What is HIV/AIDS?

Human immunodeficiency virus (HIV) is a disease that attacks the body's immune system by destroying white blood (CD4) cells, thus preventing the body from fighting off infections and diseases.[1] HIV can be found in blood, semen, pre-seminal fluid (pre-cum), rectal fluids, vaginal fluids, and breast milk.[2] HIV is primarily transmitted through anal or vaginal sex or by the sharing of needles, syringes, and other drug injection equipment (e.g., cookers).[3] HIV infection can happen when any of these fluids make contact with damaged tissue or mucous membranes such as the ones found in the rectum, vagina, penis, or mouth.[2] HIV is also transmitted when directly injected into the bloodstream.[2]

Although an effective cure against HIV does not exist, the infection can be treated with medication known as antiretroviral therapy (ART). ART is a life-long treatment that can help with viral suppression by reducing the amount of the virus in the blood, known as viral load.[1] When taken as prescribed, ART can reduce the viral load to undetectable levels, which keep people with HIV healthy and unable to transmit the virus to their HIV-negative partners.[1] If left untreated, HIV infection can progress into acquired immune deficiency syndrome (AIDS).[1] The three stages of HIV include:

Stage 1: Acute HIV Infection

- Highly contagious stage of HIV infection due to large amounts of the virus in a person's blood.[4]
- People typically experience flu-like symptoms at this stage.[4]

Stage 2: Chronic HIV Infection

- This stage is known as asymptomatic (no symptoms) HIV infection; however, the virus is still actively reproducing in the body.[4]
- Although a person may not experience any symptoms, they can still infect others with HIV.[4]
- Stage 2 may last a decade or longer, but will eventually progress into AIDS without HIV treatment.[4]

Stage 3: AIDS

- Stage 3 is the most severe stage with the highest viral load or amount of virus in the blood.[4]
- An AIDS diagnosis is determined when the person with HIV has a white blood cell count below a certain threshold (200 cells per cubic millimeter of blood) or when they develop any opportunistic infections.[1]
- People with AIDS have highly compromised immune systems which allow the development of opportunistic infections and other serious illnesses.[4]
- Typical survival for people with AIDS is about three years without HIV treatment.[4]

HIV diagnoses in the United States and dependent areas has decreased by 9% from 2015 to 2019.[5] In 2019, over 36,800 people received an HIV diagnosis within the United States and its dependent areas.[5]

Risk Factors for HIV/AIDS

Demographic Risk Factors

- *Age*
  - In 2019, the highest number of new HIV diagnoses were among people 25-34 years old, followed by people 13-24 years old.[5]
- *Race/Ethnicity*
  - Certain races/ethnicities are disproportionately affected by HIV:
    - In 2019, Black/African American people represent 13% of the United States population, yet they accounted for 42% of new HIV diagnoses.[5]
    - In 2019, Hispanic/Latino people represent 18% of the United States population, yet they accounted for 29% of new HIV diagnoses.[5]
- *Sex*
  - Gay and bisexual men were the most affected population by HIV infection and accounted for 69% of all new HIV diagnoses in 2019.[5]

Social and Behavioral Risk Factors

- *Having a Sexually Transmitted Disease (STD)*
  - People who have an STD such as syphilis, gonorrhea, and herpes are more likely to have HIV in the future.[6]
  - Similar behaviors that aid transmission of other STDs places individuals at greater risk of becoming infected with HIV.[6]
- *Injection Drug Use/Needle Sharing*
  - People who inject drugs (PWID) account for nearly 1 in 10 HIV diagnoses in the United States.[7]
  - In 2019, PWID accounted for 7% of all new HIV diagnoses in the United States.[6]
- *Risky Sexual Behavior*
  - Having anal, vaginal, or oral sex without a barrier device, such as a condom, increases the risk of HIV and other STDs.[6]
  - Having multiple and/or anonymous sex partners increases the risk of HIV and other STDs.[6]
  - Consuming drugs or alcohol can lower inhibitions and increase sexual risk-taking.[6]

Intermediate Outcomes

HIV/AIDS increases the risk of other diseases and is accompanied by complications. Some of these diseases or complications include:

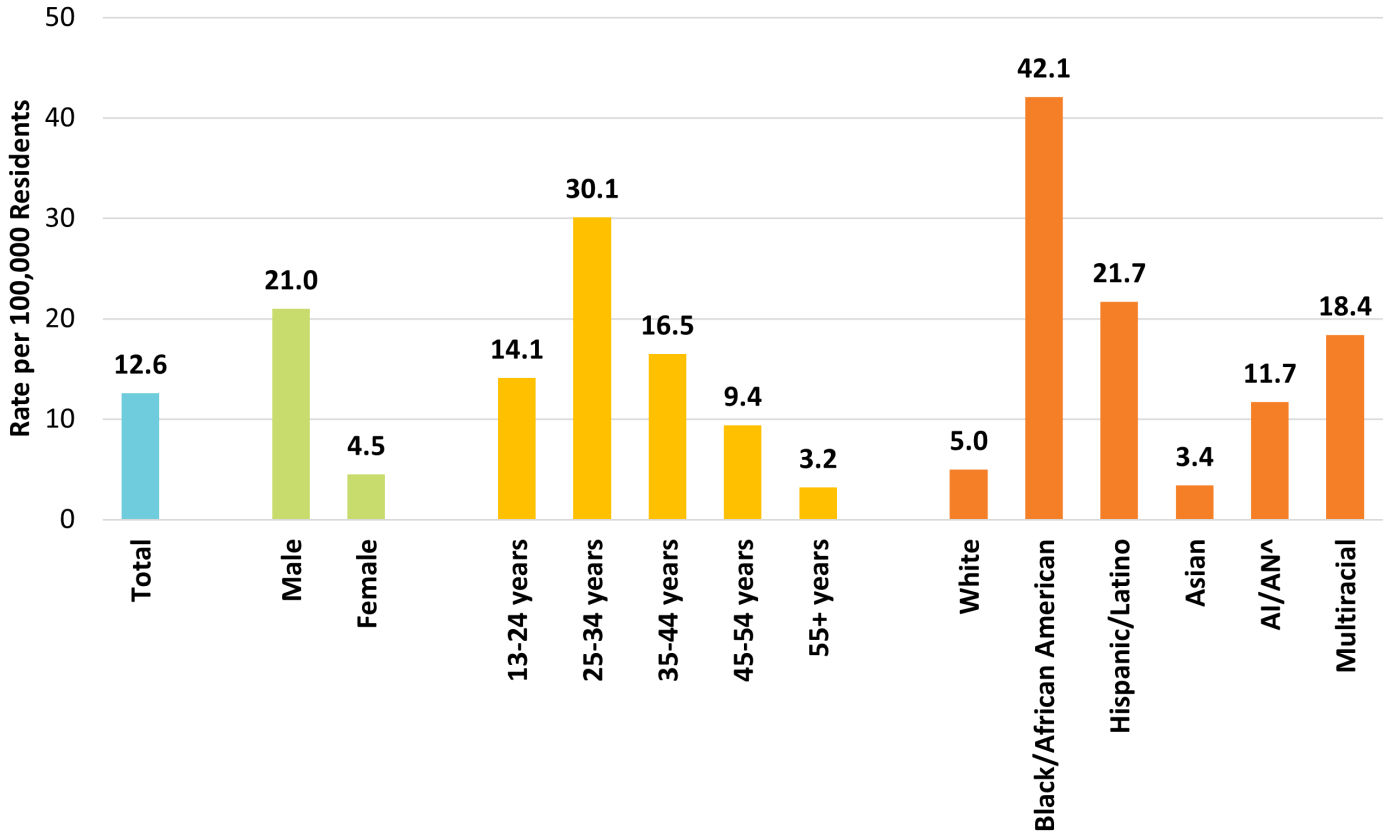
Opportunistic Infections and Diseases

- *Candidiasis (Thrush)*
  - Caused by the fungus *Candida* which affects the skin, nails, and mucous membranes of the body.[8]
  - People living with HIV have difficulty with fungal infections from *Candida,* especially in the mouth, throat, and vagina.[8]
- *Invasive Cervical Cancer*
  - Cancer that begins at the cervix (top of the vagina, bottom of the uterus) and spreads throughout the body.[8]
- *Herpes Simplex Virus (HSV)*
  - HSV is typically an inactive (latent) virus in healthy people, however, in people with weak immune systems HSV can cause infections of the lungs, esophagus (swallowing tube), and bronchus (breathing tube).[8]
- *Kaposi's sarcoma (KS)*
  - KS is a life-threatening disease that causes small blood vessels to grow abnormally and appear as firm pink or purple spots.[8]
- *Lymphoma*
  - Non-Hodgkin lymphoma and Hodgkin lymphoma are cancers of the lymph nodes and other lymphoid tissues which are associated with HIV.[8]
- *Pneumonia*
  - People living with HIV have an increased risk of pneumonia, particularly *Streptococcus pneumoniae*, a life-threatening bacteria among immune compromised people.[8]
- *Tuberculosis (TB)*
  - Due to a compromised immune system, people living with HIV have an increased risk of TB.[9]
  - People with HIV and TB coinfection require specific treatment plans depending on an individuals circumstances.[9]
- *Wasting Syndrome*
  - Involuntary loss of more than 10% of a person's body weight and muscle mass.[8]

