HIV Data

Behavioral and Clinical Characteristics of Persons with Diagnosed HIV Infection—Medical Monitoring Project, United States, 2023 Cycle (June 2023—May 2024)

MAR. 16, 2026

For Everyone

AT A GLANCE

The release presents nationally representative data on behavioral and clinical characteristics of U.S. adults with diagnosed HIV from the 2023 cycle of the Medical Monitoring Project, which informs prevention, treatment goals, and resource planning to improve health outcomes and reduce transmission risk.

Current data release

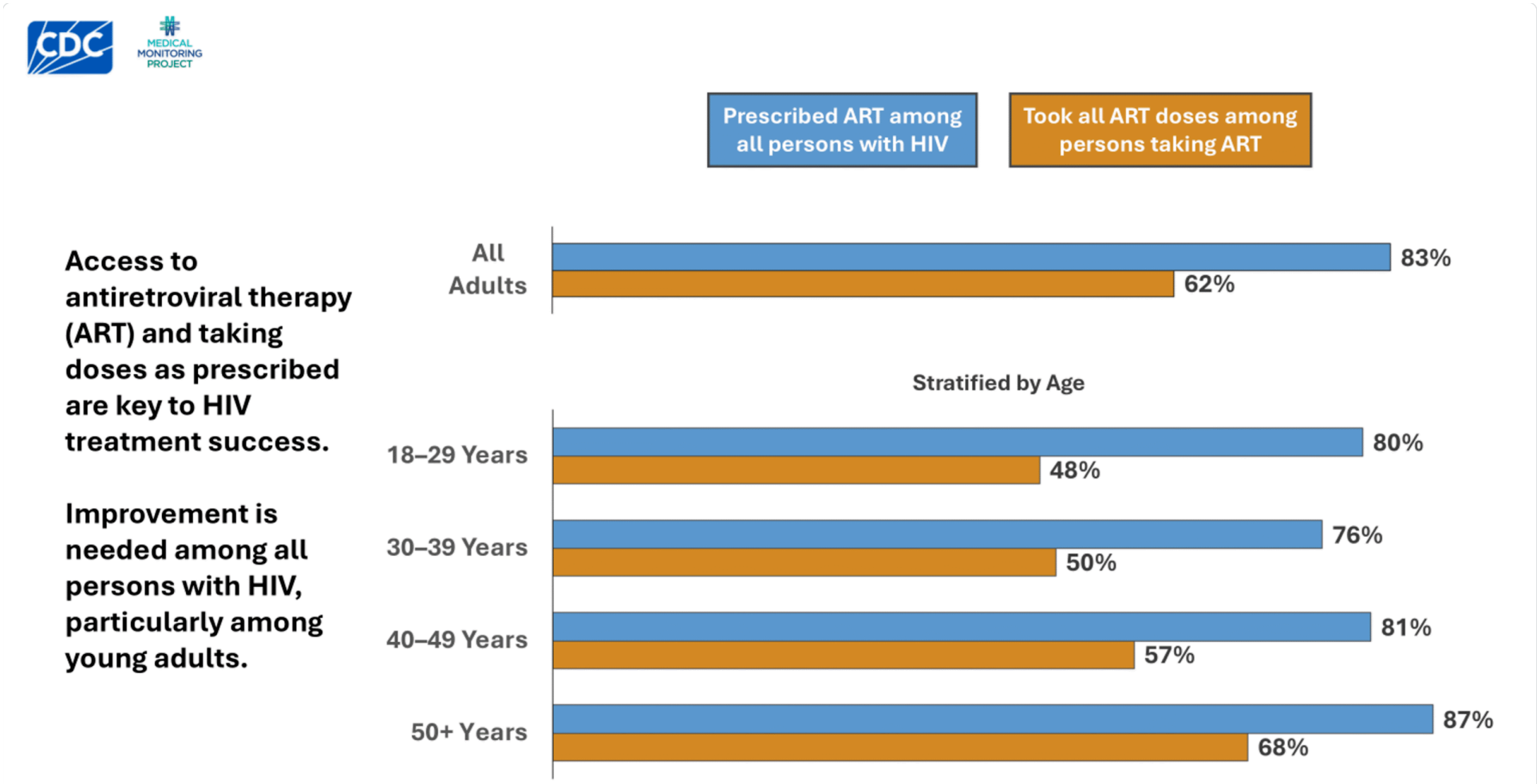
Read or download the current data release

MMP Data Release Figures, 2023 PPT

This PowerPoint slide set includes charts and figures for the MMP Data Release: Behavioral and Clinical Characteristics of Persons with Diagnosed HIV Infection—Medical Monitoring Project, United States, 2023 Cycle (June 2023–May 2024) for the 2023 MMP Data Release

MMP Data Release Tables, 2023 EXCEL Tables for the MMP Data Release: Behavioral and Clinical Characteristics of Persons with Diagnosed HIV Infection—Medical Monitoring Project, United States, 2023 Cycle (June 2023–May 2024)

Key Findings



Bar chart on access to antiretroviral therapy (ART) and adherence among adults with HIV in the United States.

The graphic states that access to ART and taking doses as prescribed are key to HIV treatment success and that improvement is needed, particularly among young adults.

