Mexico's health system, 2023*

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Abstract
Mexico's health system is comprised of two sectors, public and private. The public sector includes social security institutions and institutions that provide services to the population without social security. The private sector includes private insurance companies and service providers working in private offices, clinics, and hospitals. Longer lifespans and exposure to risks associated with unhealthy lifestyles have transformed the leading causes of disease and death. Chronic non-communicable diseases and injuries are increasingly prevalent in the health profile. Health system coverage improved over the last two decades, from less than 50 million people with health insurance in 2000 to over 100 million in 2016. Healthcare in Mexico is financed with public and private resources. Public resources finance partially the institutions that serve the population with contributory health insurance and fully those that serve the population without this labor benefit. Health spending represents 5.5% of gross domestic product. There are 34 756 healthcare units in Mexico. The ratio of doctors per thousand inhabitants is 2.5. Healthcare regulation activities include accreditation of health sciences schools and faculties, licensing and certification of physicians and nurses, and certification of healthcare units. The *Comisión Federal de Protección contra Riesgos Sanitarios* is responsible for health regulation.

Keywords: health system; health conditions; expenditure in health; financial protection; health manpower; regulation; Mexico

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Resumen
El sistema de salud de México cuenta con dos sectores, el público y el privado. El público incluye a las instituciones de seguridad social y las que proporcionan servicios a los que carecen de seguridad social. El sector privado incluye las aseguradoras privadas y los prestadores de servicios privados. El incremento de la esperanza de vida y la exposición a riesgos asociados con estilos de vida no saludables han transformado las principales causas de enfermedad y muerte, que hoy son las enfermedades crónicas no transmisibles y las lesiones. La cobertura del sistema de salud se incrementó en las últimas dos décadas al pasar de menos de 50 millones en 2000 a más de 100 millones en 2016. La atención a la salud está financiada con recursos públicos y privados. Los recursos públicos financian parcialmente la atención de la población con seguridad social y totalmente la atención de la población sin seguridad social. El gasto en salud representa 5.5% del producto interno bruto. México cuenta con 34 756 unidades de salud y su razón de médicos por 1 000 habitantes es de 2.5. Las actividades de regulación de la atención a la salud incluyen la acreditación de las escuelas de medicina y enfermería, la certificación de médicos y enfermeras, y la certificación de las unidades de atención a la salud. La Comisión Federal de Protección contra Riesgos Sanitarios está encargada de la regulación sanitaria.

Palabras clave: sistema de salud; condiciones de salud; gasto en salud; protección financiera; recursos humanos para la salud; regulación; México

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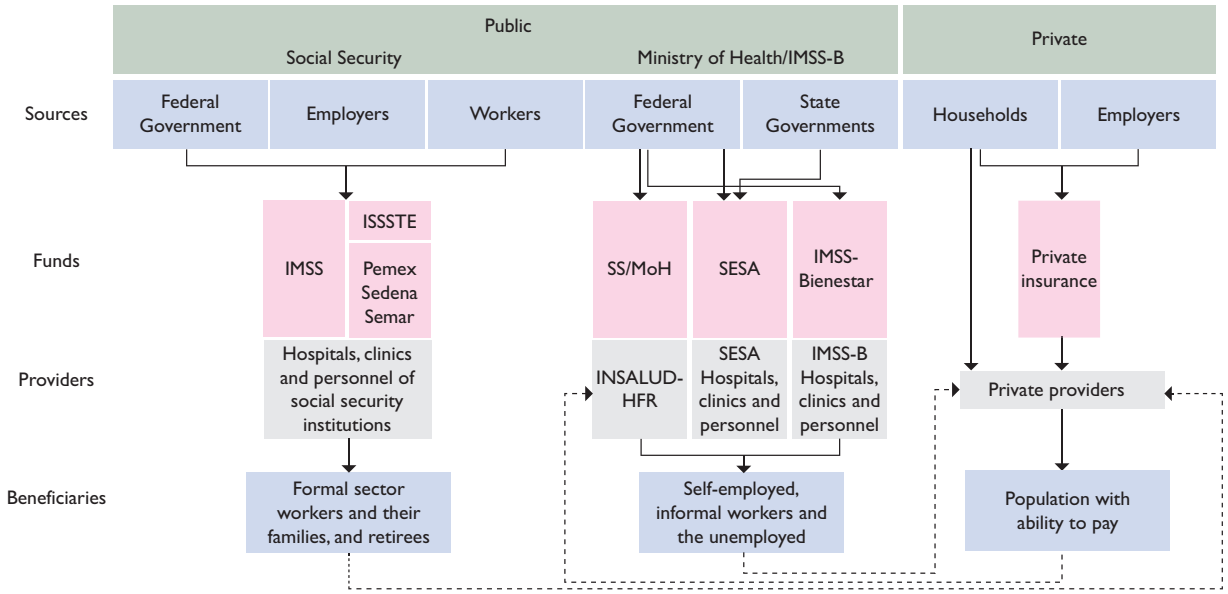


Mexico's healthcare system is comprised of two sectors, public and private. The public sector includes social security institutions [*Instituto Mexicano del Seguro Social* (IMSS), *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE), *Petróleos Mexicanos* (Pemex), *Secretaría de la Defensa Nacional* (Sedena), *Secretaría de Marina* (Semar)] and institutions that provide services to the population without social security [*Secretaría de Salud* (SS/MoH), *Servicios Estatales de Salud* (Sesa) and *Servicios de Salud del IMSS para el Bienestar* (IMSS-B)]. The private sector includes private insurance companies and service providers working in private offices, clinics, and hospitals. Social security institutions are financed by contributions from employers, workers, and the federal government (social quota). These institutions have their own infrastructure and staff. Their beneficiaries are salaried workers and their families, as well as retirees in the formal sector of the economy. The SSa, IMSS-B, and the Sesa are financed with federal resources, although the nine Sesa that did not join IMSS-B also receive resources from their respective state governments. These institutions serve the population without social security. The only providers that the SS now has are the national health institutes (INSalud) and the federal referral hospitals (HFR), which offer specialty and high-specialty services. The Sesa have their own staff, clinics, and hospitals. Finally, IMSS-B has its hospitals, clinics, and staff, including the high specialty regional hospitals (HRAE). Finally, a segment of the population uses private sector services through private insurance or out-of-pocket payments. This is mainly, but not exclusively, the middle and upper-class population.