Coinfections and Conditions

- *Body Fat Changes—Lipodystrophy*
  - Lipodystrophy involves the buildup and/or loss of body fat among people living with HIV. [10]
  - Changes in body fat may be due to HIV infection or some HIV medications.[10]
- *Cardiovascular Disease*
  - HIV and some HIV medications can increase the risk of heart disease.[9]
- *Diabetes*
  - People living with HIV are more likely to develop type 2 diabetes compared to people without HIV. [11]
  - Some HIV medications should be avoided by people living with HIV with higher than normal blood glucose levels.[11]
- *Dementia*
  - Early in the HIV disease process the virus can spread throughout the brain known as HIV encephalopathy.[12]
  - In advanced stages of the disease, serious complications can occur such as HIV-associated dementia or AIDS dementia complex.[12]
- *Hepatitis B*
  - Hepatitis B is a liver infection primarily spread through sexual contact.
  - The hepatitis B virus (HBV) can be found in the blood, semen, or other body fluid of a person who is infected with HBV.[9]
  - In the United States, 10% of people living with HIV also have HBV, known as HIV/HBV coinfection.[9]
- *Hepatitis C*
  - Hepatitis C is a liver infection primarily spread through the sharing of needles or other injection drug equipment.[9]
  - The hepatitis C virus (HBV) can be found in the blood of a person who is infected with HCV.[9]
  - In the United States, 21% of people living with HIV also have HCV, known as HIV/HCV coinfection.[9]
- *Kidney Disease*
  - HIV infection and some HIV medications can affect the kidneys leading to kidney disease.[9]
  - People with poorly controlled HIV/HCV coinfection have an increased risk of kidney disease.[9]
- *Oral Health*
  - People living with HIV/AIDS are at an increased risk for several oral health problems since their immune system is weakened by HIV/AIDS.[13]
  - Oral health problems experienced by people living with HIV include chronic dry mouth, bone loss (periodontitis), gingivitis, canker sores, oral warts, fever blisters, oral candidiasis (thrush), white tongue patching (hairy leukoplakia), and dental caries. [13]

National Statistics and Disparities



Source: Centers for Disease Control and Prevention. (2021). Estimated HIV incidence and prevalence in the United States, 2015–2019. HIV Surveillance Supplemental Report 2021. http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html
*Age refers to age at infection/diagnosis. **Hispanic/Latino persons can be of any race.
^AI/AN = American Indian/Alaska Native

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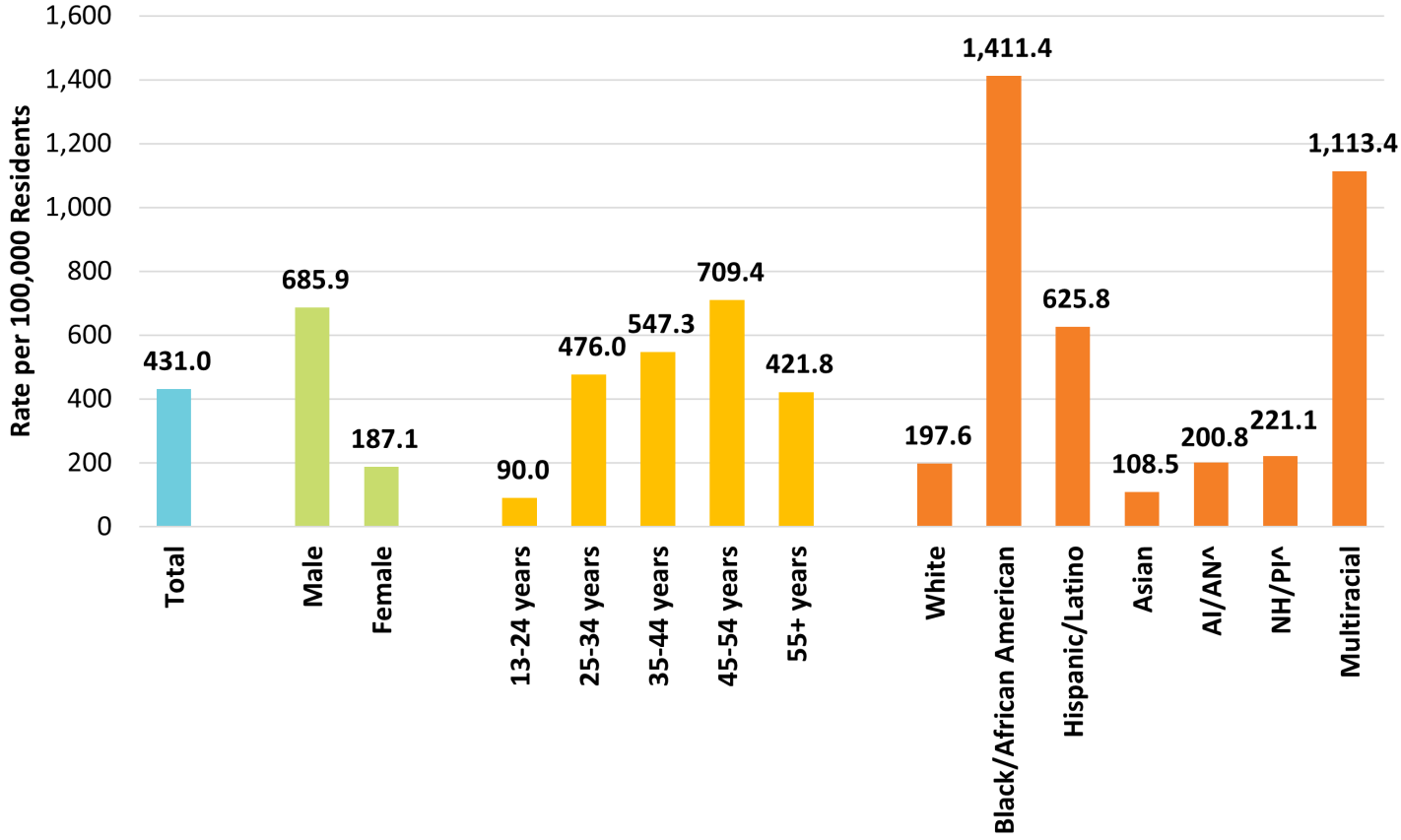
- In 2019, males had a higher estimated incidence rate of HIV (21.0 per 100,000 residents) than females (4.5 per 100,000 residents) and the United States overall (12.6 per 100,000 residents).[14]
- In the United States, individuals 25-34 years of age had the highest incidence rate of HIV infection (30.1 per 100,000 residents) compared to all other age groups in 2019.[14]
- In 2019, Black/African Americans had the highest incidence rate of HIV infection (42.1 per 100,000 residents) compared to all other races/ethnicities.[14]



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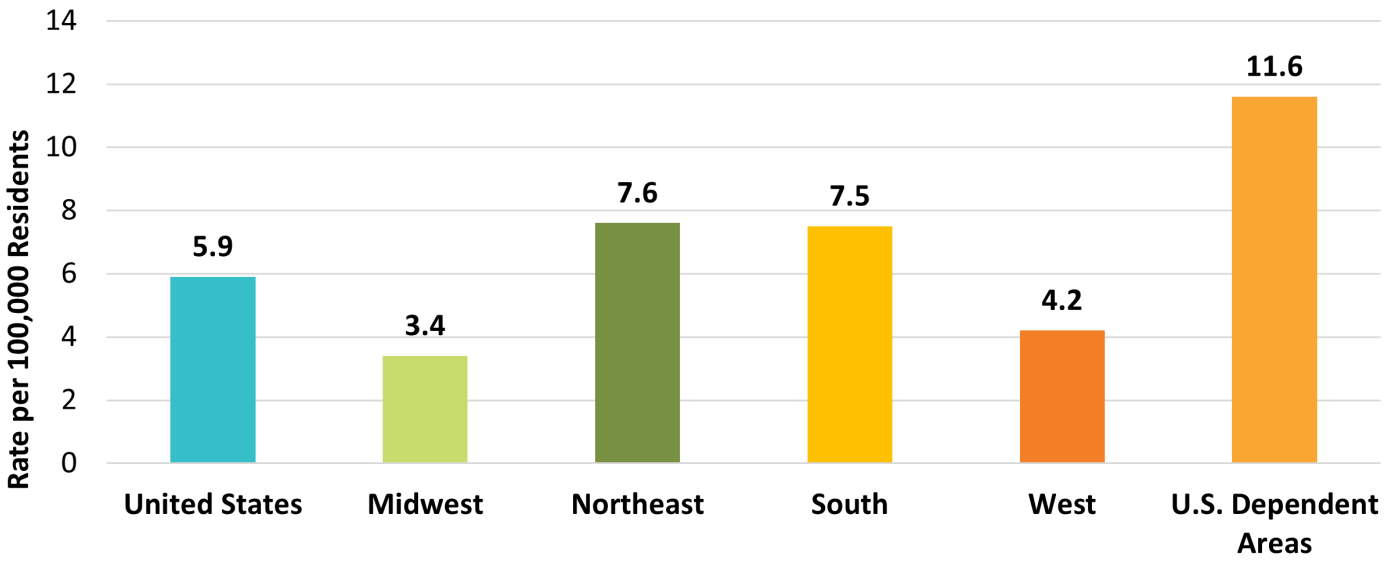
- In 2019, males had a higher estimated prevalence rate of HIV (685.9 per 100,000 residents) than females (187.1 per 100,000 residents) and the United States overall (431.0 per 100,000 residents).[14]
- In the United States, individuals 45-54 years of age had the highest prevalence rate of HIV infection (709.4 per 100,000 residents) compared to all other age groups.[14]
- In 2019, Black/African Americans had the highest prevalence rate of HIV infection (1,411.4 per 100,000 residents) compared to all other races/ethnicities.[14]



Source: Centers for Disease Control and Prevention (CDC), National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), retrieved from NCHHSTP AtlasPlus; https://www.cdc.gov/nchhstp/atlas/index.htm, 2021.

