HIV and Medicare: A Survey of the HIV Medicare Population

JUNE | 2025

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A Survey of the HIV Medicare Population

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An Introduction and Brief History of HIV

Since the emergence of the Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS) in the late 20th century, few conditions have had a more prominent, impactful role in public health policy. The disease emerged as a public health risk in the United States in the summer of 1981, when reports of clusters of men in New York and California being afflicted with a rare cancer—Kaposi's Sarcoma—first appeared in the U.S. Centers for Disease Control's (CDC) July 3, 1981 publication of the *Morbidity and Mortality Weekly Report*[1]. In September 1982, the term "AIDS" was used by the (CDC) for the first time[2]. By the following summer AIDS had entered into the public consciousness, marked by Newsweek's cover article, "Gay America: Sex, Politics, and the Impact of AIDS"[3]. By the mid-1980s, the disease was recognized by all levels of government to be a public health crisis for the general population.

In the early days of the disease, a positive AIDS diagnosis was terminal; the average life expectancy for an individual with an AIDS diagnosis was three years[4]. Public policy therefore emphasized prevention and education—especially among younger cohorts, who comprised most of those diagnosed. However, within a decade, pharmaceutical therapies emerged that transformed the disease from a terminal illness to a treatable chronic condition. In 1996, "researchers found that triple-drug therapy could durably suppress HIV replication to minimal levels, while creating a high genetic barrier against development of drug resistance"[5]. Progressive improvements in medication therapies in the following decades have been so successful in maintaining the health of the HIV-positive population that individuals receiving an early diagnosis and adhering to pharmaceutical regimens now have life expectancies similar to the non-HIV-positive population[6].

The mid-1990s advent of effective antiretroviral therapies has extended life expectancy so dramatically that a significant cohort of people living with HIV is now approaching retirement age. The happy result of the therapy is a cohort of HIV-positive Americans who are aging into Medicare when they turn 65. This cohort includes, perhaps, the most famous HIV-positive person, NBA Hall of Famer Earvin "Magic" Johnson, who turned 65 last summer. With the HIV-positive population beginning to reach retirement age and transition into Medicare, there is an important outstanding question: How well is Medicare prepared to care for this population? This report does not attempt to provide a definitive answer to this question. Instead, the report intends to introduce the questions that could be explored and answered to ensure that the Medicare program can provide requisite care for the HIV-positive age-ins (individuals who become Medicare-eligible upon turning 65) so that they can continue to receive access to the quality care needed to maintain health well into their senior years.

[1] https://stacks.cdc.gov/view/cdc/1265
[2] https://www.hiv.gov/hiv-basics/overview/history/hiv-and-aids-timeline#year-1982
[3] https://exhibits.lib.berkeley.edu/spotlight/queer/catalog/22-986
[4] https://oar.nih.gov/about/history/oar-35-years
[5] https://www.niaid.nih.gov/diseases-conditions/antiretroviral-drug-development
[6] https://www.aidsmap.com/about-hiv/life-expectancy-people-living-hiv

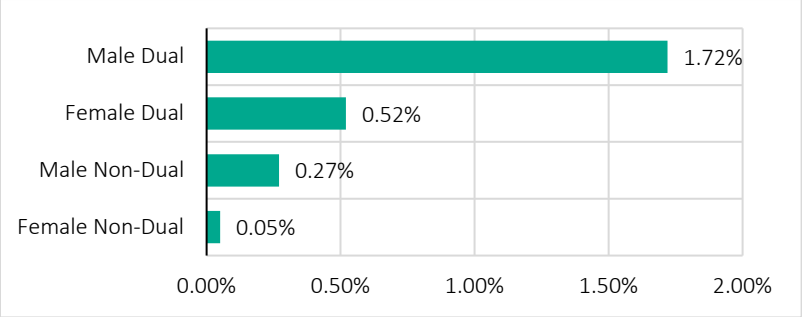
Executive Summary

At the commencement of this research, the project's original thesis was that the Medicare-enrolled HIV-positive population would exhibit signs of growth among the age 65+ enrollment, and that this population would have a unique demographic composition and thus care needs would differ relative to the broader Medicare population. The goals of the project were to:

A) Confirm or disprove the age 65+ enrollment and demographic composition theses,
B) Review and compare the high-level prescription and medical utilization and cost patterns of the HIV Medicare population to the non-HIV Medicare population, and
C) Begin to identify differences in care needs and costs to guide program design and care management. The study compares the HIV-positive Medicare population to the non-HIV-positive Medicare population in demographics, medical costs, and pharmaceutical costs to begin to explore these goals and enable the actuarial community to ask more precise questions to ensure HIV-positive members are properly cared for in the Medicare program.

The demographic analysis confirms both the aging trend among HIV-positive Medicare enrollees and their distinctive makeup—particularly in sex distribution and income status. Over the course of the dates in the study, the HIV-positive population has shifted from a population that was primarily under 65 (qualified for Medicare due to disability) to a population with a much higher percentage of 65+ members (qualified for Medicare due to age). Given the advances in anti-retroviral (ARV) medications discussed in the Introduction, we expected the demographic data to show this trend, and it was substantiated by the data. Additionally, the research shows a population that is predominantly male, heavily skewed towards the low-income population, and almost entirely in metro areas as defined by the Centers for Medicare & Medicaid Services (CMS).

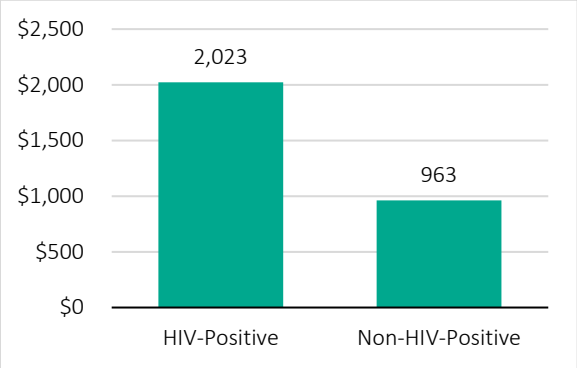
PERCENT OF HIV-POSITIVE MEDICARE MEMBERS IN 2022



For non-dual eligible (non-dual) females in Medicare, only 1 in 2,000 members are HIV-positive. For dual-eligible (dual) males, the prevalence is closer to 1 in 50. Dual-eligible individuals (or duals) are persons eligible for both Medicare and Medicaid coverage. The significant over-representation of HIV-positive Medicare members in poorer, urban communities, with a preponderance of males, confirms that the HIV-positive population has a distinct demographic profile. Care management (CM) programs and care models for HIV-positive insureds could benefit from greater awareness of these unique demographic characteristics.

Medical care needs for HIV-positive members are greater than those of the average Medicare member, as measured by both overall allowed medical costs and co-morbidity prevalence (co-morbidity: the simultaneous presence of two or more chronic health conditions in the same individual). Medical costs for an HIV- positive members are approximately twice those of non-HIV-positive members with a ~$1,000 Per Member Per Month (PMPM) difference in allowed costs, with the majority of the difference in costs attributable to Inpatient care.

2022 MEDICARE ALLOWED* MEDICAL COSTS (PMPM)



*Allowed costs are defined as the combination of both member and health plan costs

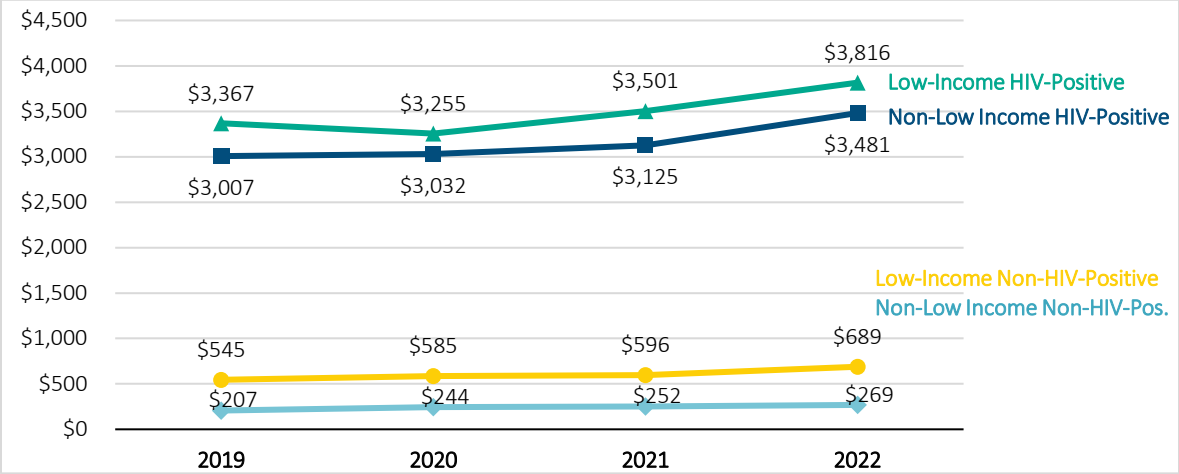
Interestingly, cost differentials persist when HIV-positive members are compared to non-HIV-positive members with a similar number of co-morbid conditions. Further, allowed costs for HIV-positive members are greater than non-HIV-positive members even after being risk adjusted. While risk adjustment is calibrated to plan liability, not allowed costs, given the relatively uniform allocation of plan/member liabilities for the standard Medicare Part A/Part B benefit, there is a reasonably high probability that the risk-adjusted cost differential persists for the plan liability measurement. A risk adjustment model that inadequately compensates for HIV-positive members could potentially induce risk-taking plans and providers to avoid HIV-positive members. The potential for the risk-adjusted cost differential is beyond the scope of this study and a topic for future research.

Pharmaceutical costs demonstrate the most significant difference between HIV-positive and non-HIV-positive members in Medicare. HIV medications are expensive; this is not a ground-breaking revelation. However, there are several outcomes from the authors' initial analysis of HIV-positive pharmacy costs that are of interest.