Figure 1. Mexico's healthcare system, 2023

Demographics

Mexico has a population of 126 million people as of 2020. 48.8% are men, and 51.2% are women. Between 2010 and 2020, the population increased by 14 million. It is anticipated that the population will stop growing around mid-century, when it will reach 170 million, and will begin to decline in 2070.[1] The current demographic situation is the result of a significant drop in mortality which started in the 1930s, due primarily to a decrease in infant deaths.

The drop in infant mortality and the family planning campaigns launched in the early 1970s also contributed to the decline of fertility rates. Mexican women of reproductive age went from having an average of 6.8 children in 1970 to only 1.9 in 2020.[2] The fall in the birth rate, in turn, has led to an aging of the population, which implies a growing participation of adults and older people in the population structure.[3] The population over 65 shows an annual growth rate that will lead it to account for 15% of the national population in 2030 and 20% in 2050. An increase in life expectancy from 34 years in 1930 to 75 years in 2018, a product of the fall in mortality rates, has accompanied the aging of the population. However, in 2020 and 2021, there was a decline in the value of this indicator –from 75 to 71 years– due to the Covid-19 pandemic.[4]

Mexico has also experienced an accelerated urbanization in recent decades. In 1950, 43% of the population lived in urban settlements; by 2020, this percentage reached 79%.[5]

Health conditions

Longer lifespans and exposure to risks associated with unhealthy lifestyles, more prevalent in urban areas, have transformed the leading causes of disease and death. In Mexico, chronic non-communicable diseases (NCDs) and accidental and non-accidental injuries are increasingly prevalent in the health profile. However,

common infections and reproductive problems continue to affect impoverished rural populations significantly.

Mexico finds itself at a relatively advanced stage of the epidemiological transition. This is evident in its relatively low under-five mortality rate (13.2 per 1 000 live births) and a relatively low maternal mortality ratio (59 per 100 thousand live births), figures lower than the average for Latin America but higher than those of other upper-middle-income countries in the region such as Chile, Costa Rica, and Uruguay (table I).[6,7]

Mortality rates from NCDs vary considerably. While cancer mortality ranks among the lowest in the region, diabetes mortality is the highest in Latin America. Mortality from cardiovascular diseases falls somewhere in between.

A key indicator is life expectancy, which falls below the average for Latin America (72.6) and significantly trails behind most upper-middle-income countries, including Argentina, Chile, Colombia, Costa Rica, Panama, and Uruguay (table I).

Main causes of death

For decades, the leading causes of death have been NCDs, homicides, and accidents. In 2022, the leading cause of death (table II)[8] was heart disease, which resulted in approximately 200 000 deaths, more in men (106 769) than in women (93 201).[8] The second leading cause of death was diabetes. In Mexico, the prevalence of diabetes among people aged 20 and over is 18.3% (14.6 million) –one of the highest in the world.[9] In 2022, this disease caused 115 thousand deaths (table II). Malignant tumors were the third leading cause of death. In 2022, 89 thousand deaths were caused by this disease. The tumors that caused the most deaths were those of the

Table I
BASIC HEALTH INDICATORS, LATIN AMERICA 2021

Country	*Life expectancy at birth, 2021*	*Mortality < 5 years (per 1K LB), 2021*	*Maternal mortality (per 100K LB), 2020*	*CVD mortality (per 100K), 2019**	*Mortality due to diabetes (per 100K), 2019**	*Cancer mortality (per 100K), 2019*	*Mortality due to traffic accidents (per 100K), 2019*
Latin America	72.6	14.5	75.7	180.6	31.1	125.0	16.9
Argentina	75	6.9	45	183.9	21.2	188.8	14.0
Bolivia	64	24.7	161	214.4	46.4	116.8	17.0
Brazil	73	14.4	72	175.7	28.7	122.7	20.5
Chile	79	6.6	15	126.8	15.9	173.9	12.6
Colombia	73	12.8	75	131.5	13.1	103.5	15.5
Costa Rica	77	7.6	22	128.5	11.3	128.2	17.8
Cuba	74	5	39	197.3	10.4	244.6	9.5
Dominican Republic	73	33	107	311.1	32.6	99.3	24.5
Ecuador	74	12.5	66	163.7	35.2	100.2	27.2
El Salvador	71	12.4	43	150.3	37.5	94.4	20.4
Guatemala	69	23	96	173.2	62.4	70.9	15.7
Honduras	70	14.7	72	297.7	19.5	78.9	11.8
Mexico	70	13.2	59	157.3	65.4	85.8	16.9
Nicaragua	74	13.3	98	236.7	47.5	68.0	11.4
Panama	76	13.9	52	123.8	29.1	95.7	12.7
Paraguay	70	18.2	71	187.9	46.3	88.6	21.6
Peru	72	14.1	69	88.6	14.9	98.2	14.0
Venezuela	71	24.2	259	222.7	38.5	123.8	22.1
Uruguay	75	5.8	19	161.6	15.2	293.4	16.3

* Age-standardized mortality rate
CVD: cardiovascular diseases
Sources: The World Bank Group. DataBank. World Development Indicators, 2024[6] and The Global Change Data Lab. Our World in Data. Health. 2024.[7]

breast, colon and rectum, prostate, respiratory tract, and liver. It is important to note that the three leading causes of death in the country (heart disease, diabetes, and malignant tumors) accounted for 47.6% of all deaths in 2022.

The fourth cause of death was liver diseases, among which liver cirrhosis and hepatitis C stand out. Deaths from this cause are much more frequent in men (30 127) than in women (11 147). Covid-19 was the fifth leading cause of death. It produced more than 38 000 deaths, many more in men (23 250) than in women (15 255). Accidents, a prevalent issue in developing countries, ranked as the sixth leading cause of death in Mexico, fifth among men (28 816) and ninth among women (8 578). Vehicle accidents notably impact pedestrians and often stem from alcohol consumption, speeding, and deficiencies in roads and road signs, all preventable factors.

Cerebrovascular diseases claimed the seventh spot as a cause of death, with arterial hypertension being the primary reason. In 2022, these diseases resulted in almost 36 thousand deaths.