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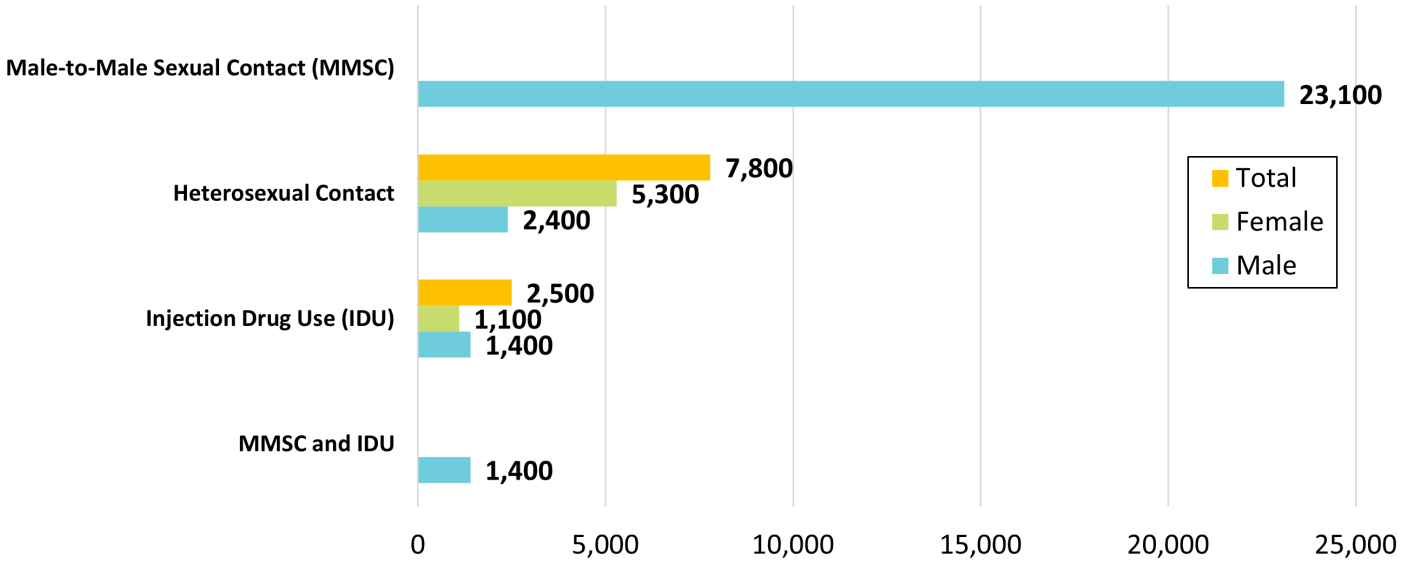
- In 2019, US dependent areas had the highest death rate due to HIV (11.6 per 100,000 residents) among Regions in the United States, followed by Northeast (7.6 per 100,000 residents) and South (7.5 per 100,000 residents).[15]

- US dependent areas (11.6 per 100,000 residents), Northeast (7.6 per 100,000 residents), South (7.5 per 100,000 residents) Regions had higher rates of death due to HIV than the United States (5.9 per 100,000 residents) overall.[15]



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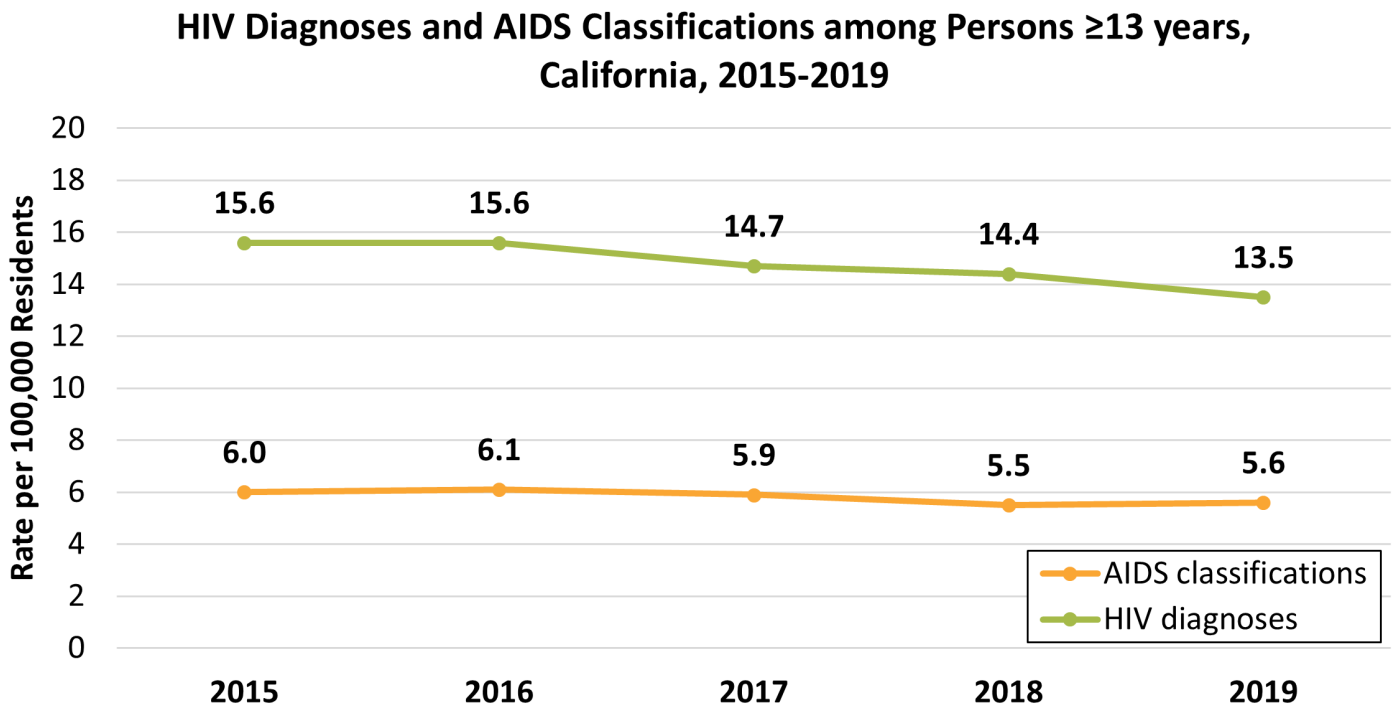
- In 2019, the transmission category with the highest estimated number of HIV infections among males was due to male-to-male sexual contact (MMSC).[14]
- In 2019, the transmission category with the highest estimated number of HIV infections among females was due to heterosexual contact.[14]
- Among injection drug use, males had a higher estimated number of HIV infection compared to females who also engaged in injection drug use.[14]

Cost

- In 2019, an average of over $420,000 in lifetime HIV-related medical costs were estimated for a person living with HIV.[16]

State Statistics and Disparities



Source: Centers for Disease Control and Prevention (CDC), National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), retrieved from NCHHSTP AtlasPlus; https://www.cdc.gov/nchhstp/atlas/index.htm, 2021.

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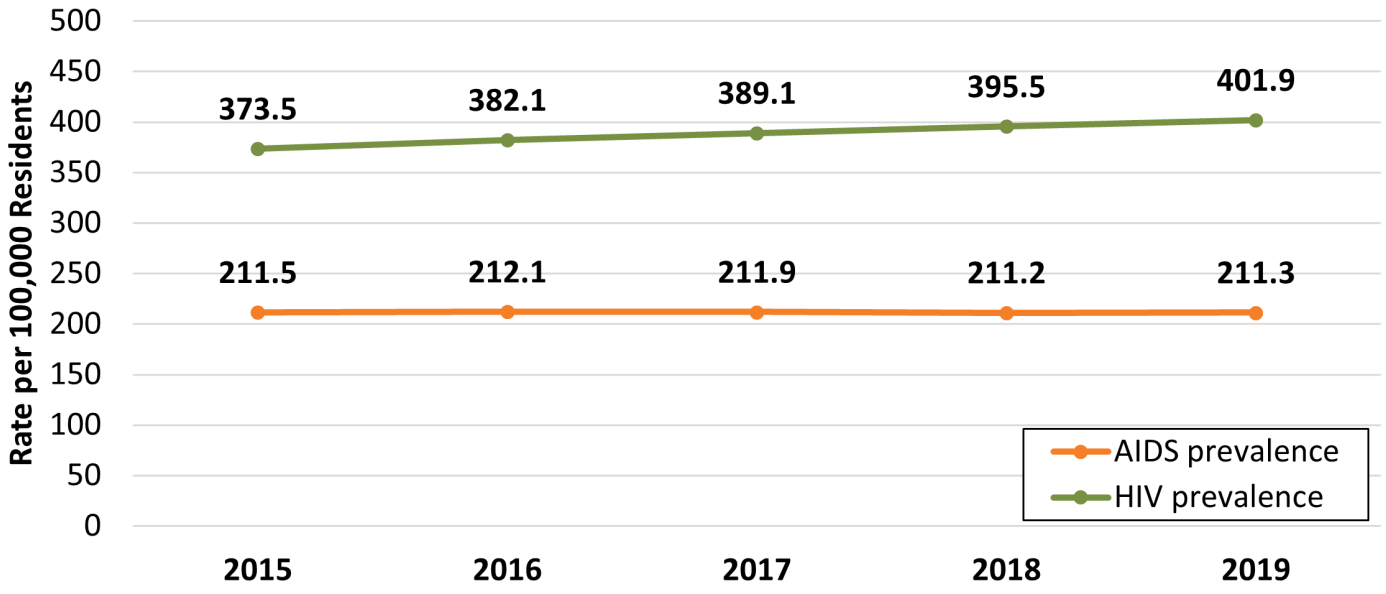
- In California, HIV diagnoses and AIDS classifications have decreased from 2015 to 2019.[15]
- In 2019, the rate of HIV diagnoses among persons aged 13 years and older (13.5 per 100,000 residents) was higher than the rate of AIDS classifications among persons aged 13 years and older (5.6 per 100,000 residents) in California.[15]



Source: Centers for Disease Control and Prevention (CDC), National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (NCHHSTP), retrieved from NCHHSTP AtlasPlus; https://www.cdc.gov/nchhstp/atlas/index.htm, 2021.

