

# HIV IN ALAMEDA COUNTY, 2017-2019

Alameda County Public  
Health Department

HIV Epidemiology &  
Surveillance Unit





# HIV in Alameda County, 2017-2019

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HIV Epidemiology and Surveillance Unit

HIV STD Section

Division of Communicable Disease Control and Prevention

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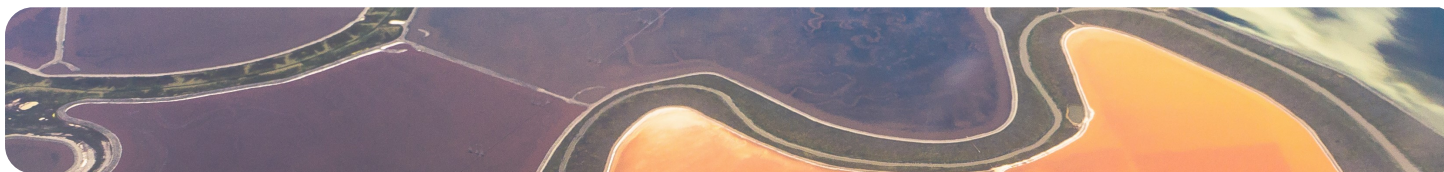




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# Background

## Overview of this Report

This report is based on human immunodeficiency virus (HIV) case surveillance in Alameda County. It summarizes data on HIV in 5 chapters as described below.

1. **New Diagnoses:** This chapter describes patterns of HIV diagnosis in Alameda County, characterizing those who were recently diagnosed according to demographic factors, risk factors and stage of disease.
2. **People Living with HIV:** The second chapter of the report describes the characteristics of all people known to be living with HIV disease (PLHIV) in Alameda County. This chapter describes the total burden of HIV disease in the county and how it varies by demographic factors as well as by geography. It also describes changes in mortality rates (deaths) over time among those ever diagnosed with Acquired Immune Deficiency Syndrome (AIDS).
3. **The Continuum of HIV Care:** This chapter presents the continuum of HIV care in Alameda County. Modern medical treatments for HIV can halt the progression of the disease and prevent its spread, but not all persons living with HIV receive effective treatment. The continuum of HIV care (also known as the “HIV care cascade”) is a framework that presents different indicators of engagement in HIV care among PLHIV, including linkage to care, retention in care, and viral suppression. Summarized metrics for the Data to Care program (D2C)—which focuses on targeting HIV prevention and care services along the continuum of care using surveillance data—is described with the relevant continuum of care metrics in this chapter.
4. **Key Populations:** This chapter highlights HIV/AIDS as pertaining to specific populations of transgender people, young people of color, men who have sex with men (MSM), non-US-born, and people who inject drugs (PWID).
5. **Social Determinants of Health and HIV:** This chapter describes the associations between the social and structural factors affecting health and HIV. Neighborhood metrics of educational attainment, poverty, nativity, unemployment, and health insurance are examined in relation to prevalence of HIV.

## HIV/AIDS

HIV attacks the immune system, weakening it over time such that people living with HIV become increasingly susceptible to opportunistic infections and other medical conditions. The most advanced stage of infection, when the immune system is weakest, is called AIDS. Medical treatments can inhibit HIV’s ability to replicate and greatly temper its effect, but the human body cannot clear HIV. HIV is typically transmitted through sex, contaminated needles, or spread from mother to fetus during pregnancy.



## Definitions Used in this Report

### Stages of HIV Infection

For surveillance purposes, HIV disease progression is classified into 4 stages, from acute infection (Stage 0) to AIDS (Stage 3). In this report, we use “HIV” to refer to HIV disease at any stage (including Stage 3/ AIDS) and AIDS to refer specifically to Stage 3 HIV disease. We use the acronym “PLHIV” to refer to all people living with HIV disease, regardless of stage.

### Case Definition

All reported HIV cases must meet the Centers for Disease Control and Prevention (CDC) case definition based on laboratory or clinical criteria.<sup>1</sup> Clinical criteria include a medical provider diagnosis and evidence of HIV treatment, unexplained low CD4 count, or opportunistic infection. The full criteria may be found at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6303a1.htm>.

### Transmission Category

For surveillance purposes, each reported HIV case must be classified according to their risk factors for acquiring HIV. Cases with multiple risk factors are assigned a transmission category, the risk factor most likely to have resulted in HIV transmission according to a hierarchy developed by the CDC. In this context, “heterosexual contact” refers to sexual contact with a partner of the opposite sex with a known risk factor for HIV. In some cases, partners’ risk factors are unknown, leaving some heterosexual cases without known HIV risk factors. Such cases are assigned to the “unknown” transmission category. The only exception is when a case’s sex at birth is female and she reported sex with males, in which case she is presumed to have been infected through heterosexual contact in accordance with CDC-accepted guidance set by the Council of State and Territorial Epidemiologists.<sup>2</sup>

### Demographics

Demographic data in this report are based on investigations of medical records. Although the transgender community is highly impacted by HIV, data on current gender identity are not reliably captured in medical records. For this reason, all analyses are presented by sex assigned at birth, for which we use “sex” as shorthand.

Data from racial/ethnic groups in which there were very small numbers were combined for these analyses. Asians and Pacific Islanders are combined into a single category. American Indians, Alaskan Natives, and those identifying with multiple races are combined along with those of unknown race into another group (“Other/Unk”). In tables and charts, the category “Asians and Pacific Islanders” is abbreviated “API” and “African American” is abbreviated “AfrAmer”.

## Geographic Area

Residential addresses are geocoded to census tract and city/Census-designated place. Region and neighborhood boundaries established by the Alameda County Community Assessment, Planning, and Evaluation (CAPE) unit based on census tract aggregates are used. These geographic areas are shown in Figures 1.1 and 1.2.

## Other Conventions Used

Analyses that are broken out by subgroup (e.g., race/ethnicity) are presented along with the overall group total (e.g., all races) for comparison.

Where rates are presented, they are often accompanied by error bars to convey their degree of statistical variability. These error bars depict 95% confidence intervals (a “margin of error”) for the estimates. (In the case of trends, error bands formed by connecting the ends of these margins of error are shown.) Confidence intervals are displayed in select subgroup analyses of indicators. Confidence intervals that do not overlap are considered “statistically significant” and generally represent true differences that are not attributed to chance alone, though it is still possible. Details regarding how these confidence intervals are calculated can be found in the technical notes (see “Calculation of Confidence Intervals” on page 67).

Tables showing breakdowns of populations (e.g., new diagnoses, people living with HIV) for indicators (e.g., diagnosis rates, viral suppression) by demographic or other subgroup are included at the end of each chapter. Note that in each table the length of the orange bar is proportional to the fraction of the total population in that subgroup. Additionally, estimates of each indicator and lines depicting 95% confidence intervals for the estimate are also shown for absolute comparisons between subgroups. Relative comparisons of subgroups (e.g., “Late diagnosis is three times as common in group A as it is in group B”) may be made by comparing estimates, when shown. Unreliable estimates are not shown in tables, although their confidence intervals may be. Details on data suppression can be found in the technical notes (see “Data Suppression Rules” on page 68). Lastly, in order to protect privacy, case counts less than five are not presented in this report.

## Data to Care

Data to Care (D2C) is an Alameda County Public Health Department (ACPHD) program aimed at improving outcomes along the continuum of HIV care. It supports and targets HIV prevention services in the county by identifying persons newly diagnosed with HIV as well as those living with HIV who have fallen out of care, using surveillance data. A description of D2C services and program metrics are included in Chapter 4.

Figure 1.1: Regions of Alameda County

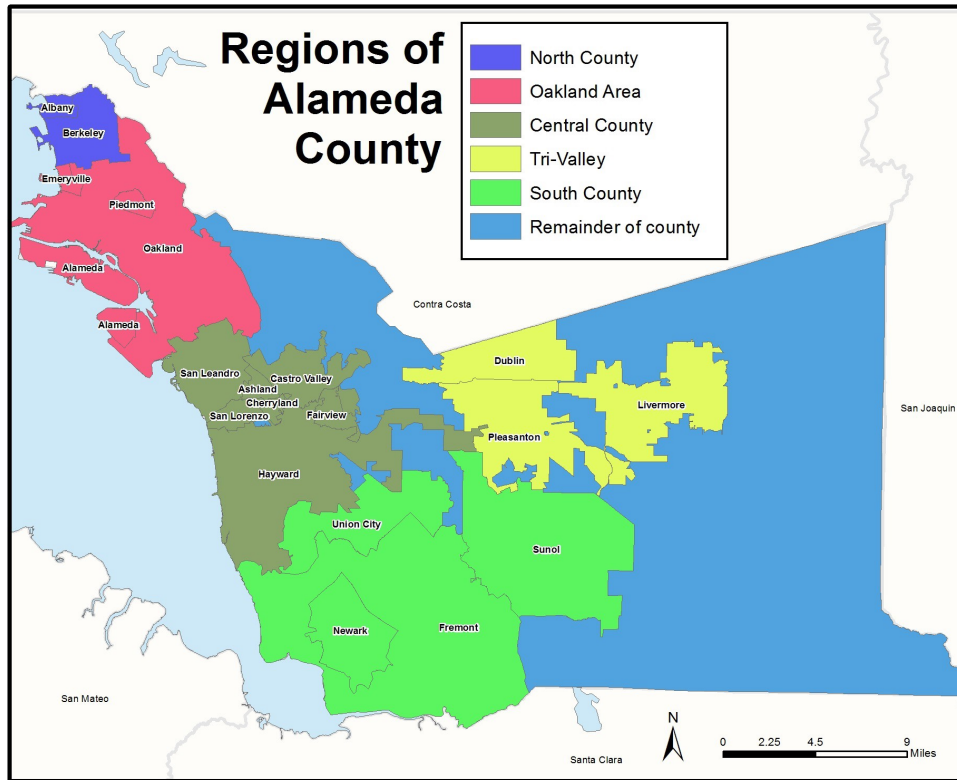
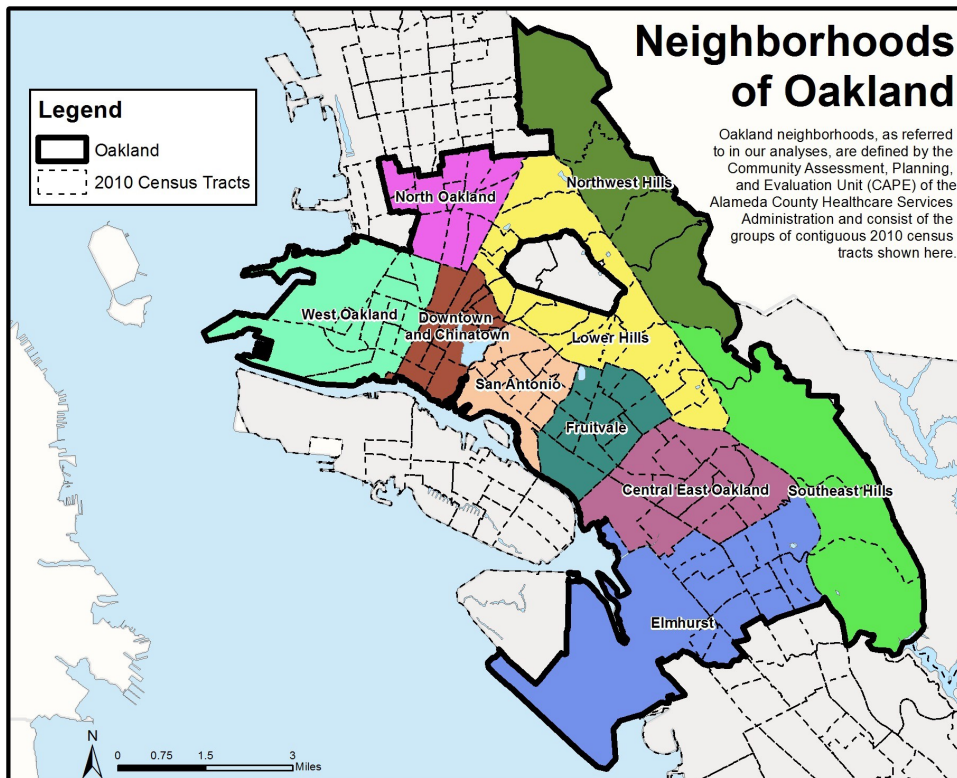


