



SECOND YEAR POLICY ANALYSIS

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FROZEN IN TIME

IMPROVING THE LANDSCAPE OF AIDS-RELATED MORTALITY IN MEXICO



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ACRONYMS

AHD Advanced HIV Disease

AIDS Acquired Immune Deficiency Syndrome

ART Antiretroviral Therapy

CAPASITS Outpatient Centers for the Prevention and Treatment of AIDS and Sexually Transmitted Infections

CDC U.S. Centers for Disease Control and Prevention

CENSIDA National Center for the Prevention and Control of HIV/AIDS

COFEPRIS Federal Commission for Protection against Sanitary Risks

CONAPRED National Council for the Prevention of Discrimination

CONEVAL National Council for the Evaluation of Social Development Policy

DSI Discrimination and Stigma Against People Living with HIV Index

ENADIS National Survey on Discrimination

ENDISEG National Survey on Sexual and Gender Diversity

ENDUTIH National Survey on Availability and Use of Information Technologies

ENSANUT National Health and Nutrition Survey

FONSABI Health for Welfare Fund

HIV Human Immunodeficiency Virus

IHME Institute for Health Metrics and Evaluation

IMSS Mexican Social Security Institute

INEGI National Institute of Statistics and Geography

INSP National Institute of Public Health

ISSSTE Institute for Social Security and Services for State Workers

LAC Latin America and the Caribbean

LGBTQ+ Lesbian, Gay, Bisexual, Trans, Queer and other minorities

MSM Men Who Have Sex with Men

NGO Non-Governmental Organization

NIH U.S. National Institutes of Health

OECD Organization for Economic Co-operation and Development

PAHO Pan American Health Organization

PEP Post-Exposure Prophylaxis

PLHIV People Living with HIV

PPP Purchasing Power Parity

PrEP Pre-Exposure Prophylaxis

SAIH Services for Comprehensive Hospital Care

SALVAR Management, Logistics and Monitoring System for Antiretroviral Drugs

SSA Ministry of Health

STI Sexually Transmitted Infection

UNAIDS Joint United Nations Programme on HIV/AIDS

WDI World Development Indicators

WHO World Health Organization

EXECUTIVE SUMMARY

THE PROBLEM

In Mexico, there are approximately 4,800 deaths related to acquired immune deficiency syndrome (AIDS) per year, with the highest number of fatalities occurring in men aged between 30 and 44 years. Nationally, 43% of the patients start antiretroviral therapy (ART) when the disease is already at an advanced stage, which escalates their risk of mortality. Men who have sex with men (MSM) is the key population most vulnerable. Mexico not only underperforms in absolute mortality rate values compared to the Organization for Economic Co-operation and Development (OECD) countries but also after factoring in income levels.

DIAGNOSTIC AND ANALYSIS

Healthcare is hardly a budgetary priority for the Mexican government, the funding scheme for the human immunodeficiency virus (HIV) program carries risks and community-led responses have been weakened. Late detection significantly contributes to AIDS-related mortality, underscoring the physical and behavioral obstacles individuals encounter in accessing testing. The primary flaw within the healthcare system affecting people living with HIV stems from its fragmentation, resulting in a burdensome “pilgrimage” that patients must endure. Discrimination and stigma against this population is among the most severe in Mexico, discouraging individuals from seeking testing.

POLICY RECOMMENDATIONS

The Mexican government should increase health expenditure, allocate enough resources for the Program on Prevention and Treatment of HIV/AIDS and other STIs and strengthen the community-led responses. Massive testing campaigns continue being necessary to reach populations who are far from clinics and offering self-testing kits with appropriate counseling is also recommended. Prompt linkage to treatment regardless of the patient’s employment status is of utmost importance. Impactful general and targeted campaigns on social media portraying prestigious individuals to fight discrimination is central, in addition to an opt-out testing approach and other regulatory improvements to overcome the stigma and cognitive biases that exist around getting tested.

INTRODUCTION

The HIV/AIDS epidemic is not over, it carries economic implications, represents a crisis of human lives and poses a risk for widespread outbreaks if let unattended. Fortunately, the advent of ART has transformed HIV from an inevitable death sentence into a manageable chronic condition. Mexico's commitment to achieving the 95-95-95 international targets as part of the constitutional right to health protection underscores the nation's dedication to curbing its concentrated epidemic. However, Mexico lags behind in achieving these goals compared to the rest of the world and the region. There are approximately 4,800 AIDS-related deaths per year, with the highest number of fatalities occurring in men aged between 30 and 44 years. Mexico's AIDS-related mortality rate has plateaued, underperforming compared to OECD countries even when factoring in GDP per capita. Alarming, 33% of people living with HIV (PLHIV) are unaware of their status and 43% of the patients newly diagnosed with HIV start their treatment with advanced HIV disease (AHD), significantly increasing their mortality risk. MSM is the most vulnerable group, followed by trans individuals. The mortality rate is not uniform across the country, and its reduction is not necessarily correlated with economic growth. Almost half of the deaths, 40.3%, were among individuals with no healthcare affiliation.

In assessing Mexico's response, healthcare does not receive the budgetary emphasis seen in other nations, compromising the fight against the epidemic. The reliance of the National Center for the Prevention and Control of HIV/AIDS (CENSIDA) on external funding and the reduction of financial support for community-led responses, despite being instrumental in testing and patient linkage to care, exacerbates the challenge. Diagnosis often comes late, a critical issue since studies indicate a high mortality rate within the first six months after ART initiation among patients with AHD, revealing the failure of free and universal ART access in reducing mortality rates. Barriers to testing are not only physical but also behavioral, emphasizing the need to demystify the testing process. The healthcare system's fragmentation leaves informal workers outside the reach of Mexican Social Security Institute (IMSS) clinics, and formal workers unable to access care at the Outpatient Centers for the Prevention and Treatment of AIDS and Sexually Transmitted Infections (CAPASITS). This results in a burdensome "pilgrimage" for care, increasing the risk of delays in treatment and adherence complications. Discrimination and stigma against PLHIV stand as considerable obstacles

to testing and treatment in Mexico. Evidence shows that this type of discrimination is among the most severe in Mexico. Based on these findings, I created a novel Discrimination and Stigma Against People Living with HIV Index (DSI) and showed a statistically significant positive association between the proportion of patients who commence ART with AHD at the state level. Discrimination and stigma are especially heightened for lesbian, gay, bisexual, trans, queer and other minorities (LGBTQ+), compounding the barriers they already encounter.

The government's efforts in combating HIV/AIDS have been considerable, yet persisting with the status quo will not reduce AIDS-related mortality. In addition to the essential expansion of ART and pre-exposure prophylaxis (PrEP), a multifaceted approach is necessary. Recommendations are categorized into three groups: Empowerment, Inclusion and Nudges. "Empowerment" calls for increased health spending and enhanced funding for HIV/AIDS programs, alongside reinforcing grassroots organizations. "Inclusion" encompasses continuing massive testing campaigns with proper counseling, the introduction of free HIV self-testing kits, making healthcare services accessible to all regardless of employment status and launching impactful social media campaigns to combat discrimination and stigma towards PLHIV. "Nudges" refers to the importance of overhauling any stigmatizing procedures and piloting opt-out systems to normalize and increase testing, counteracting cognitive biases.

Utilizing both quantitative methods and expert interviews from different perspectives, the structure of this analysis unfolds in three sections. Section 1 lays the groundwork by framing the problem as a public policy issue, analyzed through various lenses and backed by national and subnational statistics. This section ends with an international comparison, leveraging econometric methods to contextualize Mexico's standing. Section 2 delves into institutional factors of AIDS-related mortality, examining both formal institutions like fiscal policies and the healthcare system, as well as informal ones such as discrimination and stigma. This section expounds how both macro and micro-level elements synergistically affect mortality rates. Section 3 presents a prognosis under the current trajectory, followed by detailed policy recommendations aimed at altering the course of the epidemic. Each policy is analyzed for its technical soundness, political viability and administrative practicability, acknowledging that a multifaceted approach is vital to improve the landscape of AIDS-related mortality in Mexico.

1

THE PROBLEM

In the initial section of this document, I establish the problem and succinctly argue for its relevance as a matter of public policy from distinct lenses. I follow this with a detailed presentation of HIV/AIDS statistics in Mexico, offering an analysis between various key populations on a national scale, as well as providing detailed subnational statistics. The section ends with a comparative perspective, placing Mexico's HIV/AIDS situation in an international context by contrasting it with global data, from Latin America and the Caribbean and the OECD countries. Mexico's performance is also gauged using econometric methods.

KEY TAKEAWAYS

- In Mexico, there are approximately 4,800 AIDS-related deaths per year, with the highest number of fatalities occurring in men aged between 30 and 44 years.
- Nationally, 43% of the people newly diagnosed with HIV start their treatment with AHD and MSM is the key population most vulnerable.
- Mexico not only underperforms in absolute mortality rate values compared to the OECD countries but also after factoring in income levels.

1.1 A CRISIS OF HUMAN LIVES

According to the World Health Organization (WHO 2023), “HIV is an infection that attacks the body’s immune system. AIDS is the most advanced stage of the disease. HIV targets the body’s white blood cells, weakening the immune system [...] HIV is spread from the body fluids of an infected person, including blood, breast milk, semen and vaginal fluids [...] HIV can be treated and prevented with ART. Untreated HIV can progress to AIDS, often after many years.”¹

Health has a positive, sizable and statistically significant effect on GDP (Bloom et al. 2004). Nations across the world have been impacted by **HIV/AIDS, which has had economic repercussions** for Southern Sub-Saharan Africa in particular. Research suggests that meeting funding targets for HIV could greatly improve economic growth (Economist Impact 2023, p. 7). For South Africa, with the highest disease burden in the study, achieving the targets may result in a 2.8% GDP increase by 2030 and it is estimated that each dollar invested between 2022 and 2030 could yield a GDP increase of 7.2 USD. Similarly, other countries with lower disease burdens stand to benefit. For example, Kenya could experience a GDP growth of 1.1% if funding objectives are met.

Although HIV/AIDS undoubtedly has an economic dimension, such as loss of economic productivity due to morbidity and increased healthcare costs due to late treatment, Professor Sen’s perspective shifts the focus. He contends that viewing the epidemic solely as an economic crisis is misleading because **the AIDS epidemic is fundamentally a crisis of human lives**: people suffer, lose their freedoms and many victims die prematurely. “[The] economic effects of the AIDS epidemic are important not so much on their own but primarily because of their consequences on human lives and happiness and freedoms” (Sen 2008, p. 8).

In its infectious nature, HIV/AIDS poses a **risk of widespread outbreaks** if not effectively managed. As with any infectious disease, surpassing a certain threshold of cases often makes containment efforts markedly more difficult. This underscores the importance of proactive measures to prevent

¹ For a comprehensive description about the epidemiology, pathogenesis, treatment and prevention of HIV infection, see Maartens et al. (2014). Refer to Sharp and Hahn (2011) for an account about the origins and evolution of lentiviruses that led to the AIDS pandemic.

transmission and control the spread of the virus. The advent of ART has transformed HIV **from an inevitable death sentence into a manageable chronic condition.**²

This progress not only saves lives but also aligns with the state's obligations. Article 4 of the Mexican Constitution states, **“Every person has the right to health protection.”** This foundational right highlights the importance of addressing AIDS-related mortality in Mexico, not just as a health issue but as a legal mandate. In line with this, **Mexico's commitment to the international 95-95-95 targets** set by the United Nations Programme on HIV/AIDS (UNAIDS) is crucial. These targets aim for 95% of PLHIV to know their status, 95% of those diagnosed to receive ART and 95% of those receiving ART to achieve viral suppression. Meeting these goals necessitates a comprehensive approach to improve prevention, testing, treatment and care for those living with HIV.

*Patients waiting for their antiretrovirals at Clínica Especializada
Condesa, Mexico City.*



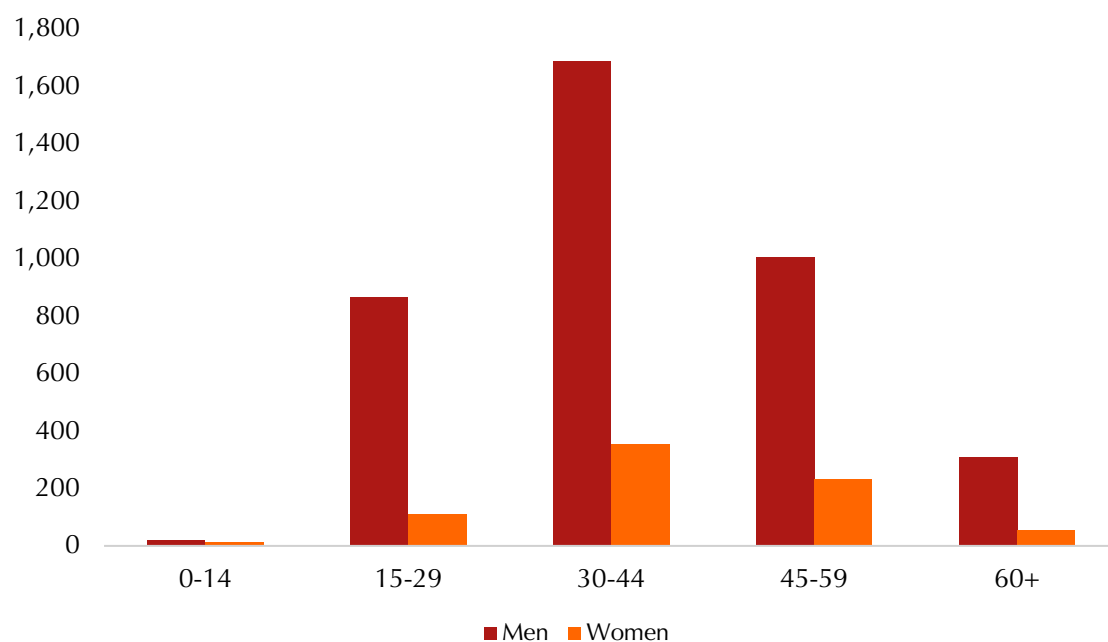
1.2 AIDS-RELATED MORTALITY IN MEXICO

The AIDS epidemic in Mexico is considered as concentrated, with a prevalence of 0.2% (CENSIDA 2022). Between 2000 and 2021, there was an **average of 4,804 AIDS-related deaths**, with a maximum of 5,293 in 2019, according to the Health Ministry (SSA 2022) and the National Institute of Statistics and Geography (INEGI 2022). For 2021, INEGI (2022) reported 4,662 AIDS-related deaths and 83.6% were among men. **Figure 1** illustrates the age distribution by sex, with the **highest number of fatalities occurring in men aged between 30 and 44 years**. It is worth mentioning that among the infectious and parasitic diseases, HIV/AIDS is the major cause of death in Mexico, followed by diarrheal diseases, tuberculosis and hepatitis C.³

² In one of the early versions of this document, Professor Sen pointed out that the “inevitable death sentence has several distinct elements from the nature of the disease spread and its reach.” Some of these characteristics will be analyzed in **Section 2 – Diagnostic and Analysis**, such as discrimination and stigma.

³ WHO Mortality Database. Latest year available for Mexico: 2020 [\[link to WHO website\]](#).

Figure 1. AIDS-Related Deaths by Age and Sex in Mexico



Source: INEGI (2022)

At a subnational level, Veracruz, Mexico City, Jalisco, the State of Mexico and Baja California are the entities with the highest level of AIDS-related deaths. Out of the 32 states, these five accounted for almost half of national AIDS-related deaths in 2021. **Table 1** presents the number of AIDS-related deaths in selected states alongside the corresponding percentage of the national AIDS-related fatalities they constitute. **The mortality rate is not homogenous across the country.** The fact that Veracruz, which has half the State of Mexico's population, ranks as the entity with the highest number of deaths implies that there are institutional variables playing an important role behind the transmission mechanisms. **Table 6** in the **Appendix – Tables** shows a chart with the number of 2021 AIDS-related deaths for every state.

Consistent with these observations, there is no association between AIDS-related deaths per 1 million inhabitants and GDP per capita across Mexican states.⁴ This absent pattern suggests that **increasing economic growth within the country might not necessarily impact AIDS-related deaths.** Similarly, there is also no relationship between AIDS-related deaths per 1 million inhabitants and

⁴ The regression analysis did not show statistically significant associations without Campeche and Tabasco either. These two states are considered outliers because of their high oil production.

population density. These results highlight the need for further, more detailed analysis to understand the varied intra-country dynamics.⁵

Table 1. AIDS-Related Deaths in Selected States and their National Weight

State	AIDS-Related Deaths	Weight on Total AIDS-Related Deaths
Veracruz	605	13%
Mexico City	444	9.5%
Jalisco	371	8%
State of Mexico	323	6.9%
Baja California	317	6.8%
Sum	2,060	44.2%

Source: INEGI (2022)

There is a second classification that also accounts for more than 40% of AIDS-related deaths (INEGI 2022): social security. **Individuals who did not have any affiliation to a healthcare system represented 40.3% of total AIDS-related deaths**, followed by people who were affiliated to IMSS, who represented 31.1%. The rest is split among INSABI/Seguro Popular (6.8%), Institute for Social Security and Services for State Workers (ISSSTE) (3%) or other institutions (4.1%). INEGI (2022) statistics also show that the majority of people dying from AIDS-related disease were single (65.1% for men and 44.3% for women), followed by free unions (9.7% for men and 20.9% for women) and married couples (12.4% for men and 12.5% for women).

