in Spanish), has also been subject to austerity measures and changes in key personnel. Many of its routine processes have been overhauled or delayed. COFEPRIS has a central role in providing certainty and supporting efforts to increase access to relevant technologies. This is more the case during a pandemic, given the need to act expeditiously and firmly. For example, the drug remdesivir was shown to be effective in the ACTT-1 study, in which Mexico was one of the clinical sites (NEJM), but has yet to be approved by the for the treatment of COVID-19. Therefore, it is not available in the public sector and not covered by private insurance; those who want to receive the drug must do so by purchasing it out of pocket in the black market (infobae).

More recently, COFEPRIS has played a key role in the authorization of vaccines imports by the government. Transparency regarding technical evaluations of vaccines safety and efficacy and purchasing decisions are central to promote the population uptake of vaccination. COFEPRIS has not played a visible role in this aspect and the recent directive subjecting COFEPRIS under the direction of the Under Secretariat of Prevention and Health Promotion limits the arms-length necessary distance to ensure technical independence from political pressures in the public health area.

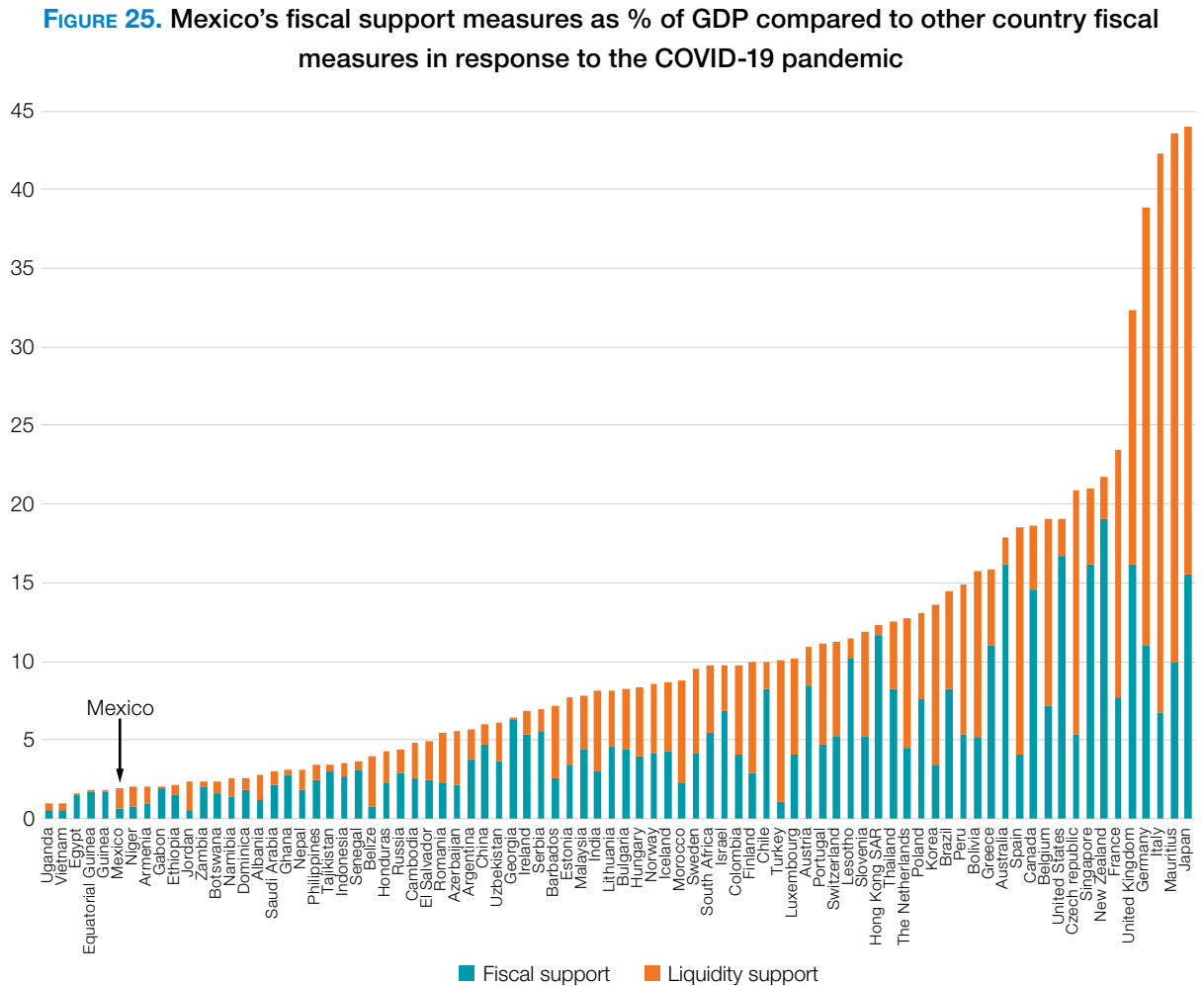


# Financing

CHAPTER

7

Mexico's fiscal response to the pandemic has been among the smallest in the world, and much lower than the response of most middle- and high-income economies. Above-the-line fiscal measures include increasing government expenditures and decreasing tax revenues; as of late January 2021, above-the-line fiscal measures in Mexico were 0.2% of the GDP in health expenditures and 0.5% of the GDP for supporting households and firms ([Atlantic Council](#), [IMF](#)). Below-the-line measures (including loans to formal workers, loans to workers who have been recently laid-off, and contingent liabilities) were approximately 1.3 percent of GDP ([IMF](#), as of 01/03/21). The impact on economic activity that results from “below-the-line” fiscal measures is more uncertain and depends on the uptake by the targeted recipients. [Figure 25](#) compares the fiscal and monetary support measures as a share of GDP across countries as of December 31st, 2020. Mexico ranked sixth lowest out the 82 countries. None of the countries with the lowest fiscal support measures were as badly hit by the pandemic as Mexico.



Source: IMF, Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic. As of December 31, 2020.

The limited fiscal response should not come as a surprise. The current administration has committed to a conservative fiscal stance and is generally unwilling to accrue new debt even to finance the President's flagship infrastructure projects. The conventional approach, especially among more developed economies,

has been to mitigate the risk of a more severe recession by providing direct fiscal support to businesses to keep them afloat and to avoid permanent layoffs of workers, and by providing income protection to individuals above what is legally mandated by the social protection measures. At 65.6 percent, the debt to GDP ratio is relatively low and fiscal prudence can generate long-lasting economic damages that set Mexico on the path for a weak economy and long economic recovery.

At the cusp of the first national lockdown, on April 5<sup>th</sup>, President López Obrador outlined his government's policy priorities to combat the economic effects generated by the spread of the disease, including increased health expenditure. During the week of April 19, the President announced additional austerity measures for public spending, including the reallocation of non-priority expenditures to priority items for health and some voluntary wage reductions for high-ranked government officials. Even the proceeds of a confusing lottery scheme to sell the presidential plane were allocated to equip struggling public hospitals. The measures were small and came late. The health sector had been experiencing devastating budget cuts; these included decreased salaries for health personnel in the public sector the year before and as recently as January 2020. In addition, spending capacity was hampered by new allocation rules of health funds to states, red tape related to the restructuring of the procurement process, and centralization by the Secretariat of Finance of the funds for drugs and medical equipment.