Figure 1.2: Neighborhoods in the City of Oakland







## *New Diagnoses*

ACPHD monitors the HIV epidemic through mandated reports of new diagnoses and laboratory results. Estimating the true incidence rate of new HIV transmissions is complex due to the variable time interval between when a person becomes infected and when their infection is diagnosed. However, surveillance data reliably describe all new HIV diagnoses and diagnosis rates. In 2018, there were an estimated 37,515 new diagnoses of HIV infection in the US for an overall diagnosis rate of 11.5 per 100,000 persons. Nationally, rates were highest among males as compared to females (22.6 vs. 5.1 diagnoses per 100,000, respectively), those aged 20 to 24 or 25 to 29 (27.8 and 32.6 per 100,000, respectively), African Americans and Latinos (39.2 and 16.4 per 100,000), and in the South and Northeast (15.6 and 9.9 per 100,000). Men who have sex with men, including those who inject drugs, accounted for 66% of all new diagnoses, heterosexual contact accounted for 24%, and other modes of transmission accounted for the remaining 10%.<sup>3</sup>

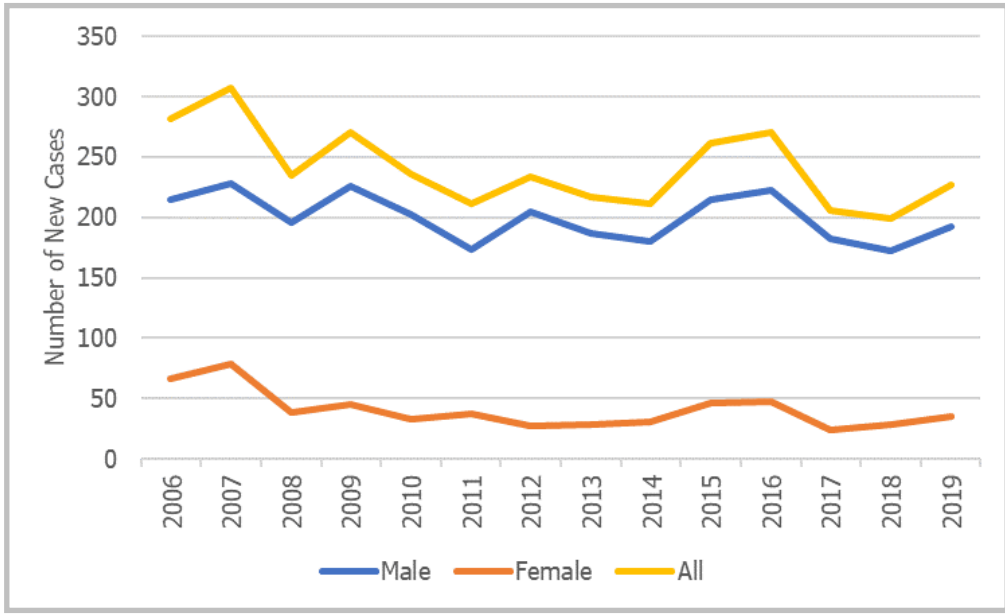
In California, there were an estimated 4,747 new diagnoses for an overall statewide rate of 11.9 diagnoses per 100,000 in 2018. The epidemiology of HIV in Alameda County largely mirrored that of the nation, with the exception that heterosexual contact is estimated to account for only 14.3% of all new diagnoses among Alameda County residents.<sup>4</sup> In Alameda County the average annual diagnosis rate calculated over the 3-year period of 2017 to 2019 was 12.7 diagnoses per 100,000.

This chapter describes HIV in Alameda County by examining characteristics of new diagnoses, new diagnosis rates, and the timeliness of diagnoses by demographic characteristics. Stratified data on newly diagnosed cases from 2017 to 2019 by sex, age and race/ethnicity are provided in Tables 2.1 to 2.4 at the end of this chapter.

# Characteristics of New Diagnoses

Since HIV became reportable by name in California in 2006, between 200 and 300 new cases of HIV disease have been reported each year among Alameda County residents. In 2019, there were 227 new diagnoses of HIV in the county.

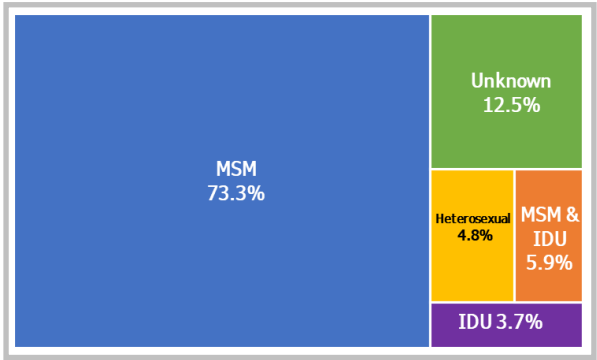
Figure 2.1: New Diagnosis by Sex and Year, Alameda County, 2006-2019



NOTE: "Sex" here refers to sex assigned at birth.

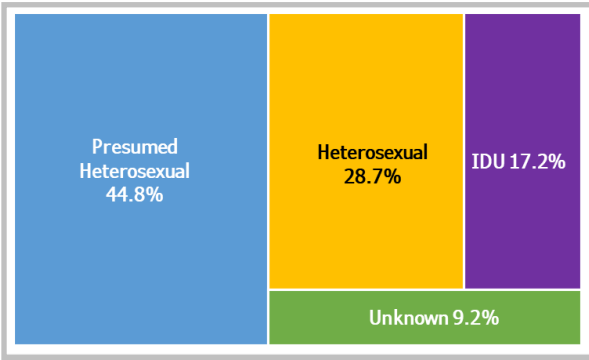
In Alameda County, newly diagnosed HIV cases were overwhelmingly male. The proportion of new diagnoses that were among males increased from 76.2% in 2006 to 84.6% in 2019.

Figure 2.2: New Diagnoses by Mode of Transmission Among Males, Alameda County, 2017-2019



NOTES: 1) N=546  
2) "Sex" here refers to sex assigned at birth.

Figure 2.3: New Diagnoses by Mode of Transmission Among Females, Alameda County, 2017-2019



NOTES: 1) N=87  
2) "Sex" here refers to sex assigned at birth.

Among the 546 men diagnosed with HIV from 2017 to 2019, the overwhelming majority (73.3%) were MSM. More than seven in ten (78.0%) newly diagnosed women were reported to or presumed to have acquired HIV by heterosexual contact with a partner with known or unknown HIV status; most of the remaining women with a known transmission category were infected through injection drug use (IDU).

Figure 2.4: New Diagnoses by Race/Ethnicity, Alameda County, 2017-2019

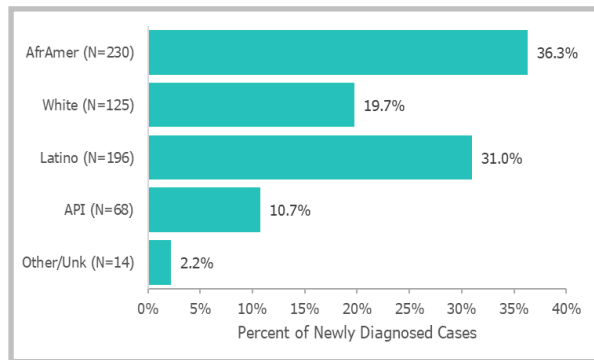
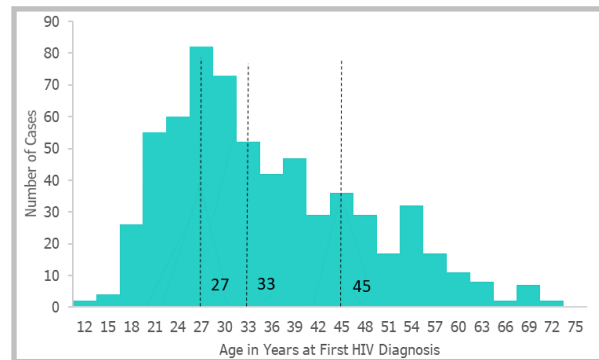


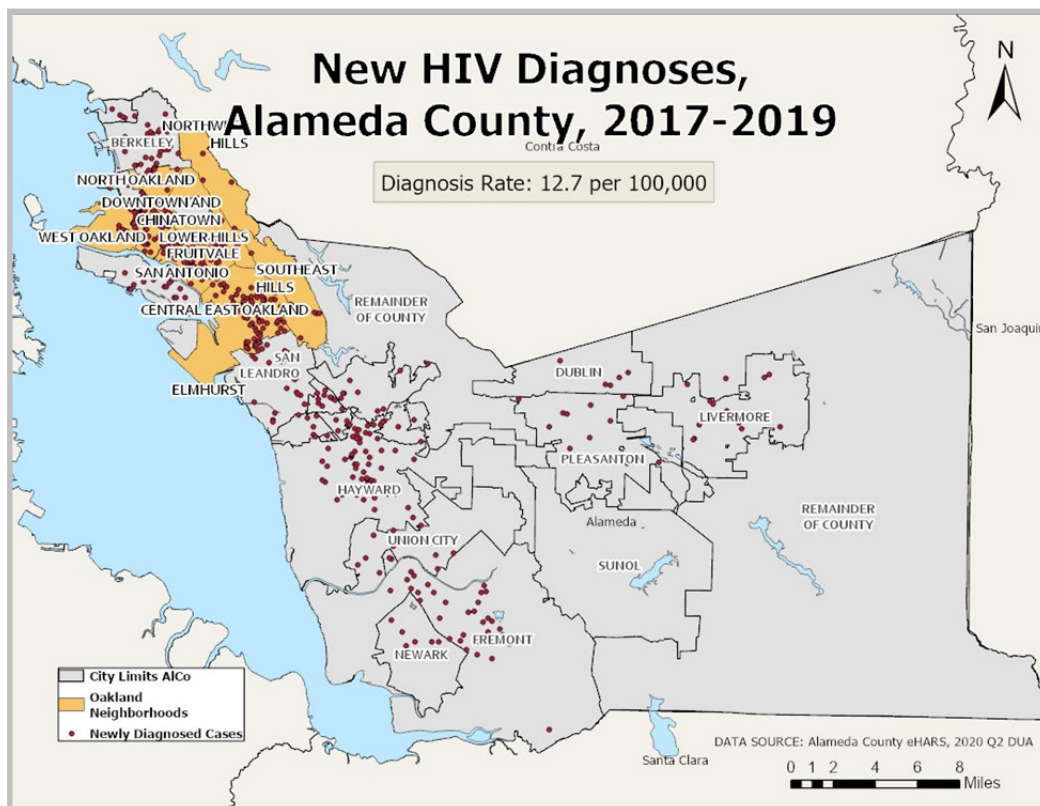
Figure 2.5: Age of New Diagnoses, Alameda County, 2017-2019



NOTE: The dashed lines indicate the 25th, 50th, and 75th percentile values for age among new diagnoses.

From 2017 to 2019, African Americans comprised the largest proportion (36.3%) of new HIV diagnoses among all racial/ethnic groups. Latinos had the next largest proportion (31.0%) of new HIV diagnoses, followed by whites (19.7%), and API (10.7%). The median age among Alameda County residents diagnosed with HIV disease from 2017 to 2019 was 33 years and the mean age was 36.4 years. Most diagnoses were among those in their twenties to forties.

