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RESEARCH ARTICLE

Higher inequality in health expenditures during COVID-19 pandemic in Mexico

Incremento en la desigualdad en gastos de salud durante la pandemia de COVID-19 en México

Aumento da desigualdade nas despesas de saúde durante a pandemia de COVID-19 no México

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Abstract

Introduction: The purpose of this research is to delve deeper into how the problem of inequality in access to healthcare during the COVID-19 pandemic worsened in Mexico. To address this important issue, the behavior of health expenditures of Mexican households was broken down through a descriptive statistical analysis using data from the National Survey of Household Income and Expenditure (ENIGH) for 2018, 2020, and 2022. The **methodology** includes the construction of income quintiles, types of expenditure, and the indicator of lack of access to health services. Additionally, a regional analysis was conducted. Our **results** show an overall increase in health expenditures of more than 30% between 2018 and 2022, with this phenomenon being more evident in households in the highest income quintile. Additionally, a significant deterioration in household well-being is observed, with greater vulnerability in households without access to health services, which have higher expenses compared to those with access to a health program. In regional terms, the southern part of the country showed higher health expenditures in proportion to their income, with a predominant focus on outpatient issues. These findings help identify the main problems of access and participation of households in absorbing health expenditures, suggesting the implementation of differentiated policy measures by the government aimed at improving access to health services and reducing potential catastrophic health-related expenses for households.

Keywords: Health expenditures; Economic development; Welfare; Mexican economy

Resumen

Introducción: El propósito de esta investigación es profundizar en cómo el problema de la desigualdad en el acceso a la salud durante la pandemia de COVID-19 se acrecentó en México. Para abordar este tema tan importante, se desglosó el comportamiento de los gastos en salud de los hogares mexicanos mediante un análisis estadístico descriptivo utilizando datos de la Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) de 2018, 2020 y 2022. Entre la **metodología** destaca la construcción de quintiles de ingreso, tipo de gasto y del indicador de carencia por acceso a los servicios de salud; además, se realizó un análisis regional. Nuestros **resultados** muestran un aumento general en los gastos en salud de más del 30% entre 2018 y 2022, presentándose este fenómeno de manera más clara en los hogares del quintil de ingreso más alto. Asimismo, se observa un deterioro grave en el bienestar de los hogares, al presentarse una vulnerabilidad mayor en los hogares sin acceso a los servicios de salud, los cuales tienen gastos superiores en comparación con aquellos que tienen acceso a un programa de salud. Regionalmente, la zona sur del país es la que mostró un gasto mayor en proporción a su ingreso en salud, con un enfoque predominante en cuestiones ambulatorias. Estos hallazgos permiten identificar los principales problemas de acceso y participación de los hogares en la absorción de gastos en salud, lo cual podría permitir sugerir la implementación de medidas de políticas diferenciadas orientadas a mejorar el acceso de los servicios de salud y reducir los posibles gastos catastróficos relacionados con la salud en los hogares.

Keywords: Gastos en salud; Desarrollo económico; Bienestar; Economía mexicana

Resumo

Introdução: O objetivo desta investigação é aprofundar a forma como o problema da desigualdade no acesso aos cuidados de saúde durante a pandemia de COVID-19 cresceu no México. Para abordar esta importante questão, desagregamos o comportamento das despesas de saúde das famílias mexicanas através de uma análise estatística descritiva utilizando dados do Inquérito Nacional ao Rendimento e Despesa das Famílias (ENIGH) para 2018, 2020 e 2022. A **metodologia** inclui a construção de quintis de renda, tipo de despesa e o indicador de privação de acesso aos serviços de saúde; além disso, foi realizada uma análise regional. Os nossos **resultados** mostram um aumento global das despesas de saúde de mais de 30% entre 2018 e 2022, com as famílias do quintil de rendimento mais elevado a registarem o maior aumento. Verifica-se também uma grave deterioração do bem-estar das famílias, com maior vulnerabilidade entre as famílias sem acesso a serviços de saúde, que têm despesas mais elevadas em comparação com as que têm acesso a um programa de saúde. Regionalmente, a região sul do país é a que apresenta maior despesa em proporção do rendimento com a saúde, com predominância de gastos em ambulatório. Esses achados permitem identificar os principais problemas de acesso e participação das famílias na absorção dos gastos com saúde, o que pode permitir sugerir a implementação de medidas políticas diferenciadas que visem melhorar o acesso aos serviços de saúde e reduzir possíveis gastos catastróficos relacionados à saúde no nível domiciliar.