- First, pharmacy costs for HIV-positive members grew, in the years covered by this study, at a rate similar to pharmacy costs for non-HIV-positive members. Given that ARV medications first emerged in the 1990s, the consistent upwards trend in drug costs may have been expected to be dampened by the appearance of generic drugs after the expiration of patents on those ground-breaking drugs from the 1990s and 2000s. However, next-generation ARV Combination agents (e.g., Biktarvy) that have been introduced over the past decade have gained the majority of the market share for ARV drugs and offset any price reductions from generic medications. The authors would expect patent expirations, and the Inflation Reduction Act's (IRA) negotiated drug program[7] to start to dampen drug cost trends for HIV treatments within the next five years. Given the persistency of high drug trends in the ARV market, though, prudence calls for monitoring cost trends to see the expected decrease come to fruition.

[7] https://www.cms.gov/inflation-reduction-act-and-medicare/medicare-drug-price-negotiation

MEDICARE ALLOWED PHARMACY COSTS PMPM



- The other noteworthy finding from the review of HIV-positive pharmaceutical costs is the effectiveness of the Medicare program and other state-based assistance programs in making drug costs reasonable for the HIV-positive Medicare member. As of 2022, non-dual HIV-positive members paid less than 7% of allowed pharmacy costs out-of-pocket, compared to non-dual non-HIV-positive members' 12%. For dual members, the out-of-pocket cost difference was almost non-existent—HIV-positive dual members paid an average of $5.60 PMPM versus $4.56 PMPM for non-HIV-positive dual members. As several major provisions of the Inflation Reduction Act (IRA) take effect, the authors expect non-dual members' out-of-pocket cost differences between HIV-positive and non-HIV-positive members to shrink further.

Section 1: Overview of the Medicare Program

Medicare Introduction. The Medicare program was created in 1965 when President Lyndon Johnson signed legislation creating the program to provide medical care for the elderly population in the United States. The original design of the program established coverage for Inpatient hospital stays (Part A), which was provided to everyone over the age of 65, and coverage for physician and outpatient services as an optional, supplementary benefit that the 65 and over population could choose at a monthly cost[8]. Since the original bill was signed into law, there have been several key changes to the program, such as the addition of an option of private coverage that integrates hospital coverage with physician and outpatient services (first Medicare Plus Choice, now Medicare Advantage) and the addition of a prescription drug benefit (Part D) to provide coverage for Medicare members' pharmacy costs.

Other changes to Medicare since the inception of the program include an expansion of Medicare coverage to "cover the disabled, people with end-stage renal disease (ESRD) requiring dialysis or kidney transplant,"[9] in addition to the aged (65+) population. This expansion in coverage is vital to the HIV-positive population, as particularly in the earlier decades of the outbreak of HIV, the debilitating disease rendered many of the afflicted unable to work. As is shown in Section 2 of this report, the majority of HIV-positive enrollees in the Medicare program were under 65 as of 2022, so this addition of eligible beneficiaries is a critical part of the Medicare program for individuals with HIV. The addition of drug coverage, referenced in the paragraph above, is the other major change in Medicare that benefits HIV-positive members. As shown in Section 4, the monthly pharmaceutical therapies to keep an HIV-positive person healthy are prohibitively costly without insurance coverage. The Pharmacy Costs section of the report demonstrates how the Medicare Part D program, in concert with state-based drug assistance programs, keeps costs for both low income and non-low income Medicare enrollees manageable. The third key programmatic change that will benefit the HIV-positive Medicare community is the IRA legislation, which contains several provisions that the authors expect to continue to reduce drug costs for many HIV-positive members in future years.

[8] https://www.nasi.org/learn/medicare/the-history-of-medicare/
[9] https://www.cms.gov/about-cms/who-we-are/history

Section 2: Demographics

How will Medicare provide care for the aging HIV-positive population? To introduce and answer the questions of how Medicare cares for the HIV-positive population, one needs to know how the HIV-positive Medicare population differs from the non-HIV-positive Medicare population. Who is the typical HIV-positive Medicare member? The demographic profile of the HIV-positive Medicare population over the last half-decade will begin to introduce the specific questions to answer.

2.1 OVERALL AND SEX-SPECIFIC HIV-POSITIVE RATES

This study reviewed the demographic composition of the HIV-positive Medicare population from several different views. The authors' analysis focuses on overall infection rate and infection rate by sex. Overall, the HIV-positive rate in the Medicare population ranged from 0.30% to 0.37%. However, there was a significant difference in HIV-positive rates by sex, both in Medicare and in the general HIV-positive population in the United States. In the overall U.S. population, males accounted for 87% of new infections in 2022[10]. In the Medicare population, the sex difference was not quite so severe (and there is a distinction in measurement—new infections versus overall infection rate), but males in Medicare did demonstrate a higher preponderance of HIV than females. For males, the rate of HIV ranged from a high of 0.59% in 2017 and 2018 to a low of 0.50% in 2022. Females, however, had infection rates below 0.20% in all years, with a high of 0.18% in 2017 and 2018 to a low of 0.13% in 2022. Another notable trend in the data was the decrease in infection rate over the six-year period. For both sexes, 2017 and 2018 were the highwater marks for infection rates, and 2022 was the year with the lowest infection rates. Further, the infection rates by year showed a consistent decline from the first year of the study to the last year. Tables 2.1.1-2.1.3, denominated in member months, showed both the sex differences and downward trend in infection rates by year.

Table 2.1.1
HIV-POSITIVE RATE: OVERALL MEDICARE MEMBERS

Year	All Sexes (Member Months)		
	Non-HIV-positive	HIV-positive	HIV-positive Rate
2017	19,762,055	72,914	0.37%
2018	19,624,712	71,204	0.36%
2019	19,509,728	65,321	0.33%
2020	19,001,765	62,497	0.33%
2021	18,161,997	57,789	0.32%
2022	17,461,465	52,425	0.30%

Table 2.1.2
HIV-POSITIVE RATE: MALE MEDICARE MEMBERS

Year	Males (Member Months)		
	Non-HIV-positive	HIV-positive	HIV-positive Rate
2017	8,937,154	53,410	0.59%
2018	8,888,756	52,323	0.58%
2019	8,851,831	48,194	0.54%
2020	8,633,521	46,338	0.53%
2021	8,248,587	43,451	0.52%
2022	7,922,470	40,019	0.50%

[10] https://www.hiv.gov/hiv-basics/overview/data-and-trends/statistics

Table 2.1.3
HIV-POSITIVE RATE: FEMALE MEDICARE MEMBERS

Year	Females (Member Months)		
	Non-HIV-positive	HIV-positive	HIV-positive Rate
2017	10,824,901	19,504	0.18%
2018	10,735,956	18,881	0.18%
2019	10,657,897	17,127	0.16%
2020	10,368,244	16,159	0.16%
2021	9,913,410	14,338	0.14%
2022	9,538,995	12,406	0.13%

2.2 AGE BAND DEMOGRAPHICS AND TRENDS

Next, the authors reviewed infection rates and HIV-positive population composition by age bands, dividing the population into eight distinct age bands (0-35, 36-44, 45-54, 55-64, 65-69, 70-74, 75-79, and 80+), illustrated in Tables 2.2.1 and 2.2.2. The infection rates by age band over the six-year period demonstrated two somewhat opposing patterns: the infection rates for the younger age bands were significantly higher than for the older age bands, but the infection rate trend for the younger age bands was decreasing, while the infection rate for the older age bands was increasing (with an inflection point between the 45-54 and 55-64 age bands). These opposing demographic trends drive a notable change in the age makeup of the HIV-positive Medicare population.

2.2.1 HIV-POSITIVE DIAGNOSIS RATES BY YEAR AND AGE

A higher infection rate amongst the younger age bands is expected, since Medicare members under the age of 65, by program definition, can only qualify to participate in Medicare if they are disabled or in end-stage renal disease (ESRD). HIV can be debilitating, so the authors would expect that the disabled Medicare population would have much higher infection rates than the aged Medicare population. This expectation was confirmed in the data; by far, the greatest infection rate differential between any two consecutive age bands was the differential between the 55-64 age band and the 65-69 age band. For every year, every age band under the age of 65 had infection rates above 0.7%, and every age band between 35 and 64 had infection rates above 1%. Contrastingly, every age band for the 65+ cohorts had infection rates below 0.25%, except for the 65-69 age demographic in years 2021 and 2022. The infection rate differentials by age band show definitively that HIV was much more prevalent in the disabled Medicare enrollees than it was amongst age-qualified Medicare enrollees.

Table 2.2.1
HIV-POSITIVE RATE OF MEDICARE MEMBERS BY AGE

Year	0-34	35-44	45-54	55-64	65-69	70-74	75-79	80+
2017	1.01%	1.57%	2.23%	1.32%	0.20%	0.12%	0.08%	0.03%
2018	0.97%	1.45%	2.24%	1.34%	0.22%	0.13%	0.08%	0.03%
2019	0.85%	1.29%	2.03%	1.35%	0.22%	0.14%	0.08%	0.03%
2020	0.83%	1.20%	1.83%	1.44%	0.24%	0.15%	0.08%	0.04%
2021	0.79%	1.14%	1.65%	1.51%	0.26%	0.16%	0.10%	0.04%
2022	0.70%	1.13%	1.46%	1.51%	0.26%	0.17%	0.11%	0.05%

2.2.2 HIV-POSITIVE MEDICARE POPULATION DISTRIBUTION

The trends in infection rates also illustrate a defined difference between the younger HIV-positive population and the older HIV-positive population. For the younger age bands, the percentage of the population that was HIV-positive decreased every year. This was consistent with the HIV-positive population trends seen in Table 2.1.1. However, in the older age bands, there was a divergence in this pattern of decreasing HIV infection rates that was occurring in the overall Medicare population and in the younger age bands. Beginning at age 55, the infection rate trends for the older age bands turned positive. For this older population, the percentage of Medicare enrollees with HIV-positive *increased* every year, with the aforementioned deviations for the 75-79 and 80+ age bands between 2018 and 2019. Interestingly, this divide in infection rate trends started at the age 55-64 band, which by program definition was comprised entirely of Medicare members qualifying for the program due to disability. Because this shift in infection rate trend includes the oldest age band of disabled Medicare members, the underlying cause of the divergence in population infection rates cannot be attributable to the disability status of a member.