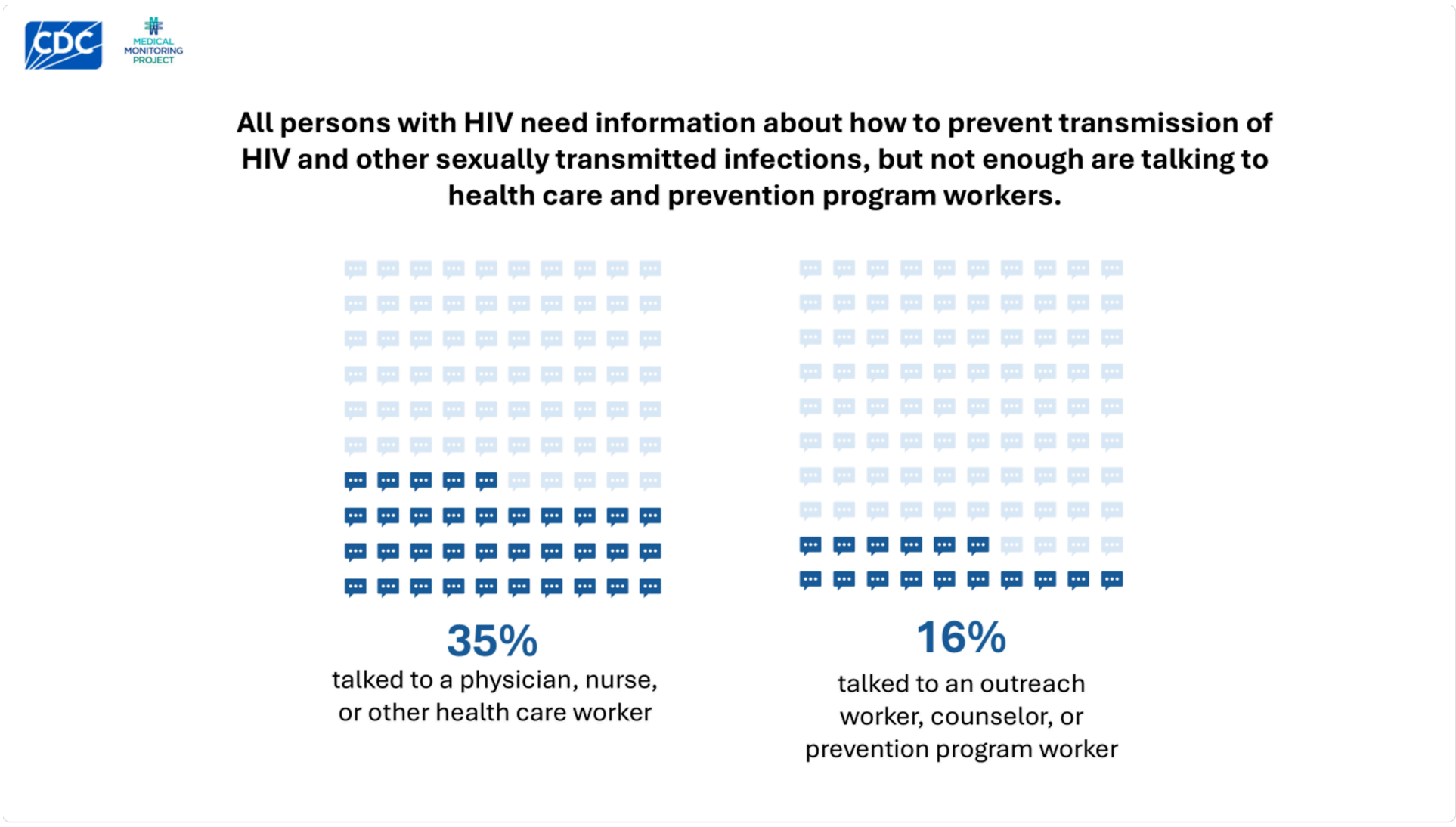
Overall:

- 83% of all adults with HIV were prescribed ART.
- 62% of those taking ART took all doses as prescribed.

By age group:

- Ages 18–29: 80% prescribed ART; 48% of those on ART took all doses.
- Ages 30–39: 76% prescribed ART; 50% of those on ART took all doses.
- Ages 40–49: 81% prescribed ART; 57% of those on ART took all doses.
- Ages 50 and older: 87% prescribed ART; 68% of those on ART took all doses.

Adherence is lowest among younger adults, especially those ages 18–29.



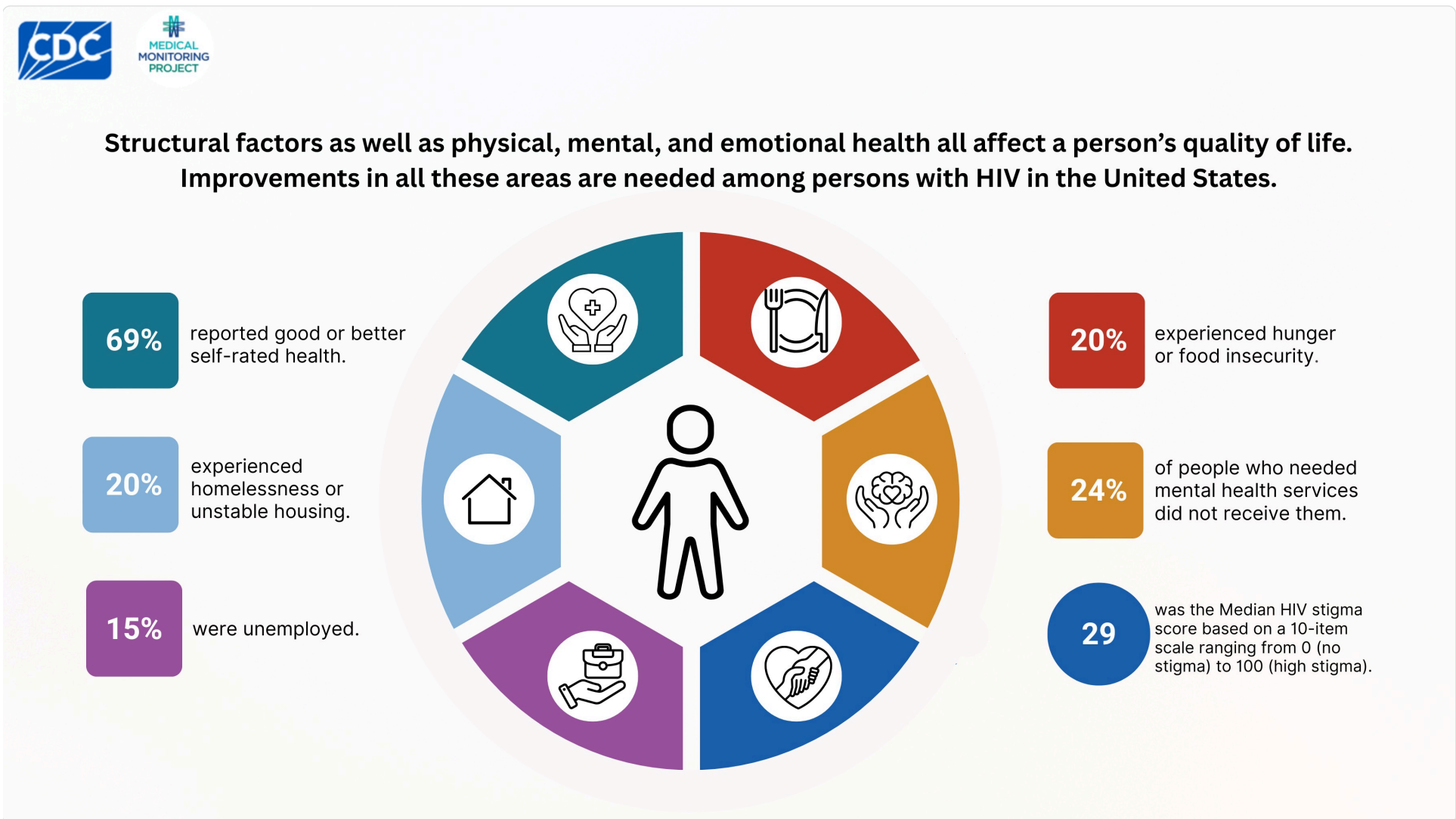
Infographic about HIV prevention discussions among adults with HIV in the United States.