Latin America and the Caribbean exhibit the highest homicide rates globally. Among the countries in the region, El Salvador (52 per 100 000 inhabitants), Jamaica (43.9), Honduras (38.9), Belize (37.8), Venezuela (36.7), and Mexico (29.1) record the highest rates.[10] Mexico experienced a dramatic rise in the homicide rate over the past two decades, surging from eight per 100 000 inhabitants in 2007 to 29 in 2018. In 2022, there were 33 287 deaths attributed to this cause, predominantly among men (28 745), ranking it eighth among causes of death.

The impact of violence is immediately registered as premature deaths, but the disability associated with surviving violence must also be measured through mental and other health parameters, especially in women. Disability-adjusted life years (DALYs) lost to violence range from 1 to 5% for women and girls aged 10-29 years across Mexican states. Violence is also associated with poorer physical health, increased use of medications, prevalence of mental health problems, and adoption of risky behaviors (alcohol, drug, tobacco use, etc.) that can last a lifetime.[11]

Influenza and pneumonia, with 33 000 deaths, held the ninth position. Given the absence of reports of influenza epidemic activity, this elevated figure is likely a repercussion of the Covid-19 pandemic. The Mexican government opted against widespread diagnostic testing during the pandemic and afterwards, which resulted in numerous cases of this disease classified as influenza and pneumonia.

Chronic obstructive pulmonary disease (COPD), primarily caused by an inflammatory response to tobacco consumption and air pollution, ranked as the tenth leading cause of death in Mexico in 2022.

There are other ailments that impact health significantly but do not lead to death that are often overlooked when analyzing a country's health profile. In Mexico, musculoskeletal problems (such as back pain, neck pain, osteoarthritis, and rheumatoid arthritis) and mental illnesses (including depression, anxiety, schizophrenia, and bipolar disorder) fall into this category. When considering

Table II
Top 10 causes of death, Mexico 2022

	Cause	Number			% (with respect to total deaths)
		Total	Women	Men	
1	Heart diseases	200 023	93 201	106 769	23.6
2	Diabetes mellitus	115 025	57 174	57 837	13.5
3	Malignant tumors	89 574	46 673	42 889	10.5
4	Liver diseases	41 281	11 147	30 127	4.8
5	Covid-19	38 508	15 255	23 250	4.5
6	Accidents	37 450	8 578	28 816	4.4
7	Cerebrovascular diseases	35 977	17 919	18 052	4.2
8	Homicides	33 287	4 542	28 745	3.9
9	Influenza and pneumonia	33 049	14 131	18 905	3.9
10	COPD	18 463	8 778	9 685	2.1
-	All	847 716*	369 951	476 765	100

* In 1 000 deaths sex was not specified.
COPD: chronic obstructive pulmonary disease
Source: Instituto Nacional de Estadística y Geografía. Estadísticas de defunciones registradas (EDR) 2022.[8]

DALYs as a measure of health damage, musculoskeletal problems account for a greater loss of DALYs (7.4% of total DALYs lost) than cirrhosis or cerebrovascular disease.[12] Similarly, depression and anxiety combined contribute to 3.7% of lost DALYs in Mexico. The *Encuesta Nacional de Salud y Nutrición 2022* (Ensanut 2022) indicates that depression prevalence among adults in Mexico is 11.3%, higher among women (15%) than men (7.3%).[13]

Health risks

Environmental risks

The lack of regular access to safe drinking water is a health risk that has almost been eliminated in Mexico. In 1990, drinking water coverage in the country was 78.4%, and it reached 96.1% in 2020.[14]

Sanitation services are vital in preventing diarrhea and other common infections. Today, 95% of the Mexican population has access to sewerage.[15]

Air pollution is monitored by 245 Air Quality Monitoring Systems located in 100 cities. These systems monitor air concentrations of suspended particulate matter (PM_{10} and/or PM_2), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and carbon monoxide (CO). In 2020, only seven of 43 cities measuring PM_{10}, five of 49 measuring PM_2, eight of 47 measuring O_3, 11 of 46 measuring SO_2, 34 of 45 measuring NO_2, and 27 of 45 measuring CO complied with the health protection limits.[15]

Experts increasingly recognize climate change as a social determinant of health. People who are vulnerable to the effects of extreme weather, namely people with low incomes, the elderly/disabled, and children, have experienced increased levels of mental, emotional, and physical stress due to exposure to natural disasters.[16,17] For example, there is growing evidence linking extreme heat and rising temperatures to increased hospitalizations for mood and behavioral disorders, as well as increased risk of suicides related to heat waves and rising temperatures.[18] Burke and colleagues estimated that under a high greenhouse gas emissions pathway, there could be 9 000 to 40 000 additional suicide deaths in Mexico and the United States by 2050.[19]

Behavioral risks

In Mexico, the prevalence of smoking among individuals over 20 years of age is 19.1 percentage points, higher in men (29.5%) than in women (10.4%), and ranks among the lowest in Latin America and the Organisation for Economic Co-operation and Development (OECD) countries.[20]

Alcohol stands as one of the primary risk factors for premature death in men. Seven out of every 10 traffic accidents in Mexico are related to the consumption of this substance.[21] The prevalence of alcohol consumption in adults is 55.5%, with excessive consumption at 40.4%.[22] Among adolescents aged 10 to 19 years, the prevalence of alcohol consumption is 20.6%.

The prevalence of drug use (lifetime) in Mexico among individuals aged 12 to 65 years is 10.3%, with marijuana being the most used drug, followed by cocaine.[23]

Movement behaviors also impact health. According to Ensanut 2022, 68% of teenagers and 19% of adults aged 20 to 64 fail to meet physical activity requirements (i.e., being active for at least 60 minutes daily).[24] Additionally, low consumption of healthy foods is emerging as a significant concern. From 2020 to 2022, only 35.5 and 19.6% of adults met the recommended fruit and vegetable consumption levels, respectively. While the percentage for fruits is higher than in 2018 (26.7%), it is lower than in 2016 (39.7%). Vegetable consumption is higher than in 2018 (13.4%) and 2016 (12.6%).[25]

Metabolic risks

In Mexico, the prevalence of overweight among adults is 38.3%, while obesity stands at 36.9%.[26] Overweight is more prevalent in men than in women, whereas obesity is more common in women than in men. The combined prevalence of overweight and obesity is 75.2%, one of the highest among Latin American and OECD countries.