Table 2.2.2
HIV-POSITIVE DISTRIBUTION OF MEDICARE MEMBERS BY AGE

Year	Median	0-34	35-44	45-54	55-64	65-69	70-74	75-79	80+
2017	56	4.3%	10.4%	28.6%	30.2%	15.3%	6.7%	2.7%	1.8%
2018	57	4.3%	9.3%	26.2%	30.4%	16.9%	7.7%	3.2%	2.0%
2019	58	3.8%	8.8%	23.8%	31.2%	18.2%	8.5%	3.6%	2.1%
2020	59	3.7%	8.1%	20.2%	31.9%	19.9%	10.0%	4.0%	2.2%
2021	61	3.6%	7.4%	17.0%	31.4%	21.8%	11.2%	4.9%	2.8%
2022	63	3.3%	6.8%	13.9%	30.7%	23.3%	13.1%	5.6%	3.2%

2.2.3 HIV-POSITIVE MEDICARE AGE AND SEX REVIEW

In review, high-level summary statistics of age and sex showed that the HIV-positive people in Medicare were skewed heavily male and were aging. The population was transitioning from a disabled/under 65 population to a 65+ population quickly, as shown in the consistent increase in the median age of the HIV-positive members from 2017 to 2022. A continuing increase in median age over the next few years will soon push the median HIV-positive Medicare members into the 65+ demographic.

2.3 HIV-POSITIVE DEATH RATES AND ENTRY RATES

The results shown in Section 1.2 demonstrated a clear aging of the HIV-positive Medicare population. The HIV-positive Medicare population is getting older for one of two reasons. Either a larger share of new beneficiaries are enrolling at older ages, or death rates among older beneficiaries have fallen too low to counterbalance the enrollees who are aging into those brackets. The study examined the death rates and new entries by age band to ascertain the reasons for the demographic age shift.

2.3.1 HIV-POSITIVE DEATH RATES AND SHARE

Once a person becomes eligible for Medicare and chooses to participate, the vast majority will remain enrolled in the program for the rest of their life. Hence, the authors would expect death rate trends by year and age band to demonstrate if the HIV-positive Medicare age band shifts can be attributed to higher exit rates in the younger age bands. Table 2.3.1.1 shows death rates by age band, and Table 2.3.1.2 shows share of deaths by age band. From Table 2.3.1.1, there is no immediate observation that explains the shift in demographics. What is notable is the jump in death rates in 2020. COVID had a material effect on Medicare death rates in 2020 for the general population; Table 2.3.1.1 demonstrates that this COVID effect carried into the HIV-positive population. For the HIV-positive population, this elevated death rate remained high in 2021 for most age bands before decreasing in 2022 (age bands 55-64 and 65-69 excepted). Similarly, for the HIV-positive share of deaths by age band, there is no discernible pattern that would seem to contribute to the demographic shift shown in Table 2.2.2. The 65+ share of deaths was

approximately 10% higher than that cohort's share of the population (and, therefore, the under 65's death rate was about 10% less than their population share). What may partially explain the aging of the HIV-positive Medicare population is the 55-64 age band death rate share, which was roughly equivalent to their share of the population. All else equal, about half of the 2017-2018 55-64 cohort would have aged into the 65+ cohort by 2022. Similarly, in the second half of the period of study (2020-2022), the 65-69 and 70-74 death rate shares started to approach their population shares, which again the authors would expect to contribute to the HIV-positive population's shift towards the older age cohorts.

Table 2.3.1.1
HIV-POSITIVE DEATH RATE OF MEDICARE MEMBERS BY AGE

Year	Median	0-34	35-44	45-54	55-64	65-69	70-74	75-79	80+
2017	60	n/a	2.7%	3.1%	4.2%	4.1%	5.8%	9.3%	13.6%
2018	61	n/a	3.3%	2.9%	4.0%	5.1%	4.0%	7.7%	14.6%
2019	61	n/a	2.8%	3.2%	3.8%	4.8%	3.3%	7.8%	8.5%
2020	65	n/a	n/a	3.6%	4.6%	6.0%	6.0%	8.9%	20.5%
2021	65	n/a	3.5%	4.9%	4.2%	5.1%	6.7%	11.7%	19.2%
2022	65	n/a	3.2%	4.1%	5.1%	5.7%	5.1%	6.2%	17.4%

Table 2.3.1.2
HIV-POSITIVE DEATH SHARE OF MEDICARE MEMBERS BY AGE

Year	0-34	35-44	45-54	55-64	65-69	70-74	75-79	80+
2017	1.1%	7.0%	22.5%	31.8%	15.5%	9.7%	6.2%	6.2%
2018	1.9%	7.6%	18.6%	29.7%	21.3%	7.6%	6.1%	7.2%
2019	1.7%	6.4%	19.6%	30.6%	22.6%	7.2%	7.2%	4.7%
2020	2.3%	2.9%	14.5%	29.0%	23.5%	11.9%	7.1%	8.7%
2021	2.6%	4.7%	15.1%	23.7%	20.1%	13.7%	10.4%	9.7%
2022	0.4%	4.1%	10.7%	29.6%	25.2%	12.6%	6.7%	10.7%

2.3.2 HIV-POSITIVE ENTRY RATES AND SHARE

New enrollee patterns may also be contributing to the aging HIV-positive population. New enrollees are individuals who have recently joined Medicare and are newly entitled to benefits, either by turning 65 or due by qualifying via disability or end-stage renal disease. For new enrollees, the authors would expect very few new enrollees to come into Medicare at the age of 70, and even fewer at age 75+. However, an increasing influx of 65+ enrollees in the latter years of the study would drive the HIV-positive age shift. In fact, shown by **Tables 2.3.2.1** and **2.3.2.2**, most of the older (65+) age band cohorts showed consistent increases in new enrollee rates and new enrollee population shares from the early years of the study to the later years. Similarly, all the under 65 age bands, with the exception of the 0-34 band, had declining new enrollment rates from 2017 to 2022.

Table 2.3.2.1
HIV-POSITIVE MEDICARE ENTRY RATE BY AGE

Year	0-34	35-44	45-54	55-64	65-69	70-74	75-79	80+
2017	11.9%	7.0%	5.9%	4.9%	14.8%	6.0%	1.2%	2.5%
2018	12.9%	6.3%	4.7%	3.9%	16.2%	4.8%	1.9%	2.3%
2019	14.3%	8.0%	6.0%	4.3%	15.7%	3.5%	2.3%	3.8%
2020	11.1%	9.7%	6.5%	4.3%	16.3%	4.1%	2.4%	2.3%
2021	13.5%	6.4%	5.5%	4.2%	17.7%	3.1%	3.4%	2.6%
2022	16.9%	6.6%	5.2%	3.6%	17.8%	3.9%	4.8%	3.0%

Table 2.3.2.2
HIV-POSITIVE MEDICARE ENTRY SHARE BY AGE

Year	0-34	35-44	45-54	55-64	65-69	70-74	75-79	80+
2017	7.2%	10.2%	23.5%	20.9%	31.5%	5.7%	0.4%	0.7%
2018	8.2%	8.7%	18.0%	17.6%	40.4%	5.5%	0.9%	0.7%
2019	7.4%	9.6%	19.5%	18.3%	38.9%	4.0%	1.1%	1.1%
2020	5.3%	10.2%	17.0%	17.9%	42.3%	5.3%	1.3%	0.6%
2021	6.3%	6.3%	12.3%	17.1%	50.5%	4.6%	2.2%	1.0%
2022	7.2%	5.7%	9.1%	14.1%	52.8%	6.4%	3.5%	1.2%

2.3.3 HIV-POSITIVE NET ENROLLMENT RATES

The net enrollment rates (new enrollee rate – death rate) more clearly demonstrates the age shift occurring in the HIV-positive population. As is apparent in **Table 2.3.3**, the 0-34 and 65-69 age bands added considerably more members over the period of the study than other age bands. Given the 65-69 age band represents a much higher share of the HIV-positive Medicare population than the 0-34 age band (15.3% versus 4.3% in 2017, 23.3% versus 3.3% as of 2022 —from Table 2.2.2), the double-digit net adds for the 65-69 demographic will have a much greater impact on the overall population. Additionally, the share of new entries in the age-in cohort (65+) will drive the average age of the population higher.

Table 2.3.3
HIV-POSITIVE NET MEDICARE ENTRIES BY AGE

Year	0-34	35-44	45-54	55-64	65-69	70-74	75-79	80+
2017	10.8%	4.3%	2.7%	0.7%	10.7%	0.2%	-8.1%	-11.0%
2018	11.2%	3.0%	1.8%	-0.1%	11.1%	0.8%	-5.8%	-12.3%
2019	12.6%	5.2%	2.8%	0.5%	10.9%	0.2%	-5.5%	-4.6%
2020	8.0%	7.9%	2.8%	-0.3%	10.3%	-2.0%	-6.5%	-18.2%
2021	9.3%	3.0%	0.7%	0.0%	12.6%	-3.6%	-8.3%	-16.6%
2022	16.3%	3.4%	1.1%	-1.5%	12.2%	-1.2%	-1.4%	-14.4%

2.3.4 HIV-POSITIVE AGE-BAND ENTRY/EXIT SUMMARY

In review, analysis of the entry and exit rates shows an HIV-positive Medicare population that has been adding age 65-69 (age-in members) at high rates. Also, the median age at death has increased considerably, indicating how medical and pharmaceutical care has been effective at prolonging life for HIV-positive members.

2.4 SOCIO-ECONOMIC DEMOGRAPHICS AND TREND

A 2021 report by the Journal of Global Health Reports discovered that globally, "more wealth inequality in the region of residence is consistently a positive driver of higher prevalence[11]." A nine-year study performed in Brazil and published by *The Lancet* found that, amongst other socio-economic indicators, "[l]ess wealth was strongly associated with a higher AIDS incidence[12]." On its website, the American Psychological Association lists a plethora of studies demonstrating a link between socioeconomic status and HIV infection rates[13]. These global and national trends hold true in the U.S. Medicare population.