The Health Fund for Wellness has provided flexible and expedient financial support during the pandemic. Ironically, the Health Fund for Wellness (formerly known as the Fund for the Protection against Catastrophic Expenditures), which had a balance of more than 5 billion USD when INSABI was enacted, was a centerpiece of the Seguro Popular financial architecture. Designed to be more flexible and operate as a trust fund that is independent of the federal budget allocations by the Secretariat of Finance, it has provided financial support to buy PPE, replenish drug supplies, and generally respond to the urgent need to keep hospitals running during the crisis. A legal initiative to cancel 109 trust funds managed by the federal government was voted on by Congress in October. The measure led by the Secretariat of Finance initially included the Health Fund for Wellness and generated additional budget distress and long-term financial uncertainty. Eventually, and after much pressure from advocacy groups and opposition in Congress, the Health Fund for Wellness was spared from cancellation, but soon after around USD 1.5 billion were appropriated by the Secretariat of Finance.

The fiscal support from local state and municipal activities and private and civil society organizations (CSOs) has also been significant. Some states implemented economic and social assistance policies to support public health policy, but in many cases the funds were insufficient due to budgetary constraints, especially in the context of federal government inaction ([CIDE COVID federalism observatory](#)). The private sector has complemented funding directly or through CSOs, by supporting testing and isolation for its own employees and by donating PPE, ventilators, and other equipment to public hospitals over the course of the pandemic ([EF](#)).

Isolation policies need resources and financial support to be effective. Individuals must have sufficient income to be able to comply with recommendations. The sheer lack of economic support measures at the federal level hindered compliance with stay-at-home measures and recommendations to self-isolate when positive or after contact with a possibly infected individual. This has been especially true among those of lower socioeconomic status and those employed in the informal sector. IMF data and a [UN/ECLAC analysis](#) demonstrates that Mexico had one of the most limited fiscal and social protection responses to COVID-19 in Latin America and worldwide, despite having policy space and a flexible credit line with the IMF to finance a more ambitious response.

# Vaccines

CHAPTER

8

The Magic of Vaccines

Vaccines are the most cost-effective of all interventions in the public health armamentarium. Globally, millions of lives have been saved at a very low cost by the different vaccines available. It used to take many years to develop a safe and effective vaccine. It is truly remarkable the speed with which vaccines against SARS-CoV-2 were developed. Only a few weeks after the genomic sequence of the virus was published in January of 2020, scientists in different parts of the world started the development of potential vaccines, using new technologies as well as old ones (NYT). Phase 1 studies were initiated in March 2020, phase 3 studies in June 2020 and by November of 2020 data safety monitoring boards were informing the public that the first vaccines were highly efficacious. With this information, the US FDA gave Emergency Use Authorization to the Pfizer-BioNTech vaccine on December 11, 2020 and, a few days later, the first persons started to be vaccinated outside of a clinical trial (FDA). The newest technologies deliver messenger RNA wrapped in lipid nanoparticles or use a harmless adenovirus as a vector to insert the genetic code of the virus into our cells, to produce the spike protein as antigen. Other technologies include recombinant proteins, while an older technology implies inactivating the whole coronavirus. The information on type, dosage, efficacy and storage requirements of some of the vaccines available is summarized in the Table 7.

TABLE 7. How some of the COVID-19 vaccines compare

Company	Type	Doses	Effectiveness (severe disease and death)	Storage
Pfizer-BioNTech	RNA	2	100%	-70C, new evidence suggests higher temps.
Moderna	RNA	2	100%	-20C, 30 days shelf life
AstraZeneca-Oxford	Viral Vector	2	100%	Regular fridge temp
Sputnik V	Viral Vector	2	92%	Regular fridge temp

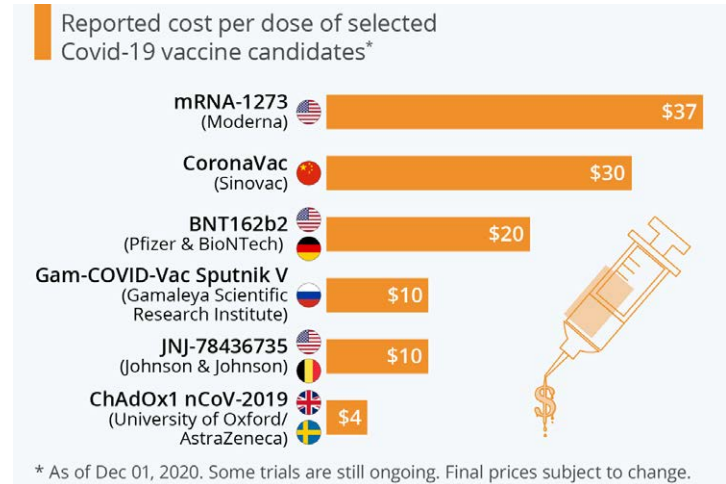
Source: BBC; WHO; Yale.

There are 12 vaccines at the moment of writing this report, approved fully or by “Emergency Use Approval” by regulatory agencies around the world, and many others are in the pipeline, in different stages of development. There are currently 71 vaccines being tested in clinical trials on humans, and 20 have reached the final stages of testing (NYT).

Cost of Vaccines

Vaccines are priced differently according to the technology employed in the manufacture, and also depending on the market. Covid-19 vaccines are no different, with a variance that is currently up to 9-fold between the cheapest and the most expensive. The figure 26 compares the wholesale cost to governments of some of the vaccines currently available in the market.

FIGURE 26. The Cost Per Jab of COVID-19 Vaccine Candidates



Source: Statista.

Geopolitical Positioning of Influence

The race to be the first with a safe and efficacious vaccine became a matter of pride and geopolitical influence at the international level. In what has been known as “Vaccine Diplomacy”, countries that have a successful vaccine have exerted influence on others to push their product (NYT). For the pharmaceutical industry, a successful vaccine also implies enormous prestige, as well as income. Some manufacturers, however, have offered their products at no cost to WHO and low-income countries. The problem is that most of the vaccine production has been secured by richer countries, with better purchasing and negotiating power—particularly if they are vaccine producers (NYT).

Vaccines Contracted and Vaccination Policies in Mexico

The explicit COVID-19 vaccination policies (4<sup>th</sup> edition) were published by the Mexican government on January 11<sup>th</sup>, 2021 (GovMX). The stated goal is to have at least 70% of the total population, with 100% of health workers vaccinated. It also aims to achieve 95% coverage in in people over 16 years of age. In ranking order, the population priorities are as follows:

1. Health workers at the frontline of Covid-19 care (estimated 1 million people)
2. Senior citizens
  - a. Over 80 years of age (estimated 2 million people)
  - b. From 70 to 79 years of age (estimated 4.2 million people)
  - c. From 60 to 69 years of age (estimated 8.2 million people)

In practice, these explicit priorities have not been strictly followed. Only a fraction of the health workers in the public sector have been vaccinated, and exceedingly few of those working in the private health



sector ([CNN](#)). This situation has led to numerous street protests as well as complaints in social media by health workers across the country ([El Universal](#)). Moreover, the president of Mexico has instructed to give preference to poor, rural communities. Given that COVID-19 is predominantly prevalent in large urban areas, the mandate does not make epidemiological sense ([Washington Post](#)). Another highly criticized measure has been the preferred vaccination of teachers in states that have low coronavirus transmission ([Latinus](#)). Overall, the perception that vaccination priorities are geared for political reasons is prevalent in the Mexican press and media. Mexico is having mid-term elections this coming June ([El Pais](#)).

