TECHNICAL NOTE N° IDB-TN-02784

How Countries Allocate Their Health Resources? The Case of Colombia

Catalina Gutiérrez
Santiago Palacio
Ursula Giedion
Marcella Distrutti

Inter-American Development Bank
Social Protection and Health Division

September 2023

How Countries Allocate Their Health Resources? The Case of Colombia

Catalina Gutiérrez
Santiago Palacio
Ursula Giedion
Marcella Distrutti

Inter-American Development Bank
Social Protection and Health Division

September 2023

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library
How countries allocate their health resources?: the case of Colombia / Catalina Gutiérrez, Santiago Palacio, Ursula Giedion, Marcella Distrutti.
p. cm. — (IDB Technical Note ; 2784)
Includes bibliographical references.
1. Medical policy-Colombia. 2. Medical care, Cost of-Colombia. 3. Medical economics-Colombia. 4. Drugs-Prices-Colombia. I. Gutiérrez, Catalina. II. Palacio, Santigo. III. Giedion, Ursula. IV. Distrutti, Marcella. V. Inter-American Development Bank. Social Protection and Health Division. VI. Series.
IDB-TN-2784

http://www.iadb.org

HOW COUNTRIES ALLOCATE THEIR HEALTH RESOURCES?

The Case of Colombia

Catalina Gutiérrez • Santiago Palacio
Ursula Giedion • Marcella Distrutti

IDB

INTRODUCTION

» **Health expenditures are increasing worldwide due to epidemiologic and demographic changes, the emergence of costlier new health technologies and the increased demand for services driven by higher incomes and aging populations.** During the last two decades, health spending in Latin America and the Caribbean grew from 6.6 to 7.9 percent of GDP. By 2030, health spending is expected to increase by an additional 2 percentage points. This estimate does not account for the new post-pandemic challenges, such as the investment required to prepare for similar future events [1].

» For this spending growth to result in health benefits, it must be sustainable, meet population needs and not displace other vital investments. While it is unrealistic and undesirable to halt spending growth altogether, governments can shape spending and enhance efficiency to maximize health benefits. Evidence shows that at least 20 percent of health spending does not significantly contribute to improving health outcomes; therefore, governments could spend significantly less while still improving population health [2]. A previous IADB study suggests that countries in Latin America and the Caribbean could increase life expectancy by just over four years with more efficient allocation of their spending [3].

» However, when countries seek to increase spending efficiency, they often lack the necessary information needed to identify where to act. Designing better policies requires information to understand what are governments spending on, and how different regions or providers within the country are using their resources. Significant differences in certain indicators can suggest inefficient health spending as well as help identify best practices in specific countries or regions.

» **This article is part of a series analyzing possible policies to improve spending efficiency in Latin America and the Caribbean.** Here, we explore the recent composition of public health spending (PHS) in Colombia. The goal is to identify the items that account for the highest percentages of total spending, as well as possible inefficiencies in resource allocation by comparing Colombia's spending structure and performance with those of other countries. We aim to offer policy recommendations and provide a preliminary control panel of indicators that other countries in the region could use to analyze their own health spending.

» **The article has seven sections.** The first section highlights the most important findings in an executive summary. The second section briefly describes the Colombian health system, while the third presents the Colombian information sources used. The fourth section compares global spending trends in Colombia with those of other countries. Section five delves into the spending structure by the level of care in which it is provided, the type of service provided and the health conditions treated. Section six examines drug expenditure in detail. The seventh section summarizes findings and presents five action areas to increase the efficiency of health resource allocation in Colombia.

1. EXECUTIVE SUMMARY

This article analyzes Colombia's health spending from 2016 through 2020 to identify areas where spending efficiency could be improved. The results show the following:

- **There is room to improve spending efficiency.** Colombia's public expenditure as a share of GDP is similar to the average of the 42 countries used for comparison in this study. However, public spending as a share of total health spending is higher than average. Indicators measuring the efficiency of aggregate spending —how much health is gained for every dollar invested— show that Colombia is close to, but below, the average efficiency of OECD countries. If Colombia were as efficient as the most efficient countries, it could increase life expectancy by four years.

- **Unnecessary and preventable spending is evident in high-complexity environments.** Disaggregating spending by level of care, type of service, health conditions and drugs reveals where health spending efficiency could be improved. There is an excessive use of expensive services, particularly emergency care. While Colombia does not appear to have a higher rate of preventable hospitalizations than other countries in Latin America and the Caribbean, these preventable hospitalizations still account for 1.6 trillion pesos in spending —equal to 3 percent of public health spending and 17 percent of total hospitalization spending.

- **The country needs to move toward more efficient management of some chronic diseases.** Some health conditions which are preventable or which can be adequately treated through efficient primary care, including cardiovascular disease, chronic renal disease, chronic obstructive disease, diabetes and certain cancers account for a significant share of spending. For example, cardiovascular disease accounts for 30 percent of spending on preventable hospitalizations and 50 percent of spending on conditions with modifiable risks. Additionally, 20 percent of total spending is related to caring for conditions that can be prevented by addressing four risk factors: tobacco use, harmful use of alcohol, physical inactivity and unhealthy nutrition.

- **Colombia should move toward a more efficient primary health care model and more effective models for chronic disease management.** Improving the quality and effectiveness of primary health care, as well as extending its hours of operation on non-working days and weekends, would reduce the overuse of emergency care and of hospitalizations for conditions amenable to primary health care. Identifying the most cost-effective technologies and care models, with a broad risk management approach, for the five highest-cost diseases could lead to savings and improved population health.

- **The country faces significant challenges to control the growth of drug spending and to improve its efficiency.** Drug spending in Colombia accounts for 19 percent of total health spending —4 to 7 percentage points above the average of reference countries. Spending on biological drugs, currently accounting for 21 to 35 percent of drug spending, will continue to grow due to medical innovations and the increase of non-communicable diseases. Colombia's drug coverage system is particularly challenging when trying to rationalize spending, as patients are entitled to any drug prescribed by an attending physician or a court, regardless of cost or benefit. Colombia will need to adopt and strengthen policies and strategies to increase drug spending efficiency, such as price regulation, centralized procurement, pooled

procurement, price setting linked to therapeutic value, competitive tenders for monopolistic markets and shared risk agreements with pharmaceutical companies, among others. Additionally, the country should continue to deepen health technology assessment for coverage decisions and price setting.

» **The evaluation and monitoring of spending efficiency should be institutionalized.** A necessary condition for designing policies to address inefficient spending is having trustworthy and usable information. Colombia should establish a control panel of indicators to monitor waste and use this information to address inefficiencies. Although Colombia has data to identify potential inefficiencies, it lacks an institutionalized strategy to monitor waste and act upon it. The country should move in this direction.

JEL codes: H10, H11, H21, H30, H51, H61, I1

Keywords: Health expenditure, Public health expenditure, Medications, Prices, Priority setting, Pharmaceutical policies, Pharmaceutical products, Procurement, Procurement policies, Efficiency, Expenditure, Prioritization, Resources, Health, Generic medications, Healthy living, Cost-effectiveness.

2. KEY ASPECTS OF THE ORGANIZATION OF THE COLOMBIAN HEALTH SYSTEM

To facilitate understanding of the rest of this article, this section briefly describes the Colombian health system and the different sources of data.

Colombia's a health insurance system is made up of two regimes: the contributive regime and the subsidized regime for those unable to contribute. Both regimes are financed by citizen contributions and additional budget resources. Currently, 95 percent of the population is insured by one of these regimes. Special regimes cover teachers, the armed forces and the police, amounting to 4 percent of the population. The remaining 1 percent of the population is uninsured. EAPB, (or *empresas administradoras del plan de beneficio* in Spanish) operate as insurers and pay for health an insurance premium per enrollee. This premium is known as the *Unidad de Pago por Capitación* (UPC, or Capitation Payment Unit). The UPC amount depends on the member's age, gender and place of residence. With the resources from the UPC, EAPBs must guarantee an explicit benefit plan (*Plan de Beneficios en Salud*, PBS). The PBS covers most of the technologies available in the country, including drugs, supplies, professional services, diagnostic and care services, and individual prevention and promotion services.

Colombian citizens can also access benefits not covered by the explicit benefits plan through a mechanism which requires a special request by the attending physician or a court order. These benefits are financed by a resource fund called "Maximum Budgets" (*Presupuestos Máximos*), which is an amount assigned to the EAPBs to pay for these benefits. The bulk of these benefits are high-cost drugs, but they may also cover supplies such as special lenses and support services (caregivers, diapers, transport, lodging and nutritional supplements, among others).

Colombian law allows certain services to be excluded based on specific criteria: services with cosmetic purposes, services lacking scientific evidence of effectiveness or safety, experimental services and services not authorized by the health agency or provided overseas. However, the courts have granted exceptions even for experimental treatments, those provided overseas, cosmetic procedures and services not approved by a competent authority. In practice, this means that Colombians can access all services and technologies if prescribed by an attending physician or ordered by a judge.

Health services are provided by health professionals, diagnostic and laboratory centers, hospitals, clinics and health centers which can be either public or private. The EAPBs establish service networks and negotiate the price of services with the providers in their networks.

The EAPBs, together with provider networks, financing sources and regulatory framework, make up the *Sistema de Seguridad Social en Salud* (SGSSS, Health Social Security System). The SGSSS does not include special regimes, private insurance or out-of-pocket spending.

Subnational authorities (departments and municipalities) are responsible for collective promotion and prevention actions, such as health education campaigns, and for other environmental actions. These health actions are financed partly through a system of transfers from the central government to subnational authorities and partly through the latter's own resources.

The health ministry acts as the system's regulator and provides technical assistance to departments and municipalities. Additionally, it is directly responsible, in coordination with local authorities, for providing and financing certain preventive health services, such as the national vaccination system and control of vector-borne diseases.

3. MEASURING PUBLIC HEALTH SPENDING: DATA SOURCES

Estimating public health spending (PHS) in Colombia is challenging given that spending responsibilities are distributed among multiple institutions, with no central repository collecting or recording all expenditures.

Although there have been past attempts to build national health accounts that encompass all spending sources, these have not been systematic. Thus, a comprehensive view of health spending requires consulting several sources that we will describe in this section, and that are then summarized in Table 1.

Most spending is channeled through the health social security system (SGSSS), which covers all the benefits included in the benefits plan (PB). Information on spending through the SGSSS is accounted for in **Satellite Health Accounts** (CSS, or *Cuentas Satélites en Salud*). The CSS separates administrative and health benefits spending; within health benefits, it disaggregates promotion and prevention spending from curative and palliative services[1].

Additionally, benefit plan management companies (EAPBs) must report all the services provided to their members and their associated expenses to the Health and Social Protection Ministry. The ministry uses this information to annually set the capitation payment unit (UPC). This information is recorded in the **UPC Sufficiency Database**. EAPBs that do not comply with required data quality are eliminated from the sample. Hence, the sufficiency database captures only a percentage of all the services provided in the system: for 2017 and 2019, the streamlined database captured 72 to 77 percent of the benefits provided by the contributive system and 26 to 31 percent of the benefits provided in the subsidized system[2]. Since the number of EAPBs included each year varies, absolute values cannot be compared across different periods. Nevertheless, the database can provide information on the distribution of spending among different items, including by health conditions and by level of care, among others. It is important to note that the Sufficiency Database only includes benefits covered by the explicit benefits plan; it does not include other expenditures paid by other institutions. To capture spending not included in the explicit plan, other sources are needed.

As we mentioned above, Colombian citizens can also access services not covered by the explicit benefits plan through exceptional mechanisms. These benefits are financed through the Maximum Budgets, and this information is captured in the Maximum Budgets Database. Maximum budgets were created in 2020. Before 2020, these benefits were paid directly by the national budget through a system known as *recobros*; their amounts were recorded in the Recobros Database.

Spending on public health services by municipalities and departments is not consolidated in any single information source. Several sources exist, though they are not always coherent with each other (see Ministerio de Salud y Protección Social, 2018)[3]. For this article, we used the SICODIS information, which records transfers from the central government to subnational governments for health purposes, including transfers for public health[4]. This source captures 77 percent of total health spending by subnational governments [4]. The remaining 23 percent is financed with subnational governments' own resources, but this information is not recorded in a consolidated database. Therefore, we expanded the public health spending by 23 percent to account for those resources.

Besides the aforementioned information sources, the *Sistema de Información de Precios de Medicamentos* (SISMED, Drug Prices Information System) records the volume of all drugs sold and bought by different health system actors (wholesalers and retailers), along with their respective prices.

Finally, the health ministry (MSPS) spends on its operations, investments and on some centrally managed and

financed public health benefits, including the immunization program. This information is recorded by functional category in the ministry's budget execution reports. It is beyond the scope of this article to scrutinize which of the ministry's budgeted activities correspond to public health spending, administration or service provisions; consequently, this spending is not accounted for in this article.
The first section of this report, which analyzes total spending according to its classification as administrative, public health or benefits, is based on the Satellite Health Accounts data and information recorded in the subnational governments transfer tracking system (SICODIS). The second section, analyzing the spending in the health social security system (SGSSS), is based on the Sufficiency Database from 2017 through 2019. The third section focuses on drug spending and uses different information sources: for SGSSS spending the Sufficiency Database is used, while spending on drugs not included in the explicit benefit package is estimated from information recorded in the Maximum Budgets Database. For that section, we also use the SISMED database. Table 1 summarizes the information sources used for each functional category or type of service.