Palavras-chave: Despesas de saúde; Desenvolvimento económico; Bem-estar; Economia mexicana

Introduction

The health pandemic caused by COVID-19 has had a significant impact on the different spheres of society, such as education, economy and health (Parramore, 2021; World Bank, 2022). The health area was one of the most affected, with more than 760 million cases and approximately 7 million deaths due to the virus (World Health Organization, 2024). In this regard, in order to mitigate the health problems following the pandemic, economic agents have developed various strategies in this regard. Governments, for their part, implemented public policies such as containment, the application of vaccines and the conversion of hospitals (United Nations, 2021). Households had to adapt to the health measures imposed by the government, but they also had to reconfigure their health expenditures to cope with the pandemic. That is, households have had to absorb the additional costs of purchasing health services in order to counteract the health problems resulting from the COVID-19 pandemic.

In the case of Mexico, the figure is alarming. According to data from the Center for Economic and Budgetary Research (CIEP) in 2022, 38% of total health spending was made by households (Saldívar, 2023). Moreover, the sudden problems of COVID-19 were aggravated by the inequality in access to health services faced by the population throughout the national territory. From the interruption of health services (disappearance of popular insurance), a substantial increase in the lack of access to health services was observed notably between 2018 and 2022 (CONEVAL, 2023).

Thus, the objective of this research is to analyze the evolution of private expenditures on health, broken down by income quintile, access to health services, type of expenditure and territorial regions. To achieve said objective, expenditure constructs and various statistical estimations were carried out with data from the National Survey of Household Income and Expenditures (ENIGH) for the years 2018, 2020 and 2022.

The contributions of our research are diverse. First, an analysis by income quintile makes it possible to identify the vulnerabilities of households with lower economic resources and to evaluate the possibility of their incurring catastrophic health expenditures (CONEVAL, 2023). As a second contribution, empirical evidence is presented on the disparities in expenditures between households with access to health services and those that do not, which will provide elements to demonstrate the failure of the interruption of universal health policies that had been previously proposed in Mexico. Finally, this research will provide indications of the regional differences that exist throughout the Mexican territory in terms of household health expenditures. Taken together, the entire analysis will provide policy makers with insights into the situation Mexican households are facing to counteract the health ravages of the COVID-19 pandemic.

The main results suggest that people with lower incomes are the most affected in terms of health. In addition, those who have a precondition of lack of public health services will be even more deteriorated with the forced increase of the purchase of health goods in their budget. On the regional side, the increase of public programs in traditionally neglected regions, such as the south of Mexico, is evident, and in the analysis of socio-demographic strata, a public policy that focuses on those who have the least is necessary.

In addition to this introduction, the article presents a brief overview of health care expenditures in the context of the

This paper presents the systemic neglect of health institutions in Mexico, documented by different sources, including at the international level. Then, the methodological design is developed and the sources of information are included. Subsequently, the results are presented and discussed, to close with the conclusions.

Brief overview of health care expenditures in the Mexican context

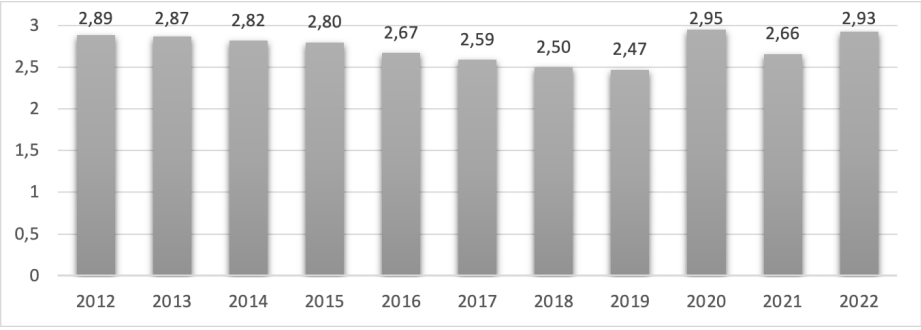
According to the theory of human capital, the health of individuals is considered one of the main axes of the growth and development of nations, because it strengthens and at the same time enhances people's skills, which allows them to improve their productivity and, thus, their levels of well-being (Ogundari and Abdulai, 2014; Ogundari and Awokuse, 2018; Hendricks and Schoellman, 2018; Nussbaum, 2011; Shultz, 1995). In that sense, investments in health, both public and private, seek to promote well-being.

In Mexico, the healthcare system is composed of a private and a public sector. The private sector is defined as that which is not found within public institutions and provides service to individuals who have the ability to pay (Gómez-Dantés et al., 2011; Martínez and Murayama, 2016). For a long time, there was an idea that the private system was not very accessible to citizens in general due to its high costs. However, some authors such as Olaiz et al. (1995), with information from the first National Health Survey (ENSA), observed that the private sector represented one-third of the supply of outpatient services in 2000, a figure that has been maintained until ENSA II. This suggests that approximately one-third of the national population consistently resorts to private medicine.