Figure 2.6: Geographic Distribution of New HIV Cases by Residence at HIV Diagnosis, Alameda County, 2017-2019

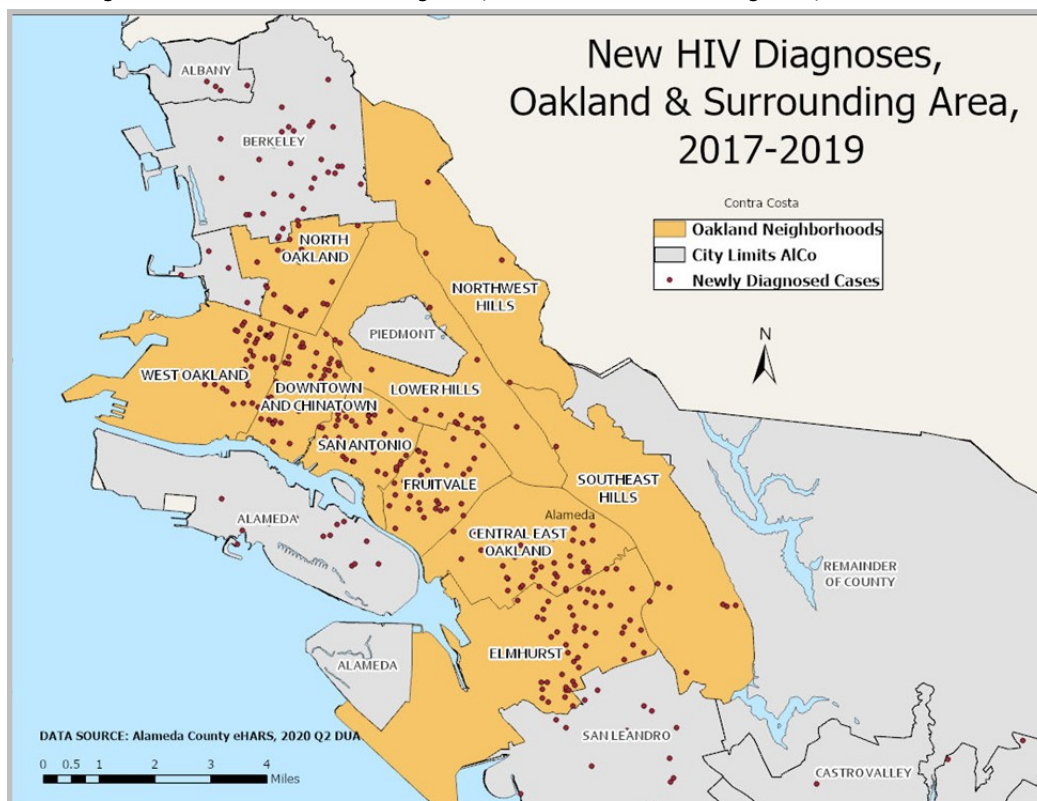


NOTES: 1) N=587

2) An additional 46 new diagnoses (7.2% of all) are not represented due to incomplete street address.

New diagnoses of HIV were most concentrated in the Oakland area and central county regions (as defined in Figure 1.1 on page 4).

Figure 2.7: Residence at HIV Diagnosis, Oakland and Surrounding Area, 2017-2019



Within Oakland and the surrounding area, new diagnoses were less concentrated in the Oakland hills (Northwest Hills, Southeast Hills, and Lower Hills neighborhoods) than in the rest of the region.

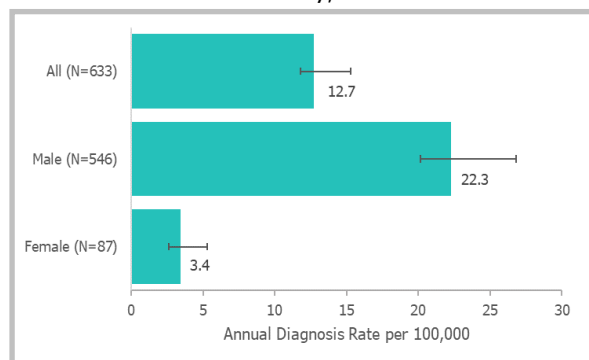
## Diagnosis Rates

This section examines trends in HIV diagnosis rates. Diagnosis rates are not equivalent to HIV incidence rates. Trends in diagnosis rates may reflect changes in HIV incidence over time, but may also reflect changes in HIV testing practices. For example, HIV incidence could decrease while HIV diagnosis rates increase if more HIV-unaware persons are tested and diagnosed. Due to the relatively small numbers of diagnoses occurring in Alameda County in any given year, annual diagnosis rates are statistically unstable.

We performed statistical analyses to identify trends that are least likely to reflect random year-to-year HIV variability. Apparent trends do not indicate statistical significance unless specified in the text.

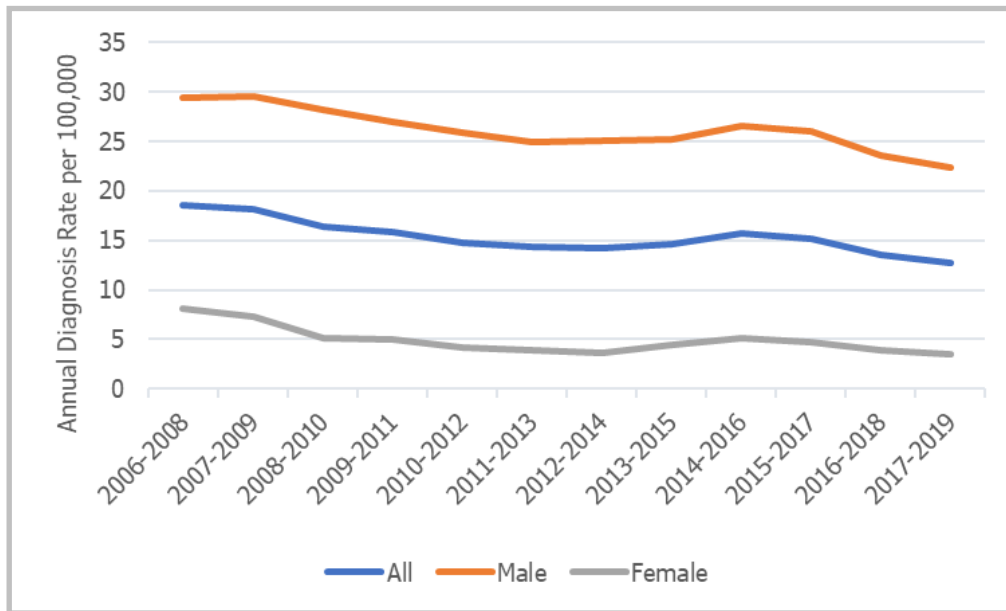
From 2017 to 2019, there were 633 new HIV diagnoses in Alameda County for an average annual rate of 12.7 per 100,000 residents. New diagnosis rates were six times as high among males as among females between 2017 and 2019.

Figure 2.8: Rates of New Diagnoses by Sex, Alameda County, 2017-2019



NOTE: "Sex" here refers to sex assigned at birth.

Figure 2.9: Trends in Rates of New Diagnoses by Sex, Alameda County, 2006-2019

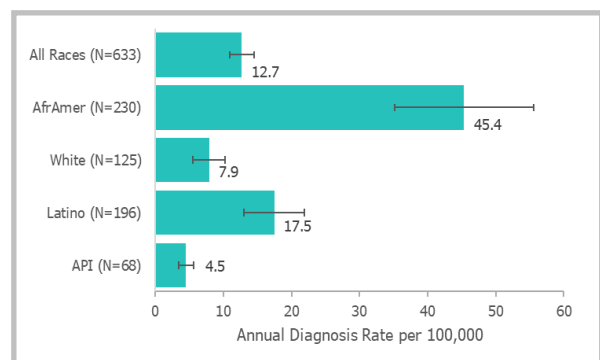


NOTE: "Sex" here refers to sex assigned at birth

New diagnosis rates declined steadily and significantly between 2006 and 2019, decreasing by an average of 2.8% annually overall and 2.1% annually among males. In contrast, the same period, rates among females dropped significantly by 6.4% annually. Rates were consistently higher in men between 2006 and 2019.

From 2017 to 2019, the highest diagnosis rate was among African Americans, which was almost three times as high as the second most impacted group—Latinos. The lowest diagnosis rate was seen among API.

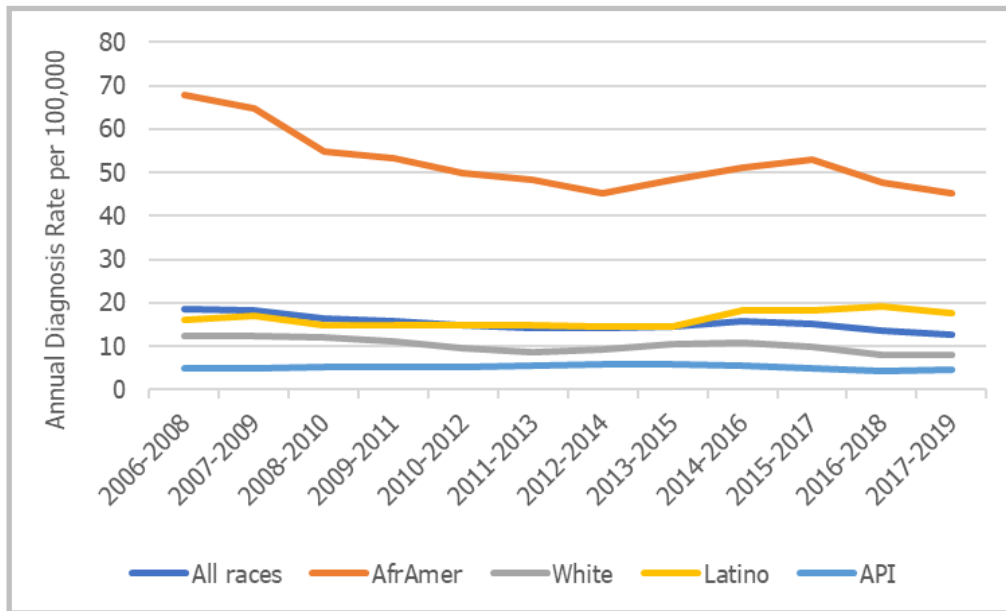
Figure 2.10: Rates of New Diagnoses by Race/Ethnicity, Alameda County, 2017-2019



NOTE: "Sex" here refers to sex assigned at birth.



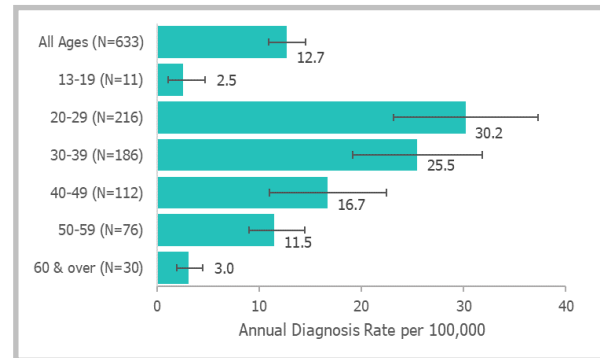
Figure 2.11: Trends in Rates of New Diagnoses by Race/Ethnicity, Alameda County, 2006-2019



Diagnosis rates have been relatively constant since 2006 in most racial/ethnic groups. However, the average annual decline in diagnosis rate was statistically significant among African Americans (3.4%) and whites (3.2%). The overall decline in the diagnosis rate in the county since 2006 was driven largely by decreases in diagnoses among African Americans—particularly African American women—amongst whom rates decreased by 6.8% per year on average. While there were 42.1 new diagnoses per 100,000 African American women from 2006 to 2008, that rate declined to 17.4 new diagnoses per 100,000 from 2017 to 2019. Rates also declined among Latino women, by an average of 4.8% per year.