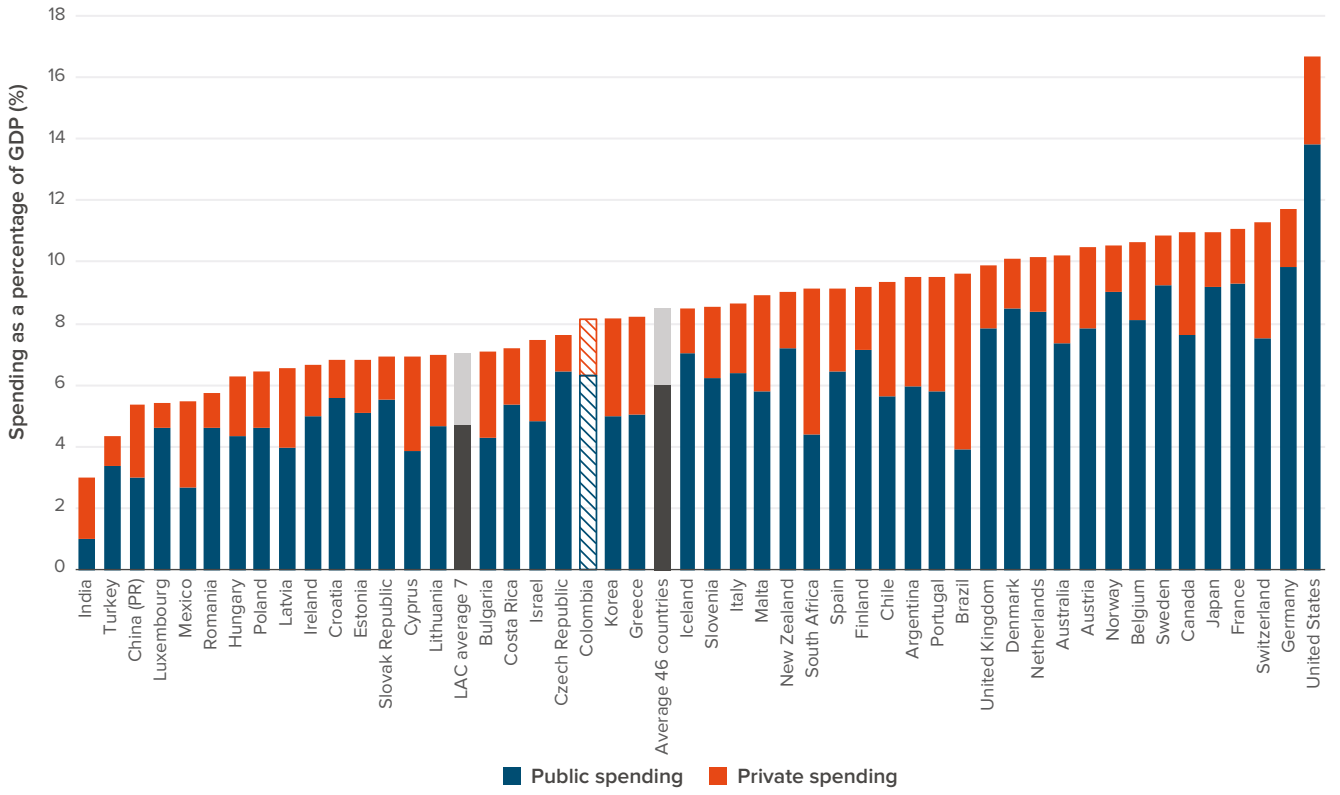
TABLE 1 **Information Sources by Functional Category or Type of Service and Section in Which Each Spending Type is Analyzed**

Functional Category or Type of Service	Document section	Information source used	Notes
Total spending on public health services (totals and percentages)	Section 3	SICODIS	Captures 77% of spending on public health services.
Total spending on curative, palliative and individual promotion and prevention services (both included and not included in the explicit benefit plan)	Section 3	Satellite Health Accounts	Includes only EAPB spending for these items; does not include private spending, public spending by subnational governments or direct spending by the health ministry or affiliated entities.
Total spending in administration	Section 3	Satellite Health Accounts	Includes only insurance administration. Does not include MSPS or subnational governments administrative spending.
Structure of the spending on benefits included in the explicit benefits plan (PBS)	Section 4	Sufficiency database to analyze the structure (shares by functional category, level of care or health condition) Satellite Health Accounts for total spending	The Sufficiency Database is only used to study the PBS spending structure. As the sample varies across different periods, we cannot estimate total expenditure nor compare across time periods.
Drug spending, total and structure	Section 6	SISMED, Sufficiency database, Satellite Health Accounts, Maximum Budgets Database	Only includes spending paid by SGSSS resources.
Spending on high-cost drugs	Section 6	SISMED Maximum Budgets Database	Only includes spending paid from SGSSS resources (excludes out-of pocket payments and private insurance spending).

Source: authors' elaboration.

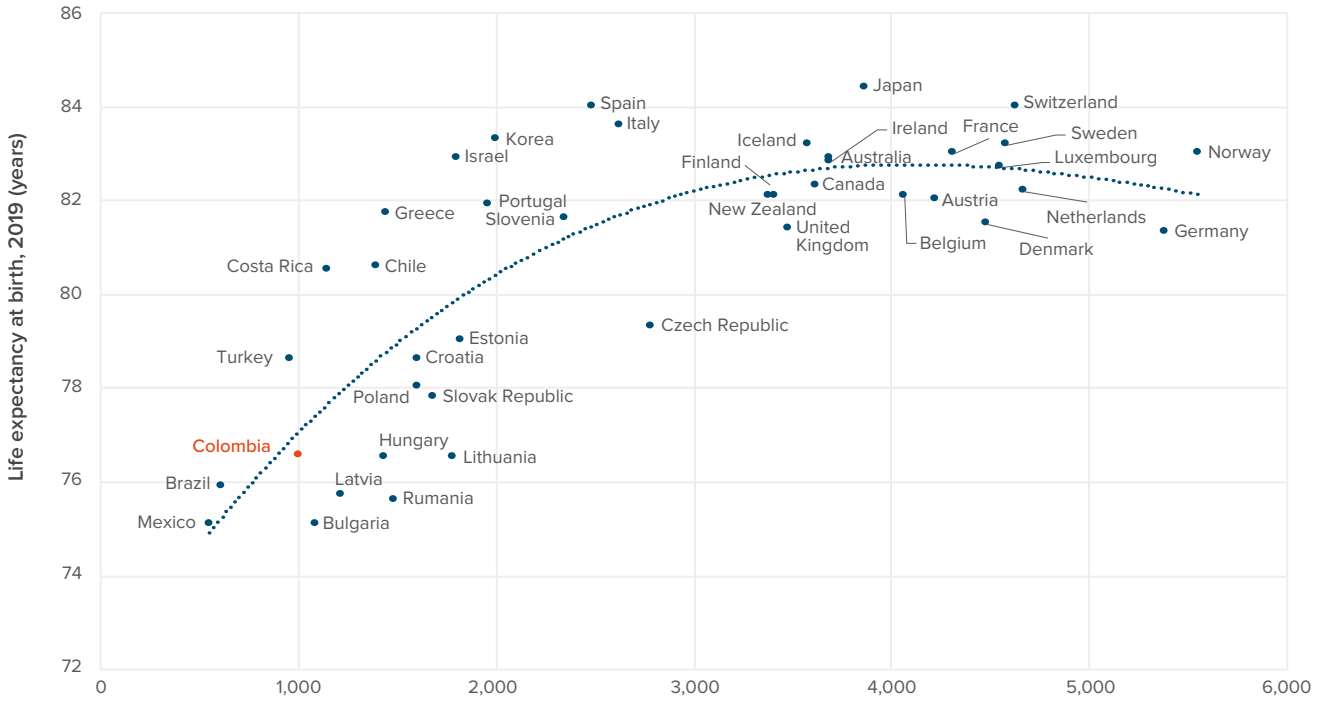
4. TRENDS IN HEALTH SPENDING IN COLOMBIA: HOW DOES IT COMPARE TO OTHER COUNTRIES?

FIGURE 1 Total Current Health Spending, Public and Private, as a Share of GDP, 2019



Source: authors' elaboration based on OECD's Health Statistics.

FIGURE 2 **Per Capita Health Spending and Life Expectancy at Birth, 2019**



Source: authors' elaboration based on OECD's Health Statistics.

Colombia spends 8 percent of its GDP on health, including private spending. This is comparable to the average of reference countries, less than countries like Argentina, Chile and Brazil, but more than the average of the seven Latin American and the Caribbean countries included in the OECD database (Figure 1). Of this percentage, public spending accounts for 6 percentage points, which is higher than the average of the 47 reference countries and higher than the average of the seven Latin American and the Caribbean countries (5 percent of GDP).

Although life expectancy depends on multiple factors, such as socioeconomic conditions, its relation to health spending is often used as a proxy of spending efficiency. Figure 2 suggests that Colombia buys slightly less health per dollar spent per person than the average of the countries studied by the OECD (it is below the dotted line). Colombia achieves a lower life expectancy than countries in the database with similar spending levels, such as Costa Rica, Greece and Turkey. Pinto, Moreno-Sierra *et al.* (2018) [3] finds a similar result with an efficiency frontier analysis using several outcome indicators in addition to life expectancy[5]. That study finds that Colombia ranks tenth among 25 countries in Latin America and the Caribbean in terms of health system efficiency, and 48th out of 69 when OECD countries are included. If Colombia increased its spending efficiency, it could gain 4.5 additional years in life expectancy at birth. These results suggest that Colombia could enhance its health resource allocation efficiency. The following sections delve into specific areas that could guide this effort.

Total public health spending in 2020 amounted to 59 trillion current pesos (17,000 million dollars)[6].

Table 2 illustrates Colombia's total public health spending by functional categories. On average, 89.8 percent is invested in curative and palliative services provided by the social security system, 5.4 percent is allocated to administrative spending, 2.4 percent to individual preventive services and the remaining 2.5 percent to public health.

Even though the Satellite Health Accounts follow the WHO standard methodology (as much as possible), there are significant limitations in comparing Colombia's health spending structure to those of other countries. This is true even for other countries using the WHO

TABLE 2 **Public Health Spending by Functional Categories, 2017-2020 (%)**

	2017	2018	2019	2020	Real spending growth, 2017-2020
	Participation (%)	Participation (%)	Participation (%)	Participation (%)	Rate (%)
Administrative spending	5.5	5.3	5.3	5.4	15.7
Spending in health services	89.7	90.0	90.1	89.0	15.9
Spending in preventive services of an individual nature	2.3	2.2	2.1	2.8	45.7
Public health spending	2.5	2.5	2.4	2.8	31.2
Total spending	**100.0**	**100.0**	**100.0**	**100.0**	**18.8**

Source: authors' elaboration based on DANE, Satellite Health Accounts and DNP, SICODIS. Excludes spending of the Ministerio de Salud y Protección Social and affiliated entities other than transfers to the subsidized regime and subnational governments.

methodology due to international differences in definitions and in the ways in which countries aggregate the data. Nonetheless, comparing countries can offer a starting point to identify atypical performance.

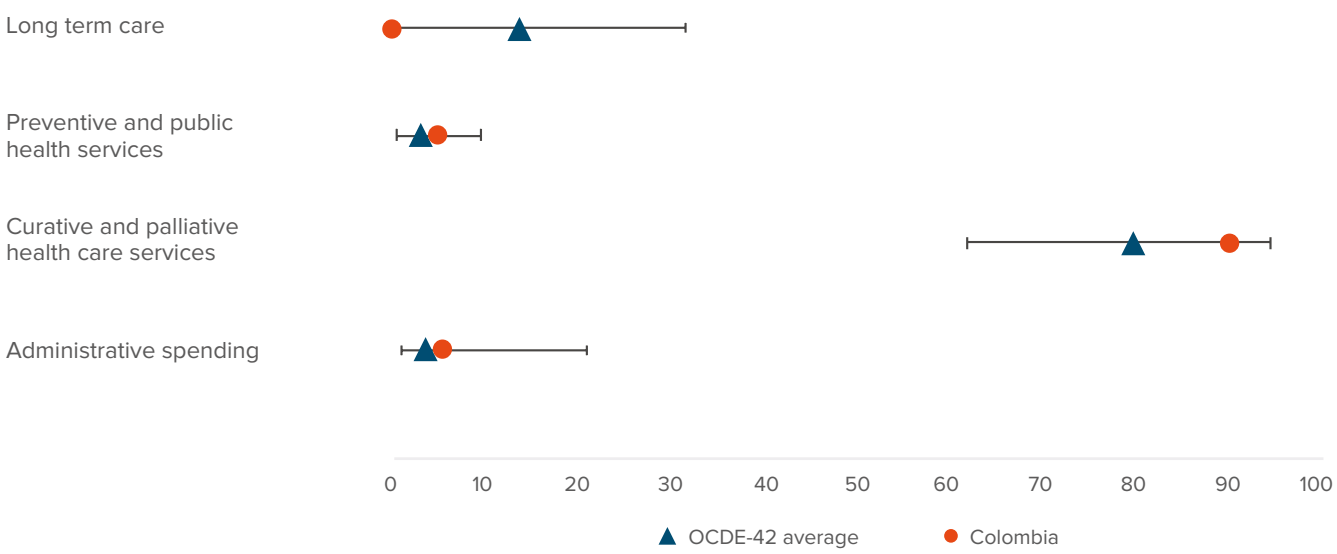
Figure 3 illustrates the distribution of spending by health functions and compares it to the average of 43 countries with data in the OECD health statistics database. The horizontal bars show the minimum and maximum observed proportions among the countries under analysis. **Colombia spends 4.8 percent of total health spending on preventive services of individual and collective nature, above the 3 percent average reported by the countries included in the OECD database**. There is strong consensus regarding the high cost-effectiveness of public health and preventive care services. It is important to note that, even if using the Health Accounts methodology, the comparison of spending on promotion and prevention is particularly problematic because mapping local classifications and measurement to health accounts methodology is not straightforward (see Gmeinder, Morgan *et al.*, 2017 [5] for a detailed discussion)[7].

OECD information on promotion and prevention spending does not disaggregate spending on public health actions from promotion and prevention services provided to patients at the individual level. However, Gmeinder, Morgan *et al.* [5] disaggregate promotion and prevention spending for some OECD member states between collective and individual actions, finding that 40 percent of promotion and prevention spending pertains to collective health actions, which equates to 1.2 percent of total health spending. In Colombia, the share of spending assigned to collective actions (public health) is 2.5 percent. This higher participation of public health expenses in Colombia could be explained by a higher prevalence of infectious diseases relative to other OECD countries.

Excessive administrative spending could reflect inefficiencies in the system's management or governance. On average, administrative expenses in the OECD sample between 2017 and 2019 were 3.5 percent of total spending, significantly below the 5.4 percent recorded for Colombia in the Satellite Health Accounts[8]. Figure 3 also shows a broad dispersion in administrative spending: from 20.7 percent (Chile) to 0.9 percent (Finland). The administration and governance spending recorded for Chile is unusually high; the second highest is that of Costa Rica, at 11.6 percent. It is interesting that these countries have very different systems, with Chile using multiple private payers and Costa Rica a single public payer.