The graphic states that all adults with HIV need information about preventing transmission of HIV and other sexually transmitted infections, but not enough are speaking with health care and prevention program workers.

Key data:

- 35% talked to a physician, nurse, or other health care worker about prevention.
- 16% talked to an outreach worker, counselor, or prevention program worker.

The visual uses rows of speech bubble icons to represent the percentages.



Quality of life among people with HIV.

Key findings:

- 69% reported good or better self-rated health.
- 20% experienced homelessness or unstable housing.

- 15% were unemployed.
- 20% experienced hunger or food insecurity.
- 24% of those who needed mental health services did not receive them.
- Median HIV stigma score was 29 on a scale of 0 (no stigma) to 100 (high stigma).

The graphic emphasizes that structural, physical, mental, and emotional factors all affect quality of life and that improvements are needed.

Overview

The release provides the latest nationally representative data on behavioral and clinical characteristics of adults with diagnosed HIV in the United States. The data were collected by the Medical Monitoring Project (MMP), a cross-sectional complex sample survey that is the only source of locally and nationally representative information on behavioral and clinical factors that affect HIV treatment success and risk of HIV transmission among U.S. adults with HIV. These data are used to monitor progress towards national and local HIV prevention and treatment goals and inform planning and resources to improve the health and well-being of persons with HIV.

This overview summarizes the data presented in this report. For complete results, refer to the figures PPT and tables EXCEL. See the Technical Notes and Appendix for information on methodology and variable measurement.

Social conditions affecting health

The social conditions people experience affect their health and well-being.

- 34% were living in a household below the poverty line
- 4% were incarcerated >24 hours during the past 12 months
- 8% were uninsured and had no coverage for healthcare or medications during the past 12 months

Clinical characteristics

Viral suppression means that a person with HIV can live a normal lifespan and will not transmit HIV to others.

- 66% were virally suppressed at their most recent test
- 62% were virally suppressed at all tests during the past 12 months

Use of health care services and antiretroviral treatment (ART)

Access to medical care and adherence to antiretroviral therapy are essential for the health of people with HIV. During the past 12 months,

- 83% were prescribed antiretroviral therapy
- 62% of people with HIV who reported taking ART took all their prescribed antiretroviral doses
- Forgetting was the most common reason for missing their last antiretroviral dose (68%), followed by a change in routine or being out of town (43%)
- 40% had at least one visit to the emergency department
- 15% had at least one hospital admission

Mental health and substance use

Problems with mental health and substance use can affect the health of people with HIV and can increase the risk of transmitting HIV to others.

- 17% had symptoms of major or other depression during the past 12 months
- 16% had symptoms of moderate to severe anxiety during the past 12 months
- 16% reported binge drinking during the past 30 days
- 50% reported noninjection drug use during the past 12 months
- 3% reported injection drug use during the past 12 months

Sexual behavior

Strategies to prevent sexual transmission of HIV include sex while having sustained viral suppression, using condoms, preexposure prophylaxis use by sexual partners, or sex with a person with HIV. During the past 12 months,

- 17% of sexually active males who have sex with males had sex without using a prevention strategy
- 11% of sexually active males who have sex only with females had sex without using a prevention strategy
- 14% of sexually active females who have sex with males had sex without using a prevention strategy

Met and unmet need for ancillary services

Receiving needed ancillary services helps people with HIV stay in care and improves their well-being. During the past 12 months,

- 52% used, and 10% needed but did not receive, HIV case management services
- 56% used, and 26% needed but did not receive, dental care
- 37% used, and 13% needed but did not receive, Supplemental Nutrition Assistance Program (SNAP) or Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) services

Receipt of prevention services

Discussions with health care providers and other prevention program staff help people with HIV learn ways to prevent transmission of HIV and other sexually transmitted infections (STIs). During the past 12 months,

- 35% talked to a physician, nurse, or other health care worker about how to prevent HIV or other STIs
- 16% talked to an outreach worker, counselor, or prevention program worker about how to prevent HIV or other STIs

Key factors affecting health and quality of life

Physical health, mental or emotional health, and structural factors affect a person's quality of life.

- 69% reported current good or better self-rated health
- 24% of people who needed mental health services did not receive them during the past 12 months
- 20% experienced homelessness or unstable housing during the past 12 months
- 15% were currently unemployed
- 20% experienced hunger or food insecurity during the past 12 months

Previous data releases

- Previous data releases on CDC Stacks
- CDC Archive
- NCHHSTP Atlas Plus

Technical notes

Population of inference

For the 2023 Medical Monitoring Project (MMP) data collection cycle (data collected June 1, 2023–May 31, 2024), the population of inference was adults with diagnosed HIV (aged ≥18 years) living in the United States.

A total of 23 areas were funded to conduct data collection for the 2023 cycle: California (including the separately funded jurisdictions of Los Angeles County and San Francisco), Delaware, Florida, Georgia, Illinois (including the separately funded jurisdiction of Chicago), Indiana, Michigan, Mississippi, New Jersey, New York (including the separately funded jurisdiction of New York City), North Carolina, Oregon, Pennsylvania (including the separately funded jurisdiction of Philadelphia), Puerto Rico, Texas (including the separately funded jurisdiction of Houston), Virginia, and Washington.

Data collection

Persons with diagnosed HIV were sampled for MMP by using data from the National HIV Surveillance System (NHSS). Sampled persons were recruited by mail, by telephone, or in person. To be eligible for MMP, the person had to be, as of December 31, 2022: living with diagnosed HIV infection, aged ≥18 years, and residing in an MMP project area. The respondent eligibility criteria were the same in all participating project areas.