The public sector is mainly financed by the government and its main challenge is to provide affordable and reliable health services through which citizens can develop optimally (Alcántara Balderas, 2012). The way to finance this service is through public spending. According to the recommendations of the World Health Organization (WHO), public spending should be set at 6% of Gross Domestic Product (GDP). However, in the last decade, health spending in Mexico has ranged between 2.5% and 2.9% of GDP, i.e., less than half of the international recommendation. Figure 1 shows the evolution of health expenditures as a percentage of GDP, indicating that, despite the pandemic, there has not been a substantial increase in health issues.

Figure 1.

Public expenditure on health as a percentage of GDP

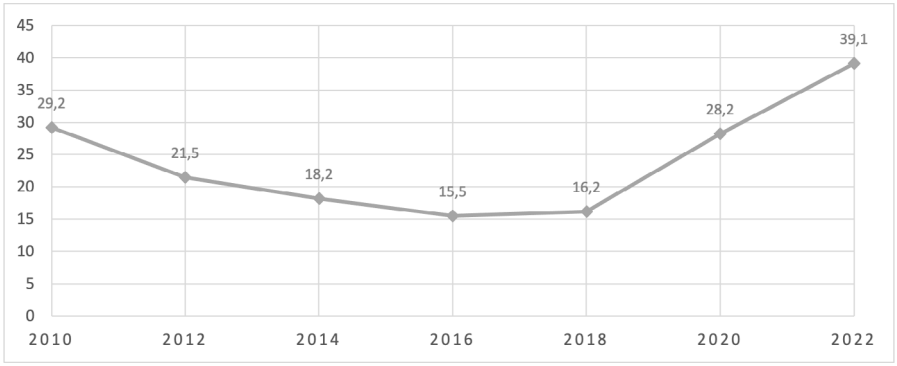


Source: Own elaboration with CIEP data.

Through public spending, the Mexican government has established various strategies for access and quality in health services through public policy (Gutiérrez et al., 2019). Until a few years ago, the strategies were mainly based on universal access policies, where they sought to establish a national health insurance, later called Seguro Popular de Salud (Laurell, 2013). Seguro Popular de Salud started in Aguascalientes, Campeche, Colima and Jalisco with a pilot phase in 2001 (Tamez González and Eibenschutz, 2008). The target population was low-income families who were not entitled to social security, in order to avoid out-of-pocket spending by families on health. Based on these strategies, there had been important advances in the reduction of catastrophic out-of-pocket expenditures for health issues (Hernández-Torres et al., 2008) and in increases in the coverage of health services in the Mexican population (Gómez-Dantés and Frenk, 2019). In such a way that with the penetration of Seguro Popular de Salud by 2016 there were already 18.8 million affiliates (Guzmán Flores, 2018). CONEVAL estimates, up to 2018, showed that in the Mexican population the lack of access to health services decreased 22.2% between 2010 and 2018 (CONEVAL, 2019). However, by 2020, with the interruption of health services with the disappearance of Seguro Popular de Salud (Antúnez, 2023), there was a substantial increase in the deprivation due to access to health services, as can be seen in Figure 2.

Figure 2.

Percentage of population with access to health care services in Mexico (2010-2022)



Source: Own elaboration with data from CONEVAL 2011, 2013, 2015, 2017, 2019, 2019, 2021 and 2023.

The increase in the lack of access to health services came at the worst time for households in Mexico, since they were also hit by the COVID-19 pandemic. Thus, in the face of public policy problems in access to health care, households had to bear the consequences. In other words, households had to allocate a considerable part of their income to attend to health issues (Díaz-González and Ramírez-García, 2017). This part of the income that households allocate to health issues is referred to as out-of-pocket health expenditure (Lu et al., 2009). With own estimates, an increase in the variation of these expenditures of approximately 33% between 2018 and 2022 is estimated (Instituto Nacional de Estadística y Geografía [Inegi], 2018, 2020, 2022a, 2022b).

When out-of-pocket spending on health reaches a critical point, more than 20% of total spending, the household is considered to incur catastrophic health expenditures (Dorjdagva et al., 2016; Pandey et al., 2018; Piroozi et al., 2016; Xu et al., 2003). The COVID-19 pandemic wreaked havoc on households by prompting many to make catastrophic out-of-pocket health expenditures (Garg et al., 2022; Hafidz et al., 2023; Rajalakshmi et al., 2023).

It is detrimental for households to incur catastrophic health expenditures for several reasons. First, catastrophic health expenditures can push households into poverty by having to spend a large part of their income on medical care and neglecting other necessary household expenditures (Vanegas, 2020). Secondly, by not paying the high medical costs, households may worsen their health condition leading to more serious and costly illnesses in the future, in addition to decreasing their labor productivity (Ribero, 2000). Finally, it affects inequality, given that catastrophic expenses tend to affect low-income households more; lower-income families are the most vulnerable to this problem (Sáenz Vela and Guzmán Giraldo, 2021). Thus, the analysis of the factors associated with out-of-pocket health expenditures should be a key element in public policies to generate growth and development in the territories, in addition to protecting the right of households to access to health care.