Globally, there are 1.2 billion individuals with hypertension.[27] Ensanut 2022 recorded a prevalence of hypertension among adults at 47.8%, higher in men (53.8%) than in women (42.4%).[28]

Another prevalent risk in Mexico is hyperglycemia, which is defined as glucose levels that do not meet the criteria for a diagnosis of diabetes but cannot be considered normal.[29] In Mexico, its prevalence in adults is 22.1% (17.6 million people).[9]

Finally, there is cholesterol, a normal component of the blood, body organs, and nerve fibers, but which becomes a risk when diets rich in saturated fats, heredity, and certain diseases, such as diabetes, favor its increase in blood. In Mexico, there is a prevalence of hypercholesterolemia of 30.6% (13 million adults).[30]

Health conditions in Mexico are also under the influence of the various social determinants of health (e.g., education, employment, income, housing), the control of which fall beyond the responsibility of the health system. However, health authorities are increasingly addressing the need for intersectoral coordination

to reduce the negative influence of social and economic risks, and improve health conditions.

Structure and coverage

How is the system set up, and who are its beneficiaries?

As depicted in figure 1, Mexico's healthcare system consists of two sectors: public and private. The public sector encompasses various social security institutions such as the *Instituto Mexicano del Seguro Social* (IMSS), the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE), *Petróleos Mexicanos* (Pemex), *Secretaría de la Defensa* (Sedena), and *Secretaría de Marina* (Semar). Additionally, it includes institutions like the *Secretaría de Salud* (SS), *Servicios Estatales de Salud* (Sesa), and *Servicios de Salud del IMSS para el Bienestar* (IMSS-Bienestar), which cater to the population without social security coverage. On the other hand, the private sector comprises private insurance companies and service providers operating in private offices, clinics, offices adjacent to pharmacies, and hospitals.

Social security institutions have their own infrastructure and personnel, serving salaried workers and their families. IMSS-Bienestar, Sesa, and SS operate with their own infrastructure and staff, with IMSS-Bienestar, established in 2023, serving as the main service provider in 23 states through its health centers and hospitals, including Regional High Specialty Hospitals (HRAE, in Spanish). In nine states, Sesa manage service provision independently. The SS offers high-quality services through the national health institutes (INSalud, in Spanish) and federal referral hospitals (HFR). Two INSalud –the *Instituto Nacional de Salud Pública* and the *Instituto Nacional de Medicina Genómica*– focus exclusively on research and human resources training. Finally, private healthcare services are used mainly by the middle and upper classes, but are also accessed by individuals with social security coverage and those from rural and urban poor backgrounds. According to Ensanut 2022, 33.5% of IMSS affiliates and 40.8% of ISSSTE affiliates used private health services regularly during that year.

How comprehensive is healthcare coverage?

Health system coverage improved over the last two decades, from less than 50 million people with health insurance in 2000 to over 100 million in 2016 (table III).[31,32] However, the replacement of *Seguro Popular* (SP) by the *Instituto de Salud para el Bienestar* (Insabi) in 2019 halted this trend. Two reports by the *Consejo Nacional de Evaluación de la Política de Desarrollo Social* (Coneval) indicate that the "lack of access to health services" increased from 17 million people in 2018 to 50 million in 2022, the years Insabi operated.[33,34] This increase, however, is probably an overestimation, given the nature of the question posed ("Do you have public health insurance?") by the survey (National Household Income and Expenditure Survey [ENIGH, in Spanish]) which nourished this calculation. The surveyed population did not know that after the dissappearance of SP, the uninsured population would be automatically covered by Insabi, which, in addition, did not demand any credential or affiliation document. It took a while for people to understand this. This will probably change with the creation of IMSS-Bienestar, which is formally affiliating the population without social security and handing out credentials.

Table III
Distribution of the population with health insurance, Mexico 2016

Sector	*Public*				*Private*	*Total*
Institution	*Social Security*			*Ministry of Health or Sesa*		
Payers and suppliers	Pemex, Sedena and Semar	ISSSTE (federal and state)	IMSS	*Seguro Popular*	Private insurance companies	-
Affiliated population (million)	1.0	8.6	43.4	55.6	1.0*	109.6

Notes:
* This figure should be higher, since, according to the Mexican Association of Insurance Institutions, the number of people with private health insurance in 2016 was at least eight million, half of whom also had some public health insurance. If only those with private health insurance are counted, the correct figure should be four million.
Sesa: *Servicios Estatales de Salud*; IMSS: *Instituto Mexicano del Seguro Social*; ISSSTE: *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*; Pemex: *Petróleos Mexicanos*; Sedena: *Secretaría de la Defensa*; Semar: *Secretaría de Marina*.
Modified from *Consejo Nacional de Evaluación de la Política de Desarrollo Social. Estudio diagnóstico del derecho a la salud 2018*.[32]

What are the benefits?

The health benefits Mexicans receive vary depending on the institution to which they are affiliated. Generally, individuals with social security enjoy more extensive benefits than those without social security coverage.

IMSS operates two insurance systems: the mandatory system, to which most of its affiliates belong, and the voluntary one. The compulsory system encompasses five branches of social protection: sickness and maternity insurance, occupational risk insurance, disability and life insurance, retirement insurance, childcare, and other social benefits. Sickness and maternity insurance guarantees access to medical, surgical, pharmaceutical, and hospital care, breastfeeding assistance, and subsidies for temporary disability. Individuals without formal employment may voluntarily agree with the IMSS to obtain only part of the sickness and maternity insurance benefits.

ISSSTE members receive protection through insurance, benefits, and services similar to those offered by IMSS. This includes health insurance and access to preventive medicine, maternity, medical, surgical, hospital, pharmaceutical, and physical and mental rehabilitation services. Pemex, Sedena, and Semar affiliates enjoy benefits similar to those of IMSS and ISSSTE, covering first, second, and third-level medical, surgical, and hospital care; pharmaceutical and rehabilitation coverage; insurance for occupational hazards, retirement, disability, and various complementary coverages. All social security institutions provide a broad, though not explicitly defined, package of medical services, encompassing outpatient care, general and specialty hospital care, and the necessary medicines and supplies.

Regarding the population without social security, IMSS-Bienestar guarantees first and second-level services. The nine SESAs that did not join IMSS-Bienestar offer varied benefits in their states, ranging from basic outpatient services in rural clinics to more comprehensive interventions in large cities. Lastly, regarding personal health services provision, the SS oversees the subcomponent of the Insalud and the HFRs, which, as mentioned earlier, offer specialty and high-specialty services to the population without social security.