In Medicare, an enrollee with a dual status is a member that qualifies for both Medicare and Medicaid. Medicaid is a joint federal and state program that provides medical coverage for individuals with limited incomes and financial resources[14]. Therefore, the dual status indicator in Medicare can be used to identify Medicare enrollees with lower incomes. Using the dual status indicator to identify Medicare members of a disadvantaged economic status, the demographic data shows a stark difference in infection rates between dual and Non-dual Medicare enrollees.

The tables below demonstrate the heightened risk of HIV in the dual population. Male Medicare members who have dual status were approximately six to seven times more likely to have HIV than non-dual members; for females, the likelihood of being HIV-positive increased by a factor of ten if the member had dual status. Table 2.4.1 shows the HIV-positive rates for duals/non-duals by sex and overall. Even though the majority of Medicare members were non-duals, the majority of HIV-positive members were duals (Table 2.4.4). Of all demographic discoveries thus far in this report, perhaps the most remarkable finding is in Tables 2.4.1-2.4.3. Of all male Medicare enrollees with dual status, ~1 in 50 were HIV-positive. This is in stark contrast to the female non-dual infection rate, which was barely over 1 in 2,000.

Table 2.4.1

HIV-POSITIVE INFECTION RATE OF MEDICARE MEMBERS BY DUAL STATUS: OVERALL

Year	All Sexes (Member Months)		
	Non-Dual	Dual	Total
2017	0.17%	1.18%	0.37%
2018	0.17%	1.18%	0.36%
2019	0.16%	1.13%	0.33%
2020	0.16%	1.13%	0.33%
2021	0.16%	1.11%	0.32%
2022	0.15%	1.05%	0.30%

[11] https://www.joghr.org/article/18126-wealth-and-wealth-inequality-in-adult-hiv-prevalence
[12] https://www.thelancet.com/journals/lanam/article/PIIS2667-193X(23)00128-X/fulltext
[13] https://www.apa.org/pi/ses/resources/publications/hiv-aids
[14] https://www.medicare.gov/publications/11306-Medicare-Medicaid.pdf

Table 2.4.2
HIV-POSITIVE INFECTION RATE OF MEDICARE MEMBERS BY DUAL STATUS: MALES

Year	Male (Member Months)		
	Non-Dual	Dual	Total
2017	0.29%	1.97%	0.59%
2018	0.29%	1.96%	0.58%
2019	0.28%	1.85%	0.54%
2020	0.28%	1.84%	0.53%
2021	0.28%	1.80%	0.52%
2022	0.27%	1.72%	0.50%

Table 2.4.3
HIV-POSITIVE INFECTION RATE OF MEDICARE MEMBERS BY DUAL STATUS: FEMALES

Year	Female (Member Months)		
	Non-Dual	Dual	Total
2017	0.06%	0.63%	0.18%
2018	0.06%	0.62%	0.18%
2019	0.06%	0.59%	0.16%
2020	0.06%	0.60%	0.16%
2021	0.05%	0.57%	0.14%
2022	0.05%	0.52%	0.13%

Tables 2.4.1-2.4.3 show that Medicare members were much more likely to be HIV-positive if they were dual males.

As shown in Table 2.4.4, the majority of HIV-positive Medicare members were duals, in contrast to the general Medicare population where the dual rate was closer to 30%

Table 2.4.4
HIV-POSITIVE INFECTION RATE OF MEDICARE MEMBERS BY DUAL STATUS AND SEX

Year	HIV-positive Share					
	Male		Female		All Sexes	
	Non-Dual	Dual	Non-Dual	Dual	Non-Dual	Dual
2017	40.6%	59.8%	27.2%	72.8%	37.1%	62.9%
2018	41.4%	58.6%	28.8%	71.2%	38.1%	61.9%
2019	42.7%	57.3%	29.4%	70.6%	39.2%	60.8%
2020	44.2%	55.8%	29.5%	70.5%	40.4%	59.4%
2021	44.7%	55.3%	30.4%	69.6%	41.2%	58.8%
2022	45.8%	54.3%	33.3%	66.7%	42.8%	57.2%

2.4.1 HIV-POSITIVE SOCIO-ECONOMIC SUMMARY

As mentioned in the Executive Summary, the HIV-positive population is predominately poor, and predominately male. For dual males in Medicare, there were approximately 50 non-HIV-positive members for every 1 HIV-positive member. For a non-dual female in Medicare, the ratio jumped to 2,000 non-HIV-positive members for every 1 HIV-positive member.

2.5 GEOGRAPHIC DISTRIBUTION

HIV-positive Medicare members, much more than non-HIV-positive members, tend to be concentrated in urban neighborhoods. Aggregating across all years, almost half of Medicare members with HIV live in counties defined as "Large Metro" areas such as Los Angeles, New York, Atlanta, and Miami. In contrast, less than a quarter of the non-

HIV-positive population live in these counties. When metro county areas (which are mostly suburban) are added in for a total metro share, almost nine in ten HIV Medicare members live in or around large cities, as seen in **Table 2.5.1**. HIV-positive CM programs, therefore, would benefit from focusing on access issues such as ensuring the network includes an adequate number of clinics and primary care options to mitigate access issues driven by population density. Overburdened urban clinics cannot serve HIV members adequately if there are too few clinics for too many people in a small area. Also, while geographic distance is not as much of an issue in urban settings, access to public transportation is important. Given the HIV population is heavily urban and majority dual, the expense of owning and parking personal transportation may be cost prohibitive. Therefore, poorer city-based HIV-positive populations would benefit from non-emergent transportation benefits to ensure that they can see their primary care and specialist doctors as needed. For HIV-positive Medicare members who are poorer and city-based, adequate network density, transportation provisions, and a robust pharmacy network, can all help to alleviate hidden care barriers for this population.

Table 2.5.1

HIV-POSITIVE GEOGRAPHIC DISTRIBUTION OF MEDICARE MEMBERS BY COUNTY DEFINITION

County Definition	Geographic Distribution	
	HIV-Positive	Non-HIV-Positive
Large Metro	45.6%	24.2%
Metro	43.2%	51.0%
Total Metro	88.8%	75.2%
Micro[15]	6.8%	13.4%
Rural	3.8%	8.9%
Unknown	n/a	n/a
CEAC[16]	0.5%	2.2%

2.6 SUMMARY OF HIV-POSITIVE MEDICARE DEMOGRAPHICS

Who is the "typical" HIV-positive Medicare member? Is the typical HIV-positive Medicare member any different today than 5-6 years ago? The demographic data shown above answers a few of the basic questions. HIV-positive Medicare members are approaching retirement age at a median age of 63 years old as of 2022; this is a remarkable statement on the achievement of medicine but also indicates that the health needs of HIV-positive members are changing as the population ages. The data show a clear aging of the population, as the median age was 57 only five years prior. The aging of the HIV-positive Medicare population is mostly driven by new age-in qualifying entrants to Medicare, which has also shifted considerably over the six-year period of the study. Over half of all HIV-positive new entrants to Medicare were in the 65-69 age range (the typical new enrollee age band for the general Medicare population) as of 2022 (and 64% of new entrants are over 65). This is a dramatic change from the age profile of the 2017 new entrant, when disabled new enrollees accounted for 62% of all new-to-Medicare HIV-positive members. The HIV-positive population is shown to be predominantly male (over 75%) and dual, although the share of HIV-positive Medicare members with dual status has been declining over the six-year period of this study (down from 63% to 57%). Finally, HIV-positive members are almost entirely located in metro areas. Optimal care management programs will account for this aging, city-based, high-need population to guarantee that HIV-positive Medicare members receive an appropriate level of care.

[15] Micro = A county that is part of a micropolitan statistical area with at least 10,000 but less than 50,000 people

[16] CEAC = Counties with Extreme Access Considerations, defined as counties with a population density of less than 10 individuals per square mile

Section 3: Medical Profile, Care and Expenses

In Section 2, the authors examined the Medicare demographic data to begin to answer the question: "Who are the HIV-positive people in Medicare?" In Section 3, the authors attempted to answer the questions: 1) "What care do HIV-positive Medicare members need?" and 2) "What is the cost to provide care for HIV-positive Medicare members?" First, though, the authors examined the medical profile of HIV-positive members. Because HIV is a disease that attacks the immune system, it is reasonable to think that HIV-positive members would be more susceptible to acquiring a co-morbid condition, and that the severity of this co-morbid condition could be significantly worsened by an HIV-positive condition.

3.1 HIV-POSITIVE MEMBERS AND CO-MORBIDITIES: PREVALENCE

An initial examination of co-morbidity prevalence confirms the initial hypothesis that HIV-positive members are more likely to have co-morbid conditions. Illustrated in **Table 3.1.1**, 23% of HIV-positive Medicare members have 0 co-morbidities, which means that 77% of HIV-positive Medicare members had 1 or more co-morbid conditions, compared to 65% of non-HIV-positive members with one or more co-morbid conditions. The difference was more pronounced for the 3+ co-morbidity category, in which HIV-positive Medicare members were ~50% more likely to be categorized than non-HIV-positive members. The other notable observation from the Co-morbidity prevalence data was the spike in prevalence of co-morbidities after COVID for both HIV-positive and non-HIV-positive members. The percentage of HIV-positive Medicare members with 0 co-morbid conditions ranged from 28%-29% in the early half of the study but dropped to under 23% by 2022. The share of non-HIV-positive members with zero co-morbid conditions also dropped, but the change was not as significant in the non-HIV-positive population (from 37% in 2017 to 35% in 2022). The impact of the drop in the HIV-positive zero co-morbidity category flows almost entirely to the 3+ co-morbidity category, in which the share of HIV-positive members increased from ~14-15% in 2017-2019 to ~19% in 2021-2022. Interestingly, in this most severe category, the increase in the percentage of members with 3+ co-morbidities was matched by the non-HIV-positive population (below 9% to over 12%), indicating that the COVID-induced health changes moved a relatively equal percentage of HIV-positive and non-HIV-positive members into the most severely ill category.