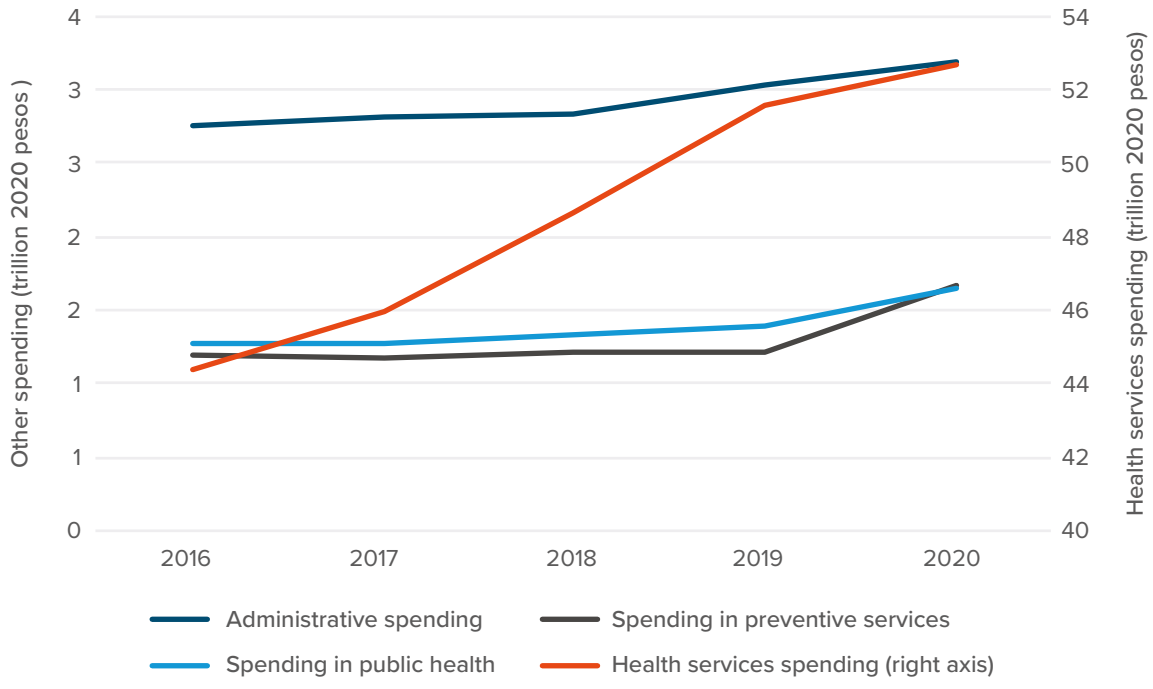
Total health spending has grown rapidly –at a 4 percent real annual rate– one percentage point over the average annual growth of GDP. The main driver of this spending has been health services, while spending on prevention has remained relatively constant except for 2020, which could reflect the effects of the pandemic (see Figure 4). Administrative and public health spending have also grown in real terms, but they had been losing participation before the pandemic.

FIGURE 3 **Share of Total Public Health Spending by Functions, Average Percentage, 2017-2019**



Source: authors' elaboration based on DANE, Satellite Health Accounts, and OECD *Health Expenditure Indicators* [6] and OECD (2020)[7].
Note: palliative and health care services include drugs and supplies items and the *ancillary* services category.

FIGURE 4 **Public Health Spending Growth, 2016-2020 (trillion of 2020 pesos)**



Source: authors' elaboration based on DANE, Satellite Health Accounts.

This spending growth is not negligible. For it to be sustainable and result in increased health benefits, it is crucial to ensure that allocation is efficient and that resources are not diverted from highly cost-effective interventions. This is especially important given the persistent gaps in Colombia's coverage of essential services, particularly in rural areas.

Section 4 Key Messages:

- **Health Spending Comparison:** Colombia's health spending is neither excessive nor insufficient when compared to other countries. The share of public spending in total spending is above that of most countries in the database.

- **Efficiency of Health Spending:** At the aggregate level, there are no evident significant inefficiencies in the allocation of health spending compared to other countries, though there is room for improvement. Findings suggest that Colombia could increase life expectancy by six months if its spending efficiency matched the *average* of the reference countries. If resources were used as efficiently as in the *most efficient* countries, life expectancy could increase by four years.

- **Spending on Promotion and Prevention:** Spending on individual and collective promotion and prevention services accounts for at least 2.3 percent of public health spending (excluding spending by subnational governments) and up to 4.8 percent of total spending (including it). This is higher than the average recorded in OECD statistics, but the higher value could be partially explained by issues of data comparability.

- **Administrative Spending:** This is similar to that of reference countries but was the second-fastest-growing item before the pandemic. This warrants further analysis to identify potential efficiency gains.

- **Curative and Palliative Services:** Spending on curative and palliative services has increased rapidly, consuming a growing share of health resources. There is no available information to determine if this increase has resulted in improved population health. Therefore, further study is recommended to identify the sources of this growth and their impact on health.

5. COLOMBIAN HEALTH SPENDING STRUCTURE, 2017-2019

The ability of health spending to improve health outcomes depends on several factors, including its distribution across levels and functions of care (e.g. primary care vs. hospital care, inpatient vs. outpatient care, etc.), health conditions and types of services (e.g., drugs, supplies, consultations). This section analyzes spending distribution by level of care, type of services and health condition. Additionally, we examine how total spending might change by avoiding spending on care that could be prevented with effective primary care.

For this, we use data from the Sufficiency Database for 2017, 2018 and 2019. Since the Sufficiency Database does not cover all benefits provided in the SGSSS and because the coverage of EAPBS varies over time, we cannot compare total values across different periods. Furthermore, given the variability of EAPBs included in each year's sample, especially in the subsidized regime, we opted to use the complete three-year period to estimate the indicators as annual averages. The values are expressed in 2018 pesos.

Unlike the Satellite Health Accounts, the Sufficiency Database classification does not follow the methodological principles of the Health Accounts. To compare the spending structure with that of other countries, we established a correspondence between the items in the Sufficiency Database and those in the Health Accounts. This homologation is further explained in the annex.

USE BY LEVEL OF CARE

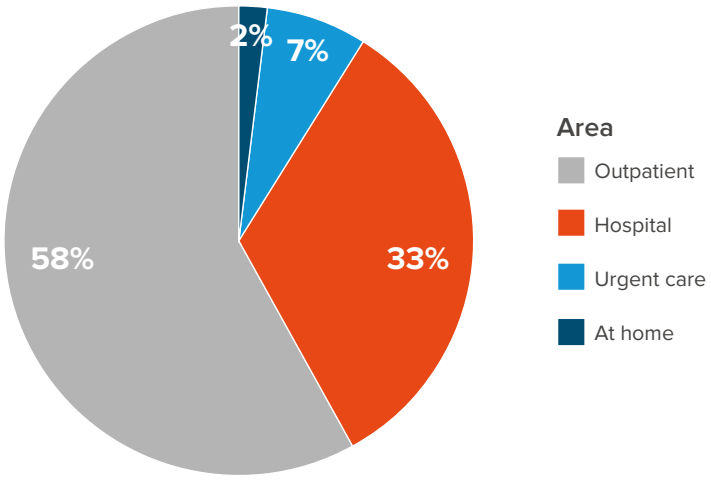
Hospitals and emergency care provide essential high-complexity services that cannot be offered at the primary care level. However, they are costly to operate and require significant high-cost human and technical resources. Hence, it is crucial to use them judiciously to ensure an efficient resource allocation. The overuse of hospital and emergency care services for conditions that could be managed at lower levels of care is well-documented globally [2]. This overuse not only results in unnecessarily higher costs but also diverts scarce human resources to cases that do not require them.

Figure 5 and Figure 6 illustrate the distribution of spending by type of care. On average, from 2017 to 2019, outpatient and at-home services accounted for 60 percent of spending in the contributive regime and 62 percent in the subsidized regime, while inpatient and emergency care accounted for 40 and 38 percent, respectively. This spending distribution by type of care has been relatively stable for the last five years. The structures of both regimes are quite similar, suggesting that members of both regimes have similar morbidity profiles, with no significant differences in access by type of care.

The 2021 OECD health reports is helpful to homologate the Sufficiency Database categories, thus facilitating comparisons on service distribution by type of care and purpose[9]. This comparison reveals that Colombia has the highest share of outpatient spending and is around the average in spending on drugs and supplies. OECD countries, on the other hand, allocate more than 10 percent of their spending to long-term care, such as support with daily activities at a hospice or a home, which is not a benefit covered by the Colombian health system[10]. Despite this difference by care and purpose, inpatient services in Colombia account for a similar share of spending as the average of reference countries (28 percent).

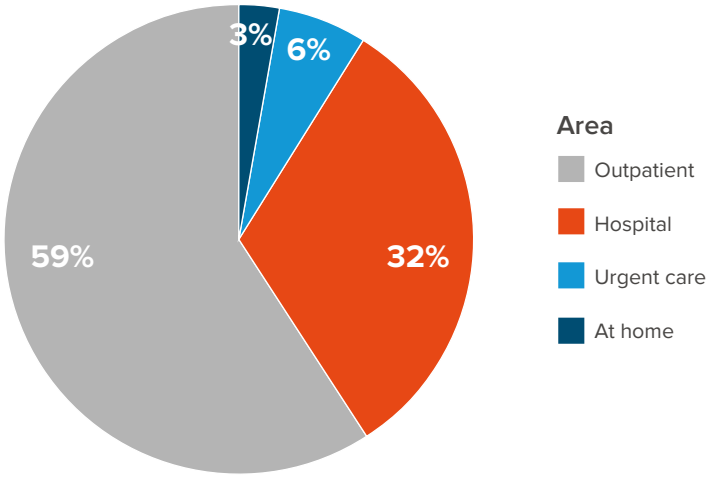
The methodology used by the OECD does not separate emergency care from inpatient or outpatient care. However, Brechet (2015) [8] found an OECD average of 31 emergency care visits per 100 inhabitants. In Colombia, the rate estimated using the Sufficiency Database is 58 per 100 members. This disparity could be due to a lower problem-solving rate at the primary care level or differences in the definitions used. Regardless, the rate of use of emergency care in Colombia appears to be double that of OECD member countries.

FIGURE 5 **Participation in Expenditure by Area of Care in the Contributory Regime, 2017-2019**



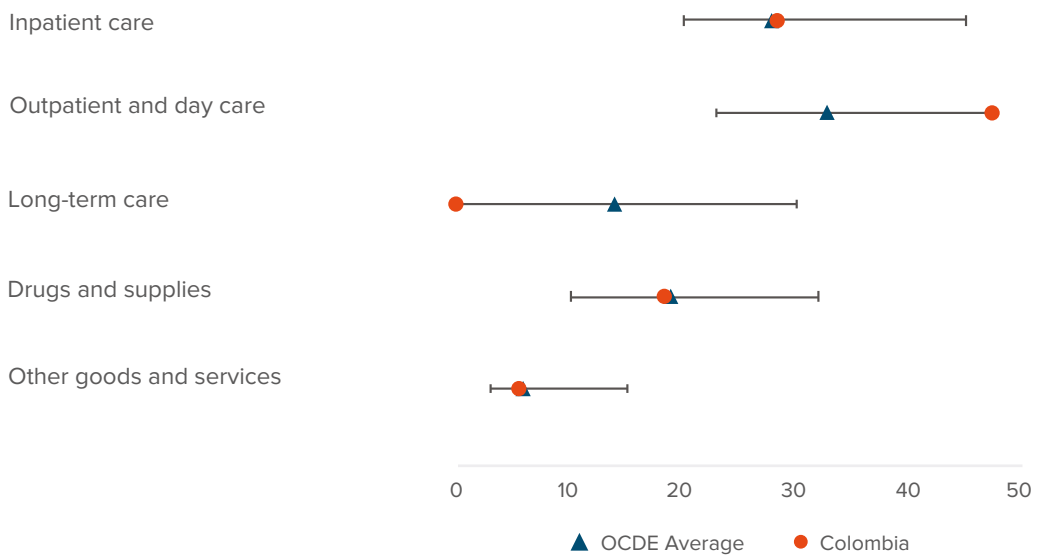
Source: authors' elaboration based on the UPC Sufficiency Study Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 6 **Participation in Expenditure by Area of Care in the Subsidized Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Study Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 7 **Comparison of the Distribution of Total Expenditure by Functions and Areas of Care: Average Percentage 2017-2019**



Source: authors' elaboration based on OECD (2021), DANE Satellite Health Accounts and Sufficiency Database.
Note: "others" includes collective goods, administration and other non-classifiable records.

SPENDING IN PREVENTABLE CONDITIONS

Some emergency care and inpatient services could be avoided with adequate and timely primary care or with effective disease-prevention systems. Services for Conditions Amenable to Primary Care (CAPC) are low-complexity services that, if delivered effectively and timely, can prevent future hospitalizations or avoid medical complications. Rodríguez-García [9] found that in 2009, 21 percent of inpatient discharges in the contributive system were related to conditions amenable to primary care — the highest rate among six countries in the region according to a study by Guanais et. al [10]—. In the subsidized regime, 12 percent of hospitalizations were due to CAPC. A more recent study comparing avoidable hospitalizations in 2017 for five conditions across six countries in Latin America and the Caribbean found that only for chronic obstructive disease did Colombia have a higher inpatient discharge rate than the Latin American average [7].

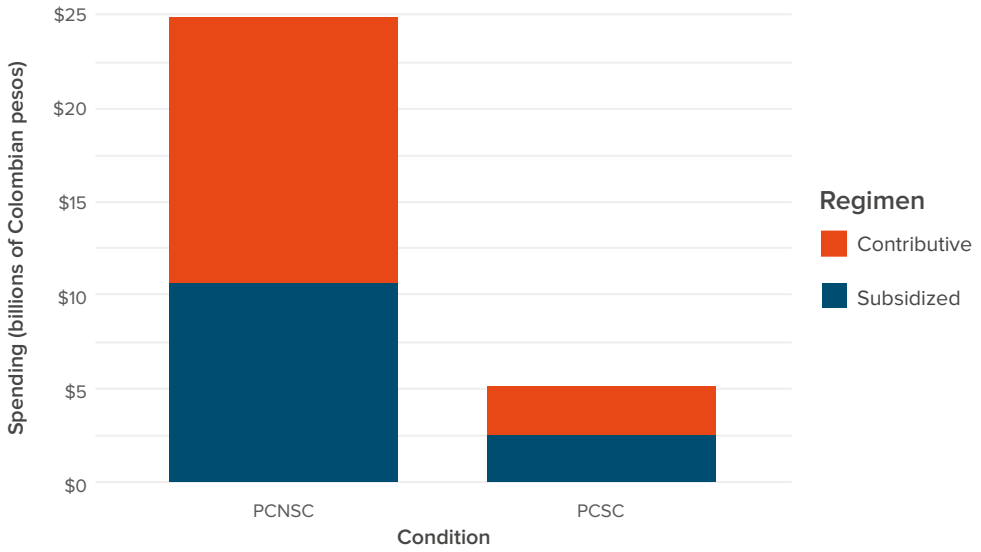
Using the CAPC list defined by Rodríguez-García, we estimated the spending associated with CAPC hospitalizations. Figure 8 illustrates the results from 2017 through 2019: 17 percent of inpatient spending was due to conditions amenable to primary care. Based on the Sufficiency Database sample, we find that the annual total spending on conditions amenable to primary care amounts to 1.7 trillion pesos, equivalent to 3 percent of total public health spending.