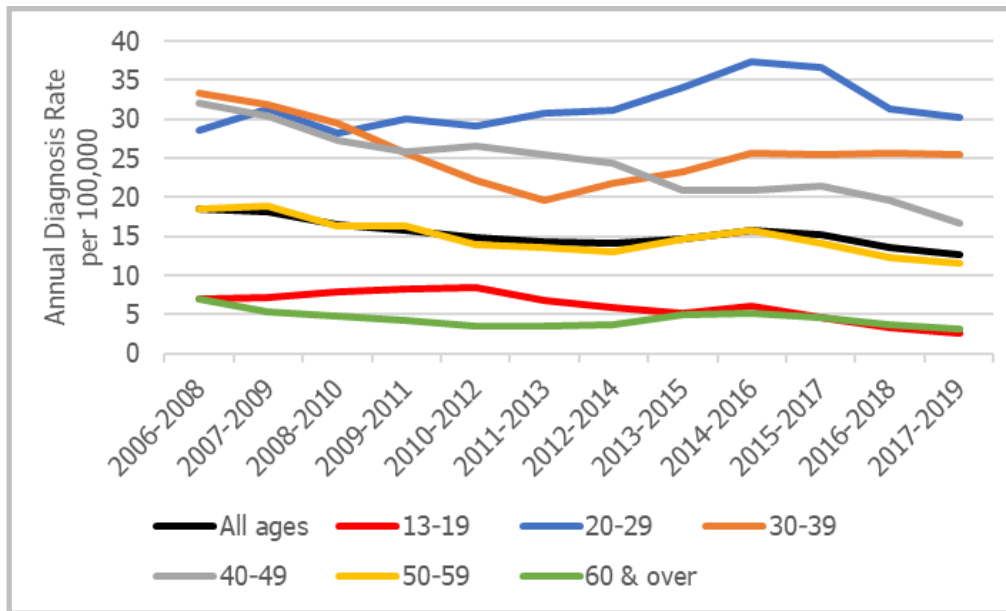
Among all males, the only significant trends were declines in diagnosis rates among African Americans and whites (2.2% and 3.9%, respectively per year on average).

Figure 2.12: Rates of New Diagnoses by Age, Alameda County, 2017-2019



From 2017 to 2019, new HIV diagnoses were most common among those in their twenties, thirties, and forties, with 30.2, 25.5, and 16.7 diagnoses per 100,000, respectively. New HIV diagnoses were somewhat less common among those in their fifties and least common among those at the extremes of the age spectrum (i.e., teens and those aged 60 and over).

Figure 2.13: Trends in Rates of New Diagnoses by Age, Alameda County, 2006-2019



By age, diagnosis rates have decreased significantly from 2006 to 2019 at an average rate of 5.5% per year among those 40 to 49 and 4.2% per year among those 50 and older. While the rate among those 20 to 29 has increased and among those 30 to 39 has decreased since 2006, these were not statistically significant trends.

Among African Americans, there were significant declines in diagnosis rates between 2006 and 2019 in several age groups. There was an average annual decline of 3.9% among those aged 30 to 39 years, 6.8% among those 40 to 49 years, and 4.2% among those 50 to 59 years. Whites aged 40 to 49 years old saw an average annual decline of 6.3% while those 60 and older saw a decline of 7.2%. Among Latinos, there was an 8.9% decline among those aged 13 to 19 years; in contrast there was a 4.3% increase among those aged 20 to 29 years. There were not statistically significant trends among API by age.

Stratified diagnosis rates by sex, age and race/ethnicity are provided in tables at the end of this chapter (Table 2.1 to 2.4 on pages 15 to 18). The disparity in diagnosis rates between African Americans and whites was more pronounced among females than males. African American males had 5.2 times the diagnosis rates as white males diagnosed from 2017 to 2019; African American females had 8.3 times the diagnosis rates of white females (Table 2.3 on page 17).

## Timeliness of Diagnosis

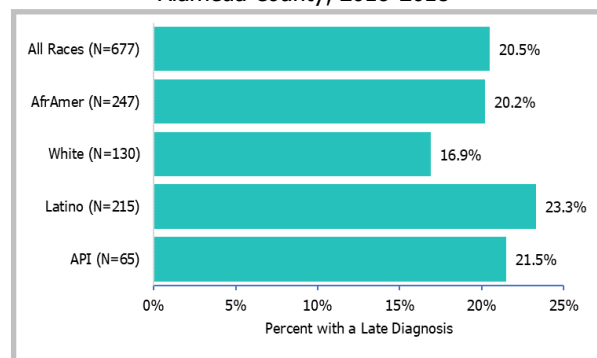
Diagnosis of HIV early in the course of infection is an important component of effective HIV prevention and treatment as early intervention generally reduces both the risk of transmission to others and the impact of HIV infection on a person's health.

### Late Diagnosis

A key indicator of late HIV diagnosis is the time to progression to AIDS (stage 3 HIV infection). A diagnosis is deemed late if AIDS is diagnosed at the same time as a person's initial HIV diagnosis or if the person progresses to AIDS within one year of the initial HIV diagnosis. The analyses presented in this section are for the years 2016 to 2018 to allow a full year of follow-up from initial HIV diagnosis. Stratified analyses of late diagnosis by sex, age, and race/ethnicity are provided in tables at the end of this chapter. Apparent differences should be interpreted with caution due to the small numbers of diagnoses seen in some subgroups, resulting in statistical instability.

In Alameda County, 20.5% of new diagnoses between 2016 and 2018 were late. Whites and African Americans had the lowest rate and Latinos and API the highest; however, differences by race/ethnicity were not statistically significant.

Figure 2.14: Late Diagnosis by Race/Ethnicity, Alameda County, 2016-2018



There was no difference in late diagnosis by sex.

The proportion of late diagnoses generally increased with age; over a third of HIV diagnoses among those aged 60 and over were late. Late diagnosis was less common among those aged 20 to 29; 1 in 8 were diagnosed late in this age group. The increase in rate of late diagnosis with increasing age was statistically significant.

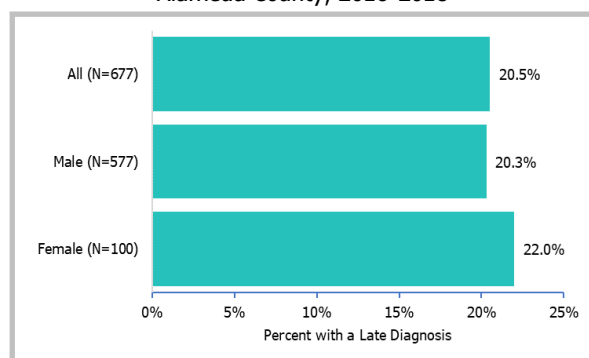
### First CD4 Count\*

CD4 cell count at the time of diagnosis is another indicator of the timeliness of HIV diagnosis. CD4+ T-cells, an important component of the human immune system, are infected and killed by HIV. Anti-retroviral therapy (ART) allows the body to preserve or increase the CD4 count. However, the longer a person goes without taking ART, which controls the level of HIV in their body, the lower their CD4 count will drop and the more susceptible the person will be to opportunistic infections and other health problems. Once a person's CD4 count falls below 200 cells/mm<sup>3</sup>, the person is considered to have stage 3 HIV disease, or AIDS.

Among those diagnosed with HIV between 2016 and 2018 and for whom a CD4 count was conducted within 90 days, the median CD4 count at the time of diagnosis was 437 cells/mm<sup>3</sup>. Whites had the highest median CD4 count at diagnosis among all racial/ethnic groups and API had the lowest.

\*These analyses exclude 111 cases (16.4% of all diagnoses) with a first CD4 count more than 90 days after diagnosis.

Figure 2.15: Late Diagnosis by Sex, Alameda County, 2016-2018



NOTE: "Sex" here refers to sex assigned at birth.

Figure 2.16: Late Diagnosis by Age, Alameda County, 2016-2018

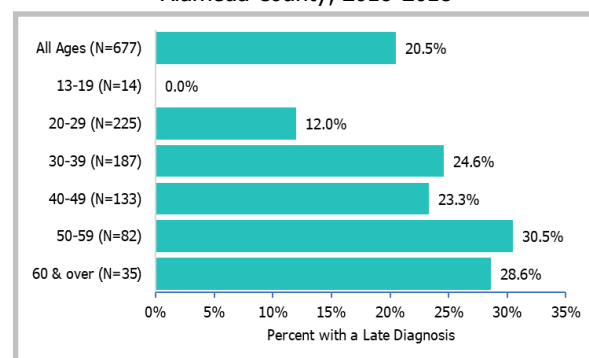
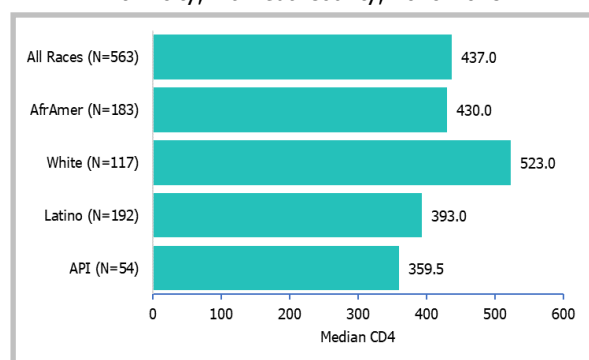
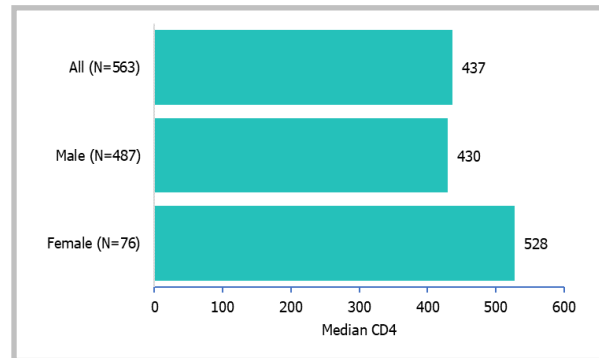


Figure 2.17: First CD4 Count at Diagnosis by Race/Ethnicity, Alameda County, 2016-2018



Median CD4 within 90 days of diagnosis was higher among females than males.

Figure 2.18: First CD4 Count at Diagnosis by Sex, Alameda County, 2016-2018



NOTE: "Sex" here refers to sex assigned at birth.

Those aged 13 to 19 and 20 to 29 had higher median CD4 counts at diagnosis than other age groups. Median CD4 count was generally lower in successively older age groups. Those 50 to 59 had the lowest median CD4 count at diagnosis. However, data among those aged 13 to 19 should be interpreted with caution due to small numbers.

Figure 2.19: First CD4 Count at Diagnosis by Age, Alameda County, 2016-2018

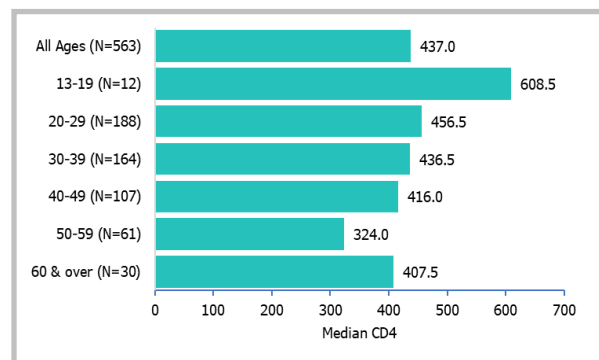




Table 2.1: New HIV Diagnoses, Alameda County, 2017-2019

Characteristic	Category	Average Annual Count	Percent	Average Annual Diagnosis Rate per 100,000	95% Confidence Interval
All diagnosis		211.0	100.0%	12.7	11.0 - 14.4
Sex <sup>a</sup>	Male	182.0	86.3%	22.3	19.1 - 25.6
	Female	29.0	13.7%	3.4	2.7 - 4.2
Race/Ethnicity <sup>b</sup>	AfrAmer	76.7	36.3%	45.4	35.2 - 55.5
	White	41.7	19.7%	7.9	5.5 - 10.3
	Latino	65.3	31.0%	17.5	13.2 - 21.7
	API	22.7	10.7%	4.5	3.5 - 5.6
	Other/Unk	4.7	2.2%	-	-
Age (years) <sup>c</sup>	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	72.0	34.1%	30.2	23.2 - 37.2
	30-39	62.0	29.4%	25.5	19.1 - 31.8
	40-49	37.3	17.7%	16.7	11.4 - 22.1
	50-59	25.3	12.0%	11.5	9.0 - 14.4
	60 & older	10.0	4.7%	3.0	2.1 - 4.3
Residence	North County	13.0	6.2%	9.2	6.6 - 12.6
	Oakland Area	118.7	56.2%	22.6	18.5 - 26.6
	Central County	44.3	21.0%	11.3	8.0 - 14.6
	South County	21.0	10.0%	5.9	4.5 - 7.6
	Tri-Valley	13.3	6.3%	5.7	4.1 - 7.8
	Remainder of county	*	*	*	*
	Unknown	*	*	-	-