Financing

Who pays?

Healthcare in Mexico is financed with public and private resources. Public resources finance partially the institutions that serve the population with contributory health insurance and fully those that serve the population without this labor benefit. Private resources finance services for the population with the capacity to pay. Social security institutions are supported by contributions from the employer, the worker, and the federal government (social quota). The services offered by the SS, IMSS-Bienestar, and Sesa are financed with federal resources, although the latter also receive resources from their respective state governments. Services offered in the private sector are financed by private insurance premiums, paid by employers or households, and so-called out-of-pocket payments.

How much does health spending amount to?

Between 2000 and 2015, Mexico's health spending as a percentage of gross domestic product (GDP) increased from 4.4 to 5.7%. Today, health spending represents 5.5% of GDP, which is below the Latin American average (8.2%) and well below what other middle-income countries in Latin America, such as Argentina (10.1%), Brazil (10%), Chile (9%), Colombia (8.1%) and Costa Rica (7.2%), devote to health.[35] OECD countries invest, on average, 9.2% of their GDP in health.[36] Health spending per capita in Mexico is 1 081 USD (United States dollar), one of the lowest in Latin America's upper-middle-income countries (table IV).[37]

Public spending on health has expanded slowly but consistently in recent years. In 2000, it accounted for 45% of total health spending, and today, it accounts for 53%, much lower than in Argentina (66.5%), Chile (62.2%), Colombia (76.1%), and Costa Rica (74.4%).[38] Public spending in OECD countries accounts, on average, for 72% of total health spending (table IV).

Private spending showed an increasing trend from 2000 to 2005, when it began to decline to reach its lowest level in 2013 (46%); thereafter, it remained around 47%.[38] The bulk of private spending in Mexico is out-of-pocket spending. A percentage of less than 5% of total health spending corresponded to insurance premium payments until 2010 when it began to grow to reach around 7% in 2020 (table IV).[38]

What is the level of financial protection of the population?

The prevalence of catastrophic and impoverishing health expenditures has been measured in Mexico since 2001. These measurements are fed by the ENIGH, conducted every two years since 1992. As shown in figure 2,[39] the percentage of households with catastrophic health expenditures in Mexico declined between 2000 and 2014, although there was a significant increase in 2006 and a slight increase in 2012. Between 2014 and 2016, there was another slight increase, and there was another important one between 2018 and 2020, prob-

Table IV
Healthcare financing, Mexico and Selected Latin American Countries, 2000-2022

	2000	*2005*	*2010*	*2015*	*2022*
Argentina					
TEH as % of GDP	8.2	7.6	9.4	10.2	10.0 (2020)
Health expenditure percapita (USD PPP)	-	-	-	1 986.6	2 169.7 (2020)
Public health expenditure as % TEH	54.7	51.4	59.0	67.0	66.5 (2020)
Private health expenditure as % TEH	45.3	48.6	41.0	33.0	33.5
Out-of-pocket expenses as % TEH	29.1	33.1	26.8	25.9	24.2 (2020)
Brazil					
TEH as % of GDP	8.3	8.0	7.9	8.9	10.1 (2020)
Health expenditure percapita (USD PPP)	-	-	-	1 360.8	1 572.7 (2020)
Public health expenditure as % TEH	41.6	41.6	45.0	43.3	44.8 (2020)
Private health expenditure as % TEH	58.4	58.4	55.0	56.7	55.2
Out-of-pocket expenses as % TEH	36.6	35.9	29.4	24.7	22.4 (2020)
Chile					
TEH as % of GDP	7.0	6.6	6.8	8.4	9.0
Health expenditure percapita (USD PPP)	589.9	810.7	1 254.3	1 833.6	2699.4
Public health expenditure as % TEH	53.3	52.9	59.0	58.7	62.2
Private health expenditure as % TEH	46.7	47.1	41.0	47.3	37.8
Out-of-pocket expenses as % TEH	42.8	42.5	34.5	34.5	29.8
Colombia					
TEH as % of GDP	5.6	6.1	7.1	7.5	8.1
Health expenditure percapita (USD PPP)	-	-	-	1 035.0	1 639.9
Public health expenditure as % TEH	76.5	74.2	74.8	76.3	76.1
Private health expenditure as % TEH	23.5	25.8	25.2	23.7	23.9
Out-of-pocket expenses as % TEH	13.7	16.4	17.0	15.4	13.7 (2021)
Costa Rica					
TEH as % of GDP	6.6	6.7	8.0	7.6	7.2
Health expenditure percapita (USD PPP)	-	-	-	1 382.6	1 658.1
Public health expenditure as % TEH	66.0	64.8	73.1	74.8	74.4
Private health expenditure as % TEH	34.0	35.2	26.9	25.2	25.6
Out-of-pocket expenses as % TEH	31.6	32.8	25.4	22.4	20.7 (2021)
Mexico					
TEH as % of GDP	4.4	5.8	5.7	5.7	5.5
Health expenditure percapita (USD PPP)	517.2	771.6	893.8	1 062.6	1 081.0
Public health expenditure as % TEH	45.2	42.2	50.2	52.2	53.0
Private health expenditure as % TEH	54.8	57.8	49.8	47.8	47.0
Out-of-pocket expenses as % TEH	52.2	54.6	43.5	41.0	41.4 (2021)

TEH: total expenditure on health
USD PPP: United States Dollar per capita
GDP: gross domestic product
Source: The Organisation for Economic Co-operation and Development. OECD Data Explorer.[37]

ably explained by the Covid-19 pandemic, which forced households to use private health services. Between 2020 and 2022, catastrophic expenditures declined slightly but remained high. Impoverishing expenditures did not undergo major changes in the 2000-2022 period. The percentage of households with this type of expenditure remained below one percent. The prevalence of excess expenditures, defined as the percentage of households with catastrophic and impoverishing expenditures, behaved very similarly to the prevalence of catastrophic expenditures in this period.