A closer look reveals which health conditions are responsible for spending that could be preventable with primary care. Circulatory system diseases—such as cardiovascular disease, ischemic heart disease, hypertension and strokes—account for 30 percent of spending in both regimes. They are followed by diseases of the respiratory system (26 percent), genitourinary system (12 percent), with chronic renal disease being prominent, and endocrine, nutritional and metabolic disorders (9 percent), with diabetes standing out (Figure 9).

If Colombia managed hypertension, cholesterol, smoking, obesity and other conditions that are precursors of heart disease and chronic renal disease more effectively, it could improve both population health and its health spending efficiency, and could reduce spending by up to 1.7 trillion pesos (3 percent of total PHS).

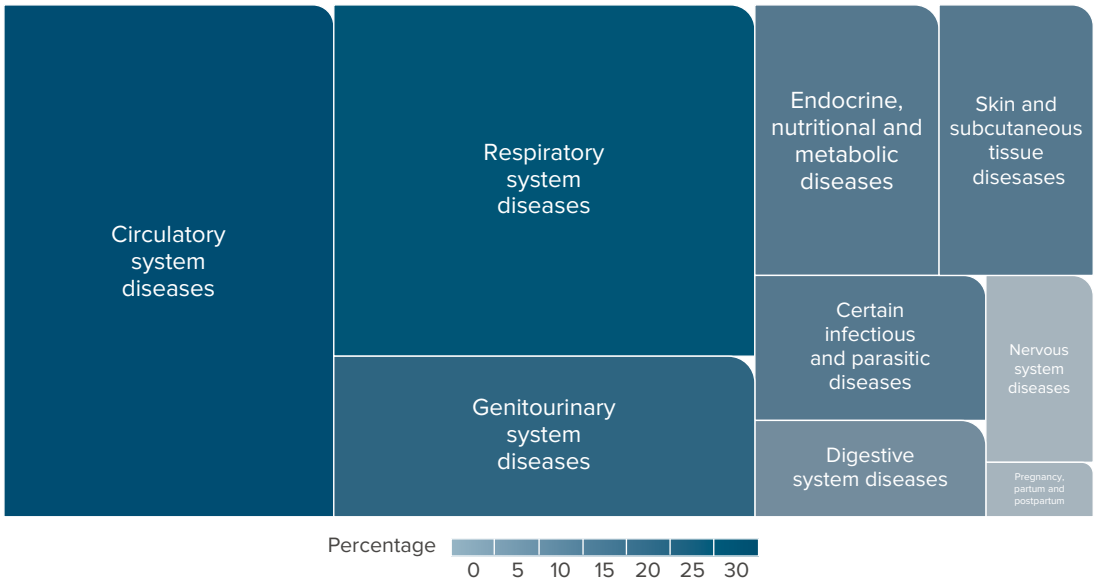
Collective public health and prevention and promotion actions can also prevent disease. Many of these interventions could even reduce total spending[11]. The WHO has identified four high-prevalence conditions whose incidence could be reduced by targeting contextual and lifestyle risk factors: cancer, diabetes, cardiovascular diseases and chronic respiratory diseases.

FIGURE 8 **Expenditure on Hospitalizations for Primary Care Sensitive Conditions (PCSC) and Non-Sensitive Conditions (PCNSC), 2017 to 2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 9 **Conditions with the Highest Share of Expenditure on Preventable Hospitalizations with Primary Care, 2017-2019**



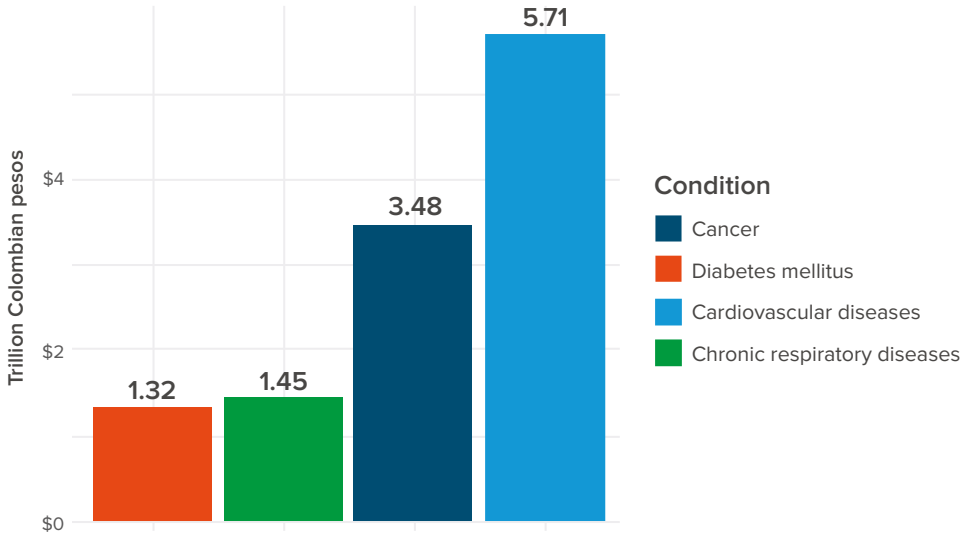
Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

The WHO estimates that tobacco use is responsible for over 8 million annual deaths worldwide, and the excessive intake of sodium (salt) for an additional 1.8 million deaths. Non-communicable diseases associated with alcohol consumption account for over half of the **3 million annual deaths attributed to alcohol worldwide**. Similarly, 830,000 annual deaths can be attributed to insufficient physical activity [11].

Figure 10 and Figure 11 illustrate the spending attributable to these conditions in Colombia between 2017 and 2019[12]. For the Benefits Plan Management Companies

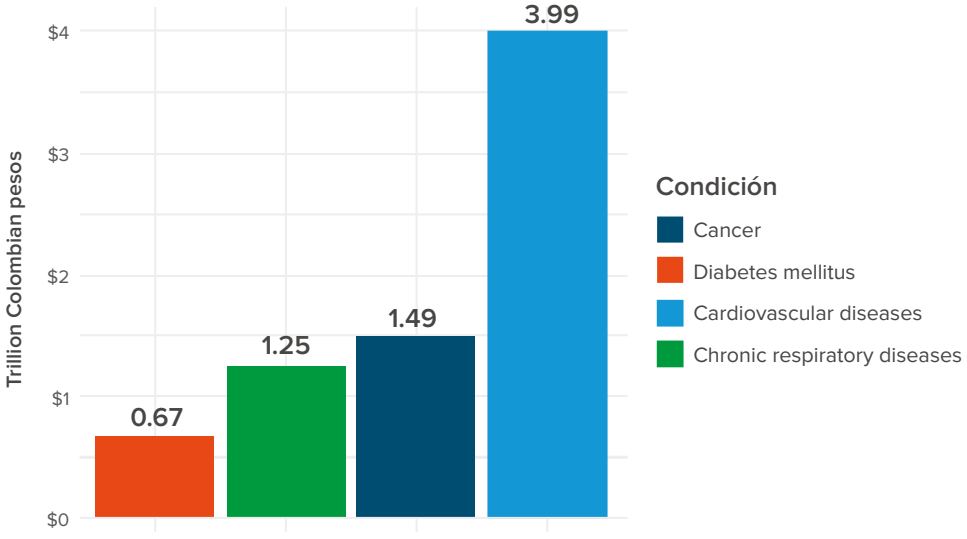
(EAPB) included in the Sufficiency Database, spending for these conditions totaled 19 trillion pesos (an annual average of 6.4 trillion pesos), which accounts for 21 percent of total public health spending. Cardiovascular disease accounts for 50 percent of the spending on conditions with modifiable risks (in both regimes), followed by cancer at 26 percent. Diabetes and chronic respiratory disease account for 10 and 14 percent, respectively.

FIGURE 10 **Total Expenditure on Non-Communicable Diseases with Modifiable Risks in the Contributory Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 11 **Total Expenditure on Non-Communicable Diseases with Modifiable Risks in the Subsidized Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

Rao *et al.* [1] models the expected growth of health spending in Latin America and the impact of some cost-control policies, including the reduction of risk factors. The results for Colombia show that a 10 percent reduction in the incidence of risk factors for these conditions (tobacco, hypertension, high blood glucose levels and alcohol) would decrease the projected spending between 2010 and 2050 by almost 2 percent. Similarly, the WHO identifies the 88 most cost-effective health actions to reduce these risk factors and estimates that with under one dollar per person per year, significant reductions in morbidity could be achieved in the four causes under study, with an economic gain of 7 dollars per dollar invested [12].

SPENDING BY HEALTH CONDITION

Understanding which conditions are generating most of the spending is a necessary condition to devise a strategy to reduce the incidence of these conditions and treat them in a timely and cost-effective manner. For example, designing models of care to manage risk and prevent complications, establishing payment-for-results mechanisms that incentivize prevention or prioritizing health services or technologies with higher cost-effectiveness. In some countries, like Uruguay, services for mid- and high-complexity conditions are limited to specialized providers, monitored and financed by an entity created for that purpose (the Fondo Nacional de Recursos). In Colombia, certain conditions defined as high-cost are monitored by the High-Cost Account (CAC). The account's main function is to manage the ex-post risk adjustment system to ensure that EAPBs receive sufficient resources to serve their patients, thereby preventing denial of services to the sickest patients. Additionally, the CAC monitors outcome indicators, disseminates care guidelines, promotes health risk management and has recently been implementing payment-for-results. However, the CAC is a private risk adjustment entity, and its information has a two-year lag. It would be beneficial for the health system that the ministry of health cooperated with the CAC to monitor conditions of interest using agile information mechanisms to reduce these lags.

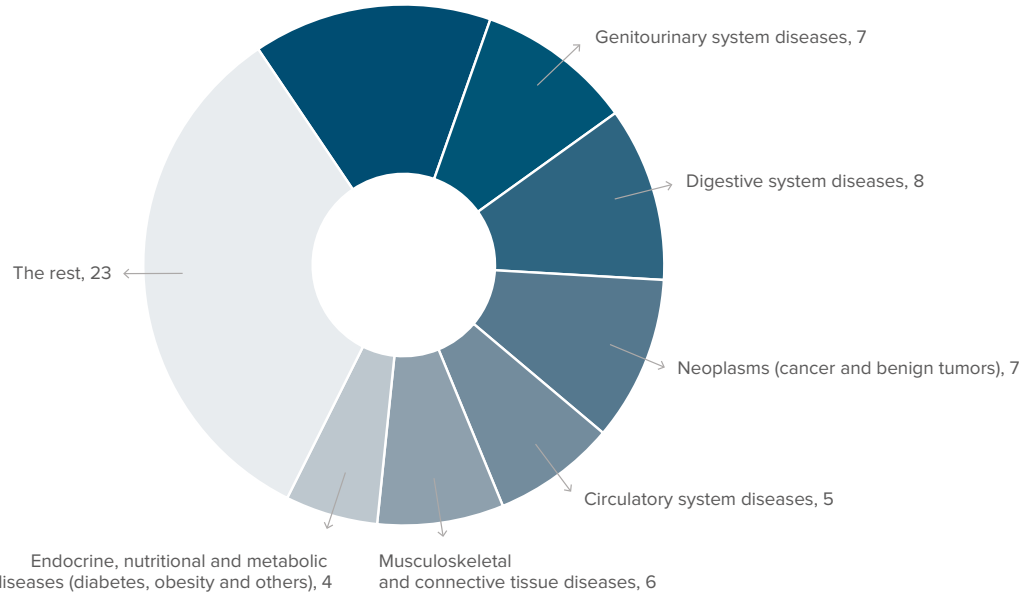
Figure 11 presents spending by health condition using the international classification of diseases (ICD) system. Circulatory system diseases (especially ischemic heart disease, cerebrovascular accidents and arterial hypertension), account for the highest share of spending, which also holds for most of the world. These account for 10 percent of spending in Colombia. Neoplasms account for 7 percent of spending, followed by genitourinary system diseases (including chronic renal disease) and digestive system diseases, with 7 and 8 percent of spending, respectively. Musculoskeletal and connective tissue diseases (including rheumatoid arthritis) account for 5 percent, and respiratory system diseases for another 5 percent. These six groups combined account for 44 percent of spending.

Spending in these conditions is expected to continue growing. Rao, *et al.* [1] estimates that neoplasms and circulatory, genitourinary, musculoskeletal and connective tissue diseases will have a 4 percent increase in Colombia over the next 30 years.

Some of these conditions also account for a significant percentage of hospital spending (see Figure 13 and Figure 14). Circulatory system diseases account for 13 percent of hospital spending in both regimes, and respiratory system diseases between 8 and 9 percent. The main reasons for hospitalization highlight the differences in the epidemiological profile of members in each regime. Neoplasms represent 12 percent of inpatient spending in the contributive regime but only 7 percent in the subsidized regime. Similarly, infectious and parasitic diseases along with mental and behavioral disorders are not among the main spending causes in the contributive regime, but they are among the 10 conditions generating more inpatient spending in the subsidized regime. These differences might suggest lesser access to primary care or outpatient consultation for psychiatric care for members in the subsidized regime, resulting in more hospitalizations due to complications from conditions not treated in time[13].