Source: Alameda County eHARS, 2020 Q2

[a] Refers to sex assigned at birth

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[c] Age at diagnosis

[\*] Some cells suppressed to protect confidentiality

[-] Rate not calculable for lack of a denominator

Table 2.2: HIV Diagnosis Rates by Sex and Age, Alameda County, 2017-2019

Sex <sup>a</sup>	Age	Average Annual Count	Percent	Average Annual Diagnosis Rate per 100,000	95% Confidence Interval
All	All ages	211.0	100.0%	12.7	11.0 - 14.4
	0-4	*	*	*	*
	5-12	*	*	*	*
	13-19	3.7	1.7%	**	**
	20-24	30.0	14.2%	26.0	20.9 - 32.0
	25-29	42.0	19.9%	34.1	23.8 - 44.5
	30-39	62.0	29.4%	25.5	19.1 - 31.8
	40-49	37.3	17.7%	16.7	11.4 - 22.1
	50 & older	35.3	16.7%	6.4	4.3 - 8.6
Male	All ages	182.0	86.3%	22.3	19.1 - 25.6
	0-4	0.0	0.0%	**	**
	5-12	*	*	*	*
	13-19	*	*	*	*
	20-24	25.7	44.3%	44.3	34.9 - 55.3
	25-29	38.3	61.9%	61.9	42.3 - 81.4
	30-39	56.3	46.5%	46.5	34.4 - 58.7
	40-49	29.7	27.0%	27.0	21.7 - 33.2
	50 & older	28.3	11.0%	11.0	8.8 - 13.7
Female	All ages	29.0	3.4%	3.4	2.7 - 4.2
	0-4	*	*	*	*
	5-12	*	*	*	*
	13-19	*	*	*	*
	20-24	4.3	2.1%	7.6	4.0 - 12.9
	25-29	3.7	1.7%	**	**
	30-39	5.7	2.7%	4.6	2.7 - 7.4
	40-49	7.7	3.6%	6.8	4.3 - 10.1
	50 & older	7.0	3.3%	2.4	1.5 - 3.7

Source: Alameda County eHARS, 2020 Q2

[a] Refers to sex assigned at birth

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

Table 2.3: HIV Diagnosis Rates by Sex and Race/Ethnicity, Alameda County, 2017-2019

Sex <sup>a</sup>	Race/Ethnicity <sup>b</sup>	Average Annual Count	Percent	Average Annual Diagnosis Rate per 100,000	95% Confidence Interval
All	All races	211.0	100.0%	12.7	11.0 - 14.4
	AfrAmer	76.7	36.3%	45.4	35.2 - 55.5
	White	41.7	19.7%	7.9	5.5 - 10.3
	Latino	65.3	31.0%	17.5	13.2 - 21.7
	API	22.7	10.7%	4.5	3.5 - 5.6
	Other/Unk	4.7	2.2%	-	-
Male	All races	182.0	86.3%	22.3	19.1 - 25.6
	AfrAmer	61.0	28.9%	77.0	57.7 - 96.4
	White	36.0	17.1%	13.7	9.2 - 18.2
	Latino	60.3	28.6%	31.7	23.7 - 39.7
	API	*	*	*	*
	Other/Unk	*	*	-	-
Female	All races	29.0	13.7%	3.4	2.7 - 4.2
	AfrAmer	15.7	7.4%	17.4	12.8 - 23.2
	White	5.7	2.7%	2.1	1.2 - 3.4
	Latino	5.0	2.4%	2.7	1.5 - 4.5
	API	*	*	*	*
	Other/Unk	*	*	-	-

Source: Alameda County eHARS, 2020 Q2

[a] Refers to sex assigned at birth

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[-] Rate not calculable for lack of a denominator

Table 2.4: HIV Diagnosis Rates by Race/Ethnicity and Age, Alameda County, 2017-2019

Race/Ethnicity <sup>a</sup>	Age	Average Annual Count	Percent	Average Annual Diagnosis Rate per 100,000	95% Confidence Interval
All races	All ages	211.0	100.0%	12.7	11.0 - 14.4
	0-4	*	*	*	*
	5-12	*	*	*	*
	13-19	3.7	1.7%	**	**
	20-24	30.0	14.2%	26.0	20.9 - 32.0
	25-29	42.0	19.9%	34.1	23.8 - 44.5
	30-39	62.0	29.4%	25.5	19.1 - 31.8
	40-49	37.3	17.7%	16.7	11.4 - 22.1
	50 & older	35.3	16.7%	6.4	4.3 - 8.6
AfrAmer	All ages	76.7	36.3%	45.4	35.2 - 55.5
	0-4	*	*	*	*
	5-12	*	*	*	*
	13-19	1.7	0.8%	**	**
	20-24	10.7	5.1%	95.4	65.3 - 134.7
	25-29	17.0	8.1%	154.2	114.8 - 202.8
	30-39	18.7	8.8%	84.8	64.1 - 110.2
	40-49	12.3	5.8%	52.5	37.0 - 72.4
	50 & older	16.0	7.6%	26.4	19.5 - 35.1
White	All ages	41.7	19.7%	7.9	5.5 - 10.3
	0-4	0.0	0.0%	**	**
	5-12	0.0	0.0%	**	**
	13-19	0.0	0.0%	**	**
	20-24	3.7	1.7%	**	**
	25-29	6.3	3.0%	18.6	11.2 - 29.0
	30-39	12.0	5.7%	18.5	13.0 - 25.7
	40-49	8.7	4.1%	11.9	7.8 - 17.5
	50 & older	11.0	5.2%	4.6	3.1 - 6.4
Latino	All ages	65.3	31.0%	17.5	13.2 - 21.7
	0-4	*	*	*	*
	5-12	0.0	0.0%	**	**
	13-19	*	*	*	*
	20-24	12.0	5.7%	37.5	26.3 - 51.9
	25-29	13.7	6.5%	39.2	28.1 - 53.2
	30-39	22.7	10.7%	35.0	27.2 - 44.4
	40-49	11.7	5.5%	25.2	17.6 - 35.1
	50 & older	4.3	2.1%	6.4	3.4 - 5.6
API	All ages	22.7	10.7%	4.5	3.5 - 5.6
	0-4	0.0	0.0%	**	**
	5-12	*	*	*	*
	13-19	*	*	*	*
	20-24	*	*	*	*
	25-29	*	*	*	*
	30-39	*	*	*	*
	40-49	*	*	*	*
	50 & older	4.0	1.9%	2.4	1.3 - 4.2
Other/Unk	All ages	4.7	2.2%	-	-
	0-4	0.0	0.0%	-	-
	5-12	0.0	0.0%	-	-
	13-19	0.0	0.0%	-	-
	20-24	*	*	-	-
	25-29	*	*	-	-
	30-39	*	*	-	-
	40-49	*	*	-	-
	50 & older	0.0	0.0%	-	-

Source: Alameda County eHARS, 2020 Q2

[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

[-] Rate not calculable for lack of a denominator

Table 2.5: Late Diagnosis by Sex and Age, Alameda County, 2016-2018

Sex <sup>a</sup>	Age at Diagnosis	New Diagnoses		Late Diagnoses	
		Average Annual Count	Column Percent	Average Annual Count	Row Percent
All	All ages	225.7	100.0%	46.3	20.5%
	5-12	*	*	0.0	*
	13-19	*	*	0.0	*
	20-24	29.3	13.0%	2.7	**
	25-29	45.7	20.2%	6.3	13.9%
	30-39	62.3	27.6%	15.3	24.6%
	40-49	44.3	19.6%	10.3	23.3%
	50 & older	39.0	17.3%	11.7	29.9%
Male	All ages	192.3	85.2%	39.0	20.3%
	5-12	*	*	0.0	*
	13-19	*	*	0.0	*
	20-24	24.7	10.9%	2.7	**
	25-29	41.3	18.3%	5.7	13.7%
	30-39	56.0	24.8%	12.7	22.6%
	40-49	35.3	15.7%	8.7	24.5%
	50 & older	31.0	13.7%	9.3	30.1%
Female	All ages	33.3	14.8%	7.3	22.0%
	5-12	*	*	0.0	*
	13-19	*	*	0.0	*
	20-24	4.7	2.1%	0.0	0.0%
	25-29	4.3	1.9%	0.7	**
	30-39	6.3	2.8%	2.7	**
	40-49	9.0	4.0%	1.7	**
	50 & older	8.0	3.5%	2.3	**

Source: Alameda County eHARS, 2020 Q2

[a] Refers to sex assigned at birth

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

Table 2.6: Late Diagnosis by Sex and Race/Ethnicity, Alameda County, 2016-2018

Sex <sup>a</sup>	Race/Ethnicity <sup>b</sup>	New Diagnoses		Late Diagnoses	
		Average Annual Count	Column Percent	Average Annual Count	Row Percent
All	All races	225.7	100.0%	46.3	20.5%
	AfrAmer	82.3	36.5%	16.7	20.2%
	White	43.3	19.2%	7.3	16.9%
	Latino	71.7	31.8%	16.7	23.3%
	API	21.7	9.6%	4.7	21.5%
	Other/Unk	6.7	3.0%	1.0	**
Male	All races	192.3	85.2%	39.0	20.3%
	AfrAmer	61.3	27.2%	13.0	21.2%
	White	38.7	17.1%	6.3	16.4%
	Latino	66.7	29.5%	15.3	23.0%
	API	*	*	3.7	*
	Other/Unk	*	*	0.7	*
Female	All races	33.3	14.8%	7.3	22.0%
	AfrAmer	21.0	9.3%	3.7	17.5%
	White	4.7	2.1%	1.0	**
	Latino	5.0	2.2%	1.3	**
	API	*	*	1.0	*
	Other/Unk	*	*	0.3	*

Source: Alameda County eHARS, 2020 Q2

[a] Refers to sex assigned at birth

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown



Table 2.7: Late Diagnosis by Race/Ethnicity and Age, Alameda County, 2016-2018

Race/Ethnicity <sup>a</sup>	Age at Diagnosis	New Diagnoses		Late Diagnoses	
		Average Annual Count	Column Percent	Average Annual Count	Row Percent
All races	All ages	225.7	100.0%	46.3	20.5%
	5-12	*	*	0.0	*
	13-19	*	*	0.0	*
	20-24	29.3	13.0%	2.7	**
	25-29	45.7	20.2%	6.3	13.9%
	30-39	62.3	27.6%	15.3	24.6%
	40-49	44.3	19.6%	10.3	23.3%
	50 & older	39.0	17.3%	11.7	29.9%
AfrAmer	All ages	82.3	36.5%	16.7	20.2%
	5-12	*	*	0.0	*
	13-19	*	*	0.0	*
	20-24	13.3	5.9%	1.3	**
	25-29	15.3	6.8%	2.3	**
	30-39	17.3	7.7%	4.0	**
	40-49	14.0	6.2%	3.3	**
	50 & older	19.3	8.6%	5.7	**
White	All ages	43.3	19.2%	7.3	16.9%
	5-12	0.0	0.0%	0.0	**
	13-19	0.0	0.0%	0.0	**
	20-24	3.0	1.3%	0.0	0.0%
	25-29	7.7	3.4%	0.7	**
	30-39	14.7	6.5%	2.7	**
	40-49	9.0	4.0%	2.3	**
	50 & older	9.0	4.0%	1.7	**
Latino	All ages	71.7	31.8%	16.7	23.3%
	5-12	*	*	0.0	*
	13-19	*	*	0.0	*
	20-24	9.3	4.1%	1.3	**
	25-29	16.7	7.4%	1.7	**
	30-39	22.7	10.0%	6.0	**
	40-49	16.0	7.1%	4.3	**
	50 & older	5.7	2.5%	3.3	**
API	All ages	21.7	9.6%	4.7	21.5%
	5-12	0.0	0.0%	0.0	**
	13-19	*	*	0.0	*
	20-24	*	*	0.0	*
	25-29	4.0	1.8%	1.3	**
	30-39	5.7	2.5%	2.3	**
	40-49	*	*	0.0	*
	50 & older	*	*	1.0	*
Other/Unk	All ages	6.7	3.0%	1.0	**
	5-12	0.0	0.0%	0.0	**
	13-19	0.0	0.0%	0.0	**
	20-24	*	*	0.0	*
	25-29	2.0	0.9%	0.3	**
	30-39	2.0	0.9%	0.3	**
	40-49	*	*	0.3	*
	50 & older	*	*	0.0	*

Source: Alameda County eHARS, 2020 Q2

[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

## *People Living with HIV*

In the United States, there were an estimated 1,040,352 persons aged 13 years or older living with diagnosed HIV at the end of 2018. Prevalence was highest among men, those aged 50 to 54 and 55 to 59 (757.9 and 699.5 per 100,000 respectively), African Americans and Latinos (1,034.2 and 386.4 per 100,000 respectively), and in the Northeast and South (420.5 and 371.6 per 100,000 respectively).<sup>3</sup> At year-end 2018, California had an estimated 136,566 PLHIV for a statewide prevalence of 342.9 per 100,000 population. HIV prevalence among women in California (79.5 per 100,000) was less than half that of women nationally.<sup>4</sup> At year-end 2019 in Alameda County, the prevalence of HIV was 380.6 per 100,000 residents.