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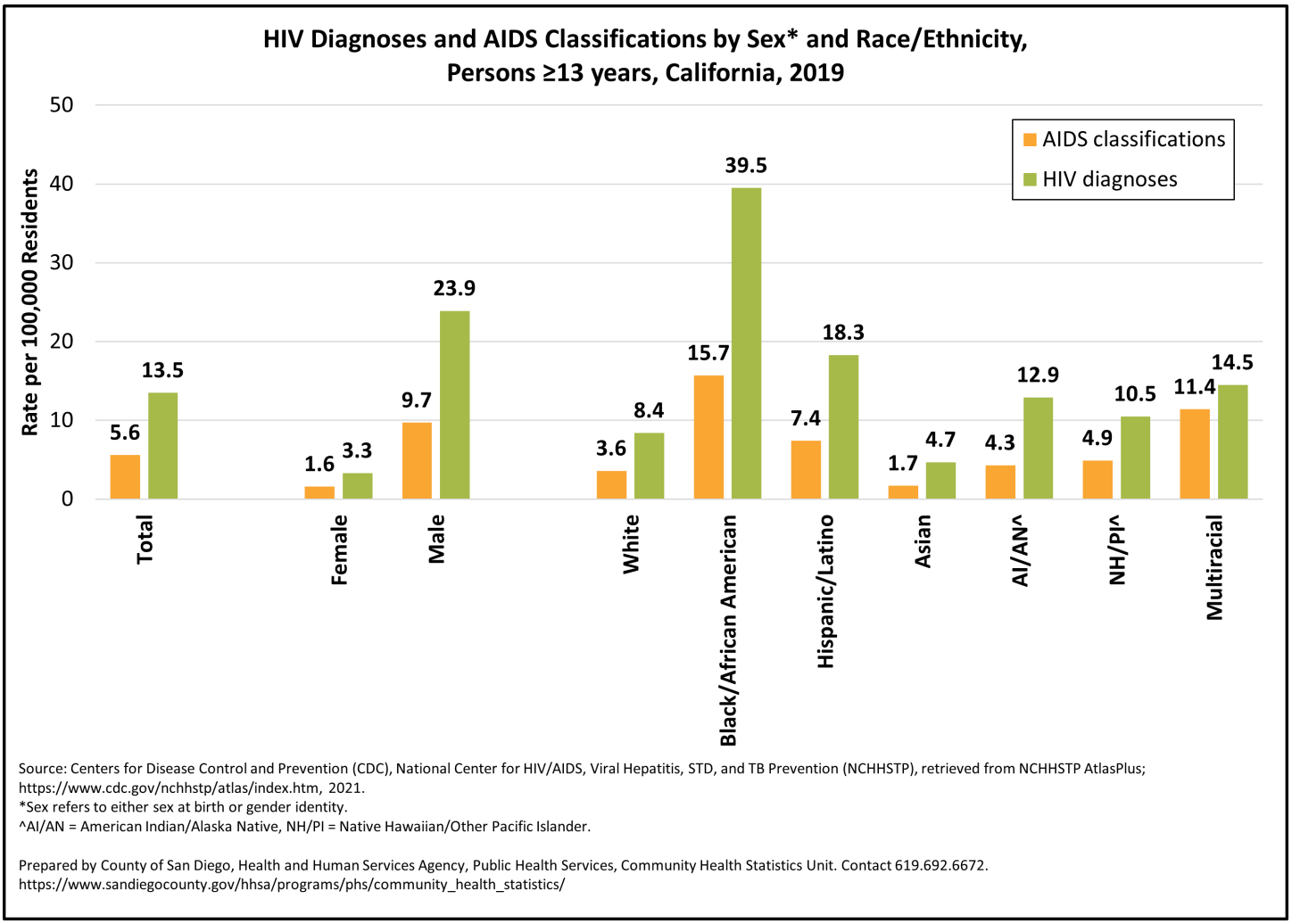
- In California, the rate of persons aged 13 years and older living with HIV has increased from 2015 (373.5 per 100,000 residents) to 2019 (401.9 per 100,000 residents).[15]
- In California, the rate of persons aged 13 years and older living with AIDS has decreased from 2015 (211.5 per 100,000 residents) to 2019 (211.3 per 100,000 residents).[15]



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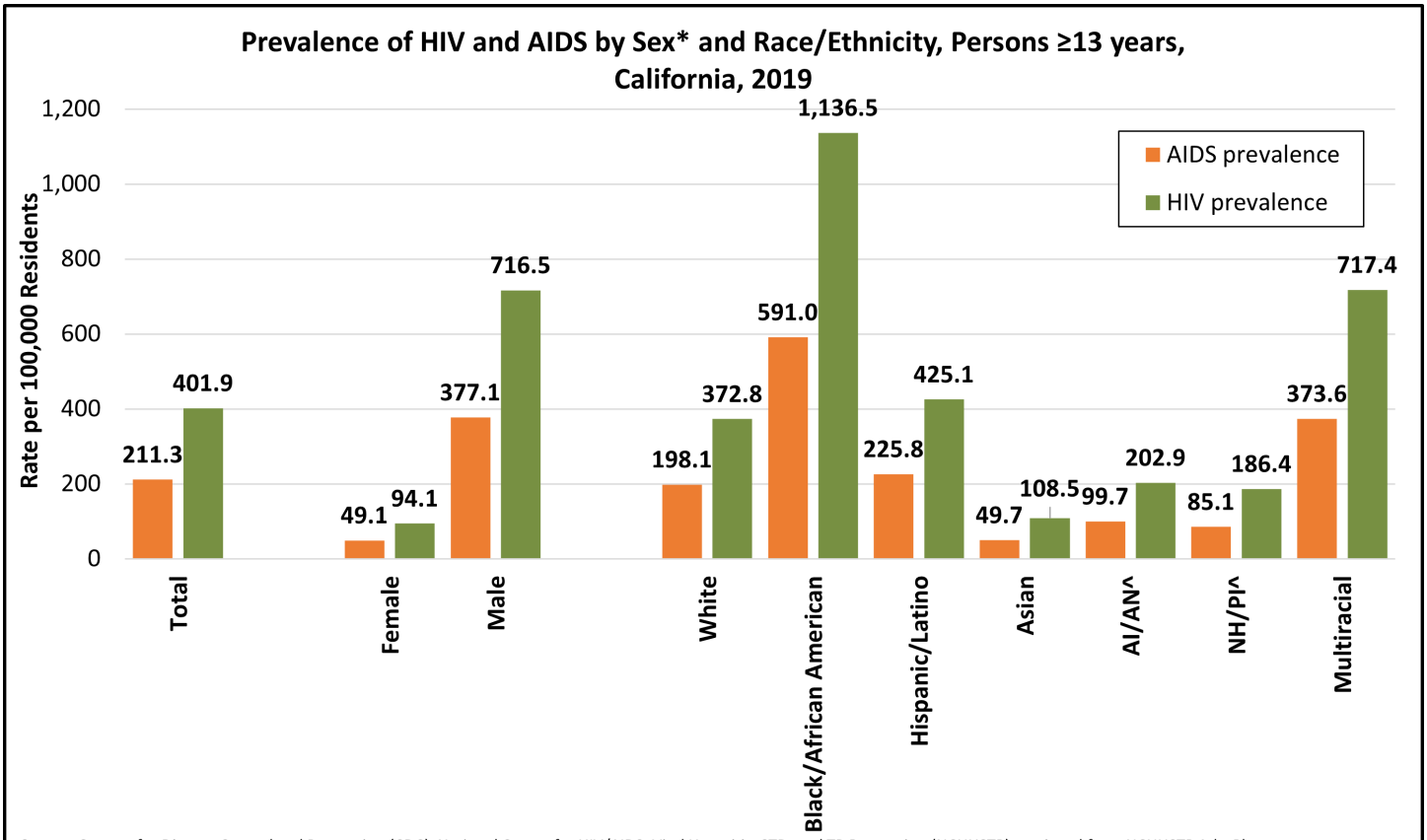
- In 2019, males had higher rates of AIDS classifications (9.7 per 100,000 residents) than the rate of AIDS classifications among females (1.6 per 100,000 residents) and California (5.6 per 100,000 residents) overall.[15]
- In 2019, males had higher rates of HIV diagnoses (23.9 per 100,000 residents) than the rate of HIV diagnoses among females (3.3 per 100,000 residents) and the California (13.5 per 100,000 residents) overall.[15]
- In California, Black/African American persons aged 13 years and older had the highest rates of AIDS classifications and HIV diagnoses compared to all other races/ethnicities.[15]
- Black/African American (15.7 per 100,000), Multiracial (11.4 per 100,000 residents), and Hispanic/Latino (7.4 per 100,000 residents) persons aged 13 years and older had higher AIDS classifications than California (5.6 per 100,000 residents) overall.[15]
- Black/African American (39.5 per 100,000 residents), Hispanic/Latino (18.3 per 100,000 residents), and Multiracial (14.5 per 100,000) persons aged 13 years and older had higher HIV diagnoses than the California (13.5 per 100,000 residents) overall.[15]