Sources of information and methodological design

The data used in this study come from the ENIGH for the years 2018, 2020 and 2022. This survey provides detailed information on the origin and distribution of household income and expenditures in Mexico. Given its construction, probabilistic, two-stage, stratified, by conglomerates, as well as the size of the sample, it is considered that it allows for representative analyses at the national, state and rural and urban levels (Inegi, 2024). In addition, it facilitates the disaggregated analysis of health expenditures in its main categories (Inegi, 2024). The ENIGH is made up of 16 tables, which contain information on dwellings, households, population, household-level expenditures, individual-level expenditures, jobs, income, among others (to process the information from the different tables of the survey, it is necessary to combine them by means of key folios). The Stata 17 statistical package was used to process the database.

Construction of variables

In order to analyze the behavior of health expenditures, it is essential to define the construction of the variables used for this purpose. Table 1 details the description and construction of all the variables used. The first step in this process was to create a variable that would identify the criteria for determining household health expenditures. We start from the premise that the fraction of income that households spend on these issues is called out-of-pocket health expenditures, and can seriously affect household finances when they increase substantially (Knaul et al., 2006). These expenditures can be broken down into three main categories (the cons- truction of health variables was made based on what was proposed by the Ministry of Health [2018] and Inegi [2018]: (a) expenditures on primary or outpatient care, which include services that do not require hospitalization, such as outpatient consultations and prescription drugs; (b) expenditures on hospitalization, de- fined as the costs associated with the hospitalization of individuals with prior authorization from the treating physician; and (c) expenditures on non-prescription or over-the-counter drugs, which also include orthopedic and therapeutic devices, healing material and alternative medicine. For the construction of the variable corresponding to health expenditures, the sub-base of expenditures was used and the expenditure keys recommended by Inegi were considered (Table 1). The sum of these three categories, as shown in equation 1, represents the total health expenditures made by the household (Inegi, 2024).

$$Gasto\ en\ salud = \sum_{i=1}^{n} (gastos_{ambu} + gastos_{hospital} + gastos_{medicinas}) \ldots\ldots (1)$$

In addition, to analyze spending in the face of unequal access, the lack of access to health services was used for each household in the sample. According to the CONEVAL (2019), a person lacking access to health services is a person who does not have affiliation to any medical service (federal or state Popular Health Insurance, Mexican Social Security Institute [IMSS], Institute of Security and Social Services for State Workers [ISSSTE], Petróleos Mexicanos [Pemex], Army, Navy or private services). Enrollment in these services can be by salary benefit, affiliation of a family member with direct kinship or by voluntary affiliation (CONEVAL, 2019). For the calculation of the lack of access to health services, the methodology proposed by CONEVAL was used, where a dichotomous variable identifies whether or not the person has access to the service in all the years analyzed (for the construction of this lack, the ENIGH sub-bases of jobs, population, expenses and household concentration were used (CONEVAL, 2019). These results may vary marginally from the official ones, since the ENIGH is used, and the measurements are in households and not in individuals.

For the calculation of income quintiles, we used the current income variable (constructed with the sub-base income and concentrated household), which is estimated considering income from work, income from rents, income from transfers, estimated rent and other income (including public transfers, for example, government transfers and private transfers from other households such as the receipt of remittances). Quintiles are constructed by dividing a data set into five equal parts, so that each quintile has 20% of the households according to their income levels, with quintile 1 having the lowest income and quintile 5 the highest income.

The regions of territorial analysis are based on the five regions of social mobility in Mexico proposed by the Centro de Estudios Espinosa Yglesias (Delajara and Graña, 2017). This regionalization allows for a more detailed and specific analysis of the differentiated problems in the territories. For example, previous work such as that of Huffman and van Gameren (2019) evidences deficiencies generated by the medical infrastructure in the southern region. In contrast, in the central region there is a growing proliferation in access to medicines due to the concentration of pharmaceutical clusters in this region. The state of Mexico and Mexico City alone account for 56% of the pharmaceutical industry's gross production (Inegi, 2022). For its part, in the north of the country there is a problem of medical tourism, where, having borders with the United States, international migrants seek treatment at lower costs in Mexico, which increases the prices of medical care in this region (Adame Gómez et al., 2018). Thus, a regional analysis allows us to observe the particularities of health care expenditures that can be diluted by performing only a national analysis.

Table 1.