This chapter examines prevalence, or the proportion of people with HIV infection living in Alameda County, reflecting the overall burden of HIV in the population. Data presented do not include PLHIV with undiagnosed infection but include all those with diagnosed HIV (including newly diagnosed), regardless of the stage of HIV infection. First, characteristics of PLHIV in the county are presented. Then, the prevalence of HIV disease in different subpopulations is described. Finally, mortality (deaths) among PLHIV ever diagnosed with AIDS is described. Table 3.1 summarizes data presented in this chapter. Stratified prevalence rates by sex, age and race/ethnicity are provided in Tables 3.2 to 3.4 at the end of this chapter.

## Characteristics of PLHIV

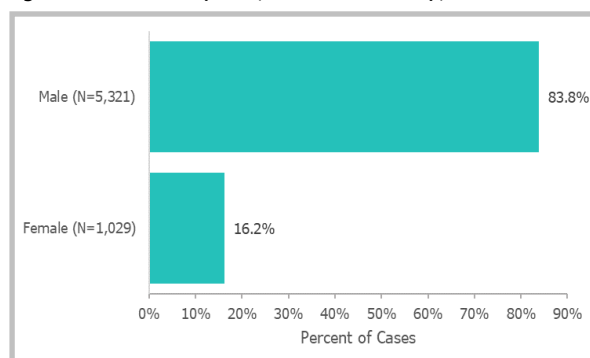
At the end of 2019, there were an estimated 6,350 PLHIV in Alameda County.

As with the distribution by sex among new diagnoses of HIV, PLHIV in Alameda County at year-end 2019 were predominantly male (83.8%).

PLHIV in Alameda County were predominantly African American (38.4%) or white (29.5%). Latinos and API each comprised a smaller proportion of PLHIV. Racial/ethnic disparities among PLHIV were more apparent among women compared to men (Table 3.3). Among men there was a similar number of PLHIV who were African American and white; however, among women there were nearly four times as many PLHIV who were African American compared to those who were white.

Half of PLHIV were in their fifties or older. Only about a quarter were in their thirties or younger at year-end 2019.

Figure 3.1: PLHIV by Sex, Alameda County, Year-End 2019



NOTE: "Sex" refers to sex assigned at birth.

Figure 3.2: PLHIV by Race/Ethnicity, Alameda County, Year-End 2019

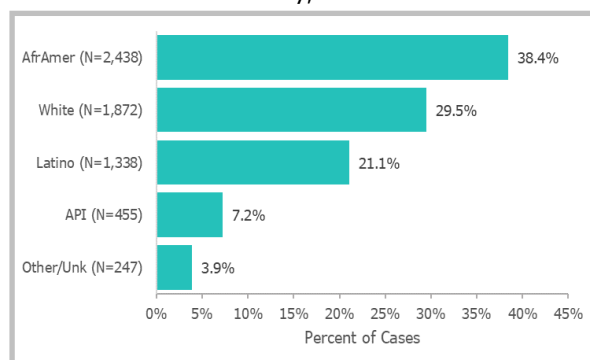
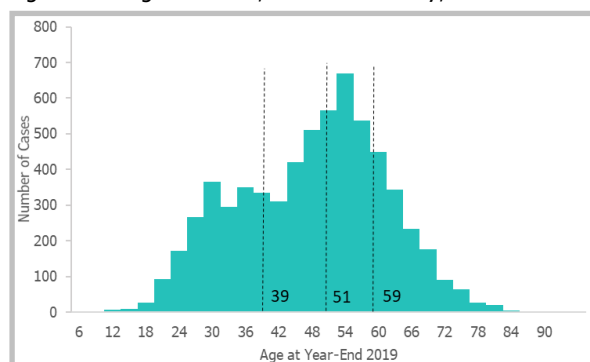


Figure 3.3: Age of PLHIV, Alameda County, Year-End 2019



## Prevalence Rates

At the end of 2019 there were 6,350 people living with HIV in Alameda County for a prevalence rate of 380.6 per 100,000 or 0.4% of residents.

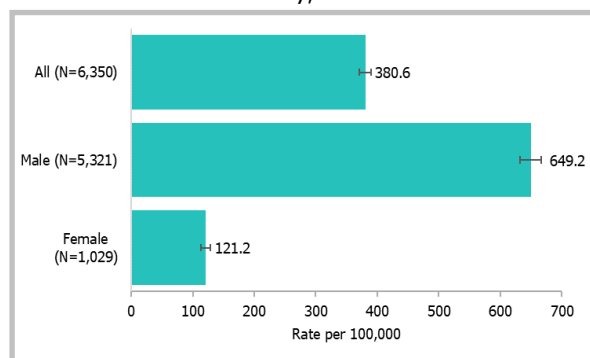
HIV prevalence was more than five times higher among males than females at year-end 2019.

African Americans had a four times higher burden of HIV prevalence compared to the next most impacted racial group, whites. Prevalence was lowest among API.

HIV prevalence was higher in each successive age group, ranging from 15.8 per 100,000 youth aged 13 to 19 to a high of 855.1 per 100,000 people aged 50 to 59 years. The number of children aged 0 to 12 living with HIV was too low to estimate a statistically reliable prevalence rate. Prevalence among those aged 60 and over differed only slightly from those in their thirties. Increasing prevalence of HIV with age is consistent with the greatly improved survival of PLHIV in the post-ART era.

Disparities in prevalence rates by race/ethnicity were more pronounced among females than males. While prevalence was more than three times higher among African American males compared to white males, it was 10 times higher among African American females compared to white females (Table 3.3). Additionally, although HIV prevalence was higher among white males compared to Latino males, prevalence was lower among white females compared to Latino females.

Figure 3.4: Prevalence of HIV by Sex, Alameda County, Year-End 2019



NOTE: "Sex" refers to sex assigned at birth.

Figure 3.5: Prevalence of HIV by Race/Ethnicity, Alameda County, Year-End 2019

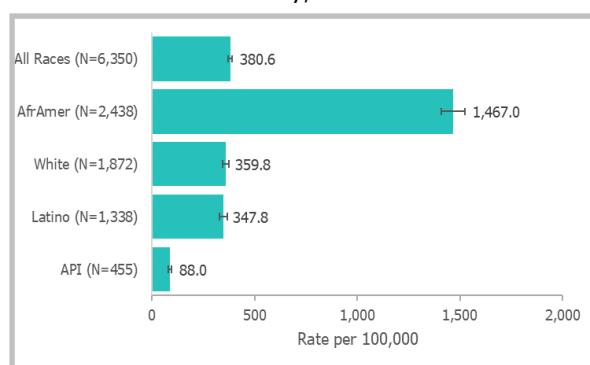


Figure 3.6: Prevalence of HIV by Age, Alameda County, Year-End 2019

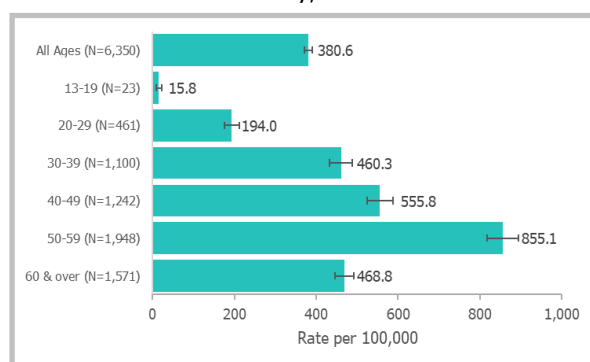
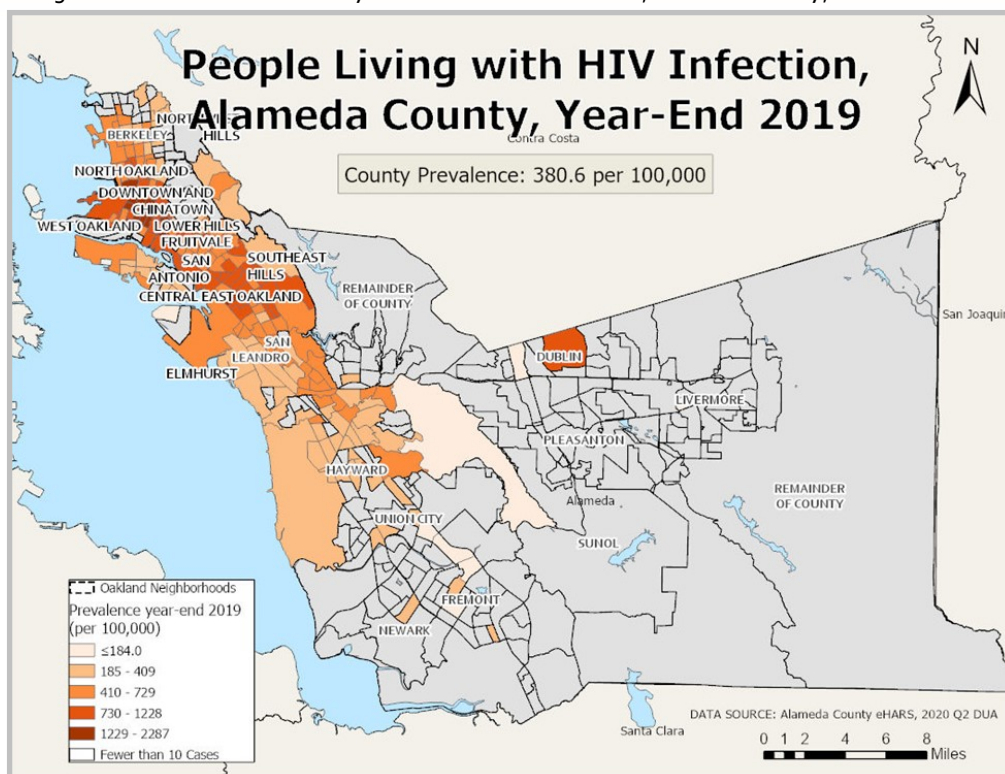


Figure 3.7: Prevalence of HIV by Census Tract of Residence, Alameda County, Year-End 2019



The city of Emeryville had the highest HIV prevalence within Alameda County, followed by Oakland, Ashland, and Fairview. Among the Oakland neighborhoods, West Oakland, Downtown, and Chinatown had the highest HIV prevalence, ranging between 1 to 2% of residents.

