



THE IMPACT OF THE
COVID-19
PANDEMIC ON
CANCER CARE
IN LATIN AMERICA
AND THE CARIBBEAN

THE IMPACT OF THE COVID-19 PANDEMIC ON CANCER CARE IN LATIN AMERICA AND THE CARIBBEAN

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Executive Summary

Background and Introduction

Global public health has been ravished by this century's most severe infectious pandemic caused by the SARS-COV-2 virus. Since December 2019, the burden of the COVID-19 pandemic has mountingly displaced traditional health priorities and altered the criteria for public health prioritization. This has proved detrimental to the prevention, diagnosis, and treatment of many diseases, including cancer.

The full spectrum of cancer care, from prevention to survivorship, has been compromised by the dominance of the COVID-19 pandemic. In 2020, 1.5 million people in Latin America and the Caribbean (LAC) were diagnosed with cancer. Cancer is the second leading cause of death in LAC, with over 700,000 deaths recorded in 2020 and a projected rise in incidence for the coming years due to populational aging and lifestyle shifts. This burden already presented significant challenges for the region, which have been further exacerbated by the contingency. The immediate demands of the pandemic have resulted in diverting resources, both economic and human, to containment strategies aimed at limiting the loss of lives. The negative impact of the pandemic is likely to be greatest in low- and middle-income countries, such as those in LAC due to the already-limited resources, geographical maldistribution of healthcare, poor access to technology, and global inequities in vaccine distribution. This study aims to evaluate the impacts of the pandemic on all aspects of cancer care across 11 countries in LAC including: the impact on the activities of patient groups and organizations, the response of oncology centers, the measures taken to adapt care delivery and interventions; and the economic impact in terms of direct and indirect cancer expenditure for the main cancers in LAC and a projection of future cost implications for the region.

Methods

This report was developed through the utilization of three different data collection and generation methodologies: patient organizations (PO) survey, physician survey, and an economic impact analysis. **Patient organization survey:** Research was conducted on the impact of COVID-19 on cancer PO and their patients in LAC using an online survey tool to gather information, from which responses were obtained from 102 leaders of PO in the LAC region, the majority from Brazil, Costa Rica, Mexico, Argentina, and Colombia. This work was complemented by personalized qualitative interviews with 17 leaders from Mexico (5), Argentina (4), Colombia (2), Chile (3), and Uruguay (3). **Physician survey:** A multi-national cross-sectional survey was distributed to cancer care providers across LAC using an online survey tool through which responses were obtained from 266 cancer care providers from Argentina, Brazil, Colombia, Costa Rica, Chile, Ecuador, Dominican Republic, Mexico, Panama, Peru, and Uruguay. The online survey included questions regarding the following topics: biographical information, disruption in cancer care; epidemiologic trends; impact on screening and prevention; impact on clinic visits; treatment changes; diagnosis and management of COVID-19; and economic impact of the pandemic. **Economic analysis:** The independent health economics assessment was performed to estimate the economic impact of diagnosis delays and treatment interruptions for LAC patients, physicians, healthcare systems, and governments through the data available. With this model, the burden that healthcare systems and governments experience from this complex problem was calculated and a projection of the future implications and requirements in terms of budget allocation due to shifting trends in stage of diagnosis because of the pandemic was made. The analysis concentrates on five of the most frequent cancers in the region: prostate, breast, colorectal, lung, and cervical cancer.¹ Six countries are examined in detail, including Brazil, Chile, Colombia, Costa Rica, Mexico, Peru. The rest of the region's countries are analyzed at an aggregated level as "Other LAC," due to the scarce data published data available for the individual countries.

At a regional level, the impact of the COVID-19 pandemic on cancer care in LAC has primarily been felt in three spheres: supply of services for cancer care, mortality, and economic impact for the patient and the healthcare systems.

Supply of services for cancer care

All (100%) participants in the cancer care provider survey reported a disruption of usual care to some extent, due primarily to overwhelmed healthcare systems. Other reasons that patients saw difficulties in accessing their usual care reasons were quarantines and travel bans, fear of infection, precautionary methods taken, and financial limitations. Treatment interruptions prevailed through 2020 (95%) and to a slightly lesser extent in 2021 (85%). Most cancer care providers reported that at a proportion of their patients were forced to abandon treatment entirely, due to pandemic-related reasons. The areas most affected by disruptions in the region were surgery and diagnostic services, which will presumably have a substantial impact as patients experienced delays and interruptions in timely access to diagnosis and surgical treatment.

80% of participants reported that cancer prevention programs and activities in the region have been significantly affected by the pandemic, with 96% reporting a decrease specifically in mammography screening. This will impact millions of women as breast cancer is the most common cancer in women in LAC and is often curable if found in early stages, which is possible primarily through these important routine screening programs. The potential impact from halting screening and prevention efforts is substantial in terms of delays in timely diagnosis and staging of new patients. The downstream effects of these delays are going to be seen in coming months and years as patients present with more advanced disease and healthcare systems face the backlog of patients. If the situation exhibited by most countries becomes a trend, the compounded health and economic impact post-pandemic will likely overburden the healthcare systems with a surplus demand.

Mortality

The connection between an increase in cancer mortality and the COVID-19 pandemic is widely reported in high-income countries, with estimated increase ranging from 20-30%.^{2,3,4} Although similar data are not currently available for LAC, it is likely that the impact is even greater. This would mean at least 210,000 more people would die in LAC each year due to cancer. For example, in Peru alone, cancer deaths during the health emergency increased by 31%. In this study, several data point support the notion of a grave impact on cancer mortality due to the pandemic. On average, 87% of cancer care providers surveyed in the region reported a perceived increase in cancer mortality in their patients due to delays and interruptions caused by the pandemic. An advanced stage of cancer at the time of diagnosis was reported by 93% of physicians, often meaning poorer prognosis and limited treatment options for the patient. An increase in patients with cancer relapse was also reported by 87% of participants. An increase in disability-adjusted life years (DALYS) lost over 10-years due to cancer throughout the region is estimated to be up to 105% vs baseline, for a total of 917,000 years.

Economic Impact

Patients with cancer and their families have suffered grave economic fallouts in the wake of the pandemic. In the patient organization survey, a decrease/ loss of income for patients or their caregivers was reported by 89% and 86%, respectively. In addition, an increase in OOP expenses for treatment and the increase in home expenses associated with patient care, such as hiring additional caregivers and home refurbishment due to mobility restrictions from COVID-19 creates an alarming situation, aggravating the inherent vulnerability of patients with cancer. The role of women as caregivers was intensified as a result in the pandemic, often increasing women's economic and emotional vulnerability. A loss of public or private health coverage was also

reported by many patients. This impact is one of the most concerning as it may last into the medium- or long-term and directly affects access to care. In many countries in the region, some types of coverage are directly linked to employment. Thus, a loss of employment, also has an impact in terms of coverage.

On the other hand, healthcare systems also face an impending economic burden. 96% of physicians expect an overload of patients with cancer post-pandemic in their country and most believe that healthcare systems are not prepared to manage this pent-up demand in terms of budget allocation or healthcare personnel and specialized facility availability. Of note, in Mexico and Peru, ~70% saw decreases in the budget allocated to cancer care by their center and by the government. The total economic impact of up to US\$10.7 billion is estimated from delays in cancer diagnosis and treatment initiation, and treatment interruptions caused by the COVID-19 pandemic in LAC. Additionally, economic capacity lost over 10 years due to cancer could increase up to US\$ 8.3 billion, which is a 107% increase versus the baseline scenario, with an increase of up to 155% in the 5-year cost of cancer treatment for healthcare systems, equivalent to US\$ 2,132 million. Breast cancer is responsible for approximately 50% of the total economic impact of the pandemic followed by cervical cancer, exposing the severe impacts of the pandemic on women's health.

Furthermore, the finding from this report evidence that the COVID-19 pandemic had a disproportionate impact on women in LAC, exacerbating gender inequality in health and threatening women's development and well-being in terms of health, employment, and social welfare. To address the issues raised resulting from the impact of the COVID-19 pandemic on cancer care in LAC, recommendations are provided to continue to respond to this and future pandemics in a way that prioritizes the health, protection, and care of patients by committed governments and resilient healthcare systems. That is, policies that prevent this situation from having such a high social cost that it implies a death sentence without even having begun the journey of the disease..

Summary of recommendations

Advocate for public policies and specific support programs aimed at addressing the new problems patients face created by the deterioration of the economic situation in LAC, which particularly affects vulnerable groups such as cancer patients and their caregivers. The economic dimension of the impact of the pandemic on cancer PO and their patients will likely have a sustained impact, at least in the medium term. Thus, solutions must be developed methodically and not only with a short-term, temporary perspective.

POs must map new actors and programs, especially those in the social sphere, to create synergies that help patients with their new needs and support the sustainability of these organizations which has been challenged by the economic impact of the pandemic, as both the demand for and supply of activities and services for patients and caregivers has increased significantly, while incomes have declined.

Governments must recognize and understand the repressed cancer burden generated by the pandemic and develop a dedicated and comprehensive strategy with the aim of reducing cancer mortality by mitigating delays and interruptions to cancer prevention, diagnosis, and care.

Allocate sufficient resources to cancer expenditure according to the repressed demand and economic impact of the pandemic on cancer care and control in each country.

Incorporate the gender perspective to broaden the understanding of the problems associated with the COVID-19 pandemic and cancer care, recognizing the disproportionate impact bore by women and girls both as patients and caregivers, and mainstreaming gender in all stages of the formulation of policies, plans, and strategies.

Continue cancer prevention programs in full force and implement strategies to breach the gap of screening that was created during the pandemic, in order to achieve opportune diagnosis and intervention.

Ensure the continuity of supply of cancer care services, including prevention, diagnosis, surgery, treatment, and follow-up during future outbreaks and health crises, by developing specific strategies to be better prepared.

Combat the pervading shortage and maldistribution of resources in LAC by optimizing existing human resources and leveraging technology.

Implement communication and awareness campaign that educate healthcare personnel, patients with cancer, and caregivers to deal with the new reality and embrace the lessons learned from this pandemic as an integral part of the new normal of cancer care.

Foment local research on the impacts of the diverse measures, adaptations, and decision made to cancer care delivery in light of the pandemic to create an evidence-based approach for the future.

Introduction

Global public health has been ravished by this century's most severe infectious pandemic caused by the SARS-COV-2 virus. Since December 2019, the burden of the COVID-19 pandemic has mountingly displaced traditional health priorities and altered the criteria for health management prioritization. This has proved detrimental to the prevention, diagnosis, and treatment of many other diseases, including cancer worldwide and LAC has been no exception.

The full spectrum of cancer care, from prevention to survivorship, has been compromised by the dominance of the COVID-19 pandemic. In 2020, 1.5 million people in the LAC region were diagnosed with cancer, with prostate and breast cancers being the most frequent in men and women, respectively. Cancer is the second leading cause of death in LAC, with over 700,000 deaths recorded in 2020 and a projected rise in incidence for the coming years due to populational aging and lifestyle shifts. This burden already presented significant challenges for the region, which have been further exacerbated by the contingency.

In LAC, the pre-pandemic healthcare landscape was already pervaded by fragmented and under-funded healthcare systems with inequities in the levels of access to quality care. The immediate demands of the pandemic have resulted in diverting resources, both economic and human, to containment strategies aimed at limiting the loss of lives. Public health measures such as lock downs and quarantines implemented across the region were interlaced with the pressing economic crisis, creating and aggravating challenges related to access to cancer screening, diagnosis, and treatment across the region. Additionally, the COVID-19 pandemic had a disproportionate impact on women in LAC, exacerbating the ongoing crisis that is gender inequality affecting the health, social, economic, and political spheres.

When the pandemic began, routine health services were interrupted and many of the health workers that usually provided care to patients with cancer or other non-communicable diseases were reassigned to the COVID-19 response. Patients with cancer are especially vulnerable to pandemic impacts as they can face life-threatening infections and interruptions and/or delays in their cancer care. This also puts this group of people at a higher risk of becoming critically ill or dying if they have COVID-19. According to the Pan American Health Organization (PAHO), countries must seek innovative ways to ensure care continuity for people with non-communicable diseases, including cancer, while addressing COVID-19. Countries cannot think this is an either-or situation.

Adapting to the circumstances, while balancing the continued delivery of care and limiting exposure has been a challenge for oncologists and patients everywhere. Many oncology practices have implemented measures such as adopting telemedicine, augmenting follow-up intervals, reducing elective or non-essential procedures, and discharging patients from in-patient care.^{5,6} The negative impact of the pandemic is likely to be greatest in low- and middle-income countries, such as those in LAC due to the already-limited resources, geographical maldistribution of healthcare, poor access to technology, and global inequities in vaccine distribution.^{7,8} This study aims to analyze and estimate the impacts of the pandemic on all aspects of cancer care across 11 countries in LAC including: the impact on the activities of patient groups and organizations, the response of oncology centers, the measures taken to adapt care delivery and interventions; the economic impact in terms of direct and indirect cancer expenditure for the main cancers in LAC and a projection of future cost implications for the region. Recommendations are provided to continue to respond to this and future pandemics in a way that patients are kept healthy, protected, and cared for by resilient healthcare systems.

Methodology

This report was developed through the utilization of three different data collection and generation methodologies: patient organizations (PO) survey, physician survey, and an economic impact analysis and estimation. Once these three parts were aggregated, the expert panel reviewed the article for contextual edits and final approval.

Patient Organization Survey

The Catalyst Group, through United Patients, its online training platform for PO, conducted research on the impact of COVID-19 on cancer PO and their patients in LAC. Catalyst utilized an online survey tool to gather information, from which responses were obtained from 102 leaders of PO in the LAC region, the majority from Brazil, Costa Rica, Mexico, Argentina, and Colombia (See Table 1).

This work was complemented by personalized qualitative interviews with 17 leaders from Mexico (5), Argentina (4), Colombia (2), Chile (3), and Uruguay (3). The surveys and interviews were done between May and July of 2021. The content of the research is divided into four main parts to analyze how, more than a year after it began, the pandemic has affected PO. This included a) patient access to health care; b) economic impact; c) impact of the pandemic on organizations' services; and d) response to COVID-19. In this analysis, the focus is on the overall impacts of the pandemic on organizations and their patients and on the economic impact it has caused. These results bolster the report with quotes and stories, as well as detailing the economic impact on patients that would be difficult to collect through the online survey or from the physician experts.

Physician Perception Survey

Design and Study Instrument

UA multi-national cross-sectional survey was distributed to cancer care providers across LAC. A team of oncologists and researchers from across LAC developed a data collection instrument in the form of an online survey consisting of 45 questions. Content validation was performed and assessed by a group of seven oncologists and the survey was tested on a sample of oncologists from LAC to ensure that all questions were clear and understandable. Appropriate changes were made based on the suggestions. The online survey included questions regarding the following topics: biographical information, perception of disruption in cancer care; epidemiologic trends; perception of impact on screening and prevention; impact on clinic visits; treatment

Table 1. Number and distribution of answers per country

Country	Answers	(% No.)
Argentina	10.78	11
Brazil	13.73	14
Chile	7.84	8
Colombia	10.78	11
Costa Rica	12.75	13
Dominican Republic	4.90	5
Ecuador	3.92	4
Mexico	11.76	12
Panama	9.80	10
Peru	8.82	9
Uruguay	4.90	5
Respondents		102
Non-respondents		2

changes; diagnosis and management of COVID-19; and perception of economic impact of the pandemic. The questions included were developed based on a literature review on the subject and the team's personal experience.

Participants

This survey, available in Spanish, Portuguese, and English, was disseminated electronically using the Crowdsignal platform between the months of June-September of 2021. The survey was completed by 266 cancer care providers from public and private institutions across 11 LAC countries: Argentina, Brazil, Colombia, Costa Rica, Chile, Dominican Republic, Ecuador, Mexico, Panama, Peru, and Uruguay. The cancer care providers targeted were involved in clinical cancer care and aware of their centers' response. See Table 2 for population characteristics.

Data Analysis

Responses from the survey were collected and recorded anonymously. Upon completing the data collection process, data from each country was individually exported and compiled for analysis. Descriptive analyses were performed through data aggregation for every category and question. A cluster strategy was used to report the data in the form of Central America and the Caribbean (Panama, Dominican Republic, Costa Rica); Andean Region (Colombia, Peru, Ecuador); Southern Cone (Argentina, Chile, Uruguay); Brazil, and Mexico. This strategy was used to ensure a robust analysis due to limited survey responses in the clustered countries. Due to rounding of percentage values, some totals may not correspond with the sum of the separate figures.

Economic Impact Analysis

The independent health economics assessment was performed to estimate the economic impact of diagnosis delays and treatment interruptions for LAC patients, physicians, healthcare systems, and governments through the data available. With this model, the burden that healthcare systems and governments experience

Table 2. Characteristics of Survey Sample

Characteristic	No. (%)
Total Number of Participants Per Country	
Argentina	32 (12.03)
Brazil	25 (9.39)
Colombia	26 (9.77)
Costa Rica	13 (4.89)
Chile	13 (4.89)
Ecuador	46 (17.29)
Dominican Republic	14 (5.26)
Mexico	43 (16.16)
Panama	12 (4.51)
Peru	19 (7.14)
Uruguay	23 (8.66)
Total	266 (100)
Specialty Types Total	
Clinical oncologist	158
Surgical oncologist	57
Radio-oncologist	10
General surgeon	8
Palliative care specialist	6
Hematologist	6
Pathologist	6
Gynecologist	5
Other	10
Quantidade total de instituições de saúde	
Public hospital only	59
Public hospital and academic center	11
Private hospital only	71
Both private and public hospitals	77
Private hospital and academic center	12
Private, public, and academic center	18
Academic center only	13
Other	6
Average new cases attended/year	795

from this complex problem was calculated and a projection of the future implications and requirements in terms of budget allocation due to shifting trends in stage of diagnosis because of the pandemic was made. The analysis concentrates on five of the most frequent cancers in the region: prostate, breast, colorectal, lung, and cervical cancer.¹ Six countries are examined in detail, including Brazil, Chile, Colombia, Costa Rica, Mexico, Peru. The rest of the region's countries are analyzed at an aggregated level as "Other LAC," due to the scarce data published data available for the individual countries.

The COVID-19 pandemic is causing several direct and indirect impacts on cancer. This model focused on the following: a) Incremental cost of treatment for the healthcare system; b) Deviation of annual cancer expense compared to a pre- pandemic scenario; c) Loss of economic capacity as more people with cancer will die or live with the disease longer; and d) Public spending to fight poverty for those households impoverished due to "out-of-pocket" (OOP) payments associated with disease treatment at a more advanced clinical stage. The following methodology was used for each:

- a. Clinical stage-shift was utilized, which measures the increase in the 5-year cost of treatment caused by a shift in cancer stage, given a delay in diagnosis or treatment initiation of new cases and treatment interruption of existing patients, as the cost of care generally increases at a more advanced stage..
- b. The same estimation method was used to assess how the annual cancer expense would vary compared to a scenario without COVID-19 during 2020-2023. As current patients and new cases have seen delays or deferrals in treatment since the start of the pandemic, some of them die before starting or resuming treatment, and some other start or resume treatment at a more advanced clinical stage.
- c. Burden of disease methodology was used to estimate the GDP (gross domestic product) lost over 10 years due to new cases and patients that will die sooner or live longer with the disease due to treatment delay or deferral.
- d. A financial catastrophe/ Impoverishment methodology was used, which measures the number of people that fall into financial catastrophe and impoverishment, as well as the 10-year government expenses to fight poverty of households impoverished by OOP expenses (Figure 1).

The model estimations cover three scenarios: baseline, scenario A, and scenario B. These scenarios result from different assumptions on the following variables: (i) the percentage of people that experience delays or interruption in treatment, (ii) the duration of delay in diagnosis or treatment deferral, and (iii) the length of the period in which the pandemic has had the most critical effects.

The baseline scenario assumes that the most critical effects of the pandemic (e.g., lockdowns and healthcare system capacity reduction) occur from March 2020 until March 2022. Based on the literature review, this scenario states that in 2020, 72% of new cancer cases were affected by the pandemic, while in 2021 and 2022 this proportion will have decreased by 40% each year, and the length of the delay in diagnosis or treatment initiation will have lasted 6 months. For patients, it considers that 38% will have deferred their treatment, and these deferrals will have lasted 3 months.

Scenario A reflects an increment from the baseline scenario of 10 p.p. in the percentage of people affected, a 3- month increase in length of treatment delay for new cases, and a 2-month increase in treatment deferrals for patients. Scenario B considers that the most critical effects of the pandemic will extend until December 2022, following the same predictions as scenario A for new cases, with an increase in the percentage of patients affected by treatment deferrals, reaching 68%.

The estimates provided in this report were built through a model that involved 18 different variables. Data points for each of the variables are required at a country level except for variables 8, 17, and 18; and at a cancer type level, except for variables 14 and 16. Variables 1 to 6 are the basis of the three estimation methods (clinical stage shift, burden of disease, and financial catastrophe). Additionally, clinical stage shift utilizes variables from 7 to 12, the burden of disease from 7 to 8 & 12 to 15, and financial catastrophe from 16 to 18 (Figure 2). Annex 1 contains a detailed description of the methodology for each subset.

Figure 1. Framework of COVID-19 economic impact on cancer care

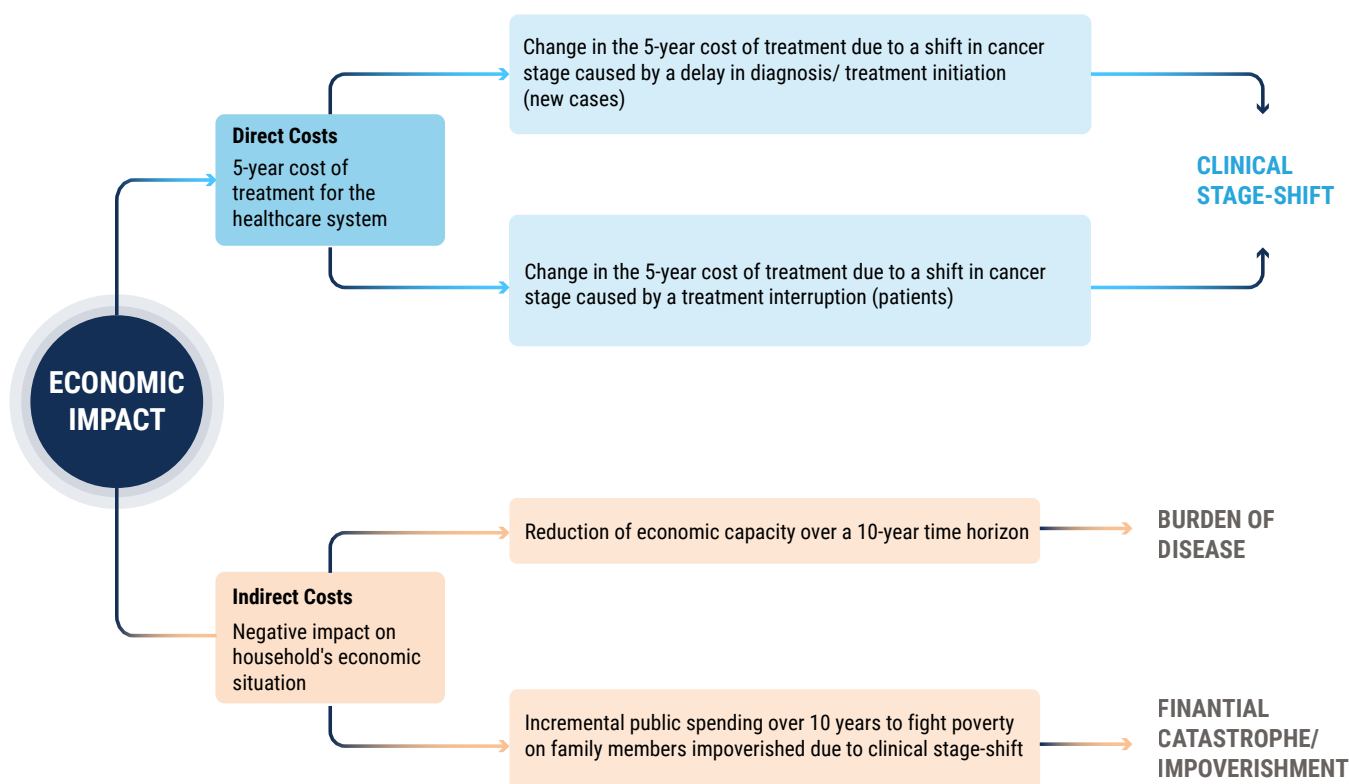


Figure 2: Overview of variables required for the estimations

	Variable	Estimation Method	Description
1	Average months of treatment delay/ interruption		Number of months that treatment was delayed or interrupted during the pandemic
2	Proportion of patients affected by COVID		% of cancer patients that interrupted or delayed their treatment
3	2020, 2021 & 2022 estimated new cases		Number of new cases of cancer in a specific period of time
4	2020, 2021 & 2022 estimated patients		Number of cancer patients in treatment as of that year
5	Incidence distribution by stage		The distribution of new cancer cases diagnosed by clinical stage of cancer
6	Patients in treatment distribution by stage		The distribution of patients treated by clinical stage of cancer
7	5-year Survival rate by stage		Probability of being alive for 5 years after diagnosis by stage
8	Observed hazard ratio by stage		The rate at which the risk of shifting clinical stage changes given a delay in treatment
9	5 year cost of treatment by stage		5 year patient cost of cancer's treatment per stage
10	1st year cost of treatment ratio		The proportion of the first year cost of cancer treatment from the rest of the years
11	5 year cancer healthcare budget		Public healthcare budget destined to each cancer over 5 years
12	Yearly cancer healthcare budget		Healthcare budget destined to each cancer for 2020, 2021 and 2022
13	1 to 4 year survival rate by stage		Probability of being alive for x years (from 1 to 4) after diagnosis by stage
14	Average GDP per capita over 10 years		Gross Domestic Product distributed by the number of inhabitants for 10 years
15	Average ratio of years of life lost (YLLs) over disability-adjusted life years (DALYs)		The proportion that YLLs (years lost due to premature mortality) represents of total DALYs (includes YLLs plus Years Lived with Disability)
16	Social spending on poverty over 10 years		Expenses that governments have to incur to fight poverty per household
17	Impoverishment to financial catastrophe ratio		Proportion of people that fall into poverty given a financial catastrophe
18	Odds ratio of falling into financial catastrophe		Probability of falling into financial catastrophe per stage of cancer

GDP: gross domestic product

Clinical Stage Shift Burden of disease Financial catastrophe/ impoverishment

**RESULTS OF PATIENT
ORGANIZATION SURVEY:
IMPACT OF COVID-19 ON
CANCER PATIENTS AS SEEN
BY LATIN AMERICAN PATIENT
ORGANIZATIONS**

IMPACT OF COVID-19 ON CANCER PATIENTS AS SEEN BY LATIN AMERICAN PATIENT ORGANIZATIONS (PO)

Summary of Impacts

The impact of the COVID-19 pandemic on cancer patients and PO that defend their rights in the LAC has been significant, adding a new dimension that must be analyzed precisely. This is especially true in the economic sphere, which requires specific interventions. The socioeconomic situation has affected cancer patients and their caregivers, particularly those with few financial resources. One of its main impacts has been the loss of access to early diagnosis as well as to the treatments they receive, thus leading to a deterioration of their life expectancy and quality of life. Cancer PO in the region have also reported deteriorating economic conditions that affect the organizations themselves as well as patient caregivers, affecting patient support structures and deepening the vulnerability of their situation. Considering the fact that 2 out of 3 caregivers are women or girls, the increased burden that the COVID-19 pandemic has placed on caregivers has fallen primarily on this group.

As part of the new challenges facing PO, several are associated with the economic impact from the pandemic, as both supply and demand for activities and services for patients and caregivers has increased significantly. Nevertheless, organizations report a loss of revenue in the same period. This scenario can put organizations and their sustainability at risk, which would directly affect patients who rely heavily on the work of these organizations to access health services.

In this context, it is necessary to produce a specific response to confront the new challenges, both through specific programs from the organizations themselves and by means of public policies that recognize and address these issues. That is, policies to prevent this situation from having a social cost that is simply too high, in a scenario where patients have a death sentence without even having begun the journey of the disease.