Description and construction of variables used in the analysis

Variables	Definition
Total health care expenditures	Sum of outpatient care expenses, hospitalization expenses and over-the-counter drug expenses.
Outpatient care expenses	Expenses for services that do not require hospitalization with overnight stay. Sum of expense keys J016 to J043|1 .
Inpatient Hospital Expenses	Expenses for services that do not require hospitalization with overnight stay. Sum of expense keys J001 to J015 and J070 to J072|2 .
Over-the-counter drug expenses	Over-the-counter drug expenditures. Sum of expense keys J044 to J069|3 .
Lack of access to health services	Someone in the household lacks access to health services.
Current income	Sum of earned income, income from rents, transfers, estimated rent and other income.
Income quintile	
Northern Region	Comprised of the states of Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon and Tamaulipas.
	Northwestern regionConsists of the states of Baja California Sur, Sinaloa, Nayarit, Durango and Zacatecas.
North-central region	The region is made up of the states of Jalisco, Aguascalientes, Colima, Michoacán and
San Luis Potosí	Central RegionConstructed with the states of Guanajuato, Querétaro, Hidalgo, Mexico City,
CDMX, Morelos,	
	Tlaxcala and Puebla
Southern Region	The states of Campeche, Chiapas, Guerrero, Guerrero, Oaxaca, Quintana Roo, Tabasco, Veracruz and Yucatán.

Source: Own elaboration with data from ENIGH 2016, 2018 and 2020.

Editor's note: Figures are expressed in Mexican pesos and represent quarterly monetary current spending for each year. Division of the population into five parts according to their income level, where 1 is the lowest and 5 is the highest.

|1: Variables refer to the following: Total: total expenditure on health care; Ambulatory: expenditure on primary or ambulatory care; Inpatient: expenditure on hospitalization; Medicines: expenditure on over-the-counter medicine.

|2: Health expenditures as a proportion of income is calculated considering current monetary income (health expenditures/current monetary income).

| 3: Health expenditure as a proportion of expenditure is calculated considering current monetary expenditure (health expenditure/current monetary expenditure).

Results

We present the results obtained using data from the ENIGH 2018, 2020 and 2022, and the various statistical procedures discussed in the previous section. First, we present the evolution of expenditures by expenditure category at the national level. In the second subsection, we analyze health expenditures by condition of access to health services, i.e., considering whether or not the household has a lack of access to health services. Subsequently, the results are broken down by region of analysis and, finally, the information is presented by household income quintile.

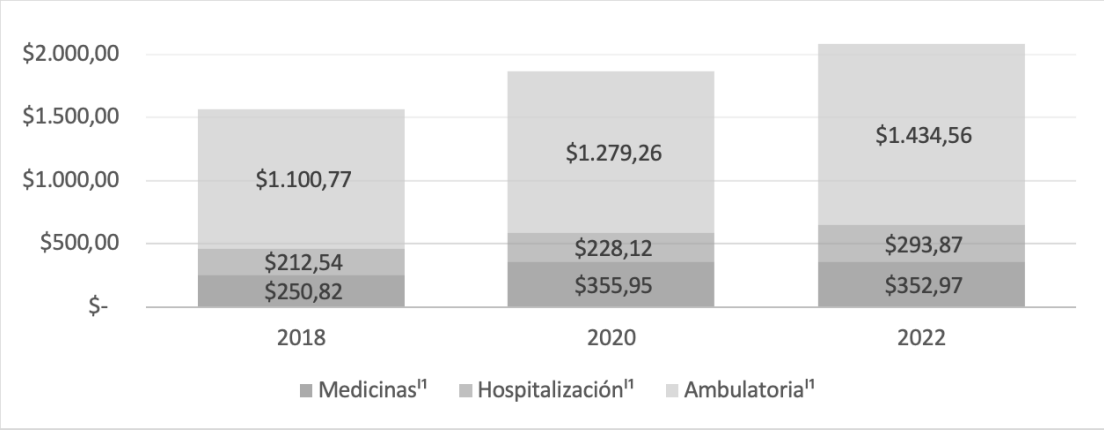
Evolution of private health care expenditures

Private health expenditures have shown an upward trend considering Mexico's contextual particularities in recent years. The mixed health system, with mainly public participation, sought to achieve universal coverage of access to health services through the public policy of Seguro Popular de Salud (Alcántara Balderas, 2012; Martínez and Muraya- ma, 2016). Its objective was to allow those people who could not access the health system to