Table 2 disaggregates average HIV positivity rates from 2018 to 2022 among different demographic groups (CENSIDA 2023). These tests were performed at the CAPASITS or at the Services for Comprehensive Hospital Care (SAIHs).⁶ **MSM exhibit the highest HIV positivity rates (12.6%),**

⁵ AIDS-related deaths, GDP per capita, population and density data come from INEGI (2022) and its portal, which reports 2020 figures.

⁶ Among the services offered by CAPASITS is ensuring that PLHIV who are informal workers have access to ART. An example is Clínica Especializada Condesa located in Mexico City. This CAPASITS offers care to 9,000 patients at no cost (Martín et al. 2017, p. 507).

followed by trans individuals (7.1%), male sexual workers (6.4%) and people who inject drugs (4.2%).⁷ Incomplete data in the report also suggests that prisoners are at a high risk of infection.

Table 2. HIV Positivity Rate by Group in Mexico (2018-2022)

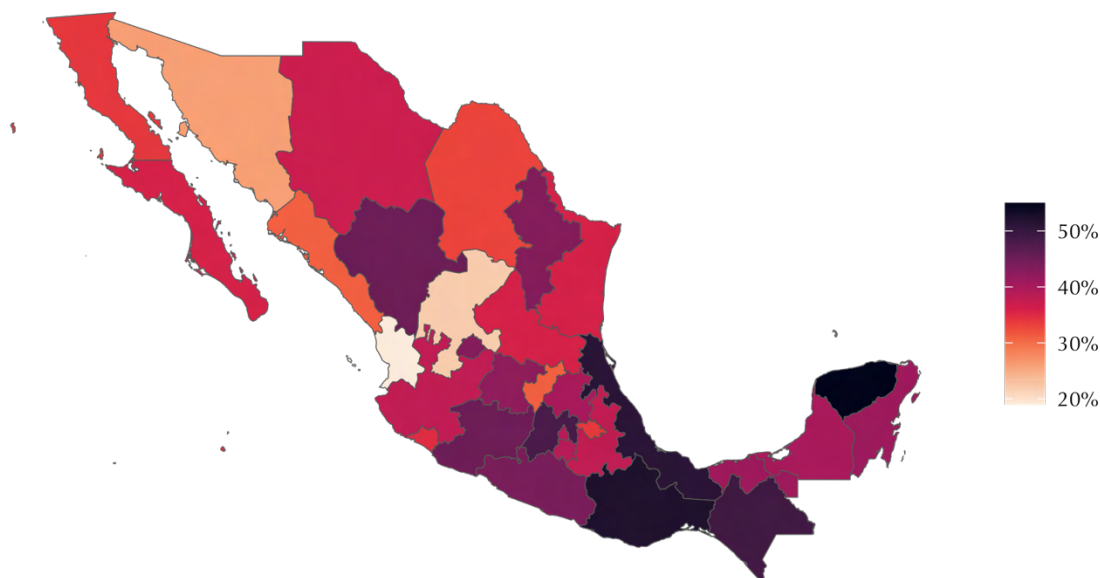
Group	Rate	Group	Rate
Female sexual workers	0.9%	Male sexual workers	6.4%
Heterosexual men	3.8%	MSM	12.6%
Heterosexual women	1.7%	Pregnant women	1.8%
Inject drugs	4.2%	Trans people	7.1%

Source: CENSIDA (2023)

AHD is defined as CD4 count less than 200 cells/mm³ (WHO 2023). Individuals diagnosed with AHD exhibit an increased mortality risk, which remains substantial subsequent to the commencement of ART. Predominant etiologies of morbidity and mortality among this cohort include tuberculosis, critical bacterial infections and cryptococcal meningitis. **Figure 2** presents a map of Mexico showing the state-level percentages of newly diagnosed individuals with AHD who are initiating ART for the first time (CENSIDA 2023). The range spans from 19% in Nayarit to 55% in Yucatán. Nationally, **43% of the people newly diagnosed with HIV start their treatment with AHD** and 83% of these cases are among men. There is no statistically significant association between AHD and GDP per capita or population density either. For the specific percentage for each state, see **Table 7** in the **Appendix – Tables**.

⁷ Beyrer et al. (2012) explain the global epidemiologic drivers of HIV infection in MSM, such as the high probability of transmission per act through receptive anal intercourse. For a systemic review and meta-analysis about the worldwide burden of HIV in transgender women, see Baral et al. (2013), and for a review of the global health burden and needs of transgender individuals, refer to Reisner et al. (2016). Shannon et al. (2018) present an account of the global response to HIV in relation to sex workers, highlighting the actions that still need to be addressed. For a systematic review of people who inject drugs and their exposure to behavioral and environmental risks, see Degenhardt et al. (2023).

Figure 2. Proportion of Patients Initiating ART with AHD by State



Source: Own elaboration with data from CENSIDA (2023)

1.3 MEXICO IN COMPARATIVE PERSPECTIVE

Box 1 contains a brief description of the HIV/AIDS global trends, which includes HIV incidence and AIDS-related deaths plots in the **Appendix – Figures**. While these are valuable measurements, the mortality rate per 100,000 inhabitants might be more precise to compare the specific response against the disease across countries (**Figure 3**). To assess how good or bad Mexico has performed we need a reference point. Mexico has a lower rate than Latin American and the Caribbean, but there is a gap relative to the OECD peers.⁸ In 2019, HIV/AIDS mortality was 6.4 in Latin America and the Caribbean, 3.85 for Mexico and 1.12 for the OECD countries (IHME 2021). It is intriguing to observe the decline in mortality rates in the region and among the OECD economies in particular. Between 2003, which marked the global peak, and 2019, the worldwide mortality rate fell by 62%, while in Latin America and the Caribbean it decreased by 37%, in OECD countries by 48% and in

⁸ Please note for this and subsequent figures that excluding Mexico as an observation from the OECD average would result in a larger gap, as Mexico's inclusion raises the OECD mean due to its relative position within the group.

Mexico by 28%. In contrast, **Mexico has experienced a plateau in its mortality rate.**⁹ The number of AIDS-related deaths is frozen in time, which represents an opportunity for improvement.

Box 1. Global Trends of HIV/AIDS

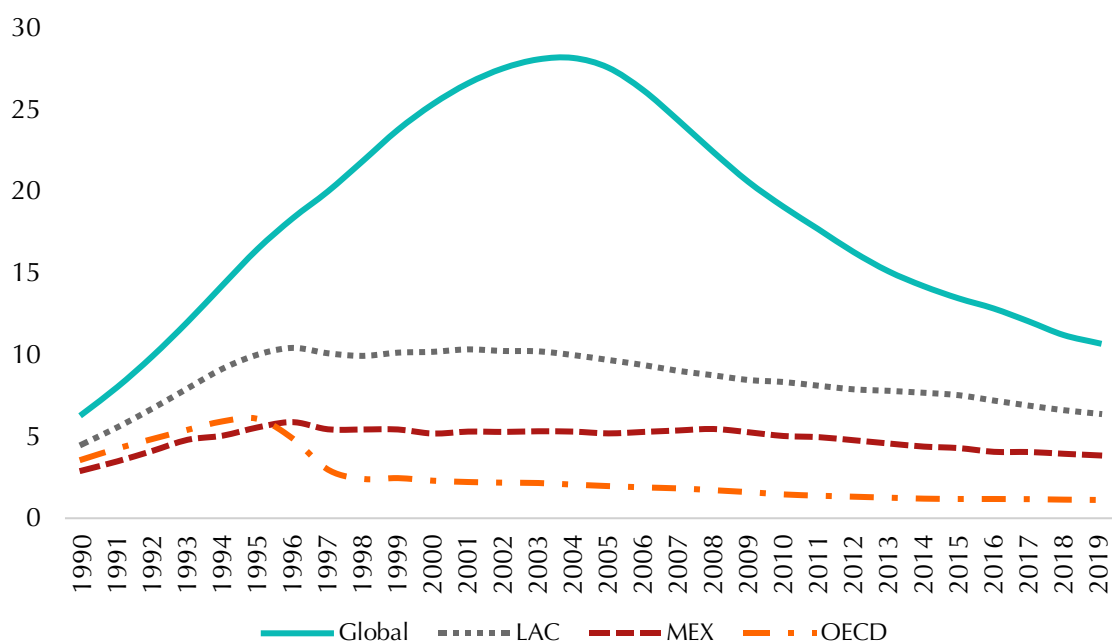
“HIV/AIDS is a leading cause of death and disease burden” (Wang et al. 2016, p. e361). Their findings suggest that global HIV incidence reached its maximum in 1997, at 3.3 million new infections. This annual incidence has consistently declined since then (**Figure 9 in the Appendix – Figures**). By contrast, the number of PLHIV/AIDS (prevalence) has increased and reached 38.8 million. More importantly, “HIV/AIDS mortality has been declining at a steady pace, from a peak of 1.8 million deaths [...] in 2005 to 1.2 million deaths [...] in 2015” (p. e361). The authors emphasize that there is significant variance across countries, with some experiencing slowdowns or even increases in HIV/AIDS mortality. In any case, the problem persists: **“AIDS claimed a life every minute in 2022”** (UNAIDS 2023, p. 7).

To put it in perspective, HIV/AIDS took more than 850,000 lives in 2019, surpassing the number of deaths caused by suicide, malaria or homicides (IHME 2021). Cardiovascular diseases, cancers and respiratory diseases were the main causes of death that year. Southern Sub-Saharan Africa is the region most affected by HIV/AIDS, with countries like South Africa reporting extraordinarily high death rates. Globally, young adults and children under five are the most affected, due to the mechanisms of HIV spread, such as sexual behavior and vertical transmission from mother to child. As previously stated, there is a **high heterogeneity across countries**. For example, Sub-Saharan Africa has a higher proportion of females living with HIV while, in the rest of the world, it is more prevalent among men (World Bank 2023). Sub-Saharan Africa also has a higher HIV prevalence of children under five years old (IHME 2019).

Figure 10 in the Appendix – Figures shows the number of AIDS-related deaths from 1990 to 2022 (UNAIDS 2023, p. 9). Mortality from tuberculosis continues to be the main cause of death for PLHIV. Overall, numbers of AIDS-related deaths have been reduced by 69% since the peak in 2004. The UNAIDS report estimates that **ART averted 20.8 million deaths between 1996 and 2022**. These figures are optimistic yet far from desirable.

⁹ INEGI (2022) reported 4,662 AIDS-related deaths in 2021, which accounts to a mortality rate per 1,000 inhabitants of 3.7. The average rate from 2000 to 2021 is 4.2. This data differs slightly from IHME (2021).

Figure 3. AIDS-Related Deaths per 100,000 Inhabitants



Source: Own elaboration with data from IHME (2021)

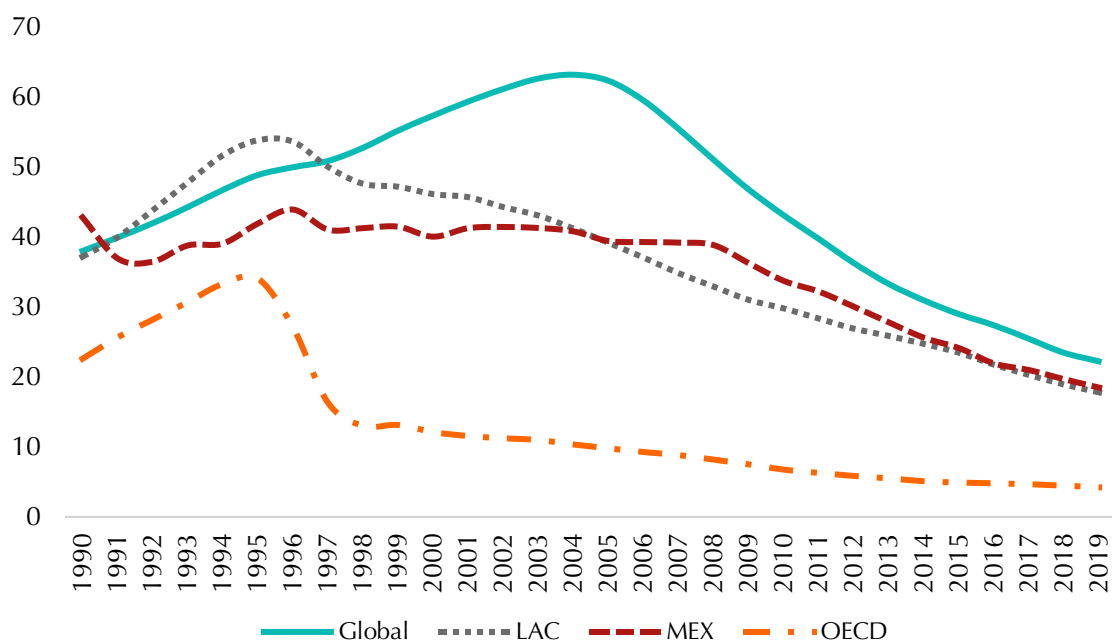
Furthermore, among the OECD countries, Mexico ranked in 2018 with the third highest HIV/AIDS mortality rate. It has been argued that it is unfair to compare Mexico with this group given the differences in GDP. However, the relationship between income per capita and AIDS-related mortality is not entirely clear.¹⁰ Low-income countries have made substantial progress (see **Box 2** in **Subsection 2.1 – No Money, No Lives** for Cambodia’s example). Notwithstanding the above, the Mexican mortality rate is higher than expected given its level of income, among the OECD countries. Mexico is the fifth worst country in doing worse than expected given its GDP per capita. Hence, we could argue that **Mexico underperforms in absolute mortality rate values compared to the OECD countries and after factoring in income levels.**

The number of deaths per 1,000 prevalent cases is also a commonly used measurement to assess success (**Figure 4**). The number of deaths per 1,000 prevalent cases compares HIV/AIDS deaths with

¹⁰ Income per capita is associated with AIDS-related mortality between countries (global) and among OECD state members in particular, but the relationship disappears for Latin America and the Caribbean. These results suggest that institutional factors might also be driving better outcomes, especially among countries at the regional level. The **Appendix – Econometric Analyses** presents the results with greater detail.

the number of PLHIV (prevalence). The downward sloping curves reflect the average attainment fighting PLHIV who are diagnosed. Mexico holds a slightly worse ratio than its region in the recent years and there is a considerable gap between the country and the OECD group, which has been able to keep deaths per 1,000 prevalent cases below 10 since 2005.

Figure 4. Deaths per 1,000 Prevalent Cases



Source: Own elaboration with data from IHME (2020)

Before we end this section, even though the focus of this analysis is about how to ameliorate the mortality rate, it is worth mentioning some additional indicators that are intertwined. In June 2021, the *Political Declaration on HIV and AIDS: Ending Inequalities and Getting on Track to End AIDS by 2030* was adopted at the United Nations General Assembly. Paragraph 61 states: “Commit to achieve the 95–95–95 testing, treatment and viral suppression targets within all demographics and groups and geographic settings, including children and adolescents living with HIV, ensuring that, by 2025, at least 34 million PLHIV have access to medicines, treatment and diagnostics.”¹¹

¹¹ After this declaration, the 90-90-90 targets previously agreed were raised to 95-95-95, with an extensive list of additional goals. Since 2015, UNAIDS monitors the progress of these milestones and the most recent publication at the time this analysis is being written is cautiously optimistic: 86% of PLHIV know their status, 89% of people who know their HIV status are on treatment and 93% of people on treatment have suppressed viral loads (UNAIDS 2023).

The 95-95-95 targets can also be interpreted as 95-90-86 if instead of taking subsets we use PLHIV as the common denominator. **Table 3** shows how **Mexico's progress on these 95-90-86 targets is worse than the rest of the world and Latin America.**¹² According to CENSIDA (2022), in Mexico there are 360,000 PLHIV. The country is considerably below the internationally agreed benchmarks: only 67% of PLHIV know their status, 61% are on ART and 54% are virally suppressed. In other words, **33% of the PLHIV do not know their status and are at a higher risk of dying** (i.e., 118,800 persons). The last column of **Table 3** also exposes a large gender gap in treatment for those living with HIV: 64% of men receive treatment compared to only 55% of women. A similar disparity is observed in the percentages of patients achieving viral suppression.