Table 3.1.1

CO-MORBIDITY PREVALENCE OF MEDICARE MEMBERS BY YEAR

Year	HIV-Positive Status	Co-morbidities Prevalence				
		Co-morbidities				
		0	1	2	3	3+
2017	HIV-Positive	29.2%	27.1%	19.0%	11.0%	13.7%
	Non-HIV- Positive	37.0%	28.1%	17.0%	9.2%	8.7%
2018	HIV- Positive	27.7%	27.2%	19.2%	11.1%	14.8%
	Non-HIV- Positive	36.9%	27.7%	17.0%	9.4%	9.0%
2019	HIV- Positive	27.8%	27.0%	18.8%	11.5%	14.9%
	Non-HIV- Positive	37.3%	27.1%	16.8%	9.3%	9.6%
2020	HIV- Positive	26.3%	26.8%	19.4%	12.3%	15.1%
	Non-HIV- Positive	37.8%	26.8%	16.6%	9.2%	9.6%
2021	HIV- Positive	23.4%	25.1%	19.2%	12.9%	19.3%
	Non-HIV- Positive	34.8%	25.4%	17.1%	10.5%	12.3%
2022	HIV- Positive	22.7%	25.7%	19.4%	13.4%	18.8%
	Non-HIV- Positive	35.0%	25.2%	17.1%	10.4%	12.3%

3.2 HIV-POSITIVE MEMBERS: COST PROFILE

3.2.1 HIV-POSITIVE COST PROFILE - UNADJUSTED

Note: The service categories presented in the tables in Section 3.2 are broadly defined as follows:

- *Inpatient: Facility-based care typically requiring an overnight stay in the facility.*
- *Outpatient: Facility-based care that is completed within the day, and for which the patient is released to their residence on the same day.*
- *Professional: Primary care or specialist care, typically in a free-standing office setting.*
- *Ancillary: Other services or medical items such as Durable Medical Equipment, Orthotics and Prosthetics, etc.*

Given HIV's impact on the immune system and the need for consistent maintenance of health (and the suspected severity of illness when an HIV-positive does require medical care), the authors would expect that HIV-positive members' medical costs would be materially higher than for non-HIV-positive members. Table 3.2.1 confirms that HIV-positive Medicare enrollees had much higher medical costs than those for non-HIV-positive members on an aggregated basis. HIV-positive members' allowed cost of medical care was slightly more than twice the cost of care of non-HIV-positive members. The directional trend holds for all service categories (broadly defined as Inpatient, Outpatient, Professional, and Ancillary), but the magnitude of the variance fluctuates. The most significant driver of the cost difference between HIV-positive and non-HIV-positive members was due to Inpatient services. By both dollars and cost ratio, Inpatient costs proved to be the largest cost differential for HIV-positive members. HIV-positive members on average had ~$600-$700 PMPM more Inpatient costs than that of non-HIV-positive members, which was 150% more than the cost of Inpatient care for non-HIV-positive members. The differences in HIV-positive/non-HIV-positive costs were also significant for Outpatient and Professional services, with Outpatient costs approximately doubling for HIV-positive members and Professional costs being higher by a factor of roughly 1.5 (representing cost increases in the range of $150-$200 for those categories), but the cost differential in both magnitude and ratio was most pronounced for Inpatient services. This finding indicates that, while maintenance costs were routinely higher for HIV-positive members, a focus on maintaining an HIV-positive members' health was critical, as Table 3.2.1 showed that hospitalizing medical events were much more severe if the Medicare members had HIV. In both the co-morbidity data (Table 3.1.1) and the Inpatient cost data (Table 3.2.1), the detrimental impact of HIV on the immune system was demonstrated.

Table 3.2.1
UNADJUSTED ALLOWED MEDICAL COST PMPM BY SERVICE CATEGORY

Year	HIV-Positive Status	PMPM Cost by Service Category				
		Inpatient	Outpatient	Professional	Ancillary	Total
2017	HIV-Positive	$970.59	$344.00	$401.11	$89.75	$1,805.45
	Non-HIV-Positive	$381.31	$163.31	$242.89	$69.59	$857.10
2018	HIV-Positive	$1,005.42	$380.99	$420.52	$89.83	$1,896.77
	Non-HIV- Positive	$383.20	$177.19	$254.11	$70.94	$885.44
2019	HIV-Positive	$977.64	$387.53	$435.02	$85.51	$1,885.80
	Non-HIV- Positive	$389.10	$184.48	$263.30	$67.03	$903.91
2020	HIV-Positive	$961.34	$398.23	$418.32	$86.02	$1,863.90
	Non-HIV- Positive	$382.45	$178.90	$247.50	$64.41	$873.26
2021	HIV-Positive	$964.29	$404.52	$472.74	$94.97	$1,936.53
	Non-HIV- Positive	$395.26	$199.46	$289.09	$70.91	$954.72
2022	HIV-Positive	$1,055.85	$403.12	$471.31	$93.07	$2,023.35
	Non-HIV- Positive	$388.99	$206.34	$294.66	$72.73	$962.72

3.2.2 HIV-POSITIVE COST PROFILE – RISK-ADJUSTED

Section 3.2.1 illustrates what was likely obvious—the cost of medical care for HIV-positive individuals was much greater than the cost of medical care for non-HIV-positive members. Medical cost variance by condition is a common occurrence, and a key reason why risk adjustment exists in Medicare. A natural follow-up from the total cost-of-care question is: how do aggregated costs compare between HIV-positive and non-HIV-positive members on a risk-adjusted basis?

Risk adjustment is the process of normalizing costs (or adjusting revenue) to account for differences in morbidity and demographics by member. Within Medicare Advantage, the CMS-HCC (Hierarchical Condition Category) risk adjustment model is used to perform this function. The risk-adjusted results shown in Table 3.2.2 below illustrate total medical costs by service after dividing gross medical costs by the CMS-HCC risk score for each member.

In a perfect world, the HIV-positive/non-HIV-positive member medical costs would be relatively equal over a long period of study. However, Table 3.2.2 shows a consistent difference between HIV-positive and non-HIV-positive members even after normalizing for risk scores. With the caveat that risk adjustment is intended to normalize plan/provider liability differences—*not allowed cost differences*—it is still reasonable to believe that risk adjustment would render allowed costs to be close to equal, given the relatively linear liability curve of the Medicare Fee-For-Service benefit after the deductible. For HIV-positive members, however—acknowledging the flaw that allowed costs and plan liability are neither perfectly equivalent nor perfectly correlated—risk adjustment did not appear to adequately compensate for the full impact of HIV-driven cost differences from 2017 - 2022. In every year of the study, the HIV-positive members' allowed cost of care was 25%-35% greater than the non-HIV-Positive members' cost of care after normalizing for risk score. This difference is too great to be explained away by a disconnect between allowed and paid costs in the risk adjustment process.

Table 3.2.2
RISK-ADJUSTED ALLOWED MEDICAL COST PMPM BY SERVICE CATEGORY

Year	HIV-Positive Status	Risk Adjusted PMPM Cost by Service Category				
		Inpatient	Outpatient	Professional	Ancillary	Total
2017	HIV-Positive	$572.67	$202.97	$236.66	$52.95	$1,065.25
	Non-HIV- Positive	$364.12	$155.95	$231.93	$66.45	$818.45
2018	HIV-Positive	$567.23	$214.94	$237.25	$50.68	$1,070.10
	Non-HIV- Positive	$343.35	$158.76	$227.69	$63.57	$793.37
2019	HIV-Positive	$556.98	$220.78	$247.84	$48.72	$1,074.32
	Non-HIV- Positive	$359.92	$170.65	$243.55	$62.02	$836.14
2020	HIV-Positive	$524.64	$217.33	$228.29	$46.94	$1,017.20
	Non-HIV- Positive	$343.31	$160.59	$222.18	$57.82	$783.90
2021	HIV-Positive	$569.46	$238.89	$279.18	$56.09	$1,143.62
	Non-HIV- Positive	$377.60	$190.55	$276.17	$67.74	$912.06
2022	HIV-Positive	$615.41	$234.96	$274.71	$54.24	$1,179.32
	Non-HIV- Positive	$371.11	$196.86	$281.11	$69.38	$918.46

Risk Adjusted Allowed Medical Cost equals Allowed Medical Cost divided by average CMS-HCC risk score

3.2.3 HIV-POSITIVE ALLOWED COST SUMMARY

HIV-positive members had roughly twice the medical costs compared to non-HIV-positive members. The cost difference was reduced, but (critically) persisted after an adjustment for a member's risk score. The potential consequences are profound. It is important that risk adjustment of revenue adequately take into account the persistence of costs for HIV-positive members to ensure HIV-positive members are covered appropriately under Medicare Advantage plans.

3.3 HIV-POSITIVE MEMBERS: CO-MORBIDITIES AND COST

3.3.1 HIV-POSITIVE COST PROFILE BY CO-MORBIDITIY - UNADJUSTED

Section 2.1 demonstrated that HIV-positive members were more likely to have co-morbid conditions than non-HIV-positive members, especially in the most severe co-morbidity count categories. Section 2.2 demonstrated that HIV-positive members had a larger cost of care than non-HIV-positive members. Both results were expected, given the nature of HIV and its impact on the body. However, for members with the same number of co-morbid conditions, we might have expected to see costs more in-line between the HIV-positive and non-HIV-positive cohorts, given that the illness burden would be similar (the implied null hypothesis: HIV is similar to other co-morbid conditions in its detrimental impact to a person's health). In Table 3.3.1, costs for HIV-positive and non-HIV-positive members were compared. The results inferred that the null hypothesis did *not* hold. For every condition count, HIV-positive members had costlier medical care than non-HIV-positive members. While this may be a reasonable expectation for the zero-co-morbidity category (which would include the healthiest members with no conditions), we might expect the co-morbidity count categories after the zero category to be close in medical costs. The result, however, did not align with this expectation. For every co-morbidity count category but the most severe, HIV-positive members had greater costs than non-HIV-positive members by approximately 50%. For the most severe category, the cost differential ratio was around 70%. As the health of the overall Medicare members became progressively poorer, the allowed cost differential between HIV-positive and non-HIV-positive members became more pronounced. The implication: HIV-positive, Cancer, and Diabetes are worse/costlier than Cancer, Diabetes, and Congestive Heart Failure (as an example). Therefore, from a cost perspective, it is critical for Medicare providers to keep HIV-positive members healthy and free of other conditions, since HIV magnified the cost impact of acquiring additional conditions.