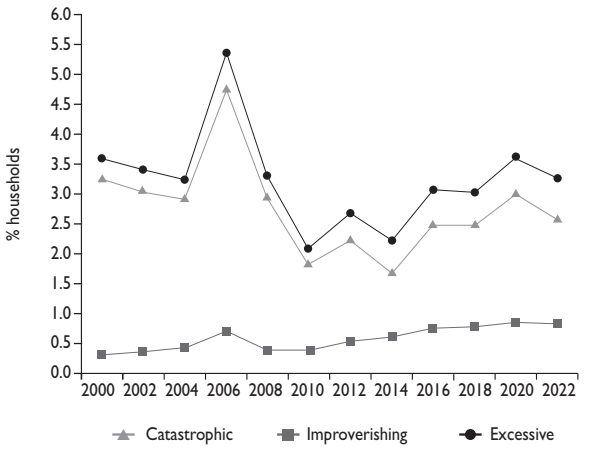
Resources and services

With what infrastructure and equipment are health services provided?

There are 34 756 healthcare units in Mexico; 29 737 are ambulatory care units, and 5 019 are hospital units of varying complexity.[38] The SS and Sesa, IMSS-Bienestar, and IMSS concentrate most of the ambulatory units in the public sector. In the private sector there are 9 511 ambulatory units. Of the total number of hospitals in the country, 3 503 are private and 1 516 are public.

The health system has 139 581 beds, 89 562 in hospitals and 50 019 in other areas.[40] This results in a ratio of beds per thousand inhabitants of 1.1, well below the average for OECD countries (4.3) and the average for the Americas (2.4).[40]

In general, the availability of high-tech equipment in the country is very poor. The ratio of computed tomography scanners, magnetic resonance imaging units, and radiotherapy units per million inhabitants in Mexico, for example, is 6.2, 2.5, and 1.9, respectively, while the average ratio for OECD countries is 29.6, 19.0, and 10.2, respectively.[40] These ratios are also lower than the average for Latin American countries, 9.4, 3.6, and 2.7, respectively.[40]



Notes: Estimates by the authors using data from the National Household Income and Expenditure Survey 2000-2022.[39]

FIGURE 2. PREVALENCE OF CATASTROPHIC AND IMPOVERISHING HEALTH EXPENDITURES, MEXICO 2000-2022

How much is spent on medicines?

In 2021, medical spending in Mexico accounted for 22.1% of total healthcare spending.[41] Most of this spending was out-of-pocket. In terms of volume, the drug market is almost equally divided between the public and private sectors. However, the private market is dominated by patent medicines, while the public sector is dominated by generic drugs, which are much cheaper than brand-name drugs. This explains the large difference in spending in these two sectors in this area.

In 2021, 13% of the public health budget (91 559 million Mexican pesos) was spect in medicines.[42] 76% of the budget was dedicated to medicines, and the rest to materials, accessories, and medical and laboratory supplies. The institution with the highest percentage of its budget dedicated to the purchase of medicines was ISSSTE (28.5%), followed by IMSS (19.1%), Pemex (15.7%), Sedena (6.7%) and SS/Sesa (5.4%).

How is the supply of human resources for health?

There are 666 thousand physicians in Mexico.[43] This gives a ratio of doctors per thousand inhabitants of 2.5, lower than the average for OECD countries, which is 3.7, and similar to the average for Latin American and Caribbean countries, which is 2.4. 40 The case of nurses is very similar. The ratio of nurses per thousand inhabitants is 2.9, well below the average for OECD countries, which is 9.2, and below the average for countries in Latin America and the Caribbean, which is 4.[40,43]

In addition, it should be emphasized that the distribution of personnel across the national territory is not homogeneous. In 2017, 18 states did not reach the average density of medical and nursing personnel per thousand inhabitants recommended by the World Health Organization (WHO). This means these entities do not have enough personnel to provide health services to their populations. There are also significant differences in the distribution of nursing personnel between rural and urban localities, with only 6.5 nurses per 100 working in rural areas.[44]

Medical doctors in Mexico have lower salaries than their counterparts in Chile and Costa Rica, both for general practitioners and specialists. On average,

in 2020, a general practitioner in Mexico earned half of what a general practitioner in Chile earned. Similarly, a hospital nurse in Mexico will earn only 2/3 of the salary of her Chilean counterpart.[40]

Who generates the information?

Information on the health sector in Mexico is concentrated in the General Directorate for Health Information of the SS. In collaboration with other public health institutions, this agency created the *Sistema de Información en Salud* (Sinais), which generates information on births, deaths, disease cases, infrastructure, services, and financial, human and material resources. The Sinais has several subsystems, including the *Sistema Nacional de Vigilancia Epigemiologica* (Sinave), the *Subsistema Automatizado de Egresos Hospitalarios* (SAEH), the *Subsistema de Información de Equipamiento, Recursos Humanos e Infraestructura para la Atención de la Salud* (Sinerhias), and the *Subsistema de Cuentas en Salud* (Sicuentas). To this we must add the subsystem of National Health and Nutrition Surveys, which began to be carried out in 1986 and are now conducted every two years, generating information on health conditions and the use of health services in the country.

Who provides and who uses the services?

The Ensanut 2022 indicates that 48.8% of the population seeks ambulatory care in the private sector, while the rest seek public care. It is worth noting that private outpatient services are increasing significantly, especially in offices adjacent to drugstores, which already offer more than 10 million consultations per month.[45]

Utilization of hospital services shows a similar pattern. The population is increasingly using private hospital services. In contrast, SS/Sesa hospital service utilization is decreasing, after it increased between 2000 and 2012 and even surpassed the utilization of IMSS hospital services.

Users of outpatient services tend to rate private clinics higher than public outpatient units (figure 3),[46] a worldwide phenomenon according to Kruk and colleagues.[47] More than 90% of users of private clinics rate the care received as good or very good. In contrast, the poor ratings received by IMSS, SS/Sesa, ISSSTE, and IMSS-Prospera (the former name of the IMSS-Bienestar program) are striking.[46]

The perception of the quality of hospital services is not very different from that of outpatient services. Users tend to rate private hospitals much higher than public hospitals. Ten percent of IMSS hospital users rate the care received as "bad" or "very bad", and 70% rate the care received in this institution as "good" or "very good". In contrast, more than 90% of private hospital users rate the care received as "good" or "very good".