A trained interviewer conducted an interview in person or via telephone or video. English and Spanish versions of the questionnaire were used. The interview was offered in a language other than English or Spanish if a translator was available. Persons who agreed to participate were interviewed over the telephone or in a private location (e.g., at home or in a clinic). The interview (approximately 40 minutes) included questions

about demographic characteristics, social and structural factors, health care use, met and unmet needs for ancillary services, sexual behavior, symptoms of depression and anxiety, gynecologic and reproductive history, substance use, and use of HIV/STI prevention services. Respondents were given a token of appreciation of no more than $50 in cash or the equivalent for participation; the form of tokens differed by project area according to local considerations.

After the interview, MMP staff abstracted clinical data from the medical records of respondents at the health care facility identified by the respondent as their most frequent source of HIV care. Abstracted information included diagnoses of AIDS-defining conditions, prescription of antiretroviral therapy (ART) medications, laboratory results, and health care use in the 24 months before the interview. Because data collected from medical records were abstracted at the facility reported as the most frequent source of HIV care, care received from other providers may not be captured if that information was not sent to the person's most frequent source of HIV care.

For further technical details, please see the appendix.

Methods

The Medical Monitoring Project (MMP) uses a stratified, 2-stage sampling design. States were sampled first, with probability proportional to size (PPS). All 50 states, the District of Columbia, and Puerto Rico (defined as primary sampling units [PSUs]) were eligible for selection.

From these 52 PSUs, 20 were selected by using PPS sampling based on AIDS prevalence at the end of 2002. According to the PPS sampling method, states with a higher AIDS prevalence had a higher probability of selection [1] [2]. Six municipal jurisdictions receive separate funding for HIV surveillance (Chicago, Illinois; Houston, Texas; Los Angeles County, California; New York City, New York; Philadelphia, Pennsylvania; and San Francisco, California); these areas were included with the state for first-stage sampling and constituted a city-state unit. If a state included a city with independent HIV surveillance authority (e.g., Texas, which includes Houston), selection of the state included selection of the city (i.e., city-state units were selected together).

In 2004, 19 states (including the 6 separately funded areas within those states) and Puerto Rico were selected from the 52 PSUs, resulting in 26 MMP project areas. Because of funding constraints for the 2009 data collection cycle, 3 project areas (Maryland, Massachusetts, and South Carolina) were randomly selected to discontinue participation in MMP, and the total number of MMP areas was reduced to 23.

Analyses carried out in 2014 and subsequently in 2021 found that the original measure of size with which states were originally sampled (i.e., AIDS prevalence in 2002) was still a reasonable proxy for the distribution of HIV prevalence. The selected sample of states was still sufficiently representative of the population of persons with diagnosed HIV; consequently, selecting a new first-stage sample for the 2015 and subsequent data collection cycles was unwarranted. In addition, the change in the sampling frame from HIV care facilities and their patients to sampling from the National HIV Surveillance System (NHSS), which provides national totals of adults with HIV, presented new options for calibrating weights, further lessening the need for any adjustments to the sample of states.

At the second stage, persons with a reported diagnosis in NHSS were sampled after the selection of the states. The sampling frame was the national case surveillance data set containing records submitted to the Centers for Disease Control and Prevention (CDC) as of December 31, 2022. Using NHSS data, the initial national frame dataset was created for persons who were alive, had diagnosed HIV infection, were aged 18 years or older, and were living in the United States, the District of Columbia, or Puerto Rico on the sampling date (i.e., December 31, 2022). Each case was assigned to a surveillance jurisdiction based on the most recently reported residence in NHSS. These addresses primarily came from case report forms and HIV-related laboratory reports. From this initial national frame, CDC staff drew simple random samples for each of the 23 project areas; project area staff then linked their samples to local case surveillance systems and extracted contact information for use in locating sampled persons, whom they then attempted to recruit.

Eligibility and response classifications

Persons were eligible for participation if, as of the sampling date, they had received a diagnosis of HIV, were aged ≥18 years, were alive, and were a resident of an MMP project area. Sampled persons were presumed to be eligible based on their information in NHSS unless data from another source contradicted this status.

Persons were classified into 4 categories: (1) eligible respondents, (2) contacted nonrespondents, (3) nonrespondents who were not contacted, and (4) ineligible persons. These categories were used in calculating final response rates and contact rates following standard formulas [3].

Weighting

Overview

Sets of weights were produced nationally, for the city-state combinations, and for each project area. This report presents national weighted data and, thus, represents all adults with diagnosed HIV infection living in the United States. Nationally, data were weighted based on known probabilities of selection at the state or jurisdiction level and person level and then adjusted for multiplicity and nonresponse. After adjusting for nonresponse, the weights were poststratified to population totals from the NHSS frame. Extreme weights, if present, were trimmed, and the weights were adjusted to the same population totals.

For the weighting process, an updated sampling frame was obtained from NHSS data approximately a year and a half after sampling, during which time additional information available but not reported to NHSS prior to sampling may have been reported for sampled persons, and additional HIV diagnoses made prior to sampling may have been reported. Thus, this updated sampling frame added records that would have been eligible if their information had been reported to NHSS on the date the initial sample was drawn; primarily, these were diagnoses that occurred during the year prior to the MMP sampling date (for the 2023 cycle, December 31, 2022). Additionally, some persons may have had multiple records at the time of sampling that were later identified as duplicate records and removed prior to updating the sampling frame. In

some cases, updated information indicated that a person originally judged eligible and included on the original frame was ineligible. The updated sampling frame data also provided descriptive information for all sampled persons regardless of response and were the source of data used for nonresponse analysis and weighting.

Adjustments for unequal selection probabilities
The first step in the computation of weights was the calculation of base weights that reflect the sampling design probabilities. The base weight for each sampled person incorporates both the probability of selecting a project area, and the probability of selecting a person within a project area. A person who was sampled from one jurisdiction but lived in another area at the time of sampling retained the original base weight. Prior to weighting, such cross-jurisdictional records were grouped with their project area of residence at the time of sampling. This moving of records did not affect the national weights, but did affect the project area weight totals, increasing some while decreasing others.