Table 3.3.1
UNADJUSTED ALLOWED COST PMPM BY CO-MORBIDITY COUNT

Year	HIV-Positive Status	Co-Morbidities Prevalence Number of Co-Morbidities					
		0	1	2	3	>3	Total
2017	HIV- Positive	$256.47	$744.36	$1,428.18	$2,461.46	$7,218.16	$1,805.45
	Non-HIV- Positive	$177.71	$483.64	$929.40	$1,665.46	$3,974.41	$857.10
2018	HIV- Positive	$264.78	$817.08	$1,464.53	$2,921.74	$6,727.74	$1,896.77
	Non-HIV- Positive	$183.15	$496.17	$948.83	$1,693.83	$4,010.87	$885.44
2019	HIV- Positive	$279.95	$808.68	$1,670.04	$2,581.69	$6,556.72	$1,885.80
	Non-HIV- Positive	$187.10	$509.12	$950.01	$1,665.48	$3,986.86	$903.91
2020	HIV- Positive	$230.58	$677.21	$1,502.94	$2,504.54	$6,751.74	$1,863.90
	Non-HIV- Positive	$159.76	$473.92	$905.30	$1,623.15	$4,013.86	$873.26
2021	HIV- Positive	$241.48	$813.45	$1,281.05	$2,477.66	$5,735.65	$1,936.53
	Non-HIV- Positive	$180.26	$494.96	$905.47	$1,538.53	$3,671.91	$954.72
2022	HIV- Positive	$261.76	$873.19	$1,306.67	$2,384.86	$6,204.45	$2,023.35
	Non-HIV- Positive	$187.09	$514.61	$926.80	$1,557.68	$3,638.17	$962.72

3.3.2 HIV-POSITIVE COST PROFILE BY CO-MORBIDITIY – RISK-ADJUSTED

HIV-positive members' costs were shown to be higher than non-HIV-positive members' cost in aggregate, when risk-adjusted in total, and when compared to non-HIV-positive members with an equal count of co-morbid conditions. As Table 3.3.2 shows, this trend continued even for risk-normalized medical costs within the same co-morbid condition count category—but with some caveats:

1. For the healthiest members (defined as members with zero co-morbid conditions), the risk-adjusted medical costs for HIV-positive members were actually lower than the costs for non-HIV-positive members. However, as more co-morbid conditions were added, the cost impacts from the decline in health were greater for HIV-positive members than for non-HIV-positive members.

2. As HIV-positive members' health declined, their cost increases outpaced the risk-adjusted coefficients meant to predict higher costs from their decline in health.

Table 3.3.2
RISK-ADJUSTED ALLOWED COST PMPM BY CO-MORBIDITY COUNT

Year	HIV-Positive Status	Co-Morbidities Prevalence Co-Morbidities 0	1	2	3	Over 3
2017	HIV- Positive	$283.02	$565.91	$821.15	$1,094.48	$1,991.28
	Non-HIV- Positive	$316.77	$546.52	$729.60	$972.46	$1,589.30
2018	HIV- Positive	$279.83	$605.65	$820.44	$1,257.99	$1,833.79
	Non-HIV- Positive	$299.37	$526.50	$708.80	$948.40	$1,540.63
2019	HIV- Positive	$304.56	$610.38	$925.78	$1,062.55	$1,868.64
	Non-HIV- Positive	$335.51	$565.94	$728.29	$950.08	$1,556.88
2020	HIV- Positive	$242.01	$503.55	$829.85	$1,009.83	$1,811.56
	Non-HIV- Positive	$278.31	$513.49	$671.42	$887.48	$1,498.72
2021	HIV- Positive	$293.62	$682.30	$802.20	$1,118.58	$1,774.82
	Non-HIV- Positive	$333.85	$603.20	$780.13	$989.79	$1,555.76
2022	HIV- Positive	$312.82	$694.93	$815.35	$1,166.73	$1,887.45
	Non-HIV- Positive	$342.44	$623.59	$796.83	$1,000.45	$1,551.59

Risk Adjusted Allowed Medical Cost equals Allowed Medical Cost divided by average CMS-HCC risk score

3.3.3 HIV-POSITIVE COSTS CO-MORBIDITIY - SUMMARY

In Section 3.2, the authors compared the total medical costs of HIV-positive and non-HIV-positive members before and after risk adjustment and found higher allowed costs for HIV-positive members both before and after risk adjustment. Section 3.3 compared allowed medical costs for HIV-positive and non-HIV-positive members with a similar number of co-morbid conditions and found a persistence in allowed medical cost differences pre- and post-risk adjustment with some exceptions. After risk adjustment, the allowed cost of care for HIV-positive members ***was actually lower*** *than for non-HIV-positive members when both had zero additional co-morbid conditions. Post-risk adjustment costs for members with* 1-2 *co-morbid conditions were higher for HIV-positive members than for non-HIV-positive members, but the difference was small. However, for HIV-positive members with* three *or more co-morbidities, the post-risk adjustment cost of care was significantly greater than the risk adjusted cost of care for non-HIV-positive members with* three *or more co-morbidities.*

3.4 REVIEW OF COVID IMPACT

Any health care industry study that includes the years of 2020 and 2021 is likely to have been impacted by the COVID epidemic in some fashion and, therefore, would not be complete without commentary on the potential impact of COVID on the study. Several metrics in the medical cost analysis in this study appear to have been impacted by COVID. The distribution of the population across the co-morbidity count table, for example, shifted materially from the pre-COVID years of 2017-2019 to the post-COVID years of 2021-2022. Both the HIV-positive and non-HIV-positive cohorts demonstrated shifts from the lowest co-morbidity count categories to the highest co-morbidity count categories over the period of study. In 2017, 29% of HIV members had zero co-morbid conditions. By 2022, the percentage of HIV members with zero co-morbid conditions decreased to 23%. Most of the decrease was shifted to the "Over 3 Co-morbidities" condition category, which increased from a share of 14% of HIV-positive members in 2017 to 19% of members in 2022. The share of HIV-positive members with only one other co-morbid condition decreased from 27% in 2017 to 26% in 2022, while the share of HIV-positive members with three other co-morbid conditions increased from 11% to 13%. Similar movements occurred in the non-HIV-positive population over this time period, although the upward shift from the least to the most severe co-morbidity count categories was less severe (the zero co-morbidity share only decreased by 2%, while the most severe "Over 3 Co-morbidities" category share increased by 4%). The swing in the percentage shares of both the HIV-positive and non-HIV-positive populations away from the lower co-morbidity counts towards the higher co-morbidity counts suggests the Medicare population became sicker in the immediate years after the emergence of COVID. While not surprising, it is noteworthy that the overall Medicare population's health condition was worsened by COVID, and that COVID had a greater effect on the HIV-positive population than the non-HIV-positive population.

Also noteworthy, but perhaps less expected, was the change in PMPM costs by co-morbidity count cohorts. While the 0-1 co-morbidity count categories both showed a relatively standard pattern of minor cost increases from year to year, the cost curve of the higher co-morbidity condition categories showed a flat or decreasing cost curve *after COVID emerged.* This observed rate of decrease generally became greater as the cohorts become sicker. The HIV-positive co-morbidity 2-condition and 3+-condition cohorts and the non-HIV-positive 3-condition and 3+-condition cohorts all showed PMPM cost decreases by over 5% from 2017 to 2022. The overall population PMPM costs increased due to the shift in population shares from the lower co-morbidity condition count categories to the higher co-morbidity condition count categories, but when sub-populations were matched on co-morbid condition counts, costs decreased from the pre-COVID period to the COVID and post-COVID period. One possible explanation is that the sickest members in the Medicare program exited the program at a higher rate than in the pre-COVID period. It is less likely that cost decreases are due to care avoided due to COVID, since the cost curves are positive for the healthiest co-morbid condition count cohorts—and because, although lower after COVID than before COVID, PMPM costs of $6,000+ for HIV-positive members and $3,500+ for non-HIV-positive members does not suggest a sustained period of medical care being avoided.

3.5 SUMMARY OF HIV-POSITIVE MEMBERS ALLOWED MEDICAL COST TRENDS

This research demonstrates that HIV-positive Medicare members allowed medical costs were greater than the costs of non-HIV-positive members, with total medical costs (including member cost share) being approximately twice the cost of non-HIV-positive members before normalizing for morbidity. This observation was certainly expected. A less-expected result is that HIV-positive member costs remained high even after normalizing for risk score. This finding suggests that the HIV-positive risk score may not have been sufficient to reimburse risk-bearing providers or managed care plans for HIV-positive Medicare members under their care.

Further, the cost discrepancy between HIV-positive and non-HIV-positive members became more pronounced as the morbidity of members increased, even on a risk-adjusted basis. Dividing HIV-positive and non-HIV-positive members into cohorts by co-morbidity prevalence, showed that the HIV-positive members with no co-morbid conditions had *lower* risk-adjusted costs than non-HIV-positive Medicare members. This finding demonstrated that,

all else equal, HIV-positive members can be a profitable for providers or managed care plans if the health of HIV-positive members was well-maintained. However, as co-morbid conditions were added on, HIV-positive members were shown to be more costly than non-HIV-positive members on a risk adjusted basis. This differential increased as additional co-morbid conditions were added. HIV-positive members with 1-2 additional co-morbidities on average cost ~5-10% more than non-HIV-positive members on a risk-adjusted basis. HIV-positive members with three co-morbidities were ~10-15% more costly than comparable non-HIV-positive members, and HIV-positive members with more than three co-morbid conditions cost ~15-20% more (all on a risk-adjusted basis). Given the nature of the disease and its deleterious effects on the immune system, the finding that HIV's impact on members' health (as measured by medical expenses) was more detrimental to members' health than other chronic/co-morbid conditions was not surprising. Nonetheless, it is noteworthy that even on a risk-adjusted basis, HIV-positive members' medical costs were greater than non-HIV-positive members' costs with a similar count of co-morbid conditions. It suggests that the risk adjustment mechanism to normalize costs may not have been sufficiently reimbursing the risk-bearing provider groups and managed care plans who had HIV-positive members amongst their managed population during the time period measured.