FIGURE 12

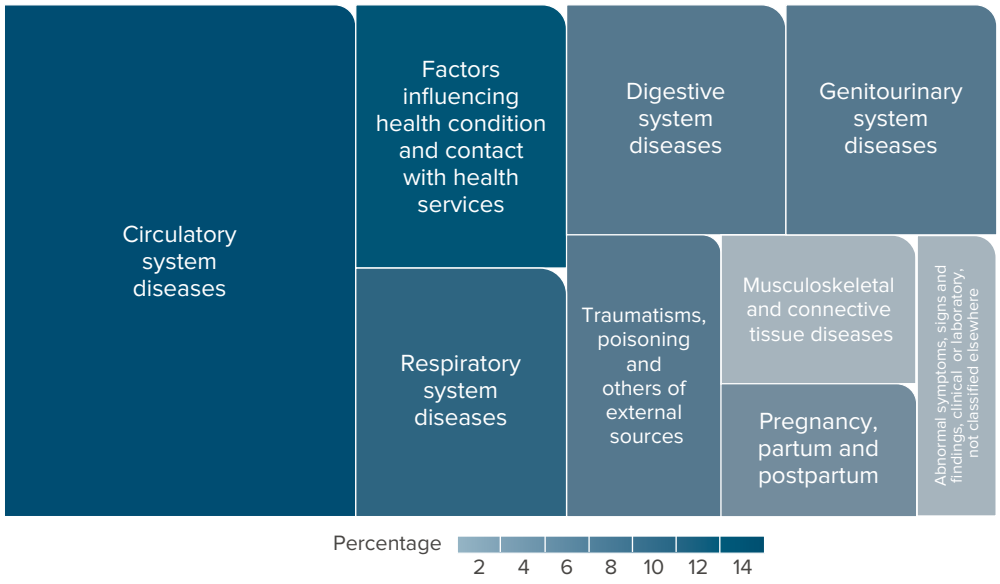
Expenditure by Health Conditions ICD-10, 2017-2019. Percentage Participation



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

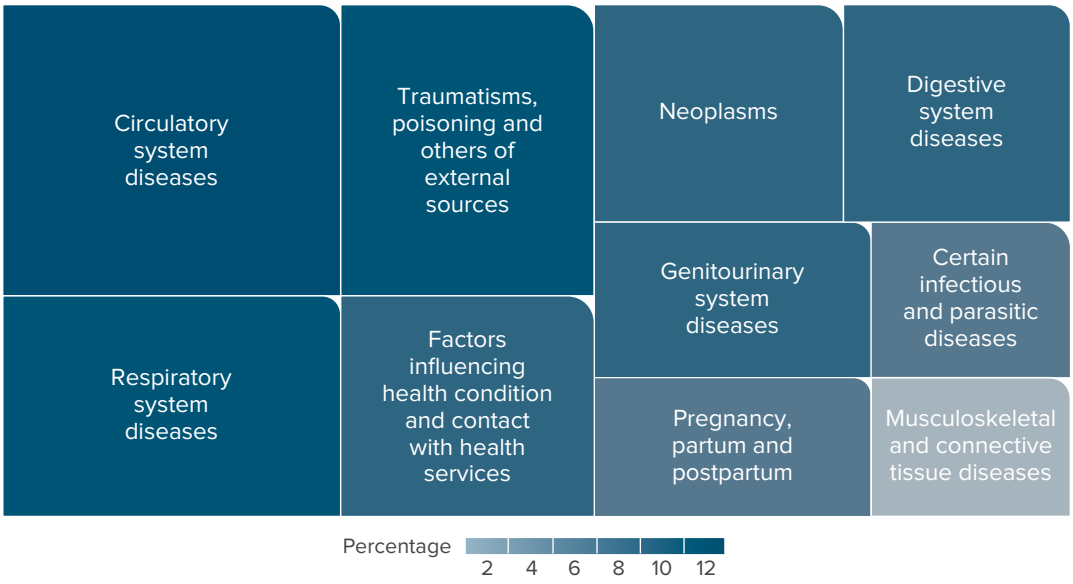
FIGURE 13

Top Ten Diagnoses with the Highest Hospital Expenditure in the Contributory Regime, 2017-2019



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 14 **Top Ten Diagnoses with the Highest Hospital Expenditure in the Subsidized Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

Within the six higher-participation chapters, eleven conditions account for 50 percent of the total spending, most of which are cardiovascular in nature (Table 3).

A starting point for optimizing spending efficiency, avoiding preventable hospitalizations and improving population health would involve further analysis of these conditions. This would include reviewing possible prevention strategies and identifying the most cost-effective technologies and service models to treat them.

TABLE 3 (1 of 2) **Eleven Conditions Accounting for 50 Percent of Inpatient Spending on the Six Higher-spending Chapters. Share in the Total Spending of the Six Chapters (%)**

ICD-10 chapter	Subchapter / condition	Share (%)	Accumulated spending (%)
Circulatory system	Hypertensive disease	9.5	9.5
Genitourinary system	Renal failure	7.6	17.1
Digestive system	Oral cavity. saliva glands and mandible diseases	7.2	24.3
Circulatory system	Ischemic cardiopathy	4.3	28.5
Circulatory system	Other cardiac diseases	3.8	32.3
Genitourinary system	Other urinary system diseases	3.5	35.8
Respiratory system	Lower respiratory tract chronic diseases	3.5	39.4
Circulatory system	Cerebrovascular diseases	3.1	42.4

TABLA 3
(2 of 2)

Eleven Conditions Accounting for 50 Percent of Inpatient Spending on the Six Higher-spending Chapters. Share in the Total Spending of the Six Chapters (%)

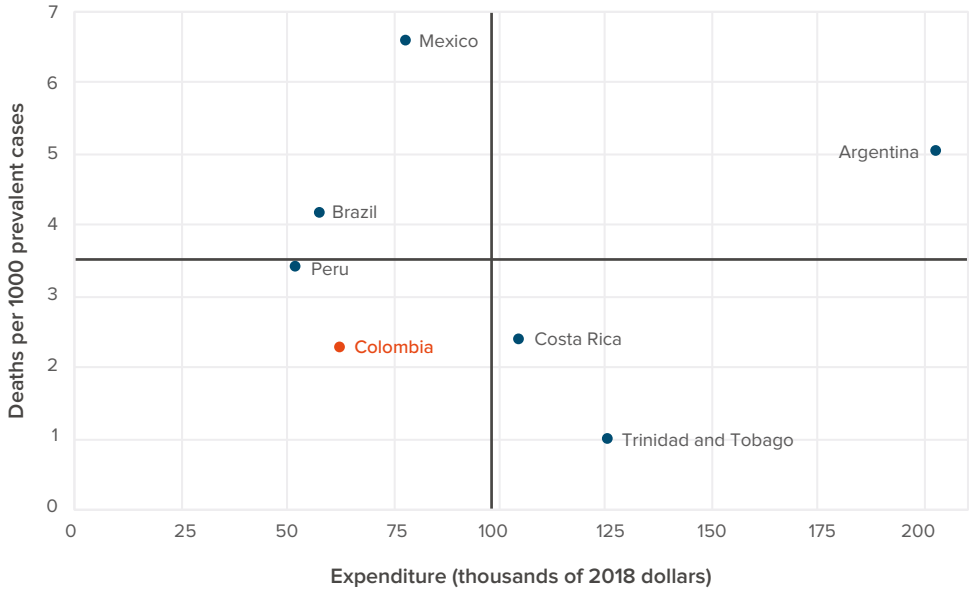
ICD-10 chapter	Subchapter / condition	Share (%)	Accumulated spending (%)
Neoplasms	Malign neoplasms, declared or presumptively primary, of lymphoid tissue, hematopoietic and related	2.9	45.3
Musculoskeletal and connective tissue	Other dorsopathies	2.7	48.1
Neoplasms	Breast cancer	2.7	50.7

Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

Figure 15 and Figure 16 compare spending levels and health outcomes as indicators of resource allocation efficiency for circulatory diseases, renal diseases and diabetes across seven countries with data available by spending chapter[14]. Countries are categorized based on their spending and mortality rates relative to the average. Those in the lower left quadrant are considered relatively more efficient. **According to this measure, Colombia demonstrates the most efficient spending on circulatory diseases.** However, for renal disease and diabetes, Colombia's spending surpasses that of Peru, yet it experiences a higher rate of deaths in these categories.

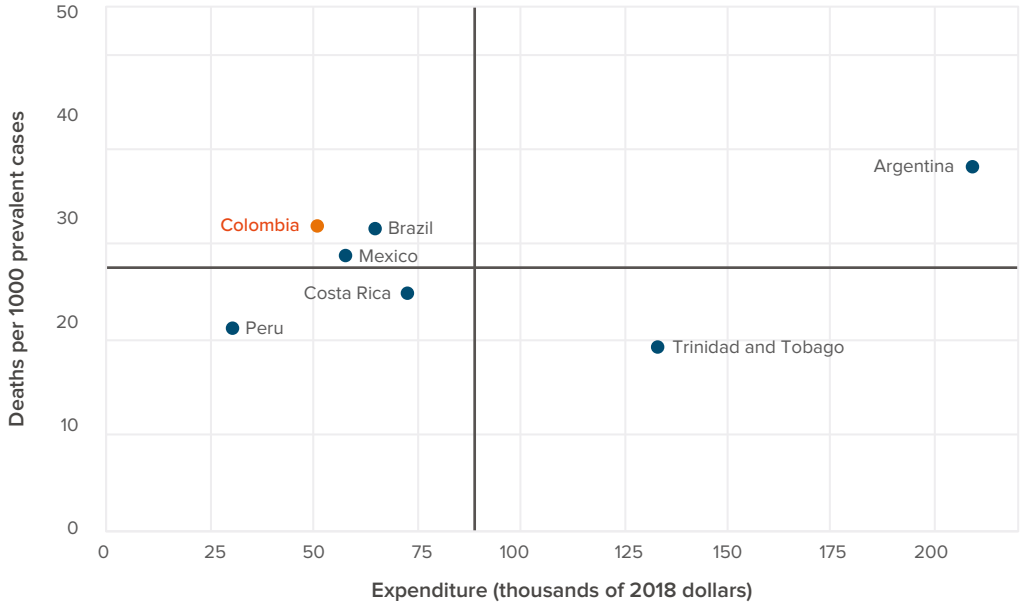
FIGURE 15

Circulatory Diseases: Expenditure and Deaths per 1,000 Prevalent Cases, 2019



Source: authors' elaboration based on spending data compiled by Rao et al. (2021) and available in https://healthtrends.netlify.app/arg/results, and prevalence and mortality data from the Institute of Health Metrics Evaluation, Global Burden of Diseases.

FIGURE 16 **Kidney Disease and Diabetes: Expenditure and Deaths per 1,000 Prevalent Cases, 2019**



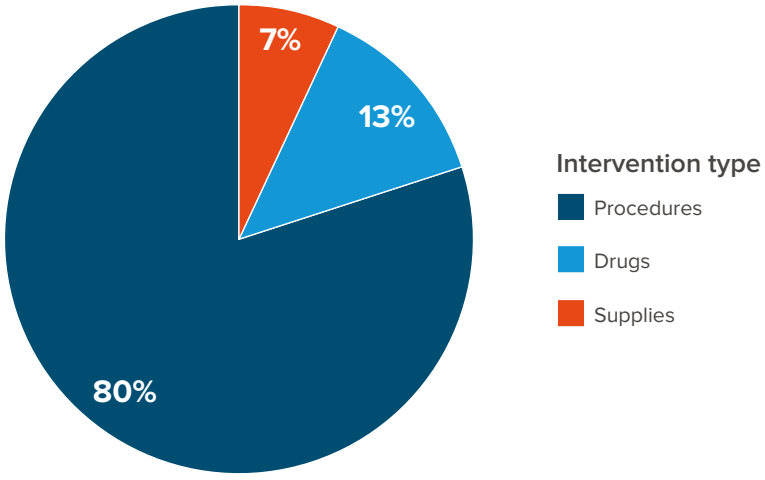
Source: authors' elaboration based on spending data compiled by Rao et al. (2021) and available in https://healthtrends.netlify.app/arg/results, and prevalence and mortality data from the Institute of Health Metrics Evaluation, Global Burden of Diseases.

DISTRIBUTION OF CARE BY TYPE OF SERVICE

Health spending can also be classified by type of service: procedures (such as external consultations, lab tests or surgeries), supplies (like cardiac stents or hearing devices) and drugs. Procedures account for between 74 and 80 percent of health service spending, with a higher share for the contributive regime. This disparity may reflect differential access. Drugs account for 13 percent of social security spending financed by the UPC in both regimes. It is important to note that we are only considering data from the Sufficiency Database, which excludes spending not covered by the PBS funded through other mechanisms discussed (the bulk of which is drugs).

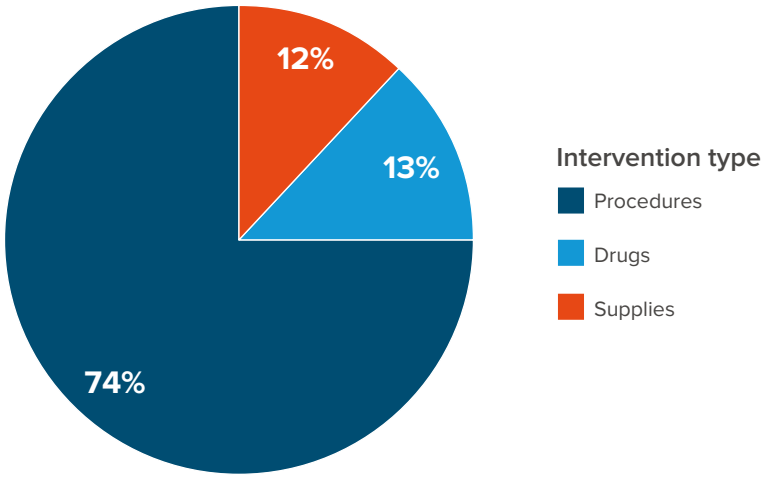
The procedures that account for the most spending generally include outpatient services, general medicine and odontology services, while emergency care and treatments like hemodialysis also contribute significantly (see Figure 17 and Figure 18). On average, insured individuals have 2.5 first-time general medicine consultations and one first-time specialist consultation. The annual average for any medical practitioner is nearly four consultations per person. By comparison, the rate across the 34 OECD countries with available data is six consultations per person annually[15]. Colombia's rate exceeds those of other Latin American countries in the database, such as Chile (rate of 3), México and Costa Rica (rate of 2.3).