through public institutes, which condition citizens' enrollment, and those who could not afford access to private services would have the opportunity to be attended in an institution. Initially, the results of this public policy were very encouraging, especially in terms of access indicators, although there were drawbacks in terms of quality and inequality. However, in 2019, with the arrival of President Andrés Manuel López Obrador, the disappearance of the Seguro Popular de Salud was announced to make way for the Instituto de Salud para el Bienestar (INSABI). Unfortunately, in the midst of the transition from Seguro Popular de Salud to INSABI, the COVID-19 pandemic occurred, which increased the problems and made the lack of access to public health services more expensive for individuals. These inconveniences wreaked havoc on individuals, who had to cope with the lack of access and the impacts of the pandemic through their income. According to own estimates, private health spending increased by approximately 33% between 2018 and 2022, with outpatient care expenditures accounting for the largest proportion of health spending. In Figure 3, the health expenditures of Mexican households for the years 2018, 2020 and 2022 are presented. An upward trend in total spending can be observed due to changes in the health care system and the COVID-19 pandemic. The largest proportion of spending is on outpatient care, which is the first line of health defense and also the cheapest. Expenditures on hospitalization are lower because only about 8% to 11% of households incur such expenditures (Rodriguez-Aguilar, 2022). Despite the fact that outpatient care is the main type of expenditure, expenditure on over-the-counter drugs is the one that shows the highest rate of variation, with a 40% increase in expenditure during the period analyzed, which could be associated with the increase in the culture of self-medication.

Figure 3.

Health expenditures of Mexican households (2018, 2020, and 2022).



Source: Own elaboration with data from ENIGH 2018, 2020 and 2022.

|1 Figures are expressed in Mexican pesos and represent the current quarterly monetary expenditure for each year.

Note: Variables refer to the following: Total: total health care spending; Ambulatory: primary or ambulatory care spending; Inpatient: inpatient spending; Medicines: drug spending.

Health expenditures by condition of access to health services

In addition to the increase in private health care spending by Mexicans, it is considered to be per capita health care expenditure.

In addition, it is important to analyze whether there is a difference in access by vulnerability condition. Previously, it was established that one of the determining factors in the increase in private household health expenditures, in addition to the COVID-19 pandemic, was the interruption of health services by the government when it cancelled the Seguro Popular de Salud. In order to clarify the above, Table 2 shows the private health expenditures made by households that lack access to health services and those that do not. It is possible to observe higher spending in households without health services. Between 2018 and 2022, health spending by households without access to services increased by 41.4%, i.e., ten percentage points more than the growth in national private spending, while those households with access decreased the money allocated to health issues.

In addition, there is an increase in health spending both as a share of total household income and total household spending in the year of the COVID-19 pandemic. This is more profound in households without access to health services, since, in 2020, health spending came to represent 7.5% of total current monetary expenditure. In households with access, it only represented 5.2%. It is also necessary to emphasize that the increase observed in 2020 has decreased in 2022.

The vulnerability of households unprotected by the health system is palpable, which could lead them to incur catastrophic health expenditures. The implication of the interruption of health services is generating human, economic and social costs that are not only observed in the short term, but could have long-term consequences on important development indicators. This is how the right to health was and continues to be a social debt of the Mexican State, since access to health is not guaranteed, but rather there is a fragmented system, which is subject to the labor market and the individuals' ability to pay (Frenk et al., 2009). Therefore, it is a fundamental challenge for the government to ensure that it provides a health system that can absorb its citizens.

Table 2.

Health expenditures of Mexican households with and without access to health services (2018, 2020 and 2022).

	Total			No access to health services			With access to health services		
Variable	**2018**	**2020**	**2022**	**2018**	**2020**	**2022**	**2018**	**2020**	**2022**
Total[1]	1564,1	1863,3	2081,4	1590,4	1934,1	2249,7	1416,9	1656,5	1191,7
Ambulatory[1]	1100,8	1279,3	1434,6	1121,0	1299,3	1511,8	987,8	1220,7	866,0
Hospitalization[1]	212,5	228,1	293,9	215,6	256,9	333,3	195,7	143,9	150,3
Medicines[1]	250,8	356,0	353,0	253,9	377,9	404,7	233,4	291,9	175,4
Health expenses such as proportion of income	3,1	3,7	3,3	3,6	4,9	4,9	2,8	3,1	1,6
Health expenses such as proportion of expenditure	4,9	6,2	5,2	5,3	7,5	7,1	4,4	5,2	2,7

Source: Own elaboration with data from ENIGH 2016, 2018 and 2020.

[1] Figures are expressed in Mexican pesos and represent current quarterly monetary spending for each year.

Note 1: Variables refer to the following: Total: total health care expenditure; Ambulatory: expenditure on primary or ambulatory care; Inpatient: expenditure on hospitalization; Medicines: expenditure on over-the-counter medicine.

Note 2: Health expenditures as a proportion of income is calculated considering current monetary income (health expenditures/current monetary income).

Note 3: Health expenditure as a proportion of expenditure is calculated considering current monetary expenditure (health expenditure/current monetary expenditure).