Access to and Supply of Health Services

One of the main effects of the pandemic on cancer PO in the region is access to and supply of health services. For example, in Brazil, during the first phase of the pandemic, a significant decrease was seen in the number of patients undergoing treatment in cancer centers. This had implications not only for patients but also for health care providers, who faced difficult decisions regarding the general health and cancer treatment of patients during the pandemic.⁹

In fact, most organizations report that patient access to early detection has deteriorated significantly in part due to new health regulations combined with patient fear of being infected. For the same reasons, another trend at the regional level is the decline in access to routine and follow-up examinations.

According to a survey from the Pan American Health Organization on noncommunicable diseases, including cancer, in seven LAC countries, changes in services to cancer control resulted in specific procedures being stopped, a decline in demand due to fear of contagion and confinement, and the need to allocate more resources to counter the effects of COVID-19.¹⁰ For example, in Peru alone, cancer deaths during the health emergency increased by 31%.¹¹

Before the pandemic, according to studies on cancer patients, on average 45% of participants were diagnosed in stages III and IV in countries such as Brazil, Egypt, India, Libya, Nigeria, Peru, and Thailand. This is in contrast to developed countries, such as Canada or Sweden, where it is only 8%. Considering the effects of COVID-19 throughout LAC, this reality has increased.

In the survey of organizations, 67% reported that patients had experienced delays in getting treatment and medical care, 15% reported that patients were unable to get their treatments, while 18% reported no delays (Figure 3). The delays in receiving treatment and medical care, as it's generally understood, range from visits to the doctor to specialized procedures. According to the survey, the greatest delays have occurred in visits to the doctor, follow-up examinations of already diagnosed patients, and early detection services.

Although there is disparity among the different countries, in general there are gaps in the availability of services from the public sector in the region. There are major gaps in most countries in regard to oncology teams and difficulties in access due to administrative obstacles in some countries, leading to long waiting times, affecting treatment outcomes.¹²

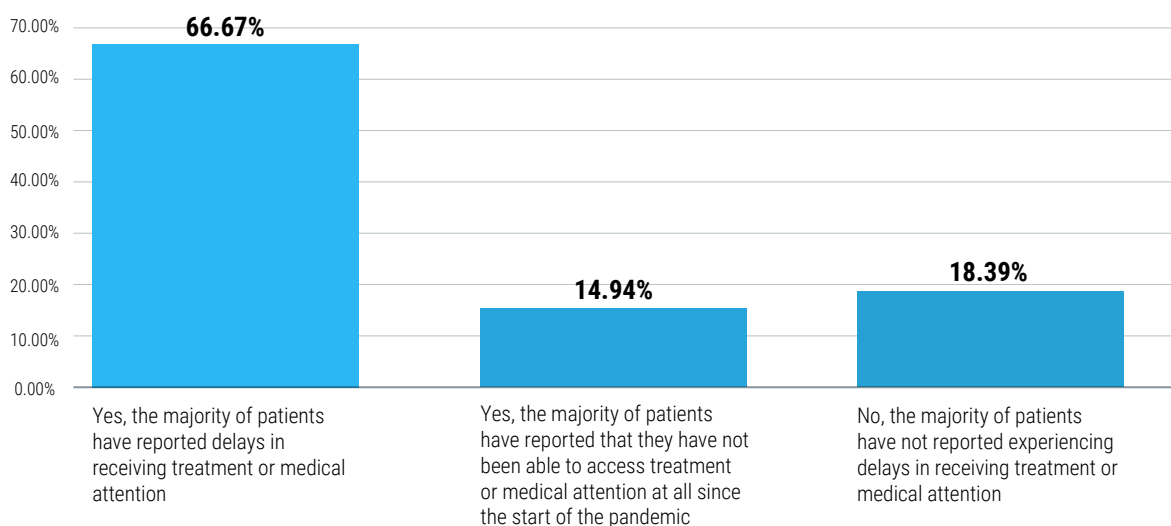
“Logistic issues regarding access are key, not being able to move around, not being able to go to a doctor’s office, minimizing points of contact with the health system. Changing this should be an urgent part of demands on the authorities.”

María de San Martín, Asociación Donde Quiero Estar

Argentina

Figure 3. Delays in receiving treatment or medical attention reported by patients

In general, have the majority of your patients reported experiencing delays in receiving treatment or medical attention? Treatment/medical attention includes all forms of early detection (i.e., screening)



Access to Health Services During the Pandemic and New Forms of Care

While it is true that another side of the coin can be seen in the acceleration of access to telehealth services, this is unequal in the region and there are problems with access to quality services. According to the “2021 Global Medical Trends Survey,” at least 50% of insurers worldwide offer telemedicine services and LAC is within the average with 46% participation.¹³ Additionally, some health services associated with cancer care require the patient to be present for follow-up, so all care cannot be shifted to virtual channels.

Given the significant economic impact of the pandemic on patients and society in general, PO have seen a significant increase in demand for their healthcare services, such as helping patients cover expenses associated with basic issues related to access, such as transportation and accommodations to be able to go to appointments (indirect expenses). Similarly, new virtual tools and the use of digital health services have also led organizations to offer training in the use of these new channels, as there is a vacuum from the states in offering this type of training.

While medical consultations by video call have provided a type of solution for patients’ access to their doctors during the pandemic, it is also a practice that has significant limitations: it is not possible to physically examine the patient, patients often require training to use the technology, and these have associated costs related to technology and internet connectivity. Among respondents, 37% stated that the majority of patients have reported not having access to medical consultations by video calls, while 26% indicated that their patients have gained access through the public system, and 20% have done so either through the public or private system. Plans to improve access to telehealth must include concrete tools for patients, attempting to ensure that the cost associated with access to health in the region does not increase even further, given that the issue of economic resources is a real constraint.

Advocacy and the New Dynamics

Another area that has had to be revised by PO is advocacy, given that the dynamics have changed. With the new focus on health at the center of public concerns, there are emerging areas in which decision-makers are seen and new opportunities arise to put issues of interest on the public agenda, for example in virtual discussions. It is important for organizations to be prepared to take advantage of these areas, and to have mapped their key actors and the spaces in which they will participate so they can situate their messages and interactions in a timely manner. Regarding this point, organizations were asked how the pandemic has impacted their advocacy efforts. Of those interviewed, 51% reported that the aspect that had most deteriorated was access to timely diagnoses during the pandemic, followed by early detection of cancer with 44%, and access to cancer treatment at 44%.

Among other internal changes, the use of digital channels to communicate with patients and caregivers was reinforced, which is a positive externality of the pandemic. Organizations indicated that they have increased the use of WhatsApp (90%), telephone calls (77%), and social media (82%) to stay in touch with their patients. Of note, the response to COVID-19 in the region’s different countries has been disparate but, in general, inadequate.

Role of Organizations in Vaccination against COVID-19

Access to vaccination against COVID-19 has moved slowly, and the vulnerability of patients with cancer to COVID-19 and lack of specific policies from governments for this group has contributed to significant disruption in access to appropriate treatments for cancer patients in the region. The PO took on an important role in providing information about the vaccine to their patients. Of survey respondents at the regional level, 46% reported their organization provided recommendations on the vaccine in collaboration with hospitals and associated medical professionals. A total of 23% produced recommendations of their own, with organizations that provided timely information to their patients reaching a total of 69%. On the other hand, 31% admitted that their organization did not provide recommendations and they limited themselves to referring patients to the ministries of health for support and guidance.

Economic Impact of the Covid-19 Pandemic on Patient Organizations for Cancer and their Patients in Latin America

One of the main impacts the pandemic has had on the region's countries is economic. Job losses have been dramatic, with the effects felt most in the second quarter of 2020, where it is estimated that approximately 47 million jobs were lost in LAC.¹⁴ In Brazil, there was an 8% drop in employment and wage costs shrank by 4%. In Chile, wage costs fell by more than 10% annually. In other countries in the region, there were declines in total wage costs in Uruguay (5%), Argentina (9%), Costa Rica (15%), and Peru (more than 25%)¹⁵

The macroeconomic indicators in the region are very clear in this regard: GDP, public debt, deficit, increased poverty, among others. In LAC, small and medium-sized enterprises, which account for more than 50% of formal employment, were severely affected. Added to this are high rates of informality, which have made families more vulnerable to effects from the pandemic.¹⁶

For example, in Colombia alone, the social gaps from poverty and extreme poverty have grown nationally, according to the March 2021 National Administrative Department of Statistics (DANE) survey, Pulso Social,¹⁷ which measured the impact of the first year of the pandemic. 2.3 million households currently eat only two meals a day, 70% of heads of households cannot save any part of their income, and another 19% do not have an income. Moreover, according to the Sisbén IV database, 4.6 million people have been identified in conditions of extreme poverty, another 8.5 million in moderate poverty, and more than 7.9 million are classified as vulnerable.

In the context of the universe of cancer patients and their families, the economic impact has a direct effect on access to health services, including diagnosis and treatment, which necessitates the creation of new social programs specifically targeted at this group, the people who have new, specific demands.

“It’s so serious, the situation of extreme poverty of patients whose socioeconomic status was bad and got worse. In some cases, even the diagnosis becomes a secondary consideration.”

*Peter Czanyo, Fundación Pacientes de Cáncer de Pulmón
Argentina*

Several PO in the region have emphasized how the economic aspect impacts patients: In Argentina, the weight of ancillary expenses, such as transfers done using proper care, non-covered medication, etc., has had a higher effect on income as a result of the general deterioration in economic conditions. In Colombia, the economic panorama is bleak, and recovery has been slow. Just in the capital city of Bogotá, more than 53,000 companies have closed, according to data from the Chamber of Commerce.

The overall outlook in the region indicates a deterioration in the finances of the organizations surveyed, especially in countries such as Mexico (82%) and Brazil (75%). Some of the traditional mechanisms for PO to raise funds have to do with charitable events have not been able to be held in the new circumstances. Thus, organizations must find alternative forms of funding and must progressively refine the impact of these to achieve similar funding. This is also an opportunity to find sponsors for activities and funding donors from other sectors beyond the traditional ones, which has become a possibility given that the health sector is at the center of everyone's attention. By carefully analyzing the questions in the report's economic section, relevant findings were elucidated.

The most frequent response was the decrease or loss of income for patients, in almost all cases. This is an alarming situation, as it aggravates the inherent vulnerability of patients with cancer. According to the survey, the patients' decrease/ loss of income was reported by 89% of respondents, followed by the decrease/loss of income for caregivers at 86%. Added to this is the increase in OOP expenses for treatment and the increase in home expenses associated with patient care, such as hiring additional caregivers and home refurbishment due to mobility restrictions from COVID-19.

In LAC, OOP spending is one of the highest in the world, a situation exacerbated by the pandemic. This was reflected in the surveys conducted, where organizations pointed out that this reality is especially important in countries such as Mexico (100%) and Argentina (90%). In this sense, a decline in patient incomes directly results in reduced access to medical care, and can even imply a loss of health coverage, which often depends on employment.

The second most-mentioned point by organizations is the income loss experienced by caregivers. This situation substantially impacts patients' quality of life, since a large part of it depends directly on the role of caregivers. Caregivers have had to look for alternative livelihoods, which can reduce the hours available for patient care. This clearly results in a decline in patients' quality of life and even in additional barriers to accessing treatment, as caregivers are responsible for tasks such as accompanying them to health centers for appointments, routine examinations, diagnosis, or treatment. Caregivers also influence the quality of life at home by taking care of many daily tasks that patients cannot perform. Of note, caregivers often care for children at home, who have had to spend several months studying in virtual sessions. Thus, time spent on the patient must also be shared with these new responsibilities.

On the other hand, caregivers, a role that falls primarily on women and girls, have also suffered an increasing burden during the pandemic. They face a wide breath of challenges including juggling their own work, caregiving responsibilities (usually unpaid), and their own personal needs and health- both of which are often sacrificed. Women and girls who are caregivers have a greater risk for poor physical and mental health, including depression and anxiety. The COVID-19 pandemic has further exacerbated this role, which is often overlooked because it is not measured in traditional economic productivity indicators.

The three following response criteria, while less common, have been mentioned by more than half of the respondents, thus affecting a majority of organizations. First, and one of the most serious effects, is the loss of health coverage, public or private, by patients. This impact is one of the most worrisome as it may last into the medium- or long-term and can also be extremely serious in regard to accessing treatment. In many countries in the region, some types of coverage are directly linked to employment (by public and private insurance). Thus, a loss of employment, also has an impact in terms of coverage. This finding is especially important from a public policy point of view and for the containment measures that public services should anticipate. On the other hand,

it also presents clear advocacy opportunities for organization with the goal of having a direct impact on the quality of life of patients most affected by COVID-19.

Delays in Access to Medical Care Due to Cost of Care Reported by Patients

Regarding postponing access to medical care, the majority of respondents reported a delay (26% most patients and 32% some patients, for a total of 58%), while 42% reported none. Making a more detailed analysis, the countries reporting the most significant delays are Ecuador, 67%, and Mexico with 64%. This question could be linked to both the increase in OOP costs and the loss of employment-related coverage, discussed earlier. The consequences of delaying access to medical care due to cost can be summarized in two main areas: 1) patients with more complex medical cases who require specialized treatments that are sometimes not available in all countries in the region; 2) a possible overload of health services, producing bottlenecks that will result in care delays.

As the economic factor is an identifiable area for delays, it is clear that incidental public policies can be created which look to address this particular aspect. PO can also make efforts to find solutions, such as helping patients identify social support programs from the government or other institutions.

Regarding loss of access to medical care strictly due to economic issues, reports from PO are divided, with a slight majority reporting loss of access due to economic factors (26% and 32%). Of the 58% who report a loss of access due to economic factors, almost half report that their patients have not sought medical care because they could not afford it, with 27% reporting that this was the case with “most patients” and another 27% reports that with “some patients”, reaching a total of 54%. On the other hand, 46% of the organizations declare that patients have not stopped seeking medical attention because they cannot pay for it.

The transverse economic impact on households caused by the COVID-19 pandemic in the region, added to the loss of coverage experienced by some patients is creating a very complex situation that the healthcare systems will have to confront in the short and medium term.

Impact of the COVID-19 Pandemic on Demand for Patient Organization Activities and Services

In the context of the pandemic, organizations found patients required increase accompaniment services to adapt to the new reality. Of the organizations surveyed, 48% noted that demand has increased significantly and that it was necessary to expand the capacity to assist patients. The trend from the survey done the previous year remains, where 58% also reported a significant increase in demand.¹⁸ Secondly, 31% stated that demand increased moderately, with more calls and interactions via email and social media. This scenario is understood in light of new dynamics in which patients have more restricted access to their treatments and a quality of life modified by the loss of their own income as well as that of their caregivers. Similarly, disruptions in access to health services, accompanied by increased OOP expenses, create a situation in which patients’ vulnerability increases and they turn to civil society organizations for support.

In response to this scenario, around 34% of organizations reported they have responded to this demand with a significant increase in the supply of activities and services, and 28% have responded with a moderate increase. New activities are mainly linked to psychological accompaniment for patients (62%), given that the pandemic has created increased stress, loneliness, and other issues that have significant psychological impact.

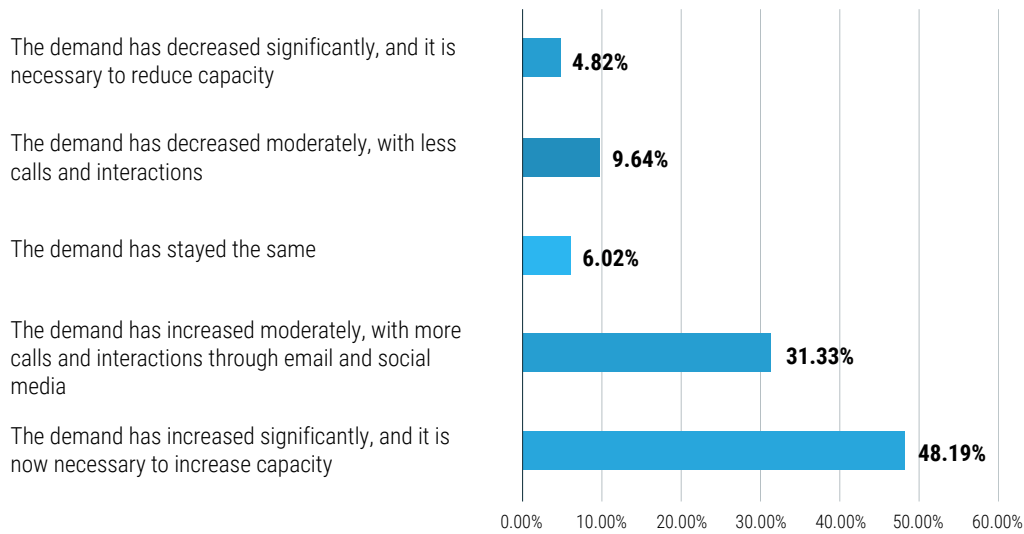
Nevertheless, what also stands out are activities and services aimed at supporting relatives and caregivers (49%) as well as providing support for patients’ basic needs. A new demand for activities and services focused

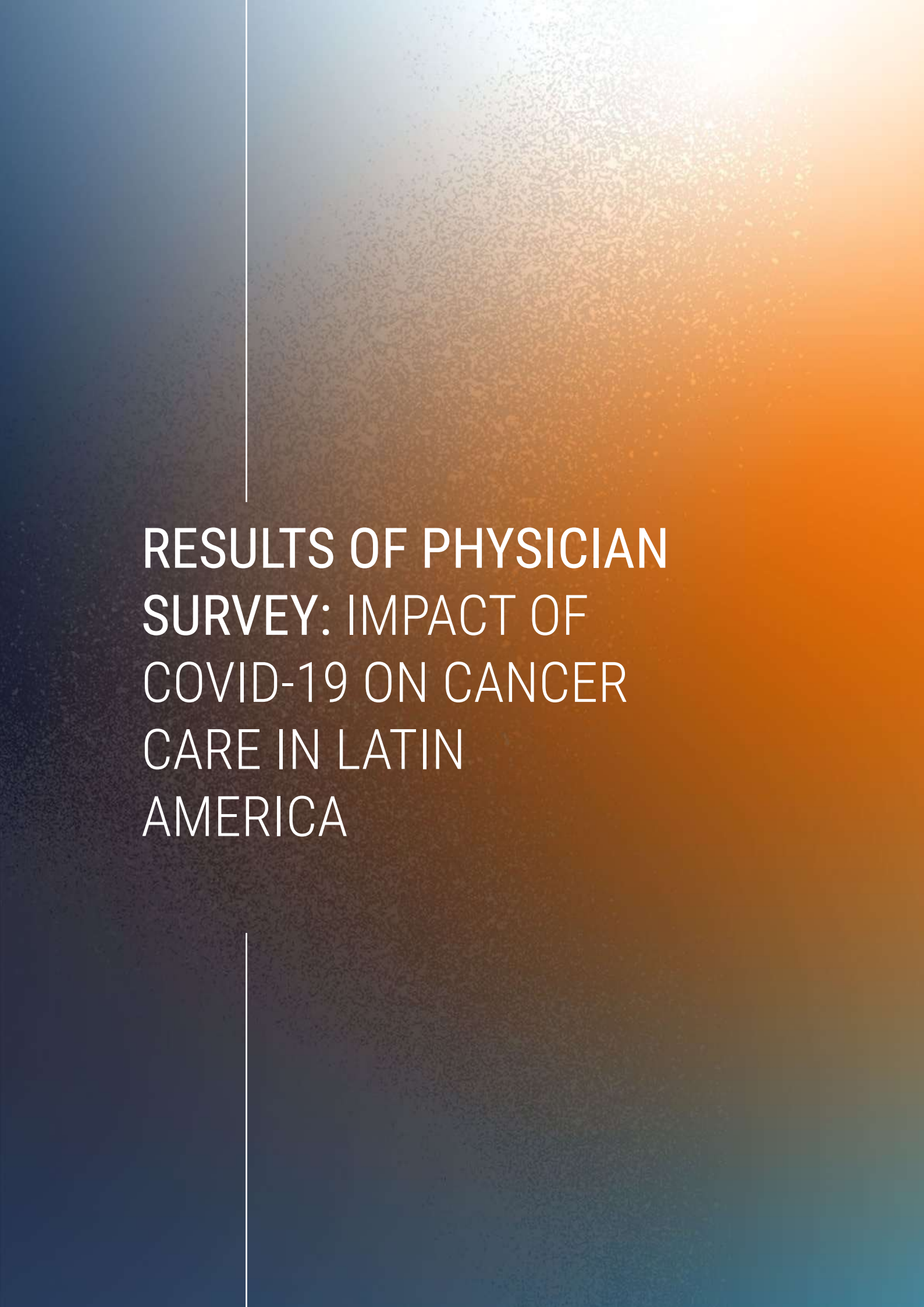
on facilitating access to healthcare systems has also emerged, such as delivery and receipt of medicines or medical equipment (48%). This higher demand, corresponding to a greater supply of services offered by organizations to their patients, also implies a greater demand for resources. Nevertheless, not all organizations are getting these resources.

More than half (56%) of organizations have noted that their financial situation has deteriorated, 35% have stayed the same, and 35% say that it has improved. This trend stays constant when compared to 2020 data, where a majority (81%) reported that the pandemic affected their finances moderately to drastically.¹⁸

Figure 4. Impact of the COVID-19 pandemic on the demand of activities and services that PO provide

How has the COVID-19 pandemic affected the demand of the activities and services that your organization provides?





**RESULTS OF PHYSICIAN
SURVEY: IMPACT OF
COVID-19 ON CANCER
CARE IN LATIN
AMERICA**

Impact of COVID-19 on Cancer Care in Latin America: Results of Physician Survey

Summary of Impacts: Regional Scope

The impact of the COVID-19 pandemic on cancer care in LAC has primarily been felt in three spheres: mortality, supply of services for cancer care, and economic impact for the patient and the healthcare systems.

The connection between an increase in cancer mortality and the COVID-19 pandemic is widely reported in high-income countries, with estimated increase ranging from 20-30%.^{2,3,4} Although similar data are not currently available for LAC, it is likely that the impact is even greater. This would mean at least 210,000 more people would die in LAC each year due to cancer. In this study, several data points support the notion of a grave impact on cancer mortality due to the pandemic. On average, 87% of cancer care providers surveyed in the region reported a perceived increase in cancer mortality in their patients due to delays and interruptions caused by the pandemic. An advanced stage of cancer at the time of diagnosis was reported by 93% of physicians, often meaning poorer prognosis and limited treatment options for the patient. An increase in patients with cancer relapse was also reported by 87% of participants. 80% of participants reported that cancer prevention programs and activities in the region have been significantly affected by the pandemic, with 96% reporting a decrease specifically in mammography screening. This will impact millions of women as breast cancer is the most common cancer in women in LAC and is often curable if found in early stages, which is possible primarily through these important routine screening programs. Almost all cancer care providers (96%) agreed that their patients would be harmed due to the delays and interruptions in care caused by the COVID-19 pandemic.

All (100%) participants in the cancer care provider survey reported a disruption of usual care to some extent, due primarily to overwhelmed healthcare systems. Other reasons that patients saw difficulties in accessing their usual care were quarantines and travel bans, fear of infection, precautionary methods taken, and financial limitations. Treatment interruptions prevailed through 2020 (95%) and to a slightly lesser extent in 2021 (85%). Most cancer care providers reported that at a proportion of their patients were forced to abandon treatment entirely, due to pandemic-related reason. The areas most affected by disruptions in the region were surgery and diagnostic services, which will presumably have a substantial impact as patients experienced delays and interruptions in accessing early surgical treatment and diagnosis.

80% of participants reported that cancer prevention programs and activities in the region have been significantly affected by the pandemic, with 96% reporting a decrease specifically in mammography screening. This will impact millions of women as breast cancer is the most common cancer in women in LAC and is often curable if found in early stages, which is possible primarily through these important routine screening programs. The potential impact from halting screening and prevention efforts is substantial in terms of delays in timely diagnosis and staging of new patients. The downstream effects of these delays are going to be seen in coming months and years as patients present with more advanced disease and healthcare systems face the backlog of patients. If the situation exhibited by most countries becomes a trend, the compounded health and economic impact post-pandemic will likely overburden the healthcare systems with a surplus demand.

96% of participants expect an overload of patients with cancer post-pandemic in their country and most believe that healthcare systems are not prepared to manage this pent-up demand in terms of budget allocation or healthcare personnel and specialized facility availability. Of note, in Mexico and Peru, ~70% saw decreases in the budget allocated to cancer care by their center and by the government.

Brazil



All participants reported disruption of usual care to some extent, with the majority (68%) reporting a moderate impact primarily due to quarantines and travel bans, precautionary measures such as decreasing in-person clinic visits, and other factors such as patients' own fear of being infected. Most centers (80%) remained open, of which 45% remained fully open, 50% reported reduced workloads during peaks, and 5% reported a general decrease in workload. 20% of centers closed partially (80%) or completely (20%). The areas that experienced the most disruptions were surgery and diagnostic services, with 76% reporting moderate to severe disruptions. In contrast, other areas predominantly saw no disruptions such as target (68%) and hormone (72%) therapy; while other areas such as radiation therapy, chemotherapy, and palliative care varied (Table 3). This correlates with data from a Brazilian study that compared 2019 and 2020 cancer data (March-May) and reported a 60% decline in surgical oncology cases during this period and a slight increase in patients undergoing radiation therapy.⁹

A decrease in new cancer cases in the first six months of the pandemic (March-August 2020) was perceived by the majority (92%), of which 35% perceived a 1-25% decrease and 57% perceived a 26-50% decrease. This correlates with the aforementioned Brazilian study, which found a 52% decrease in new visits to oncology services.⁹ Conversely, 72% perceived an increase in new visits from September 2020-September 2021, of which 44% reported a 1-25% increase, 39% reported a 26-50% increase, and 17% reported an increase of >50%. This data could reflect the general lifting of quarantines and travel restrictions in the country during this period. The majority (63%) expect the delays in cancer diagnosis due to the pandemic to exceed 5 months and 92% reported an increase in advanced disease at the time of diagnosis due to pandemic-related delays. Congruently, a perceived increase in cancer mortality possibly due to these delays was reported by 83% (Table 4). The connection between an increase in cancer mortality and the COVID-19 pandemic is widely reported in high-income countries (HIC), with estimated increase ranging from 20-30%.^{2,3,4} Increased cancer relapse due to COVID-19-related delays were also reported in varying degrees by 79%.

Cancer prevention programs have been significantly affected by the COVID-19 pandemic, and Brazil is no exception, with 68% reporting a decrease in general prevention programs and activities. Specifically, 95% and 72% saw a decrease in screening with mammography and colonoscopy, respectively. Other screening methods such as prostate specific antigen (PSA) testing (44%) and thorax computer tomography (48%) were reported to have more discrete decreases. 64% reported a decrease in pathology studies (Table 5). Brazilian data shows a mean decrease of 80% during March-June 2021 in mammographic studies and a 39% decrease in pathology studies.¹⁹

Most Brazilian centers implemented adaptive measures, including reduced in-person clinic visits replaced by virtual visits (71%) and cancelling all in-person visits and switching completely to virtual (25%). Increased times between follow-up visits were also reported (65%). Remote care options were often given, including performing lab tests close to patients' homes (96%) and having medications delivered to their home (48%). All of the centers that previously had tumor boards implemented virtual tumor boards. Moving forward, some of the adaptive measures implemented during the contingency may persist post-pandemic. 96% believe virtual clinic visits will continue post-pandemic and 100% believe virtual tumor boards will persist, possibly broadening access to these and increasing patient convenience (Table 6).

Treatment interruptions prevailed both in 2020 (March-December) (96%) and 2021 (January-September) (86%), with 50% reporting a proportion of patients abandoned treatment entirely, mostly for pandemic-related reasons. Chemotherapy interruptions were common, with 57% reporting that >10% of their patients missed at least one cycle. Brazilian data reports a 28% decrease in the number of patients undergoing intravenous

systemic chemotherapy and a 57% decrease in new treatment initiation.⁹ However, 89% reported an increased use of oral agents over intravenous (IV) therapy, which is consistent with a reported increase of 309% in the number of patients undergoing oral chemotherapy during the COVID-19 pandemic.⁹ Despite this increase, access barriers for oral agents were noted in both the private and public systems (Table 7).