Finally, the research suggests that COVID impacted the health of the HIV-positive population more severely than the non-HIV-positive population as measured by co-morbid condition counts, although both the HIV-positive and non-HIV-positive populations experienced negative health effects by this measure.

Section 4: Pharmacy Costs

Anti-retroviral drugs revolutionized care for the HIV-positive population. These drugs transformed the prognosis for the condition from a disease with a terminal prognosis to a chronic condition that can be adequately managed for decades with an ARV-adhering pharmaceutical regiment. However, these revolutionary drugs come with a severely high price tag for HIV-positive members that want to maintain their health. The review of HIV-positive pharmacy costs helped to assess the severity of these costs on HIV-positive members and their managed care plans.

4.1 HIV-POSITIVE PHARMACY COST PROFILE: ALLOWED COSTS AND MEMBER PAY

Since Medicare Part D is a complex benefit, when comparing the cost profiles of HIV-positive and non-HIV-positive members, appropriately assessing the entities that bear the most significant costs calls for evaluating the costs for all participants in the program. Tables 4.1.1 and 4.1.2 summarize member, plan, and CMS costs for Low Income (LI) and Non-Low Income (LNI) Part D members, absent manufacturer rebates.

Table 4.1.1
PHARMACY COSTS – NON-LOW INCOME (NLI)

Year	HIV-Positive Status	Cost by PDE Field (PMPM)				
		Allowed	Plan Paid (DS Benefit)	Member Paid	CMS (LICS + Fed)	Other Payers
2019	HIV-Positive	$3,007.04	$598.67	$145.68	$1,813.58	$187.96
	Non-HIV- Positive	$206.81	$75.52	$24.65	$47.54	$19.75
2020	HIV-Positive	$3,031.97	$580.79	$204.20	$2,517.50	$120.84
	Non-HIV- Positive	$244.40	$88.20	$35.92	$52.80	$12.27
2021	HIV-Positive	$3,125.21	$623.24	$234.41	$1,980.58	$126.28
	Non-HIV- Positive	$251.72	$88.79	$37.80	$40.76	$9.17
2022	HIV-Positive	$3,481.15	$686.55	$235.80	$2,185.68	$160.88
	Non-HIV- Positive	$268.53	$95.81	$32.74	$49.11	$12.62

Table 4.1.2
PHARMACY COSTS – LOW INCOME (LI)

Year	HIV-Positive Status	Cost by PDE Field (PMPM)				
		Allowed	Plan Paid (DS Benefit)	Member Paid	CMS (LICS + Fed)	Other Payers
2019	HIV-Positive	$3,366.68	$618.88	$6.40	$2,167.16	$2.26
	Non-HIV- Positive	$545.21	$154.43	$5.19	$374.08	$0.49
2020	HIV-Positive	$3,255.13	$586.74	$6.56	$1,846.55	$3.96
	Non-HIV- Positive	$584.85	$160.52	$5.46	$361.56	$0.74
2021	HIV-Positive	$3,501.43	$641.92	$6.73	$2,412.94	$2.87
	Non-HIV- Positive	$596.32	$161.79	$5.11	$317.77	$1.08
2022	HIV-Positive	$3,815.61	$695.36	$5.60	$2,193.33	$3.65
	Non-HIV- Positive	$688.74	$183.81	$4.56	$324.71	$0.85

From this initial analysis, a few observations stand out. In allowed cost terms, for HIV-positive members, LI members had higher costs than NLI members, but the ratio of NLI:LI costs was much lower for HIV-positive members than for non-HIV-positive members. In fact, the additive HIV-positive/non-HIV-positive differential between NLI members and LI members was very close in allowed cost terms—roughly between $300 and $400 for the NLI and LI members in both cohorts. Analyzing plan liability (normalizing for a defined standard benefit for all members), there was virtually no difference between the NLI and LI members in the HIV-positive cohort. This was drastically different from the non-HIV-positive cohort, where the plan liability for LI members was roughly twice as

much as for NLI members (which is close to the NLI:LI ratio of allowed costs for non-HIV-positive members). This observation may be explained by the structure of the Part D benefit, which minimizes plan liability in the catastrophic phase of the benefit (where most of the ARV-taking member costs land). *Note: Effective in 2025, due to the IRA, plan liability is much larger in the catastrophic phase. If this study were to be continued, the authors would expect a noticeable increase in 'Plan Paid' starting in that year.*

For patient pay costs, unsurprisingly there was a large difference in NLI member payments as almost all ARV drugs are specialty drugs with a coinsurance. This difference was not as striking in LI member payments, due to their point-of-sale copays being capped at ~$4 or $10 for brand drugs and ~$1.50 or $4 for generic drugs.

For CMS spend, there was a large difference in costs between HIV-positive and non-HIV-positive members, mainly due to the catastrophic phase payments, although Low Income Cost Subsidy (LICS) payments for LI members also accounted for some of the difference. Finally, the "Other Payers" payments, comprised of Other True Out-of-Pocket (TrOOP) and Patient Liability Reduction Due to Other Payer Amounts (PLRO), were highest for HIV-positive NLI members, as state Medicaid programs effectively minimized the payments for NLI members who otherwise would have had a much higher medication payment burden.

4.2 HIV-POSITIVE PHARMACY COST PROFILE: ANTI-RETROVIRAL COSTS AND ADHERENCE

4.2.1 ANTI-RETROVIRAL COSTS AND TRENDS: BY YEAR AND THERAPEUTIC SUB-CLASS

As stated in the introduction of this section, ARV medications have dramatically changed the outlook for people with HIV, and these medications have continued to evolve since their initial emergence in the early 1990s. The most prevalent therapeutic subclass for ARV medications over the recent past is the ARV-Combination Agent subclass, which includes medications such as Biktarvy. Earlier generation ARV drugs required adhering HIV-positive members to follow strict schedules and take numerous pills multiple times in a day. The new ARV-Combination drugs are one-pill-per-day therapies that allow the HIV-positive member freedom from the strict regimen schedules that earlier generation drugs required. These drugs gained market share quickly after coming to market and have continued to gain market share over the past several years; ARV-Combination drugs now account for over 70% of all prescriptions dispensed for ARV drugs. Integrase Inhibitors and Protease Inhibitors were the only other therapeutic subclasses with more than 10% of the market as of 2019, and those have continued to drop in market share consistently from 2019 to 2022. In fact, no other therapeutic subclass gained in market share from 2019 to 2022, as the Combination drugs increased their dominance in the market to comprise close to three-quarters of total prescriptions as of 2022.

Table 4.2.1
TOTAL PHARMACY SCRIPT SHARES – ALL MEMBER TYPES

HIV-POSITIVE Status	2019	2020	2021	2022
ARV – CCR5	0.9%	0.7%	0.8%	0.7%
ARV – CD4	0.0%	0.1%	0.1%	0.1%
ARV- Fusion Inhibitors	0.0%	0.0%	0.0%	0.0%
ARV- Integrase Inhibitors	16.5%	15.1%	14.3%	13.0%
ARV- Protease Inhibitors	10.2%	7.7%	7.1%	5.8%
ARV- RTI-NA-Purines	1.0%	0.9%	0.9%	0.8%
ARV- RTI-NA-Pyrimidines	1.6%	1.4%	1.4%	1.4%
ARV- RTI-NA-Thymidines	0.2%	0.1%	0.1%	0.1%
ARV- RTI-NA	3.6%	3.8%	2.5%	2.8%
ARV- RTI-Non-NA	4.6%	4.5%	4.3%	3.9%
ARV- Adjuvants	0.0%	0.0%	0.1%	0.0%
ARV- Combinations	61.3%	65.7%	68.5%	71.5%

4.2.2 ANTI-RETROVIRAL ADHERENCE BY MEMBER TYPE

Medication adherence is the most critical aspect of an HIV-positive member's care. Daily observance of the prescribed medication schedules reduces the viral load to undetectable levels for most of the HIV+ population. An average days' supply of prescriptions dispensed is one measure of adherence utilized to assess how well different member cohorts have adhered to their medication schedules. While the multiple pills-per-day schedules for older therapeutic subclasses complicates the days' supply method of measurement, a review of the average days' supply per month may still be useful to assess major differences in adherence between LI and NLI HIV-positive members. Table 4.2.2 illustrates the differences in average days' supply per month between LI and NLI members from 2019 to 2022. Allowed cost and member paid data is also included to assess if cost barriers may have prevented members from taking their medications.

A couple of observations are immediately apparent in the data in Table 4.2.2:

1. Medicare has enabled LI members to access their medications for low out-of-pocket costs. The average LI member spent less than $5 per month for their medications. In comparison, NLI members spent an average of ~$200 per month as of 2021 and 2022 for their ARV therapies. The program seems to have been effective at removing the cost barrier for low income members to have access to their medications.
2. There is an evolving difference in adherence levels between LI and NLI members over the four-year period due to COVID. In the first year of the study, the average days' supply per month was almost equal between LI and NLI members. After COVID appeared, however, an adherence gap materialized immediately and continued to grow as of 2022.

COVID is known to have induced a shift in how people taking maintenance medications access their medications, with movement away from monthly prescriptions at community retail pharmacies to taking extended days' medications (3-month supplies) and increasing the use of mail order pharmacies to access the extended days' supply prescriptions. This may explain the uptick in the monthly average in days' supply for NLI members in 2020. However, the spike in average days' supply for NLI members observed in 2020, while decreasing in the subsequent two years, remained above the average days' supply in 2019—indicating adherence was maintained or improved in the post-COVID period for NLI members.