FIGURE 27. Vaccine shipment and arrival calendar (SS)



While Mexico has a highly successful childhood immunization program, vaccination of adults has never been a priority and there is no national program to build upon such as Medicare in the United States. In Mexico, several COVID-19 vaccines have been approved by COFEPRIS, the federal regulatory agency. The government official table above (Figure 27, in Spanish) shows the different vaccines and calendar of their presumed arrival to the country. This information is derived from contractual agreements with each one of the manufacturers and are subject to modification.

The vaccines that have been applied so far in Mexico (over 2.2 million doses or 1.4% of the population at the time of this writing) are the Pfizer-BioNTech and the Oxford-AstraZeneca manufactured by the Serum Institute of India. One million doses of the SinoVac vaccine (out of the 10 million under contract) have arrived in the country, in addition to the 2 million doses from CanSino which arrived earlier in February and 200,000 doses of the Sputnik vaccine that also arrived in that month. In total, Mexican authorities expect to receive over 106 million doses of COVID-19 vaccines of different sort by the end of May 2021 (SS).

The president of Mexico has promised that everyone over 60 years of age in the country will be vaccinated by the end of March 2021. Given the fact that over 14 million people are in that category, and that only 2.2 million doses have been applied by the end of February, the laudable goal seems difficult to achieve ([El Financiero](#)).

A recent editorial in the reputed journal *Salud Pública de Mexico* strongly recommends focusing the vaccination efforts in population groups and localities with the highest density and transmission rates. Focusing vaccine priorities in places with low mortality would translate in “hundreds of COVID-19 deaths that could be prevented” (*Salud Pública de México*). Unfortunately, vaccinating rural areas first is precisely the wish of the president of Mexico. The editorial also recommends the participation of the private sector in vaccination efforts, as long as it follows the strategy guidelines mandated at the federal level.

Role of the Private Sector

AstraZeneca has signed an agreement with the Carlos Slim Foundation, a Mexican non-profit organization, to contribute to manufacture in Argentina and Mexico and distribute the COVID-19 vaccine AZD1222 at no profit during the pandemic for Latin America. This agreement will initially supply 150 million doses to Latin America, excluding Brazil, which will be covered by the AstraZeneca’s agreement with the Brazilian Government, announced last June. First shipments are expected in the first half of 2021 ([Fundacion Carlos Slim](#)).

International Collaboration (COVAX)

COVAX is the acronym of COVID-19 Vaccines Global Access, which is a global initiative-- led by GAVI, WHO, CEPI, and others-- aimed at equitable access to COVID-19 vaccines. More than 50% of the COVID-19 vaccine supply has been acquired by rich nations. Negotiating with manufacturers country by country is inefficient and leading to shortages and higher prices. In addition, many low-income countries have limited regulatory capacity, and thus rely on WHO for approval. COVAX can negotiate lower prices by economies of scale, while also simplifying the acquisition mechanism. According to a press release by WHO, COVAX has negotiated with manufacturers access to up to 2 billion doses. COVAX is funded by wealthy countries, which have contributed already \$6 billion USD, with \$2 billion more needed to reach its target for 2021 ([WHO](#)). Low-income countries will be the beneficiaries of this much needed global entity.

Through COVAX, Mexico has contracted as a self-financing participant access to 6.5 million doses of the AstraZeneca vaccine. Recently, Mexican authorities elevated a protest to COVAX for the perceived delay in receiving its share of vaccines ([PAHO](#)).

Heterologous Vaccination and Single Dose Vaccination

What are the consequences of mixing different kinds of vaccines? In other words; could someone receive one dose of one vaccine type and the second of another? Given the already difficult task of programming a second dose, compounded by the several vaccine brands offered in Mexico, it is likely that the country will face a natural experiment to answer this relevant question. The potential need to mix different types of vaccines could make vaccination programs more flexible: it would buffer the potential impact of any supply-chain disruptions and accelerate the timeline for completing the vaccination program. One additional element that could make the vaccination program in Mexico more agile and flexible is the recent discovery that people that receive a first dose of the Pfizer BioNTech vaccine after having suffered Covid illness is better protected than after two doses of the same vaccine. Since more than 25% of the population has already been exposed to the virus, it is not inconceivable to provide only one dose of the Pfizer vaccine to people with a positive antibody test ([NPR](#)).

Immunological Equity

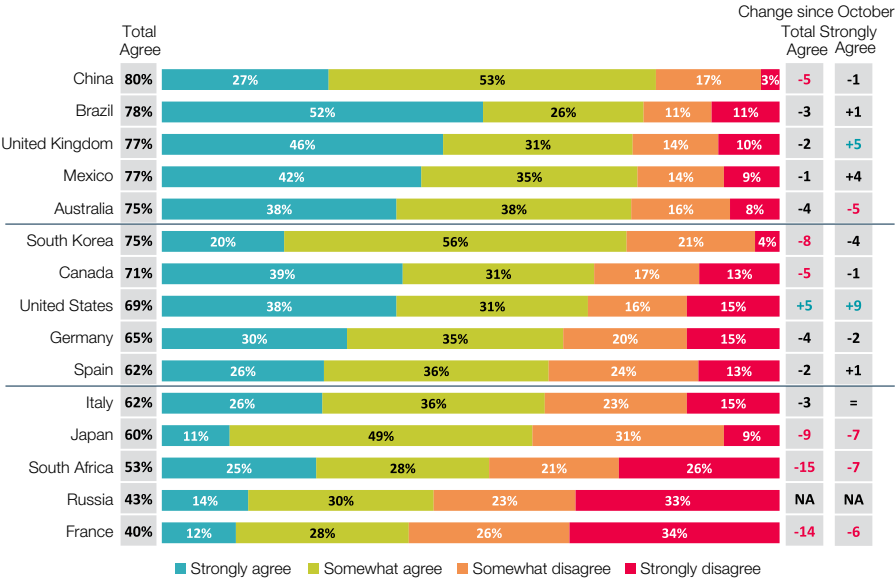
Mexico has a strong tradition of universal vaccination of children, emanating from previous administrations. Several vaccine-preventable diseases—such as polio, measles, rubella—were eliminated as a consequence. The powerful notion of immunological equity was the rallying cry to achieve universal vaccination in the early 1990’s. Unfortunately, in the last few years the budget for vaccination and epidemiological surveillance has received drastic cuts, with diminishing coverage of children’s vaccines as a consequence.

It has been repeatedly said that no country will be safe from COVID-19 until all countries are safe. Vaccine nationalism threatens equitable allocation to low-income countries. The pandemic represents a global security threat that requires a global commitment to immunologic equity. COVAX is certainly a necessary big step in the right direction, but insufficient in that it aims at best to cover 20% of the population in eligible countries and is taking too long to be implemented. It is estimated that many low- and middle-income countries will not have widespread vaccination coverage until 2023.

Vaccine Hesitancy

Paradoxically, many people are anxious to get vaccinated as soon as possible, while others are more hesitant or doubtful. T A June 2020 survey of vaccine acceptance found that 75% of the population in Mexico would be likely to take a COVID-19 vaccine if available—which is similar to a world average, according to the [Figure 28](#). While the impressive impact of vaccination in some parts of the world, like Israel, the United Kingdom and the U.S. may increase public trust in these novel vaccines, some communities in Mexico with long histories of distrust of the federal government have been particularly susceptible to vaccine misinformation. Several municipalities, primarily those with indigenous populations, have informed state health authorities that vaccine campaigns will not be permitted in their communities ([CNN](#)).