Figure 3.8: Prevalence of HIV by Census Tract of Residence, Oakland and Surrounding Area, Year-End 2019

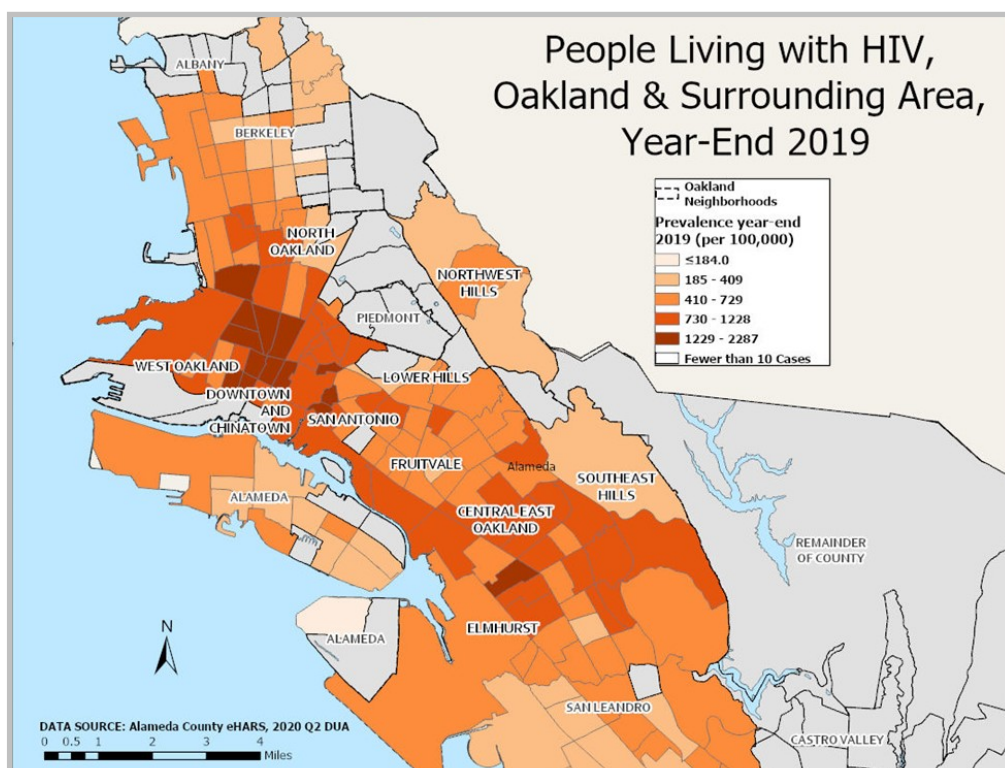
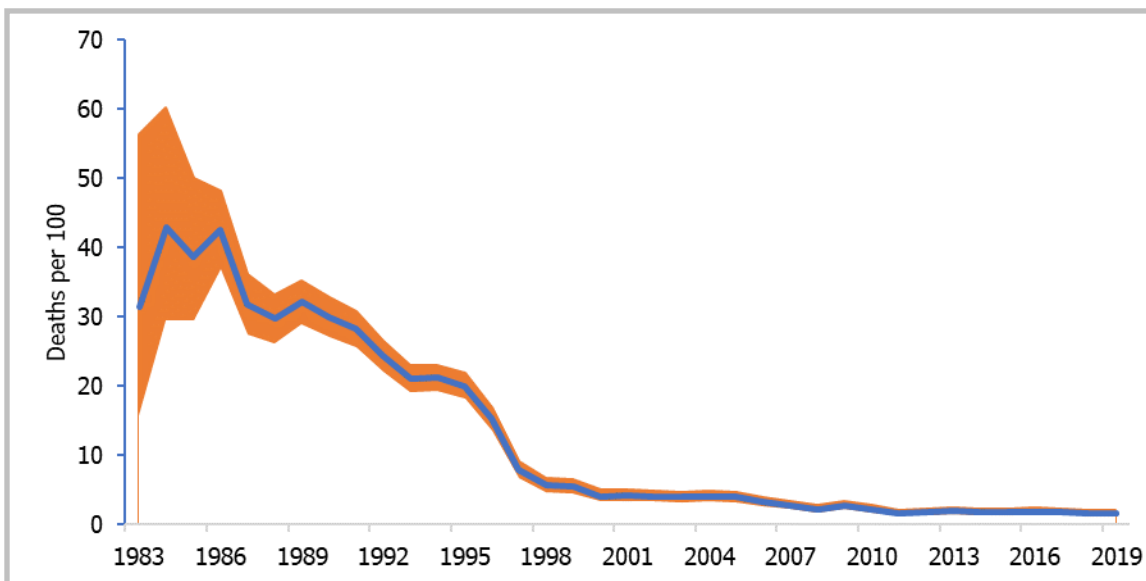




Figure 3.9: Death Rate Among Alameda County Residents Ever Diagnosed with AIDS, 1985-2019



NOTE: Death rates calculated among persons ever diagnosed with AIDS while a resident of Alameda County, regardless of county of residence at death. Deaths in PLHIV without AIDS are not reported here.

## Deaths Among Alameda County Residents Ever Diagnosed with AIDS

Although HIV infection without AIDS has been reportable by name in California only since 2006, AIDS has been a reportable disease since the early 1980s, allowing examination of long-term trends in death rates among the subset of PLHIV ever diagnosed with AIDS. In 1985, there were 38.7 deaths (from any cause, whether HIV-related or not) per 100 Alameda County residents ever diagnosed with AIDS. This rate dropped to 7.5 deaths per 100 by 1997 and has declined slowly but steadily since then. In 2019, there were 59 deaths among the 3,733 residents living with AIDS for a rate of 1.5 deaths per 100 residents living with AIDS.

Table 3.1: People Living with HIV Disease and Prevalence Rates, Alameda County, Year-End 2019

Characteristic	Category	Count	Percent	Prevalence per 100,000	95% Confidence Interval
All PLHIV		6,350	100.0%	380.6	371.3 - 390.0
Sex <sup>a</sup>	Male	5,321	83.8%	649.2	631.8 - 666.7
	Female	1,029	16.2%	121.2	113.8 - 128.7
Race/Ethnicity <sup>b</sup>	AfrAmer	2,438	38.4%	1,467.0	1,408.8 - 1,525.3
	White	1,872	29.5%	359.8	343.5 - 376.1
	Latino	1,338	21.1%	347.9	329.2 - 366.5
	API	455	7.2%	88.0	79.9 - 96.0
	Other/Unk	247	3.9%	--	--
Age (years) <sup>c</sup>	0-12	5	0.1%	**	**
	13-19	23	0.4%	15.8	10.0 - 23.7
	20-29	461	7.3%	194.0	176.3 - 211.7
	30-39	1,100	17.3%	460.3	433.1 - 487.5
	40-49	1,242	19.6%	555.8	524.9 - 586.7
	50-59	1,948	30.7%	855.1	817.1 - 893.1
	60 & older	1,571	24.7%	465.8	445.6 - 492.0
Residence	North County	500	7.9%	352.6	321.7 - 383.5
	Oakland Area	3,790	59.7%	717.4	649.6 - 740.3
	Central County	1,271	20.0%	321.4	303.7 - 339.1
	South County	424	6.7%	118.5	107.3 - 129.8
	Tri-Valley	332	5.2%	141.2	126.0 - 156.4
	Remainder of county	23	0.4%	257.8	163.4 - 386.9
	Unknown	10	0.2%	**	**

Source: Alameda County eHARS, 2020 Q2

[a] Refers to sex assigned at birth

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[c] Age at year-end 2019

[\*\*] Unstable estimates not shown

[--] Rate not calculable for lack of a denominator

Table 3.2: HIV Prevalence by Sex and Age, Alameda County, Year-End 2019

Sex <sup>a</sup>	Age	Count	Percent	Prevalence per 100,000	95% Confidence Interval
All	All ages	6,350	100.0%	380.6	371.3 - 390.0
	0-12	5	0.1%	**	**
	13-19	23	0.4%	15.8	10.0 - 23.7
	20-29	461	7.3%	194.0	176.3 - 211.7
	30-39	1,100	17.3%	460.3	433.1 - 487.5
	40-49	1,242	19.6%	555.8	524.9 - 586.7
	50-59	1,948	30.7%	855.1	817.1 - 939.1
	60 & older	1,571	24.7%	468.8	445.6 - 492.0
Male	All ages	5,321	83.8%	649.2	631.8 - 666.7
	0-12	5	0.1%	**	**
	13-19	15	0.2%	20.2	11.3 - 33.4
	20-29	409	6.4%	340.7	307.7 - 373.7
	30-39	972	15.3%	821.9	770.3 - 873.6
	40-49	1,013	16.0%	919.8	863.1 - 976.4
	50-59	1,620	25.5%	1,450.1	1,379.5 - 1,520.7
	60 & older	1,287	20.3%	846.6	800.3 - 892.8
Female	All ages	1,029	16.2%	121.2	113.8 - 128.7
	0-12	0	0.0%	**	**
	13-19	8	0.1%	**	**
	20-29	52	0.8%	44.2	33.0 - 58.0
	30-39	128	2.0%	108.0	87.7 - 124.4
	40-49	229	3.6%	202.1	175.9 - 228.3
	50-59	328	5.2%	282.5	251.9 - 313.1
	60 & older	284	4.5%	155.1	137.1 - 173.2

Source: Alameda County eHARS, 2020 Q2

[a] Refers to sex assigned at birth

[\*\*] Unstable estimates not shown

Table 3.3: HIV Prevalence by Sex and Race/Ethnicity, Alameda County, Year-End 2019

Sex <sup>a</sup>	Race/Ethnicity <sup>b</sup>	Count	Percent	Prevalence per 100,000	95% Confidence Interval
All	All races	6,350	100.0%	380.6	371.3 - 390.0
	AfrAmer	2,438	38.4%	1,467.0	1,408.8 - 1,525.3
	White	1,872	29.5%	359.8	343.5 - 376.1
	Latino	1,338	21.1%	347.9	329.2 - 366.5
	API	455	7.2%	88.0	79.9 - 96.0
	Other/Unk	247	3.9%	-	-
Male	All races	5,321	83.8%	649.2	631.8 - 666.7
	AfrAmer	1,829	28.8%	2,343.2	2,235.8 - 2,450.6
	White	1,704	26.8%	656.9	625.7 - 688.0
	Latino	1,178	18.6%	602.1	567.7 - 636.5
	API	382	6.2%	158.2	142.6 - 173.9
	Other/Unk	218	3.4%	-	-
Female	All races	1,029	16.2%	121.2	113.8 - 128.7
	AfrAmer	609	9.6%	691.0	636.1 - 745.9
	White	168	2.6%	64.4	54.6 - 74.1
	Latino	160	2.5%	84.7	71.6 - 97.8
	API	63	1.0%	23.4	18.0 - 29.9
	Other/Unk	29	0.5%	-	-
Source: Alameda County eHARS, 2020 Q2					
[a] Refers to sex assigned at birth					
[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race					
[**] Unstable estimates not shown					
[-] Rate not calculable for lack of a denominator					

Table 3.4: HIV Prevalence by Race/Ethnicity and Age, Alameda County, Year-End 2019