For LI members, COVID seems to have negatively impacted adherence. From 2019 to 2022, the average monthly days' supply dropped consistently, from 42.73 days in 2019 to 28.45 days in 2022. 2022 was also the first year that the average days' supply metric fell below the 30-day threshold, strongly suggesting that medication adherence may have become an issue for LI members since COVID. We can speculate on the reasons that COVID-induced behavior changes have impacted the adherence behaviors of lower income HIV-positive population negatively, while concurrently having no impact on the more financially-able HIV-positive population (housing instability, less self-advocacy, etc.), but it is clear from Table 4.2.2 that medication adherence has developed into an issue for the poorer HIV-positive populations. To prevent these lower adherence rates from persisting and causing long-term differences in health outcomes between LI and NLI HIV-positive members, Medicare providers and managed care organizations would serve themselves and their HIV-positive members by exploring a solution for this emerging adherence problem.

Table 4.2.2
ARV ADHERENCE RATE DUAL STATUS:

Year	ARV Cost/Adherence (PMPM)			
	Income Status	Allowed	Member Paid	Days' Supply
2019	NLI	$2,669.73	$124.65	43.10
	LI	$2,805.16	$4.39	42.73
2020	NLI	$2,670.97	$176.00	59.58
	LI	$2,689.45	$4.66	36.44
2021	NLI	$2,711.02	$201.69	46.89
	LI	$2,888.19	$4.72	33.81
2022	NLI	$2,999.22	$199.05	51.93
	LI	$3,094.65	$3.73	28.45

4.2.3 ANTI-RETROVIRAL COST AND ADHERENCE SUMMARY

The survey of pharmacy costs illustrates that the cost of ARV medications has been extremely high, that Medicare and state assistance programs have been reasonably effective at mitigating point-of-sale costs for the ARV-adhering member, and that ARV costs have continued to increase despite being available as a therapeutic sub-class for 30+ years. Additionally, the average days' supply per month for low-income members appeared to be decreasing below a threshold that could be explained by conversion from multiple-pill regimes to single prescription combination agents.

4.3 HIV-POSITIVE PHARMACY COSTS PROJECTION: MEMBER AND STATE IMPACT FROM THE IRA

The IRA passed in the Summer of 2022 changed how pharmacy costs are distributed amongst Medicare participants. The major change in Part D benefit design did not go into effect until 2025, but we can project how future liabilities will be distributed amongst the Part D participants today using the historical cost distribution data shown in **Tables 4.1.1 and 4.1.2** and a high-level knowledge of the 2025 benefit design changes.

Perhaps the most well-publicized change in the Medicare Part D benefit is the reduced member out-of-pocket limits on prescription spending. As of 2024, Medicare members had to spend $8,000 out-of-pocket to reach the catastrophic phase of the Part D benefit, after which the member paid $0 in copays (and only 5% coinsurance pre-2024). As of 2025, Medicare members are limited to $2,000 in out-of-pocket spending[17]. For members who are not new-to-Medicare mid-year joiners, the $2,000 annual limit equates to roughly $167 a month in member costs. As of 2022, the monthly member expense for the NLI HIV-positive population was $235.80. With the $2,000 annual cap, even after a rough new member cost adjustment (assuming ~10% of the HIV-positive population is new to Medicare every year with a midpoint join date of July, the $167 adjusts to approximately $175), the HIV-positive NLI members project to save about 34% per month in out-of-pocket costs, *assuming state-based assistance does not exist*. However, as long as state-based assistance continues at some level, HIV-positive members will realize even greater savings.

As mentioned above, the other likely benefactors of the IRA out-of-pocket limit change are the state programs that provide financial support for lower-income Medicare members who do not meet the qualifications of an LI member for Medicare cost-subsidy assistance. State-based AIDS Drug Assistance Programs (ADAPs) assist the HIV-positive population with medication expenses. These ADAP expenses can be estimated from PDE data by analyzing the "OtherTrOOP" field in the PDEs. Other state-based assistance programs will be included in this "OtherTrOOP" field;

[17] Due to plan design, a member may not pay the full $2,000 out-of-pocket maximum. For more details, see this CMS document on the Part D Benefit Redesign: https://www.cms.gov/files/document/final-cy-2025-part-d-redesign-program-instructions.pdf

by taking the difference in “OtherTrOOP” between the non-HIV-positive and HIV-positive populations, the authors can calculate a reasonable estimate of the prescription expenses specific to ADAPs. Also, it is important to note that these state assistance dollars count towards the Medicare member satisfying their out-of-pocket maximum and will continue to count towards the member’s out-of-pocket maximum in 2025 and beyond. Due to the exorbitant cost of ARV medications, without this provision, state assistance programs would only delay the point in the year at which the HIV-positive members reach the $2,000 out-of-pocket maximum instead of saving members any money.

Even without including ADAP payments, with an HIV-positive member’s monthly ceiling of $175 for prescription drugs, member costs are reduced. Once OtherTrOOP/ADAP dollars are added, member savings increase further. Since the state payments count as member out-of-pocket, the $175 monthly limit for members in Medicare the authors compared to the sum of member paid dollars and OtherTrOOP dollars to calculate the true impact. Adding these fields together yields a 2022 member monthly out-of-pocket average of $397, with $161 of the amount contributed by state programs, (~$148 from ADAPs using the HIV-positive OtherTrOOP minus non-HIV-positive OtherTrOOP to calculate the ADAP amount).

At one extreme, ADAP expenditures could drop to $0 and the member would still realize out-of-pocket savings of about one-third of member expense, as the Member Paid amount of $236 PMPM in 2022 would at most be $167 PMPM for a member participating in Part D for the full 12 months. At the other extreme, assuming no reduction in ADAP and other state assistance programs, the average NLI member expense would decrease to less than $10 per month, approaching the monthly expenditure of an LI HIV-positive member. The most likely outcome—a moderately even distribution of savings between the member and the state program—would reduce the expenses for both by over 50%. This roughly even distribution of IRA-induced pharmacy savings between the member and the state programs would reduce member out-of-pocket expenses to around $100 a month and save state programs hundreds of millions of dollars in aggregate savings.

Section 5: Suggestions for Future Related Research

This study intends to present a demographic, medical cost, and pharmaceutical cost profile of a Medicare population that is 1) susceptible, 2) uniquely impactful in terms of cost of care, and 3) changing in demographic profile.

The assertion that HIV-positive members are medically susceptible is indicated in Section 2 of this paper. The HIV-positive population has demonstrated a higher proportion of members with two or more co-morbid conditions, as compared to the non-HIV-positive population. Even after restricting medical cost comparisons to members with similar co-morbid condition counts, HIV-positive members have required significantly more medical care as measured by total cost when compared to non-HIV-positive members. The Medicare program and its participants must ensure that the program serves the needs of all of its members.

The cost of care impact of the HIV-positive Medicare population is demonstrated in Sections 2 and 3 of this paper. From a medical cost-of-care standpoint, HIV-positive members generated approximately twice as much medical spending as non-HIV-positive members. On a risk-adjusted basis, HIV-positive members were still more costly than non-HIV-positive members by ~15%. The differential in pharmacy costs for HIV-positive members was even greater. As measured by allowed costs, in the non-low income population, HIV-positive members' pharmacy costs were greater than non-HIV-positive members by a factor of greater than 10. For low income members, the ratio was a less severe but a still lofty 5:1 between low income HIV-positive member costs and low income non-HIV-positive member costs. Programmatic changes from the IRA, as well as other legislative and regulatory changes, make a risk-adjusted assessment of HIV-positive to non-HIV-positive populations' costs more challenging, but it is a near certainty that HIV-positive members will account for a larger share of plan liability in the post-IRA Part D benefit world. Greater liability implies greater risk. The Medicare program can continue to provide HIV-positive members with the medical and pharmaceutical care they need, by providing the plans and providers with adequate revenues to care for these members, and by ensuring that HIV-positive members are encouraged and incentivized to seek out the care needed to maintain their health.

The demographic evolution of the HIV-positive Medicare population is shown in Section 1 of this paper. As stated in the introduction, the revolution in the anti-retroviral pharmacological therapies that emerged in the early 1990s has enabled individuals with HIV to enjoy a life expectancy that approaches the life expectancy of non-HIV-positive individuals. As a result, the proportion of the HIV-positive Medicare individuals aging into the program (as opposed to qualifying via disability) has increased substantially over the past 5+ years. To effectively serve this emerging senior population, as well as the disabled population that has historically comprised the majority of HIV-positive Medicare members, the Medicare program and its participants may want to calibrate their mechanisms of care and outreach programs accordingly

Future research exploring the challenges of the HIV Medicare population may pursue several different paths:

- Broadly, the availability of Chronic Special Needs Plans (C-SNPs) catering to Medicare members could serve as a measure of how attractive the market views Medicare members with HIV in comparison to Medicare members with diabetes, heart conditions, and other major chronic conditions. More focused studies could analyze the reimbursement mechanisms of Medicare to measure possible revenue shortfalls for HIV members. For example, the CMS-RxHCC model assigns Low-Income Age 65 New Enrollee Medicare members a composite Part D risk score of between 1.12 and 1.629 (variation by female/male). The RxHCC condition coefficient for continuing (non-institutional) enrollee HIV members is between 7.9 and 9.7. The implication for managed care plans is that plans enrolling age-in HIV Medicare members will bear plan liabilities of up to 10 times the revenue plans are receiving for these members. Such a disconnect creates an enticement for plans to avoid attracting HIV-positive individuals; the result may be a landscape that doesn't properly serve members with HIV.

- HIV-positive members are very concentrated in urban areas and are socioeconomically disadvantaged compared to non-HIV-positive Medicare members. More research could help to identify how gaps in care may inordinately burden HIV-positive Medicare members

Section 6: Acknowledgments

The researchers' deepest gratitude goes to those without whose efforts this project could not have come to fruition: the Project Oversight Group and others for their diligent work overseeing questionnaire development, analyzing and discussing respondent answers, and reviewing and editing this report for accuracy and relevance.

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