FIGURE 28. Interest in getting a COVID-19 vaccine if available



Source: [World Economic Forum-IPSOS](#).

In addition to the problem of vaccine refusal, there is growing concern related to public perception of vaccines Mexico has purchased. Because the different vaccines vary in level of efficacy and, in instances, the availability and rigor of scientific evidence, experts worry the public may perceive there is an inequitable multi-tiered system regarding which communities are able to access which vaccines. The decision to purchase vaccines before the phase three clinical trial results became available may lead individuals receiving those doses to feel they are receiving an inferior or “second class” vaccine. In particular, the Chinese manufactured vaccines are perceived by the public as suboptimal.

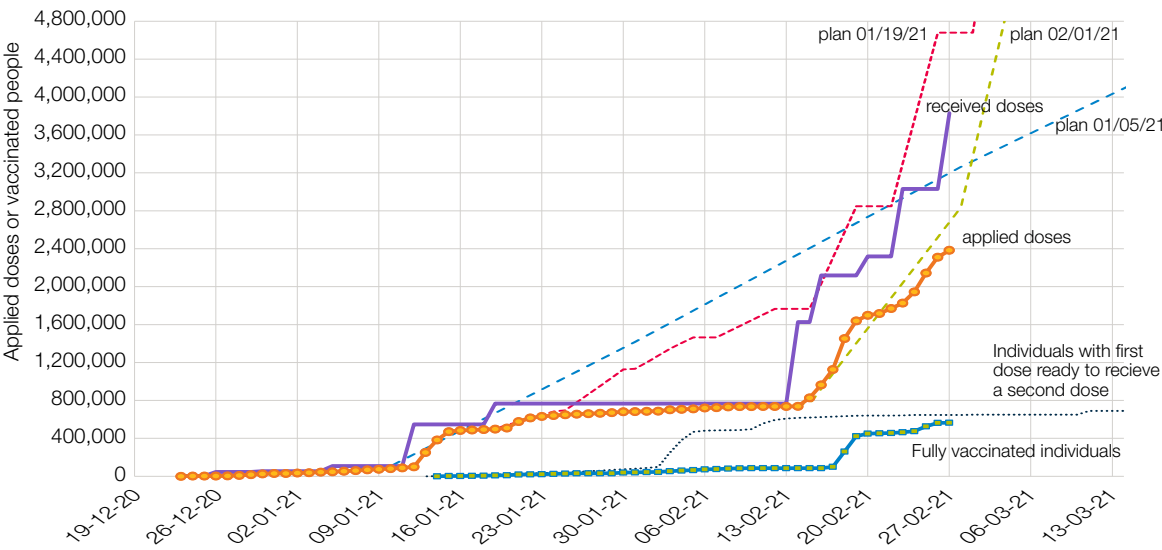
Vaccine Politicization

All vaccines in Mexico have historically been administered by health workers. For COVID-19 vaccination, however, the president of Mexico ordered that the vaccines would be administered by “*Brigadas Correcaminos*” ([Animal Político](#)). These brigades are commanded by “*Servidores de la Nacion*”, which are composed of 23,000 political followers of MORENA, the political party in power. The fact that the *Servidores de la Nacion* were vaccinated ahead of the older population raised significant uproar ([El Financiero](#)).

All brigades are also heavily militarized, with several members of the Army securing vaccination sites (photo above). Significant concern has been raised in the media about the increased use of the armed forces in almost every aspect of government activities—from building airports, to operate seaports and now the custody of vaccination brigades—in addition to combating drug lords.

To make matters even more suspicious about the political use of the vaccination campaign, the *Servidores de la Nacion* are demanding a copy of their “*credencial para votar*” (electoral ID card), which is photographed, along with a photo of the person to be vaccinated. All this information is uploaded to a government data base. ([El Universal](#); photo). A congressman of an opposition party has sued the federal government for the electoral use of the vaccination program ([Reforma](#)).

FIGURE 29. Vaccination in Mexico



Source: [Cano 2021](#), Nexos.

Mexico will have mid-term elections on June 2021. This is the largest election process in the nation’s history, with a new Congress, 15 (out of 32) state governorships and thousands of municipalities at stake. The success or failure of the COVID-19 vaccination program will have a large impact on the electoral outcome (El País).

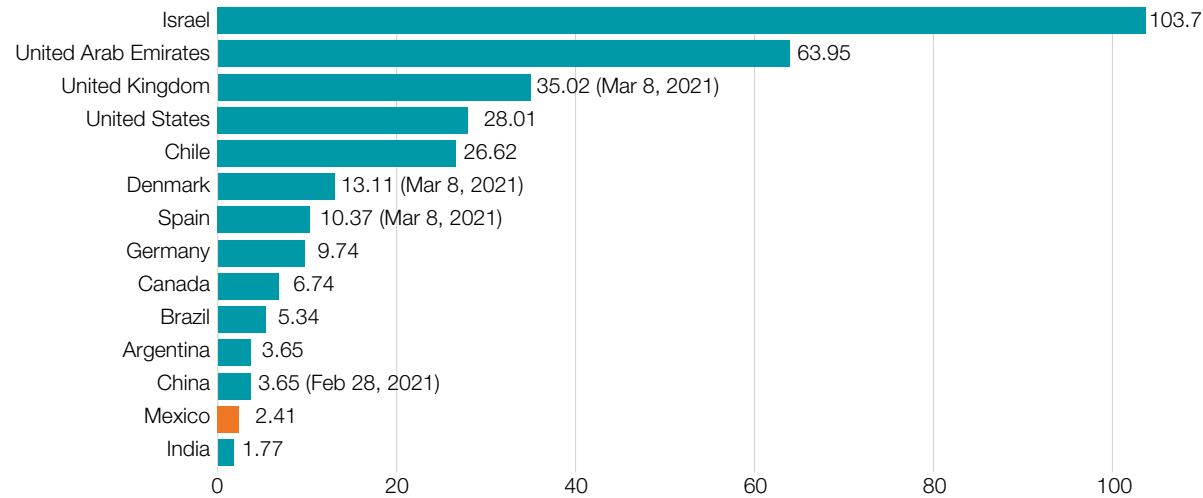
From his daily 2 to 3-hour press conference, the president of Mexico has been making promises about achieving full vaccination coverage for everyone over 60 years of age. Every promise made had to be re-examined in terms of the timeline to achieve the goal (Figure 29). As the time of this writing, only about 2.3 million doses have been administered, including those applied to health care workers (El País). In order to vaccinate the over 15 million remaining people over 60 years of age by the end of March, 500,000 vaccines would need to be administered every single day. Neither the quantity of vaccines available, nor the capacity to deliver them makes this promise achievable.

International Comparison

The supply of COVID-19 vaccine by the few existing manufacturers has been awfully slow in comparison to the needs. Reaching out with effective vaccines to at least 70% of the 7.8 billion world population will be the greatest challenge ever faced by the global health system. In the best of cases, it will be until 2023 when some form of heard immunity will be achieved globally. The longer it takes to get everyone vaccinated, the larger the probability of having variants of SARS-CoV-2 that might be more infectious and/or lethal.