Adjustments for multiplicity
A multiplicity factor was applied to the person weight for persons with records found to be present more than once after the original frame was compared to the updated sampling frame. This factor, which accounts for some persons' multiple opportunities for being sampled, was capped at 2 and was applicable for only 36 persons.

Adjustments for nonresponse
A nonresponse-adjustment factor was applied to the multiplicity-adjusted base weight based on an analysis of nonresponse. Updated sampling frame data provided descriptive information about all sampled persons, which was used to assess how these characteristics were associated with nonresponse. The potential predictors of nonresponse were: race/ethnicity, male-to-male sexual contact (MMSC) HIV transmission category, HIV/AIDS disease stage, disease progression measured by most recent viral load test reported to NHSS, time since HIV diagnosis, age of most recent contact information, the person's frequency of receipt of HIV care (as indicated by NHSS records), movement to a different MMP jurisdiction since the time of sampling, non-U.S. birthplace, sex, and age at sampling date. The nonresponse analysis followed a 2-step process. First, a bivariate analysis was conducted to determine which characteristics were potential predictors of nonresponse; then, a multivariate analysis using the significant characteristics from the bivariate analysis was conducted to identify independent predictors of nonresponse. Three significant predictors from this multivariate analysis were used to create weighting classes for the national data. The significant predictors of nonresponse were: male-to-male sexual contact (MMSC) HIV transmission category, the person's frequency of receipt of HIV care (as indicated by NHSS records), and sex. Within weighting classes, the adjustment factor for nonresponse was the ratio of the sum of the multiplicity-adjusted base weights for eligible sampled cases to the sum of these weights for eligible respondents. The multiplicity-adjusted weight within each nonresponse weighting class was then multiplied by the nonresponse-adjustment factor to produce the nonresponse-adjusted weights.

Poststratification and trimming
Poststratification methods ensure that weighted totals sum to known population totals and, therefore, minimize the potential for biases due to nonresponse and noncoverage. However, poststratification can also add additional variance to the weights. Thus, trimming procedures are used to control weight variability and reduce its impact on survey variances. MMP used an iterative approach that combines poststratification and trimming so that trimmed weights retain their variance-reducing features after poststratification and ensures that poststratified weights add up to known population totals.

The nonresponse-adjusted weights were first poststratified to population totals from the updated sampling frame. The poststratification cells were defined by crossing sex, race/ethnicity, and age group. Nationally, there were 32 poststratification cells. Poststratification adjustments were performed within each poststratification cell so that the weighted sum was preserved in each cell. To reduce additional variance added to poststratified weights, cells were collapsed and the need for weight trimming was evaluated. Poststratified cells were collapsed when cells had 2 or fewer respondents or had an extreme adjustment factor (≥ 1.75). The need for trimming was then assessed. If the design effect due to weighting (measured as $1 + CV^2$, where CV is the coefficient of variation of the weights) had exceeded 1.75, we would have capped the weights at the median weight plus 4 times the interquartile range of the weights; where trimming occurred, the weights were redistributed and poststratified again to the population totals. However, no trimming was needed for the national weights.

Design variables
Nationally, design variables indicating strata and cluster membership for each participating person accounting for the sample design were created. Many project areas were sampled with certainty because of higher AIDS prevalence, and each of these was defined as its own stratum. Elsewhere, strata were created by grouping 2 to 3 project areas (PSUs in the stratified PPS design) that had similar selection probabilities. Among the 23 project areas, 14 were sampled with certainty. The 14 certainty project areas each represent a stratum, and each person within the stratum is a cluster. The remaining 9 noncertainty project areas were grouped to create strata, and each noncertainty project area was a cluster within the stratum. Multiple project areas within certainty states were effectively substrata, and each project area remained its own stratum. For local estimates, variance estimation was conditional on the initial sampling of states as PSUs, meaning that this stage of sampling was ignored. Respondents were treated as having come from a simple random sample with replacement, although the various adjustment factors induced unequal weights.

Definitions

Demographic characteristics and social and structural factors

- **Sex:** Categories were male and female.
- **Race/ethnicity**: Respondents were asked about whether they considered themselves as being of Hispanic, Latino/a, or Spanish origin. They were also asked about racial groups they identified as; respondents could check all categories that applied to them. These data were used to create the following analytic racial/ethnic categories: American Indian/Alaska Native, Asian, Black/African American, Hispanic/Latino, Native Hawaiian/other Pacific Islander, White, and multiple races. Hispanic/Latino persons could be of any race, and persons categorized by race did

not report Hispanic or Latino ethnicity. The number of persons reported in each race category may, however, include persons whose ethnicity was not reported.

- **Health insurance or coverage for care or medications (including receipt of Ryan White HIV/AIDS Program [RWHAP] assistance):** Respondents were asked whether they had health insurance or coverage for care or medications (including antiretroviral [ART] medications) during the 12 months before interview—including assistance through the RWHAP, a federally-funded comprehensive care program that provides HIV primary care, medications, and essential support services for low-income persons with HIV [4]. Responses to these questions were combined and categorized as private health insurance, Medicaid, Medicare, RWHAP, Tricare/CHAMPUS or Veterans Administration coverage, insurance classified as other public health insurance, and unknown insurance. Private insurance included receipt of health insurance through a person's employer or family member's employer, or health insurance purchased through the Health Insurance Marketplace or directly from a health insurance company. Respondents could select more than 1 response for health insurance or coverage for care or medications. Those who only received RWHAP assistance were considered to not have health insurance.

- **Federal poverty guidelines:** Respondents were asked about their combined monthly or yearly household income (in U.S.$) from all sources during the 12 months before interview. The number of persons meeting the current federal poverty threshold was determined by using the U.S. Department of Health and Human Services poverty guidelines that corresponded to the calendar year for which income was asked. These guidelines are issued yearly for the 48 contiguous states and Washington, D.C., and are an indicator used for determining eligibility for many federal and state programs. The 2022 guidelines were used for persons interviewed in 2023, and the 2023 guidelines were used for persons interviewed in 2024 [5]. Because the poverty guidelines are not defined for the territory of Puerto Rico, the guidelines for the contiguous states and Washington, D.C. were used for this jurisdiction. Respondents were asked to specify the range of their income, and household income was assumed to be the midpoint of the income range.