90% of physicians reported making changes to any part of patient treatment plans. The adaptations included reducing chemotherapy cycles (58%) and deviating from clinical practice guidelines (CPG) or the standard of care (SoC) by postponing surgery (89%) or radiotherapy (78%). Most (96%) participants reported potential patient harm due to the interruptions in care (Table 7). The majority of participants had treated both outpatient (90%) and in-patient (70%) oncologic patients with a COVID-19 diagnosis. 95% reported infection among oncology staff; however, most (76%) did not experience PPE shortages at their centers (Table 8).

96% of participants expect an overload of patients with cancer post-pandemic and most believe the healthcare systems are not prepared to manage it in terms of budget allocation or healthcare personnel and specialized facility availability. The Brazilian government has not announced an action plan to address the expected increase in cancer burden to date (Table 9).

Colombia



All participants reported disruption of usual care to some extent, with the majority reporting a moderate (65%) or severe (19%) impact, primarily due to lack of access to medications and staff shortages due to COVID-19 infection. Most centers (92%) remained open, of which 46% remained fully open, 23% reported reduced workloads during peaks, and 23% reported a general decrease in workload. Only 8% of centers closed partially. The area that experienced the most disruptions by far was surgery, with 96% reporting moderate to severe disruptions, followed by supportive care (54%) and diagnostic services (50%). Areas such as radiotherapy and chemotherapy saw slight-moderate disruptions (Table 10). This correlates with data from a LAC study that compared 2019 and 2020 cancer data (March-June) and found a mean reduction of 43% in first cycles of chemotherapy. However, this data is from a private institution and the impact in public centers may be greater.¹⁹

A decrease in new cancer cases in the first six months of the pandemic (March-August 2020) was perceived by the majority (80%), of which 58% perceived a 1-25% decrease and 27% perceived a 26-50% decrease. This correlates with official Colombian data, which found a mean reduction of 36% in first time visits to oncology services.⁹ Conversely, 63% perceived an increase in new visits from September 2020-September 2021. This data could reflect the general lifting of quarantines and travel restrictions in the country during this period. 52% of participants expect the delays in cancer diagnosis due to the pandemic to exceed 5 months and 88% reported an increase in advanced disease at the time of diagnosis due to pandemic-related delays. Consistently, a perceived increase in cancer mortality, possible due to these delays was reported by 95%. An increase in cancer relapse due to the pandemic was also reported by 77% (Table 11).

In line with regional trends, cancer prevention programs have been significantly affected by the COVID-19 pandemic in Colombia, with 77% reporting a decrease in general prevention programs and activities. 100% of participants reported a decrease in mammography, colonoscopy, PSA testing, and thorax computer tomography (CT). Participants reported a decrease of pathology studies of 1-25% (55%), 26-50% (30%), and >50% (15%). (Table 12). While no other reports of this data were found specifically for Colombia, this data is consistent with reports of other countries in the region, which reported a decrease between 30-100% in mammography studies, and between 6-50% in pathology studies.¹⁹

Adaptative measures were implemented in most Colombian centers, including reduced in-person clinic visits replaced by virtual visits (72%) and cancelling all in-person visits and switching completely to virtual (24%). Increased times between follow-up visits were also reported (76%). Some participants reported availability of remote care options, including performing lab tests close to patients' home (63%) and having medications delivered to their home (63%). Almost all participants (96%) reported that tumor boards were available in their centers pre-pandemic, of which 75% switched to virtual, 13% switched to virtual and in-person and 13% remained in person. Moving forward, most believe adaptative measure such as virtual clinic visits (76%) and virtual tumor boards (75%) will persist post-pandemic, possibly representing increased convenience for patients and broadening access to tumor boards (Table 13).

Treatment interruptions were reported by 100% of participants in 2020 (March-December) and by 90% in 2021 (January-September), with 81% reporting a proportion of patients abandoned treatment entirely both for reasons related to COVID-19 (i.e., fear of infection, quarantines) and non-related to COVID-19 (i.e., insurance stopped coverage). While chemotherapy interruptions did occur, most participants (61%) reported that <10% of their patients missed at least one cycle and 75% reported they reduced the number of cycles in <25% of their patients. Other countries in the region had more pronounced impacts on chemotherapy. 95% of participants reported making changes to any part of their patient's treatment. These adaptations included increased use of oral chemotherapy over IV chemotherapy (87%) and deviating from CPG or the SoC by postponing surgery

(90%) or radiotherapy (71%). Most participants (81%) reported potential patient harm due to interruptions in care (Table 14).

The majority of participants had treated both outpatient (96%) and inpatient (88%) oncologic patients with a COVID-19 diagnosis. Contrary to other countries in the region, only 12% of participants reported PPE shortages in their centers. Despite this, 92% of participants reported COVID-19 diagnosis among their oncology department staff (Table 15).

The majority of participants (77%) reported neither their institution nor payers asked them to implement cost-containment measures during the pandemic. Moving forward, 100% of participants anticipate an overload of patients with cancer post-pandemic and most believe the healthcare system is not prepared to manage in terms of budget allocation or healthcare personnel. The Colombian government has not announced an action plan to address the expected increase in cancer burden to date (Table 16).

Ecuador



Most participants (96%) reported disruption of usual care to some extent, with the majority (54%) reporting moderate impact primarily due to an overwhelmed healthcare system and precautionary measures taken to maintain social distancing and minimize patient visits. Quarantines and travel bans were also noted to have a serious role in disruptions of care. Most centers (70%) remained open, of which 28% remained fully open, 50% reported a general reduction in workloads, and 22% reported reduced workloads during peaks. 30% of centers closed partially (85%) or completely (15%). The areas that experienced the most disruptions were surgery followed by diagnostic services, with 80% and 75% reporting moderate to severe disruptions, respectively. Other areas were also reported to have serious disruptions such as supportive care (74%), chemotherapy (64%), and palliative care (60%). (See Table 17) This data is concordant with trends seen in most countries in the region.

A decrease in new cancer cases in the first six months of the pandemic (March-August 2020) was perceived by the majority (92%), of which 47% perceived a 1-25% decrease and 24% perceived a 26-50% decrease. Regional data suggests that first-time visits to oncology services decreased by 28- 38%.^{6,9} Conversely, 85% perceived an increase in new visits from September 2020-September. This data could reflect the general lifting of quarantines and travel restrictions in the country during this period. Opinions on the duration of delays in cancer diagnosis due to the pandemic are split, with 54% believing they will exceed 5 months and 41% expecting delays to last between 1-4 months. 96% reported a perceived increase in advanced disease at the time of diagnosis due to the pandemic; consistently, 97% report an increase in cancer mortality. The connections between an increase in cancer mortality and the COVID-19 pandemic have been widely reported in HIC.^{2,4} Increased cancer relapse due to COVID- 19-related delays were also reported in varying degrees by 95% (Table 18).

In line with regional trends and global recommendations, cancer prevention programs in Ecuador have been significantly affected by the COVID-19 pandemic. 84% reported a decrease in general prevention programs and activities. Specifically, all participants (100%) reported a decrease in screening with mammography and colonoscopy. 79% reported a decrease in mammography screening in >50% of patients and 88% reported a decrease in colonoscopies in >50% of patients. Other screening methods such as PSA testing and thorax CT were also reported to decrease, though less severely. 97% of participants noted a decrease in pathology studies, with 71% reporting the decrease in between 26-75% of patients (Table 19). Although no reports of this data were found specifically for Ecuador, it is consistent with trends shown in other countries in the region.¹⁹

Most centers in Ecuador (80%) implemented adaptative measures, including reduced in-person clinic visits replaced by virtual visits (64%) and cancelling all in-person visits and switching completely to virtual (35%). However, 18% of clinics continued outpatient visits as usual. The majority (91%) of participants also reported increasing the time between follow-up visits. Remote care options were often given, including performing lab tests close to patients' homes (76%) and having medications delivered to their homes (59%). Tumor boards were available in 93% of centers prior to the pandemic and experienced varying impacts among the centers. 34% switched to virtual tumor boards, 32% had virtual and in-person tumor boards and 29% were canceled all together (Table 20). Moving forward, some of the adaptative measures implemented during the contingency may persist post-pandemic. 71% believe virtual clinic visits will continue post-pandemic and 74% believe virtual tumor boards will persist.

Treatment interruptions prevailed both in 2020 (March- December) (98%) and 2021 (January-September) (91%), with 100% of participants reporting a proportion of patients abandoned treatment entirely, mostly for pandemic-related reasons (i.e., fear of infection, quarantines). Chemotherapy interruptions were common, with 83% reporting that >10% of their patients missed at least one cycle. 98% of physicians reported making changes to any part of patient treatment. These adaptations included increased use of oral chemotherapy

over IV chemotherapy (95%), reduction in chemotherapy cycles (65%), and deviating from CPG or the SoC by postponing surgery (95%) or radiotherapy (92%). Most (96%) participants reported potential patient harm due to the interruptions in care. (Table 21).

The majority of participants had treated both outpatient (96%) and in-patient (83%) oncologic patients with a COVID-19 diagnosis. 91% reported infection among oncology staff; however, most (87%) did not experience PPE shortages at their centers (Table 22). 43% of participants reported neither their institution nor payers asked them to implement cost-containment measures during the pandemic; however, 39% noted that either their institution, insurance companies, or both made such requests and 17% preferred not to answer. 98% of participants expect an overload of patients with cancer post-pandemic and most believe that the healthcare system is not prepared to manage it in terms of budget allocation or healthcare personnel and specialized facility availability. The Ecuadorian government has not announced an action plan to address the expected increase in cancer burden to date (Table 23).

Mexico



Most participants reported some level of disruption to usual care (98%), primarily due to an overwhelmed healthcare system and a lack of access to medications. The majority of centers (66%) remained open, of which 39.2% remained fully open, 32% reported reduced workloads during peaks, and 29% reported a general decrease in workload. 30% closed either partially or completely. The areas that experienced the most disruptions were surgery, chemotherapy, diagnostics with moderate to severe disruptions reported in 74%, 65%, and 60%, respectively. Other areas that were substantially affected were radiotherapy, immunotherapy, and target therapy. (Table 24). This correlates with data from a LAC study that compared 2019 and 2020 cancer data (March-June) and found a mean reduction in oncologic surgery and chemotherapy of 33% and 30% in Mexico's Instituto Nacional de Cancerología (INC) and 77% and 76% in Hospital General (HG), respectively.¹⁹ In contrast, no change in radiotherapy was reported at HG.¹⁹

A decrease in new cancer cases in the first six months of the pandemic (March-August 2020) was perceived by the majority (82%), of which 52% perceived a 1-25% decrease and 19% perceived a 26-50% decrease and 30% a decrease >50%. This correlates with data from Mexico's HG, which found a mean 60% reduction in first time visits and the INC, where a 10% decrease was observed.¹⁹ Conversely, 75% perceived an increase in new visits from September 2020-September 2021, of which 73% reported a 1-25% increase. This data could reflect the general lifting of quarantines and travel restrictions in the country during this period. The majority (59%) expect the delays in cancer diagnosis due to the pandemic to last between 1-4 months and 81% reported an increase in advanced disease at the time of diagnosis due to pandemic-related delays. Congruently, a perceived increase in cancer mortality possibly due to these delays was reported by 93% (Table 25). Increased cancer relapse due to COVID-19-related delays were also reported in varying degrees by all participants.

A decrease in the country's cancer prevention programs and activities was reported by 69%. Specifically, screening with mammography and colonoscopy were reported to have decreased by 90% and 92% of participants, respectively. Other screening methods such as PSA testing (78%) and thorax computer tomography (79%) were also substantially affected. 92% reported a decrease in pathology studies. (Table 26). This data reflects a higher impact than the mean percentage decrease in mammography and pathology studies found at HG (28%; 57%) and INC (36%; 44%), respectively¹⁹ (Table 26)

Adaptative measures were implemented in some Mexican centers, including reduced in-person clinic visits replaced by virtual visits (51%), or switching completely to virtual (12%); however, nearly a third (32%) reported their centers continued outpatient visits as usual. Increased times between follow-up visits were also reported (74%). Opinions on whether these changes will persist post-pandemic are split. Regarding remote care options, 65% reported the availability of lab tests close to patient homes and only 35% reported having medications delivered to patient homes. Virtual tumor boards were available in around half the centers (Table 27).

Some level of treatment interruption was reported by 98% both in 2020 (March-December) and 2021 (January-September), with 91% reporting a proportion of patients abandoned treatment entirely, mostly for pandemic-related reasons. Chemotherapy interruptions were common, with 76% reporting that >10% of their patients missed at least one cycle and 88% of physicians reporting making changes to any part of patient treatment. The adaptations included reduction in chemotherapy cycles (69%) and deviating from CPG or the SoC by postponing surgery (78%) or radiotherapy (84%). Other adaptations included an increased use in oral over IV chemotherapy (77%), likely to reduce exposure to health centers. Most participants (86%) reported potential patient harm due to interruptions in care (Table 28).

The majority of participants had treated both outpatient (84%) and to a lesser extent inpatient (70%) oncologic patients with a COVID-19 diagnosis. A significant proportion (77%) reported PPE shortage at their centers and as expected, 73% reported infection with SARS-COV-2 among oncology staff (Table 29).

47% of participants reported petitions from payers, their healthcare institution, or both to implement cost-containment measures during the pandemic; in concordance, 70% saw decreases in the budget allocated to cancer care within their institution. Moving forward, 91% of participants expect an overload of patients with cancer post-pandemic and most believe the healthcare system is not prepared to manage in terms of budget allocation or healthcare personnel and specialized facility availability. The Mexican government has not announced an action plan to address the expected increase in cancer burden to date (Table 30).

Peru



All participants reported disruption of usual care to some extent, with the majority (90%) reporting a moderate-severe impact primarily due to quarantines and travel bans and an overwhelmed healthcare system. Most centers (79%) remained open, of which 73% remained open but with a general decrease in workload, and 20% reported a reduced workloads during peaks. 20% of centers closed partially. Overall, most health services saw moderate-severe disruptions. The areas that experienced the most disruptions were surgery, with 100% of participants reporting moderate to severe disruptions, followed by diagnostic services (95%) and supportive care (89%). Other areas such as radiotherapy (88%) and palliative care (74%) saw moderate-severe disruptions. Chemotherapy had predominantly slight-moderate disruptions (74%) (Table 31). This data is consistent with data from a LAC study that compared 2019 and 2020 cancer data (March) in Peru and found a reduction of 84% and 59% of oncologic ambulatory and in-hospital surgeries, respectively. A private provider reported a 30% decrease in radiotherapy for the same period, but the impact in the public system is likely greater.¹⁹

A decrease in new cancer cases in the first six months of the pandemic (March-August 2020) was perceived by the majority (79%) and a slightly greater decrease through September 2020-September 2021 (88%). This is contrary to most other countries in the region, which saw an increase in the latter period, which may signify a greater impact due to the prolonged delays. Consistently, the majority (84%) believe diagnostic delays will exceed 5 months, and 100% reported an increase in advanced disease at the time of diagnosis due to pandemic-related delays and consequently 100% of participants perceived an increase in cancer mortality (Table 32). Increase cancer relapses were also reported by all participants, with the majority (84%) reporting them in 11-50% of patients.

All participants reported a decrease in the country's cancer prevention programs and activities. Specifically, all participants (100%) also reported a decrease in screening with colonoscopy and CT of thorax. 94% reported a decrease in mammography studies and PSA testing. 37% of participants reported a decrease between 25-50% in pathology studies (Table 33).

Adaptative measures were implemented in most Peruvian centers, including reduced in-person clinic visits replaced by virtual visits (69%), or switching completely to virtual (36%); only 5% reported their centers continued outpatient visits as usual. Most (95%) believe virtual visits will persist post-pandemic. Increased times between follow-up visits were also reported by all participants. Regarding remote care options, 68% reported the availability of lab tests close to patient homes and 72% reported having medications delivered to patient homes. Virtual tumor boards were available in 90% of the centers, with most (90%) believing they will continue in virtual format post-pandemic (Table 34).

Some degree of treatment interruptions was reported by all participants in 2020 (March-December) and by 95% of participants for 2021 (January-September), with 68% reporting between 1-25% of patients abandoned treatment entirely, mostly for pandemic-related reasons. 88% reported their patients were forced to seek care in a different center. Chemotherapy interruptions were common, with 83% reporting that >10% of their patients missed at least one cycle and all physicians reporting having to make changes to any part of patient treatment. The adaptations included reductions in chemotherapy cycles (93%) and deviating from CPG or the SoC by postponing surgery (89%) or radiotherapy (88%). Other adaptations included an increased use in oral over IV chemotherapy, reported by 100% of participants, likely to reduce patient exposure to health centers. All participants reported potential patient harm due to interruptions of care (Table 35).

The majority of participants had treated both outpatient (95%) and inpatient (89%) oncologic patients with a COVID-19 diagnosis. A substantial proportion (86%) reported PPE shortage at their centers and concordantly, 95% reported infection with SARS-COV-2 among oncology staff (Table 36).

47% of participants reported petitions from payers, their healthcare institution, or both to implement cost-containment measures during the pandemic, while 53% did not experience such petitions. Decreases in the budget allocated to cancer care by health centers and government were reported by 68% and 70% of participants, respectively. Moving forward, all participants expect an overload of patients with cancer post-pandemic and most believe the healthcare system is not prepared to manage in terms of budget allocation, healthcare personnel and specialized facility availability (Table 37).

Central America



This section will provide the aggregated results of the Central American countries, Costa Rica, Dominican Republic, and Panama. 98% of participants reported disruption of usual care to some extent, with the majority (58%) reporting a moderate impact, primarily due to overwhelmed healthcare systems and precautionary measures. Most centers (82%) remained open, of which 50% reported a general decrease in workload, 28% remained fully open, and 22% reported reduced workloads during peaks. 18% of centers closed partially or completely. The area that experienced the most disruptions was surgery, with 69% reporting moderate to severe disruptions, followed by diagnostic services (66%) and supportive care (58%). Other areas such as radiotherapy, palliative care, and chemotherapy saw predominantly slight-moderate disruptions (Table 38).

Differing from practically all countries in South America, an increase in new cancer cases in the first six months of the pandemic (March-August 2020) was perceived by the majority (87%) of participants in Central America. A similar increase reported by 80% was also noted for the period of September 2020-September 2021. This data contrasts with regional trends, which found reductions in first time oncology visits between 28-38% for the period of March-June of 2020.¹⁹ 50% of participants expect the delays in cancer diagnosis due to the pandemic to exceed 5 months and 100% reported an increase in advanced disease at the time of diagnosis due to pandemic-related delays. Consistently, a perceived increase in cancer mortality, possible due to these delays was reported by 74%. An increase in cancer relapse due to the pandemic was also reported by 78% (Table 39).

In line with regional trends, cancer prevention programs have been significantly affected by the COVID-19 pandemic in Central America, with 78% reporting a decrease in general prevention programs and activities. Specifically, all participants (100%) reported a decrease in screening with colonoscopy and 97% with mammography. Decreases in screening with PSA testing (80%) and CT of thorax (72%) were also reported. 94% of participants affirmed a decrease in pathology studies. Notably, these decreases were predominantly reported to be in 1-25% of patients, contrasting with higher impacts in other countries. No published data on the impact of the pandemic on screening strategies were found specifically for Central America (Table 40).

Adaptative measures were implemented in most (87%) centers where the Central American participants work, including reduced in-person clinic visits replaced by virtual visits (73%) and cancelling all in-person visits and switching completely to virtual (18%). Increased times between follow-up visits were also reported (74%). Remote care options such as performing lab tests close to patient homes (97%) and having medications delivered to their home (55%) were also available to some. Almost all participants reported that tumor boards were available in their centers pre-pandemic, of which 65% switched to virtual tumor boards, and 24% implemented a combination of virtual and in-person. Moving forward, most believe adaptative measure such as virtual clinic visits (74%) and virtual tumor boards (82%) will persist post-pandemic, possibly representing increased convenience for patients and broadening access to tumor boards (Table 41).

Treatment interruptions were reported by 92% of participants in 2020 (March-December) and by 68% in 2021 (January-September), with 85% reporting a proportion of patients abandoned treatment entirely both for reasons related to COVID-19 (i.e., fear of infection, quarantines) and non-related to COVID-19 (i.e., insurance stopped coverage). Chemotherapy interruptions were common, with 70% reporting >10% of their patients missed at least one cycle of chemotherapy and 60% reported reducing the number of cycles in 1-25% of their patients. 89% of participants reported making changes to any part of their patient's treatment. These adaptations included increased use of oral chemotherapy over IV chemotherapy (95%) and deviating from CPG or the SoC by postponing surgery (87%) or radiotherapy (75%). Most participants (90%) reported potential patient harm to patients due to interruptions in care (Table 42).

The majority of participants had treated both outpatient (85%) and inpatient (76%) oncologic patients with a COVID-19 diagnosis. A slight majority of 57% participants reported a lack of sufficient PPE in their centers. However, 82% of participants reported COVID-19 diagnosis among their oncology department staff (Table 43).

The majority of participants (77%) reported neither their institution nor payers asked them to implement cost-containment measures during the pandemic. Moving forward, 92% of participants anticipate an overload of patients with cancer post-pandemic and most believe the healthcare system is slightly or not prepared to manage in terms of budget allocation, healthcare personnel, or specialized facility availability (Table 44).

Southern Cone



This section will analyze the aggregated results of the Southern Cone countries, Argentina, Chile, and Uruguay. Most participants (94%) reported disruption of usual care to some extent, with the majority (79%) reporting a slight to moderate impact primarily due to precautionary measure taken to maintain social distancing and minimize patient visits and quarantines or travel bans. Overwhelmed healthcare systems were also noted to have a serious role in disruptions of care. Most centers (90%) remained open, of which 43% remained fully open, 42% reported a general reduction in workloads, and 15% reported reduced workloads during peaks. Only 9% of centers closed partially and none closed completely. The proportion of centers that remained fully open was one of the highest in the region.

The areas that experienced the most disruptions were surgery followed by diagnostic services, with 69% and 58% reporting moderate to severe disruptions, respectively. This correlates with data from a LAC study that compared 2019 and 2020 cancer data (March-June) and found a mean reduction of 35% for this period in oncologic surgery in Chile.¹⁹ Radiotherapy, supportive care, and palliative care were reported to have slight to moderate disruptions by 65%, 58%, and 56%, respectively. Available data for Chile showed a mean reduction of 28% for the aforementioned period.¹⁹ Notably, the majority of participants reported that chemotherapy (60%), hormone therapy (76%), immunotherapy (58%) and target therapy (58%) did not have interruptions. This is in stark contrast with the rest of the region, which predominantly reported some level of interruption for those services. However, according to the same study mentioned previously, there was a discrete decrease in chemotherapies of 18% reported by a public provider in Uruguay and a decrease of only 2% reported by the National Cancer Institute in Chile.¹⁹ (Table 45).

Results on the change in number of new cancer cases during the first six months of the pandemic (March-August 2020) did not reflect a significant impact. For the period of September 2020 – September 2021, 74% of participants reported an increase in new cancer cases. Data from public and private health providers in Uruguay show a 26% mean reduction in first time oncology visits during the period of March-June and a 35% mean reduction in Chile's National Cancer Institute.¹⁹ The majority (68%) expect delays in cancer diagnosis due to the pandemic to exceed 5 months and 91% reported an increase in advanced disease at time of diagnosis due to the pandemic. Congruently, a perceived increase in cancer mortality possibly due to these delays was reported by 68% (Table 46).

In line with regional trends, a decrease in cancer prevention programs and activities in the Southern Cone countries was reported by 86%. Specifically, screening with colonoscopy and mammography were reported to have decreased to some extent by 100% and 98% of participants, respectively. Other screening methods such as PSA testing (85%) and thorax computer tomography (90%) were also substantially affected. 92% reported a decrease in pathology studies. (Table 47). Data for Uruguay showed a mean reduction of 63.3% in mammography studies from a sample of private providers and a mean reduction of 29% in pathology studies from Chile's National Cancer Institute.¹⁹

Most centers in the Southern Cone countries (99%) implemented adaptative measures, including reduced in-person clinic visits replaced by virtual visits (66%) and cancelling all in-person visits and switching completely to virtual (22%). However, 12% of clinics continued outpatient visits as usual. The majority (89%) of participants also reported increasing the time between follow-up visits. Remote care options were sometimes available, including performing lab tests close to patients' homes (76%) and having medications delivered to their homes (37%). Tumor boards were available in 87% of centers prior to the pandemic and experienced varying impacts among the centers. Of these, 77% implemented virtual tumor boards, 15% had virtual and in-person tumor boards. Moving forward, some of the adaptative measures implemented during the contingency may persist

post-pandemic. 71% believe virtual clinic visits will continue post-pandemic and 63% believe virtual tumor boards will persist (Table 48).

Treatment interruptions prevailed both in 2020 (March-December) (80%) and decreased slightly in 2021 (January-September) (68%). Nonetheless, 65% of participants reported a proportion of patients abandoned treatment entirely, mostly for pandemic-related reasons (i.e., fear of infection, quarantines). Chemotherapy interruptions were less common than in other countries, with 55% reporting that <10% of their patients missed at least one cycle and 53% reporting that they have not reduced the number of chemotherapy cycles for their patients. 88% of physicians reported making changes to any part of patient treatment. These adaptations included increased use of oral chemotherapy over IV chemotherapy (81%) and deviating from CPG or the SoC by postponing surgery (73%) or radiotherapy (69%). Most (88%) participants reported potential patient harm due to the interruptions in care. (Table 49). The majority of participants had treated both outpatient (87%) and in-patient (83%) oncologic patients with a COVID-19 diagnosis. 75% reported infection among oncology staff; however, most (64%) did not experience PPE shortages at their centers (Table 50).

75% of participants reported neither their institution nor payers asked them to implement cost-containment measures during the pandemic. 93% of participants expect an overload of patients with cancer post-pandemic and most believe that the healthcare system is not prepared to manage it in terms of budget allocation or healthcare personnel and specialized facility availability (Table 51).



RESULTS OF ECONOMIC
ANALYSIS OF THE IMPACT
OF COVID-19 ON CANCER
CARE IN LATIN AMERICA

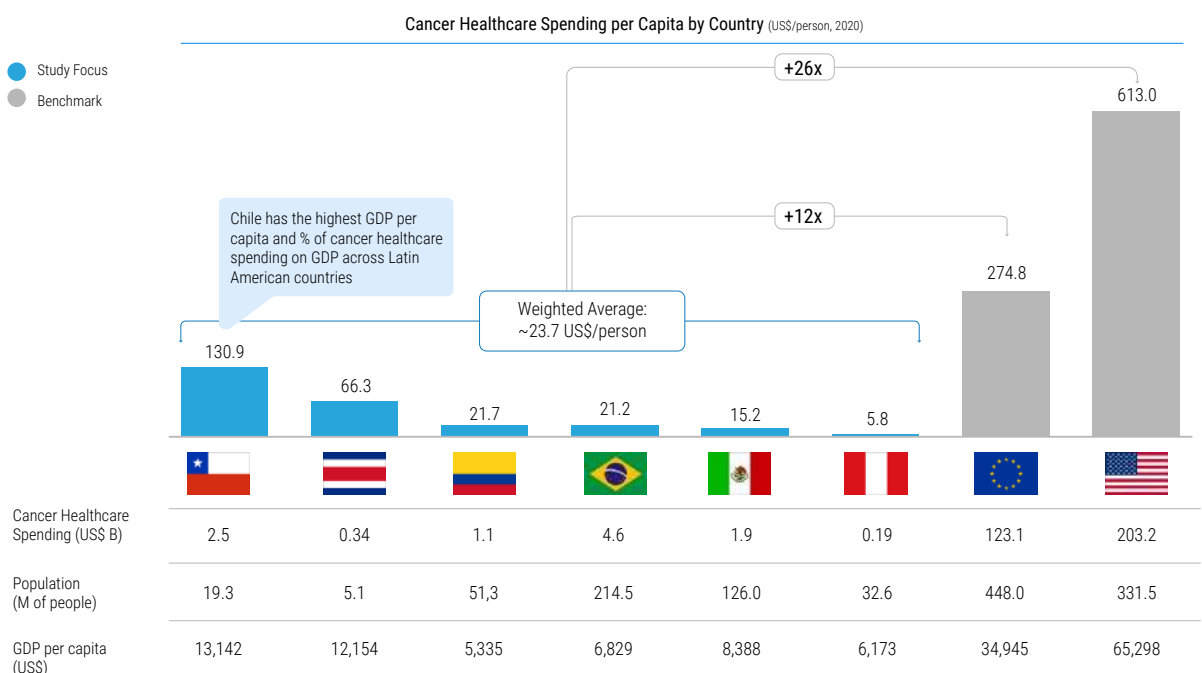
Results of Economic Analysis of the Impact of COVID-19 on Cancer Care in Latin America

The present study aims to estimate the impact of the COVID-19 pandemic on cancer patients, the healthcare system, and the economy across LAC. The pandemic, besides having catastrophic direct consequences in the region with ~26 million people infected, ~850,000 deaths,²² and a 7.4% reduction of the regional GDP,²³ has had direct and indirect effects on the treatment of chronic diseases like cancer. Lockdown measures imposed by governments have dissuaded people from visiting doctors and hospitals to avoid the risk of contagion. In addition, already fragile LAC healthcare systems have seen their capacity stressed as they cope with the pandemic. Both effects translate into cancer care interruptions and delays in diagnosis or treatment initiation. Consequently, patients are expected to present a worsened health status—that is, a more advanced clinical stage or even risk of death—leading to economic and social impacts for their countries.