Table 3. HIV Testing and Treatment Cascade with Global Targets in Brackets

Living with HIV who...	Category	Global	LAC	MEX
know their status [95%]	All ages	86%	85%	67%
	Children (0-14)	63%	55%	n.d.
	Women (15+)	90%	85%	n.d.
	Men (15+)	83%	85%	n.d.
are on treatment [90%]	All ages	76%	72%	62%
	Children (0-14)	57%	39%	47%
	Women (15+)	82%	69%	55%
	Men (15+)	72%	73%	64%
are virally suppressed [86%]	All ages	71%	66%	58%
	Children (0-14)	46%	32%	40%
	Women (15+)	76%	63%	51%
	Men (15+)	67%	68%	59%

Source: aidsinfo.unaids.org and CENSIDA (2022). Note: n.d. stands for no data.

¹² Since aidsinfo.unaids.org does not report Mexican data for PLHIV who know their status, I inputted the value in **Table 3** from CENSIDA's (2022) estimate (i.e., 67%).

2

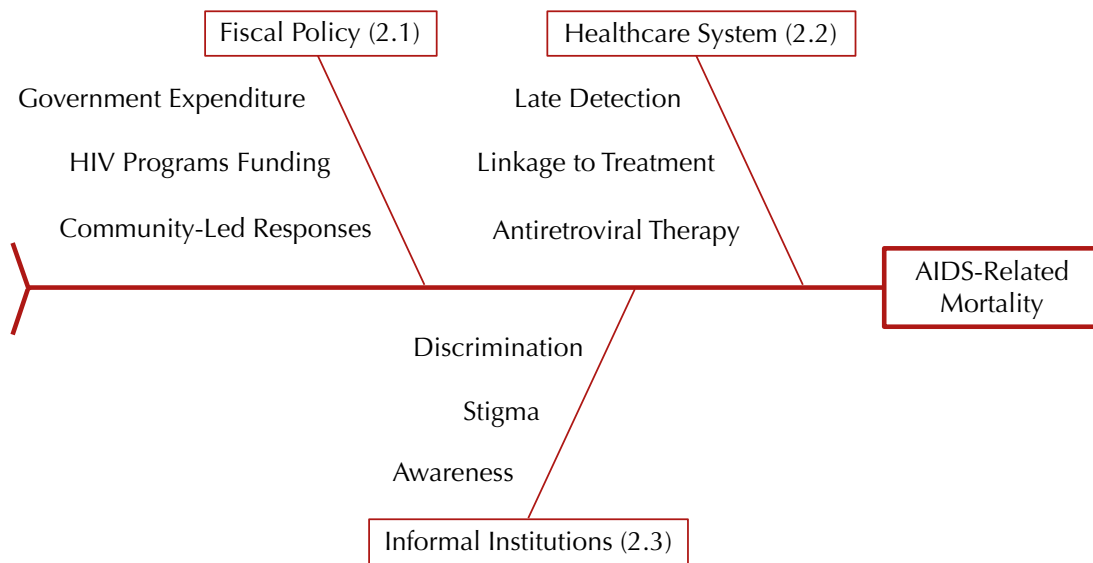
DIAGNOSTIC AND ANALYSIS

In this second section, I offer an in-depth analysis of the main institutional factors contributing to AIDS-related mortality in Mexico. An Ishikawa, or cause-and-effect diagram presented as **Figure 5** illustrates a summary of the diverse and interrelated causes. It includes formal institutions, such as fiscal policy and the structural design of the healthcare system, as well as informal institutions, which encompass the societal issues of discrimination and stigma. This diagram serves as a visual framework, laying out how these varied elements—from the macro-level policies set by government bodies to the micro-level foundations embedded in the human minds—converge to influence the mortality rates associated with AIDS.

KEY TAKEAWAYS

- Healthcare is hardly a budgetary priority for the Mexican government, the HIV funding scheme has risks and community-led responses have been weakened.
- Late detection significantly contributes to AIDS-related mortality, underscoring the physical and behavioral obstacles individuals encounter in accessing testing.
- The primary flaw within the healthcare system affecting PLHIV stems from its fragmentation, resulting in a burdensome “pilgrimage” that patients must endure.
- Discrimination and stigma against PLHIV and the LGBTQ+ community is among the most severe in Mexico, discouraging individuals from seeking testing.

Figure 5. Ishikawa Diagram



2.1 NO MONEY, NO LIVES

Fiscal policy is a good indicator of how important a topic is in any political agenda. To assess how much a government prioritizes health care, we can look at three different measurements published by the World Bank (2023). The first indicator is domestic general government health expenditure as a percentage of GDP. From 2013 to 2020, the world averaged 6%, Latin America and the Caribbean 4%, the OECD countries 7.8% and Mexico 2.9%. The second measurement is domestic general government health expenditure as a percentage of general government expenditure. While this figure is more precise because it is a direct share of public spending, the data is not as complete. There is no reported data for the world, but Latin America and the Caribbean averaged 12.5%, the OECD members 18.2% and Mexico 10.7%.¹³ The third indicator is domestic general government health expenditure per capita adjusted by purchasing power parity (PPP) in current international USD. The world's mean is 787 USD, the Latin American and Caribbean region average is 640 USD, the OECD states report 3,171 USD and Mexico 558 USD. **Table 4** duplicates this information, which

¹³ The period for Latin America and the Caribbean starts one year later, from 2014 to 2020.

suggests that **healthcare is hardly a budgetary priority for the Mexican government** when compared to other countries either in relative or absolute terms.¹⁴

Table 4. Fiscal Measurements for Healthcare

Government health expenditure...	Global	LAC	OECD	Mexico
as % of GDP	6%	4%	7.8%	2.9%
as % of general government expenditure	n.d.	12.5%	18.2%	10.7%
per capita (PPP)	787 USD	640 USD	3,171 USD	558 USD

Source: World Bank (2023). Note: n.d. stands for no data.

“Primary health care in Mexico’s public sector has been neglected for decades” (Unger et al. 2023, p. 675). The government itself acknowledges that the basic health resources for the population are “scarce” and “far away from the minimum standards set by the WHO” (SSA 2019, p. 28). Julio Frenk, former Health Minister, noted in an interview that the budget for the Health Ministry quadrupled from 2000 to 2015; however, this upward trend ceased in 2016 and, in recent years, the budget has decreased in real terms.¹⁵

In terms of HIV/AIDS financing, UNAIDS (2022) reports a total of 936 million USD for Mexico in 2015, of which 867 million USD came from domestic public sources, 68 million USD from domestic private sources and 1 million USD from international institutions other than PEPFAR and the Global Fund. In 2010, the government created a flagship program called Prevention and Treatment of HIV/AIDS and other STIs, with the following objective: “Contribute to reducing health disparities or inequalities by preventing new HIV infections in vulnerable groups and providing timely care to carriers.” According to the Ministry of Finance’s portal Transparencia Presupuestaria, the program had an approved annual budget of approximately 500 million MXN and most of it is used by

¹⁴ An additional observation is the fiscal response to the COVID-19 pandemic. Mexico’s response to the shock was modest. According to Hannan et al. (2022, p. 175), extra spending in 2020 equaled 0.4% of GDP for healthcare support and 0.2% of GDP for household and firm protection. Credit extended to formal workers and those who lost their jobs, along with contingent liabilities, totaled 1.2% of GDP. This level of assistance was notably less than that of Latin American and other emerging market and middle-income economies.

¹⁵ For more statistics on these budgetary trends see **Appendix – Fiscal Policy**.

CENSIDA. It is also worth noting that the program is considered as a priority in the 2024 Federal Expenditure Budget Law's Annex 26.¹⁶

At the same time, the actual amount of money spent or received by CENSIDA from 2018 to 2021 was lower than the approved: 20.4% less in 2018, 62.7% in 2019, 9.4% in 2020 and 21.8% in 2021 (ASF 2022, p. 77).¹⁷ It is hard to assess if the specific CENSIDA's resources are proportionate to the problem given the perennial budgetary constraints of any country and recent generalized austerity fiscal policies that reduced personnel in specialized clinics, but considering the previous fiscal figures, it is likely that they are insufficient—with a high degree of uncertainty.

It is easier to assess the financial risk of those funds. Expert interviews suggest the necessity for increased resources for CENSIDA, considering it utilizes approximately 7,000 million MXN (around half of its total budget) from the Health for Welfare Fund (FONSABI).¹⁸ While the total sum of 14,000 million MXN might suffice for procuring tests and antiretrovirals, **CENSIDA's funding scheme presents risks by depending on external sources**, which are subject to discretionary use.

The way in which the government spends money is as important as the amount disbursed. As former Minister of Finance Carlos Urzúa stated in an interview, "Not everything is about the budget. Groundbreaking policy is not crafted solely with money, but with intelligence, reasoning and strategic vision." For HIV/AIDS, community-led responses are critical.¹⁹ **Box 2** highlights the example of Cambodia, a nation that efficiently utilized its limited resources and achieved remarkable results by actively engaging with the communities. UNAIDS (2023b) notes:

¹⁶ There are four other "main programs" within the health sector: health care, drug prevention and treatment, maternal, sexual and reproductive health and vaccination.

¹⁷ CENSIDA's original budgets for 2018, 2019, 2020, and 2021 were 418,050 MXN, 399,718 MXN, 424,864 MXN, and 409,095 MXN, respectively, while the exercised budgets were 332,900 MXN, 148,965 MXN, 384,916 MXN, and 319,935 MXN. The discrepancy in CENSIDA's 2021 budget was attributed to savings and austerity policies, which, according to ASF (2022, p. 76), did not impact CENSIDA's goals.

¹⁸ Additionally, institutions like IMSS, ISSSTE, the Defense Ministry, subnational governments and others contribute another 7,000 million MXN for HIV/AIDS financing.

¹⁹ Community-led responses are defined by UNAIDS as the actions and strategies that seek to improve the health and human rights of their constituencies, that are specifically informed and implemented by and for communities themselves and the organizations, groups and networks that represent them.

“The world cannot end AIDS as a public health threat without supporting communities in their leadership roles. Communities have long made and continue to make decisive contributions in driving progress to reduce numbers of new HIV infections and AIDS-related deaths, and to protect and promote the rights of all people living with or affected by HIV. The historic achievements the world has made in the HIV response have been possible only because of visionary, courageous leadership and action by communities.” (p. 102).

Box 2. The Case of Cambodia

Charles (2006) wrote that “Cambodia’s success in the fight against HIV sets a solid example of how even poor countries [sic] in some of the worst circumstances can manage to follow in Brazil’s footsteps” (p. 3). The country had the highest HIV prevalence rate in Asia and was able to become a success story. The prevalence of HIV among those attending antenatal clinics decreased from a peak of 2.8% in 1999 to a rate of 1.9% in 2006. The government was able to implement a 100% condom use policy and other behavioral programs. In 1999, only three patients were receiving ART, a number that increased to 10,537 by 2005 with support of the Global Fund. For this and other purposes, the government created a framework that integrated care “at the district level hospital **with support at the community level, involving all stakeholders** [...] within Cambodia’s limited resources.” Charles also points out that a study presented at the International AIDS Conference in 2004 by Suos PP et al. determined that the framework’s effectiveness relied heavily on coordination throughout the program, ensuring the optimal use of stakeholders’ individual strengths (p. 4). Some of the stakeholders were home-based care teams, village volunteers, Buddhist monks, families and other non-healthcare community members. In Mexico, this approach is feasible thanks to the various non-governmental organizations (NGOs) across the country that have contributed significantly to the fight against the epidemic.

In the 2021 *Political Declaration on HIV and AIDS*, member states committed to ensuring that, by 2025, community-led organizations would provide 30% of testing and treatment services, as well as 80% of prevention services for high-risk populations. Juan Sierra, one of the top HIV experts in Mexico, emphasizes the **crucial role of NGOs in Mexico in administering tests and linking newly diagnosed patients with the healthcare system for treatment**. Many of these organizations rely on federal government financial support. However, due to austerity policies, there has been a **reduction**

in the funding for community-led responses, which adds pressure on the healthcare system that may lack the necessary capacity and local expertise to effectively manage the challenges.²⁰

2.2 BROKEN BRIDGES: FROM DETECTION TO TREATMENT

2.2.1 LATE DETECTION AS BINDING CONSTRAINT

The common cause of death for PLHIV is typically due to a lack of access or non-adherence to ART and the consequent susceptibility to opportunistic infections. For ART to be effective, early detection of HIV/AIDS and prompt linkage to treatment are critical. Otherwise, if an individual receives a late diagnosis, ART may no longer be sufficient to halt the disease's progression and save the person's life. This scenario underscores the critical importance of early testing and diagnosis in managing HIV/AIDS.²¹

For the case of Mexico, the final report on health and nutrition from INEGI/INSP (2020) concludes that there is a low percentage of individuals who have completed an HIV test in their lifetime.²² This finding is deemed "concerning" as it reflects on the importance that people place on their sexual behavior and sexually transmitted infections (STIs) prevention (p. 156). Among MSM who use dating and sexual mobile apps in Mexico, an online survey conducted in 2017 found that 34% have never gotten tested (Algarin et al. 2023, p. 772). The previous map in **Figure 2** and **Table 7** in the **Appendix – Tables** strongly suggest that **late diagnosis is one of the most binding constraints to reduce mortality** since almost half of the population who initiate ART have already AHD (CENSIDA 2023).

Silverman et al. (2015) emphasize the importance of enhancing initiatives that promote timely HIV detection and linkage to medical services. They conducted a statistical analysis of 41,847 patients registered in the Management, Logistics and Monitoring System for Antiretroviral Drugs (SALVAR)

²⁰ The WHO's Commission on Social Determinants of Health highlights the importance of enabling civil society to organize to promote health equity, "top-down and bottom-up approaches are equally vital" (WHO 2008, p. 24)

²¹ Estimates suggest that older adults diagnosed late are 14 times more likely to die within the first year of diagnosis compared to the patients who were not diagnosed late (Smith et al. 2010, p. 2,112).

²² The percentage of individuals between 20 and 49 years old who have been tested for HIV at least once is 34.7% (p. 141).

and found that, **out of the 3,195 patients who died within the study period, 59% occurred within the first six months of ART initiation** (p. S123).²³ Furthermore, 87.3% of these fatalities had already AHD at the moment of their diagnosis. The study did not find other characteristics at the individual or health unit level that could help explain the differences between early and non-early mortality (p. S124). Also, Magis et al. (2015) indicate that 49% of the people who initiated ART between 2008 and 2013 did so lately. Even though they acknowledge that the prevalence of late diagnosis has declined over time, “it continues being high” (p. S132). While the reduction in late diagnosis in women dropped from 53.4% to 28.8%, among men it decreased from 56.6% to 51.7% only (p. S130).

Other studies offer similar results. Bravo and Ortiz (2016) add that **free and universal access to ART “failed” to reduce HIV/AIDS mortality** in Mexico (p. 732). ART had profound effects on lowering death rates in the United States, Brazil, Argentina and several European nations. Nevertheless, the anticipated reduction in mortality rates in Mexico did not occur as predicted (p. 735). The authors urge “to improve access to HIV testing by using more aggressive strategies” (p. 732). They also highlight a contrast on late detection trends between 2008 and 2013. While in Mexico 49% started treatment late (i.e., AHD), globally there was a reduction from 53% to 45.6% (p. 737). For additional references supporting this argument see **Appendix – Late Detection** (Martín et al. 2015, Elizalde and Juárez 2023, Caro et al. manuscript).

Individuals also face physical and behavioral barriers to getting tested. The number of CAPASITS in each state is limited and, according to a government official, reaching them can take more than 4 hours in some states.²⁴ Golman et al. (2017) offer a comprehensive account of how individuals actively avoid information, even when it is costless and should help them make better decisions, including those who are at risk of HIV (p. 97). Baruch presented results from the online survey introduced above at the National Institute of Public Health (INSP) and suggested that those

²³ SALVAR is a national electronic registry system for PLHIV who are informal workers and receive free ART from the Health Ministry at the CAPASITS and SAIHs. 64% of the population receiving ART are beneficiaries of this system (Azamar et al. 2021).

²⁴ Every state in the country has a minimum of one CAPASITS, with certain states having more. For example, the State of Mexico and Tamaulipas each have six centers. As for the SAIHs, there are 64 in total nationwide; some states do not have any SAIHs, while Chiapas has the highest number, with 12 facilities.

individuals often did not seek HIV testing due to a perceived lack of risk, fear of test results or not knowing where to get tested.²⁵ These factors are indicative of broader issues, including inadequate awareness, discrimination, stigma and the limited availability of clinics.