The perception of the overall performance of the system is not very different. According to data from the Voice of the People Survey on Health Systems Performance, which was conducted between 2022 and 2023 in 15 countries, only 38.7% of respondents said that Mexico's health system had improved in the last two years, and only 22.9% said that the health system works relatively well and only requires minor adjustments, although 82.6% of the same respondents said they could obtain good quality care.[46]

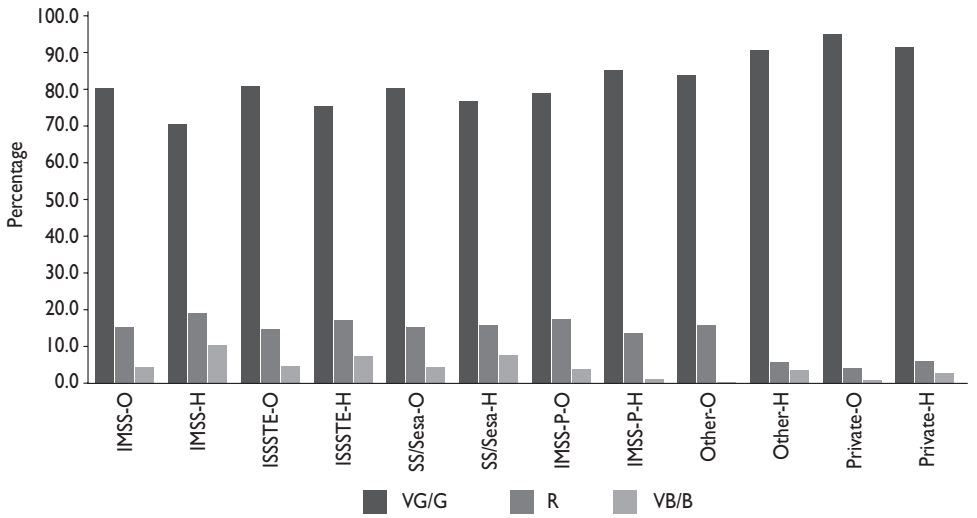
The health authorities provide public health services through the General Directorate of Health Promotion and the General Directorate of Epidemiology of the SS, PrevenIMSS and PrevenISSSTE programs, the *Comité Nacional para la Vigilancia Epidemiológica* (Conave), the *Consejo Nacional de Vacunación* (Conava), the *Centro Nacional para la Prevención y Control del VIH y el sida* (Censida), the *Comisión Nacional contra las Adicciones* (Conadic), the *Consejo Nacional para la Prevención de Accidentes* (Conapra) and the *Comisión Federal para la Protección contra Riesgos Sanitarios* (Cofepris). This section describes some of the activities carried out by the health system to promote health and prevent and control diseases in populations.

In addition to carrying out advocacy activities to increase access to drinking water, the health authorities carry out actions to monitor its bacteriological quality.

The Mexican vaccination schedule is one of the most complete in Latin America. It includes 12 immunogens that protect against poliomyelitis, diphtheria, pertussis, tetanus, hepatitis A, hepatitis B, invasive *Haemophilus influenzae* infections, tuberculous meningitis, measles, rotavirus, rubella, mumps, pneumococcus, and influenza. Recently, vaccination against human papillomavirus has also begun.

The national vaccination program has achieved complete coverage of more than 85% of children under one year of age. This has enabled polio eradication, elimination of diphtheria and neonatal tetanus, and control of whooping cough, mumps, and rubella. However, in recent years, the availability of vaccines has decreased, and vaccination coverage has fallen.[48]

Public health services also include activities for early detection of health damage, which are unfortunately largely neglected, as evidenced by the figures for cancer screening tests. The percentage of women aged 50 to 69 with mammography in 2021 was 20%, the lowest figure among OECD countries, with an average of 54%.[49] The percentage of women aged 20-69 with cervical cancer screening in 2021 was 35%, while the average figure for OECD countries is 53%.[50]



IMSS: *Instituto Mexicano del Seguro Social*; IMSS-P: IMSS-*Prospera*; ISSSTE: *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*; SS/Sesa: *Secretaría de Salud/Servicios Estatales de Salud*
O: outpatient, H: hospital, VG/G: very goog or good, R: regular, VB/B: very bad or bad
Source: Shamah-Levy T, Vielma-Orozco E, Heredia-Hernández O, Romero-Martínez M, Mojica-Cuevas J, Cuevas-Nasu L, *et al*. Encuesta Nacional de Salud y Nutrición 2018-19: resultados nacionales.[46]

Figure 3. Perception of the quality of outpatient and inpatient services by institution, Mexico 2018

Four of the main and alarming health risks facing the Mexican population are overweight, hyperglycemia, hypercholesterolemia, and high blood pressure. To combat these risks and prevent the diseases with which they are associated, the Mexican health system is promoting physical activity and the consumption of healthy diets, carrying out actions for the early detection of risks and ailments, imposing taxes on sugary drinks, and making the labeling of the nutritional content of processed foods mandatory.

To combat tobacco consumption, smoking clinics have been established, restrictions on smoking in public places were imposed, tobacco advertising in electronic media was eliminated, and taxes were imposed on tobacco consumption. This led to a decrease in the prevalence of tobacco consumption, which is one of the lowest among OECD and Latin American and Caribbean countries.

Governance

How is healthcare regulated?

Healthcare regulation activities include accreditation of health sciences schools and faculties, licensing and certification of physicians and nurses, and accreditation and certification of healthcare units. This area also includes conciliation and arbitration tasks and judicial proceedings.

Accreditation of medical schools and medical faculties

In 1970, Mexico had 25 medical schools; in 1977, there were 59; and now there are more than 165 public and private medical schools and faculties in the country.[50] There are also 723 schools of nursing; 135 offer undergraduate studies, and 588 offer upper secondary studies.[51]

The quality of teaching institutions in the health field has been guaranteed through accreditation. In medical schools, this process was formalized in the nineties by the *Asocación Mexicana de Facultades y Escuelas de Medicina* (AMFEM). A few years later, AMFEM, in collaboration with the main public health institutions, the National Academy of Medicine and the Mexican Academy of Surgery, formed the Mexican Council for the Accreditation of Medical Education, which is now in charge of accrediting medical teaching institutions. Accreditation of nursing education programs is the responsibility of the Mexican Council for Nursing Accreditation.

Licensing and certification of physicians and nurses

For decades, the certification of human resources for health has been the responsibility of institutions of higher education and the General Directorate of Professions of the Ministry of Public Education. The Law of Professions and the General Law of Health state that physicians must have a degree from a formally recognized educational institution and a license issued by the General Directorate of Professions to practice their profession.