Summary of Impacts

To put economic impact estimations for LAC into perspective, it is worth mentioning that cancer expenditure across other regions and countries worldwide varies significantly. Consequently, when drawing comparisons involving the economic impact of COVID-19 on cancer care in LAC, these differences in the magnitude of cancer spending should be carefully considered. For instance, the European Union and the United States have 12 times higher (~275 USD/person)²⁴ and 26 times higher (~613 USD/person)²⁵ cancer expenditure per capita, respectively, than the weighted average of the LAC countries considered in this study (~ 24 USD/person).²⁶⁻³¹ (Figure 5).

Figure 5: Cancer healthcare spending per capita by countries and regions (USD/person, 2020)



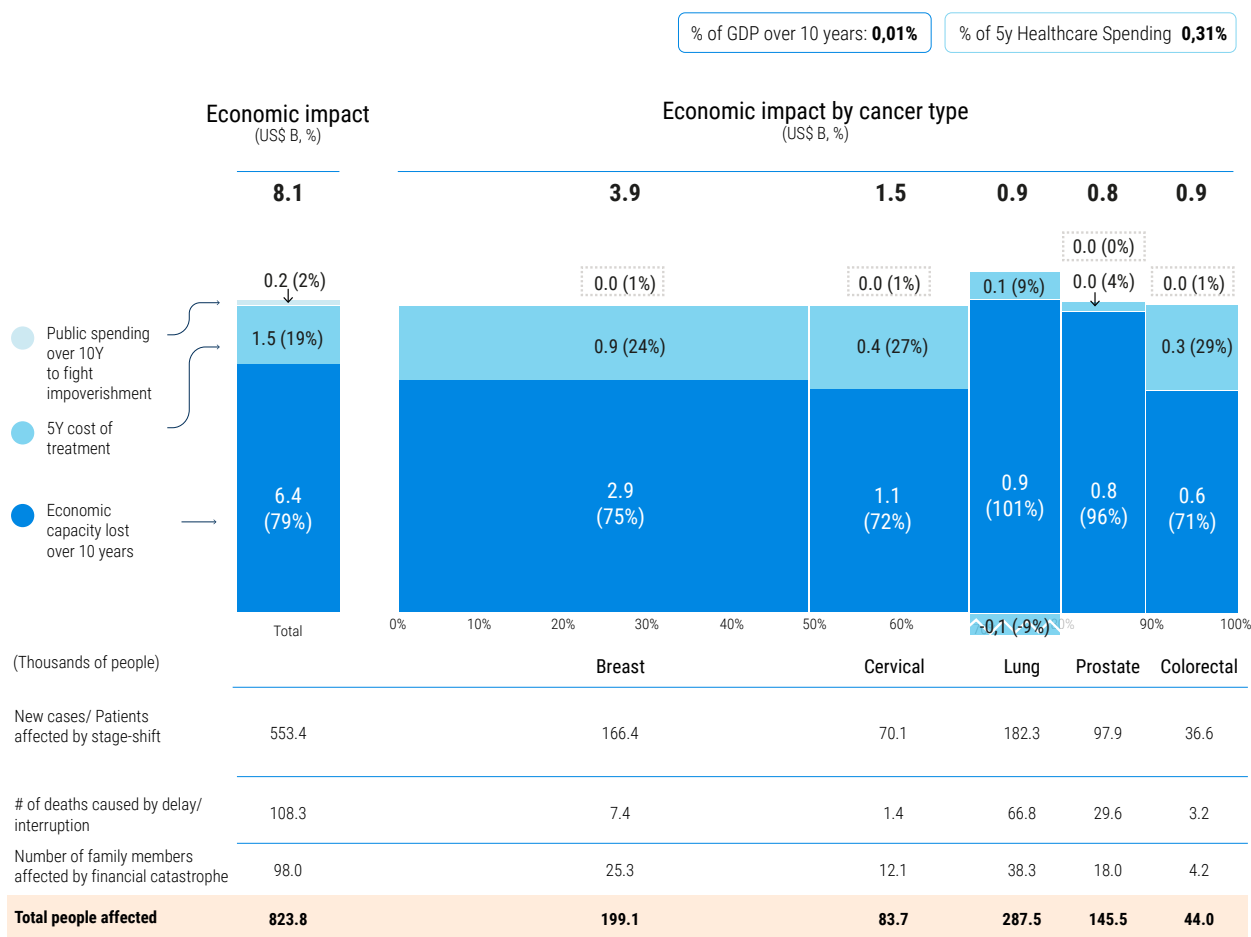
Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer.org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

USD: United States Dollar; B: billion; M: million; GDP: gross domestic product

A total economic impact of US\$ 8.1B (US\$ 5.0 – 10.7B range) is estimated from deferrals in cancer diagnosis/treatment initiation, and treatment interruptions caused by the COVID-19 pandemic in LAC, estimated to affect 824,000 (491,000-1,100,000 range) people that will suffer a clinical stage shift, die due to treatment delay, or fall into financial catastrophe.

Of this estimated economic impact, US\$ 6.4B (80%) comes from economic capacity lost over 10 years, US\$ 1.5B (18%) from an projected increase in the 5-year healthcare cost of treatment, and US\$ 0.1B (2%) from estimated public spending over 10-year destined to fight the poverty of those impoverished by financial catastrophe. Breast cancer accounts for US\$ 3.9B (~50%) of the estimated economic impact, as it concentrates ~50% of total cases while having a high survival rate, which makes patients shift to a more expensive clinical stage and keep the death toll low. Cervical cancer accounts for US\$ 1.5B (Figure 6).

Figure 6: Economic and social impact in LAC by effect and cancer type (US\$ B, % and Thousands of people)

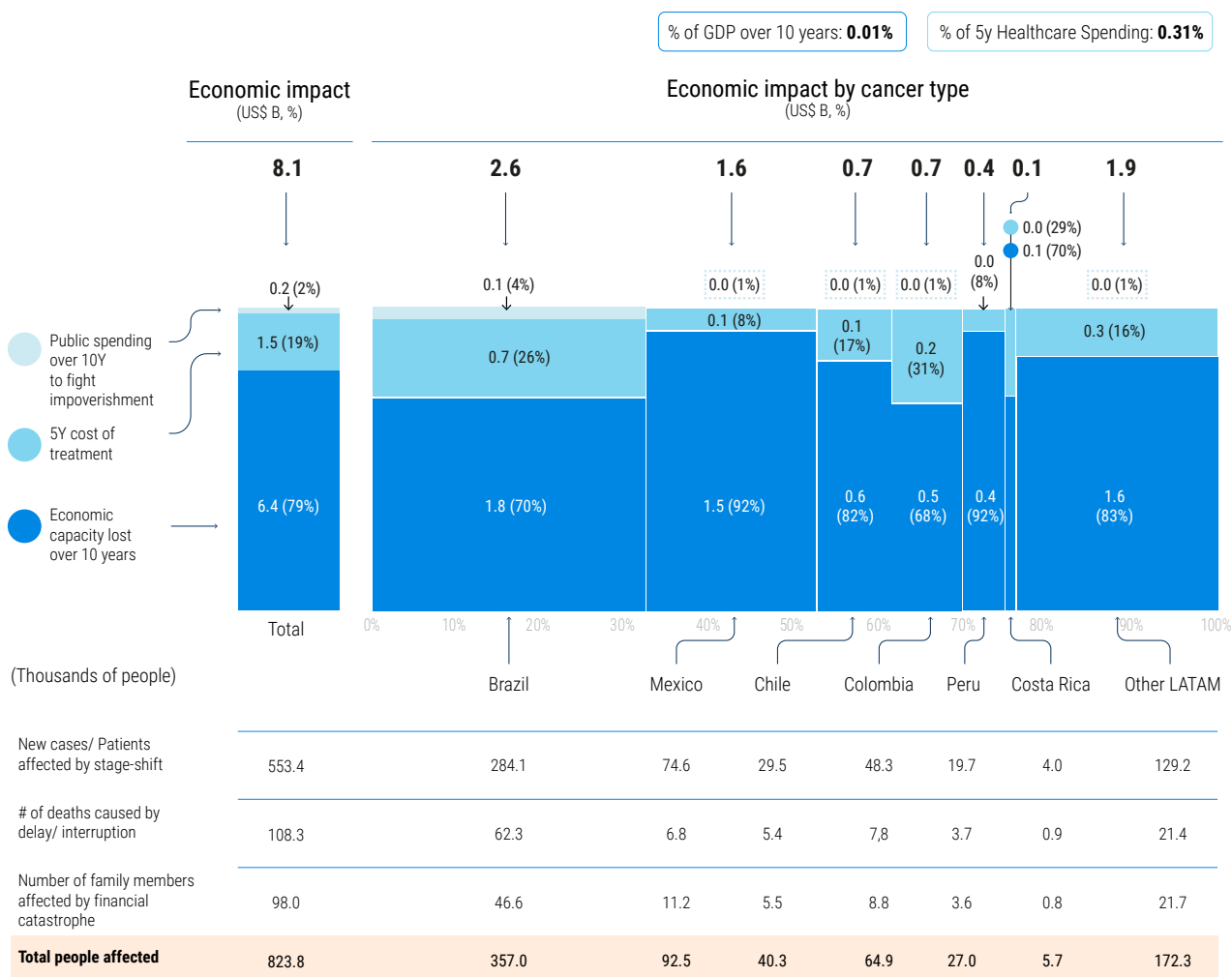


Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDX health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

USD: United States Dollar; B: billion; M: million; GDP: gross domestic product

From a geographical perspective, Brazil and Mexico account for US\$ 4.3B (~50%) of the total estimated economic impact in the region and 502,000 (~60%) of the people affected, as they present a high proportion of all cancer cases. Nonetheless, Brazil has the highest proportion of estimated healthcare spending on cancer across LAC (Figure 7).

Figure 7: Economic and social impact in LAC by effect and country (US\$ B, % and Thousands of people)

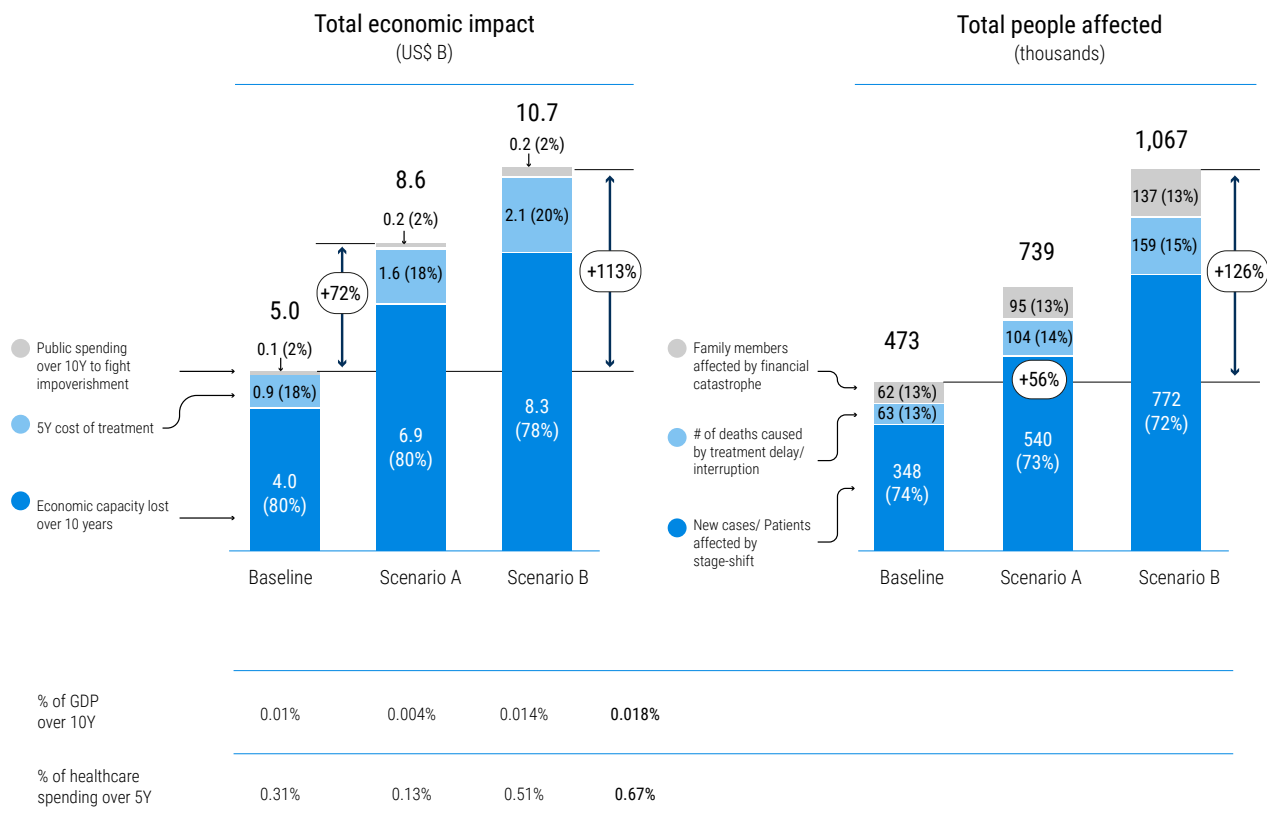


Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; B: billion; 10Y: ten-year; 5Y: five-year

According to the scenario analysis, scenario A would increase the economic impact to US\$ 8.6B (+72% vs baseline) with a total of 739,000 people affected (+56% vs baseline). In scenario B, the potential economic impact is expected to be of US\$ 10.7B (+113% vs baseline), whereas the total of people affected would reach 1.1 million (+126% vs baseline) (Figure 8).

Figure 8: Scenario analysis of the total economic and social impact in LAC (US\$ B, Thousands of people)



Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

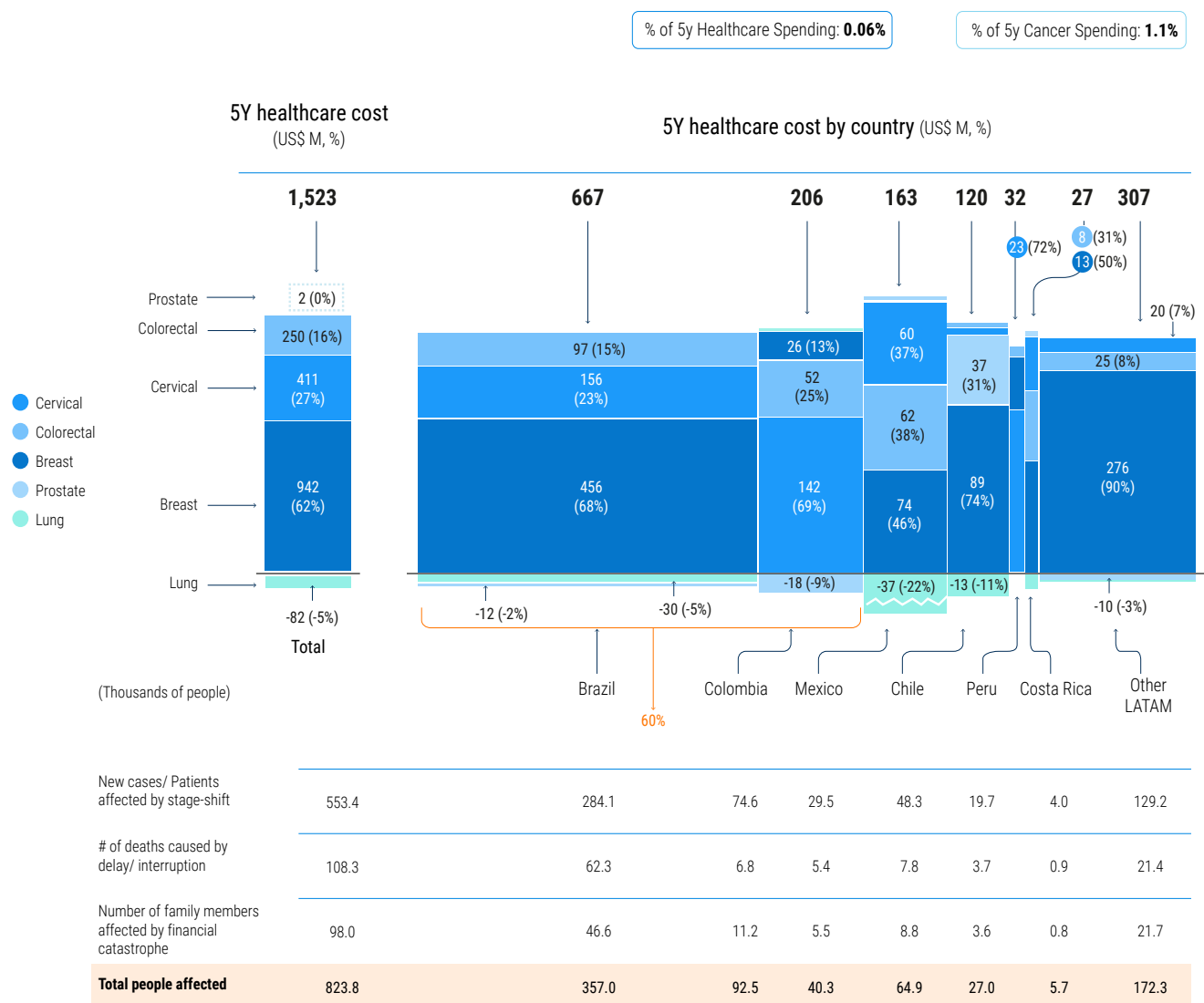
US\$: United States Dollar; B: billion; 10Y: ten-year; 5Y: five-year

The Direct Impact of COVID-19 on Health Care Systems- Cancer Care

Impact on 5-year Cost of Treatment

The 5-year cost of cancer treatment is expected to increase to US\$ 1.5B due to treatment deferrals caused by COVID-19. Breast and cervical cancers account for US\$ 1.4B (~93%) of the total, which is a result of the high proportion of breast cancer cases and the high concentration of cervical cancer in early clinical stages. Lung and prostate cancers appear to have a positive effect on the 5-year cost of treatment, as most patients are in later stages and survival rates for lung cancer are low; however, it comes at the expense of 84,000 deaths. From a geographical point of view, Brazil and Colombia account for US\$ 873M of the 5-year cost of treatment (~60%); Colombia is the second most affected country by the impact of cervical cancer, since half the cases that shift stage are in early stages (I-II), where treatment costs increase by 75% (Figure 9).

Figure 9: 5-year increase in the cost of treatment by cancer type and country across LAC (US\$ B, Thousands of people)



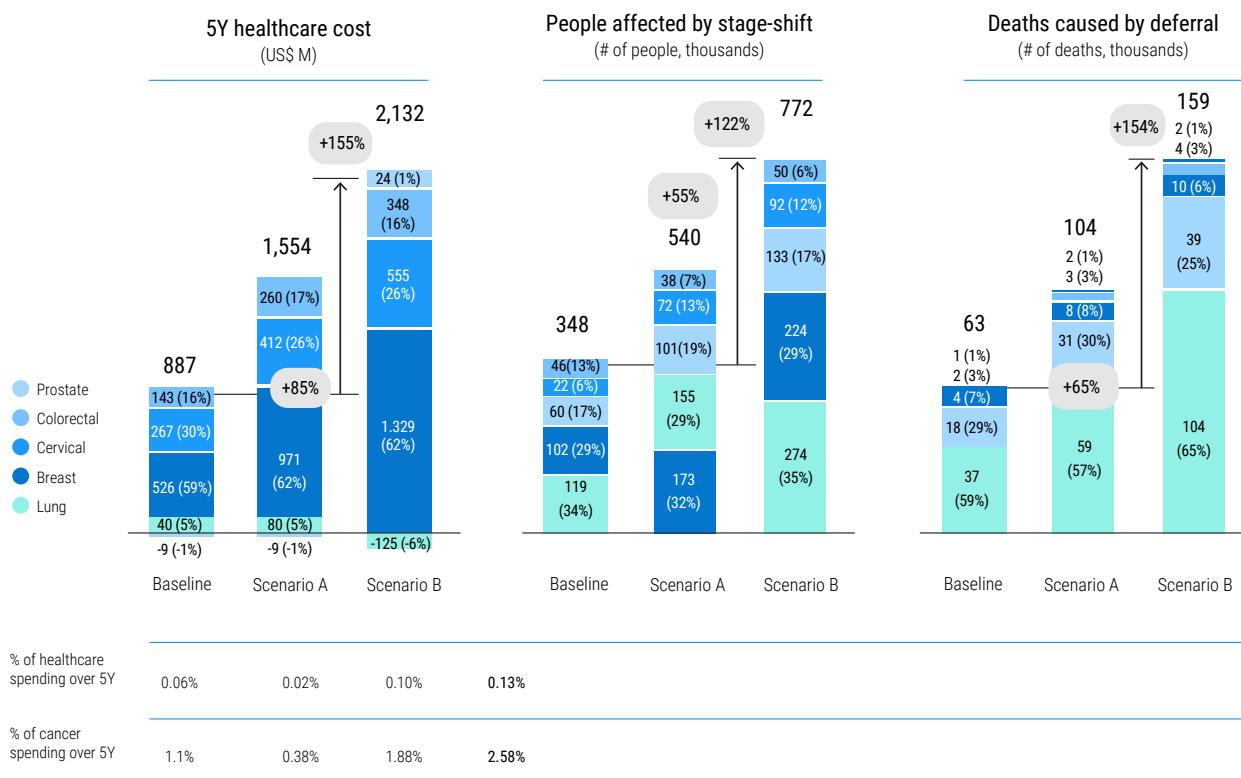
Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, SciELO, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; M: Million; 5Y: five-year

In terms of social impact, the estimated total of people affected by a clinical stage shift caused by treatment deferral is 553,000, with 453,000 of those people evolving to a more advanced clinical stage, and 108,000 of them dying. Brazil, Colombia, and Mexico concentrate 570,000 of the people affected (69%) and 77,000 of all deaths (71%).

Based on the scenario analysis, in scenario A, the 5-year cost is expected to increase to US\$ 1,554 million (+85% vs baseline). A total of 875,000 people would be affected (+78% vs baseline), including 104,000 deaths (+65% vs base). In scenario B, the 5-year cost would increase to US\$ 2,132 million (+155% vs baseline), with 1.1 million people affected (+124% vs base), and 159,000 (+154% vs base) of those dying (Figure 10).

Figure 10: Scenario analysis of the 5-year increase in the cost of treatment, total of people affected, and deaths caused by cancer type and country across LAC (US\$ B, Thousands of people)



Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

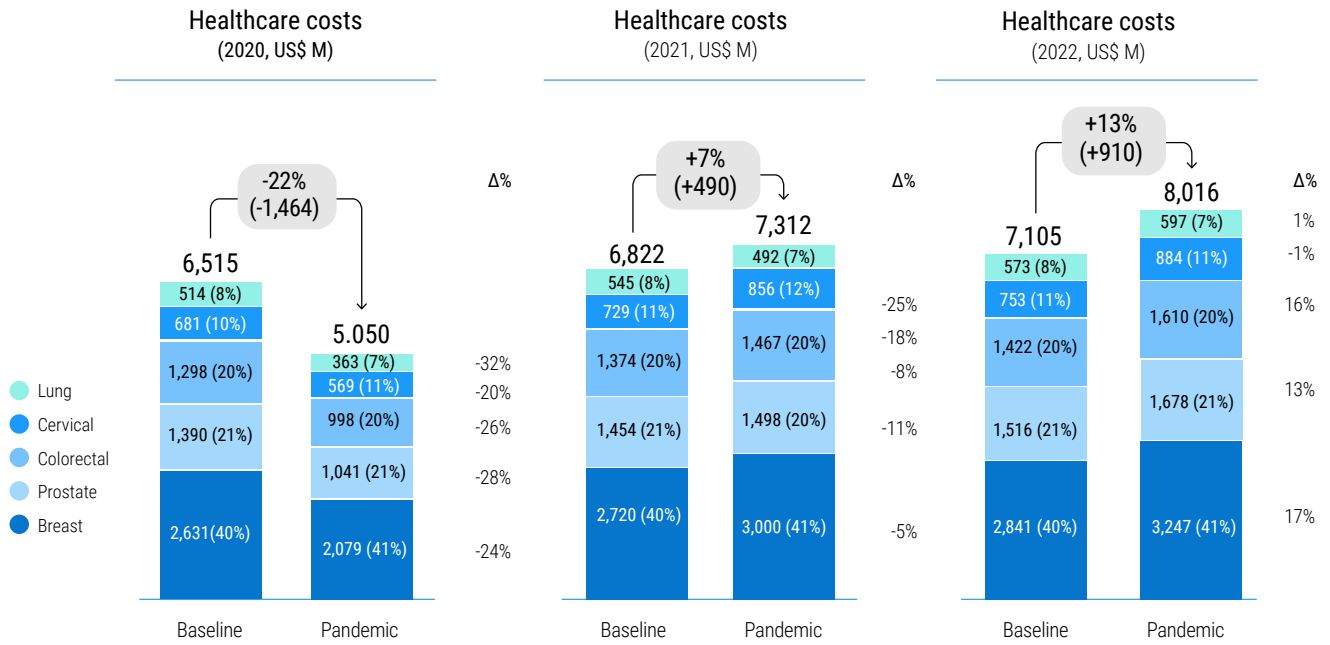
US\$: United States Dollar; M: million; 5Y: five-year

Evolution of Annual Cancer Expenditure during 2020-2022

This analysis was conducted to understand what the government cancer-expenditure needs will be in LAC during the most critical period of the pandemic compared to a baseline without COVID-19. As opposed to the impact on the 5-year cost of treatment that provides a static perspective, this analysis is dynamic, as it takes into account both the moment at which patients interrupt and resume treatment and the moment at which new cases arrive in the system. Therefore, results from the annual expenditure variation should not add up to the 5-year cost increase.

In the baseline scenario, results show that the full impact on cancer spending will be observed in 2022, when a 13% increase occurs compared to the baseline, as new cases stop deferral and cases affected in the prior year resume treatment. In 2021, cancer spending is expected to be higher than the baseline by 7%, derived from a combine effect of new cases and patients of the past year that resume treatment at a higher cost, people that die while deferring treatment, and people who defer treatment to the next year. In 2020, spending is expected to be 22% lower than the baseline due to patients that delay treatment to the next year or die while deferring treatment. After 2022, the annual expense is expected to vary from the baseline in each country depending on its cancer type distribution, as there is a combined effect of patients receiving more expensive cancer treatment and of patients dying earlier due to a more advanced clinical stage (Figure 11).