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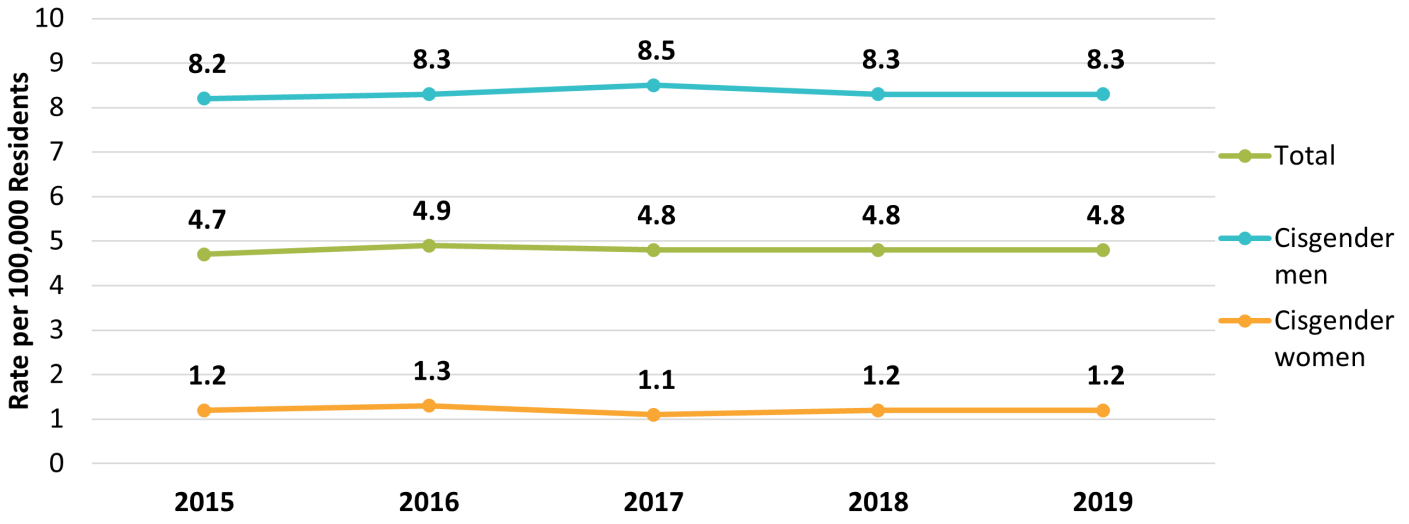
- In 2019, the rate of persons living with AIDS was higher among males (377.1 per 100,000 residents) compared to females (49.1 per 100,000 residents) and California (211.3 per 100,000 residents) overall.[15]
- In 2019, the rate of persons living with HIV was higher among males (716.5 per 100,000 residents) compared to females (94.1 per 100,000 residents) and California (401.9 per 100,000 residents) overall.[15]
- In California, Black/African American persons aged 13 years and older had the highest rate of persons living with HIV/AIDS compared to all other races/ethnicities.[15]
- Black/African American (591.0 per 100,000 residents), Multiracial (373.6 per 100,000 residents), and Hispanic/Latino (225.8 per 100,000 residents) persons aged 13 years and older had higher rates of persons living with AIDS than California (211.3 per 100,000) overall.[15]
- Black/African American (1,136.5 per 100,000 residents), Multiracial (717.4 per 100,000 residents), and Hispanic/Latino (425.1 per 100,000 residents) persons aged 13 years and older had higher rates of persons living with HIV than the California (401.9 per 100,000 residents) overall.[15]



Source: California Department of Public Health, Office of AIDS, California HIV Surveillance Report — 2019. Available at https://www.cdph.ca.gov/programs/cid/doa/pages/oa_case_surveillance_reports.aspx

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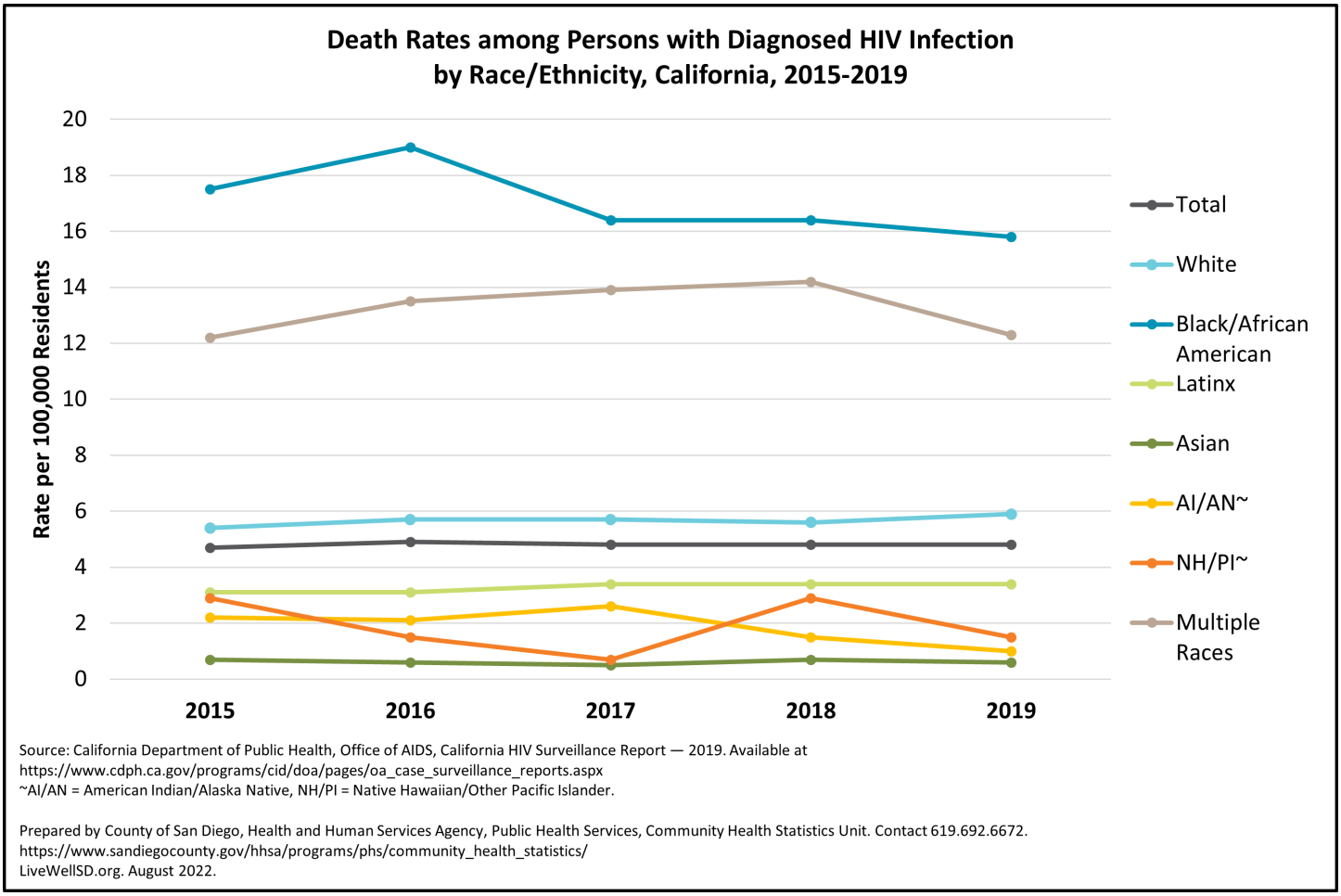
- Between 2015-2019, cisgender men had a higher rate of death among persons with diagnosed HIV infection compared to cisgender women and California overall.[17]
- In 2019, cisgender men had a higher rate of death among persons with diagnosed HIV infection (8.3 per 100,000 residents) compared to cisgender women (1.2 per 100,000 residents) and California (4.8 per 100,000 residents) overall.[17]