Another mechanism for regulating medical practice is the National Medical Residency Examination (Enarm, in Spanish), which regulates the admission of general practitioners to specialization programs. It aims to select the best-prepared Mexican and foreign physicians to train as specialists. In 2022, 49 thousand aspirants applied for the Enarm, and around 18 thousand vacancies were offered.[52]

The certification of medical specialists is the responsibility of the councils of the various medical specialties, coordinated by the National Academy of Medicine and the Mexican Academy of Surgery.

Certification of nurses is not yet fully in place, but the National College of Nurses, the Mexican Federation of Associations of Faculties and Schools of Nursing, the Mexican College of Licensed Nurses, and the College of Military Nurses are designing a system for certifying these professionals.

Accreditation and certification of healthcare facilities

Voluntary hospital certification has been carried out by the *Consejo de Salubridad General* since 1999. This body, through the *Sistema Nacional de Certificación de Establecimientos de Atención Médica* (Sinaceam), determines whether hospital units have the necessary infrastructure, resources, and processes to guarantee quality care. In 2022, 287 hospitals in Mexico were certified by this council, 168 private and 119 public, and 153 were in the certification process.[53]

Recently, to generate market advantages and attract foreign users of health services, private hospitals have also begun to use the services of the Joint Commission International to become certified. In Mexico, only six hospitals have received this certification.

Protection of the user of health services

The *Comisión Nacional de Arbitraje Médico* was created in 1996 to resolve differences between service providers and patients through conciliation and arbitration. Among its functions are the orientation of dissatisfied health service users, the management of more timely care in public health facilities, specialized counseling, and conciliation between service providers and users. If the conciliation and arbitration processes do not resolve the differences between providers and users, the latter may resort to administrative, civil, and criminal courts and sue the service providers.

Who monitors the activities that impact health?

In 2001, the SS established the Cofepris. This agency is responsible for protecting the population against events that put human health or life at risk due to exposure to biological, chemical, or physical factors present in the environment or the products or services consumed, including advertising. Cofepris is responsible, among other activities, for overseeing health establishments; preventing and controlling environmental risks; promoting basic sanitation and occupational health; controlling the health risks of products and services; performing sanitary control of the process, use, maintenance, import, export and final disposal of medical equipment and supplies; regulating, from a sanitary standpoint, the advertising of activities, products and services; and controlling the disposal of organs, tissues and their components, as well as donations and transplants of human organs, tissues and cells. It must also monitor food safety and the bacteriological and physicochemical quality of water for human consumption and guarantee the quality, safety, and efficacy of medicines offered to the public.

Who evaluates?

In 2003, the General Directorate for Performance Evaluation of the SS was created, whose mission is to evaluate the performance of national and state health systems, priority programs, and curative and public health services.

Reforms and innovations

At the end of the 20th century, the Mexican health system consisted of three basic components. The first included those governmental organizations providing services to the uninsured population (SS, Sesa, IMSS-Bienestar). The second component comprised the social security institutions (IMSS, ISSSTE, Pemex, Sedena, Semar) that provided services to salaried workers and their families. The third component was the private sector, which included a wide variety of providers working in hospitals, clinics, and traditional medicine units that served the population with the capacity to pay.

In 1983, the first step towards making healthcare a citizen's right was taken by incorporating the right to the protection of health into Article 4 of the Constitution. However, for its implementation, this constitutional framework required other legal, financial, and administrative instruments without which the full right to healthcare could only be guaranteed to salaried workers and their families. These instruments were created through the 2003 reform of the General Health Law that gave rise to the *Sistema de Protección Social en Salud* (SPSS).[54] Through SPSS, Mexicans who lacked social security were gradually incorporated into the operational instance of that system, SP, which in 2018 guaranteed access to 294 essential interventions and 66 high-cost specialized interventions. SP finally placed healthcare for the uninsured population outside the scope of assistance, establishing clear rules that ensured its financial sustainability.

In 2018, SP had 55 million affiliates, adding to the 50 million insured via the social security institutions. Ninety percent of the total population in Mexico enjoyed public health insurance both contributive and noncontributive. At the time, it was only necessary to make a new effort to extend health insurance to the 20 million Mexicans who still did not have regular access to it and achieve universal coverage.

Several scientific articles indicated that SP contributed to improving the health conditions and financial protection levels of the country's poorest population. However, it was cancelled after the 2018 election. At the end of 2019, Congress approved several reforms to the General Health Law that transferred the responsibility of providing health services to the population without social security to Insabi.[55] The new institute would establish coordination agreements with the states to cede to the federation the power to organize, operate, and supervise, in a centralized manner, health services for the uninsured population.

Problems with the implementation of Insabi resulted in a drop in health coverage. Two Coneval reports indicate that the "lack of access to health services" increased from 20.1 million in 2018 to 50.4 million in 2022.[33,34] This forced the federal government to transfer the responsibility of providing services to the population without social security to a new institution. This decision was formalized in 2023 through a decree that created the decentralized public agency IMSS Health Services for Welfare or IMSS-Bienestar.[56] Like Insabi, IMSS-Bienestar would establish coordination agreements with the states to provide services centrally to the uninsured population. By the end of 2023, 23 states had signed the National Agreement for the Federalization of Health Services.[57] This means that personal health services for the population without social security will be mostly provided by this new institution, leaving the SS with the responsibility of coordinating the provision of public health services through the recently created National Public Health System and developing stewardship functions. The only component of the SS delivering personal health services to the uninsured population will be the INSalud.

Conclusions

Mexico's population is going through an aging process which is associated to an increasing prevalence of NCDs. Mortality due to cancer is low if we compare it to other countries in the region, but cardiovascular diseases and diabetes represent major challenges, and both conditions are related to a very high prevalence of overweight and obesity, the combat of which has generated poor results. Pre-transitional ailments have improved, but there are still some challenges to be met, such as maternal deaths, prevalent in vulnerable and rural population groups. The health system, in turn, has been chronically underfinanced and under-staffed, and this explains some of the persistent health challenges. The system has also provided unequal access to healthcare, which generates major problems of financial protection.

Memorial quote

We dedicate this manuscript to our colleague and friend, Sandra Sosa-Rubí, PhD, who passed away in March 2021. Sandra consistently inspired us in our analysis of equity and financial protection in health during her fruitful lifetime.

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