Even when individuals have the available time and resources to travel, cognitive biases may dissuade them from spending the necessary time, effort and money. For instance, due to hyperbolic discounting, a person might undervalue the long-term benefits of early detection and treatment of HIV, preferring instead to avoid the immediate costs associated with taking the test. Moreover, Juan Sierra underscores **the need to demystify the testing process**, highlighting that the informed consent required for an HIV test is not typically mandated for other procedures like X-rays, gonorrhea or syphilis.

2.2.2 A FRAGMENTED SYSTEM

ART has saved millions of lives globally and Mexico is not an exception. The number of individuals receiving ART has been steadily rising. There were 127,223 individuals registered in SALVAR receiving ART, as of September 2023 (CENSIDA 2023). This shows an increase from five years ago, when 93,037 people were on ART: a rise of 37% (see **Figure 11** in the **Appendix – Figures**). The states with the highest number of patients in ART are Mexico City, State of Mexico and Veracruz. **Table 8 (Appendix – Tables)** displays the number of individuals receiving ART in selected states and the percentage each state contributes to the national total of patients in ART.²⁶ Furthermore, national adherence to ART is relatively strong.²⁷ While the supply of ART has been effective overall, it has been an incomplete response to address the issue from within the healthcare system.

²⁵ Doctorate dissertation defense (March 15, 2019).

²⁶ For every 4 men, there is 1 woman in ART in the country. Upon examining **Table 1** and **Table 8**, it is noted that four of the five states listed are present in both tables, albeit with a shift in their ranking. Notably, while Veracruz registers the highest number of deaths, it is Mexico City that leads in the number of patients undergoing ART, with the State of Mexico ranking second in this regard. These top five states account for nearly half of the national population receiving ART.

²⁷ Out of the 99,065 PLHIV who have been on ART for at least six months, 88,344 have achieved an undetectable viral load, defined as less than 50 copies per milliliter (CENSIDA 2023). This represents 89% of those on ART reaching an undetectable status. The states with the lowest undetectability rates are Nuevo León (81%), Guanajuato (82%) and Tamaulipas (84%). These figures should not be conflated with the international target of viral suppression since the calculations are not the same. For a review of interventions to enhance HIV medication adherence, see Whiteley et al. (2021) and Jopling et al. (2020).

Contrary to what one might expect, informal workers face fewer bureaucratic barriers to starting treatment compared to those covered by their work affiliation, like IMSS or ISSSTE. As previously mentioned, the state offers ART through SALVAR to those diagnosed with HIV who have an informal job. In contrast, **formal workers can experience significant delays due to bureaucratic procedures**, such as initial testing, returning for confirmation, being referred to a specialist, getting a CD4 count and then receiving a prescription.²⁸ The hurdles originate from the fact that HIV diagnosis, an epidemiological concern, is managed at the primary level of care, while treatment requires referral to secondary level facilities and confirmatory tests (i.e., Western Blot), which are not widely available and delay treatment, instead of using viral load test. Immediate treatment is critical for immunocompromised individuals in the months following diagnosis.²⁹

The major flaw in the healthcare system impacting PLHIV is its fragmentation. Informal workers are unable to receive care at IMSS clinics and formal workers cannot receive treatment at CAPASITS.³⁰ The share of informality in the workforce stands at 55.1%, with significant variation across states (INEGI 2023b).³¹ When a formally employed individual, recently diagnosed with HIV, loses their job, they must visit one of the limited specialized clinics. This situation is similarly problematic in reverse. Moreover, around 20% of formal workers transition to informal work after 15 months, while about 40% of women and 20% of men leave informal work in the same period (Puente 2017). The author highlights multiple barriers to remaining in the formal sector. These **enforced shifts in healthcare systems, known as “pilgrimage,” carry significant risks**, such as treatment delays, issues with adherence and potential behavioral-related challenges like alterations in treatment regimens or developing resistance to antiretrovirals. The online survey mentioned earlier found that, among PLHIV, 38.1% were not timely linked to care, 57.6% did not receive

²⁸ It is important to remember that despite better access to treatment for informal workers, the rate of AIDS-related deaths in this group is still 10 percentage points higher compared to formal workers (INEGI 2022). This statistic underscores the persistent structural differences between both groups.

²⁹ This observation is consistent with many of the aforementioned studies, which emphasize early linkage to care (Bravo and Ortiz 2015, Silverman 2015 and Caro et al. manuscript).

³⁰ There are very recent changes in the healthcare system of Mexico, such as the creation of IMSS Bienestar, which are out of the scope of this analysis given the lack of sufficient evidence. However, initial analyses are not optimistic: “The program lacks the capacity to deliver health care to everyone not affiliated with social security” (Knaul et al. 2023, p. 740).

³¹ For instance, Oaxaca and Nuevo León have informality rates of 81.5% and 36.9%, respectively.

timely viral load results and 61.8% were not enrolled in ART promptly (Algarin et al. 2023). Conversations with experts suggest that this fragmentation in the care continuum can sometimes delay ART for certain patients up to a year.

2.3 CULTURAL SCRIPTS ON DISCRIMINATION AND STIGMA

In addition to formal institutions like fiscal policy and the healthcare system's design, informal ones play a key role in the HIV/AIDS response. Theoretically, the extensive expansion of treatment availability has the potential to transform HIV into a manageable long-term condition, rather than a fatal one, which could lead to a higher rate of testing and, as a result, potentially diminish the stigma associated with HIV/AIDS. Despite this, Mahajan et al. (2008) point out that stigma continues to endure in developed nations that have enjoyed almost universal access to treatment for the past decade (p. S74). The **stigma associated with HIV/AIDS is documented as an obstacle to the utilization of HIV testing and treatment** services in various settings, "particularly in resource-limited countries" (p. S73).³²

The National Survey on Discrimination (ENADIS 2022) conducted by INEGI (2023) provides insightful data on HIV/AIDS-related stigma in Mexico.³³ Focusing on individuals aged 18 and older, the **data shows that discrimination against PLHIV/AIDS remains one of the most severe forms in Mexico**, with men showing a slightly higher likelihood to discriminate than women. The survey found that 29% now view interaction with HIV/AIDS individuals as always risky, down from 35% in 2017. Notably, 43% of those aged 60 and above believe this, compared to 27% between 30 and 59 years and 21% in the 18 to 29 age group.³⁴

Moreover, 48% would disagree with their child marrying someone with HIV/AIDS, even if they did not have children. This rate is higher than biases against homosexual couples, immigrants or

³² High-income countries, like the U.S., also need to "address stigma as a root cause of HIV risk" (Sullivan et al. 2021, p. 1,101)

³³ National standards define discrimination as the unjust treatment of individuals based on various attributes like race, gender or disability. It can involve actions that impair human rights. Stigma is defined as a negative stereotype associated with certain characteristics, such as HIV, often leading to social disapproval. Source: NOM-010-SSA-2023.

³⁴ It is encouraging to note a trend of lesser discrimination among younger generations, signaling a positive shift in beliefs over time.

refugees, people with disabilities, those of different religions, foreigners, African descendants, indigenous people and the impoverished (**Figure 6**). Additionally, 35% expressed reluctance to rent a room in their home to someone with HIV/AIDS, a percentage that remained unchanged since 2017.³⁵ In the workplace, 15% stated they would not hire someone with HIV/AIDS.³⁶ It is important to approach these statistics with care due to possible misconceptions about transmission mechanisms. For instance, some may not be aware that individuals with very low viral loads who are on ART cannot transmit the virus. This lack of awareness can lead to fears of contagion reflected as discriminatory and stigmatizing attitudes in the survey results.

Based on the survey's results, I created a Discrimination and Stigma Against PLHIV Index (DSI).³⁷ A visual representation in **Figure 7** showcases a map of Mexico, illustrating the DSI scores for each state. The State of Mexico ranks as the least discriminatory against PLHIV, while in Chiapas the stigma is most ubiquitous.³⁸ **An important contribution of this policy analysis is not only the novel formulation of the DSI but the fact that it has a statistically significant positive association with the proportion of patients who start ART with AHD (Figure 8).** The DSI retains its significance even when adjusted for GDP per capita but not when educational levels are considered.³⁹ These findings are consistent with prior results, which showed no connection between ART initiation with AHD and GDP per capita, highlighting the influence of informal institutional factors.

³⁵ The reluctance is more pronounced than discrimination against other groups like youth, trans individuals, migrants, homosexuals, people of African descent, those of different religions, with disabilities, indigenous people and the elderly.

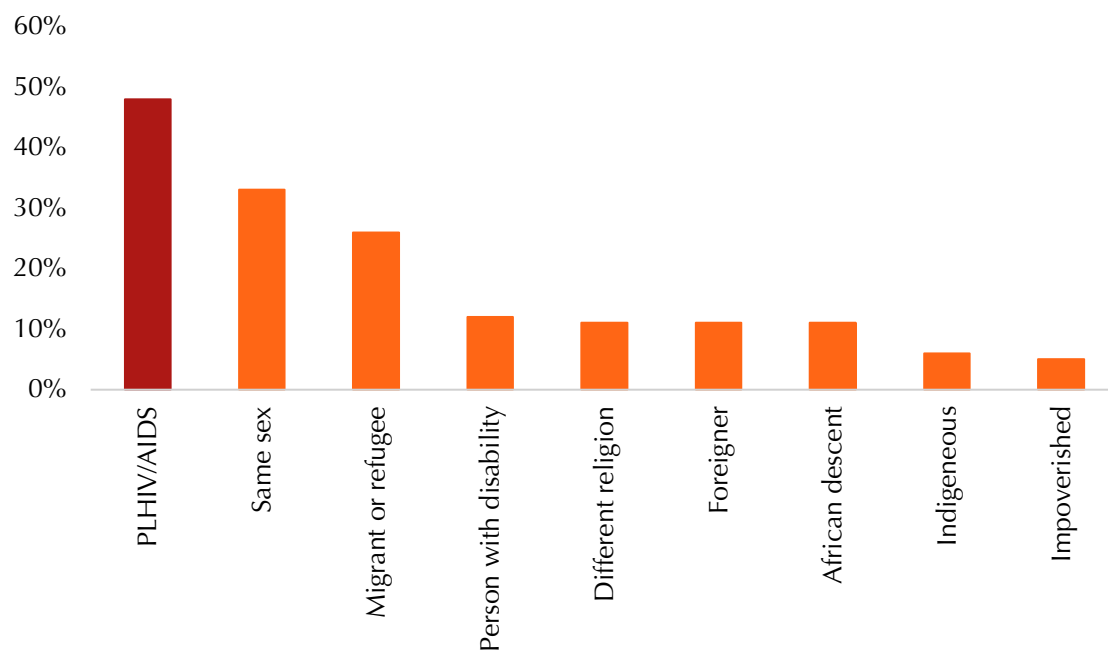
³⁶ This figure surpasses discrimination against indigenous people, those of African descent, pregnant women or those with young children, the elderly, people with disabilities, trans, migrants and refugees.

³⁷ The DSI is scaled from 0 to 1, where a score of 0 indicates the least discrimination and a score of 1 signifies the most. It is important to note that this scaling does not imply that states with lowest scores exhibit minimal discrimination or that a state scoring 1 cannot possibly discriminate more; rather, the scoring is relative. Essentially, a state with a score of 0 is least discriminatory compared to other states, while a state with a score of 1 is the most discriminatory on a relative scale. This distinction is crucial for policy implications since there will invariably be a state assigned 0, another 1 and the rest distributed in between. Hence, the value of this index lies in pinpointing states with the highest relative prevalence of discrimination and stigma to strategically target them, though a consideration of the absolute levels of discrimination remains imperative. For an in-depth explanation of the DSI's construction, please refer to the **Appendix – DSI**.

³⁸ The ENADIS results used for the DSI are representative at the state level (i.e., large random sample). For a comprehensive listing of states and their corresponding DSI scores, refer to **Table 9** in the **Appendix – Tables**.

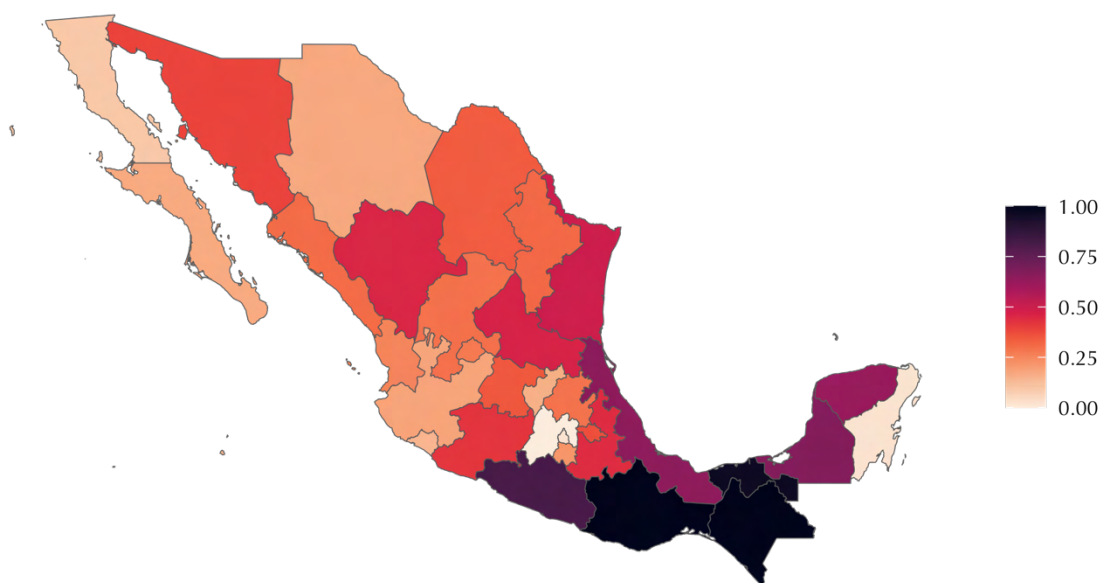
³⁹ See **Appendix – Econometric Analyses** for regression tables.

Figure 6. Disagreement if your Child Marries a PLHIV



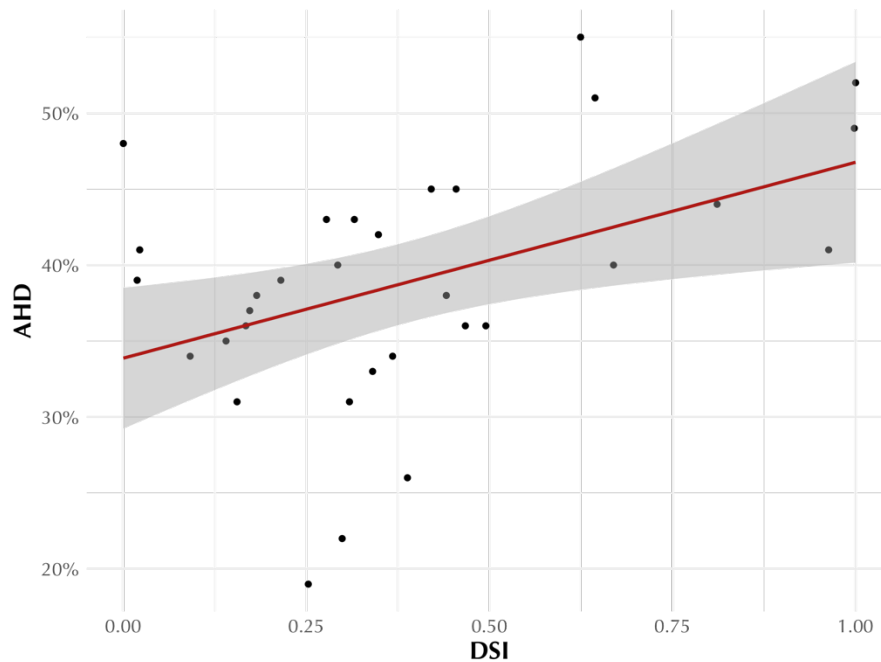
Source: Own elaboration with data from ENADIS 2022 (INEGI 2023)

Figure 7. Discrimination and Stigma Against PLHIV Index by State



Source: Own elaboration with data from ENADIS 2022 (INEGI 2023)

Figure 8. Relationship between DSI and AHD



Source: Own elaboration with data from INEGI (2023) and CENSIDA (2023)

There is a nuanced behavioral aspect at work here. Individuals might avoid HIV testing not only due to lived experiences of discrimination or stigma but also because of their perceptions about societal biases (i.e., beliefs of others' beliefs). This phenomenon could lead to mental overestimations or underestimation of DSI scores within their communities, influencing their decision to get tested. In the absence of data on second-order normative beliefs, I assume that DSI scores closely mirror individual perceptions of societal attitudes towards HIV.⁴⁰

While discussing these findings, Kenneth Mayer highlighted that **discrimination and stigma experienced by PLHIV/AIDS are often exacerbated by additional prejudice faced by LGBTQ+ individuals**. This can further discourage them from seeking care and increase the risk of death from AIDS-related illnesses. ENADIS 2022 provides evidence of discrimination against the LGBTQ+ community as well, with 37% reporting discriminatory experiences in the last year, the highest

⁴⁰ Bursztyn and Yang (2022) published a meta-analysis of recent empirical literature that examines perceptions about others. The study found that misconceptions about others' beliefs are common, asymmetric, especially pronounced for those not in one's own social group and tend to mirror one's personal beliefs.

percentage among surveyed groups, including indigenous peoples, those of African descent, persons with disabilities, migrants, individuals practicing different religions, the elderly, adolescents, women aged 18 or older and domestic workers. To put it into perspective, 24% of the general population aged 18 or older reported discrimination during the same period.⁴¹



Flyer delivered by a person living with HIV in Mexico City, who is increasing awareness of the virus.