- **Disability**: Defined as having a physical, mental, and/or emotional disability. Respondents were considered to have a disability if they reported being deaf or having serious difficulty hearing; being blind or having serious difficulty seeing, even when wearing glasses; having serious difficulty concentrating, remembering, or making decisions because of a physical, mental, or emotional condition; having serious difficulty walking or climbing stairs; having difficulty dressing or bathing; or having difficulty completing errands alone, such as visiting a doctor's office or shopping, because of a physical, mental, or emotional condition.

Clinical characteristics

- **CDC stage of disease classification for HIV infection:** Defined according to CDC's 2014 revised surveillance case definition for HIV infection [6]. Information from NHSS was used to determine the most advanced HIV disease stage ever reached by respondents.

Use of health care services

- **Outpatient HIV medical care:** Defined as documentation of any of the following at the most frequent source of HIV care: encounter with an HIV care provider (could be self-reported), viral load test result, CD4 test result, HIV resistance test or tropism assay, ART prescription, *pneumocystis* pneumonia (PCP) prophylaxis, or *Mycobacterium avium* complex (MAC) prophylaxis. All were measured through documentation in the person's medical record; an encounter with an HIV care provider was also measured based on interview self-report. Persons were considered to be retained in care if they had 2 elements of outpatient HIV care at least 90 days apart in each 12-month period reviewed.

- **ART prescription:** Defined as a prescription in the medical record, during the 12 months before interview, of any of the following medications: abacavir, amprenavir, atazanavir, bictegravir, cabotegravir, cobicistat, darunavir, delavirdine, didanosine, dolutegravir, doravirine, efavirenz, elvitegravir, emtricitabine, enfuvirtide, etravirine, fosamprenavir, fostemsavir, ibalizumab, indinavir, lamivudine, lenacapavir, lopinavir/ritonavir, maraviroc, nelfinavir, nevirapine, raltegravir, rilpivirine, ritonavir, saquinavir, stavudine, tenofovir alafenamide, tenofovir disoproxil fumarate, tipranavir, or zidovudine. Persons with no medical record abstraction were considered to have no documentation of ART prescription.

- **PCP prophylaxis:** Defined as documentation in the medical record that prophylaxis for PCP was prescribed among persons with a CD4 count of < 200 cells/μL in the 12 months before interview [7]. Persons prescribed regimens typically given as PCP prophylaxis (trimethoprim-sulfamethoxazole, dapsone with or without pyrimethamine and leucovorin, aerosolized pentamidine, and atovaquone) were not presumptively categorized as having received PCP prophylaxis unless it was specifically stated in the medical record that prescription of these medications was for PCP prophylaxis or no length of time was specified for the course of treatment.

- **Influenza vaccination:** Respondents were asked whether they had received seasonal influenza vaccine during the 12 months before interview.

- ***Neisseria gonorrhoeae* testing:** Defined as documentation in the medical record, during the 12 months before interview, of a result from culture, Gram stain, direct fluorescent antibody (DFA), enzyme immunoassay (EIA), nucleic acid amplification test (NAAT), or nucleic acid probe performed on a specimen from any anatomical site for screening or diagnostic purposes.

- ***Chlamydia trachomatis* testing:** Defined as documentation in the medical record, during the 12 months before interview, of a result from culture, Gram stain, direct fluorescent antibody (DFA), enzyme immunoassay (EIA), nucleic acid amplification test (NAAT), or nucleic acid probe performed on a specimen from any anatomical site for screening or diagnostic purposes.

- **Syphilis testing:** Defined as documentation in the medical record, during the 12 months before interview, of a result from nontreponemal serologic tests (rapid plasma reagin [RPR], Venereal Disease Research Laboratory [VDRL]), treponemal serologic tests (*Treponema pallidum* hemagglutination assay [TPHA], *T. pallidum* particle agglutination [TP-PA], microhemagglutination assay for antibodies to *T. pallidum* [MHA-TP], chemiluminescence immunoassay [CIA], fluorescent treponemal antibody absorption [FTA- ABS] tests), polymerase chain reactions (PCR), or dark-field microscopy performed for screening or diagnostic purposes.

Self-reported ART medication use and adherence

- **ART adherence**: Respondents were asked about their adherence to ART in the 30 days before interview using questions from a 3-item scale developed by Wilson and colleagues [8]. Respondents were asked about how many days they missed at least 1 dose of their HIV medicines, how often they took their HIV medicines in the way they were supposed to, and how good a job they did at taking their HIV medicines in the way they were supposed to during the 30 days before interview.