Some countries have been more aggressive and resourceful in vaccinating their populations than others. Israel is leading the world with more than 103 individual doses per 100 people (Figure 30). In terms of total doses of vaccine administered, it is the United States which is leading the pack, with over 93 million so far (Figure 31). The promise of President Biden in the US to vaccinate one million people daily has been surpassed, with an average of 1.5 million doses administered every day.

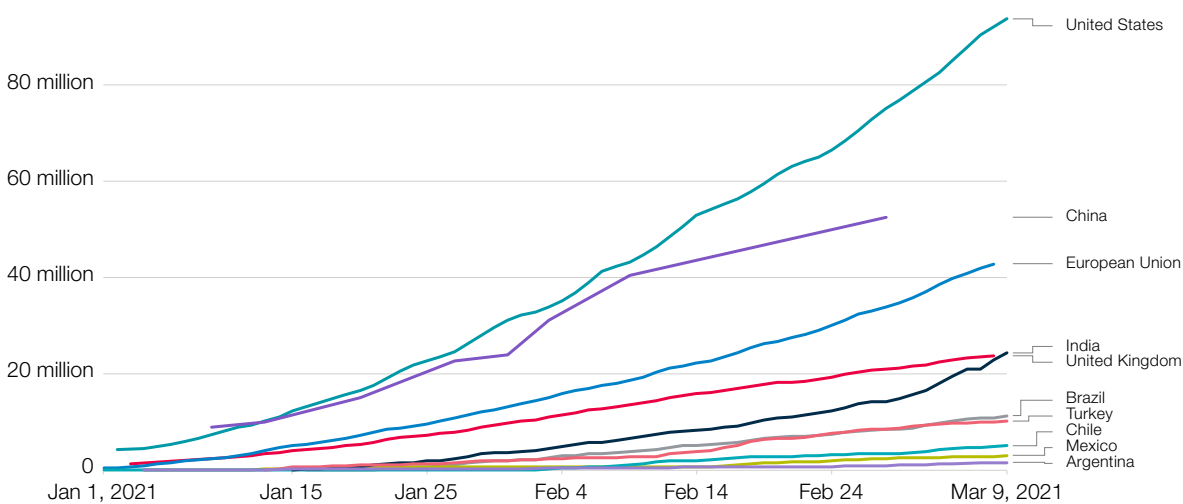
FIGURE 30. COVID-19 vaccine doses administered per 100 people, Mar 9, 2021



Total number of vaccination doses administered per 100 people in the total population. This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses).

Source: Official data collated by Our World in Data – as of March 10th.

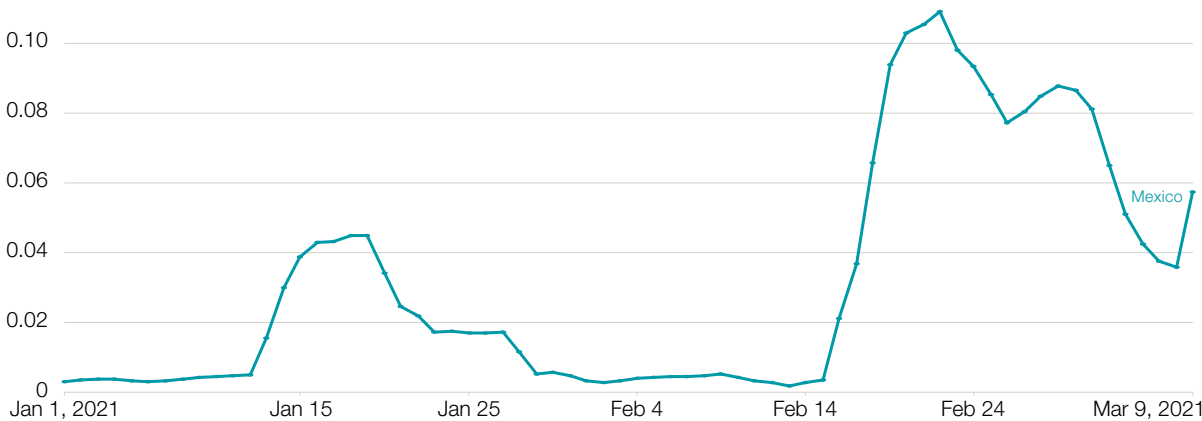
FIGURE 31. Cumulative COVID-19 vaccination doses administered



This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses).

Source: Official data collated by Our World in Data – as of March 10th.

FIGURE 32. Daily new COVID-19 vaccination doses administered per 100 people



Shown is the rolling 7-day average. This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses).

Source: Official data collated by Our World in Data – as of March 10th.

Mexico has been lagging behind other countries, with only 2.4 doses administered per 100 people (as of March 9, Figure 32). The contrast with Chile, another Latin American country, is quite profound. Chile has been able to vaccinate 26.6 per 100 citizens in only 35 days.

The uncertainty of vaccine supplies by manufacturers, and delays in production, has made the programming and roll out of vaccines quite complicated everywhere, and Mexico is no exception. In January, the Pfizer BioNTech vaccine was administered to health workers, while on the second half of February the Oxford-AstraZeneca was the main biological administered. It is not clear to whom and where the Sputnik V and the CanSino and SinoVac will be administered.

# Conclusions and Recommendations



**1. Deficiencies in the emergency management model led to a lack of precaution in dealing with an unknown virus, failures in incorporating relevant scientific evidence, and an inability to acknowledge mistakes and correct policy as initial assumptions proved invalid.**

Decision-making authority was overly concentrated in a single unit of government that lacked a) institutional checks to minimize the potential for error and misjudgment; and b) necessary levels of independence to maintain technical aspects of risk assessment, planning, and implementation removed from undue political pressures. Authorities eschewed deliberation and collective decision-making in the appropriate collegiate institutions. Mexico's top health governance and coordination body, the General Health Council, remained relegated to a secondary role throughout the pandemic. Key public health decisions were not systematically submitted to independent supervision, outside expert consultation, and constant revision.

The lack of institutional checks and independent deliberation in the decision-making process led to several problems in the pandemic response: authorities failed to properly assess the degree of emerging risk, minimizing the threat; responsible officials made key decisions based on assumptions about the virus whose scientific certainty had not been established, rather than out of precaution; technical decision-making was hampered by discretionary political interference; groupthink tendencies emerged among health officials, who acquired high stakes in blame avoidance and tended to double down on their mistakes; and public health policy failed to incorporate relevant scientific evidence in a timely manner, especially with respect to infection control measures.

We identify ten main aspects in which public health policy failed to properly incorporate scientific evidence and follow a precautionary approach: the potential severity of the COVID-19 disease; uncertainties about acquired immunity; the effectiveness of masks; transmission by asymptomatic or pre-symptomatic individuals; airborne transmission; the importance of widespread testing, outbreak investigation, contact tracing, and supported isolation; regulation of travel and border control measures; risks associated with new variants; vaccination priorities; and adaptation of public health measures to observed levels of epidemiological risk, most notably in Mexico City in late 2020, when authorities ignored established guidelines to postpone lockdown measures, contributing to a peak in cases and deaths.