Within the LGBTQ+ community, individuals aged between 18 and 29 reported the highest discrimination at 49%, followed by the 30 to 59 age group at 29% and those 60 and above at 23%.⁴² This contrasts with the decrease in discrimination against PLHIV/AIDS among the younger generations.⁴³ In terms of behavior patterns, 1.8% of the LGBTQ+ population avoids seeking health care, slightly higher than the rates for people with disabilities (1.2%), adolescents (1.4%), women (1%) and domestic workers (1.5%). A second survey from INEGI (2022b), the National Survey on Sexual and Gender Diversity (ENDISEG 2021), also offers evidence of discrimination and stigma faced by the LGBTQ+ community (see **Appendix – ENDISEG**).

To conclude this section, it is pertinent to reference the study of Noguera et al. (2015), which investigated the psychosocial elements associated with late ART initiation in Mexico by surveying 150 patients who started their treatment between 2010 and 2011. The **strongest risk factor was self-stigma towards HIV/AIDS** (p. S135). These findings suggest “the need to develop psychosocial interventions to decrease negative self-image and stigmatization attitudes and behaviors in risk groups for HIV.” Data from ENDISEG 2021 also suggests that **self-stigma is prevalent within the LGBTQ+ community**.

⁴¹ Within the LGBTQ+ community, women faced more discrimination than men, at 45% versus 30%. For the broader population, 25% of women and 23% of men encountered discrimination.

⁴² This age bracket also reported the highest levels of discrimination in the general population, with 30% of those aged 18 to 29 affected.

⁴³ A hypothesis explaining this phenomenon is the lack of firsthand experience with the HIV/AIDS crisis of the 1980s and a greater openness to be publicly an LGBTQ+ member, leading to more reporting compared to older generations.

3

POLICY RECOMMENDATIONS

In the third and last section of this analysis, I first sketch the prognosis of the status quo and then proceed with policy recommendations to improve the landscape of AIDS-related mortality in Mexico, which stem directly from **Section 2 – Diagnostic and Analysis**. For each policy, I assess its technical correctness, political feasibility and if it is administratively implementable. As with any adaptive challenge, there is no single action that by itself will take us to our aspiration. Instead of a silent strategy, Mexico needs to address the problem with a pandemic response approach.

KEY TAKEAWAYS

- The Mexican government should increase the health expenditure as percentage of total government expenditure, allocate enough resources for the Program on Prevention and Treatment of HIV/AIDS and other STIs and strengthen the community-led response.
- Continuing massive testing campaigns to reach populations who are far from clinics, offering self-testing kits with appropriate counseling, prompt linkage to treatment regardless of the patient's employment status and impactful campaigns on social media portraying prestigious individuals to fight discrimination towards PLHIV and members of the LGBTQ+ community is of utmost importance.
- An opt-out testing approach and other regulatory improvements are central to overcome stigma, other cognitive biases and increase testing rates.

3.1 STATUS QUO

Mexico has done immense efforts in the fight against HIV/AIDS. Out of the 8 eight punitive laws that UNAIDS (2022) identifies, Mexico has none of these, *prima facie*.⁴⁴ Recently, the Ministry of Health enacted new comprehensive and far-reaching rules for the prevention and control of HIV.⁴⁵ The antiretroviral procurement was significantly improved in 2019 (**Box 3**) and preliminary figures from CENSIDA (2023) show that mother-to-child transmission has decreased. At the local level, the Congress of Mexico City removed this year the crime of “danger of contagion [from STI]” from its penal code.⁴⁶ The government has gone beyond the minimum and started providing PrEP, which facilitates early detection, in addition to other inclusive policies like post-exposure prophylaxis (PEP).⁴⁷ Also, in 2014, May 17 was declared as the National Day of the Fight Against Homophobia by presidential decree. These are just some examples of the commendable progress in the country. Nevertheless, **if Mexico continues with the status quo, AIDS-related mortality will hardly decrease.** This forecast is counterintuitive, given the clinical evidence favoring treatment as prevention. Unfortunately, Mexico has improved its ART availability since a long time ago, yet the mortality has not decreased so far (see Bravo and Ortiz 2016). Patients continue arriving to the clinic with AHD.⁴⁸

⁴⁴ The laws that the report looks at are criminalization of transgender people, criminalization of sex work, criminalization of same-sex sexual acts in private, criminalization of possession of small amounts of drugs, laws criminalizing the transmission of HIV, non-disclosure of or exposure to HIV, laws or policies restricting the entry, stay and residence of PLHIV, parental consent for adolescents to access HIV testing and mandatory HIV testing for marriage, work or residence permits.

⁴⁵ NOM-010-SSA-2023, published on the Federal Register on June 2, 2023.

⁴⁶ “Article 159. Anyone who, knowing that they suffer from a serious infectious disease, endangers the health of another through sexual relations or other transmissible means, provided that the victim is unaware of this circumstance, shall be subject to imprisonment from three months to three years and a fine of fifty to three hundred days’ pay. If the disease suffered is incurable, the punishment shall be imprisonment from three months to ten years and a fine of five hundred to two thousand days’ pay. This crime shall be prosecuted upon the complaint of the victim or offended party.”

⁴⁷ WHO defines PrEP as “the use of an antiretroviral medication by HIV-negative people to reduce the risk of HIV acquisition.” The Pan American Health Organization (PAHO) and WHO define PEP as “the short-term use of antiretrovirals to reduce the probability of contracting HIV after potential exposure.”

⁴⁸ For a possible explanation, see **Appendix – Status Quo**.

Box 3. The New Paradigm

After painful shortages in ART medication throughout Mexico, the government collaborated with HIV experts and civil society in April of 2019 to guarantee its availability. Carlos Urzúa, the former Minister of Finance and a key player in this example of good practice, shared his experience in an interview. Inspired by the discoveries in Brazil and with the endorsements of doctors Gustavo Reyes and Juan Sierra, the scheme was reduced from 30 different types of medications to just a few—many of which were generic. The improved regimen is more effective, safer, with fewer side effects, requires fewer doses and is less likely to develop resistance. These improvements can lead to better adherence. Furthermore, the new paradigm not only advanced treatment quality but also saved 1,740 million MXN in drug procurement. According to the then Under Secretary for Prevention and Health Promotion, López-Gatell, this represented more than 50% of the annual ART budget, as reported in a May 17 morning press conference. Alethse de la Torre shared in another interview that part of these savings in procurement were used to strengthen the response against hepatitis C. The administrative change, known as the “new paradigm,” was met with acclaim from activists and more than 1,000 PLHIV in the country were able to continue their treatment.

The reason why it seems that ART and PrEP have not been successful to reduce AIDS-related mortality lies in the fact that there is no counterfactual in the country.⁴⁹ Without ART, a vast number of patients, if not all, would die. Similarly, without PrEP, there would be a higher incidence of HIV, particularly among key populations, which would ultimately lead to increased mortality.⁵⁰ Thus, **while expanding ART and PrEP is important, it alone is insufficient to reduce AIDS-related mortality in Mexico.** Should these services be withdrawn, mortality rates would predictably escalate.

The decline in discrimination against PLHIV among younger generations is notable, yet the reason behind this change remains ambiguous. It is uncertain whether the reduction is due to a lack of understanding about the virus’s transmission and severity or if it is the result of improved knowledge about the virus and advancements in treatment. Additionally, with the limited number of CAPASITS available in each state, accessibility issues are likely to persist. The challenges can be exacerbated

⁴⁹ For a discussion about how to define PrEP success (i.e., prevention-effective adherence), see Haberer et al. (2015).

⁵⁰ The PROUD study found that daily tenofovir-emtricitabine conferred very high protection against HIV acquisition among MSM, with no evidence of an increase in other STIs (e.g., gonorrhea and chlamydia) despite risk compensation concerns (McCormack et al. 2016). Researchers in the ANRS IPERGAY trial found consistent HIV incidence results using an on-demand PrEP regimen (Molina et al. 2015).

by recent fiscal policies that have led to staffing cuts in clinics and restricted the operations of community-led initiatives working for vulnerable groups. Considering these factors, if Mexico maintains its current approach, I foresee either stagnation or a potential slight increase in mortality rates. The outlook will depend on whether the gains from increased access to ART and PrEP can offset the detrimental impacts of reduced fiscal spending.

3.2 PANDEMIC RESPONSE POLICIES

An effective response requires shifting the focus from the individual virus-patient interaction to the broader dynamic between the virus and the population at large. The policy recommendations outlined in this subsection are organized into three categories: Empowerment, Inclusion and Nudges. They collectively aim to bolster the national response to HIV/AIDS. Among these, specific strategies marked with an asterisk should be emphasized due to their anticipated substantial and immediate impact once implemented.

1. Empowerment

- a. Increasing health expenditure as a percentage of total government spending.
- b. Strengthening the budget for the Program on Prevention and Treatment of HIV/AIDS and other STIs.
- c. Empowering financially and politically community-led responses.*

2. Inclusion

- a. Continuing massive testing campaigns and offering self-testing kits with appropriate counseling.
- b. Ensuring prompt linkage to care regardless of the patient's employment status.*
- c. Creating social media campaigns to combat discrimination and stigma against PLHIV and members of the LGBTQ+ community.

3. Nudges

- a. Reviewing discriminatory and stigmatizing regulatory procedures.
- b. Piloting an opt-out testing system as a standard of practice.*

For substantial progress, the Mexican government needs to **increase health spending as a percentage of total government expenditure**. The AIDS epidemic in Mexico is deeply rooted in social and economic determinants of health, which can be mitigated with a stronger fiscal policy, including the establishment of more and better equipped clinics and enhanced knowledge of the virus among the population, including the healthcare providers. Reducing the perceived costs, such as time and effort, by establishing more testing centers, could mitigate cognitive biases (i.e., present bias) and increase the likelihood of early detection. Preventive interventions are usually cost effective.⁵¹ One rapid test can save a life-long provision of antiretrovirals.

The **budget allocated to the Program on Prevention and Treatment of HIV/AIDS and other STIs needs to be strengthened** to fulfill its objectives effectively. Reliance on external funding sources introduces financial risk that is susceptible to discretionary political contexts or extraneous events. Moreover, for upper middle-income countries, like Mexico, the economic returns of ending the AIDS epidemic by 2030 are 13 USD for every dollar invested (Lamontagne et al. 2019, p. 106). Community-led initiatives are vital for reaching populations that are inaccessible to the government. These **grassroots organizations must be financially and politically empowered**, especially considering their heavy reliance on federal. Their views should be incorporated in the decision-making processes of the government to get better outcomes.

To forge effective bridges that connect early diagnosis with treatment access, the CAPASITS need to **continue expanding their massive testing campaigns** to reach those distant from specialized clinics or people who inject drugs who do not attend testing sites at pride parades. Baruch's online survey found that 33% of MSM who use sexual apps like Grindr have never visited a place where gay men usually socialize. These initiatives should **encompass proper counselling and consider introducing free HIV self-testing kits**, which could engage those uncomfortable with public testing facilities—individuals who are likely bearing the brunt of discrimination and stigma (see Oldenburg et al. 2017).

⁵¹ The cost-effectiveness analysis can express the outcome using years of life gained, quality-adjusted life years gained, new diagnoses, infections and deaths averted. See the U.S. Centers for Disease Control and Prevention (CDC) Division of HIV Prevention website for additional resources on HIV cost-effectiveness.

Furthermore, it is crucial that **any healthcare point, regardless of the patient's employment status, offers comprehensive care.** The externalities and risk of HIV transmission should justify the exception to the existing system. Mexico gained experience with this pandemic approach during the COVID-19 crisis. For instance, IMSS primary care clinics, which are widespread, ought to have the capability to serve informal workers. On this note, a federalist synergy should be retaken to ensure that these expanded services are uniformly accessible. The administrative burden for the patient should be minimal to ensure a smooth transition from early detection to undetectability (e.g., no informed consents for HIV testing, use of viral load as confirmatory tests, homogenized ART guidelines, etc.). More details on this policy recommendation are included in the **Appendix – Pandemic Approach.**

There is no apparent shortage of tests in Mexico (**Figure 12** in the **Appendix – Figures**), but a combination of insufficient awareness, strong discrimination, stigma and accessibility obstacles prevents populations from learning their HIV status. There is a **critical need for impactful social media campaigns to combat discrimination and stigma against PLHIV and induce behavioral change.** The strategies deployed to date have not succeeded in reducing unequal treatment. Campaigns should be twofold: one aimed at the general public and another directed to key populations, particularly the ones with the highest positivity rates (i.e., MSM, see **Table 2**).⁵² Various analytical frameworks and metrics exist to dissect discrimination and stigma (see Ferguson et al. 2022 for a systemic review), yet for simplicity, it can be posited that broad-based campaigns serve to counteract societal discrimination, whereas targeted initiatives are designed to mitigate internalized self-stigma. See **Appendix – Social Media Campaigns** for more details on this recommendation.

Despite significant administrative efforts at both federal and local levels to combat discrimination and stigma (**Box 4**), the problem remains. It is central **to identify and rectify any discriminatory and stigmatizing procedures.** The most conspicuous is the need to sign an informed consent prior to get

⁵² See **Appendix – ENDUTIH** for statistics from the National Survey on Availability and Use of Information Technologies (ENDUTIH) regarding the use of internet, smartphones and social media apps in Mexico.

tested.⁵³ Expert interviews suggest that heterosexual women often contract HIV from their partners, and many become aware of their status during pregnancy or after developing AHD. The earliest HIV diagnoses often occur during pregnancy when testing is mandated by law and lacks the stigma associated with the procedure.

Box 4. Policies to Reduce Stigma in Mexico

Mexico implemented a code of conduct in 2017 to enhance healthcare service access for LGBTQ+ individuals and combat stigma and discrimination based on sexual orientation and gender identity (UNAIDS 2017). The code outlines specific guidelines and actions for healthcare delivery to ensure dignified and autonomous health access for LGBTQ+ patients. It mandated training for public health personnel to eliminate discriminatory behavior and preserve patient confidentiality, prohibited treatments claiming to “cure” homosexuality or transsexuality and enforced a zero-tolerance policy towards discrimination, requiring investigation for any related complaints. Additionally, health centers were tasked with conducting targeted sexual and reproductive health and HIV prevention campaigns for the LGBTQ+ community. The code was developed with input from various health institutes, anti-discrimination bodies, LGBTQ+ organizations and civil society representatives. “The Ministry of Health has comprehensive mechanisms that guarantee access to health care for lesbian, gay, bisexual, transgender and intersex people. I urge health staff to fulfill our constitutional mandate, that everyone should enjoy the right to health” said José Narro, the Health Minister. More recently, the government partnered with PAHO and the Inter-American Commission on Social Security to train medical personnel on this topic as well (CISS 2023).

Results from behavioral economics show that **opt-out systems are more efficient than opt-in protocols when higher participation is preferred** (Madrian and Shea 2001). This approach can be adopted to circumvent the stigma associated with HIV testing, especially among the formal workers who have better and more frequent access to health. A recent systemic review and meta-analysis

⁵³ Another example of the deep-seated nature of these practices is the requirement for Mexican citizens to present an HIV test to marry at a consulate. Although the Ministry of Foreign Affairs has made considerable strides in human rights, exemplified by facilitating gender marker changes on birth certificates for trans citizens, the necessity to continuously review and revise according to the pro persona principle is evident. This recommendation extends beyond regulatory adjustments. It calls for sweeping policy changes, such as altering the current approach towards users who inject drugs, which doubles stigma against this group. A systemic review suggests that drug criminalization has a negative effect on HIV prevention and treatment (De Beck et al. 2017). For a systemic review that delves into the global coverage of interventions to prevent and manage harms among people who inject drugs, see Colledge-Frisby et al. (2023)

found that opt-out HIV testing had a significantly higher uptake than opt-in testing (Soh et al. 2022), which is consistent with other studies (Henriquez et al. 2017) and congruent with WHO and CDC recommendations.⁵⁴ A 2021 study conducted in Kenya highlights the effectiveness of opt-out testing, revealing that it led to more than double the likelihood of diagnosing new HIV cases compared to opt-in testing methods (Sanders et al. 2022). See **Appendix – Behavioral Insights** for a comprehensive discussion.