Private health care expenditures by region of residence

Inequalities in health expenditures are not only palpable in the groups with access to services, but are also present throughout the national territory. Table 3 shows a breakdown of health expenditures by region and expenditure category. The regional results are in line with the national data, with an increase in private health expenditures in the period analyzed. However, it can be observed that the growth has not been the same throughout Mexico. The north-central region is the one with the highest health expenditure, surpassing the region with the lowest expenditure by more than one thousand pesos per quarter. In addition, that region also presents the highest variation between 2018 and 2022 with a growth of 45.9% in the period.

On the other hand, the southern and northern regions present approximately the same variation between 2018 and 2022, although their regional particularities are different. While in the northern region the amount is higher than in the south, the proportion that this expenditure represents of household income is lower. In other words, household income in the south of the country is lower than in the north, which means that health spending represents 3% of total household income in that region. In addition to the income problems of the southern region, this region is the one with the highest number of households lacking access to health services, reaching almost 50% of the total. In the northern region, only 20% lack access, which could indicate a preference for private care in the northern region and a lack of public sector care in the south of the country.

Table 3.

Mexican household health expenditures by region (2018, 2020 and 2022).

	Northern region			
Variable	**2018**	**2020**	**2022**	**Variation (%)**
Total[I1]	1842,5	2092,6	2357,4	27,9
Ambulatory[I1]	1168,0	1295,3	1438,9	23,2
Hospitalization[I1]	422,2	477,2	547,3	29,6
Medicines[I1]	252,3	320,1	371,3	47,1
North-west region				
	2018	**2020**	**2022**	
Total[I1]	1545,4	2237,7	2149,3	39,1
Ambulatory[I1]	1171,4	1639,2	1533,0	30,9
Hospitalization[I1]	155,7	202,3	257,6	65,4
Medicines[I1]	218,3	396,2	358,8	64,3
North-central region				
	2018	**2020**	**2022**	
Total[I1]	1943,6	2213,2	2836,3	45,9
Ambulatory[I1]	1267,7	1577,3	2082,0	64,2
Hospitalization[I1]	322,4	284,2	366,2	13,6
Medicines[I1]	353,6	351,7	388,1	9,8
Central region				
	2018	**2020**	**2022**	
Total[I1]	1456,5	1742,2	1949,0	33,8

	Northern region			
Variable	**2018**	**2020**	**2022**	**Variation (%)**
Ambulatory[11]	1063,5	1190,9	1302,7	22,5
Hospitalization[11]	135,7	168,8	272,3	100,6
Medicines[11]	257.3	382,5	374,1	45,4
Southern region				
	2018	2020	2022	
Total[11]	1301,4	1590,8	1666,0	28,0
Ambulatory[11]	983,9	1125,9	1242,1	26,2
Hospitalization[11]	135,2	136,6	135,7	0,3
Medicines[11]	182,3	328,3	288,2	58,1

Source: Own elaboration with data from ENIGH 2018, 2020 and 2022.
[11] Figures are expressed in Mexican pesos and represent current quarterly monetary spending for each year.
Note: The variables in the table refer to the following: Total: total health care spending; Ambulatory: spending on primary or ambulatory care; Inpatient: spending on hospitalization; Medications: spending on over-the-counter medication.

Private health expenditures by income quintile

The reality of inequity in Mexico is evident. As seen in Table 4, due to COVID-19 pandemic issues, all strata spent more on health goods from 2018 to 2020. The average was 37.91% more than in the base period, but there were differences. The poorest sector had to spend more on medicine (59.28%), and the most affluent sector spent more on hospitalization (59.24%). The sad note is that, although it is true that the proportions of the increase in spending are not very different, the amount is substantially different. The average poor people had 700 pesos for their health spending in 2018, while the highest quintile had almost seven times that amount to meet their needs in this same item in 2022. The quality of health services due to these budgetary differences is abysmal. As a curious fact, for further analysis, it is observed how the middle class had an unusual strategic expenditure, which was the very marked increase in spending on medicines (75.79%), while hospital spending even decreased by 7%, as if to imply that it was not possible to "get sick" during the time of the pandemic, but that it was necessary to move forward in the face of the very difficult conditions at that time.

Table 4.
Mexican household health expenditures by income quintile (2018, 2020 and 2022).