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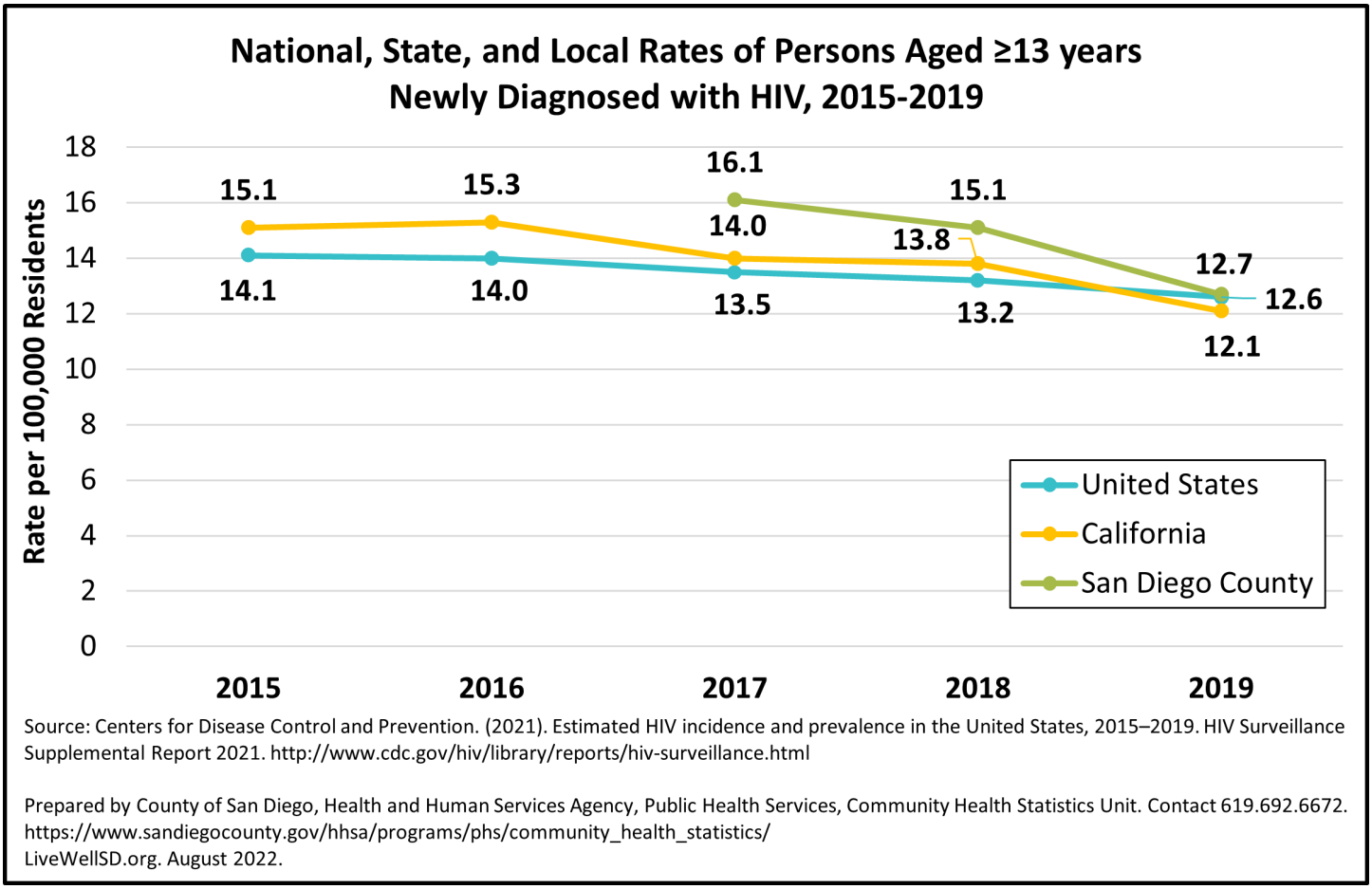
- Between 2015-2019, Black/African Americans have had higher rates of death due to HIV infection compared to all other races/ethnicities and the State of California overall.[17]
- In 2019, Black/African Americans (15.8 per 100,000 residents) and Multiracial Americans (12.3 per 100,000 residents) had the highest rates of death due to HIV infection, followed by Whites (5.9 per 100,000 residents) and Latinx (3.4 per 100,000 residents).[17]
- In 2019, Black/African Americans (15.8 per 100,000 residents), Multiracial Americans (12.3 per 100,000 residents), and Whites (5.9 per 100,000 residents) had higher rates of death due to HIV infection compared to the State of California (4.8 per 100,000 residents) overall.[17]

Local Statistics and Disparities



Source: Centers for Disease Control and Prevention. (2021). Estimated HIV incidence and prevalence in the United States, 2015–2019. HIV Surveillance Supplemental Report 2021. http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html

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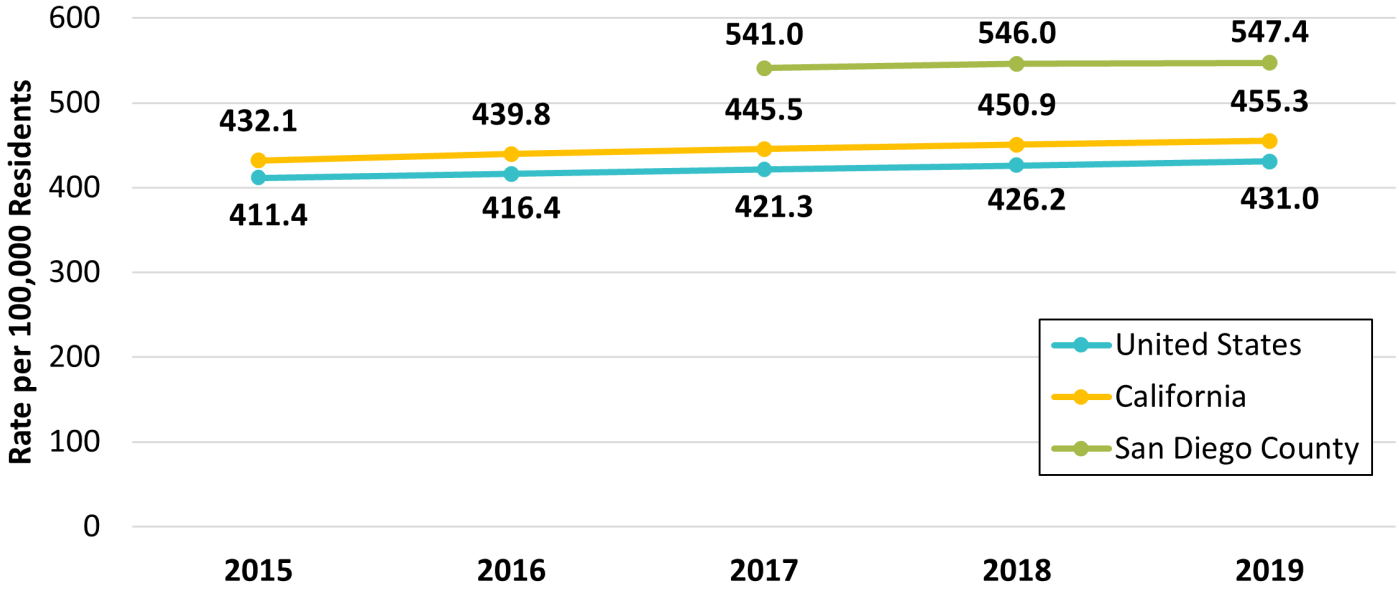
- Between 2015-2018, the United States had lower rates of newly HIV diagnosed persons aged 13 years and older than California.[14]
- Between 2017-2019, San Diego County had a higher rate of newly HIV diagnosed persons aged 13 years and older than California and the United States overall.[14]
- In 2019, San Diego County had a higher rate of newly HIV diagnosed persons aged 13 years and older (12.7 per 100,000 residents) than California (12.1 per 100,000 residents) and the United States (12.6 per 100,000 residents) overall.[14]



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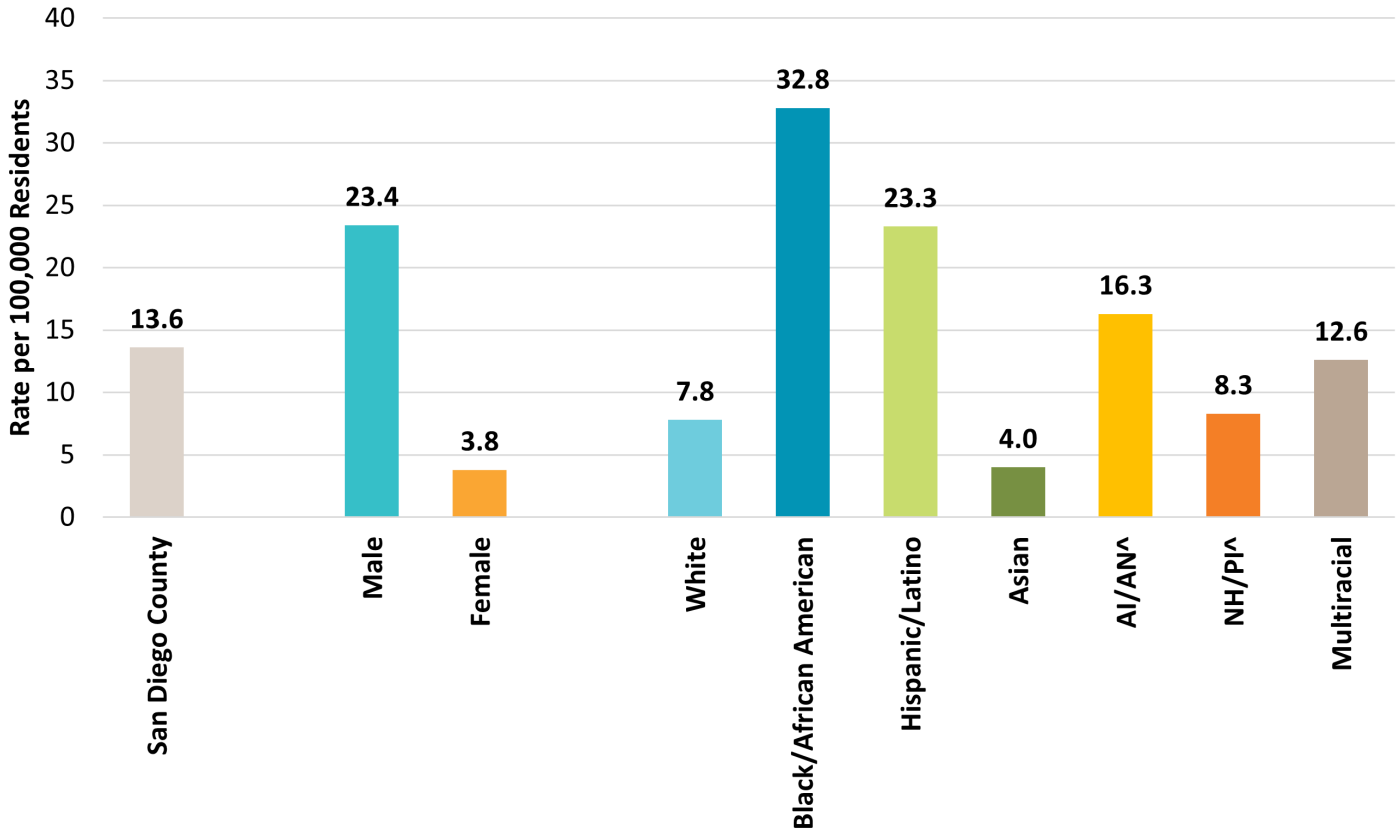
- Between 2015-2019, the United States had lower rates of persons aged 13 years and older living with HIV than California.[14]
- Between 2017-2019, San Diego County had a higher rate of persons aged 13 years and older living with HIV than California and the United States overall.[14]
- In 2019, San Diego County had a higher rate of persons aged 13 years and older living with HIV (547.4 per 100,000 residents) than California (455.3 per 100,000 residents) and the United States (431.0 per 100,000 residents) overall.[14]