In conjunction with these actions, it is strongly recommended to establish a robust monitoring and evaluation system, to foster the collaboration with research institutions or international partners and to improve coordination among stakeholders. See **Appendix – Complementary Policies** for further details.⁵⁵

3.3. DIVING INTO THE RECOMMENDATIONS

Table 5 provides an overview of the suggested policies, considering its technical soundness, political viability and administrative feasibility. Technical correctness assesses the expected impact of the policy in reducing AIDS-related mortality. Political feasibility takes into account the current leadership in the Executive and Legislative branches. The category of administrative implementability considers the likelihood of the policy succeeding in light of bureaucratic obstacles.

Increasing health expenditure, including HIV programming, scores high in technical correctness primarily because resources are a sine qua non for other recommendations. An augmented budget means not only the establishment of more and better clinics but also an enhanced potential for increasing disease awareness and combating discrimination and stigma. The current administration adheres to a narrative of fiscal austerity, which has manifested in the reduction of government size. It is unlikely that this downsizing will reverse in the near term. However, a window of opportunity may open with the election of the next president this summer, who could potentially diverge slightly from the incumbent's approach. Arturo Herrera, former Minister of Finance, noted at the Harvard Kennedy School that there is no space to increase fiscal spending, but that Mexico could invest more

⁵⁴ Soh et al.'s (2022) results were statistically significant after controlling for rapid testing, country income level, setting and population tested.

⁵⁵ For standard comprehensive recommendations, refer to the Consolidated Guidelines on HIV Prevention, Testing, Treatment, Service Delivery and Monitoring published by WHO (2021).

in infrastructure by augmenting tax revenues. José González, also a former Finance Minister, suggested in a conversation in the same building that public health institutions like IMSS could streamline expenses by outsourcing ancillary services, such as laundry, to private entities. Either better tax collection or government savings can be translated into better healthcare. Regarding immediate steps, the Minister of Finance would send the bill proposal to the Lower Chamber and its approval is likely to happen.⁵⁶

Table 5. Pandemic Response Policies Scorecard

Category	Recommendation	Technically Correct	Politically Feasible	Admin. Implement.
Empowerment	Increase health expenditure, including HIV programing	High	Low	High
	Empower community-led responses*	High	Low	High
Inclusion	Continue massive testing campaigns	Medium	High	High
	Prompt linkage to care regardless of affiliation status*	High	Medium	Low
	Create social media campaigns targeting the general public	High	Medium	High
	Create social media campaigns targeting key populations	High	High	High
Nudges	Review regulatory procedures	Medium	Medium	Low
	Opt-out testing system*	High	High	Medium

Empowering community-led responses is technically sound because they are ideally positioned to reach individuals distant from health centers, including those close to key populations. However,

⁵⁶ Furthermore, the Executive Branch has considerable fiscal spending discretionary power.

the prospect of significant changes in fiscal policy is low, making it exceedingly difficult for these organizations to secure funding from the federal government. Moreover, confrontations at the national level between the President and NGOs have undermined trust. At the local level, there is a margin for initiative. For example, Clínica Especializada Condesa has collaborated with activists to extend the reach of their PrEP program. From an administrative standpoint, the Mexican government has in place a robust mechanism for transferring resources to NGOs. The Commission for the Promotion of Activities of Civil Society Organizations would facilitate the community-led responses with funding once it is approved.

Continuing massive testing campaigns receives a medium rather than a high rating because it maintains the status quo—albeit a critical element. The maintenance of this policy may not drastically impact the reduction of mortality rates, yet the cessation of such campaigns could potentially lead to an increase. This approach may be effective for the segment of the population that is willing to get tested and can access a testing site. However, individuals facing discrimination and stigma might still avoid getting tested despite increased accessibility. Politically and administratively, this policy is rated highly because it is an ongoing effort from the CAPASITS with low likelihood of encountering new obstacles.

Ensuring care irrespective of the patient's affiliation status, whether they are a formal or informal worker, is considered as technically correct because it removes “pilgrimage” and the need to navigate the system. While the suggested policy might garner public support, enacting a substantive administrative reform to reconcile Article 4 with Article 123 of the Constitution is deeply challenging. The pursuit of universal health coverage has been a recurring item on the political agenda but has struggled to materialize effectively in practice. The **Appendix – Pandemic Approach** outlines a pilot program in Chiapas that could be the basis for a national model. The legal teams of the Finance and Health Ministries, CENSIDA, IMSS, ISSSTE and other institutions would need to undertake a substantial coordination effort.

The creation of social media campaigns aimed at the general public is technically correct, as it could significantly reduce discrimination against PLHIV and the LGBTQ+ community. Politically, such campaigns may encounter resistance from certain factions, such as local authorities and churches, which historically dislike sexual education topics. Nevertheless, the ruling party is supportive of

these types of policies, which is why the recommendation receives a medium, rather than a low, political feasibility score. In contrast, campaigns focusing on key populations, primarily MSM or trans individuals, are less likely to stir up political resistance.⁵⁷ Administratively, the implementation process seems straightforward as similar initiatives have been carried out by the government before, with established procedures in place. Additionally, previous studies suggest that similar interventions are cost-efficient.⁵⁸ The Ministry of Health would need to collaborate first with the community to design these campaigns thoughtfully and then negotiate with leadership from different platforms (e.g., television, radio, streaming services, etc.), social, dating and sexual apps (e.g., Instagram, X, Grindr, etc.) and prestigious individuals (e.g., actors, business leaders, national or local authorities, etc.) The evaluation team should be included since the inception of the initial designs to ensure that their impact can be measured effectively.

Stairway of Clínica Especializada Condesa, Mexico City.



Reviewing national and local policies and procedures could potentially reduce discrimination and stigma in the long term but is unlikely to significantly change current trends on its own. Implementing such a comprehensive review and reform would require considerable political will. On the administrative side, amending even seemingly innocuous rules proves to be very challenging.⁵⁹ By contrast, an opt-out system is likely to have a substantial effect

⁵⁷ According to Reisner et al. (2016b), in addition to HIV-related services such as biobehavioral prevention, HIV testing, linkage to care and treatment, interventions aimed for trans individuals are most effective if a structural approach integrating primary concerns is used (e.g., gender-affirmative care and management of gender transition).

⁵⁸ Research conducted in Guatemala indicates that using custom-made videos tailored to the cultural and linguistic preferences of the local population to counter COVID-19 vaccine misinformation on social media can lead to higher vaccination rates among rural, indigenous communities (Abascal Miguel et al. 2022). One of the co-authors, Nadia Diamond-Smith, points out that delivering the videos costed 4 U.S. cents per person.

⁵⁹ For example, when the author of this analysis worked at the Foreign Ministry and contributed to reforms allowing trans individuals to change their gender markers on birth certificates, it necessitated the involvement of the Foreign Minister himself to overcome bureaucratic obstacles.

in counteracting behavioral biases by normalizing testing and increase rates dramatically, especially among the most in need who avoid testing because of stigma, inertia or information avoidance. While there is expected support from politicians, there may be legal and operational obstacles during implementation. For example, a study in the Deep South of the U.S. “demonstrated that providers at large did not possess a sufficient understanding of the CDC’s recommendations for universal “opt-out” HIV testing” (Wise et al. 2019). However, piloting this approach is promising. Legal teams from the Health Ministry and CENSIDA would need to agree on the terms as a first step.

The policy recommendations delineated in this subsection are devised to tackle AIDS-related mortality in Mexico from multiple angles. Each recommendation presents a unique set of strengths and weaknesses, reflecting the complex nature of the healthcare landscape, which varies not only over time but also across different regions and groups.

CONCLUSION

Improving AIDS-related mortality in Mexico is far from a technical challenge, but an adaptive one. The solutions are not wholly straightforward and need the concerted active engagement of several stakeholders. The complexity of the problem requires policies to tackle its multiple root causes at the individual, community, state and national levels. A comprehensive approach entailing formal and informal institutions across the various levels is warranted, yet numerous unknowns are still to be navigated and swift adaptation will be necessary.

It is important to recognize the many nuances of the epidemic. Discrimination and stigma are not homogeneous across the country, the individual obstacles to getting tested are different for MSM or trans individuals than for people who inject drugs. This analysis has given relatively higher attention to MSM given their positivity rates but tailoring the policies to each population is important to combat the epidemic effectively. Moreover, MSM and other key populations are not monolithic groups either, and policies must be strategically designed to leave no one behind.

It must also be acknowledged that the recommendations are not exhaustive, and there is always room for further action or refinement. Observational data, such as the relationship between DSI and AHD, is suggestive but not causal. Additional research is needed. Notwithstanding the limitations, the proposed policy recommendations are intended to have a broadly positive impact by empowering public health institutions and community-led responses, halting corporativism within the healthcare system, promoting a more inclusive society towards PLHIV and the LGBTQ+ community and adopting behavioral insights to prevent AHD.

The gestation period for each policy is unique. Recommendations from the “Empowerment” category are likely to have an immediate effect. If the political constraints are overcome, tax revenues increase or enough savings are made, their implementation would be expeditious. By contrast, some “Inclusion” policies, especially those regarding social media campaigns, will take around a year to design properly and even more to have the expected impact. Iteration to find the most effective framings takes time and, more importantly, changing long-held social norms is difficult, with no promise of success. Massive testing campaigns are quick interim solutions that save

lives. Ensuring that everyone receives care regardless of their work status is imperative and its effect would unfold quickly, but the administrative changes to make this happen may take more than a year. “Nudges” has a less defined time horizon because the opportunities for agents (i.e., patients, communities, authorities, etc.) to make better decisions are limitless. However, removing specific obstacles such as informed consents or asking for HIV tests for legal procedures can be enacted in less than a year with adequate political will. The implementation of an opt-out testing approach is promising but must be gradual to identify any adverse effects and adjust accordingly, with one year as an initial timeframe.

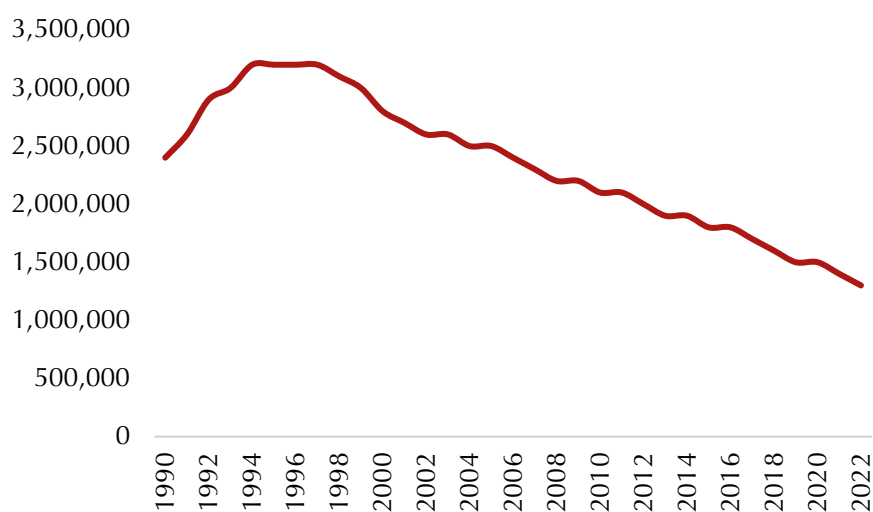
In sum, the next administration is equipped to make landmark strides in reducing AIDS-related mortality, become a global example of good practices and achieve the 95-95-95 targets. A reasonable benchmark of success is to strive for a continuous year-over-year reduction in the mortality rate, progressively moving towards the lowest achievable ratio. While the advent of technological innovations such as long-lasting ART is encouraging, their impact on reducing AIDS-related mortality may not be as significant as hoped, given that many fatal victims of the disease are either perceiving a low risk of infection or deterred from getting tested due to discrimination or stigma. The path forward is not easy, and the challenges are formidable until science offers a cure. However, the lives lost every single day compel us to act, for inaction is a luxury we cannot afford in the fight against AIDS.

APPENDIX

FIGURES

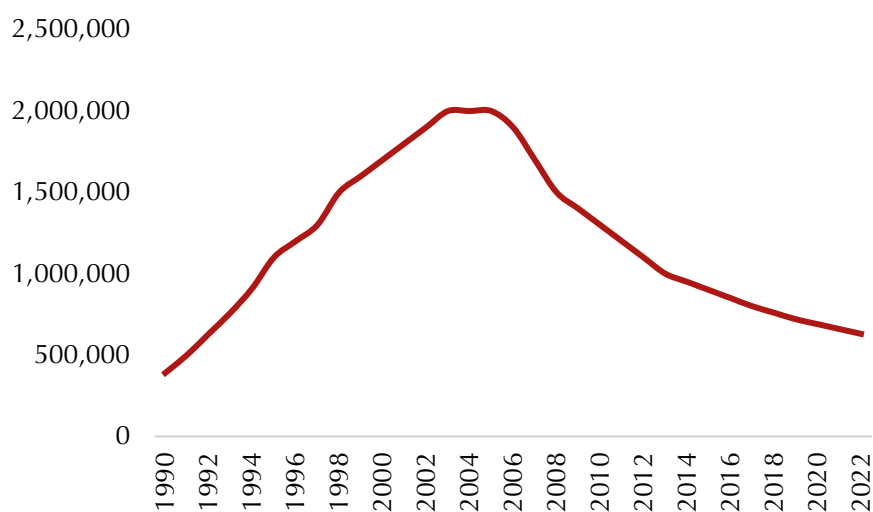
Graphs from **Box 1** showing global HIV incidence (**Figure 9**) and AIDS-related deaths (**Figure 10**).

Figure 9. Global HIV Incidence



Source: aidsinfo.unaids.org

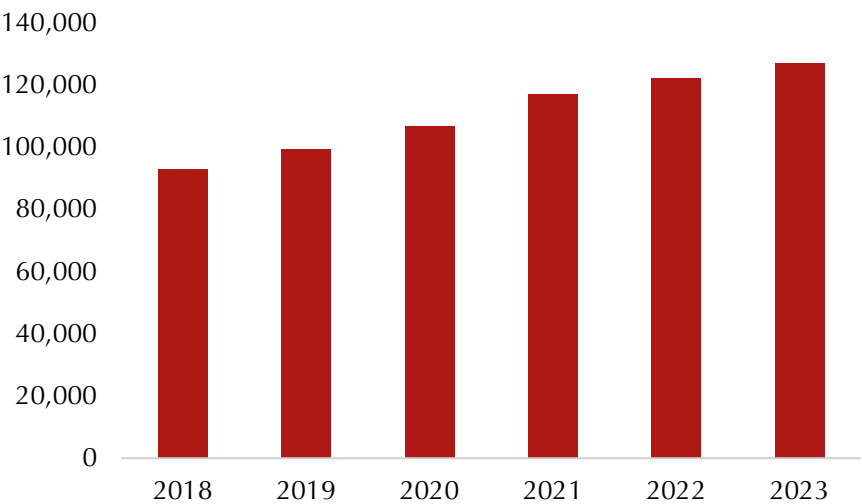
Figure 10. Global AIDS-Related Deaths



Source: aidsinfo.unaids.org

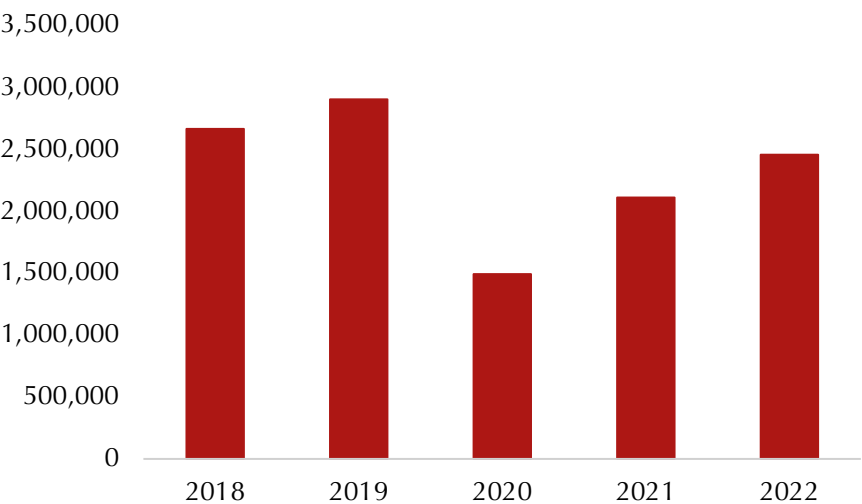
Figure 11 shows the increasing number of patients in SALVAR receiving ART, and **Figure 12** the upward trend in the number of HIV tests applied by the Health Ministry.