FIGURE 17 Expenditure Participation by Type of Registration in the Contributory Regime, 2017-2019



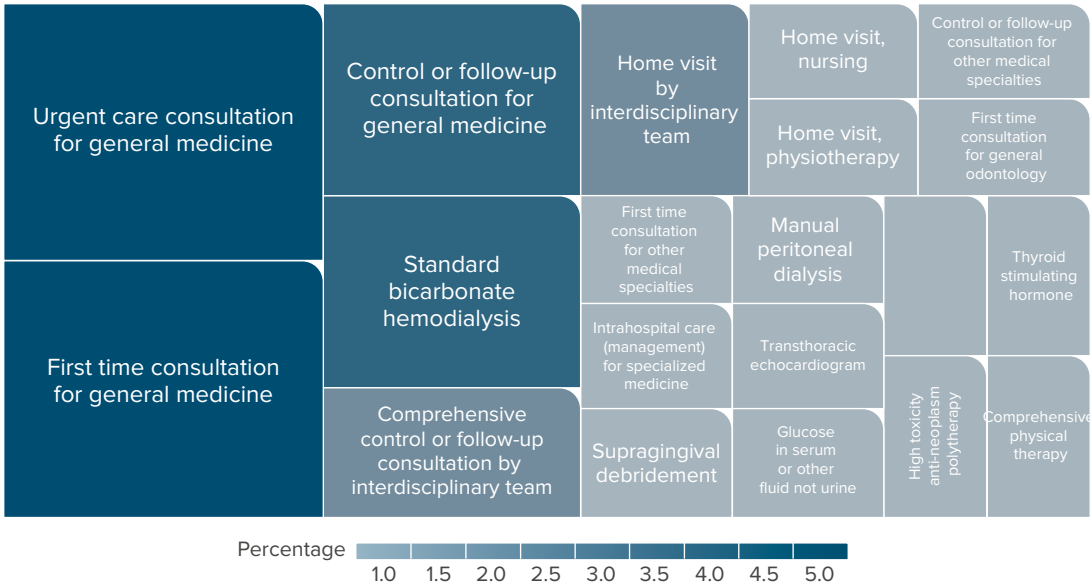
Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 18 Expenditure Participation by Type of Intervention in the Subsidized Regime, 2017-2019



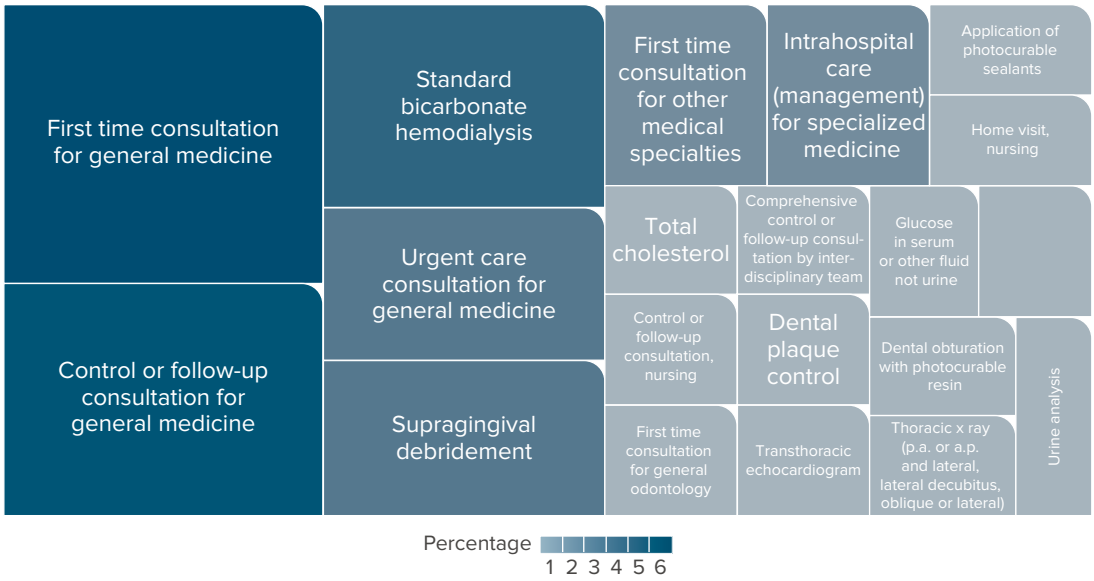
Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 19 **Procedures with the Highest Share of Expenditure in the Contributory Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 20 **Procedures with the Highest Share of Expenditure in the Subsidized Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

Section 5 Key Messages:

Spending Structure: Except for significantly higher outpatient spending as a share of total costs, Colombia's spending structure across types of care is similar to OECD countries.

- **Emergency care: The rate of emergency care usage in Colombia is nearly double that reported in OECD countries by Brechet** [8]. Currently, Colombia lacks mechanisms to monitor emergency care visits, their causes and subsequent outcomes (hospitalization or discharge). Establishing monitoring mechanisms could lead to more efficient distribution among levels of care.

- **Spending and Primary Care: Spending on conditions amenable to primary care averaged 1.6 trillion pesos annually from 2017 to 2019,** constituting 3 percent of total public health spending. In 2009, Colombia had the highest hospital discharge rate for conditions amenable to primary care among six Latin America countries (Guanais *et al.* [10]). However, more recent data indicates that, except for chronic obstructive disease, Colombia had the lowest rates of avoidable hospitalization in five conditions among these countries in 2017 [7]. This suggests a potential significant decrease in preventable hospitalization rates over time, but these differences could also be explained by the fact that (Guanais *et al.*) included a higher number of conditions in its estimations. Nonetheless, 1.6 trillion pesos represents a substantial investment level, highlighting opportunities to enhance efficiency in primary health care, public health and promotion and prevention. This includes managing risk factors for chronic non-communicable diseases such as tobacco use, alcohol consumption, high sodium intake and physical inactivity.

- **Efficiencies and Priorities: Information to compare spending efficiency across health conditions in Latin America remains insufficient.** Data available for seven countries suggests Colombia demonstrates relatively greater efficiency in managing circulatory disease compared to its regional counterparts but performs less optimally in diabetes and renal disease management. Despite that, circulatory system diseases account for 30 percent of spending on avoidable hospitalizations, 58 percent of total hospitalization spending and 10 percent of total public health spending, underscoring the need for targeted attention. Similarly, focusing on spending related to chronic renal disease and diabetes is highly advisable.

6. DRUG SPENDING

Drugs account for a significant portion of global health expenditure and is the fastest-growing category of public health spending [2]. Enhancing its efficiency could profoundly impact public budgets and population health outcomes.

To effectively guide drug policy, it is crucial to understand which therapeutic areas or drugs account for the largest share of spending, and whether prices paid are the lowest possible and in line with health benefits.

This section addresses these questions by presenting key indicators for monitoring drug spending and highlights information gaps. Table 4 provides an overview of total drug spending based on two sources: SISMED, which records sales at the first stage of the supply chain, and estimates derived from the Sufficiency Database, CSS and Maximum Budgets Database[16]. **In 2020, public health spending totaled 11 trillion pesos, representing 19 percent of total health expenditure and 1.1 percent of GDP.**

Drugs not included in the explicit plan, many of which are high-cost medications, account for 47 percent of total drug spending, while drugs covered under the explicit benefit package represent 53 percent. Sales recorded by SISMED at the initial distribution stage amount to 9 trillion pesos, suggesting a gross margin of approximately 20 percent.

The spending figures in Table 4 are not directly comparable to those reported by the OECD, which excludes inpatient drug costs and includes over-the-counter medications. Nevertheless, based on available data for 2021, drug spending in OECD countries averages between 12 to 15 percent of public health spending, which is 4 to 7 percentage points higher than Colombia's spending[17].

TABLE 4 **Drug Spending. Billion pesos, 2020**

	Source: Sufficiency and Maximum Budgets databases		Source: SISMED		
	Spending	Participation (%)	Spending	Participation (%)	Difference
Total public health spending	**58,821**	**100**	**58,821**	-	-
Drug spending	**11,185**	**19**	**9,303**	**16**	**20%**
Included in the explicit plan	5,949	53	4,962	53	20%
Not included in the explicit plan	5,236	47	4,342	47	21%

Source: authors' elaboration based on DANE, Satellite Health Accounts, Maximum Budgets Database for 2020, 2019 Sufficiency Database and information from the Drug Price Regulation Commission. Information includes only public spending, both for outpatient and hospital use.

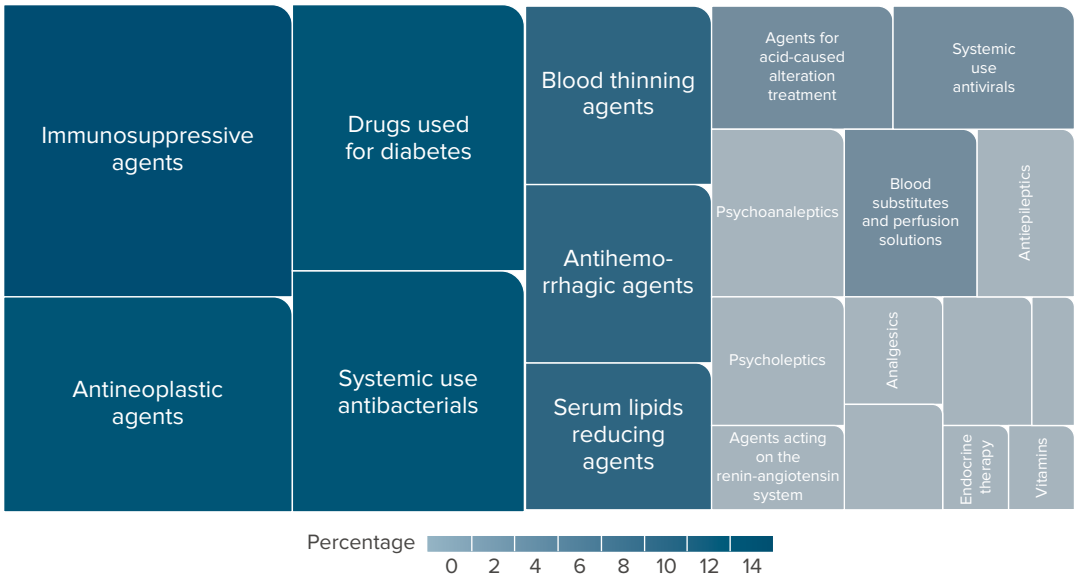
DRUG SPENDING PER THERAPEUTIC CLASS AND MOLECULE TYPE

Identifying therapeutic areas with the highest spending is crucial to rationalize expenditure. For example, promoting the entry and prescription of generics and biosimilars, implementing payment mechanisms that encourage rational use and/or advancing health technology assessment to draw attention to the cost-benefit ratios of alternative pharmacological therapies are key, among other strategies.

In the contributive regime, immunosuppressants agents (such as etanercept, adalimumab, abatacept, fingolimod) absorb the highest share of spending among drugs included in the explicit benefit plan, accounting for 12 percent of spending; antineoplastic agents (including trastazumab, rituximab, bevazizumab, tracomulis) absorb 8 percent; and two insulins for diabetes (insulin glargine and insulin glulisine) close to 8 percent (see Figure 21). This aligns with global trends where oncologic, immunologic and antidiabetic drugs collectively account for a significant portion of spending (approximately 20, 18 and 10 percent respectively) across 11 OECD countries (IQVIA, 2021 [13]). If Colombia follows the OECD growth trends, we can anticipate continued growth in drug spending within these therapeutic areas.

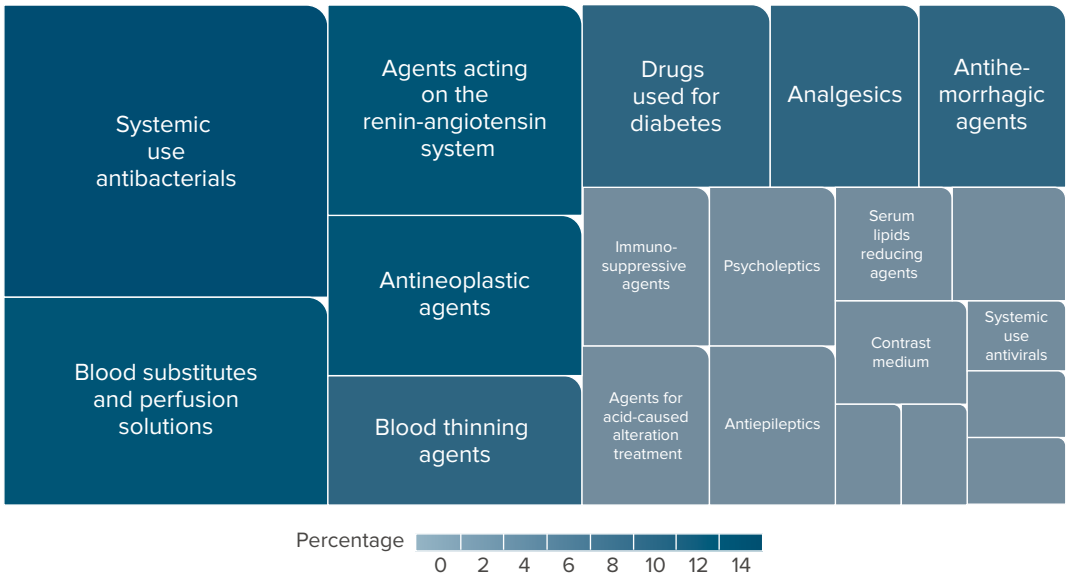
In the subsidized regime, these pharmacologic groups are also among the seven with the highest spending. Additionally, systemic antibacterial, analgesic and hypertensive agents have significant participation in the subsidized regime but not as prominently in the contributive regime (see Figure 22).

FIGURE 21 **Expenditure Participation by the Most Representative Pharmacological Groups in the Contributory Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 22 **Expenditure Participation by the Most Representative Pharmacological Groups in the Subsidized Regime, 2017-2019**



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

SPENDING IN HIGH-COST DRUGS

Traditional drugs are chemically synthesized and consist of a single substance or small molecule. Biological drugs, on the other hand, are made up of complex molecules derived from biological sources and processes, which cannot be chemically synthesized. The complexity of these molecules, coupled with their similarity to substances naturally produced by the human body, allows for the effective treatment of conditions that traditional drugs cannot address. Due to their complexity, biological drugs are costly. Therefore, it is crucial to use them rationally and ensure that prices are adequate and accessible.

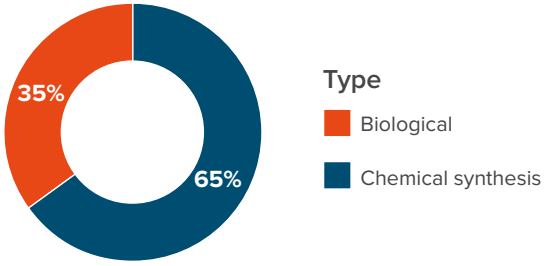
Figures 23 and 26 illustrate the share of biological drugs in total drug spending and the total number of units dispensed among drugs covered by the explicit benefits plan. Between 2017 and 2019, biological drugs accounted for 35 percent of spending in the contributive regime and 21 percent in the subsidized regimes. However, they represented 1 percent or less of total units dispensed. **This significant discrepancy between value and dispensed volume highlights their high unit prices and suggests that a small fraction of patients benefit from them.**

The biological market is expected to grow 3.9 percent over the next five years, driven mainly by technological advances and the increased prevalence of chronic diseases.