Figure 11: Annual variation of cancer expenses for the healthcare system in 2020-2022 across LAC (US\$ M, % change)



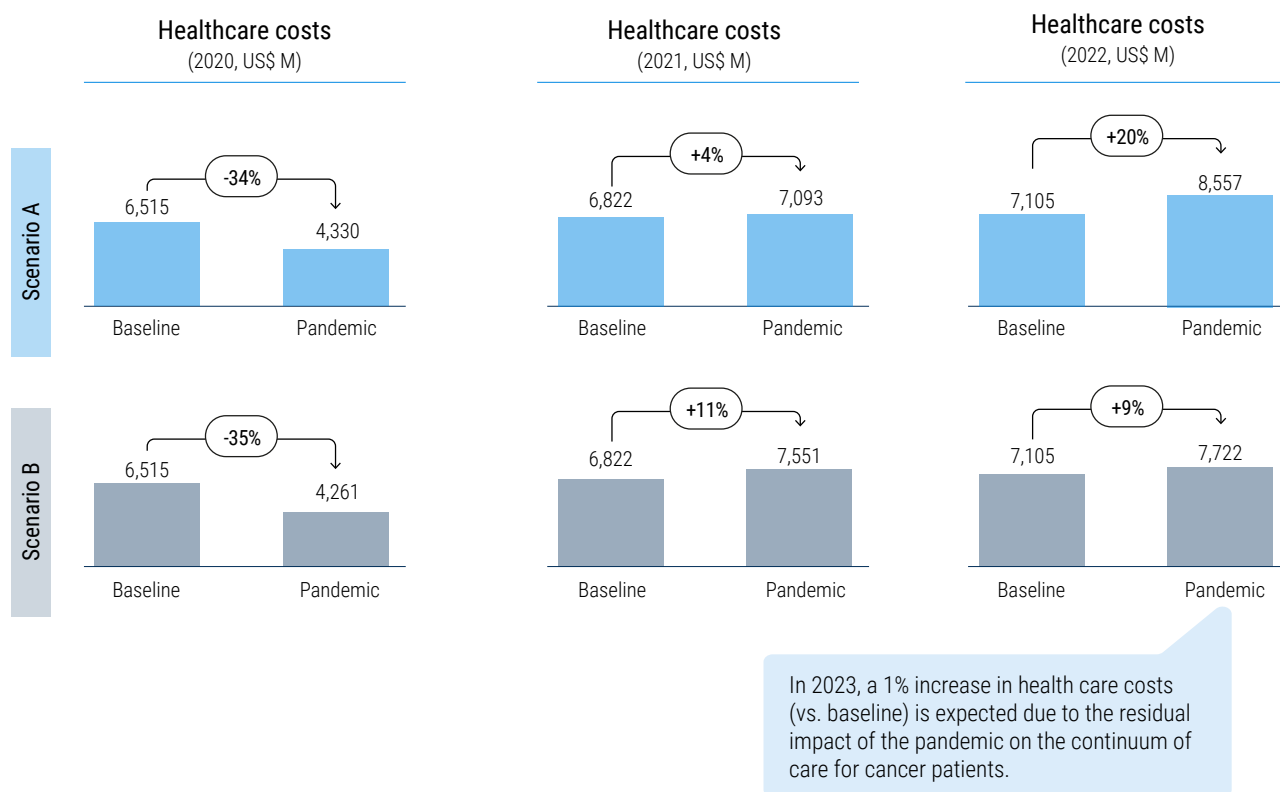
- > As opposed to the 5Y cost of treatment impact that provides a static perspective, this is a dynamic analysis that accounts for the moment at which patients and new cases arrive to the system, therefore, results are not expected to add up to the 5Y cost of treatment
- > Although most of the impact will be seen during 2020-2022, we expect a slight increase in cost after 2022 due to patients that will continue with a more expensive treatment as a result of a clinical stage-shift

Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDX health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; M: million

Considering the scenario analysis conducted, 2022 cancer spending with the pandemic can be expected to be 9% to 20% higher than in the baseline, according to scenarios A and B. In 2021, cancer spending may range from being 4% to 11% higher than in the baseline scenario. In 2020, spending may have decrease from 34% to 35% compared to the baseline scenario. This is the incremental effect in addition to the baseline cancer expenditure already incurred.

Figure 12: Scenario analysis of the annual variation of cancer expenses for the healthcare system in 2020-2022 across LAC (US\$ M, % change)



Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; M: million

The Indirect Impact of COVID-19 on Health Care Systems- Cancer Care

Loss of Economic Capacity over 10 Years

The loss of economic capacity over 10 years is estimated at US\$ 6.3B (~80% of the total economic impact). Of this impact US\$4B, over half of the capacity lost, are concentrated in breast and cervical cancer, exposing the disproportionate impact on women.

From a country perspective, Brazil and Mexico concentrate ~50% of this economic impact; in Mexico, breast cancer has a higher impact than in other countries, as the survival rate in the early stages is 18% lower. It is important to note that in Mexico, lung cancer has a low proportion of economic capacity loss compared to other countries, which is likely a result of a systemic issue of lack of diagnosis (Figure 13).

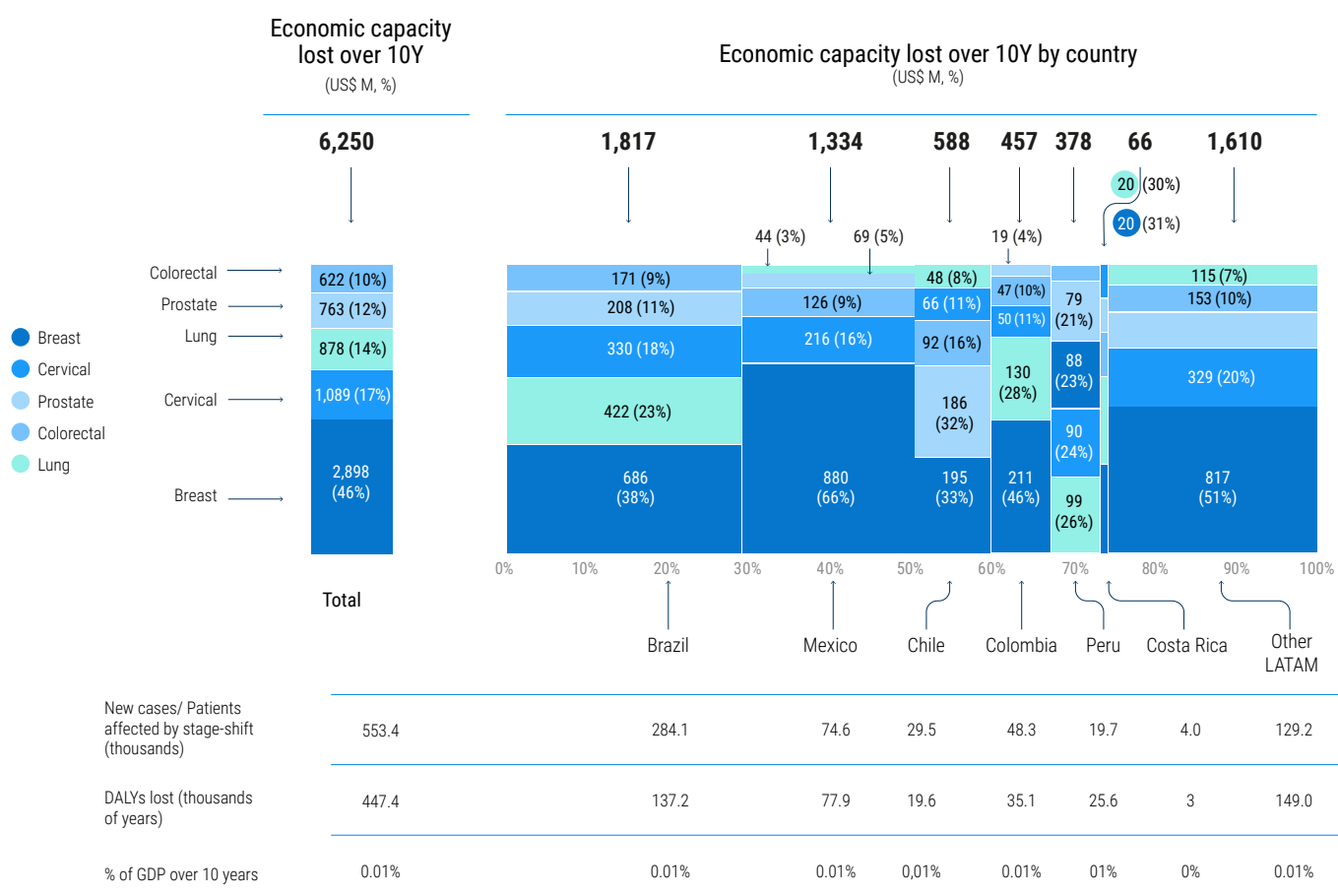
In terms of social impact, as mentioned previously, the total of new cases and patients affected by a stage shift is estimated at 553,000; however, the effect of deaths is now translated into 447,000 of DALYs lost for the whole region. Brazil and Mexico concentrate almost ~50% of the total DALYs lost across LAC (Figure 13).

In line with the scenario analysis, the economic capacity lost in scenario A is estimated at US\$6.4B (-60% vs baseline), and the DALYs lost over 10-years to 716,000 years (+60% vs baseline). In scenario B, the economic

capacity lost would increase to US\$ 8.3B (+107% vs baseline), and the DALYs lost over 10-years to 917,000 years (+105% vs. baseline) (Figure 14).

Figure 13: Economic capacity loss over 10 years by cancer type and country across Latin America (US\$ MM, Thousands of people)

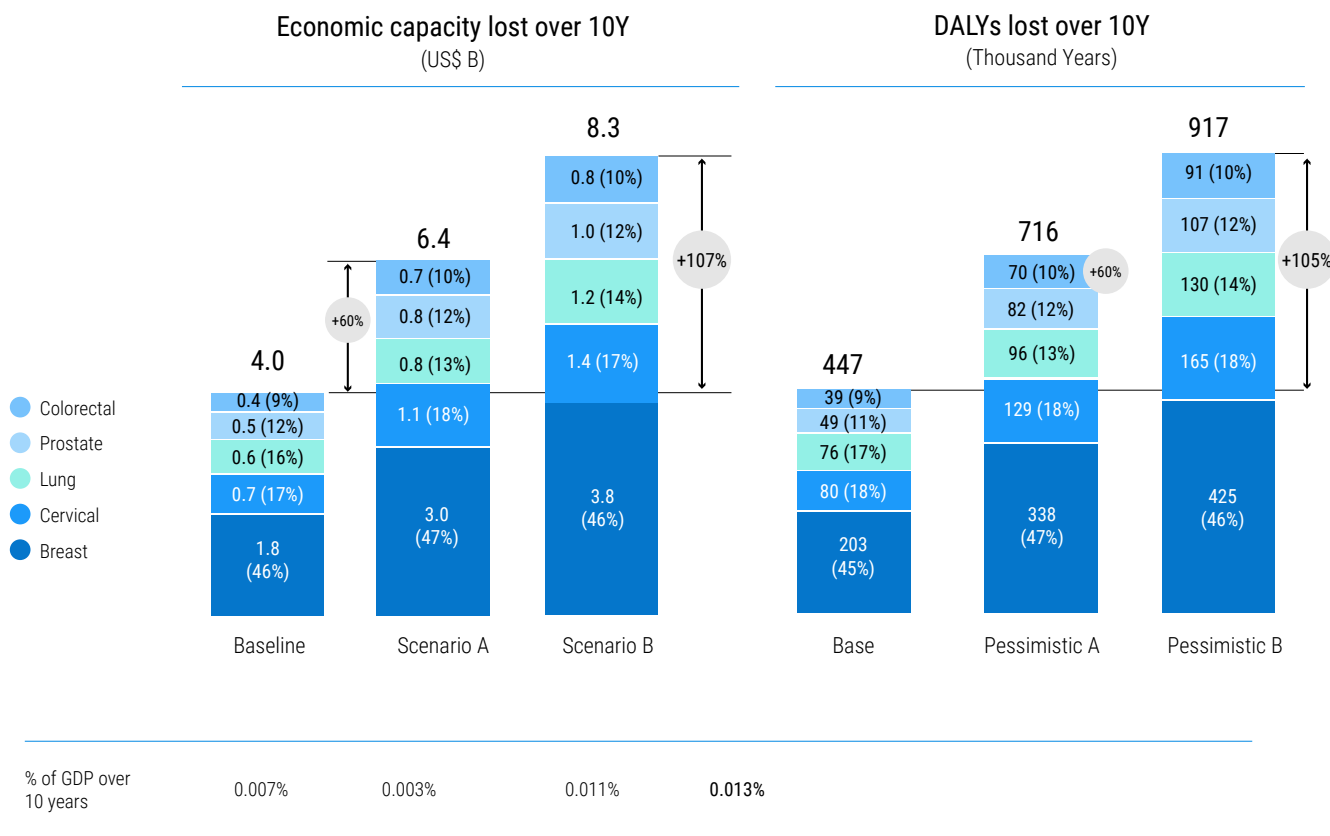
% of GDP over 10Y: **0.01%**



Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; M: million; 10Y: ten-year, DALY: disability-adjusted life years; GDP: gross domestic product

Figure 14: Scenario analysis of the economic capacity lost over 10-year and DALYs lost over 10-year caused by cancer type across LAC (US\$ B, Thousands of years)



Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; B: billion; 10Y: ten-year; DALY: disability-adjusted life years

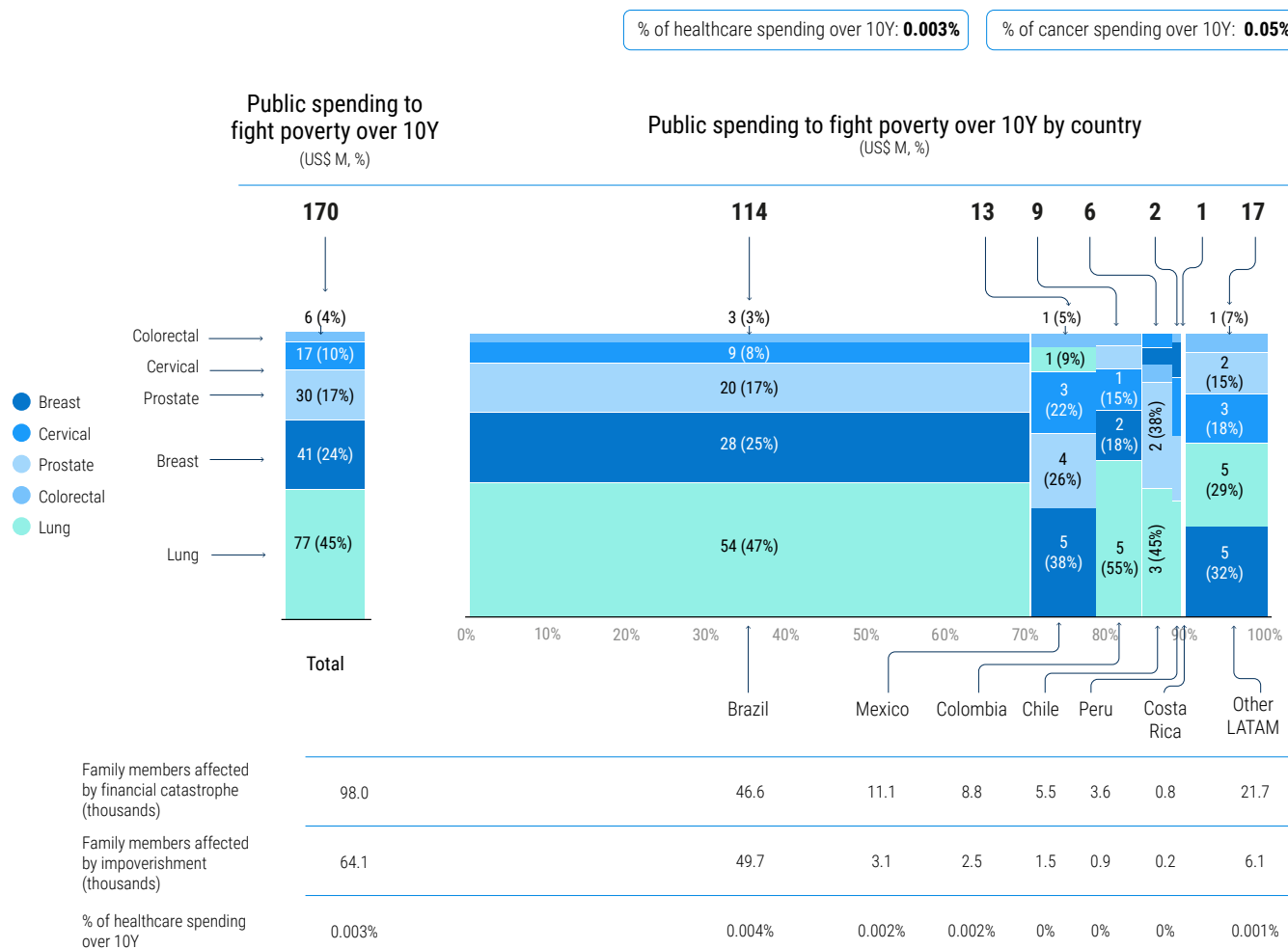
Public Spending to Fight Poverty over 10 Years of People Impoverished by Financial Catastrophe

Although additional public spending is required to fight poverty over 10 years due to the pandemic derived from those impoverished by financial catastrophe, it has a relatively low economic impact of US\$ 170 million (2% of total). From a social perspective, it accounts for 98,000 additional family members falling into financial catastrophe, out of which 64,000 are impoverished.

Throughout the region, Brazil accounts for US\$ 114 million (70%) of this economic impact, which translates into 96,000 (~46%) of the total of family members affected by impoverishment due to financial catastrophe. Secondly, Mexico accounts for US\$ 13.5 million (~8%), and Colombia for US\$ 9 million (~6%), each having ~4K (~11%) and ~3K (~9%) impoverished family members, respectively. These figures are clearly shown in Figure 15.

Furthermore, 86% of the additional public spending to fight poverty over 10 years is concentrated in three main cancers: lung, breast, and prostate cancer. According to the methodology used, patients with cancer types that concentrate cases in early or late clinical stages are at a higher risk of falling into financial catastrophe. That is the case with the aforementioned cancer types. Consequently, lung cancer accounts for US\$ 77million (48% of total), followed by breast cancer with US\$ 41 million (25% of total) and prostate cancer with US\$ 30 million (18% of total) (Figure 15).

Figure 15: Total economic impact due to public spending assigned to fight poverty over 10 years, and family members affected by financial catastrophe and impoverishment (US\$ M, thousands of people)

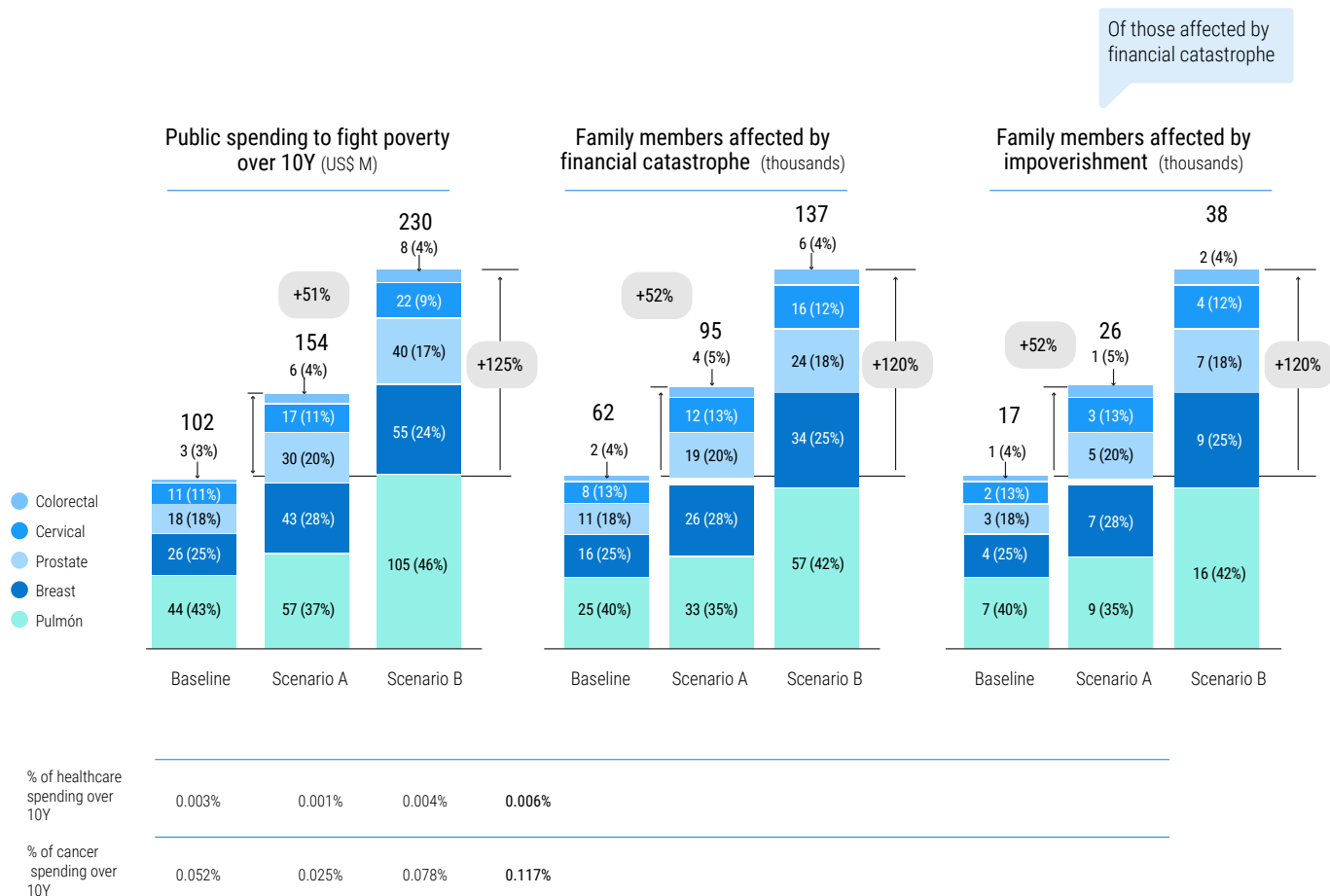


Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; M: million; 10Y: ten-year

A scenario analysis was conducted for the total economic impact due to public spending assigned to fight poverty over 10 years as a consequence of financial catastrophe. In scenario A, the total economic impact due to public spending rises to US\$ 154 million (+51% vs baseline), affecting a total of 95,000 family members due to financial catastrophe (+52% vs baseline), out of which 26,000 fall into poverty (+52% vs baseline). Scenario B suggests an increase in cost that reaches US\$ 230 million (+125% vs baseline), meaning 137,000 (+120% vs baseline) family members would be affected by financial catastrophe, out of which 38,000 would fall into poverty (+120% vs baseline) (Figure 16).

Figure 16: Scenario analysis of the total economic impact due to public spending assigned to fight poverty over 10 years, family members affected by financial catastrophe and impoverishment (US\$ M, thousands of people)



Source: EY-Parthenon analysis, Expansión, GLOBOCAN, Medigraphic, Journal of clinical oncology, AIHW, GHDx health data, Oxford Economics, Plos One, IMSS, Anales de radiografía México, INEN, CIDE, Science direct, Cancer org, The Economist, OECD, Revista colombiana de cancerología, OPS, Scielo, Instituto de Cancerología, Elsevier, Universidad continental Lima Peru, Andina, Financiamiento y Economía de la Salud, Our world in data, Gaceta Mexicana de Oncología, Goldsbury DE, MINSA Peru, CEPAL, World Health Organization

US\$: United States Dollar; M: million; 10Y: ten-year



CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This survey confirms the far-reaching impact of the COVID-19 pandemic on all aspects and stakeholders of cancer care in LAC. The economic impact of the pandemic on cancer PO and their patients in the LAC region is significant, adding a new dimension that must be analyzed precisely as it requires specific responses. The socio-economic situation in the Latin American region has deteriorated, particularly affecting vulnerable groups, such as cancer patients, especially those with less economic resources. There is a general delay in access to early diagnosis and treatment of patients with cancer in the region. Thus, a situation that is difficult to manage for the region's healthcare systems is impending, as more patients will be diagnosed in late stages, with more complex clinical management of their health profiles. The reality of a new wave of cancer cases that will arrive with greater difficulties, as these future patients will have later diagnoses and their treatment will be more complicated is notably exacerbated by the significant economic impact the pandemic has had on countries in the region. This has led organizations to rethink their framework for action, while a great need exists for specific support mechanisms to face the situation by LAC governments. Furthermore, the COVID-19 pandemic has increased the disproportionate impact of unpaid caregiving on women and girls. The increased burden that has fallen on women and girls will continue to deepen and already-existing gender inequality crisis.

On the other hand, nearly all centers across the region have been affected to some extent, with many unable to maintain the same level of care as before the pandemic and having to implement various measures to adapt. Nonetheless, delays in treatment initiation and interruption of ongoing treatments, suboptimal supportive and palliative care, and deviations from the SoC brought on by pandemic conditions will inevitably affect patient outcomes. Screening and prevention programs have shown an unprecedented decrease that may take back the important progress made in cancer prevention and diagnosis efforts. Mammography screening for breast cancer was the prevention method most affected by the pandemic, impacting millions of women as breast cancer is the most common cancer in women in LAC. When caught early, it is largely diagnosed but this can primarily be done by effective screening programs. The potential impact from screening and prevention efforts is substantial in terms of delays in timely diagnosis and staging of new patients. The downstream effects of these delays are likely to arise in the coming months and years as patients present with more advanced disease and healthcare systems face the backlog of patients. If the situation exhibited by most countries becomes a trend, the compounded health and economic impact post-pandemic will likely overburden the healthcare systems with a surplus of demand.

While some of the measures taken to mitigate the impact of the pandemic on cancer management were based on guidelines and previous experience with infectious outbreaks, this pandemic continues to reveal unknown factors and has had a heterogeneous effect on different countries and even in individual institutions. The impact of these decisions and adaptations on patient outcomes and cancer care in general must be researched to generate evidence that can guide the re-organization of cancer services and maximize the use of the limited available resources for future outbreaks or crises.

The COVID-19 pandemic will continue to have considerable economic and social impact on cancer in LAC, as worsened patient prognosis and outcomes will result from treatment interruptions as well as delays in diagnosis of new cases and treatment initiation. The total economic impact estimated in this study totals to US\$ 8.0B (US\$ 5.0 – 10.7B range) and affects a total of 824,000 (491,000-1,100,000 range) that will undergo a clinical stage shift, die due to treatment delay, or fall into financial catastrophe and impoverishment. This study also exposes the disproportionate impact of the COVID-19 pandemic on women's health. Breast (US\$ 3.9B) and cervical (US\$ 1.5B) cancers are responsible for over 50% of the total estimated economic impact, highlighting the urgency of policies and interventions that are specifically tailored towards women's health. In addition, these two cancers also account for over half of the total economic capacity lost over 10 years, making women the most deeply affected.

This report's findings evidence that the COVID-19 pandemic had a disproportionate impact on women in LAC, exacerbating gender inequality in health. Gender is a known determinant of health, but when it comes to analyzing the differential consequences of the pandemic, this perspective has not been widely studied. The absence of sex-disaggregated statistics that reflect the life experience of women and girls makes many gender inequalities invisible. In the context of COVID-19 and cancer care, accurate data on health and social outcome are needed to better understand the possible effects. Furthermore, during the pandemic, the role of caregiver exposed women to an increased risk of contracting COVID-19 as well as increased mental, physical, and financial strains. If gender is not addressed specifically, the impacts of the pandemic will threaten women's development and well-being and threatening women's development and well-being in terms of health, employment, and social welfare. The faster policy makers and business leaders act to increase gender equality, the bigger the benefits not just for gender equality but also for economic growth and society as a whole

Even before the pandemic, the increasing cancer burden in LAC represented a serious public health problem for the region due to inherent barriers that challenge the delivery of cancer care. Areas in need of improvements include funding for cancer care and control, fragmented healthcare systems, maldistribution of cancer services, delays in diagnosis and treatment access, insufficient or inadequate cancer registries, gaps in health coverage, and insufficient palliative care services. The COVID-19 pandemic has exacerbated these gaps in cancer care created by the disparities in access to resources and aggravated gender inequality. This study was designed as a tool to directionally prioritize efforts to mitigate the direct and indirect effects of the pandemic on cancer care and for countries to be better prepared to take on the upcoming challenges. To this end, a set of recommendations is proposed, specifically focusing on lessening the negative impact of the COVID-19 pandemic on cancer care and control in LAC and mitigate the impending public health burden induced by the pandemic. They require coordinated efforts with a transverse, multi-stakeholder approach that includes leveraging technology and implementing innovative approaches. These recommendations are tailored to the specific context and complexities of the LAC healthcare system and population but may be relevant for other resource-limited settings. The failure to promote and develop public policies for prevention, early detection and timely and appropriate treatment, negatively impacts both cancer control and economic development and social welfare.