Figure 11. Number of Patients in SALVAR Receiving ART as of September



Source: Own elaboration with data from CENSIDA (2023)

Figure 12. HIV Tests Applied by the Ministry of Health



Source: Own elaboration with data from CENSIDA (2023)

TABLES

Table 6 presents AIDS-related deaths in each state in 2021 and **Table 7** the proportion of patients who start their ART with AHD, which served as input for the map in **Figure 2**.

Table 6. AIDS-Related Deaths by State

State	Deaths	State	Deaths
Aguascalientes	16	Nayarit	54
Baja California	317	Nuevo León	214
Baja Cal. Sur	53	Oaxaca	122
Campeche	73	Puebla	158
Chiapas	243	Queretaro	70
Chihuahua	110	Quintana Roo	224
Coahuila	88	San Luis Potosí	52
Colima	36	Sinaloa	75
Durango	32	Sonora	113
Guanajuato	90	State of Mexico	323
Guerrero	89	Tabasco	109
Hidalgo	64	Tamaulipas	181
Jalisco	371	Tlaxcala	12
Mexico City	444	Veracruz	605
Michoacán	82	Yucatán	140
Morelos	85	Zacatecas	17
National		4,662	

Source: INEGI (2022)

Table 7. Patients Starting ART with AHD by State

State	Deaths	State	Deaths
Aguascalientes	43%	Nayarit	19%
Baja California	34%	Nuevo León	43%
Baja Cal. Sur	36%	Oaxaca	52%
Campeche	40%	Puebla	38%
Chiapas	49%	Queretaro	31%
Chihuahua	37%	Quintana Roo	41%
Coahuila	33%	San Luis Potosí	36%
Colima	35%	Sinaloa	31%
Durango	45%	Sonora	26%
Guanajuato	42%	State of Mexico	48%
Guerrero	44%	Tabasco	41%
Hidalgo	40%	Tamaulipas	36%
Jalisco	38%	Tlaxcala	34%
Mexico City	39%	Veracruz	51%
Michoacán	45%	Yucatán	55%
Morelos	39%	Zacatecas	22%
Hospitals and Institutes ⁶⁰		74%	
National		43%	

Source: CENSIDA (2023)

Table 8 shows the number of people in ART in selected states with their respective weight in the total of people in ART, and **Table 9** presents the DSI scores for each state.

⁶⁰ Hospitals and institutes refer to the healthcare system administrated by the Coordinating Commission of National Institutes of Health and High Specialty Hospitals (CCINSHAE).

Table 8. People in ART in Selected States and their National Weight

State	People in ART	Weight on Total People in ART
Mexico City	18,685	14.7%
State of Mexico	11,223	8.8%
Veracruz	11,061	8.7%
Jalisco	8,310	6.5%
Chiapas	7,053	5.5%
Sum	56,332	44.3%

Source: CENSIDA (2023)

Table 9. Discrimination and Stigma Against PLHIV Index by State

State	Deaths	State	Deaths
Aguascalientes	0.277	Nayarit	0.253
Baja California	0.091	Nuevo León	0.315
Baja Cal. Sur	0.167	Oaxaca	1
Campeche	0.669	Puebla	0.441
Chiapas	0.998	Queretaro	0.155
Chihuahua	0.173	Quintana Roo	0.022
Coahuila	0.340	San Luis Potosí	0.467
Colima	0.140	Sinaloa	0.309
Durango	0.454	Sonora	0.388
Guanajuato	0.348	State of Mexico	0
Guerrero	0.811	Tabasco	0.963
Hidalgo	0.293	Tamaulipas	0.495
Jalisco	0.182	Tlaxcala	0.368
Mexico City	0.019	Veracruz	0.644
Michoacán	0.420	Yucatán	0.624
Morelos	0.215	Zacatecas	0.299

Source: Own elaboration with data from ENADIS 2022 (INEGI 2023)

ECONOMETRIC ANALYSES

Regressions were conducted for three different sets of data: global, Latin America and the Caribbean and OECD countries (**Table 10**). The independent variable was log of GDP per capita and the dependent variable was HIV/AIDS mortality rate per 1,000 inhabitants. After the first results, observations that had an absolute value equal to or greater than 3 in their standardized residuals were removed from the sample to reduce skewness. This meant removing 5 observations from the first model (column 1) and one from the second and third (columns 2 and 3). The results were significant for the global and OECD models only ($p < 0.01$), with an adjusted R squared of 0.38 for the OECD countries. Data from 2018. Sources: WDI and IHME (2021).

Table 10. Cross-Country Regression

	AIDS-Related Mortality Rate per 1,000		
	(1) Global	(2) LAC	(3) OECD
Log of GDP per capita	-14.237*** [2.210]	5.347 [3.436]	-1.974*** [0.411]
Intercept	152.729*** [20.922]	-40.728 [33.085]	21.921*** [4.374]
Observations	181	30	37
R ²	0.188	0.080	0.398
Adjusted R ²	0.184	0.047	0.380
Residual Std. Error	34.341 (df = 179)	8.796 (df = 28)	0.985 (df = 35)
F Statistic	41.500*** (df = 1; 179)	2.421 (df = 1; 28)	23.106*** (df = 1; 35)

Notes: standard errors in brackets; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

The proportion of PLHIV who initiated their ART with AHD was regressed against the DSI and a statistically significant positive association was found ($p < 0.05$).⁶¹ **Figure 8** showed this relationship graphically. Nayarit and Zacatecas are outliers, with residuals above two standard deviations below the mean. Controlling for 2020 GDP per capita did not change the results ($p < 0.05$), even after removing Campeche and Tabasco from the data set because of their high oil production. After

⁶¹ See **Appendix – DSI** for a description about how the index was constructed.

adding average educational attainment among people 15 or older to the model, none of the variables was significant anymore (**Table 11**). The increase in standard errors was expected given the small sample and additional predictor. Even though the DSI coefficient continues being positive, the role of educational attainment might be embedded in the DSI given the statistically significant correlation between both variables (Pearson test, $p < 0.01$) highlighting the importance of tackling HIV misconceptions. I obtained consistent results ($p < 0.01$) when using the Simple Index (see **Appendix – DSI**) instead of the PCA-based index. Data sources: CENSIDA (2023) and INEGI's portal.

Table 11. DSI Regressions

	ART Initiation with AHD		
	(1)	(2)	(3)
DSI	1.527** [0.571]	1.504** [0.583]	0.968 [0.928]
GDP per capita		-0.00001 [0.00002]	0.00000 [0.00002]
Schooling			-2.358 [3.161]
Intercept	38.844*** [1.303]	39.616*** [2.529]	61.234** [29.092]
Observations	32	32	32
R ²	0.193	0.196	0.212
Adjusted R ²	0.166	0.141	0.127
Residual Std. Error	7.370 (df = 30)	7.480 (df = 29)	7.538 (df = 28)
F Statistic	7.154** (df = 1; 30)	3.537** (df = 2; 29)	2.508* (df = 3; 28)

Notes: standard errors in brackets; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

FISCAL POLICY

Knaul et al. (2023, p. 732) point out that health investment in Mexico as a percentage of GDP rose from 4.5% in 2000 to a peak of 6.1% in 2009, before consistently decreasing to 5.5% by 2019. The amount spent per person increased from 657 international USD in 2000 to 993 in 2016, before leveling off. The rate of out-of-pocket health spending saw its lowest point in 2013 and then rose in subsequent years. Similarly, private health expenditure hit a minimum of 45.4% of the total health

expenditure in 2013 but climbed to nearly 50% by 2019, marking one of the highest rates in Latin America.

LATE DETECTION

Martín et al. (2015) provided evidence from Mexico City supporting the claim that late detection is a major cause of AIDS-related mortality. Their analysis covered 128 cases of in-hospital mortality among PLHIV between 2010 and 2013.⁶² They found that 18% of the patients were unaware of their HIV status upon hospitalization, 51% had been on treatment for less than six months and 40.5% had never started it (p. S163). The study identified that 57% of these deaths were preventable with earlier treatment. The authors concluded, “Despite universal access to HAART, patients with HIV in Mexico still succumb to AIDS-defining illnesses, signaling a trend of late diagnosis.”⁶³

More recent studies (Elizalde and Juárez 2023) have also highlighted the significant impact of late-stage HIV diagnoses on mortality. This study, conducted at an HIV clinic in Mexico City from January 1999 to December 2021, with 348 newly diagnosed HIV-positive individuals, revealed that 75% entered care with late presentation (CD4 count < 350 cells/mm³) and 45.4% with AHD disease. Notably, there was an increase in late diagnoses during the COVID-19 pandemic years.

Preliminary results (Caro et al. manuscript) identified all deaths in Mexico among PLHIV from 2004 to 2015. They found 59,650 deaths among this population. Only 38,364 of the documented fatalities included information on the period between HIV diagnosis and death. AIDS explained 74% of early mortality: 56% (21,481) occurred within the first year after diagnosis and 18% (7,044) within the first month.⁶⁴ The frequencies of these early and very early mortalities increased between 2004 to 2015.⁶⁵ They also point out that the probability of death due to AIDS-related causes remained

⁶² Consistent with **Table 2**, most patients were MSM (47%) (p. S165).

⁶³ In Mexico, universal access to HAART (highly active antiretroviral therapy) began in 2001 (p. S164).

⁶⁴ The most frequent AIDS-related causes of death were pneumonia (20%), opportunistic infections (9%) and tuberculosis (5%).

⁶⁵ The frequency of deaths within one month of diagnosis increased from 15% to 23% and for deaths within a year also raised from 55% to 58%.

constant from 2010 to 2015, “in spite of massive scale-up of ART in the country.”⁶⁶ They suggest that “persistence of late HIV-diagnosis in Mexico substantially contributes to lower-than-expected reductions in AIDS-related mortality.”

DSI (DISCRIMINATION AND STIGMA AGAINST PLHIV INDEX)

The DSI was constructed using results from the ENADIS 2022 survey. The National Council for the Prevention of Discrimination (CONAPRED) has influenced the evolution and conceptual design (i.e., validity) of ENADIS since its inception in 2005. This data is the best available because it is the most recent and provides a state-representative measure of discrimination and stigma against PLHIV. The survey includes several modules, one of which contains six questions related to PLHIV that capture perceptions, values and attitudes of interest: i) interacting with PLHIV is always risky, ii) unwillingness to rent your apartment to a PLHIV, iii) disagreement that your child marries a PLHIV, iv) unwillingness to hire a PLHIV, v) unwillingness to buy vegetables from a PLHIV and vi) children living with HIV should go to a different school.

For each state, the proportion of people who were discriminating or stigmatizing PLHIV was calculated. Pearson tests showed significant correlations among the 15 possible pairs of variables. A principal component analysis showed that the first component explained most of the variance and was the only one with an eigenvalue equal to or greater than 1 (**Table 12**). Following the Kaiser criterion, this component became the basis of the DSI. Finally, the component was scaled from 0 to 1 (see **Table 9**). Given the few components, I also created a simpler index (“Simple Index”) by standardizing the proportions for each of the six variables (i.e., demeaning and dividing by standard deviation) and then averaging across the new values before scaling again from 0 to 1. The indices have excellent reliability (i.e., internal consistency), with a Cronbach alpha greater than 0.95.

⁶⁶ The model adjusted for factors associated with early mortality such as gender, age at death, calendar year, schooling and social security affiliation.

Table 12. Principal Component Analysis Results (DSI)

	PC i	PC ii	PC iii	PC iv	PC v	PC vi
Standard deviation	2.3190	0.5206	0.4086	0.3762	0.2070	1.28e-16
Proportion of variance	0.8963	0.0452	0.0278	0.0236	0.0071	0
Cumulative proportion	0.8963	0.9415	0.9693	0.9929	1	1

ENDISEG

ENDISEG 2021 (INEGI 2022b) reveals that within the LGBTQ+ community, 28% reported experiencing discrimination at work, which is notably higher than the 18% reported by those with normative sexual orientations and gender identities. The survey also found that thoughts of suicide were more prevalent in the LGBTQ+ community, with 26% considering it and 14% attempting it, compared to 8% who considered it and 4% who attempted it among non-LGBTQ+ individuals. Furthermore, there is a notable dissatisfaction among the LGBTQ+ community regarding their economic status (21%), employment (13%), family relationships (8%), physical appearance (13%) and overall life satisfaction (7%). All these figures are higher than those reported by non-LGBTQ+ individuals, who show lower dissatisfaction in their job (12%), family relationships (5%), physical appearance (7%) and overall life (4%).

The survey also shows that not all members from the LGBTQ+ community are in agreement on key issues: only 81% believe same-sex couples should show public affection, 84% support same-sex marriage and 76% are in favor of adoption rights for same-sex couples. These figures suggest self-stigma but are higher than acceptance levels among non-LGBTQ+ members, who agree at rates of 55%, 59% and 44%, respectively.

Given the high HIV positivity rates in Mexico, a useful measurement for the purpose of this analysis would be stigma affecting MSM in particular because there is independence between sexual orientation and sexual practices. However, a systemic review found that the field has limited progress on this matter outside of high-income settings (Fitzgerald-Husek et al. 2017).

STATUS QUO

A possible explanation of the status quo could be that the increase in undetectable patients, who cannot transmit the virus due to viral suppression, and individuals who change their behavior after

learning their HIV status (i.e., using condom), may primarily occur in populations already knowledgeable about the virus [Set A]. These individuals have likely overcome some of the barriers of discrimination, stigma and accessibility, making them more willing to undergo testing despite financial and time constraints. Conversely, populations not getting tested due to lack of awareness, discrimination, stigma or access continue to avoid testing [Set B]. This does not imply that only those aware of the virus and willing to get tested transmit it among themselves, nor does it mean that those unaware and unwilling to get tested only transmit the virus within their own group. A more plausible scenario is an overlap between these two groups, akin to a Venn diagram, indicating the potential for virus transmission between both groups [Subset C]. So, the increase in the availability of ART reduces the risk of the first group [Set A], consequently the risk in the overlapped region [Subset C], but the risk of the second group [Set B – Subset C] remains unchanged.

ENDUTIH

ENDUTIH 2022 (INEGI/IFT 2023) shows that internet users in Mexico reached 93.1 million, accounting for 79% of the population aged 6 and above. For young adults aged between 18 to 34 years, the internet usage was notably high, with percentages spanning from 90% to 95%, which is highly relevant given the AIDS-related mortality age distribution (see **Figure 1**). The use of the internet for social media access was 91%. The lowest internet access rates were observed in Chiapas (57%), Oaxaca (63%) and Guerrero (68%), entities with high DSI scores, though all three states experienced a statistically significant increase of over 1% compared to the previous year. From 2019 to 2022, smartphone usage for internet access increased from 95% to 97%. Mobile phone usage among the population aged 6 and over rose from 75% to 79% between 2019 and 2022, totaling 93.8 million users. Among them, 95% of users exclusively used smartphones and 79% accessed social networks. These figures highlight the potential of social media applications on smartphones as effective tools to combat discrimination and stigma, whether societal or internalized.

SOCIAL MEDIA CAMPAIGNS

Baral et al. (2018) found that UNAIDS data might significantly underestimate the populations of gay, bisexual and MSM. This conclusion was reached after they compared their own estimates, which were based on data from gay-oriented apps and Facebook users with same-sex interests, to the UNAIDS figures. They suggest that the use of social media for epidemiological surveillance and the enhancement of HIV prevention, treatment and care is increasingly viable and may offer a more

accurate assessment of at-risk populations. Furthermore, Berg (2008) points out that MSM who engage in unsafe sex use the internet to find partners and report lower perception of safe sex social norms.

Thus, social media is an adequate platform to launch initiatives which resonate with the audience in accessible formats. Promising research from behavioral scientists show that education through entertainment, for instance, increases the likelihood of getting tested for HIV (Banerjee et al. 2019). Addressing misconceptions about how the virus spreads and increasing awareness about the benefits from ART is warranted.⁶⁷ According to some government officials, CENSIDA has been running around 30 campaigns each year including some in indigenous languages, but it seems that these efforts are not fully addressing the issue at hand.

Ideally, messages targeted at the general public should feature prestigious individuals from the demographic most likely to discriminate, such as older heterosexual men, who have the power to significantly shape social norms.⁶⁸ At the same time, campaigns tailored to specific social or sexual platforms are essential. For instance, Grindr, a platform commonly used by MSM, presents an opportunity to spread such messages.⁶⁹ In addition to featuring known personalities, it is important to show them actively getting tested. Research by Henrich (2018) highlights how humans tend to “overimitate” or copy behaviors to a greater extent than other species. Therefore, rather than just urging the audience to get tested, showing a photo or video of a respected person undergoing testing could be more impactful.⁷⁰ The more prestigious, the better.