Given the high level of spending on these drugs, it is essential to monitor the efficiency of this spending. This includes understanding the health benefits obtained, cost-effectiveness and the opportunity cost in terms of health lost if funding these drugs means forgoing other investments, such as closing the gaps in essential health services. To achieve this, it is crucial to conduct health technology assessments and establish mechanisms to incorporate the results into decision-making processes.

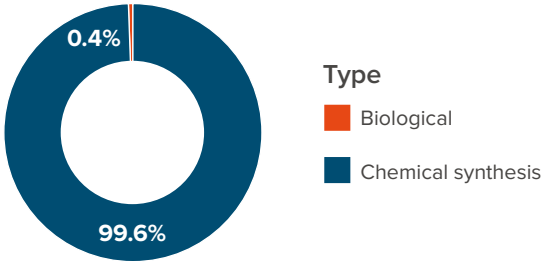
There has been nascent progress in technology assessment in Colombia; the IETS has conducted 24 economic evaluations and numerous clinical practice guidelines since 2016. Unfortunately, this information is not yet systematically used in coverage decisions[18]. **Additionally, it is necessary to promote the rapid entry of biosimilars at better prices.**

FIGURE 23 Expenditure Participation by Type of Medication in the Contributory Regime, 2017-2019



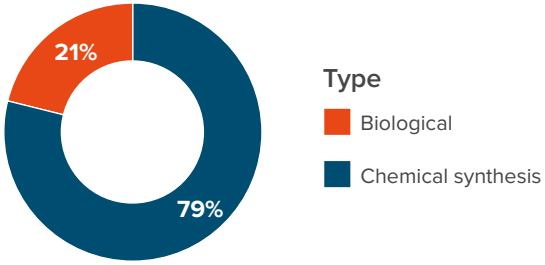
Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 24 Percentage of Medication Units Dispensed by Type in the Contributory Regime, 2017-2019



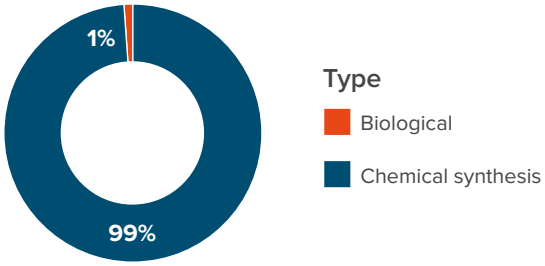
Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 25 Expenditure Participation by Type of Medication in the Subsidized Regime, 2017-2019



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

FIGURE 26 Percentage of Medication Units Dispensed by Type in the Subsidized Regime, 2017-2019



Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022.

As previously mentioned, the Sufficiency Database only captures spending for services included in the benefits plan covered by the insurance premium (UPC). However, Colombian citizens have access to all health technologies not explicitly excluded in the plan, provided they are ordered by an attending physician.

High-cost drugs represent a significant portion of spending on technologies not included in the benefits plan. These drugs mainly treat orphan diseases, cancer, autoimmune diseases, diabetes and hemophilia. Spending on these drugs averaged 1.2 trillion pesos annually, equivalent to 11 percent of total drug spending (both included and not included in the PBS), and 21 percent of drugs not included in the explicit plan[19].

Table 5 lists the fifteen drugs with the highest cost per patient per year, and/or those that account for a high share of drug spending in drugs outside the explicit benefit package[20].

TABLE 5 **Spending on Fifteen High-cost Drugs, 2020**

	Number of biosimilars or generics	Average number of patients per year	Annual average spending (Col$ million)	Annual average spending (US$ million)	Spending per patient per year (Col$ million)	Spending per patient per year (US$ million)
ECULIZUMAB	1	379	$174,286	53.66	460	141.6
PEMBROLIZUMAB	-	1,221	$162,780	50.12	133	41.0
ELOSULFASE ALFA	-	175	$136,355	41.98	781	240.6
LENALIDOMIDE	2	2,869	$123,685	38.08	43	13.3
NIVOLUMAB	-	1,812	$110,007	33.87	61	18.7
RECOMBINANT COAGULATION FACTORS VIII	6	1,983	$94,429	29.07	48	14.7
IBRUTINIB	1	963	$84,415	25.99	88	27.0
LIRAGLUTIDE	-	39,001	$82,267	25.33	2	0.6
ADALIMUMAB	10	7,440	$65,514	20.17	9	2.7
IMIGLUCERASE	-	220	$64,033	19.71	291	89.6
IDURSULFASE	-	62	$31,476	9.69	512	157.6
PLASMATIC COAGULATION FACTORS VIII / HUMAN	8	672	$30,132	9.28	45	13.8
NUSINERSEN	-	35	$22,245	6.85	645	198.5
GALSULFASE	-	44	$21,138	6.51	486	149.6
ALGLUCOSIDASE ALFA	-	51	$20,944	6.45	411	126.4
Total		**56,924**	**$1,223,705**	**376.76**	**21**	**6.6**

Source: authors' elaboration based on the UPC Sufficiency Database, Ministerio de Salud y Protección Social, 2022 and SISMED. For generic or biosimilar availability, Invima, Drugbank and Generics and Biosimilars Initiative.
Note: the number of competitors is independent on whether the generic or biosimilar has been approved in Colombia. Only biosimilars who comply with WHO criteria have been counted.

All of these drugs are subject to price regulation due to the monopolistic nature of their markets, but some also face competition from generic or biosimilar substitutes. This suggests an opportunity to achieve lower prices and additional savings beyond what is achieved through price regulation[21]. For example, European countries have negotiated lower prices for biosimilar competitors in exchange for mandatory substitution of the innovator drug for biosimilar competitors within the system. In other cases, effective alternative treatments exist, making it worthwhile to study the cost-benefit ratio of different therapeutic alternatives to better inform coverage decisions.

Section 6 Key Messages:

- **Higher Drug Spending:** Comparability challenges notwithstanding, the available data shows that Colombia spends 4 to 7 percentage points more on drugs (as a share of PHS) than the average of OECD countries.

- **Price Mark-up:** Available data suggests there is a 20 percent difference between the sale price in the wholesale pharmaceutical company and the price paid by the health system.

- **Key Groups:** The pharmacologic groups with the highest share in drug spending, both those included and not included in the explicit benefits plan, are those for diabetes, antineoplastics, blood thinning agents, immunosuppressors and systemic use antibacterials (antibiotics). It is advisable to review alternative options and provide cost-benefit information among them to inform decision-making and promote rational use.

- **Impact of High-Cost Biologics:** High-cost drugs, which are mostly biological, account for less than 1 percent of units sold but 21 to 35 percent of spending in the explicit benefits plan. Many of these drugs already have biosimilars in Colombia or other countries. It would be advisable to explore procurement mechanisms to promote competition, which could result in better prices.

- **Non-Explicit Benefit Plan Drugs:** Drugs not included in the benefits plan, mostly high-cost drugs, account for 47 percent of total drug spending; a few of these drugs account for 20 percent of the spending on non-explicit benefit plan drugs. Some of these drugs also have biosimilar alternatives in Colombia or in other countries.

- **Non-Competitive Biologics:** Biologic drugs that have no competition or therapeutic alternatives of comparable efficacy, and those treating conditions with no therapeutic alternatives, present a special challenge to rationalize spending. In these cases, centralized procurement with shared risk mechanisms, where pharmaceutical companies assume spending beyond a certain threshold, could provide more negotiation power to achieve better prices and control spending.

7. CONCLUSIONS AND RECOMMENDATIONS

LIMITATIONS AND FUTURE AREAS FOR RESEARCH

This article identifies areas where public health spending in Colombia shows signs of inefficiency.

It is not an exhaustive list but provides an initial overview by examining aggregate spending, spending distribution by level of care, type of service, functional category, health conditions and drug spending. The article offers a preliminary control panel to monitor spending efficiency at the most aggregate level.

To identify inefficiencies at this level of aggregation, international comparisons are necessary to determine if the country is within a reasonable range, as there are no absolute references for defining efficient spending. Therefore, it is essential to have sufficient and comparable information for multiple countries. For this article, we used OECD information, despite some comparability limitations. Unfortunately, we did not find systematized information for several indicators from other countries in Latin America and the Caribbean with similar epidemiological profiles and development levels.

Going forward, the region can benefit from participating in joint efforts to monitor and collect comparable information for spending items such as those analyzed here, to improve resource allocation efficiency. Agencies such as WHO, IQVIA and OECD already collect some relevant information, which can facilitate systematic compilation and monitoring.

CONCLUSIONS AND RECOMMENDATIONS

From this article's findings, we highlight five actionable areas with suggestions on how to address their inefficiencies.

1. **Although Colombia's spending level as a share of GDP is similar to the average of reference countries, there is room to improve efficiency.** Colombia spends 8 percent of its GDP on health, similar to the average of OECD countries (8.5 percent) and higher than the Latin America and Caribbean average (7 percent). The share of public spending in total spending (6.3 percent) is higher than the OECD average (6.1 percent) and the Latin American average (4.7 percent). The relationship between life expectancy and per capita spending, used as a proxy of spending effectiveness, suggests Colombia has a similar efficiency to that of the average of reference countries; nevertheless, Colombia could increase life expectancy by 6 months to 4 years by spending as efficiently as the most efficient countries. Insurance administration consumes a relatively high level of resources compared to reference countries, indicating a need for further study.

2. **Colombia should improve the quality and problem-solving capacity of primary health care (PHC) to avoid unnecessary services in resource-intensive contexts.** Although hospital service spending as a share of total spending is similar to that of OECD countries (19 percent), Colombia has a significantly higher rate of emergency care use (58 compared to 30 per 100 inhabitants). This may

indicate unnecessary emergency care use for conditions treatable in lower-complexity settings at a lower cost. Excessive emergency care use could be due to low problem-solving capacity at the primary care level, insufficient providers in certain areas, inconvenient service schedule among providers, low user confidence on these levels of care or ineffective prevention services which cause complications resulting in emergency care visits.

Available data indicates that excessive emergency care use is inversely related to the number of days needed to obtain a consultation with a general practitioner. Furthermore, countries that do not provide priority care by general practitioners or specialized practitioners outside of regular office hours experience higher use of emergency care services [2, 8]. The IADB's PHC study found that 49 percent of interviewed users had difficulties accessing services outside of regular office hours, leading them to rely on emergency care services.

The number of hospitalizations avoidable with primary care further underscores the need to improve PHC, as 17 percent of hospitalization spending could have been avoided or reduced with adequate and timely primary care.

Additionally, this article also finds that **20 percent of health spending goes toward care for conditions that could be prevented** by controlling risk factors such as tobacco use, excessive alcohol use, physical inactivity and inadequate nutrition.

The following are some actions that could be further explored:

- Monitor inappropriate emergency care use and its causes, and design policies to reduce unnecessary use, such as extending service access beyond regular office days and hours.

- Analyze current payment mechanisms to determine if they incentivize unnecessary emergency care use.

- The regulated competition system, with multiple payers and the distribution of prevention and promotion functions between subnational governments (collective actions) and the EAPBs (individual actions) presents coordination and financing challenges to implement an effective primary care model. But other countries with similar systems have exemplary primary care and promotion and prevention models; these could provide Colombia with valuable lessons. Colombia also has successful PHC experiences in some of its own cities. Strengthening PHC models in Colombia is a first-priority task, especially in rural and remote areas.

3. Colombia should intensify risk management to improve spending efficiency in five priority conditions: cardiovascular disease, renal disease, chronic respiratory disease, diabetes and some cancers.

Although Colombia appears to be more efficient in its spending on cardiovascular disease than the seven reference countries in Latin America and the Caribbean, cardiovascular diseases still account for significant portions of health spending: 30 percent of spending on avoidable hospitalizations, 50 percent on conditions with modifiable risk, 13 percent on hospitalizations and 10 percent of total health spending. Within this chapter, greater priority should be given to hypertension, ischemic disease (the leading cause of death for both men and women in Colombia), other cardiac diseases and cerebrovascular accidents. Ischemic cardiopathies are the second leading cause of death and disability and have a higher share in quality-adjusted life years lost compared to other countries[22].

The incidence of diabetes can be modified by addressing its risk factors. Effective tracking and treatment can prevent complications and hospitalizations. Diabetes currently accounts for 2.1 percent of health spending and 10 percent of spending on conditions with modifiable risks. It is the fourth leading cause of death and disability (disability-adjusted life years, DALY) in Colombia[23]. Compared to other regional countries, Colombia is less efficient in managing spending on diabetes and chronic renal disease. Renal disease accounts for 3 percent of total spending.

Respiratory disease accounts for 26 percent of spending on hospitalizations amenable to primary care. Within this chapter, chronic respiratory disease represents 14 percent of spending on conditions with modifiable risks and 3 percent of total health spending.

Cancer accounts for 7 percent of total spending and 26 percent of spending on conditions with modifiable risks. Breast cancer, the leading cause of cancer deaths for women, accounts for 16 percent of spending on neoplasms, while blood cancers account for 18 percent (around 1 percent of total spending).

Altogether, these diseases account for approximately 18 percent of total health spending and 22 percent of the loss of disability-adjusted life years.

The following are some actions that could be further explored:

- **Increase focus on preventable risk factors.** Target the five higher-spending preventable conditions (cardiovascular, chronic respiratory and renal diseases, diabetes and cancer) by reducing alcohol and tobacco use, promoting healthy diets (lower sodium and sugar intake) and encouraging physical activity. The WHO identifies 88 cost-effective interventions that can effectively reduce the disease burden from these conditions, with solid evidence backing. These include increasing taxes on tobacco and alcohol, implementing nutritional labelling, providing medications to control hypertension and diabetes and increasing public awareness of promotion, prevention and education campaigns. The WHO estimates that every dollar invested in these interventions yields 7 dollars in economic benefits.

- **Enhance risk management of high-cost diseases.** Link payments to outcomes with tangible consequences for the EAPBs that fail to meet agreed-upon goals. Emphasize the early detection of hypertension, cardiovascular risk and early-stage renal disease.

- **Identify cost-effective technologies and service models.** Focus on the most effective technologies and treatment models, including medications. This requires reorganizing care and establishing payment mechanisms aligned with explicit goals for spending efficiency and health outcomes.