Depression and substance use

- **Symptoms of depression**: Respondents were asked questions from the Patient Health Questionnaire (PHQ- 8), an 8-item scale used to measure frequency of depressed mood in the preceding 2 weeks [9]. The PHQ- 8 has the following question: "Over the last 2 weeks, how often have you been bothered by any of the following problems?" The respondent is then asked about the following problems: (1) little interest or pleasure in doing things (anhedonia); (2) feeling down, depressed, or hopeless; (3) trouble falling/staying asleep, or sleeping too much; (4) feeling tired or having little energy; (5) poor appetite or overeating; (6) feeling bad about yourself or that you are a failure or have let yourself or your family down; (7) trouble concentrating on things, such as reading the newspaper or watching television; and (8) moving or speaking so slowly that other people could have noticed, or being fidgety or restless or moving around a lot more than usual. Response categories were "not at all," "several days," "more than half the days," and "nearly every day" with points (0–3) assigned to each response category, respectively. The PHQ-8 responses were scored by using 2 methods. Method 1: an algorithm involving criteria from the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV-TR) [10], for diagnosing major depression was used to classify adults with diagnosed HIV as having major depression, other depression, or no depression. To meet the criteria for major depression, a respondent must have experienced 5 or more symptoms at least "more than half the days," and one of the symptoms must be anhedonia or feelings of hopelessness. The PHQ-8 classification "other depression" comprises the DSM-IV categories of dysthymia and depressive disorder, not otherwise specified, which includes minor or subthreshold depression. Method 2: scores for each response category were summed to produce a total score between 0 and 24 points. Current depression of moderate or severe intensity was defined as a total score of ≥ 10.
- **Symptoms of generalized anxiety disorder**: Respondents were asked questions from the Generalized Anxiety Disorder Scale (GAD-7), a 7-item scale used to screen for and measure the severity of generalized anxiety disorder [11]. The GAD-7 has the following question: "Over the last 2 weeks, how often have you been bothered by any of the following problems?" The respondent was then asked about the following problems: (1) feeling nervous, anxious, or on edge; (2) not being able to stop or control worrying; (3) worrying too much about different things; (4) trouble relaxing; (5) being so restless that it is hard to sit still; (6) becoming easily annoyed or irritable; and (7) feeling afraid as if something awful might happen. Responses were scored according to criteria from the DSM-IV-TR [10]. Response categories were "not at all," "several days," "more than half the days," and "nearly every day," with points (0–3) assigned to each response category, respectively. Scores for each response category were summed to produce a total score between 0 and 21 points. "Severe anxiety" was defined as having a score of ≥ 15; "moderate anxiety" was defined as having a score of 10–14; and "mild anxiety" was defined as having a score of 5–9.
- **Alcohol use**: Respondents were asked about alcohol use during the 30 days and the 12 months before interview. A drink was defined as 12 ounces of beer, a 5-ounce glass of wine, or a 1.5-ounce shot of liquor.
- **Binge drinking**: Defined as ≥ 5 drinks in a single sitting (≥ 4 drinks for females) in the past 30 days [12].
- **Electronic cigarette or other vaping device smoking status**: History of use of electronic cigarettes or other vaping devices in one's lifetime or during the past 30 days was based on history of vaping e-cigarettes or other vaping devices to vape nicotine, tobacco, marijuana (e.g., marijuana concentrates, marijuana waxes, THC or hash oils), flavoring or other substances.
- **Noninjection drug use**: Defined as use of any drug that was administered by any route other than injection—such as smoking or snorting—including legal drugs that were not used for medical purposes during the 12 months before interview, including marijuana (including through vaping), amyl nitrate (poppers), methamphetamine (e.g., crystal meth, tina, crank, ice), cocaine that is smoked or snorted, club drugs (e.g., Ecstasy or X, ketamine or Special K, gamma hydroxybutyrate or Liquid Ecstasy), crack, prescription opioids (e.g., oxycodone, hydrocodone, Vicodin, Percocet), prescription tranquilizers (e.g., Valium, Ativan, Xanax, downers, nerve pills), or heroin or opium. Marijuana use includes vaping marijuana for medical or nonmedical purposes in addition to nonmedical use of marijuana by other methods; the 2023 questionnaire did not distinguish between medical and nonmedical vaping of marijuana. The use of trade names is for identification only and does not imply endorsement by the Department of Health and Human Services or the Centers for Disease Control and Prevention.
- **Injection drug use**: Defined as use of any injection drug during the 12 months before interview, including methamphetamine (e.g., crystal meth, tina, crank, ice), heroin, cocaine, heroin and cocaine (speedball), or prescription opioids (e.g., OxyContin, oxycodone, hydrocodone).

Sexual behavior and use of prevention services

- **Sexual behavior/orientation**: Sexual behavior/orientation was categorized into three groups: MSM, MSF, and FSM. MSM represented males who had sex with males; MSF represented males who had sex only with females; FSM represented females who had sex with males. Females who had sex only with females were not included in sexual behavior tables. Whenever possible, categories were coded based on sexual behavior in the 12 months before interview. Respondents who reported not having sex during the 12 months before interview were categorized based on sexual orientation. This variable is not consistent with prior MMP estimates due to differences in measurement.
- **Prevention strategies:** Reported behaviors that decrease the likelihood of HIV transmission to a sexual partner, including:
  - Sex while having sustained viral suppression: Vaginal or anal sex and the respondent's HIV viral loads were documented in the medical record as undetectable or < 200 copies/mL at every measure in the past 12 months before interview.

- Condom-protected sex: Condoms were consistently used with at least 1 vaginal or anal sex partner.
- Condomless sex with a partner on preexposure prophylaxis (PrEP): At least 1 condomless-sex partner with an HIV-negative status was on PrEP. PrEP use was only measured among the 5 most recent partners and was reported by the partner with HIV.
- Sex with a partner with HIV: Vaginal or anal sex with at least 1 partner with HIV.

- **Sex without using an HIV prevention strategy:** Vaginal or anal sex with at least 1 partner with an HIV- negative or unknown status while not having sustained viral suppression, when a condom was not used, and the partner was not known to be taking PrEP.

Met and unmet needs for HIV ancillary services

HIV ancillary services were defined as services that support retention in routine HIV medical care and viral suppression, such as HIV case management, dental care, and mental health services [13]. HIV ancillary services could include services that support HIV medical care more directly or those that support a person's general health through other types of services. HIV ancillary services were grouped into three categories: HIV support services, non-HIV medical services, and subsistence services. HIV support services included: HIV case management, ART adherence support services, HIV peer group support, and patient navigation services (patient navigation services could have been for HIV medical care or other types of care). Non-HIV medical services included: dental care, mental health services, drug or alcohol counseling or treatment, and domestic violence services. Subsistence services included: Supplemental Nutrition Assistance Program (SNAP) or Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), transportation assistance, meal or food services, and shelter or housing services.

- **Met need:** Defined as an HIV ancillary service received during the 12 months before interview.
- **Unmet need:** Defined as an HIV ancillary service that the respondent reported as needed, but not received, during the 12 months before interview.