This approach not only has the potential to influence behavior but also allows for experimentation with different messages across the country, which can provide causal evidence linking the type of

⁶⁷ Strengthening sexual education through the national curriculum is not a recommended policy at this moment because the likelihood of political backlash at the local level is high.

⁶⁸ This recommendation is based on results from human evolutionary biology, see Henrich (2018).

⁶⁹ In an online survey targeting MSM and disseminated via Facebook, Twitter, Homosensual, Desastre, Grindr and Hornet, Grindr was the platform with the highest number of participants (Baruch et al. 2022, p. 315).

⁷⁰ An example is the partnership between Clínica Especializada Condesa and social influencer @carreto, who has more than 230,000 followers on Tik Tok and produced a video of him getting tested which was posted on his social media and the X account of the clinic [\[link to Tik Tok website\]](#).

message or framing to changes in testing rates. It is important to note that MSM is a heterogeneous group with different risk profiles. “Bisexual or hetero-sexually-identified MSM may not be responsive to public health messaging developed for gay-identified MSM” (Oldenburg et al. 2017, p. 246). Similarly, there should be parallel efforts to address discrimination and stigma against the LGBTQ+ community.

PANDEMIC APPROACH

Despite the constitutional right of health protection and the negative externalities of HIV, the Mexican healthcare system’s funding structure presents considerable challenges to administrative changes intended to address the epidemic. The system for informal workers, often referred to as “unaffiliated,” is sustained by taxes and government contributions. In contrast, the healthcare system for formal workers, such as IMSS, is funded from these two sources plus an employer’s contribution. Alethse de la Torre, General Director of CENSIDA, explains that treating an unaffiliated patient at an IMSS clinic would be deemed as diversion of funds.

To address this issue, CENSIDA conducted a pilot program in Chiapas, the entity with the highest number of health centers, that allows unaffiliated patients to access treatment at primary care units for affiliated workers.⁷¹ This is made possible by having CAPASITS provide the necessary medication, thus preventing any diversion of resources. Further innovative institutional solutions are necessary to close the gap between diagnosis and treatment, with a particular focus on preventing the burdensome and often detrimental “pilgrimage” of patients between clinics, which delays the timely initiation of ART, complicating its treatment and increasing the virus’s likelihood of developing resistance to the antiretrovirals.

This specific recommendation is closely tied to the fiscal aspect. If the IMSS clinics become overwhelmed, the influx of unaffiliated patients to these clinics alone will not resolve the issue. To address this challenge effectively, comprehensive funding for the healthcare system as a whole is essential.

⁷¹ Despite the presence of 16 specialized HIV centers in Chiapas, expert interviews reveal that patients need to travel more than 2 hours to reach them. However, each municipality has at least one health center that offers care to affiliated patients.

BEHAVIORAL INSIGHTS

Literature on savings enrollment offer relevant insights to promote testing and early HIV detection. Madrian and Shea (2001) found that participation on 401(k) plans is significantly higher with automatic enrollment, without changing the economic features of the plan. One explanation of the significant increase in participation, they argue, is status quo bias resulting from procrastination (p. 1,177). They point out that, although the transaction costs are low, they exceed the short-run benefits and individuals end up procrastinating. Their findings “support the contention made in much of this literature that procrastination is an extremely important factor in the widely perceived inadequacy of individual saving for retirement” (p. 1,150).

Furthermore, Samuelson and Zekhauser (1988) note that several decision-making experiments show how individuals disproportionately adhere to the status quo. They demonstrate how the bias is also observed in field studies, such as one involving over 9 thousand Harvard University employees in choosing health coverage (p. 26). The authors explain this cognitive phenomenon by bringing in results from economics and psychology, such as transaction costs, loss aversion, endowment effect, anchoring, sunk costs, regret avoidance, drive for consistency and other deviations from the rational choice model (p. 41). It is worth noting that status quo bias is also prevalent in policymaking: “Many programs receive little or no evaluation” (p. 46).

It is possible to make a cogent argument in favor of an opt-out HIV testing approach in Mexico. With proper implementation, there is minimal cost and risk in trying. **Subsection 2.3 – Cultural Scripts on Discrimination and Stigma** presented novel evidence on how discrimination and stigma are strongly associated with late ART initiation. Mexican authorities contribute to the stigma surrounding HIV testing for distinct reasons, including requiring an informed consent. This means that individuals at high risk, especially MSM, must overcome not only the stigma associated with getting tested but also the status quo bias.

The cognitive effort to get tested is compounded by several factors. First, individuals might be procrastinating their test. This could happen for several reasons, such as not wanting to get tested if they are accompanied because it could signal that they might be having risky sexual behavior, multiple partners or homosexual intercourse in contexts where it is socially not accepted. This information might be preferred to be kept confidential for safety or personal reasons. Even if they

are unaccompanied, individuals might be present biased, meaning that even though they know that they should get tested, they postpone it because the “cost” of doing it in the future is lower than today’s cost, when adjusting for an intertemporal discount factor. The problem arises when the day in which initially the individual decided to get tested arrives, it is now more costly, again, to get tested that day than in a future day. The sequence goes on and on, postponing the test indefinitely. Secondly, status quo bias in this context can be explained because the transaction costs of getting tested are higher relative to the perceived benefits.⁷² Needles and signing paperwork are costs that may contribute to the status quo. Deciding to get tested is a complex decision, which adds to the cost. Patients need to understand the severity of the virus, how it transmits, assess their individual and community risk, remember how exposed they have been, etc. The list extends even more for patients who consider themselves at risk: understanding that HIV is not a death sentence anymore thanks to ART, the availability and types of treatments, their side effects, the importance of adherence for viral suppression, the needed changes in behavior, implications for future sexual activity, etc. The cognitive effort of the mental calculations is not small.

Thirdly, cognitive misperceptions are a key factor as well. Individuals may underestimate their risk exposure, especially in states where speaking about HIV/AIDS is considered as taboo. Mimiaga et al. (2007) point out that MSM may not get tested as a result of low risk for infection perception (p. 113). The risk misperception can be intensified by optimistic bias and misconceptions related to the HIV local prevalence and transmission mechanisms of the virus. Sohn et al. (2011) analyzed data from almost 3,000 South Korean adolescents and found optimistic bias towards HIV/AIDS, which was increased with self-esteem and self-control. In other words, the cognitive effort is not only complex but also individuals are biased in their thinking process and lack the necessary inputs to compute their cost benefit analysis adequately.

The list of reasons identified in the literature regarding testing avoidance goes beyond the extension of this appendix.⁷³ It includes active information avoidance (Golman et al. 2017), the fear of testing positive and suffering from discrimination, social exclusion, losing employment, revealing the

⁷² For instance, Thornton (2008) found that even small incentives (e.g., one-tenth of a day’s wage) significantly increased the uptake of HIV testing.

⁷³ For a systemic review and meta-analysis of combination behavioral interventions co-targeting psychosocial syndemics and HIV-related behaviors of sexual minority men, see Pantalone et al. (2020).

information to others, etc. An old but revealing study in the U.S. among gay and bisexual men found that the possible psychological impact of learning about a positive result made them decline the invitation for an HIV test (Lyter et al. 1987).⁷⁴ In their analysis, participants preferred to continue living without knowing their status because the expected costs (e.g., instrumental, hedonistic and cognitive) of being HIV positive offset any other alternative.⁷⁵ It might be safe to assume that many are unaware about the ART life-saving benefits and potential to become undetectable, resulting in an overestimation of morbidity and mortality.

Intuitively, with an opt-out testing approach the direction of the effects would flip. If a person opts out, it can signal that they might be having risky sexual behavior, multiple partners or socially unaccepted homosexual intercourse. The transaction costs of opting out are higher because there is paperwork to be filled and significant cognitive effort to decide if it is worth opting out or continue with the inertia effortlessly. Many will avoid that effort by accepting the status quo. The present bias is attenuated because the cost of getting tested today is lower than in an opt-in system. An opting-out approach also functions like a suggestion from the healthcare provider that it is the right thing to do, a kind of anchoring from someone with authority or expertise that would facilitate adhering to the status quo.

Adequate framing would improve the intervention (Sharot and Sunstein 2020, p. 19). The risk misperceptions can be countered with carefully crafted messages on the opt-out form, addressing optimistic bias and HIV misconceptions. These messages should follow best practices, such as positive tones and avoiding relative risk statistics.⁷⁶ A delicate balance in terms of the difficulty of opting-out must be assessed, because the decision of actively avoiding information should be respected.

In addition to the meta-analysis and Kenyan case study mentioned in **Subsection 3.2 – Pandemic Response Policies** that support with empirical evidence this argument, the case of Botswana sheds

⁷⁴ Similarly, Sullivan et al. (2004) found that one in four participants identified the fear of receiving test outcomes as a significant factor in their decision not to return for HIV test results.

⁷⁵ See Sharot and Sunstein (2020) for a framework of information-seeking that includes results from economics, psychology and neuroscience.

⁷⁶ See Gigerenzer (2014) for more details on transparent risk communication.

light on this approach as well. In 2004, the authorities began routine, non-compulsory opt-out HIV screening in prenatal and other healthcare settings to increase ART uptake (Ramagola-Masire et al. 2020). President Mogae is regarded as “successful” in his plan to target those most vulnerable to HIV and the country is an “exemplar” in terms of public health response.

Finally, in terms of implementation and evaluation, iterative piloting is the first step. In states that register the highest DSI scores, primary care clinics would be randomly selected to start either an opt-out HIV testing protocol or to maintain the current practice of obtaining informed consent.⁷⁷ The primary outcome of interest is the number of early detections, and the measure of success would be a statistically significant difference between the clinics with the opt-out testing system and the ones without it.⁷⁸ Contrary to the idea that nudges are appealing to both liberals and conservatives, negotiating with the health authorities to agree on the legal terms of this study might be challenging but still possible.⁷⁹ The results would be treated with strict confidentiality and proper counseling to avoid doing any harm, especially among individuals who tend to prefer strategic ignorance.⁸⁰ I do not foresee significant material challenges, given the high amount of HIV detection tests available. However, as noted earlier, status quo bias is also present in policymaking. Obstacles will emerge once the piloting starts and being able to adapt is central. The government should be reminded about the cost efficiency of such an intervention.⁸¹

⁷⁷ The states with the highest DSI scores are Oaxaca, Chiapas and Tabasco.

⁷⁸ Other clinical events can be considered as secondary outcomes, given that the initiation of ART with a CD4 count greater than 500 cells/mm³ provides net benefits (Lundgren et al. 2015, p. 795).

⁷⁹ Further discussion about a “real Third Way” is elaborated by Thaler and Sunstein (2008).

⁸⁰ For a theoretical framework that considers different kind of choosers (e.g., those whose choices are affected by the frame or not), see Goldin (2017).

⁸¹ For a discussion about the value of a statistical life, see Sunstein (2013). Hemel (2021) delves into the intricacies of cost-benefit analyses and redistribution when the income elasticity of the value of a statistical life is considered, which is relevant for AIDS-related mortality given that the most affected by the epidemic belong to vulnerable groups.

COMPLEMENTARY POLICIES

Three complementary policies are recommended: i) establishing a monitoring and evaluation system, ii) enhancing collaboration with research institutions or international partners and iii) improving coordination among stakeholders. **Table 13** shows the scorecard for each policy.

Table 13. Complementary Policies Scorecard

Recommendation	Technically Correct	Politically Feasible	Admin. Implementable
Establish monitoring and evaluation	Medium	Medium	Low
Collaborate with research institutions and international partners	Medium	High	High
Enforce minimum standards across the different stakeholders	Medium	High	Low

A monitoring and evaluation system goes beyond routine pandemic surveillance, which CENSIDA has been improving.⁸² Measuring the impact of new clinics, funding allocations, agreements between CENSIDA and IMSS, social media campaigns, etc. is crucial for gauging the effectiveness of policies and deciding if resources should be redirected to more cost-efficient areas.⁸³ Although the pandemic response policies are based on evidence, their real-world impact is yet to be seen. There are several unknowns to be navigated and prompt iterative corrections will be necessary.

As with other policy recommendations, monitoring and evaluation on its own is unlikely to change current mortality trends. While this proposal seems politically viable as it helps ensuring accountability, caution is necessary. Previous evaluation initiatives in the country, especially within the education sector, have faced considerable backlash, resulting in the abandonment of reforms. Therefore, it is vital to engage with stakeholders to design properly the evaluation metrics. From an administrative perspective, the task is not straightforward. The National Council for the Evaluation

⁸² CENSIDA started collecting data to measure HIV incidence at the municipal level.

⁸³ “Continual monitoring and evaluation of Mexico’s health system is needed with transparency and accountability” (Unger et al. 2023, p. 676).

of Social Development Policy (CONEVAL) has independence and robust technical know-how in program evaluation. Nonetheless, conducting randomized controlled trials, for example, to ascertain the most impactful messaging, remains an inherently complex and expensive task. The frequent turnover in government positions further complicates the process.

Collaborating with research institutions at the national or international level, such as the U.S. National Institutes of Health (NIH), offers potential avenues to strengthen the state's capabilities.⁸⁴ For example, INEGI's National Health and Nutrition Survey (ENSANUT) includes HIV-related questions. This dataset presents an opportunity to deepen our understanding of the economic and social determinants influencing HIV/AIDS dynamics in the country for a better response. International partnerships could play a pivotal role in breaking the social taboo surrounding research on the right to sexual pleasure. Important questions remain unanswered that could refine any policy's design. Does the availability of ART change the perceived risk of HIV infection (i.e., risk compensation)? If this is the case, what measures can the government do? Are conditional or unconditional cash transfers effective to increase testing in regions with high AIDS-related mortality or DSI scores?⁸⁵

The value of academic contributions is greatly amplified when policymakers incorporate the findings. Without this integration, the insights may remain isolated and underutilized. It may be difficult to imagine a situation where politicians would oppose to such collaborations. However, not all government officials are consistently receptive to these partnerships.⁸⁶ From an administrative standpoint, the necessary procedures are already well-established. Mexico has a long history of involvement in major clinical trials, including those led by Novavax for a COVID-19 vaccine and the Mosaico study for an HIV vaccine. The Federal Commission for Protection against Sanitary Risks (COFEPRIS) is instrumental in this regard, despite that its operational capacity has been reduced by

⁸⁴ For instance, Clínica Especializada Condesa narrates how the clinic was able to acquire new equipment thanks to the collaboration with the Mosaico clinical trial.

⁸⁵ A study in Brazil found that conditional cash transfers can reduce AIDS morbidity and mortality in vulnerable populations (Silva et al. 2024). The impact decreases gradually until having no effect in individuals with higher incomes.

⁸⁶ During the COVID-19 pandemic, some high-ranked government officers initially disliked the proposal of engaging with U.S. pharmaceuticals to find safe and efficient treatments or vaccines against the virus.

budgetary cuts. CENSIDA and INSP could initially guide these efforts, along with INEGI and the Salvador Zubirán National Institute of Health Sciences and Nutrition.

Effective policy implementation requires coordination among stakeholders with efforts directed towards identifying areas for improvement, in their actions or lack thereof.⁸⁷ The main stakeholders are business associations, CAPASITS, CENSIDA, churches, community organizations, COFEPRIS, CONEVAL, hospitals, households, IMSS, influencers, international partners (e.g., NIH), Ministry of Finance, Ministry of Foreign Affairs, Ministry of Health, Office of the President, patients, pharmaceuticals (e.g., Gilead and ViiV), research institutions, social media companies, state program directors and subnational governments. Expert interviews reveal the lack of coordination between CENSIDA, CAPASITS and NGOs, for instance. Coordination between the CAPASITS and primary health care clinics like IMSS is crucial to address the fragmentation issue. Communication is the first step. Adhering to minimum standards is a helpful resource to ensure basic outcomes.

Lastly, enforcing minimum standards among the various stakeholders is an imperfect solution to a coordination problem. Raising the bar and standardizing the system where possible could lead to greater overall efficiency though. While it seems unlikely for there to be opposition towards a coordinated system, the practicality of its implementation raises doubts about its feasibility. The complex nature of the pandemic response complicates the establishment of a clear authority with both the coercive power and the political legitimacy necessary to ensure compliance with these standards.

⁸⁷ “The role of governments through public sector action is fundamental to health equity. But the role is not government’s alone. Rather, it is through the democratic processes of civil society participation and public policymaking, supported at the regional and global levels, backed by the research on what works for health equity, and with the collaboration of private actors, that real action for health equity is possible” (WHO 2008, p. 32).

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