As a consequence, Mexico has been hit by a single wave that has fluctuated between very high and extreme levels of COVID-19 without correcting policy to bring transmission under control. With the world's 11<sup>th</sup> largest population, it is the third country with the most reported COVID-19 deaths worldwide. Mexico ranks fourth in excess mortality in a global sample that includes all countries with more than 3 million population and complete mortality data, with about 43% more deaths in 2020 than would have been expected relative to 2018-2019. The average for countries in the sample is 17.3%. We estimate that had Mexico performed like the average country, around 190,000 deaths from all causes would have been avoided in 2020. This figure does not consider the peak in deaths observed in January 2021.

**Key Recommendations**

- Federal authorities should readily shift to a collaborative and deliberation-based approach to the management of the pandemic that relies centrally on the General Health Council and broadly engages the health and scientific communities, top educational institutions, and relevant civil society actors.
- Establish an independent and permanent advisory and supervisory board, formed by a diverse and prestigious set of members of the academic and scientific communities, with a clear mandate to review policy decisions, make recommendations, and analyze emerging scientific evidence.

- In the medium run, legal reforms are warranted to strengthen the institutional architecture for health emergency management and build robustness into decision-making processes.
- Legal and financial reforms are necessary to increase the capacity and autonomy of National Health Institutes and other core public health institutions.

**2. National authorities failed to perform their stewardship functions during the emergency and assume political responsibility for coordinating a coherent and unified national response.**

Crises intensify the weight of leadership. Only national leaders are in a position to set common goals and coordinate large-scale institutional and social action of the type needed in a pandemic. Mexico lacked such kind of effective national political leadership. The pandemic response became fractured from the outset due to the lack of a shared understanding between national authorities, some subnational governments, and other relevant stakeholders regarding the level of threat and the necessary actions. Partisan conflicts and polarization exacerbated these disagreements. The federal government continued to antagonize political adversaries, critics, and broad segments of the scientific and health communities through the emergency. The cultivation of leadership as the capacity for discretionary command and control has been replicated in the management of the pandemic.

The pandemic response therefore remained fragmented between levels of government and polarized along partisan lines. National authorities were initially slow to act and leveraged overlapping jurisdictions in health to dodge responsibility over the coordination of a coherent public health strategy; in some cases, they hindered state government action. The performance of state governments was highly uneven.

In short, society and different areas and levels of government have lacked a common sense of purpose, forged around clear objectives and steps to contain the virus. Instead, a sense of inevitability about the severe impact of the pandemic in the country took root.

**Key Recommendations**

- The National Health Council must be immediately reactivated, establish special committees for each dimension of the pandemic response, and promote coordinated action between levels of government. Formal and periodic sessions between national health authorities and state governments must be convened, to serve as coordination devices.
- Channels for permanent and de-politicized communication between national and all state health authorities must be reconstructed.
- National governments should not be left as sole responders to health emergencies, especially in countries with high out-of-pocket health expenses like Mexico. Existing successful experiences, like the establishment of a temporal facility to treat patients with moderate COVID-19 in Mexico City, in coordination with the private sector, should be replicated on a larger scale.
- Reforms to the institutional framework are required to resolve existing ambiguities and overlaps in the responsibilities of different levels of government with respect to health. These responsibilities should be properly linked to budgetary programs.
- Pandemic preparedness and response plans should be constantly reviewed and updated. Periodic drills to test preparedness should be the norm.

- Legal reforms are necessary to ensure that as stated in pandemic preparedness plans, existing national health councils are immediately convened when health emergencies are declared internationally, in order to avoid initial delays and the fragmentation of the public response.

**3. The lack of clear, prudent, and correct communication about the real level of risk and how to act upon contracting the disease has contributed to the devastating impact of the pandemic in Mexico. Leaders have failed to send a right and consistent message and to reinforce public health guidelines through their own behavior.**

We identify certain positive aspects in the federal government's communication strategy, as well as important steps toward transparency. On balance, however, these were overwhelmed by a politicization of health messaging; a failure to objectively communicate risk at critical junctures; a failure to incorporate relevant scientific evidence into health messaging; and as circumstances deteriorated, a propensity to cover up policy missteps and engage in scapegoating, contributing to communication noise. Lack of communication was not an issue, but wrong, inconsistent, and politicized information was.

Government messaging has particularized responsibility over preventing viral spread without necessary complementary actions on the government side. Driven by assumptions that COVID-19 would not be different from regular respiratory infections and by fears of hospitals reaching a saturation point, authorities disseminated information that encouraged patients to weather the disease at home and not seek medical attention unless grave symptoms presented. This has contributed to high mortality rates, as patients have sought medical attention only when gravely ill and an estimated 58% has died out-of-hospital.

The President and other top political leaders failed to lead by example by abiding with international health recommendations. Civil society and academia played a key role in fact-checking and the analysis of available data, contributing to a better characterization of the real burden of disease.

**Key Recommendations**

- Relocate responsibility over public health communication in the National Health Council and clearly separate public health messaging from political communication.
- Deploy a renovated and evidence-based communication campaign focused on building social knowledge about the virus, adequate coping strategies, and available forms of public care and support. Basic elements include: a national mask mandate, potential airborne transmission, proper air circulation in indoor spaces, potential transmission by asymptomatic or pre-symptomatic individuals, quarantining, and clear procedures to follow when infected (including seeking early medical attention, how and where to do so, monitoring oxygen levels, and practicing self-isolation).
- Political leaders and officials at all levels must display exemplary behavior, including properly wearing masks at all times, avoiding poorly ventilated indoor spaces and large gatherings, and generally promoting compliance by complying with public health guidelines themselves.

**4. Financial considerations exerted disproportionate influence over strategies to manage the pandemic, at the expense of necessary public health measures and support for vulnerable social groups most impacted by the pandemic.**

The federal government favored policies that entailed a hands-free, low-financial-cost approach to pandemic management. Resource constraints, authorities' prioritization of low public spending, their decision to avoid borrowing, and an unwillingness to put existing public projects on hold to liberate resources contributed to such bias in favor of minimal government intervention. In short, an unwavering commitment to austerity policies limited the range of possible measures to confront the pandemic. Mexico lacked vigorous government action and effective fiscal support.

Mexico stands out internationally as one of the countries with the lowest public spending to support the public health response and to enable compliance with health directives. The lack of income support measures structurally undermined the effectiveness of health recommendations and deepened inequities in the impact of the pandemic. Small businesses and the least well-off were caught in distressing tradeoffs between minimal economic security and health without public support. Isolation and quarantining remained voluntary and financially unsupported, contributing to uncontrolled transmission. Government inaction exacerbated the vulnerability of the informal poor, victims of gender-based violence, the indigenous population, and other disadvantaged groups during the pandemic.

**Key Recommendations**

- Public borrowing, budget reallocations, tax measures, and other potential sources of government revenue must be leveraged to increase spending in necessary health and social support measures, including:
  - A. Widespread access to testing.
  - B. Subsidized isolation and quarantine programs.
  - C. Establishment of isolation facilities for infected individuals.
  - D. Subsidized access to essential supplies among low-income populations, including high-quality face masks, hand sanitizer and when necessary, pulse oximeters, drugs, and supplementary oxygen.
  - E. Soft credits and subsidies for the establishment of appropriate air filtration systems in offices, stores, factories, and other facilities.
  - F. Proper provisioning of the health system, including drugs, hiring of additional personnel, and high-quality Personal Protection Equipment and economic and social support for all health workers.