Recommendations

Advocate for public policies and specific support programs aimed at addressing the new problems patients face created by the deterioration of the economic situation in LAC, which particularly affects vulnerable groups such as cancer patients and their caregivers. The economic dimension of the impact of the pandemic on cancer PO and their patients will likely have a sustained impact, at least in the medium term. Thus, solutions must be developed methodically and not only with a short-term, temporary perspective, especially in the following areas:

- Provide support for patients who have experienced a loss of employment and in cases, consequent loss of health coverage

POs must map new actors and programs, especially those in the social sphere, to create synergies that help patients with their new needs and support the sustainability of these organizations which has been challenged by the economic impact of the pandemic, as both the demand for and supply of activities and services for patients and caregivers has increased significantly, while incomes have declined.

Governments must recognize and understand the repressed cancer burden generated by the pandemic and develop a dedicated and comprehensive strategy with the aim of reducing cancer mortality by mitigating delays and interruptions to cancer prevention, diagnosis, and care:

- Adapt or develop national cancer control plans that contemplate the impact of the pandemic and ensure adequate diagnostic capacity and efficiency of care pathways necessary for cancer control and care
- Develop a prioritized plan to re-implement screening and prevention activities for the early detection of cancer to reduce diagnostic delays without overwhelming the diagnostic capacity of existing services
- Enable rational use of available resources (human, diagnostic, and therapeutic)

Allocate sufficient resources to cancer expenditure according to the repressed demand and economic impact of the pandemic on cancer care and control in each country:

- Establish databases to understand expenditure associated with cancer care and control by type of cancer and stage to determine more efficient use of resources
- Understand the economic impact of delays and/or interruptions on cancer diagnosis and treatment
- Develop strategies to assess and mitigate the pandemic's economic impact on patients with cancer and their families to provide appropriate and timely aid

Incorporate the gender perspective to broaden the understanding of the problems associated with the COVID-19 pandemic and cancer care, recognizing the disproportionate impact bore by women and girls both as patients and caregivers, and mainstreaming gender in all stages of the formulation of policies, plans, and strategies:

- Avoid delays in diagnosis and treatment interruptions of breast cancer. Breast cancer is responsible for ~50% of the estimated total economic impact of the pandemic. Special attention should be given to breast cancer in Brazil and Mexico. In Brazil, this cancer type accounts for ~70% of the 5-year increase in treatment cost and ~40% of the economic capacity loss; in Mexico, it concentrates 65% of the loss in economic capacity, as the survival rate is 18% lower in early stages than in other countries.

- Avoid diagnosis and treatment deferral in cervical cancer. This cancer has a US\$ 1.5 B estimated economic impact, the second-highest impact across the region. It accounts for 30% of the 5-year cost of treatment increase, as cases are concentrated in early stages, with high survival rates, and a high increase in treatment costs. Colombia should be given special attention, as it accounts for 76% of the increase in the cost of treatment, with half of the cases undergoing stage-shift progress from stage I to II, which increases costs by 75%.
- Recognize the need for evidence-based policies and practices that address women's disproportionate role as caregivers and their unmet needs in the face of the COVID-19 pandemic, including psychosocial and financial support.

Continue cancer prevention programs in full force and implement strategies to breach the gap of screening that was created during the pandemic, in order to achieve opportune diagnosis and intervention:

- Immediately resume cancer screening and prevention programs to pre-pandemic level. This strategy should contemplate and plan to accommodate the surplus of demand for screening services due to interruptions caused during the pandemic
- Create a dedicated strategy to reach the population that was not screened during the pandemic, which may include screening and prevention brigades
- Enforce awareness campaigns for the general public on the importance of screening and prevention

Ensure the continuity of supply of cancer care services, including prevention, diagnosis, surgery, treatment, palliative care ,and follow-up during future outbreaks and crises, by developing specific strategies to be better prepared

- Adjust policy to designate cancer care as part of national and institutional emergency preparedness and contingency plans to improve patient outcomes in future crises
- Adjust CPG for cancer care to accommodate the level of resources available based on the demands of the local pandemic situation
- Ensure supply of cancer and non-cancer medications during outbreaks and crises to ensure continuity of timely treatment delivery to patients with cancer

Combat the pervading shortage and maldistribution of resources in LAC by optimizing existing human resources and leveraging technology:

- Improve access to cancer care to vulnerable and underserved populations by enabling various levels of care (integrated health care networks) of specialized and non-specialized professionals to be trained in cancer care and appropriate referral situations, including nurses, community leaders, and care networks guided through telemedicine
- Use digital learning platforms to ensure broad access to effective training programs for healthcare personnel and knowledge dissemination, especially in rural or outlying communities
- Develop normative, infrastructural, and economic frameworks that support and foment the implementation and sustainable use of telemedicine

Implement communication and awareness programs by governments, patient groups, and medical societies to educate healthcare personnel, patients with cancer, and caregivers, especially on:

- The importance of vaccination against COVID-19
- The risk of infection versus the risk of inadequate cancer control due to interruption or missing treatments
- Appropriate protective measures against COVID-19

Foment local research on the impacts of the diverse measures, adaptations, and decision made to cancer care delivery in light of the pandemic to create an evidence-based approach for the future:

- Prioritize regional and national cancer registries to assess the impact of the pandemic on cancer care
- Encourage collaboration, knowledge exchange, and dissemination among government, academic, and healthcare institutions

Embrace the lessons learned from this pandemic as an integral part of the new normal of cancer care:

- Increase the availability of remote care options and care closer to patient homes, including remote patient assessment and monitoring, performing laboratory tests close to patient homes and having medications delivered to patient homes
- Leverage the use of technology in all aspects of cancer control and care delivery, research, funding, and education
- Adapt current practices based on the results of prospective research that evaluates omitting cycles in maintenance therapy, increments in follow-up visits, or screening measures

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ANNEX 1:
COUNTRY TABLES FOR
PHYSICIAN SURVEY

Annex 1 → Country Tables for Physician Survey

Tables for Brazil



Table 3. Interruption of Cancer Care

Issue	No. (%)
Disruption of usual care	
Not affected	0 (0)
Slightly affected	4 (16)
Moderately affected	17 (68)
Severely affected	4 (16)
Order of reasons for disruption of usual care	
Quarantines/ travel bans	1
Precautionary measures	2
Others (fear of infection,	3
Overwhelmed health system	4
Staff shortage due to infection	5
Lack of access to medications	6
Center closure	
No, remained fully open	9 (36)
No, but with reduced workload	1 (4)
No, but with reduced workload only during peaks	10 (40)
Yes, partially closed	4 (16)
Yes, completely closed	1 (4)

Severity of disruption by area	N	S	M	Se	N/A
Surgery	3	3	9	10	0
Radiotherapy	14	3	4	1	3
Chemotherapy	15	4	3	0	3
Immunotherapy	14	4	2	1	4
Hormone Therapy	18	2	1	0	4
Target Therapy	17	1	3	0	4
Stem Cell Transplant	6	1	1	4	13
Palliative Care	13	3	3	2	4
Supportive Care	7	7	6	2	3
Diagnostics	4	2	13	6	0

N: no; S: slight; M: moderate; Se: severe, N/A: not applicable; No.: number

Table 4. Epidemiologic Trends

Issue	No. (%)					
Change in No. of new cancer cases March 2020-August 2020	0%	1- 25%	26-50%	51-75%	>75%	N/A
Increase	13	2	2	0	1	6
Decrease	0	8	13	1	1	2
Change in No. of new cancer cases September 2020- Present (limit Sep. 2021)						
Increase	5	8	7	2	1	2
Decrease	9	3	4	0	0	8
Delays in cancer diagnosis due to pandemic	No. (%)					
1-2 months	4 (16)					
3-4 months	5 (20)					
5-6 months	8 (32)					
>6 months	7 (28)					
No change	0 (0)					
N/A	1 (4)					
Increase in advanced disease at Diagnosis due to the pandemic						
No	2 (8)					
Yes	23 (92)					
Increase in cancer mortality due to the pandemic						
0%	3 (12)					
1-10%	7 (28)					
11-25%	3 (12)					
26-50%	4 (16)					
51-75%	1 (4)					
>75%	0 (0)					
N/A	7 (28)					
Increase in cancer relapse due to the pandemic						
0%	4 (16)					
1-10%	8 (32)					
11-25%	2 (8)					
26-50%	3 (12)					
51-75%	2 (8)					
>75%	0 (0)					
N/A	6 (24)					

No.: number; N/A: not applicable

Table 5. Screening and Prevention

Issue						
Decrease in cancer screening	0%	1- 25%	26-50%	51-75%	>75%	N/A
Mammography	1	7	4	5	2	6
Colonoscopy	0	2	4	6	6	7
PSA test	3	5	3	3	0	11
CT of Thorax	3	6	2	4	0	10
Biopsy/pathology studies	3	6	5	5	2	4
Prevention programs and activities						No. (%)
Decrease in prevention activities						17 (68)
No change						0 (0)
N/A						8 (32)

No.: number; N/A: not applicable; PSA: prostate specific antigen; CT: computer tomography

Table 6. Virtual and Remote Care Adaptations

Issue	No. (%)
Outpatient clinic visits	
Canceled in-person clinic visits and switched to virtual (telemedicine) visits	6 (24)
Reduced in-person clinic visits and added virtual (telemedicine) visits	17 (68)
Continued outpatient visits as usual	1 (4)
Cancelled all visits	0 (0)
N/A	1 (4)
Virtual Clinic Visits Will Continue After Pandemic	
Yes	23 (92)
No	1 (4)
N/A	1 (4)
Increased Time Between Follow-up Visits	
Yes	15 (60)
No	8 (32)
N/A	2 (8)
Performing lab tests close to patients' home	
Yes	24 (96)
No	1 (4)
N/A	0 (0)
Patients Sought Care in Different Center	
Yes	11 (44)
No	10 (40)
N/A	4 (16)
Availability of tumor boards before pandemic	
Yes	17 (68)
No	6 (24)
N/A	2 (8)
Impact of pandemic on tumor boards	
Canceled	0 (0)
Switched to virtual	17 (68)
Virtual and in-person	0 (0)
No change	0 (0)
N/A	8 (32)
Virtual tumor boards to persist after pandemic	
Yes	15 (60)
No	0 (0)
Doesn't know	5 (20)
N/A	5 (20)

No.: number; N/A: not applicable

Table 7. Treatment changes and interruptions

Issue	No. (%)
Treatment interruptions in 2020 (March-December)	
0%	1 (4)
1-30%	17 (68)
31-60%	3 (12)
61-90%	2 (8)
>90%	0 (0)
N/A	2 (8)
Treatment interruptions in 2021 (January-Present (limit September 2021))	
0%	3 (12)
1-30%	17 (68)
31-60%	0 (0)
61-90%	0 (0)
>90%	1 (4)
N/A	4 (16)
Patients who abandoned treatment	
0%	6 (24)
1-25%	15 (60)
26-50%	4 (16)
51-75%	0 (0)
>75%	0 (0)
Reasons for abandoning treatment	
COVID-19- related reasons (fear of infections, quarantines, etc.)	12 (48)
Non-COVID-19-related reasons (insurance stopped coverage, etc.)	2 (8)
Reason is unknown	0 (0)
Both covid-19 related and non-related reasons	6 (24)
N/A	5 (20)
Delivery of medications to patients' home	
Yes	12 (48)
No	6 (24)
N/A	7 (28)
Reduced cycles of chemotherapy in __% of patients	
0%	8 (32)
1-25%	10 (40)
26-50%	1 (4)
51-75%	0 (0)
>75%	0 (0)
N/A	6 (24)

Table 7 continues on next page

Table 7 (Continuation) Treatment changes and interruptions

Issue	No. (%)
Patients missed at least 1 cycle of chemotherapy	
<10%	9 (36)
11-25%	9 (36)
26-50%	0 (0)
51-75%	2 (8)
>75%	1 (4)
N/A	4 (16)
Changes to any part of patients' treatment	
0%	2 (8)
1-25%	16 (64)
26-50%	2 (8)
51-75%	0 (0)
>75%	1 (4)
N/A	4 (16)
Reduced use of G-CSF in chemotherapy regimens	
Yes	2 (8)
No	15 (60)
N/A	8 (32)
Increased use of oral over IV chemotherapy	
0%	2 (8)
1-25%	15 (60)
26-50%	2 (8)
51-75%	0 (0)
>75%	0 (0)
N/A	6 (24)
Access barriers for oral agents	
Yes, in the public system	1 (4)
Yes, in the private system	7 (28)
Yes, in both the public and private systems	11 (44)
No	2 (8)
N/A	4 (16)

Table 7 continues on next page

Table 7 (Continuation) Treatment changes and interruptions

Issue	No. (%)
Deviation from CPG or SoC by postponing surgery	
0%	2 (8)
1-25%	14 (56)
26-50%	2 (8)
51-75%	0 (0)
>75%	1 (4)
N/A	6 (24)
Potential harm to patients due to interruptions in care	
Yes, due to lack of access to cancer care	9 (36)
Yes, due to lack of access to non-cancer care	4 (16)
Yes, due to both	11 (44)
No	1 (4)
Deviation from CPG or SoC by postponing radiation	
0%	4 (16)
1-25%	13 (52)
26-50%	1 (4)
51-75%	0 (0)
>75%	0 (0)
N/A	7 (28)

No.: number; N/A: not applicable; CPG: clinical practice guidelines; G-CSF: granulocyte colony stimulating factor; SoC: standard of care

Table 8. COVID-19 Diagnosis and Infection Control

Issue	No. (%)
Oncologic outpatients with COVID-19 diagnosis	
Yes	19 (76)
No	2 (8)
N/A	4 (16)
Oncologic inpatients with COVID-19 diagnosis	
Yes	16 (64)
No	7 (28)
N/A	2 (8)
Lack of PPE at center	
Yes	6 (24)
No	19 (76)
Member of oncology department diagnosed with COVID-19	
Yes	23 (92)
No	1 (4)
Prefer not to answer	1 (4)
Recommends COVID-19 vaccine to majority oncologic patients	
Yes	25 (100)
No	0 (0)
COVID-19 vaccine available for oncologic patients	
January 2021	2 (8)
February 2021	3 (12)
March 2021	4 (16)
April 2021	3 (12)
May 2021	5 (20)
June 2021	0 (0)
July 2021	0 (0)
Not available	0 (0)
Don't know	5 (20)
Priority was not given to patients with cancer	3 (12)

No.: number; N/A: not applicable; PPE: personal protective equipment

Table 9. Economic impact

Issue	No. (%)				
Petitions from payers or healthcare center to implement cost-containment measures					
Yes, by institution	3 (12)				
Yes, by insurance companies	1 (4)				
Yes, by institution AND by insurance companies	0 (0)				
No	19 (76)				
Prefer not to answer	2 (8)				
Changes in budget allocated to cancer care by healthcare center					
Yes, increase	1 (4)				
Yes, decrease	2 (8)				
No	9 (36)				
Don't know	11 (44)				
N/A	2 (8)				
Changes in budget allocated to cancer care by government (public spending on cancer)					
Yes, increase	1 (4)				
Yes, decrease	3 (12)				
No	4 (16)				
Don't know	13 (52)				
N/A	4 (16)				
Expected increase of patients with cancer after pandemic					
Yes, significant	12 (48)				
Yes, moderate	8 (32)				
Yes, slight	4 (16)				
No	1 (4)				
Healthcare system preparedness for increase of patients with cancer					
	V	M	S	N	N/A
Budget allocation to cancer care	1	2	5	15	2
Healthcare personnel availability	1	5	6	11	2
Specialized facility availability	3	3	8	9	2
Government has announced action plan to address increased cancer burden					
Yes	0 (0)				
No	20 (80)				
Don't know	5 (20)				

No.: number; N/A: not applicable; V: very; M: moderately; S: slightly; N: not

Annex 1 → Country Tables for Physician Survey

Tables for Colombia



Table 10. Interruption of Cancer Care

Issue	No. (%)				
Disruption of Usual Care					
Not affected	0 (0)				
Slightly affected	4 (15)				
Moderately affected	17 (65)				
Severely affected	5 (19)				
Order of Reasons for Disruption of Usual Care					
Lack of access to medications	1				
Staff shortage due to infection	2				
Others (e.g.: fear of infection)	3				
Precautionary measures	4				
Quarantines/ travel bans	5				
Overwhelmed health system	6				
Center Closure					
No, remained fully open	12 (46)				
No, but with reduced workload	6 (23)				
No, but with reduced workload during peaks	6 (23)				
Yes, partially closed	2 (7,8)				
Yes, completely closed	0 (0)				
Severity of Disruption by Area					
	N	L	M	Se	NA
Surgery	0	1	15	10	0
Radiotherapy	6	7	8	0	5
Chemotherapy	6	10	7	0	3
Immunotherapy	7	8	4	1	6
Hormone Therapy	9	8	4	0	5
Target Therapy	8	7	4	1	6
Stem Cell Transplant	2	3	6	4	11
Palliative Care	7	8	8	0	3
Supportive Care	4	6	11	3	2
Diagnostics	3	8	10	3	2

N: no; S: slight; M: moderate; Se: severe; N/A: not applicable; No.: number

Table 11. Epidemiologic Trends

Issue	No. (%)					
Change in No. of new cancer cases March 2020-August 2020	0%	1- 25%	26- 50%	51- 75%	>75%	N/A
Increase	7	9	2	1	0	7
Decrease	3	7	4	1	0	11
Change in No. of new cancer cases September 2020- Present (limit Sep. 2021)						
Increase	6	9	1	3	0	7
Decrease	5	9	0	0	1	11
Delays in cancer diagnosis due to pandemic	No. (%)					
1-2 months	5 (19)					
3-4 months	4 (15)					
5-6 months	4 (15)					
>6 months	8 (31)					
No change	2 (8)					
N/A	3 (12)					
Increase in advanced disease at Diagnosis due to the pandemic						
No	3 (12)					
Yes	23 (88)					
Increase in cancer mortality due to the pandemic						
0%	1 (4)					
1-10%	5 (19)					
11-25%	11 (42)					
26-50%	3 (12)					
51-75%	1 (4)					
>75%	0 (0)					
N/A	5 (19)					
Increase in cancer relapse due to the pandemic						
0%	0 (0)					
1-10%	8 (31)					
11-25%	7 (27)					
26-50%	3 (12)					
51-75%	2 (8)					
>75%	0 (0)					
N/A	6 (23)					

No.: number; N/A: not applicable

Table 12. Screening and Prevention

Issue	No. (%)					
	0%	1-25%	26-50%	51-75%	>75%	N/A
Decrease in cancer screening	0	10	7	2	2	5
Mammography	0	6	4	3	3	10
Colonoscopy	0	6	2	1	0	17
PSA test	0	10	4	1	1	10
CT of Thorax	0	11	6	2	1	6
Biopsy/pathology studies						
Prevention programs and activities						No. (%)
Decrease in prevention activities						17 (65)
No change						5 (19)
N/A						4 (15)

No.: number; N/A: not applicable; PSA: prostate specific antigen; CT: computer tomography

Table 13. Virtual and Remote Care Adaptations

Issue	No. (%)
Outpatient clinic visits	
Canceled in-person clinic visits and switched to virtual (telemedicine) visits	6 (23)
Reduced in-person clinic visits and added virtual (telemedicine) visits	18 (69)
Continued outpatient visits as usual	1 (4)
Cancelled all visits	0 (0)
N/A	1 (4)
Virtual Clinic Visits Will Continue After Pandemic	
Yes	19 (73)
No	6 (23)
N/A	1 (4)
Increased Time Between Follow-up Visits	
Yes	21 (81)
No	4 (15)
N/A	1 (4)
Performing lab tests close to patients' home	
Yes	14 (54)
No	8 (31)
N/A	4 (15)
Patients Sought Care in Different Center	
Yes	15 (58)
No	9 (35)
N/A	2 (8)
Availability of tumor boards before pandemic	
Yes	24 (92)
No	1 (4)
N/A	1 (4)
Impact of pandemic on tumor boards	
Canceled	0 (0)
Switched to virtual	18 (69)
Virtual and in-person	3 (12)
No change	3 (12)
N/A	2 (8)
Virtual tumor boards to persist after pandemic	
Yes	18 (69)
No	2 (8)
Doesn't know	4 (15)
N/A	2 (8)

No.: number; N/A: not applicable

Table 14. Treatment changes and interruptions

Issue	No. (%)
Treatment interruptions in 2020 (March-December)	
0%	0 (0)
1-30%	16 (62)
31-60%	6 (23)
61-90%	0 (0)
>90%	1 (4)
N/A	3 (12)
Treatment interruptions in 2021 (January-Present (limit September 2021))	
0%	2 (8)
1-30%	15 (57)
31-60%	5 (19)
61-90%	0 (0)
>90%	0 (0)
N/A	3 (12)
Patients who abandoned treatment	
0%	5 (19)
1-25%	19 (73)
26-50%	2 (8)
51-75%	0 (0)
>75%	0 (0)
Reasons for abandoning treatment	
COVID-19- related reasons (fear of infections, quarantines, etc.)	12 (46)
Non-COVID-19-related reasons (insurance stopped coverage, etc.)	0 (0)
Reason is unknown	4 (15)
Both covid-19 related and non-related reasons	6 (23)
N/A	4 (15)
Delivery of medications to patients' home	
Yes	14 (54)
No	8 (31)
N/A	4 (15)
Reduced cycles of chemotherapy in __% of patients	
0%	4 (15)
1-25%	12 (46)
26-50%	0 (0)
51-75%	0 (0)
>75%	0 (0)
N/A	10 (38)

Table 14 continues on next page

Table 14. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Patients missed at least 1 cycle of chemotherapy	
<10%	11 (42)
11-25%	3 (12)
26-50%	3 (12)
51-75%	1 (4)
>75%	0 (0)
N/A	8 (31)
Changes to any part of patients' treatment	
0%	1 (4)
1-25%	16 (62)
26-50%	4 (15)
51-75%	0 (0)
>75%	0 (0)
N/A	5 (19)
Reduced use of G-CSF in chemotherapy regimens	
Yes	1 (4)
No	11 (42)
N/A	14 (54)
Increased use of oral over IV chemotherapy	
0%	2 (8)
1-25%	11 (42)
26-50%	1 (4)
51-75%	1 (4)
>75%	0 (0)
N/A	11 (42)
Access barriers for oral agents	
Yes, in the public system	2 (8)
Yes, in the private system	1 (4)
Yes, in both the public and private systems	5 (19)
No	8 (31)
N/A	10 (38)

Table 14 continues on next page

Table 14. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Deviation from CPG or SOC by postponing surgery	
0%	2 (8)
1-25%	18 (69)
26-50%	0 (0)
51-75%	1 (4)
>75%	0 (0)
N/A	5 (19)
Deviation from CPG or SOC by postponing radiation	
0%	4 (15)
1-25%	9 (35)
26-50%	0 (0)
51-75%	1 (4)
>75%	0 (0)
N/A	12 (46)
Potential harm to patients due to interruptions in care	
Yes, due to lack of access to cancer care	6 (23)
Yes, due to lack of access to non-cancer care	5 (19)
Yes, due to both	10 (38)
No	5 (19)

No.: number; N/A: not applicable; CPG: clinical practice guidelines; G-CSF: granulocyte colony stimulating factor; SoC: standard of care

Table 15. COVID-19 Diagnosis and Infection Control

Issue	No. (%)
Oncologic outpatients with COVID-19 diagnosis	
Yes	21 (81)
No	4 (15)
N/A	1 (4)
Oncologic inpatients with COVID-19 diagnosis	
Yes	23 (88)
No	3 (12)
N/A	0 (0)
Lack of PPE at center	
Yes	3 (12)
No	23 (88)
Member of oncology department diagnosed with COVID-19	
Yes	24 (92)
No	2 (8)
Prefer not to answer	0 (0)
Recommends COVID-19 vaccine to majority oncologic patients	
Yes	26 (100)
No	0 (0)
COVID-19 vaccine available for oncologic patients	
January 2021	0 (0)
February 2021	5 (19)
March 2021	7 (27)
April 2021	5 (19)
May 2021	5 (19)
June 2021	1 (4)
July 2021	0 (0)
Not available	0 (0)
Don't know	2 (8)
Priority was not given to patients with cancer	1 (4)

No.: number; N/A: not applicable; PPE: personal protective equipment

Table 16. Economic impact

Issue	No. (%)
Petitions from payers or healthcare center to implement cost-containment measures	
Yes, by institution	1 (4)
Yes, by insurance companies	1 (4)
Yes, by institution AND by insurance companies	1 (4)
No	20 (77)
Prefer not to answer	3 (12)
Changes in budget allocated to cancer care by healthcare center	
Yes, increase	3 (12)
Yes, decrease	4 (16)
No	7 (27)
Don't know	8 (31)
N/A	4 (15)
Changes in budget allocated to cancer care by government (public spending on cancer)	
Yes, increase	1 (4)
Yes, decrease	2 (8)
No	10 (38)
Don't know	10 (38)
N/A	3 (12)

No.: number; N/A: not applicable

Annex 1 → Country Tables for Physician Survey

Tables for Ecuador



Table 17. Interruption of Cancer Care

Issue	No. (%)				
Disruption of Usual Care					
Not affected	2 (4)				
Slightly affected	9 (20)				
Moderately affected	25 (54)				
Severely affected	10 (22)				
Order of Reasons for Disruption of Usual Care					
Overwhelmed health system	1				
Precautionary measures	2				
Quarantines/ travel bans	3				
Lack of access to medications	4				
Staff shortage due to infection	5				
Others (e.g.: fear of infection)	6				
Center Closure					
No, remained fully open	9 (20)				
No, but with reduced workload	16 (35)				
No, but with reduced workload only during peaks	7 (15)				
Yes, partially closed	12 (26)				
Yes, completely closed	2 (4)				
Severity of Disruption by Area					
	N	S	M	Se	N/A
Surgery	1	7	14	19	5
Radiotherapy	5	6	10	9	15
Chemotherapy	7	9	20	8	2
Immunotherapy	4	8	11	11	12
Hormone Therapy	17	12	7	6	4
Target Therapy	10	9	15	6	6
Stem Cell Transplant	2	0	5	9	29
Palliative Care	3	15	21	6	1
Supportive Care	3	8	20	12	3
Diagnostics	3	8	21	13	1

N: no; S: slight; M: moderate; Se: severe, N/A: not applicable; No.: number

Table 18. Epidemiologic Trends

Issue	No. (%)					
Change in No. of new cancer cases March 2020-August 2020	0%	1- 25%	26-50%	51-75%	>75%	N/A
Increase	10	18	4	3	1	9
Decrease	3	18	11	4	2	6
Change in No. of new cancer cases September 2020- Present (limit Sep. 2021)						
Increase	6	20	6	6	2	4
Decrease	9	14	13	1	1	6
Delays in cancer diagnosis due to pandemic	No. (%)					
1-2 months	6 (13)					
3-4 months	13 (28)					
5-6 months	14 (30)					
>6 months	11 (24)					
No change	2 (4)					
N/A	0 (0)					
Increase in advanced disease at Diagnosis due to the pandemic						
No	2 (4)					
Yes	44 (96)					
Increase in cancer mortality due to the pandemic						
0%	1 (2)					
1-10%	10 (22)					
11-25%	16 (35)					
26-50%	8 (17)					
51-75%	6 (13)					
>75%	2 (4)					
N/A	3 (7)					
Increase in cancer relapse due to the pandemic						
0%	2 (4)					
1-10%	6 (13)					
11-25%	15 (33)					
26-50%	12 (26)					
51-75%	5 (11)					
>75%	5 (11)					
N/A	1 (2)					