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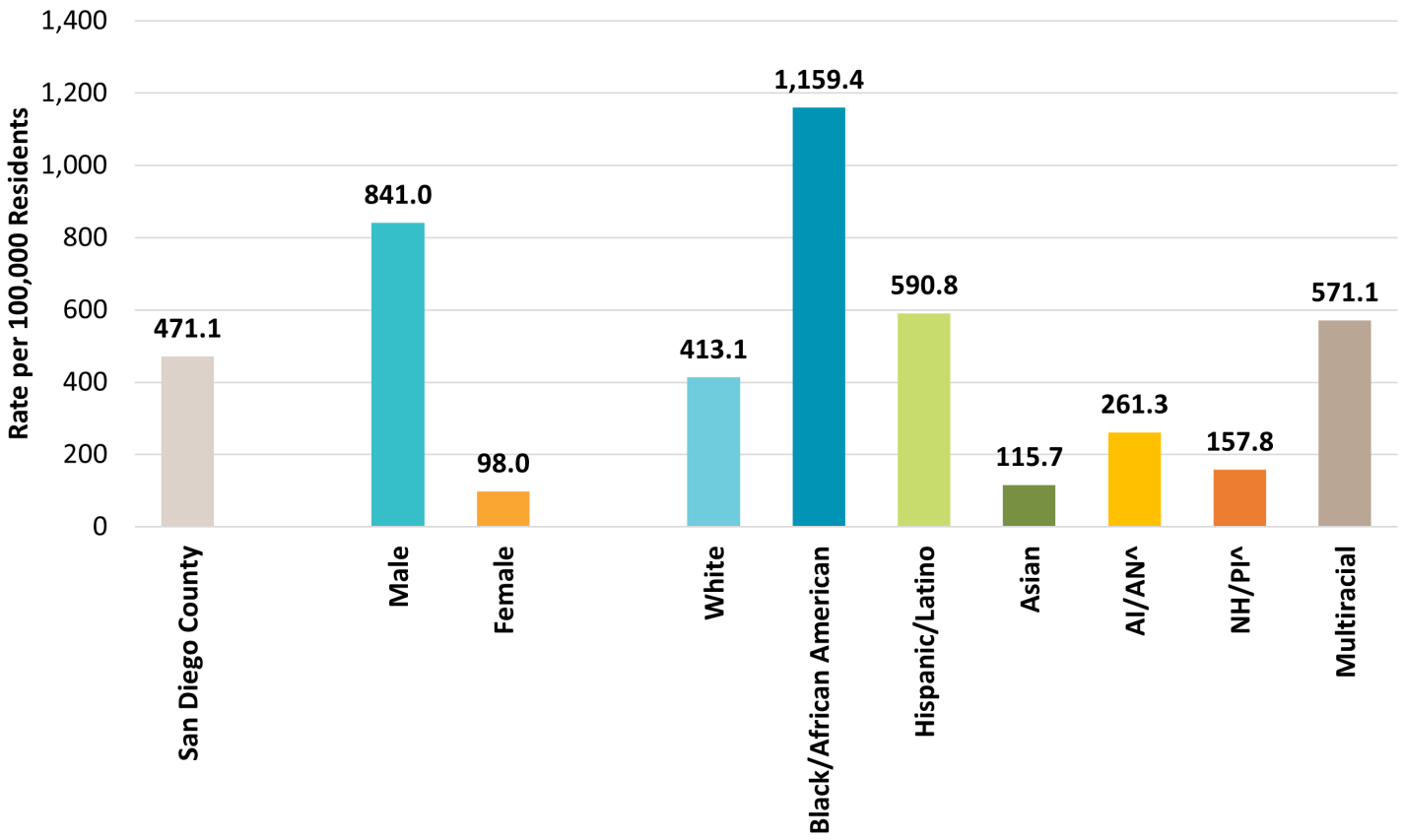
- In 2019, the rate of HIV diagnoses was higher among males (23.4 per 100,000 residents) compared to females (3.8 per 100,000 residents) and San Diego County (13.6 per 100,000 residents) overall.[15]
- In California, Black/African American persons aged 13 years and older had the highest rate HIV diagnoses compared to all other races/ethnicities.[15]
- Black/African American (32.8 per 100,000 residents), Hispanic/Latino (23.3 per 100,000 residents), and American Indian/Alaska Native (16.3 per 100,000 residents) persons aged 13 years and older had higher rates of HIV diagnoses than San Diego County (13.6 per 100,000 residents) overall.[15]



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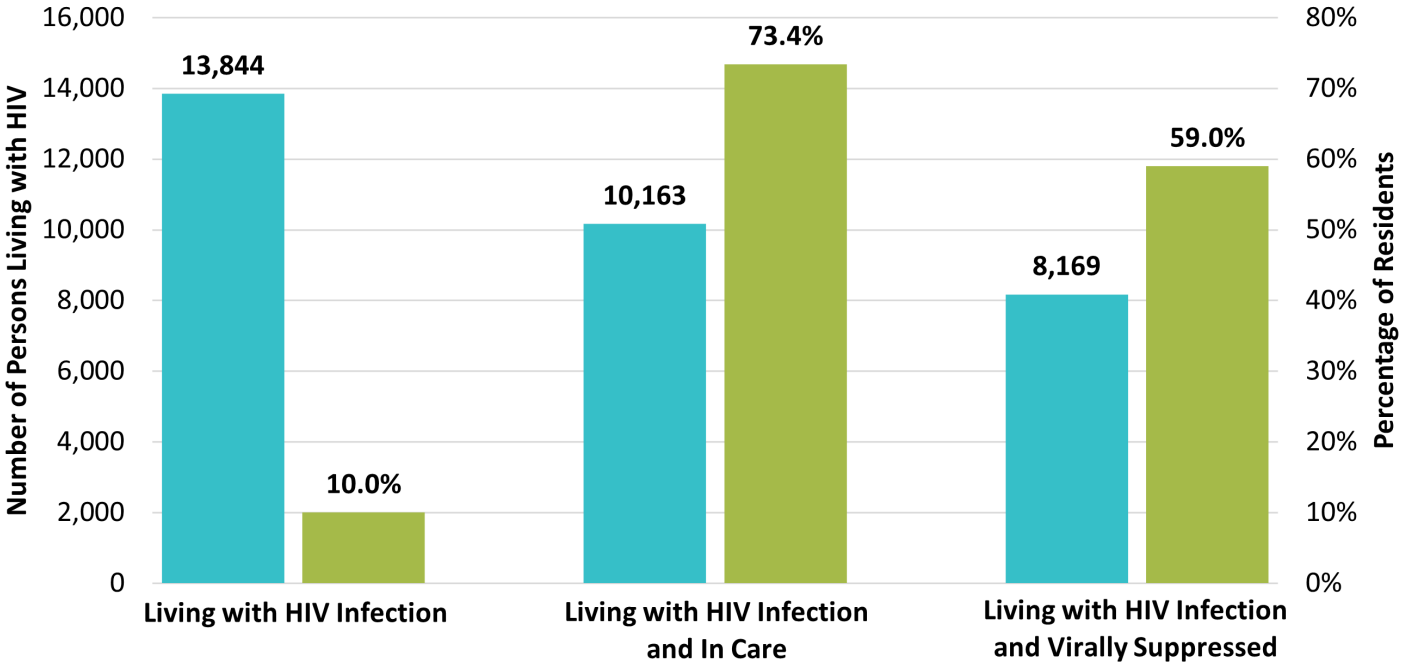
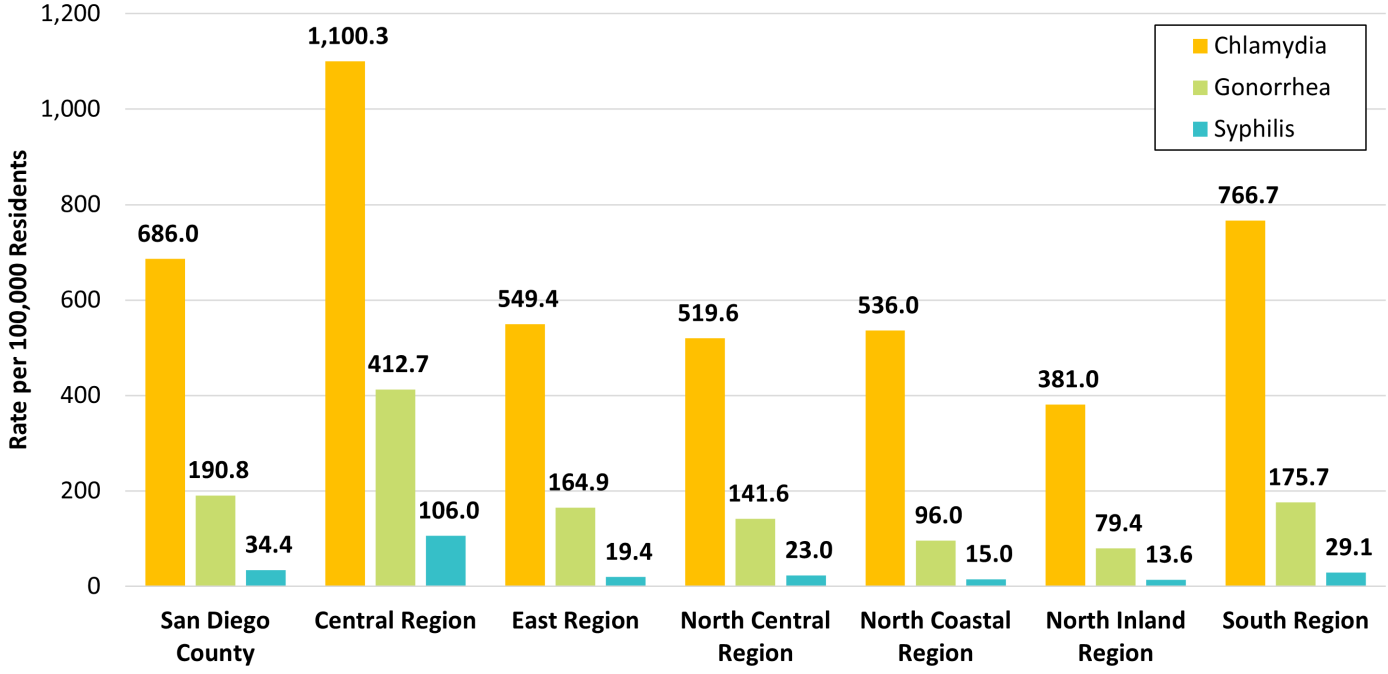
- In 2019, the rate of persons living with HIV was higher among males (841.0 per 100,000 residents) compared to females (98.0 per 100,000 residents) and San Diego County (471.1 per 100,000 residents) overall.[15]
- In California, Black/African American persons aged 13 years and older had the highest rate HIV diagnoses compared to all other races/ethnicities.[15]
- Black/African American (1,159.4 per 100,000 residents), Hispanic/Latino (590.8 per 100,000 residents), and Multiracial (571.1 per 100,000 residents) persons aged 13 years and older had higher rates of HIV diagnoses than San Diego County (471.1 per 100,000 residents) overall.[15]