Key factors affecting health and quality of life

- **Self-rated health**: Self-rated health is assessed using a single question that captures the respondent's general health at the time of interview by using a Likert-type scale with the following responses: poor, fair, good, very good, or excellent. Self-rated health was dichotomized as good or better health (i.e., good, very good, or excellent) versus less than good health (i.e., poor, fair). This measure is also used in several other national initiatives and surveys examining self-rated health among the general U.S. population (e.g., Healthy People 2030, National Health and Nutrition Examination Survey [NHANES], Behavioral Risk Factor Surveillance System [BRFSS]) [14] [15] [16].
- **Unmet needs for mental health services from a mental health professional among persons with diagnosed HIV who reported an unmet or met need for services from a mental health professional**: This measure was assessed through 2 questions. First, respondents were asked if they saw or talked to a mental health professional (e.g., psychologist, psychiatrist, psychiatric nurse, or clinical social worker) about their health during the past 12 months. Next, if they did not see or talk to a mental health professional about their health, they were asked if they needed to see or talk to one. The denominator represents people who needed mental health services (i.e., those with a met or unmet need), and was defined as those who received services (met need) and those who needed, but did not receive, services (unmet need). The numerator represents those who needed, but did not receive, services (unmet need).
- **Unstable housing or homelessness:** Persons were considered to have experienced unstable housing if they reported moving in with others due to financial issues, moving 2 or more times, or being evicted at any time during the past 12 months. Persons were considered to have experienced homelessness if they reported living on the street, in a shelter, in a single-room–occupancy hotel, or in a car during the past 12 months. Persons were considered to have experienced unstable housing or homelessness if they reported any form of unstable housing or homelessness during the past 12 months.
- **Unemployment**: Unemployed persons included those who reported being unemployed at the time of interview, excluding persons who are unable to work, calculated among all adults with HIV.
- **Hunger/food insecurity**: Persons who reported being hungry and not eating because they did not have enough money for food during the past 12 months were considered to be food insecure.
- **HIV stigma:** Defined as the weighted median score on a 10-item scale ranging from 0 (no stigma) to 100 (high stigma) that measures 4 dimensions of HIV stigma: personalized stigma during the past 12 months, current disclosure concerns, current negative self-image, and current perceived public attitudes about people living with HIV, measured among persons aged ≥ 18 years with diagnosed HIV infection living in the United States and Puerto Rico. The HIV stigma scale used for this indicator is discussed in Wright, et al [17].

Ethics statement

In accordance with guidelines for defining public health research [18], CDC has determined MMP is public health surveillance used for disease control, program, or policy purposes. Local institutional review board approval was obtained from participating areas when required. Informed consent was obtained from all interviewed respondents.

Using these data

Acknowledgements

- Medical Monitoring Project (MMP) respondents, community and provider advisory boards, and project area staff
- Data Coordinating Center for HIV Supplemental Surveillance at ICF International
- Clinical Outcomes Team, Division of HIV Prevention, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention

Suggested citation

Behavioral and Clinical Characteristics of Persons with Diagnosed HIV Infection—Medical Monitoring Project, United States, 2023 Cycle (June 2023–May 2024). Centers for Disease Control and Prevention. Published March 16, 2026. Accessed [date]. https://www.cdc.gov/hiv-data/mmp/behavioral-clinical-characteristics-pwh-2023.html

Resources

MMP Response Cards

PDF of response cards for use in the Medical Monitoring Project (MMP).

MMP Calendars

PDF of calendars for the Medical Monitoring Project (MMP).

MMP Protocol PDF

Protocols for use in the HIV Medical Monitoring Project (MMP).

Download

SOURCES

CONTENT SOURCE:
National Center for HIV, Viral Hepatitis, STD, and Tuberculosis Prevention; Division of HIV Prevention

REFERENCES

1. Frankel MR, McNaghten A, Shapiro MF, et al. A probability sample for monitoring the HIV-infected population in care in the U.S. and in selected states. *Open AIDS J* 2012;6:67–76. doi:10.2174/1874613601206010067
2. Beer L, Johnson CH, Fagan JL, et al. A national behavioral and clinical surveillance system of adults with diagnosed HIV (the Medical Monitoring Project): Protocol for an annual cross-sectional interview and medical record abstraction survey. *JMIR Res Protoc* 2019;8(11):e15453. doi: 10.2196/15453
3. The American Association for Public Opinion Research. Standard Definitions: Final dispositions of case codes and outcome rates for surveys. 10th ed. https://aapor.org/wp-content/uploads/2024/03/Standards-Definitions-10th-edition.pdf. Accessed August 1, 2025.
4. Health Resources and Services Administration. Program parts & initiatives. https://ryanwhite.hrsa.gov/about/parts-and-initiatives. Updated December 2023. Accessed August 1, 2025.
5. U.S. Department of Health and Human Services. Prior HHS poverty guidelines and Federal Register references. https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references. Updated January 2024. Accessed August 1, 2025.
6. CDC [Selik RM, Mokotoff ED, Branson B, Owen SM, Whitmore S, Hall HI]. Revised surveillance case definition for HIV infection—United States, 2014. *MMWR* 2014;63(RR-03):1–10. https://www.cdc.gov/mmwr/indrr_2014.html. Accessed August 1, 2025.
7. Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in adults and adolescents with HIV. https://clinicalinfo.hiv.gov/en/guidelines/adult-and-adolescent-arv/. Updated February 27, 2024. Accessed August 1, 2025.
8. Wilson IB, Lee Y, Michaud J, Fowler FJ Jr, Rogers WH. Validation of a new three-item self-report measure for medication adherence. *AIDS Behav* 2016;20(11):2700–2708. doi:10.1007/s10461-016-1406-x
9. Kroenke K, Strine TW, Spitzer RL, et al. The PHQ-8 as a measure of current depression in the general population. *J Affect Disord* 2009;114(1–3):163–173. doi:10.1016/j.jad.2008.06.026

.0. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR*. 4th ed. Washington, DC: American Psychiatric Association; 2000.

.1. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med* 2006;166(10):1092–1097. doi:10.1001/archinte.166.10.1092

.2. CDC. What is excessive drinking? https://www.cdc.gov/drinklessbeyourbest/excessivedrinking.html. Updated February 2024. Accessed August 1, 2025.

.3. Dasgupta S, Tie Y, Beer L, et al. Unmet needs for ancillary care services are associated with HIV clinical outcomes among adults with diagnosed HIV. *AIDS Care* 2021;34(5):606–614. doi:10.1080/09540121.2021.1946001.

.4. Healthy People 2030. https://health.gov/healthypeople/objectives-and-data/browse-objectives. Updated January 15,2021. Accessed August 1, 2025.

.5. CDC. National Center for Health Statistics: National Health and Nutrition Examination Survey. https://www.cdc.gov/nchs/nhanes/index.html. Updated May 2024. Accessed August 1, 2025.

.6. CDC. Behavioral Risk Factor Surveillance System. https://www.cdc.gov/brfss/index.html. Updated May 2024. Accessed August 1, 2025.

.7. Wright K, Naar-King S, Lam P, Templin T, Frey M. Stigma scale revised: Reliability and validity of a brief measure of stigma for HIV+ youth. *J Adolesc Health* 2007;40(1):96–98. doi:10.1016/j.jadohealth.2006.08.001

.8. CDC. Distinguishing public health research and public health nonresearch. https://stacks.cdc.gov/view/cdc/24235. Published July 2010. Accessed August 1, 2025.