No.: number; N/A: not applicable

Table 19. Screening and Prevention

Issue	No. (%)					
	0%	1- 25%	26-50%	51-75%	>75%	N/A
Decrease in cancer screening	0	8	13	10	7	8
Mammography	0	4	12	10	10	5
Colonoscopy	3	10	12	9	4	2
PSA test	4	9	11	10	5	4
Biopsy/pathology studies	1	6	13	14	4	7
Prevention programs and activities						No. (%)
Decrease in prevention activities						38 (83)
No change						7 (15)
N/A						1 (2)

No.: number; N/A: not applicable; PSA: prostate specific antigen; CT: computer tomography

Table 20. Virtual and Remote Care Adaptations

Issue	No. (%)
Outpatient clinic visits	
Canceled in-person clinic visits and switched to virtual (telemedicine) visits	13 (28)
Reduced in-person clinic visits and added virtual (telemedicine) visits	24 (52)
Continued outpatient visits as usual	8 (17)
Cancelled all visits	0 (0)
N/A	1 (2)
Virtual Clinic Visits Will Continue After Pandemic	
Yes	32 (70)
No	13 (28)
N/A	1 (2)
Increased Time Between Follow-up Visits	
Yes	42 (91)
No	4 (9)
N/A	0
Performing lab tests close to patients' home	
Yes	35 (76)
No	11 (24)
N/A	0
Patients Sought Care in Different Center	
Yes	31 (67)
No	15 (33)
N/A	0 (0)
Availability of tumor boards before pandemic	
Yes	40 (87)
No	3 (7)
N/A	3 (7)
Impact of pandemic on tumor boards	
Canceled	12 (27)
Switched to virtual	14 (31)
Virtual and in-person	13 (29)
No change	2 (4)
N/A	4 (9)
Virtual tumor boards to persist after pandemic	
Yes	29 (63)
No	5 (11)
Doesn't know	5 (11)
N/A	7 (15)

No.: number; N/A: not applicable

Table 21. Treatment changes and interruptions

Issue	No. (%)
Treatment interruptions in 2020 (March-December)	
0%	1 (2)
1-30%	22 (48)
31-60%	17 (37)
61-90%	4 (8)
>90%	1 (2)
N/A	1 (2)
Treatment interruptions in 2021 (January-Present (limit September 2021))	
0%	4 (9)
1-30%	33 (72)
31-60%	8 (18)
61-90%	0 (0)
>90%	0 (0)
N/A	0 (0)
Patients who abandoned treatment	
0%	0 (0)
1-25%	32 (70)
26-50%	9 (20)
51-75%	3 (7)
>75%	2 (4)
Reasons for abandoning treatment	
COVID-19- related reasons (fear of infections, quarantines, etc.)	35 (76)
Non-COVID-19-related reasons (insurance stopped coverage, etc.)	1 (2)
Reason is unknown	1 (2)
Both covid-19 related and non-related reasons	9 (19)
N/A	0 (0)
Delivery of medications to patients' home	
Yes	27 (59)
No	17 (37)
N/A	2 (4)
Reduced cycles of chemotherapy in __% of patients	
0%	7 (15)
1-25%	23 (50)
26-50%	6 (13)
51-75%	1 (2)
>75%	1 (2)
N/A	8 (17)

Table 21 continues on next page

Table 21. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Patients missed at least 1 cycle of chemotherapy	
<10%	7 (16)
11-25%	14 (31)
26-50%	11 (24)
51-75%	6 (13)
>75%	2 (4)
N/A	5 (11)
Changes to any part of patients' treatment	
Cant. (%)	
0%	1 (2)
1-25%	32 (70)
26-50%	7 (15)
51-75%	4 (9)
>75%	1 (2)
N/A	1 (2)
Reduced use of G-CSF in chemotherapy regimens	
Yes	11 (24)
No	28 (61)
N/A	7 (15)
Increased use of oral over IV chemotherapy	
0%	2 (4)
1-25%	27 (59)
26-50%	7 (15)
51-75%	2 (4)
>75%	0 (0)
N/A	8 (17)
Access barriers for oral agents	
Yes, in the public system	17 (37)
Yes, in the private system	0 (0)
Yes, in both the public and private systems	20 (43)
No	6 (13)
N/A	3 (7)

Table 21 continues on next page

Table 21. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Deviation from CPG or SOC by postponing surgery	
0%	2 (4)
1-25%	30 (65)
26-50%	7 (15)
51-75%	4 (9)
>75%	0 (0)
N/A	3 (7)
Deviation from CPG or SOC by postponing radiotherapy	
0%	3 (7)
1-25%	24 (52)
26-50%	5 (11)
51-75%	2 (4)
>75%	3 (7)
N/A	9 (20)
Potential harm to patients due to interruptions in care	
Yes, due to lack of access to cancer care	19 (41)
Yes, due to lack of access to non-cancer care	4 (9)
Yes, due to both	21 (46)
No	2 (4)

No.: number; N/A: not applicable; CPG: clinical practice guidelines; G-CSF: granulocyte colony stimulating factor; SoC: standard of care

Table 22. COVID-19 Diagnosis and Infection Control

Issue	No. (%)
Oncologic outpatients with COVID-19 diagnosis	
Yes	44 (96)
No	2 (4)
N/A	0 (0)
Oncologic inpatients with COVID-19 diagnosis	
Yes	38 (83)
No	8 (17)
N/A	0 (0)
Lack of PPE at center	
Yes	14 (13)
No	32 (87)
Member of oncology department diagnosed with COVID-19	
Yes	42 (91)
No	3 (7)
Prefer not to answer	1 (2)
Recommends COVID-19 vaccine to majority oncologic patients	
Yes	45 (98)
No	1 (2)
COVID-19 vaccine available for oncologic patients	
January 2021	4 (9)
February 2021	4 (9)
March 2021	8 (17)
April 2021	14 (30)
May 2021	8 (17)
June 2021	2 (4)
July 2021	5 (11)
Not available	0 (0)
Don't know	0 (0)
Priority was not given to patients with cancer	1 (2)

No.: number; N/A: not applicable; PPE: personal protective equipment

Table 23. Economic impact

Issue	No. (%)				
Petitions from payers or healthcare center to implement cost-containment measures					
Yes, by institution	11 (24)				
Yes, by insurance companies	1 (2)				
Yes, by institution AND by insurance companies	6 (13)				
No	20 (43)				
Prefer not to answer	8 (17)				
Changes in budget allocated to cancer care by healthcare center					
Yes, increase	9 (20)				
Yes, decrease	22 (47)				
No	6 (13)				
Don't know	6 (13)				
N/A	3 (7)				
Changes in budget allocated to cancer care by government (public spending on cancer)					
Yes, increase	7 (15)				
Yes, decrease	29 (63)				
No	4 (9)				
Don't know	4 (9)				
N/A	2 (4)				
Expected increase of patients with cancer after pandemic					
Yes, significant	22 (48)				
Yes, moderate	16 (35)				
Yes, slight	7 (15)				
No	1 (2)				
Healthcare system preparedness for increase of patients with cancer					
	V	M	S	N	N/A
Budget allocation to cancer care	1	5	9	29	2
Healthcare personnel availability	2	14	12	15	3
Specialized facility availability	2	10	14	18	2
Government has announced action plan to address increased cancer burden					
Yes					3 (7)
No					39 (85)
Don't know					4 (9)

No.: number; N/A: not applicable

Annex 1 → Country Tables for Physician Survey

Tables for Mexico



Table 24. Interruption of Cancer Care

Issue	No. (%)				
Disruption of Usual Care					
Not affected	1 (2)				
Slightly affected	9 (21)				
Moderately affected	22 (51)				
Severely affected	11 (26)				
Order of Reasons for Disruption of Usual Care					
Overwhelmed health system	1				
Lack of access to medications	2				
Staff shortage due to infection	3				
Precautionary measures	4				
Quarantines/ travel bans	5				
Others (e.g.: fear of infection)	6				
Center Closure					
No, remained fully open	11 (26%)				
No, but with reduced work-load	8 (19%)				
No, but with reduced work-load during peaks	9 (21%)				
Yes, partially closed	13 (30%)				
Yes, completely closed	2 (5%)				
Severity of Disruption by Area					
	N	S	M	Se	N/A
Surgery	2	8	22	10	1
Radiotherapy	3	11	20	5	4
Chemotherapy	3	12	11	17	0
Immunotherapy	5	10	9	15	4
Hormone Therapy	17	10	11	2	3
Target Therapy	11	7	16	9	0
Stem Cell Transplant	5	2	6	6	24
Palliative Care	10	12	7	10	4
Supportive Care	10	12	4	15	22
Diagnostics	6	9	11	15	1

N: no; S: slight; M: moderate; Se: severe; N/A: not applicable; No.: number

Table 25. Epidemiologic Trends

Issue	No. (%)					
Change in No. of new cancer cases March 2020-August 2020	0%	1- 25%	26-50%	51-75%	>75%	N/A
Increase	16	11	12	1	0	3
Decrease	6	14	5	7	1	9
Change in No. of new cancer cases September 2020- Present (limit Sep. 2021)						
Increase	10	22	6	1	1	3
Decrease	12	7	5	9	0	9
Delays in cancer diagnosis due to pandemic	No. (%)					
1-2 months	8 (19)					
3-4 months	17 (40)					
5-6 months	7 (16)					
>6 months	8 (19)					
No change	3 (7)					
N/A	0 (0)					
Increase in advanced disease at Diagnosis due to the pandemic						
No	8 (19)					
Yes	35 (81)					
Increase in cancer mortality due to the pandemic						
0%	2 (5)					
1-10%	15 (35)					
11-25%	15 (35)					
26-50%	6 (14)					
51-75%	3 (7)					
>75%	0 (0)					
N/A	2 (5)					
Increase in cancer relapse due to the pandemic						
0%	0 (0)					
1-10%	15 (35)					
11-25%	14 (33)					
26-50%	7 (16)					
51-75%	3 (7)					
>75%	2 (5)					
N/A	2 (5)					

No.: number; N/A: not applicable

Table 26. Screening and Prevention

Issue	No. (%)					
	0%	1- 25%	26-50%	51-75%	>75%	N/A
Decrease in cancer screening	0%	1- 25%	26-50%	51-75%	>75%	N/A
Mammography	4	21	11	2	4	0
Colonoscopy	3	20	6	5	3	5
PSA test	7	23	5	1	0	6
CT of Thorax	8	8	8	7	8	3
Biopsy/pathology studies	3	13	13	9	4	0
Prevention programs and activities						No. (%)
Decrease in prevention activities						24
No change						11
N/A						8

No.: number; N/A: not applicable; PSA: prostate specific antigen; CT: computer tomography

Table 27. Virtual and Remote Care Adaptations

Issue	No. (%)
Outpatient clinic visits	
Canceled in-person clinic visits and switched to virtual (telemedicine) visits	5 (12)
Reduced in-person clinic visits and added virtual (telemedicine) visits	21 (49)
Continued outpatient visits as usual	13 (30)
Cancelled all visits	2 (5)
N/A	2 (5)
Virtual Clinic Visits Will Continue After Pandemic	
Yes	18 (42)
No	21 (49)
N/A	4 (9)
Increased Time Between Follow-up Visits	
Yes	32 (74)
No	11 (26)
N/A	0 (0)
Performing lab tests close to patients' home	
Yes	28 (65)
No	15 (35)
N/A	0 (0)
Patients Sought Care in Different Center	
Yes	27 (63)
No	15 (35)
N/A	1 (2)
Availability of tumor boards before pandemic	
Yes	27 (63)
No	16 (37)
N/A	0 (0)
Impact of pandemic on tumor boards	
Canceled	8 (18)
Switched to virtual	8 (18)
Virtual and in-person	8 (18)
No change	6 (14)
N/A	13 (30)
Virtual tumor boards to persist after pandemic	
Yes	12 (28)
No	8 (19)
Doesn't know	9 (21)
N/A	14 (33)

No.: number; N/A: not applicable

Table 28. Treatment changes and interruptions

Issue	No. (%)
Treatment interruptions in 2020 (March-December)	
0%	1 (2)
1-30%	22 (51)
31-60%	16 (38)
61-90%	3 (7)
>90%	1 (2)
N/A	0 (0)
Treatment interruptions in 2021 (January-Present/limit September 2021)	
0%	1 (2)
1-30%	31 (73)
31-60%	10 (24)
61-90%	1 (2)
>90%	0 (0)
N/A	0 (0)
Patients who abandoned treatment	
0%	4 (9,3)
1-25%	28 (65,2)
26-50%	10 (23,2)
51-75%	1 (2,3)
>75%	0 (0)
Reasons for abandoning treatment	
COVID-19- related reasons (fear of infections, quarantines, etc.)	24 (56)
Non-COVID-19-related reasons (insurance stopped coverage, etc.)	4 (9)
Reason is unknown	2 (5)
Both covid-19 related and non-related reasons	10 (23)
N/A	3 (7)
Delivery of medications to patients' home	
Yes	15 (35)
No	27 (63)
N/A	1 (2)
Reduced cycles of chemotherapy in ___% of patients	
0%	12 (28)
1-25%	20 (47)
26-50%	6 (14)
51-75%	1 (2)
>75%	0 (0)
N/A	4 (9)

Table 28 continues on next page

Table 28. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Patients missed at least 1 cycle of chemo-therapy	
<10%	10 (23)
11-25%	17 (40)
26-50%	8 (19)
51-75%	5 (12)
>75%	1 (2)
N/A	2 (5)
Changes to any part of patients' treat-ment	
0%	5 (12)
1-25%	23 (54)
26-50%	9 (21)
51-75%	4 (9)
>75%	0 (0)
N/A	2 (5)
Reduced use of G-CSF in chemotherapy regimens	
Yes	8 (19)
No	18 (42)
N/A	17 (40)
Increased use of oral over IV chemother-apy	
0%	9 (21)
1-25%	25 (58)
26-50%	5 (12)
51-75%	0 (0)
>75%	0 (0)
N/A	4 (9)
Access barriers for oral agents	
Yes, in the public system	6 (14)
Yes, in the private system	3 (7)
Yes, in both the public and private systems	13 (30)
No	14 (33)
N/A	7 (7)

Table 28 continues on next page

Table 28. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Deviation from CPG or SOC by postponing surgery	
0%	6 (14)
1-25%	27 (66)
26-50%	4 (9)
51-75%	3 (7)
>75%	1 (2)
N/A	2 (5)
Deviation from CPG or SOC by postponing radiation	
0%	6 (14)
1-25%	27 (63)
26-50%	2 (5)
51-75%	1 (2)
>75%	1 (2)
N/A	6 (14)
Potential harm to patients due to inter-ruptions in care	
Yes, due to lack of access to cancer care	13 (30)
Yes, due to lack of access to non-cancer care	8 (19)
Yes, due to both	16 (37)
No	6 (14)

No.: number; N/A: not applicable; CPG: clinical practice guidelines; G-CSF: granulocyte colony stimulating factor; SoC: standard of care

Table 29. COVID-19 Diagnosis and Infection Control

Issue	No. (%)
Oncologic outpatients with COVID-19 diagnosis	
Yes	36 (84)
No	7 (16)
N/A	0 (0)
Oncologic inpatients with COVID-19 diagnosis	
Yes	30 (70)
No	13 (30)
N/A	0 (0)
Lack of PPE at center	
Yes	33 (91)
No	10 (9)
Member of oncology department diag-nosed with COVID-19	
Yes	30 (70)
No	11 (26)
Prefer not to answer	2 (5)
Recommends COVID-19 vaccine to major-ity oncologic patients	
Yes	42 (98)
No	1 (2)
COVID-19 vaccine available for oncologic patients	
January 2021	2 (5)
February 2021	2 (5)
March 2021	13 (30)
April 2021	14 (33)
May 2021	3 (7)
June 2021	2 (5)
July 2021	0 (0)
Not available	0 (0)
Don't know	0 (0)
Priority was not given to patients with cancer	4 (9)

No.: number; N/A: not applicable; PPE: personal protective equipment

Table 30. Economic impact

Issue	No. (%)
Petitions from payers or healthcare center to implement cost-containment measures	
Yes, by institution	9 (21)
Yes, by insurance companies	6 (14)
Yes, by institution AND by insurance companies	5 (12)
No	17 (40)
Prefer not to answer	6 (14)
Changes in budget allocated to cancer care by healthcare center	
Yes, increase	3 (7)
Yes, decrease	30 (70)
No	5 (12)
Don't know	4 (9)
N/A	1 (2)
Changes in budget allocated to cancer care by government (public spending on cancer)	
Yes, increase	2 (5)
Yes, decrease	30 (72)
No	5 (12)
Don't know	4 (9)
N/A	2 (5)
Expected increase of patients with cancer after pandemic	
Yes, significant	13 (30.2)
Yes, moderate	19 (44.2)
Yes, slight	7 (16.3)
No	4 (9.3)
Healthcare system prepared-ness for increase of patients with cancer	
	V M S N N/A
Budget allocation to cancer care	1 2 10 29 1
Healthcare personnel availability	2 6 12 22 1
Specialized facility availability	1 5 18 18 1
Government has announced action plan to address in-creased cancer burden	
	Cant. (%)
Yes	3 (7)
No	40 (93)
Don't know	0 (0)

No.: number; N/A: not applicable; V: very; M: moderately; S: slightly; N: not

Annex 1 → Country Tables for Physician Survey

Tables for Peru



Table 31. Interruption of Cancer Care

Issue	No. (%)				
Disruption of Usual Care					
Not affected	0 (0)				
Slightly affected	2 (10)				
Moderately affected	10 (52)				
Severely affected	7 (36)				
Order of Reasons for Disruption of Usual Care					
Quarantines/ travel bans	1				
Overwhelmed health system	2				
Precautionary measures	3				
Staff shortage due to infection	4				
Others (e.g.: fear of infection)	5				
Lack of access to medications	6				
Center Closure					
No, remained fully open	1 (5)				
No, but with reduced workload	11 (58)				
No, but with reduced workload during peaks	3 (16)				
Yes, partially closed	4 (21)				
Yes, completely closed	0 (0)				
Severity of Disruption by Area					
	N	S	M	Se	NA
Surgery	0	0	6	13	0
Radiotherapy	0	2	13	3	1
Chemotherapy	4	5	9	1	0
Immunotherapy	4	3	6	3	3
Hormone Therapy	6	4	9	0	0
Target Therapy	5	5	6	1	2
Stem Cell Transplant	0	0	6	8	5
Palliative Care	2	3	9	5	0
Supportive Care	1	1	7	10	0
Diagnostics	0	1	11	7	0

N: no; S: slight; M: moderate; Se: severe, N/A: not applicable; No.: number

Table 32. Epidemiologic Trends

Issue	No. (%)					
Change in No. of new cancer cases March 2020-August 2020	0%	1- 25%	26-50%	51-75%	>75%	N/A
Increase	8	2	1	4	0	3
Decrease	0	5	6	4	0	4
Change in No. of new cancer cases September 2020- Present (limit Sep. 2021)						
Increase	4	5	4	3	0	3
Decrease	2	7	6	0	0	4
Delays in cancer diagnosis due to pandemic	No. (%)					
1-2 months	0 (0)					
3-4 months	3 (16)					
5-6 months	5 (26)					
>6 months	11 (58)					
No change	0 (0)					
N/A	0 (0)					
Increase in ad-vanced disease at Diagnosis due to the pandemic						
No	0 (0)					
Yes	19 (100)					
Increase in cancer mortality due to the pandemic						
0%	0 (0)					
1-10%	4 (21)					
11-25%	6 (32)					
26-50%	8 (42)					
51-75%	0 (0)					
>75%	1 (5)					
N/A	0 (0)					
Increase in cancer relapse due to the pandemic						
0%	0 (0)					
1-10%	1 (5)					
11-25%	10 (52)					
26-50%	6 (32)					
51-75%	2 (11)					
>75%	0 (0)					
N/A	0 (0)					

No.: number; N/A: not applicable

Table 33. Screening and Prevention

Issue	No. (%)					
	0%	1-25%	26-50%	51-75%	>75%	N/A
Decrease in cancer screen-ing	0%	1-25%	26-50%	51-75%	>75%	N/A
Mammography	1	3	7	5	3	0
Colonoscopy	0	2	6	5	4	2
PSA testing	1	11	4	0	1	2
CT of Thorax	0	9	4	3	2	1
Biopsy/pathology studies	0	6	7	5	1	0
Prevention programs and activities						No. (%)
Decrease in prevention activities						19 (100)
No change						0 (0)
N/A						0 (0)

No.: number; N/A: not applicable; PSA: prostate specific antigen; CT: computer tomography

Table 34. Virtual and Remote Care Adaptations

Issue	No. (%)
Outpatient clinic visits	
Canceled in-person clinic visits and switched to virtual (telemedicine) visits	5 (26)
Reduced in-person clinic visits and added virtual (telemedicine) visits	13 (69)
Continued outpatient visits as usual	1 (5)
Cancelled all visits	0 (0)
N/A	0 (0)
Virtual Clinic Visits Will Continue After Pandemic	
Yes	18 (95)
No	1 (5)
N/A	0 (0)
Increased Time Between Follow-up Visits	
Yes	19 (100)
No	0 (0)
N/A	0 (0)
Performing lab tests close to patients' home	
Yes	13 (68)
No	6 (32)
N/A	0 (0)
Patients Sought Care in Different Center	
Yes	15 (79)
No	2 (11)
N/A	2 (11)
Availability of tumor boards before pandemic	
Yes	19 (100)
No	0 (0)
N/A	0 (0)
Impact of pandemic on tumor boards	
Canceled	5 (26)
Switched to virtual	11 (58)
Virtual and in-person	3 (16)
No change	0 (0)
N/A	0 (0)
Virtual tumor boards to persist after pandemic	
Yes	17 (90)
No	1 (5)
Doesn't know	1 (5)
N/A	0 (0)

No.: number; N/A: not applicable

Table 35. Treatment changes and interruptions

Issue	No. (%)
Treatment interruptions in 2020 (March-December)	
0%	0 (0)
1-30%	7 (37)
31-60%	8 (42)
61-90%	4 (21)
>90%	0 (0)
N/A	0 (0)
Treatment interruptions in 2021 (January-Present (limit September 2021))	
0%	1 (5)
1-30%	10 (53)
31-60%	8 (42)
61-90%	0 (0)
>90%	0 (0)
N/A	0 (0)
Patients who abandoned treatment	
0%	0 (0)
1-25%	13 (68)
26-50%	3 (16)
51-75%	3 (16)
>75%	0 (0)
Reasons for abandoning treatment	
COVID-19- related reasons (fear of infections, quarantines, etc.)	14 (74)
Non-COVID-19-related reasons (insurance stopped coverage, etc.)	0 (0)
Reason is unknown	0 (0)
Both covid-19 related and non-related reasons	5 (26)
N/A	0 (0)
Delivery of medications to patients' home	
Yes	13 (69)
No	5 (26)
N/A	1 (5)
Reduced cycles of chemotherapy in __% of patients	
0%	1 (5)
1-25%	12 (63)
26-50%	0 (0)
51-75%	2 (11)
>75%	0 (0)
N/A	4 (21)

Table 35 continues on next page

Table 35. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Patients missed at least 1 cycle of chemotherapy	
<10%	3 (16)
11-25%	8 (42)
26-50%	3 (16)
51-75%	4 (21)
>75%	0 (0)
N/A	1 (5)
Changes to any part of patients' treatment	
0%	0 (0)
1-25%	11 (58)
26-50%	6 (32)
51-75%	1 (5)
>75%	1 (5)
N/A	0 (0)
Reduced use of G-CSF in chemotherapy regimens	
Yes	4 (21)
No	12 (63)
N/A	3 (16)
Increased use of oral over IV chemotherapy	
0%	0 (0)
1-25%	10 (53)
26-50%	4 (21)
51-75%	4 (21)
>75%	0 (0)
N/A	1 (5)
Access barriers for oral agents	
Yes, in the public system	3 (16)
Yes, in the private system	0 (0)
Yes, in both the public and private systems	4 (21)
No	11 (58)
N/A	1 (5)

Table 35 continues on next page

Table 35. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Deviation from CPG or SOC by postponing surgery	
0%	2 (11)
1-25%	10 (53)
26-50%	4 (21)
51-75%	3 (16)
>75%	0 (0)
N/A	0 (0)
Deviation from CPG or SOC by postponing radiation	
0%	2 (11)
1-25%	11 (58)
26-50%	4 (21)
51-75%	1 (5)
>75%	0 (0)
N/A	1 (5)
Potential harm to patients due to interruptions in care	
Yes, due to lack of access to cancer care	10 (53)
Yes, due to lack of access to non-cancer care	3 (16)
Yes, due to both	6 (32)
No	0 (0)

No.: number; N/A: not applicable; CPG: clinical practice guidelines; G-CSF: granulocyte colony stimulating factor; SoC: standard of care

Table 36. COVID-19 Diagnosis and Infection Control

Issue	No. (%)
Oncologic outpatients with COVID-19 diagnosis	
Yes	18 (95)
No	1 (5)
N/A	0 (0)
Oncologic inpatients with COVID-19 diagnosis	
Yes	16 (84)
No	2 (11)
N/A	1 (5)
Lack of PPE at center	
Yes	14 (86)
No	5 (14)
Member of oncology department diagnosed with COVID-19	
Yes	18 (95)
No	1 (5)
Prefer not to answer	0 (0)
Recommends COVID-19 vaccine to majority oncologic patients	
Yes	19 (100)
No	0 (0)
COVID-19 vaccine available for oncologic patients	
January 2021	0 (0)
February 2021	1 (5)
March 2021	0 (0)
April 2021	1 (5)
May 2021	7 (37)
June 2021	7 (37)
July 2021	0 (0)
Not available	0 (0)
Don't know	1 (5)
Priority was not given to patients with cancer	0 (0)
N/A	2 (11)

No.: number; N/A: not applicable; PPE: personal protective equipment

Table 37. Economic impact

Issue	No. (%)				
Petitions from payers or healthcare center to implement cost-containment measures					
Yes, by institution	5 (26)				
Yes, by insurance companies	3 (16)				
Yes, by institution AND by insurance companies	1 (5)				
No	10 (53)				
Prefer not to answer	0 (0)				
Changes in budget allocated to cancer care by healthcare center					
Yes, increase	2 (11)				
Yes, decrease	13 (68)				
No	3 (16)				
Don't know	1 (5)				
N/A	0 (0)				
Changes in budget allocated to cancer care by government (public spending on cancer)					
Yes, increase	2 (10)				
Yes, decrease	14 (75)				
No	2 (10)				
Don't know	1 (5)				
N/A	0 (0)				
Expected increase of patients with cancer after pandemic					
Yes, significant	12 (63)				
Yes, moderate	6 (32)				
Yes, slight	1 (5)				
No	0 (0)				
Healthcare system preparedness for increase of patients with cancer					
Budget allocation to cancer care	V	M	S	N	N/A
Healthcare personnel availability	1	4	8	6	0
Specialized facility availability	1	6	5	7	0
Specialized facility availability	1	5	4	9	0
Government has announced action plan to address increased cancer burden					
Yes	4 (21)				
No	14 (74)				
Don't know	1 (5)				

No.: number; N/A: not applicable; V: very; M: moderately; S: slightly; N: not

Annex 1 → Country Tables for Physician Survey

Tables for Central America



Table 38. Interruption of Cancer Care

Issue	No. (%)				
Disruption of Usual Care					
Not affected	1 (2)				
Slightly affected	11 (28)				
Moderately affected	23 (58)				
Severely affected	4 (12)				
Order of Reasons for Disruption of Usual Care					
Overwhelmed health system	1				
Precautionary measures	2				
Quarantines/ travel bans	3				
Staff shortage due to infection	4				
Others (e.g.: fear of infection)	5				
Lack of access to medications	6				
Center Closure					
No, remained fully open	9 (23)				
No, but with reduced workload	16 (41)				
No, but with reduced workload during peaks	7 (18)				
Yes, partially closed	6 (15)				
Yes, completely closed	1 (3)				
Severity of Disruption by Area					
	N	S	M	Se	N/A
Surgery	2	9	14	11	3
Radiotherapy	5	13	13	0	8
Chemotherapy	10	13	10	2	4
Immunotherapy	11	14	7	2	5
Hormone Therapy	18	11	2	1	7
Target Therapy	13	8	9	1	8
Stem Cell Transplant	3	5	5	4	23
Palliative Care	8	8	14	5	4
Supportive Care	4	11	15	6	3
Diagnostics	5	9	14	11	0