	Total[11]			**Ambulatory[11]**			**Hospitalization[11]**			**Medicines[11]**		
Income quintile	2018	2020	2022	2018	2020	2022	2018	2020	2022	2018	2020	2022
Quintile 1	698,2	875,8	997,4	535,2	639,0	747,7	51,5	52,3	72,2	111,5	184,5	177,6
Quintile 2	909,6	1185,7	1212,5	673,2	826,6	874,4	88,6	120,4	123,3	147,8	238,7	214,8
Quintile 3	1142,8	1507,7	1551,3	834,7	1083,1	1122,8	137,1	140,2	127,9	171,0	284,4	300,6
Quintile 4	1590,5	2015,9	2254,5	1165,2	1457,3	1600,8	172,9	190,5	244,3	252,4	368,2	409,4
Quintile 5	3462,8	3864,2	4706,4	2290,0	2482,3	3028,9	605,2	656,0	963,7	567,6	725,9	713,8

Source: Own elaboration with data from ENIGH 2018, 2020 and 2022.
[11] Figures are expressed in Mexican pesos and represent current quarterly monetary spending for each year.
Note: Variables refer to the following: Total: total health care spending; Ambulatory: spending on primary or ambulatory care; Inpatient: spending on hospitalization; Medicines: spending on over-the-counter medicine.

Discussion

The havoc that the COVID-19 pandemic has left on the world has been alarming. In matters of health spending, much of the literature has focused on delving into how households have responded to health problems through spending patterns. For example, in the case of India, one of the countries most affected by the pandemic, Garg et al. (2022) found through a survey that households with people sickened by COVID-19 had to considerably increase their hospitalization expenses, which generated catastrophic health expenditures. In Greece, Zavras and Chletsos (2023), using a household budget survey and logistic regressions, found similar results. In Peru, Quispe Mamani et al. (2023), using household surveys, find an increase in out-of-pocket expenditures in Peruvian households, mainly associated with the lack of public services. Our work presents evidence that agrees with that observed in previous research conducted in different latitudes by observing a substantial increase in out-of-pocket health expenditures in Mexican households during the COVID-19 pandemic, an increase that has been maintained in subsequent years.

As shown in Table 2, households lacking access to health services have higher health expenditures. These results are in line with the literature, which states that catastrophic expenditures are more frequent in households without insurance due to vulnerability, since, not having access to free services, all expenditures must be met privately (Sesma-Vázquez et al., 2005).

In addition, there are regional differences in the health expenditures made by households. The northwestern region is where the highest expenditures are observed. According to Adame Gómez et al. (2018), medical tourism is likely to occur in the north of the country. The arrival of patients with greater ability to pay may contribute to an overall inflation in medical costs in the region. This may result in higher prices for consultations, medications, and treatments, and affect locals who may have fewer financial resources.

Although southern Mexico has the lowest household health expenditures, it is necessary to consider several issues. First, the limited access to health services (Huffman and van Gameren, 2019), lack of adequate infrastructure means that individuals have nowhere to go and have to travel long distances to receive medical care. Second, even though expenditures are lower compared to other regions, they represent a large proportion of total household income. Finally, the problems of access to health are latent in the southern region where the lack of access to health services reaches 66% of people in a situation of lack of access to health services (CONEVAL, 2023).

With respect to income quintiles, it is observed that the households that spend the most on health care are those in the highest quintiles, which could be due to several reasons. In the first place, because of the preference for private care, especially for hospitalization. According to the ENSANUT 2020, the households that spent the most on hospitalization were those belonging to the highest income quintile (Instituto Nacional de Salud Pública [INSP], 2021).

Conclusions

Health expenditures play a determining role in the development and economic growth of territories, so their analysis favors the development of public policies in favor of providing quality access for people. In this research, we show statistical information that helps to understand the behavior of health expenditures made by households before, during and at a time close to the end of the COVID-19 pandemic.

Using data from ENIGH 2018, 2020 and 2022, as well as employing regional statistical analysis, by income quintiles and inequality of access, the statistical results suggest that Mexican households have increased their spending on health services, to the detriment, of course, of the other capabilities of household welfare. The increase in health expenditures was higher from 2018 to 2020 and with a slight drop in 2022.

Households with more precarious access to health services also showed an increased burden on the family health budget. On a regional level, in the south of Mexico, the data suggest that people are failing to attend to their health problems due to lack of budget. It is true that in the north of the country there is greater spending on health goods, but, proportionally, due to the higher average income, the burden could be less. In terms of income distribution, it was possible to observe higher spending in households in the highest income quintile. This is associated with the payment capacity of these families and their preference for private health care. In the analysis by socioeconomic stratum, what the data analysis shows is a systemic lack of opportunities in the health sector in our country that requires a profound reconsideration.

In general, there is a detriment to households' capacity to access health care, and this calls for a change in public policy. Public policy should consider differentiated targeting by region, ensuring access to health through universal policies and providing support to the most vulnerable groups.

As lines of future research, a broader intertemporal analysis of spending on health goods is needed, a contextualization of the phenomenon of what happened in Mexico with other countries, to show what lessons can be learned from what has been done internationally, and an institutional analysis that not only exposes the unfortunate reality of millions of people, but also holds accountable both the makers of the failed public policy and the executives of the laws that should be focused on those who have the least.

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