- **Enhance the problem-solving capacity of primary health care systems.** Promote the use of prevention services by reorganizing health services and modifying the distribution and administration of healthcare human resources to prioritize the primary care level.

4. **Colombia should continue to work toward making drug spending sustainable, ensuring a good price-to-value ratio, and paying fair prices.** Currently, spending on drugs, both included and excluded in benefits plan, accounts for 18 percent of total health spending. This is 2 to 7 percentage points higher than the average of reference countries. The share of biological drug spending is currently 21 to 35 percent, and it is expected to increase due to ongoing innovations and the rise of non-communicable diseases. Although significant savings have been achieved through price control mechanisms, evidence suggests that other countries are procuring the same drugs at lower prices. To maintain sustainable drug spending and ensure it does not displace other priority investments, Colombia should explore and adopt new spending and price control mechanisms.

The following are some actions that could be further explored:

- **Numerous strategies can be employed to improve the price-value ratio of drugs.** These include price regulation, centralized procurement (potentially in collaboration with other countries), price definitions linked to therapeutic value, competitive tenders for single product markets and shared risk agreements with pharmaceutical companies. All these strategies have the potential to generate significant savings. Despite the political and technical challenges, Latin America and the Caribbean should consider moving toward joint procurement mechanisms, especially for innovative high-cost drugs. A larger market can provide greater negotiation power, lower prices and attract generic and biosimilar competition.

- **The Colombian drug coverage system faces special challenges** in rationalizing spending because patients are entitled to any drug prescribed by an attending physician, regardless of cost or benefit. The atomized procurement system, where each EAPB negotiates drug prices, benefits drug monopolies. Focusing on the cost-benefit ratio in terms of health outcomes and addressing essential service gaps can help

move the system toward more rational use. Although Colombia has a nascent health technology assessment process, there is still much progress to be made. Strategies to promote health technology assessment and mechanisms for incorporating these assesements into drug coverage decisions, clinical decisions and price definitions should be prioritized.

- **High-cost drug management could be limited to specialized registered providers, as practiced in Uruguay.** The procurement and supply system should be reviewed to ensure fairer prices. Promoting clinical practice with clear guidelines for initiating and discontinuing treatments, supported by scientific communities, is also essential. While Colombia has a system to record the use of drugs not included in the PBS, there is no explicit mechanism to use this information to improve spending efficiency. For example, highlighting opportunity costs or deviations from the mean practice or price could be beneficial.

- **Margins along the distribution chain should be reviewed to identify potential efficiency gains.**

5. **To design effective policies addressing inefficient spending, it is crucial to have trustworthy and usable information.** Colombia should establish a control panel of indicators to monitor waste and use this data to address inefficiencies. While Colombia has information to identify potential inefficiency areas, it lacks an institutional strategy to monitor and act upon waste. Advancing in this direction is essential.

ANNEX

TABLE A1
(1 of 2)

Homologation of Colombia's spending information sources with the World Health Organization's (WHO) A System of Health Accounts 2011: Revised Edition

Information sources and Colombian database items		Homologation to WHO A System of Health Accounts nomenclature	
Item in Colombian Information	**Source**	**Code**	**Item**
Administration	Satellite Health Accounts	HC.7	Administration
Service	Satellite Health Accounts		
UPC			
Procedures	Sufficiency Database	HC.1, HC.2 and HC.4	Curative care and rehabilitation
Outpatient	Sufficiency Database	.1.2, .2.2, .4,2	Outpatient
Inpatient	Sufficiency Database	.1.1, .2.1, .4.1	Inpatient
Emergency care	Sufficiency Database		No item in System of Health Accounts; distributed to outpatient and inpatient
Day	Not reported, unavailable	1.2, 2.2, 4.2	Day
At home	Sufficiency Database	1.4, 2,4, 3,4	At home
Long-term care	Not reported, unavailable	HC.3	Long-term care
Supplies	Sufficiency Database	HC.5	Drugs and supplies
Drugs	Sufficiency Database	HC.5	Drugs and supplies
Non-UPC			
Procedures	Maximum Budgets	HC.5	Drugs and supplies
Supplies	Maximum Budgets	HC.5	Drugs and supplies
Drugs	Maximum Budgets	HC.5	Drugs and supplies
Nutritional supplement	Maximum Budgets	HC.5	Drugs and supplies
Support (transport, personal care, etc.)	Maximum Budgets	HC.5	Drugs and supplies

TABLE A1
(2 of 2)

Homologation of Colombia's spending information sources with the World Health Organization's (WHO) A System of Health Accounts 2011: Revised Edition

Information sources and Colombian database items		Homologation to WHO A System of Health Accounts nomenclature	
Item in Colombian Information	**Source**	**Code**	**Item**
Individual prevention	CSS	HC.6	Preventive care
Public Health	CSS	HC.6	Preventive care

System of Health Accounts (WHO) structure: HC.1 Curative care, HC.2 Rehabilitation services, HC.3 Long-term care, HC.4 Ancillary services, HC.5 Medical goods (drugs and supplies), HC.6 Preventive care; HC.7 Governance and administration expenses, HC.9 Other health services

ACRONYMS

GDP	Gross Domestic Product
IADB	Inter-American Development Bank
CAC	High-Cost Account (*Cuenta de Alto Costo*)
ICD-10	International Classification of Diseases, tenth version
CNAPC	Conditions Not Amenable to Primary Care
CAPC	Conditions Not Amenable to Primary Care
CSS	Satellite Health Accounts (*Cuentas Satélites de Salud*)
DANE	Departamento Administrativo Nacional de Estadística (National Statistics Administrative Department)
DNP	*Departamento Nacional de Planeación* (National Planning Department)
EAPB	*Empresas Administradoras de Planes de Beneficio* (Benefit Plans Management Companies)
PHS	Public Health Spending
MSPS	*Ministerio de Salud y Protección Social* (Health and Social Protection Ministry)
OECD	Organisation for Economic Cooperation and Development
WHO	World Health Organization
PB	Benefits Plan (*Plan de Beneficios*)
SICODIS	*Sistema de Información y Consulta de Distribuciones de Recursos Territoriales* (Territorial Resource Distribution Information and Consultation System)
SISMED	*Sistema de Información de Precios de Medicamentos* (Drug Prices Information System)
SGSSS	*Sistema de Seguridad Social en Salud* (Health Social Security System)
UPC	*Unidad de Pago por Capitación* (Capitation Payment Unit)

NOTES

[1] The Satellite Health Accounts do not include the spending in special insurance regimes, such as those of the armed forces and teachers, among others; these represent under 1 percent of total spending. The CSS do include the spending not included in the benefit plan, including the spending allowed by court orders and technical-scientific committees.

[2] The Sufficiency Database captures 80% of the members of the contributive regime and 40% of those of the subsidized regime.

[3] Ministerio de Salud y Protección Social (2018). "Estructura del gasto en Salud Pública en Colombia", Papeles en Salud, No. 17, noviembre de 2018. Documento en línea ISSN: 2500-8366.

[4] This source does not include spending by territorial entities with their own resources; that information is collected through a unified territorial form, but this information is not consolidated at the national level nor is it audited to verify its quality or veracity.

[5] The efficiency frontier is measured, for any given input level, as a country's production relative to an efficiency frontier that sets the upper bound of countries' production. Thus, countries in the efficiency frontier are considered the most efficient given their health spending level (Pinto Moreno-Sierra, 2018).

[6] Banco de la República TRM (market representative rate) as of 12/31/2020: 1US$=Col$3,432.

[7] For Colombia, the OECD database only reports preventive services of an individual nature and does not include the spending by the central government or territorial entities of a collective nature that, according to the Health Accounts methodology (11th version) used by the OECD, is part of this item. Unfortunately, the item "public health spending" in Table 2 includes, among collective services, actions on health determinants that are not part of the promotion and prevention record according to SSA methodology. Given this, we can also provide an upper and lower bound of promotion and prevention spending: between 2.3% when not including the spending of territorial entities and 4.8% when including them.

[8] Although data might not be strictly comparable, the OECD records an administrative spending of 4.3 percent in Colombia in 2017 (the only available year), which is not far from the Satellite Health Accounts' record, and also much higher than the OECD average.

[9] The OECD *Health Indicators* database does not define emergency care as an independent level; emergency care visits which result in hospitalization are classified as inpatient care and those that do not result in hospitalization are classified as outpatient care. Hence, we use a different source for this analysis. For further details, see the methodological note that is part of this series.

[10] If the estimation is conducted excluding long-term care from the comparison, the relative position of Colombia does not change significantly.

[11] There is a solid consensus regarding the cost-effectiveness of most promotion and prevention interventions. However, the same cannot be said of their cost-saving nature—their ability to free up or generate resources exceeding the investment in them. For example, NYT (2018) provides evidence that these interventions are not cost savers, while McDaid, D. (2018) presents evidence to the contrary. The disagreement is partly due to differing evaluations of procedural or medications interventions, which are highly context-sensitive. An example screening for harmful alcohol consumption followed by a brief intervention through the health system. This intervention was found to save costs in 14 EU countries and to be very cost-effective in 10 others, but it was not cost-effective in 4 countries. Results also depend on whether the estimation of savings is limited to the health system or the entire country, with the latter perspective having a higher probability of finding cost-effectiveness. This underscores the importance of strengthening and promoting the economic evaluation of promotion and prevention actions within the contexts where they will be implemented.

[12] ICD-10 chapters included are: I00-I99, J30-J98, E10-E14 y C00-C97.

[13] Note: inpatient spending of Figures 12 and 13 does not include ICD-10, chapter R: "Abnormal symptoms, signs and findings, clinical or laboratory, not classified elsewhere"; this category frequently collects cases with classification issues or no data and accounts for 12 percent of inpatient spending.

[14] Spending in diabetes and renal disease corresponds to spending in all the chapter, which is mostly accounted for by these two diseases. Rao *et al.* (op. cit.) estimates the spending of countries for which information was not available. The figure only illustrates the situation of countries for which spending information does exist.

[15] Source: Health at a Glance: OECD indicators online https://www.oecd-ilibrary.org/sites/b088de1d-en/index.html?itemId=/content/component/b088de1d-en. The rate for Colombia was estimated with information from the Sufficiency Database. Consultations with non-medical professionals (alternative therapies, odontology, optometry, nursing, physical therapy, speech-language and occupational therapy, psychology) and emergency care consultations are excluded. Includes first-time, control and follow-up consultation and conference. For Colombia, the OECD records 2.6 consultations per person, below Chile and higher than Costa Rica and México, among Latin American countries for which information is available.

[16] There are two primary information sources for estimating public spending on drugs in Colombia. SISMED records all drug sales from pharmaceutical companies to healthcare system agents nationwide. It captures data only at the initial stage of the distribution chain but does not necessarily include subsequent commercialization margins. In contrast, the Sufficiency Database tracks spending and quantities of drugs financed through insurance premiums. Finally, the Maximum Budgets Database compiles information on drugs not covered by the explicit benefits plan. For more details on how drug spending is derived from these sources and how Colombian data is standardized to align with the International Health Accounts System, please refer to the methodological note.

[17] In the OECD, the spending in drugs and supplies we referred to in section 5, by level of care, is around 19 percent, but it also includes medical devices. Excluding medical devices, spending is between 12 and 15 percent.

[18] Source: IETS https://www.iets.org.co/evaluaciones-economicas; consulted February 6, 2022. The number of evaluations includes 8 critical appraisals of other studies.

[19] The Table is derived from applying a selection algorithm starting with the ten drugs with the highest price per patient per year; the ten drugs with moderate treatment costs but significant patient usage, placing them among the ten drugs with the highest budgetary impact; and those meeting both conditions. Total drug spending data was obtained from SISMED, while the number of patients and annual spending for the fifteen listed drugs were obtained from the Maximum Budgets Database and the Sufficiency Database. Some of these drugs were included in the 2021 explicit benefits plan.

[20] Very low unit price drugs, which have a high budget impact due to their extensive use, such as over-the-counter drugs like acetaminophen, ibuprofen, acetylsalicylic acid (aspirin), etc., were excluded.

[21] Palacio *et al.* shows that adding 1,877 drugs to the direct control regime, which represented 23 percent of total drug sales in the institutional channel, achieved estimated savings of Col$ 5.5 trillion over six years. Specifically, since the enactment of Circular 03 of 2013, the average drug prices under this regulation have shown an annual decrease of 0.3 percent according to the Fisher index.

[22] Institute of Health Metrics Evaluation (IHME) data, available at https://www.healthdata.org/colombia?language=149.

[23] IHME, op. cit.

BIBLIOGRAPHY

1. Rao, K., *et al.*, *Future Health Spending in Latin America and the Caribbean – Health Expenditure Projections & Scenario Analysis 2021,* Johns Hopkins Bloomberg School of Public Health and IADB.

2. OECD, *Tackling Wasteful Spending on Health*. 2017, Paris: OECD Publishing.

3. Pinto, D., *et al.*, *Efficient Spending for Healthier Lives*. Inter-American Development Bank, Flagship Report, 2018.

4. Ministerio de Salud y Protección Social, *Estructura del gasto en salud pública en Colombia*. Papeles en Salud, 2018.

5. Gmeinder, M., D. Morgan and Mueller, M., *How much do OECD countries spend on prevention?* 2017.

6. OECD, *Health expenditure indicators*. 2014.

7. OECD, International Bank of Reconstruction and Development and World Bank, *Health at a Glance: Latin America and the Caribbean 2020*. 2020.

8. Berchet, C. *Emergency Care Services. Trends Drivers and Interventions to manage the demand*. OECD Health Working Papers, 2015. No. 83.

9. Rodríguez-García, J., *Serie sobre hospitalizaciones evitables y fortalecimiento de la atención primaria en salud: El caso de Colombia*. 2012, Inter-American Development Bank.

10. Guanais, F.C., Gómez-Suárez, R. and Pinzón, L., *Series of Avoidable Hospitalizations and Strengthening Primary Health Care*. Primary Care Effectiveness and the Extent of Avoidable Hospitalizations in Latin America and the Caribbean. 2012.

11. World Health Organization, *Enfermedades no transmisibles*, WHO, Editor. 2022.

12. World Health Organization, *Tackling NCDs: 'best buys' and other recommended interventions for the prevention and control of noncommunicable diseases*. 2017, World Health Organization: Geneva.

13. IQVIA, *Drug expenditure dynamics 1995-2020: Understanding medicine spending in context*. 2021.