N: no; S: slight; M: moderate; Se: severe, N/A: not applicable; No.: number

Table 39. Epidemiologic Trends

Issue	No. (%)					
	0%	1- 25%	26- 50%	51- 75%	>75%	N/A
Change in No. of new cancer cases March 2020-August 2020						
Increase	9	14	8	2	0	6
Decrease	8	12	4	0	0	13
Change in No. of new cancer cases September 2020- Present (limit Sep. 2021)						
Increase	7	17	9	3	0	3
Decrease	11	11	3	1	0	12
Delays in cancer diagnosis due to pandemic						
1-2 months						6 (15)
3-4 months						8 (21)
5-6 months						13 (33)
>6 months						7 (18)
No change						5 (13)
N/A						0 (0)
Increase in advanced disease at Diagnosis due to the pandemic						
No						0 (0)
Yes						39 (100)
Increase in cancer mortality due to the pandemic						
0%						2 (5)
1-10%						11 (28)
11-25%						11 (28)
26-50%						7 (18)
51-75%						0 (0)
>75%						0 (0)
N/A						8 (21)
Increase in cancer relapse due to the pandemic						
0%						4 (11)
1-10%						7 (18)
11-25%						13 (34)
26-50%						7 (18)
51-75%						2 (5)
>75%						1 (3)
N/A						4 (11)

No.: number; N/A: not applicable

Table 40. Screening and Prevention

Issue	No. (%)					N/A
	0%	1- 25%	26-50%	51-75%	>75%	
Decrease in can-cer screening						
Mammography	1	22	5	4	1	6
Colonoscopy	0	15	3	6	2	13
PSA testing	5	18	2	0	0	14
CT of Thorax	7	13	3	1	1	14
Biopsy/Pathology studies	2	23	6	2	0	6
Prevention pro-grams and activi-ties						N° (%)
Decrease in pre-vention activities						22 (57)
No change						6 (15)
N/A						11 (28)

No.: number; N/A: not applicable; PSA: prostate specific antigen; CT: computer tomography

Table 41. Virtual and Remote Care Adaptations

Issue	No. (%)
Outpatient clinic visits	
Canceled in-person clinic visits and switched to virtual (telemedicine) visits	6 (15)
Reduced in-person clinic visits and added virtual (tele-medicine) visits	24 (61)
Continued outpatient visits as usual	5 (13)
Cancelled all visits	3 (8)
N/A	1 (3)
Virtual Clinic Visits Will Continue After Pandemic	
Yes	25 (64)
No	9 (23)
N/A	5 (13)
Increased Time Between Follow-up Visits	
Yes	26 (68)
No	9 (23)
N/A	4 (11)
Performing lab tests close to patients' home	
Yes	33 (84)
No	1 (3)
N/A	5 (13)
Patients Sought Care in Different Center	
Yes	21 (54)
No	15 (38)
N/A	3 (8)
Availability of tumor boards before pandemic	
Yes	36 (92)
No	2 (5)
N/A	1 (3)
Impact of pandemic on tumor boards	
Canceled	2 (5)
Switched to virtual	24 (62)
Virtual and in-person	9 (23)
No change	2 (5)
N/A	2 (5)
Virtual tumor boards to persist after pandemic	
Yes	32 (82)
No	5 (13)
Doesn't know	2 (5)
N/A	0

No.: number; N/A: not applicable

Table 42. Treatment changes and interruptions

Issue	No. (%)
Treatment interruptions in 2020 (March-December)	
0%	3 (8)
1-30%	21 (54)
31-60%	11 (28)
61-90%	2 (5)
>90%	0 (0)
N/A	2 (5)
Treatment interruptions in 2021 (January-Present (limit September 2021))	
0%	12 (31)
1-30%	20 (51)
31-60%	5 (13)
61-90%	0 (0)
>90%	0 (0)
N/A	2 (5)
Patients who abandoned treatment	
0%	6 (15)
1-25%	27 (70)
26-50%	5 (13)
51-75%	0 (0)
>75%	1 (2)
Reasons for abandoning treatment	
COVID-19- related reasons (fear of infections, quarantines, etc.)	20 (54)
Non-COVID-19-related reasons (insurance stopped coverage, etc.)	1 (3)
Reason is unknown	1 (3)
Both covid-19 related and non-related reasons	13 (35)
N/A	2 (5)
Delivery of medications to patients' home	
Yes	18 (46)
No	15 (39)
N/A	6 (15)
Reduced cycles of chemotherapy in __% of patients	
0%	9 (23)
1-25%	15 (39)
26-50%	0 (0)
51-75%	1 (2)
>75%	0 (0)
N/A	14 (36)

Table 42 continues on next page

Table 42. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Patients missed at least 1 cycle of chemotherapy	
<10%	7 (18)
11-25%	14 (36)
26-50%	5 (13)
51-75%	0 (0)
>75%	0 (0)
N/A	13 (33)
Changes to any part of patients' treatment	
0%	4 (10)
1-25%	24 (62)
26-50%	3 (8)
51-75%	2 (5)
>75%	0 (0)
N/A	6 (15)
Reduced use of G-CSF in chemotherapy regimens	
Yes	2 (5)
No	16 (41)
N/A	21 (54)
Increased use of oral over IV chemotherapy	
0%	1 (3)
1-25%	15 (38)
26-50%	5 (13)
51-75%	1 (3)
>75%	0 (0)
N/A	17 (43)
Access barriers for oral agents	
Yes, in the public system	8 (22)
Yes, in the private system	0 (0)
Yes, in both the public and private systems	8 (22)
No	11 (31)
N/A	9 (25)

Table 42 continues on next page

Table 42. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Deviation from CPG or SOC by postponing surgery	
0%	4 (10)
1-25%	23 (59)
26-50%	3 (8)
51-75%	0 (0)
>75%	0 (0)
N/A	9 (23)
Deviation from CPG or SOC by postponing radiation	
0%	7 (18)
1-25%	19 (48)
26-50%	1 (3)
51-75%	1 (3)
>75%	0 (0)
N/A	11 (28)
Potential harm to patients due to interruptions in care	
Yes, due to lack of access to cancer care	7 (18)
Yes, due to lack of access to non-cancer care	9 (23)
Yes, due to both	19 (49)
No	4 (10)

No.: number; N/A: not applicable; CPG: clinical practice guidelines; G-CSF: granulocyte colony stimulating factor; SoC: standard of care

Table 43. COVID-19 Diagnosis and Infection Control

Issue	No. (%)
Oncologic outpatients with COVID-19 diagnosis	
Yes	33 (85)
No	6 (15)
N/A	0 (0)
Oncologic inpatients with COVID-19 diagnosis	
Yes	28 (72)
No	9 (23)
N/A	2 (5)
Lack of PPE at center	
Yes	22 (57)
No	17 (43)
Member of oncology department diagnosed with COVID-19	
Yes	32 (82)
No	4 (10)
Prefer not to answer	3 (8)
Recommends COVID-19 vaccine to majority oncologic patients	
Yes	39 (100)
No	0 (0)
COVID-19 vaccine available for oncologic patients	
January 2021	3 (8)
February 2021	7 (18)
March 2021	10 (26)
April 2021	14 (36)
May 2021	3 (8)
June 2021	1 (2)
July 2021	0 (0)
Not available	0 (0)
Don't know	1 (2)
Priority was not given to patients with cancer	0 (0)

No.: number; N/A: not applicable; PPE: personal protective equipment

Table 44. Economic impact

Issue	No. (%)
Petitions from payers or healthcare center to implement cost-containment measures	
Yes, by institution	7 (18)
Yes, by insurance companies	1 (3)
Yes, by institution AND by insurance companies	2 (5)
No	25 (64)
Prefer not to answer	4 (10)
Changes in budget allocated to cancer care by healthcare center	
Yes, increase	2 (5)
Yes, decrease	12 (30)
No	7 (18)
Don't know	15 (39)
N/A	3 (8)
Changes in budget allocated to cancer care by government (public spending on cancer)	
Yes, increase	5 (12)
Yes, decrease	10 (26)
No	10 (26)
Don't know	14 (36)
N/A	0 (0)
Expected increase of patients with cancer after pandemic	
Yes, significant	12 (31)
Yes, moderate	16 (41)
Yes, slight	8 (20)
No	3 (8)

No.: number; N/A: not applicable; V: very; M: moderately; S: slightly; N: not

Annex 1 → Country Tables for Physician Survey

Tables for Southern Cone



Table 45. Interruption of Cancer Care

Issue	No. (%)				
Disruption of Usual Care					
Not affected	6 (9)				
Slightly affected	24 (35)				
Moderately affected	30 (44)				
Severely affected	8 (12)				
Order of Reasons for Disruption of Usual Care					
Precautionary measures	1				
Quarantines/ travel bans	2				
Overwhelmed health system	3				
Others (e.g.: fear of infection)	4				
Staff shortage due to infection	5				
Lack of access to medications	6				
Center Closure					
No, remained fully open	27 (39)				
No, but with reduced workload	26 (38)				
No, but with reduced workload during peaks	9 (13)				
Yes, partially closed	6 (9)				
Yes, completely closed	0 (0)				
Severity of Disruption by Area					
	N	S	M	Se	N/A
Surgery	5	16	25	21	1
Radiotherapy	17	23	14	3	11
Chemotherapy	39	15	11	0	3
Immunotherapy	34	14	8	3	9
Hormone Therapy	47	14	1	0	6
Target Therapy	36	19	5	2	6
Stem Cell Transplant	5	3	6	3	53
Palliative Care	23	20	15	5	6
Supportive Care	9	19	19	17	4
Diagnostics	2	27	28	10	1

N: no; S: slight; M: moderate; Se: severe, N/A: not applicable; No.: number

Table 46. Epidemiologic Trends

Issue	No. (%)					
Change in No. of new cancer cases March 2020-August 2020	0%	1- 25%	26-50%	51-75%	>75%	N/A
Increase	23	22	3	2	3	16
Decrease	24	20	3	2	1	16
Change in No. of new cancer cases September 2020- Present (limit Sep. 2021)						
Increase	15	26	11	4	2	10
Decrease	30	14	4	0	0	20
Delays in cancer diagnosis due to pandemic	Nº (%)					
1-2 months	7 (10)					
3-4 months	12 (18)					
5-6 months	17 (25)					
>6 months	29 (43)					
No change	3 (4)					
N/A	0					
Increase in advanced disease at Diagnosis due to the pandemic						
No	6 (9)					
Yes	62 (91)					
Increase in cancer mortality due to the pandemic						
0%	10 (15)					
1-10%	17 (25)					
11-25%	20 (29)					
26-50%	6 (9)					
51-75%	3 (4)					
>75%	1 (1)					
N/A	11 (16)					
Increase in cancer relapse due to the pandemic						
0%	8 (12)					
1-10%	12 (18)					
11-25%	27 (40)					
26-50%	6 (9)					
51-75%	4 (6)					
>75%	1 (1)					
N/A	10 (15)					

No.: number; N/A: not applicable

Table 47. Screening and Prevention

Issue	No. (%)					
	0%	1- 25%	26-50%	51-75%	>75%	N/A
Decrease in cancer screening	0	24	14	8	1	7
Mammography	1	24	14	8	1	7
Colonoscopy	0	12	13	8	11	11
PSA testing	6	25	5	3	0	16
CT of Thorax	4	22	8	5	1	15
Pathology studies	4	32	4	7	3	5
Prevention programs and activities						
Decrease in prevention activities						50 (74)
No change						8 (12)
N/A						10 (15)

No.: number; N/A: not applicable; PSA: prostate specific antigen; CT: computer tomography

Table 48. Virtual and Remote Care Adaptations

Issue	No. (%)
Outpatient clinic visits	
Canceled in-person clinic visits and switched to virtual (telemedicine) visits	15 (22)
Reduced in-person clinic visits and added virtual (telemedicine) visits	44 (65)
Continued outpatient visits as usual	8 (12)
Cancelled all visits	0
N/A	1 (1)
Virtual Clinic Visits Will Continue After Pandemic	
Yes	47 (69)
No	19 (28)
N/A	2 (3)
Increased Time Between Follow-up Visits	
Yes	58 (85)
No	8 (12)
N/A	2 (3)
Performing lab tests close to patients' home	
Yes	41 (60)
No	21 (30)
N/A	6 (9)
Patients Sought Care in Different Center	
Yes	40 (59)
No	27 (40)
N/A	1 (1)
Availability of tumor boards before pandemic	
Yes	58 (85)
No	9 (13)
N/A	1 (1)
Impact of pandemic on tumor boards	
Canceled	3 (4)
Switched to virtual	47 (69)
Virtual and in-person	9 (13)
No change	2 (3)
N/A	7 (10)
Virtual tumor boards to persist after pandemic	
Yes	40 (59)
No	14 (21)
Doesn't know	10 (15)
N/A	4 (6)

No.: number; N/A: not applicable

Table 49. Treatment changes and interruptions

Issue	No. (%)
Treatment interruptions in 2020 (March-December)	
0%	13 (19)
1-30%	40 (59)
31-60%	10 (15)
61-90%	3 (4)
>90%	0 (0)
N/A	1 (1)
Treatment interruptions in 2021 (January-Present (limit September 2021))	
0%	21 (31)
1-30%	38 (56)
31-60%	5 (7)
61-90%	1 (1)
>90%	0 (0)
N/A	3 (4)
Patients who abandoned treatment	
0%	24 (35)
1-25%	40 (59)
26-50%	4 (6)
51-75%	0 (0)
>75%	0 (0)
Reasons for abandoning treatment	
COVID-19- related reasons (fear of infections, quarantines, etc.)	37 (54)
Non-COVID-19-related reasons (insurance stopped coverage, etc.)	2 (3)
Reason is unknown	2 (3)
Both covid-19 related and non-related reasons	7 (10)
N/A	19 (28)
Delivery of medications to patients' home	
Yes	22 (32)
No	38 (56)
N/A	8 (12)
Reduced cycles of chemotherapy in __% of patients	
0%	27 (40)
1-25%	29 (43)
26-50%	1 (1)
51-75%	0 (0)
>75%	0 (0)
N/A	11 (16)

Table 49 continues on next page

Table 49. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Patients missed at least 1 cycle of chemotherapy	
<10%	33 (49)
11-25%	18 (27)
26-50%	5 (7)
51-75%	2 (3)
>75%	2 (3)
N/A	8 (12)
Changes to any part of patients' treatment	
0%	8 (12)
1-25%	51 (75)
26-50%	4 (6)
51-75%	2 (3)
>75%	1 (1)
N/A	2 (3)
Reduced use of G-CSF in chemotherapy regimens	
Yes	2 (3)
No	54 (79)
N/A	12 (18)
Increased use of oral over IV chemotherapy	
0%	10 (15)
1-25%	37 (54)
26-50%	5 (7)
51-75%	1 (1)
>75%	1 (1)
N/A	14 (21)
Access barriers for oral agents	
Yes, in the public system	15 (22)
Yes, in the private system	0 (0)
Yes, in both the public and private systems	13 (19)
No	32 (47)
N/A	8 (12)

Table 49 continues on next page

Table 49. (Continuation) Treatment changes and interruptions

Issue	No. (%)
Deviation from CPG or SOC by postponing surgery	
0%	17 (25)
1-25%	37 (54)
26-50%	6 (9)
51-75%	2 (3)
>75%	1 (1)
N/A	5 (7)
Deviation from CPG or SOC by postponing radiation	
0%	19 (28)
1-25%	34 (50)
26-50%	5 (7)
51-75%	4 (6)
>75%	0 (0)
N/A	6 (9)
Potential harm to patients due to interruptions in care	
Yes, due to lack of access to cancer care	7 (10)
Yes, due to lack of access to non-cancer care	21 (31)
Yes, due to both	32 (47)
No	8 (12)

No.: number; N/A: not applicable; CPG: clinical practice guidelines; G-CSF: granulocyte colony stimulating factor; SoC: standard of care

Table 50. COVID-19 Diagnosis and Infection Control

Issue	No. (%)
Oncologic outpatients with COVID-19 diagnosis	
Yes	59 (87)
No	9 (13)
N/A	0 (0)
Oncologic inpatients with COVID-19 diagnosis	
Yes	55 (81)
No	11 (16)
N/A	2 (3)
Lack of PPE at center	
Yes	26 (38)
No	42 (62)
Member of oncology department diagnosed with COVID-19	
Yes	51 (75)
No	17 (25)
Prefer not to answer	0 (0)
Recommends COVID-19 vaccine to majority oncologic patients	
Yes	68 (100)
No	0 (0)
COVID-19 vaccine available for oncologic patients	
January 2021	5 (7)
February 2021	2 (3)
March 2021	23 (34)
April 2021	14 (21)
May 2021	11 (16)
June 2021	1 (1)
July 2021	0 (0)
Not available	0 (0)
Don't know	5 (7)
Priority was not given to patients with cancer	7 (10)

No.: number; N/A: not applicable; PPE: personal protective equipment

Table 51. Economic impact

Issue	No. (%)
Petitions from payers or healthcare center to im-plement cost-containment measures	
Yes, by institution	6 (9)
Yes, by insurance compa-nies	5 (7)
Yes, by institution AND by insurance companies	0 (0)
No	51 (75)
Prefer not to answer	6 (9)
Changes in budget allocat-ed to cancer care by healthcare center	
Yes, increase	5 (7)
Yes, decrease	17 (25)
No	26 (38)
Don't know	18 (26)
N/A	2 (3)
Changes in budget allocat-ed to cancer care by gov-ernment (public spending on cancer)	
Yes, increase	4 (6)
Yes, decrease	22 (32)
No	18 (26)
Don't know	22 (32)
N/A	2 (3)
Expected increase of pa-tients with cancer after pandemic	
Yes, significant	35 (51)
Yes, moderate	22 (32)
Yes, slight	7 (10)
No	4 (6)
Healthcare system prepar-edness for increase of patients with cancer	
	V M S N NA
Budget allocation to cancer care	2 18 14 28 6
Healthcare personnel avail-ability	10 17 18 17 6
Specialized facility availabil-ity	9 20 17 16 6
Government has an-nounced action plan to address increased cancer burden	
Yes	5 (7)
No	57 (84)
Don't know	6 (9)

No.: number; N/A: not applicable; V: very; M: moderately; S: slightly; N: not



ANNEX 2
SPECIFIC ECONOMIC MODEL

Annex 2: Specific Economic Model

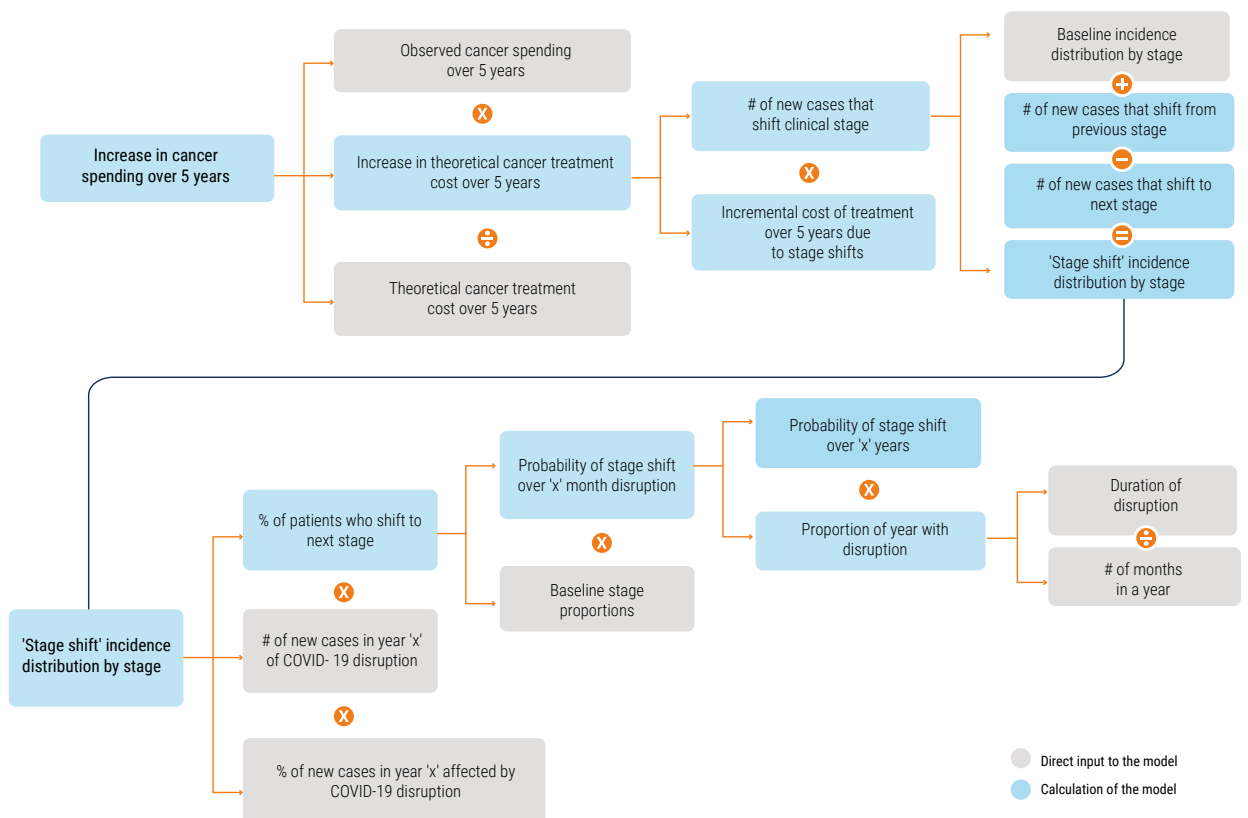
The 5-Year Cost of Treatment

The direct economic impact on cancer healthcare spending is estimated through the clinical stage-shift estimation method. People with cancer have a risk of shifting clinical stage if they delay or interrupt treatment due to COVID-19 and, in general, a more advanced stage is more expensive to treat. For this matter, we have two scenarios: the baseline scenario, which is an approximation, based on the literature, of the distribution of disease stages at treatment initiation (for new cases) and during treatment (for patients); and the stage-shift scenario, which is the distribution of disease stages after the delays or interruption of diagnosis or treatment.

The framework estimates the number of people that undergo a clinical stage shift given “n” months of treatment deferral. A clinical stage shift of disease occurs when the survival probability of a specific stage decreases to the level of the subsequent stage survival probability due to such delay or interruption in diagnosis or treatment.

It uses disease stage-specific survival probabilities and hazard ratios per stage to calculate each stage probability of progression due to “n” months of delay and the percentage of patients and new cases affected by the delay. Afterwards, with the number of cases and patients in each stage and their probability of shifting stages, we obtain the number of patients and new cases that will shift to the next stage and multiply it by the incremental cost of treatment (Figure 17). Finally, we transform the increase in theoretical treatment cost to an increase in cancer spending over 5 years for each country and for the five cancer types which are being analyzed throughout this study.

Figure 17: Clinical stage-shift framework



Loss of Economic Capacity Over 10 Years

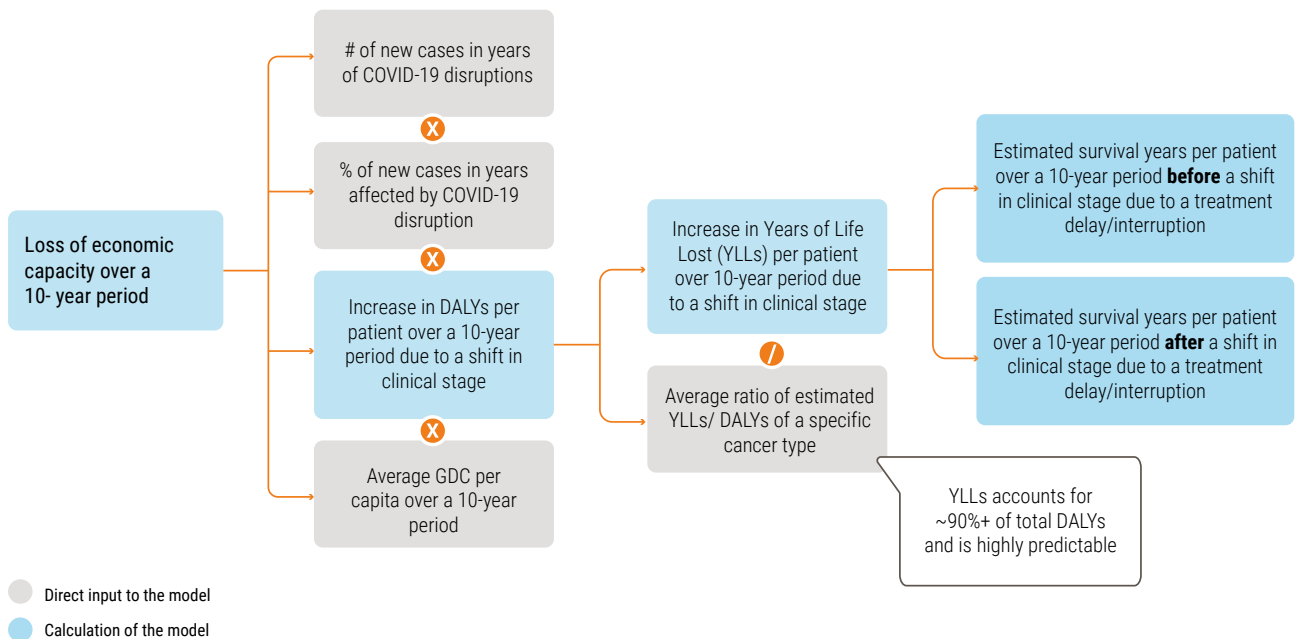
Loss of economic capacity over 10 years, one of the two indirect economic impacts measured in this report is calculated through the Burden of Disease estimation method. The framework estimates the decrease in economic value generation for the years of life lost (YLL) over 10 years due to a shift in the clinical stage.

The increase in YLLs per patient occurs when the stage distribution changes after a shift in clinical stage and the specific combined survival rate shifts downwards, which results in an overall lower survival probability of cancer patients.

To estimate the demographic-specific combined survival probability data set, the following distributions were tested to find the best fit for each: exponential, gamma, Weibull, log- normal, log-logistic, and Gompertz. To choose the distribution of best fit, two criteria were used: i) the distribution with the lowest residual sum of squares (RSS) and ii) the performance of a visual test by plotting each distribution and comparing them with each other. By obtaining the best-fit equation, the survival probability for the first 5 years was modeled and the survival probability for the 6th to 10th year was estimated. The area between the baseline and “stage shift” curves is the increase in YLLs over a 10-year period due to a delay in diagnosis/ treatment initiation.

After obtaining the YLLs over the time horizon, they were converted to DALYs using the average ratio of estimated YLLs to DALYs of a specific cancer type (YLLs account for ~90% of total DALYs and is highly predictable). Finally, the DALYs were converted to GDP per capita lost per year using the average GDP per capita over 10 years for each country (Figure 18).

Figure 18. Burden of disease framework



10-Year Public Spending to Fight Poverty of People Impoverished by Financial Catastrophe

The second indirect economic impact estimate conveyed in this report is the impoverishment effect due to an increase in families who fall into financial catastrophe. The framework estimates the increase in the number of families who fall into impoverishment, and consequently, the increase of social spending needed to fight poverty in each country.

To estimate the increase of social spending on poverty, the model receives as an input the social spending on poverty per household over 10 years and multiplies it by the incremental number of families who fall into impoverishment. The second variable is calculated by factoring in the ratio of people that fall into impoverishment given to financial catastrophe and the incremental number of families who fall into financial catastrophe.

The number of families that fall into financial catastrophe is approximated by leveraging the model clinical-stage- shift calculation method for new cases/patients who delay/interrupt treatment for a specific period of time and multiplying it by the increased probability of falling into a financial catastrophe given a shift in clinical stage (Figure 19).

Figure 19. Financial Catastrophe/Impoverishment Framework