**5. Continued adherence to an overly restrictive testing policy undermined the ability to detect outbreaks, diagnose patients, control transmission, and properly estimate the burden of COVID-19 in the country.**

Health authorities adhered to a highly restrictive testing policy that precluded diagnosis for most citizens infected with the virus. As of March 2021, Mexico ranks #155 in testing per million population, out of 203 countries with available information. The positivity rate has consistently remained in the 30-50% range, pointing to significant underdiagnosis and uncontrolled transmission since the first cases were detected. Evidence suggests large inequities in access to tests for COVID-19 across social groups and regions.

Such limited testing prevented its use as a tool for early outbreak detection and infection control, coupled with contact tracing, the isolation of positives, and locally focused interventions to contain community transmission.

**Key Recommendations**

- Launch a national “test & isolate” program in coordination with subnational governments, businesses, and civil society organizations. The first component of this program would be a massive expansion of RT-PCR and rapid antigen diagnostic tests paired with isolation and quarantine guidelines that include the use of pulse oximeters and access to remote medical supervision. The second is the establishment of subsidized and well-provisioned isolating facilities (adapted schools, convention centers, hotels, gyms, etcetera) for infected individuals who, due to living conditions, cannot safely isolate at home without putting others at risk. To be successful, such campaign must be supplemented with clear communication about the risks of transmission in crowded households and indoor spaces.
- The federal government should logistically and financially support testing programs deployed by subnational governments and invest in expanding laboratory capacity.
- Targeted local interventions that include widespread proactive testing and associated interventions should be adopted as part of a broader strategy for infection control.
- Authorities should habilitate mechanisms to provide essential workers access to free and frequent testing.
- Improved testing and quarantine protocols and requirements must be adopted regarding international travelers.

**6. Epidemiological surveillance systems have vastly underestimated the burden of COVID-19. Delays in health information systems have further inhibited decision-making based on accurate and timely epidemiological data.**

Authorities relied on a sentinel surveillance system originally designed for flu outbreaks that has mainly captured cases of severe disease. The data can be used to characterize transmission trends at an aggregate level. However, the parameters to estimate the burden of disease have been insufficiently transparent and often inaccurate. Even considering its nature as a sample, the sentinel surveillance system has vastly underestimated the true burden of COVID-19.

Comparing reported cases with the results of the nationally representative serological survey conducted by the National Public Health Institute (INSP), the most conservative estimates yield a ratio of about 1 infection in every 30 being reported (3.3%) (SS). For reference, the CDC estimates that 1 in 4.6 infections (21.7%) were detected in the United States between February and December 2020 (CDC). Authorities had previously indicated that cases found using the sentinel model needed to be multiplied by a factor of 8.2 to approximate the number of cases. A preliminary revised estimate of COVID-19 mortality provided by the independent national statistics agency (INEGI) showed that as of August of 2020, official figures underreported the death toll caused by the disease by at least 45%.

Additional testing conducted by states and private laboratories beyond the restrictive criteria of the sentinel surveillance model is not reported in the national epidemiological database, which has led to parallel counting of cases and conflicting information between states and the federal government. Leaving its accuracy aside, the passive monitoring approach chosen by health authorities is divorced from infection control objectives that are critical for COVID-19.

Large delays in case reporting and data processing within health information systems have been a further obstacle to sound decision-making. In a rapidly changing epidemic, decisions have often been based on outdated information.

Epidemiological datasets were made publicly available, in a positive move toward transparency for which authorities deserve recognition. This allowed the scientific community, the media, and civil society to conduct independent analysis of the pandemic and to validate—and sometimes complement or reinterpret—the information provided by health authorities.

**Key Recommendations**

- The national network of public health laboratories should be strengthened for viral surveillance. Such efforts should include protocols and alert systems to find existing and emerging SARS-CoV-2 variants, and more generally detect future potential public health threats. Effective adaptation of public health policy is premised on effective viral genomic surveillance.
- Complement the sentinel model with other epidemiological surveillance methods that favor early detection of outbreaks and greater subnational representativeness. New and transparent protocols to estimate the burden of disease should also be adopted.
- Revise and standardize protocols to ensure timely registration of cases and deaths in medical establishments into a dedicated national information platform.
- Expand investment in health information systems and data platforms that integrate with civil registries and other government data systems. In addition, building a national system with real-time information on the emission of death certificates can complement health data during emergencies.

**7. The health system was in a precarious condition due to chronic underinvestment, recent austerity cuts, and untimely and ill-conceived reforms.**

Mexico met the pandemic with a fragmented and weakened health system due to sizable budget cuts since the mid-2010s. Despite Mexico's low investment in health relative to GDP, health expenditures continued to decline under the current administration's austerity program, which has included aggressive cuts and layoffs of health workers. By 2020, the health budget per capita accumulated a 26.4% loss in real terms relative to its 2015 maximum, regressing to levels seen a decade before. Cuts have disproportionately affected spending on health for the informal poor who lack social security. Resource insufficiencies and personnel shortages before and during the pandemic structurally limited the quality of Mexico's emergency health response.

In addition, the current administration initiated a disorderly and poorly planned restructuring of the national health system at the time of the pandemic, after reforms were passed to dismantle the insurance scheme known as *Seguro Popular* and recentralize health services and resources. A reorganization of the government procurement system and clashes with the pharmaceutical industry created major drug shortages that continued throughout the pandemic. Clashes over the reform to the health system aggravated tensions between the federal government and opposition state governments during the emergency. Underinvestment and an ongoing process of institutional erosion in the health system deepened Mexico's vulnerability to the pandemic.

**Key Recommendations**

- Reforms to the institutional framework are necessary to establish dedicated health emergency funds and shield them from political interference and economic cycles.
- Promote the creation of an international financial coverage programs for health and other types of emergencies. Such programs could build on existing schemes to hedge against natural disasters and should require countries to routinely revise and update emergency preparation plans, as well as to maintain basic response infrastructures adequately financed and provisioned.
- Mexico must substantially increase public investment in health and address fragmentation in its health system. Such effort must prioritize reducing existing inequities in access and the quality of health services, which requires both greater resources and inter-operability across health subsystems. Increased spending will likely require tax reforms given Mexico's chronically low tax-to-GDP burden. The devastating and unequal impact of the pandemic should become a springboard for a new fiscal and social contract centered on the effective implementation of social rights, starting with the constitutional right to the protection of health.

**8. Efforts to expand hospital and ICU capacity were partially undermined by the lack of a comprehensive approach at health service delivery and the lack of control over transmission. Authorities failed to adequately prepare and provision the health system to deal with the emergency, putting health workers at risk and contributing to high mortality rates.**

When prevention efforts to contain infections fell short, the medical care system bore the burden of the pandemic, leading to overwhelmed hospitals, stressed and exposed health workers, and shortages of equipment and supplies. Relevant efforts were made at expanding hospital and ICU capacity, in which

coordination with the private sector and civil society organizations played an important role. However, authorities centered on increasing the number of available beds without a comprehensive approach at health service delivery. Efforts to increase the number of beds were partially undermined by the lack of concomitant increases in available trained staff, equipment, drugs, and financial and other resources.

Excessive focus on the number of available beds for COVID-19 patients, due to media attention and the weight of this indicator on the epidemiological risk alert system, has likely contributed to high excess mortality related to delayed or displaced treatment of other medical conditions. The immense burden that fell on the health care system meant immediate and long-lasting effects on health outcomes of both COVID-19 patients and others that were either displaced or delayed accessing care, out of fear of infection inside hospitals and clinics. To exemplify, by December 2020 diagnosis for malnutrition and heart conditions had fallen by 56% and 45%, respectively (SS).