Source: California Department of Public Health, Office of AIDS, California HIV Surveillance Report — 2019. Available at https://www.cdph.ca.gov/programs/cid/doa/pages/oa_case_surveillance_reports.aspx

Prepared by County of San Diego, Health and Human Services Agency, Public Health Services, Community Health Statistics Unit. Contact 619.692.6672.
https://www.sandiegocounty.gov/hhsa/programs/phs/community_health_statistics/
LiveWellSD.org. August 2022.

- In 2019, nearly 13,900 people were living with HIV, of whom 73.4% were in care and 59.0% were virally suppressed.[16]



*County actual rates are per 100,000 individuals. County age-adjusted rates per 100,000 2000 US standard population.
Source: San Diego County Community Profiles, 2019.
Population estimates San Diego Association of Governments (SANDAG), 2019v5/2020.

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- In 2019, the incidence rate of communicable diseases (chlamydia, gonorrhea, and syphilis) in Central Region were higher compared to all other Health and Human Services Agency (HHSA) regions and San Diego County overall.[17]
- Among communicable diseases, the highest incidence rate was due chlamydia in all HHSA regions and San Diego County overall.[17]
- Among HHSA regions, Central Region had the highest incidence rate due to gonorrhea (412.7 per 100,000 residents), followed by South Region (175.7 per 100,000 residents).[17]

HIV/AIDS and Its Complications: Prevention for Individuals

- *Safer Sex Practice*
  - Consistently and correctly use a new condom for every act of vaginal, anal, and oral sex throughout the entirety of the sexual act.[6]
  - Limit the number of sexual partners.[6]
  - Limit or eliminate the use of drugs and/or alcohol before and during sex.[6]
  - Choose sexual activities that have little to no risk of getting HIV such as oral sex.[19]
- *PrEP and PEP*
  - PrEP (pre-exposure prophylaxis) is a highly effective medication for preventing HIV among people with a high risk of getting HIV (e.g., risky sexual behavior, injection drug use).[19,20]
  - PEP (post-exposure prophylaxis) can be taken to prevent HIV infection after possible exposure to HIV.[6]
- *Do Not Share Needles/Syringes with Others*
  - Use new injection equipment such as needles and syringes with every injection.[20]
  - Seek syringe services programs (SSPs) which can safely disposed of used injection equipment and offer new needles and syringes.[20]
- *Prevent Perinatal Transmission*
  - The risk of HIV transmission throughout pregnancy, labor, and delivery can be 1% or less if HIV medications are taken as prescribed and the infant is given HIV medication for 4-6 weeks after birth.[21]
  - Cesarian delivery is an option that can prevent HIV transmission if the expecting person's viral load is not adequately reduced.[21]
  - Avoid breastfeeding or pre-chewing food for infants to eliminate the risk of passing on the HIV virus.[21]
- *Seek Treatment for HIV and other STDs*
  - Seeking treatment for STDs can help prevent its associated complications, such as sores which can facilitate transmission of HIV.[6]
- *Get tested*
  - People who are sexually active should regularly seek testing even if they do not experience symptoms.[6]
  - People who have an STD are more likely to get HIV.[19]

Prevention Tools for Public Health Professionals: HIV/AIDS Critical Pathway

There are many opportunities for public health professionals in the community to help reduce the risk of diabetes and to improve the health outcomes of individuals who already have the disease. To assist in community health efforts, a *HIV/AIDS Critical Pathway* was developed.

The *HIV/AIDS Critical Pathway* is a tool to be used in health promotion and disease prevention efforts. Its purpose is to identify populations at greater risk for HIV/AIDS, and to identify prevention and early intervention opportunities. The *HIV/AIDS Critical Pathway* displays a diagram of the major risk factors and intermediate outcomes or related diseases that have an impact on, or result from, diabetes. Risk factors are marked as non-modifiable (black striped bars) such as race/ethnicity or sex and modifiable (solid colored bars) such as risky sexual behavior or substance use.

Beneath the risk factors diagram is a data grid describing the San Diego resident population in relation to selected elements of the pathway. The data grid is designed to assist in quick identification of opportunities for interventions that might have a high impact on a particular disease. The data represent all San Diegans, not only those with a particular disease. The left axis (bar) indicates the percent of the population with a known risk factor or intermediate outcome. The right axis (diamond) indicates the rate of a particular medical encounter within the population that is specified. The data are described fully in the complete version of the *Critical Pathway*s.

In addition, the Community Health Statistics Unit website (www.SDHealthStatistics.com) provides detailed demographic, health and facility data including maps of geographically formatted health data. Also available are links to other County data sources, state and national sites of interest. For further assistance with data or interpretation, please contact the Community Health Statistics Unit.

HIV/AIDS Critical Pathway to Disease

Critical Pathway

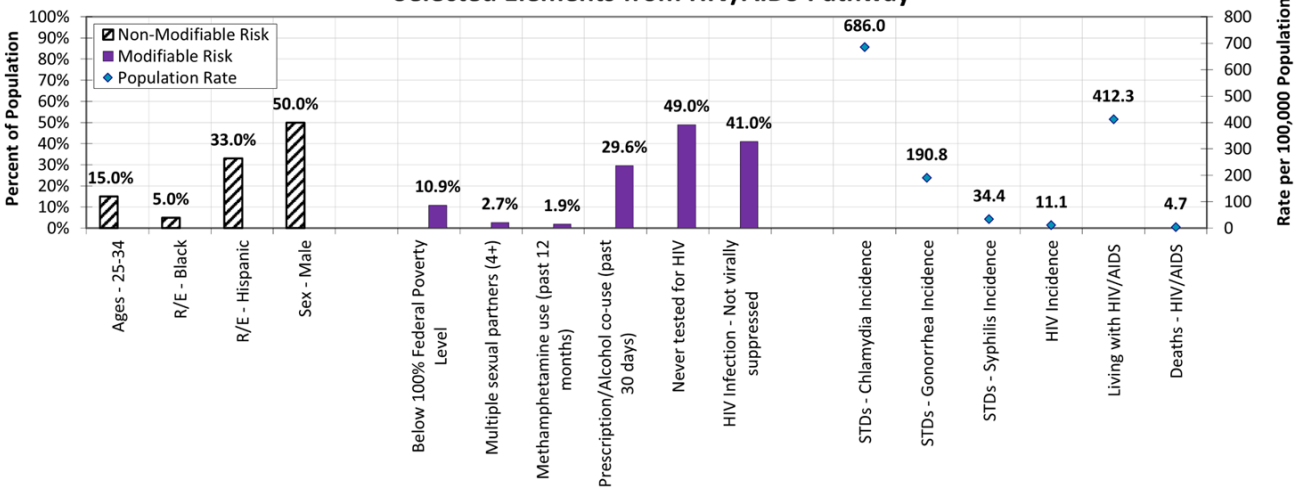
HIV/AIDS

OPPORTUNITIES FOR PREVENTION

	PRIMARY	SECONDARY	TERTIARY	
Birth	**Demographic Risk Factors*** Age; Race/Ethnicity (R/E); Sex; Socioeconomic status	**Behavioral & Social Risk Factors*** Intravenous drug use; Needle sharing; Other STDs; Risky sexual behavior; History of blood transfusion between 1978-1985	**Intermediate Outcomes** HIV positive status; Hepatitis C (comorbidity); Opportunistic infections; Tuberculosis (TB)	AIDS Death

*SOCIAL DETERMINANTS OF HEALTH

Characteristics of Residents, San Diego County
Selected Elements from HIV/AIDS Pathway



County of San Diego ■ Health and Human Services Agency ■ Public Health Services ■ Community Health Statistics Unit ■ www.SDHeathStatistics.com ■ (619)692-8667 08/2022

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