Health workers were not early and universally provided with adequate PPE, training, and economic and social support. According to data recently collected by PAHO, Mexico alone accounts for 45% of all deaths among health care workers from 17 countries. Data provided by the Mexican Secretariat of Health indicates that 226,581 HCWs in the country have tested positive for COVID-19, a figure that represents approximately 23% of the total healthcare workforce (SS).

Mortality rates among hospitalized patients have been high by international standards and markedly uneven across health subsystems. IMSS has maintained the highest hospital case-fatality rate throughout the pandemic, at around 50% or higher, versus 38% at ISSSTE, 37% at SS, and 20% in the private sector. For reference, the percent that die among those hospitalized in the United States is 2.4% for the group between 18 and 49 years old, 10% for those 50 to 64, and 26.6% for those 65 or older (CDC).

**Key Recommendations**

- Authorities must revise policies and strategies to improve the balance between the public health and the medical care response to pandemic management.
- Establish teams within each health subsystem dedicated to analyzing data on hospital outcomes on a routine basis in coordination with the research community, to understand existing variation across hospitals and subsystems and design targeted interventions to improve outcomes.
- Encourage patients to seek medical attention on the first appearance of symptoms, rather than deterring them from presenting to healthcare centers until grave symptoms appear.
- Invest in capacity to provide remote monitoring and home care to patients with moderate disease.
- Authorities must actively verify that all health workers have access to proper PPE and launch a national campaign to train and constantly update medical personnel on the management of COVID-19, in coordination with universities and relevant professional associations.
- Implement extraordinary preventive care measures and expand investment in capacity to cope with other health conditions, in order to mitigate the indirect effects of the pandemic on health. These include information campaigns, telemedicine programs, and medical home visits.
- Constitute a new special fund, financed with public resources and private donations, to pay for salary premiums and universal life insurance policies for health workers, as well as larger compensations for families of deceased health workers.



**9. Large inequities in access and quality of health services and other social inequalities created structural vulnerabilities to a high burden of disease and have deepened during the pandemic. High rates of preexisting conditions including obesity, diabetes, cardiovascular disease, and other chronic diseases further exposed large groups to severe COVID-19 and have contributed to high mortality.**

The pandemic has thrown deep inequities in access to health care into sharp relief. Residents of municipalities in the lowest socioeconomic marginalization quintile (20% wealthiest municipalities) account for 17.7% of all COVID-19 deaths, whereas residents of the 20% most marginalized municipalities account for 25.2%. Considering that more diagnostic tests have been conducted among the former group (23% of the total vs. 19.5%), the unevenness in the burden of disease may be even more marked than these figures suggest.

Several factors have contributed to the highly unequal impact of COVID-19 across social groups, in terms of both cases and deaths. High rates of informality, widespread economic insecurity, low health education, high rates of crowded and multigenerational housing, and crowded urban transport increased the risk of exposure to SARS-CoV-2 among the urban poor and reduced individuals' ability to cope with the challenges posed by the disease. The irregular quality of health services and the uneven geographical distribution of health infrastructure further increased the burden of disease and its social segmentation.

High prevalence of chronic conditions such as diabetes, obesity, and cardiovascular disease, in combination with suboptimal timeliness and quality of medical attention and the inability to control transmission of SARS-CoV-2, has contributed to the very high number of deaths, including among the non-elderly population. 50.6% of all deaths have occurred among population less than 65 years old, compared to 18.7% in the United States. These vulnerabilities associated with the health status of the population and others related to the health system merited more coherent and decisive action toward controlling viral transmission.

**Key Recommendations**

- Structural social vulnerabilities reinforce the need to make controlling viral transmission a clear pro-poor policy priority.
- Mexico must treat high rates of diabetes, obesity, cardiovascular disease, and other chronic conditions as health emergencies demanding aggressive information campaigns and reforms to the health system to prevent and better manage chronic disease.
- Improving health and health equity and the development of preparedness and response plans for future pandemics require intersectoral action. Authorities, civil society, and the scientific community must foster attention to the social determinants of health and champion initiatives that although lying outside the health sector, have a large potential to address health inequity.

**10. The vaccination plan remains insufficiently detailed and transparent. The subjection of vaccination priorities and decisions to partisan-electoral considerations is a concern.**

Important efforts were made to secure access to vaccines in the international market. The federal government has initiated vaccination of health workers and the elderly. However, the vaccination program has been marred by a lack of transparency and national authorities' unwillingness to rely on and strengthen existing civilian vaccination capacities in the health system and broadly incorporate subnational governments, civil society, and the private sector into a national and coordinated vaccination drive. A sufficiently detailed timeline and plan remain lacking, and authorities have focused the attention on the promise of universal vaccination without a comprehensive approach at bringing the pandemic under control.

Delays and miscoordination have occurred in the early stages of implementation, with partial exceptions. Concerns about the partisan-electoral use of the vaccination program have emerged, given the reliance on centrally-controlled former party activists to vaccinate and vaccination decisions that do not follow a clear health rationale, like giving high priority to rural areas and teachers in a state with a relative low burden of disease, while vaccination of health workers remains incomplete. Vaccination brigades are militarized. Authorities have also followed a geographic approach at vaccination without transparent guidelines about selection criteria.

**Key Recommendations**

- Authorities must strictly follow the vaccination priorities established by technical areas based on scientific considerations. The criteria to distribute vaccines across regions and social groups must be formalized and clearly explained according to health guidelines.
- Reconvene the National Vaccination Council and other relevant stakeholders to revise and deliberate about the vaccination plan. Such plan must draw on Mexico's experience with vaccination, promote civilian state capacities, and rally subnational governments, civil society, and the private sector around a shared, coordinated, and non-partisan vaccination campaign of unprecedented complexity and scale.
- Given the importance of open data for transparency, accountability, trust, and scientific research, authorities must release disaggregated data on the implementation of the vaccination campaign and build a comprehensive, publicly available dashboard to report and monitor progress.
- Strengthen pharmacovigilance strategies to gather reliable data and closely monitor the security and efficacy of vaccines being administered to the population, especially if the rollout significantly deviates from the guidelines of authorization agencies.



# ACKNOWLEDGEMENTS

We would like to extend our gratitude to the external experts who contributed to the case study through key informant interviews and reviews. We greatly appreciate their insights and perspectives. The views expressed in this report are those of the authors, and do not reflect the opinions of the reviewers, interviewees, or the institutions to which they are affiliated.

- Ricardo Becerra
- David Bernal
- Alejandro Cano
- Enrique Cárdenas
- Luis de la Calle
- Anna Bárbara Casillas
- Carlos Elizondo
- Germán Fajardo
- Laura Flamand
- Julio Frenk
- Silvia Giorguli
- David Kershenobich
- Magdalena Madero
- María Elena Medina-Mora
- Alejandro Mohar
- Fernando Petersen
- Luis Rubio
- Sandra Sepúlveda
- Jorge Suárez-Vélez
- Roberto Tapia

Doctors and medical residents: María Teresa Alonso de León, Laura Leyva Figueroa, Víctor Hugo Gómez Johnson, Ana Lorena Guerrero Torres, Adib Jorge de Saráchaga, Guillermo Piña Uribe, Juan José Rodríguez Carrillo, Jorge Francisco Sánchez Santa Ana.