Race/Ethnicity <sup>a</sup>	Age	Count	Percent	Prevalence per 100,000	95% Confidence Interval
All races	All ages	6,350	100.0%	380.6	371.3 - 390.0
	0-12	5	0.1%	**	**
	13-19	23	0.4%	15.8	10.0 - 23.7
	20-29	461	7.3%	194.0	176.3 - 211.7
	30-39	1,100	17.3%	460.3	433.1 - 487.5
	40-49	1,242	19.6%	555.8	524.9 - 586.7
	50-59	1,948	30.7%	855.1	817.1 - 893.1
	60 & older	1,571	24.7%	468.8	445.6 - 492.0
AfrAmer	All ages	2,438	38.4%	1,467.0	1,408.8 - 1,525.3
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	201	3.2%	926.4	798.3 - 1054.5
	30-39	423	6.7%	2,037.2	1,843.1 - 2,231.4
	40-49	417	6.6%	1,818.1	1,643.6 - 1,992.6
	50-59	734	11.6%	2,904.8	2,694.7 - 3,115.0
	60 & older	645	10.2%	1,768.6	1,632.1 - 1,905.1
White	All ages	1,872	29.5%	349.8	343.5 - 376.1
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	61	1.0%	96.5	73.8 - 124.0
	30-39	212	3.3%	350.7	303.5 - 398.0
	40-49	306	4.8%	439.0	389.8 - 488.2
	50-59	699	11.0%	760.8	704.4 - 817.2
	60 & older	592	9.3%	386.5	355.3 - 417.6
Latino	All ages	1,338	21.1%	347.9	329.2 - 366.5
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	134	2.1%	197.7	164.2 - 231.2
	30-39	319	5.0%	482.6	429.7 - 535.6
	40-49	325	5.1%	673.3	600.1 - 746.5
	50-59	345	5.4%	1,038.2	928.6 - 1,147.7
	60 & older	211	3.3%	564.9	488.7 - 641.1
API	All ages	455	7.2%	88.0	79.9 - 96.0
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	46	0.7%	61.0	44.3 - 81.9
	30-39	96	1.5%	117.2	94.9 - 143.1
	40-49	132	2.1%	177.2	147.0 - 207.4
	50-59	103	1.6%	146.2	118.0 - 174.4
	60 & older	76	1.2%	75.9	59.8 - 95.0
Other/Unk	All ages	247	3.9%	-	-
	0-12	0	0.0%	-	-
	13-19	0	0.0%	-	-
	20-29	21	0.3%	-	-
	30-39	50	0.8%	-	-
	40-49	62	1.0%	-	-
	50-59	67	1.1%	-	-
	60 & older	47	0.7%	-	-

Source: Alameda County eHARS, 2020 Q2

[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

[-] Rate not calculable for lack of a denominator



## *Continuum of Care*

Anti-retroviral therapy (ART), when taken regularly, can suppress HIV, preventing disease progression as well as preventing the transmission of HIV entirely. Thus, ART benefits PLHIV as well as the larger community. In order to maximize these benefits, it is crucial that PLHIV be diagnosed, linked to and retained in regular HIV care, and be prescribed and adhere to ART. These steps—diagnosis, linkage, retention, and prescription of and adherence to ART—are all pre-requisites for achieving virologic suppression. Together, these steps comprise the continuum of HIV care, also called the HIV care cascade or the stages of HIV care. The continuum is also a framework for conceptualizing HIV care and prevention efforts.

One goal put forth by the National HIV/AIDS Strategy is to increase the percentage of newly diagnosed persons linked to care within one month of their diagnosis to 85%.<sup>5</sup> Alameda County previously reported linkage within 90 days; however data on 30-day linkage is presented in this year's report to reflect currently relevant metrics. Evaluation of care for PLHIV is shown through two measures: any evidence of care or being in care—defined as at least one provider visit in a year, and retention—defined as two or more visits at least 90 days apart.

In the United States, the CDC estimated that 87.8% of persons diagnosed in 2018 were linked to care within 3 months. Additionally, the CDC estimated that, at the end of 2018, 86% of all PLHIV had been diagnosed and that, among those still alive and who had been diagnosed by the end of the previous year, 75.7% received any HIV care, 57.9% were retained in continuous care, and 69.6% were virally suppressed.<sup>6</sup>

In California, 86.1% of those diagnosed in 2018 were estimated to have linked to care within three months. By the end of 2018, among those living with diagnosed HIV in California, 73.8% were estimated to have received any HIV care in 2018, 57.9% were estimated to have been retained in continuous care, and 64.2% were estimated to have been virally suppressed at last test.<sup>7</sup>

This chapter examines the continuum of HIV care in Alameda County and select metrics for the Data to Care program. Care outcomes are described by demographics such as race/ethnicity, age, and sex at birth. The continuum measures look at data one year earlier than what is available in the New Diagnoses and People Living with HIV chapters to allow for more complete laboratory records to be included in the analyses.

## Data to Care

Data to Care (D2C) is a high-impact prevention strategy that aims to positively impact outcomes along the HIV care continuum using surveillance data. The Alameda County D2C program aims to target HIV prevention services to persons newly diagnosed with HIV and PLHIV who appear to have fallen out of care with an HIV provider. Prevention services supported by D2C include Partner Services (PS), linkage to care (LTC), and re-engagement. LTC is provided by Alameda County field staff who contact newly diagnosed clients to ensure that they have initiated HIV care with a provider. If the client is not linked to care, field staff assist the client in contacting and initiating care. During outreach, field staff also initiate PS, which is a broad array of services that include prevention counseling, referrals, and identifying and notifying the client's intimate partners of their potential HIV exposure. Inclusion criteria for LTC and PS are new HIV diagnosis within the last six months and residence at diagnosis in Alameda County.

D2C also aims at improving retention in HIV care by re-engaging PLHIV. Re-engagement is focused on PLHIV who appear to have fallen out of care with an HIV provider. Being retained in care refers to having two or more visits at least 90 days apart in a given year; being out of care (OOC) refers to not receiving regular visits or care from a provider to manage HIV. D2C inclusion criteria for re-engagement are previous HIV diagnosis and being determined to be OOC, either by their provider or through analysis of surveillance data showing lack of laboratory results for the client. After they are identified as being OOC, D2C field staff contact and re-engage clients with an HIV care provider.

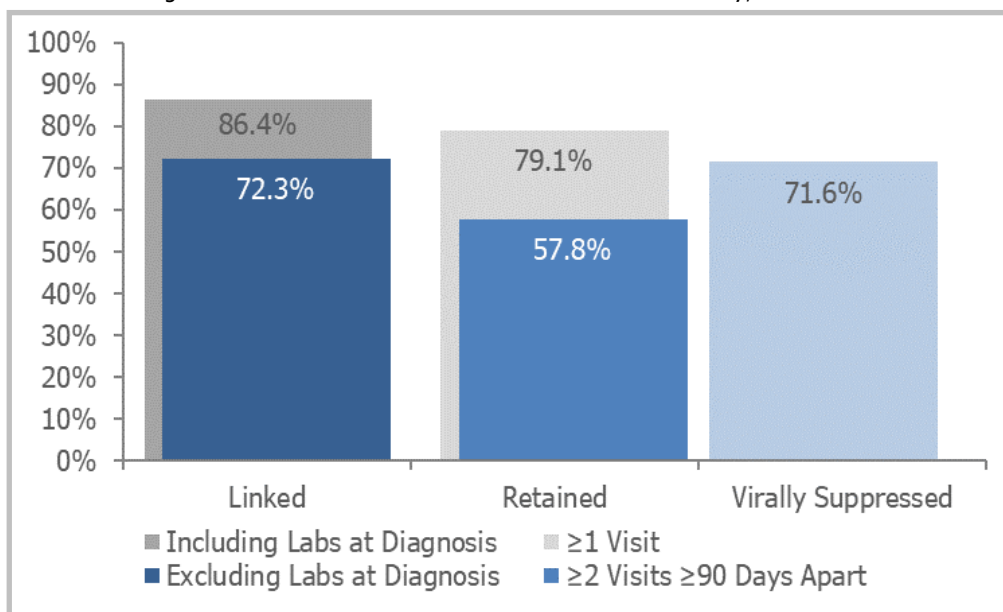
The D2C program helps ensure that clients initiate and stay engaged in HIV care, which consists of HIV viral load testing at regular intervals as well as adherence to antiretroviral therapy. These two components of HIV care can result in lowered HIV viral loads for the client, leading to better health outcomes for the client and decreased transmission of HIV in the community.

A key component of the Alameda County D2C program is a client database known as Prevention and Care Engagement (PACE) which is used to document client characteristics and program services and is managed by an epidemiologist. Ongoing data management of PACE is key to measuring D2C outcomes and identifying opportunities for continual improvement of the program.



## The Overall Continuum of Care

Figure 4.1: The Continuum of HIV Care in Alameda County, 2016-2018



NOTES: 1) Of 677 total diagnoses, 2 died within 30 days and were excluded from analysis

2) Of 6,312 PLHIV at year-end 2017, 79 were known to have died and an additional 483 to have moved out of Alameda County in 2018.

In Alameda County, 72.3% of new diagnoses between 2016 and 2018 were linked to care within 30 days if HIV-related labs done on the date of diagnosis were excluded; 86.4% were linked to care if labs done on the date of diagnosis were included. Approximately 57.8% of PLHIV who resided in Alameda County for the entirety of 2018 had two or more visits 90 or more days apart, and were considered retained in care. Viral suppression was estimated to be 71.6% that same year.

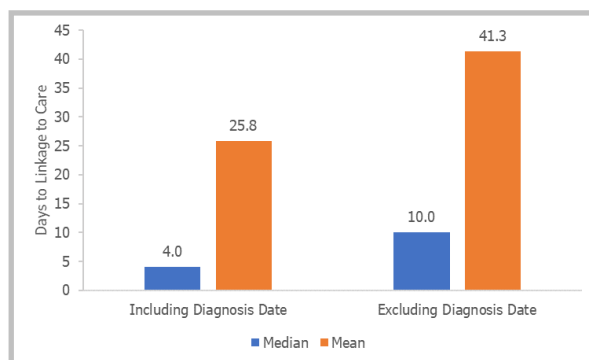
## Linkage to Care

Here we present linkage to care estimates for Alameda County. It should be noted that receipt of a CD4 count or viral load test is not a definitive indicator of linkage to care. For example, a health care provider may order these tests concurrently with a confirmatory HIV test or before a patient even knows the diagnosis. Labs ordered after the date of diagnosis provide an alternative method for estimating linkage to care.

We present both estimates of linkage—one that includes labs done on the date of diagnosis and another that excludes them—providing a range of what might be considered linked to care.

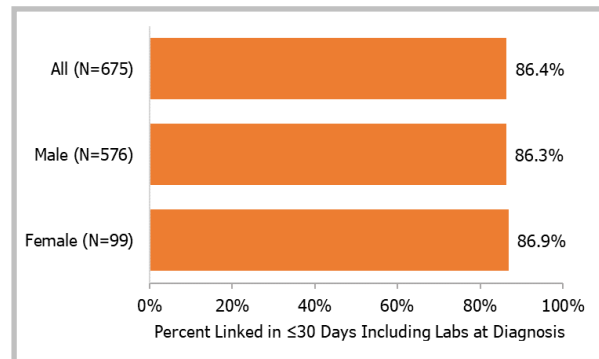
The median time from diagnosis to first CD4 or viral load among Alameda County residents diagnosed within 2016 to 2018 was four days. Excluding labs ordered on the date of diagnosis, the median time from diagnosis was 10 days.

Figure 4.2: Median and Mean Days Between Diagnosis and Linkage to Care, Alameda County, 2016-2018



Overall, 86.4% of those diagnosed with HIV in Alameda County from 2016 to 2018 were linked to HIV care within 30 days of their diagnosis. Excluding labs ordered on date of diagnosis, 72.3% of newly diagnosed cases were linked. Differences by sex were not statistically significant.

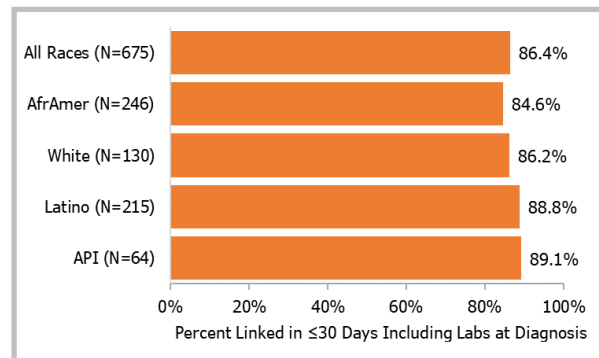
Figure 4.3: Linkage to HIV Care Within 30 Days of Diagnosis by Sex, Alameda County, 2016-2018



NOTES: 1) "Sex" refers to sex assigned at birth  
2) Excludes persons who died within 30 days of diagnosis (N=2).

Differences in linkage to care by race/ethnicity were not statistically significant.

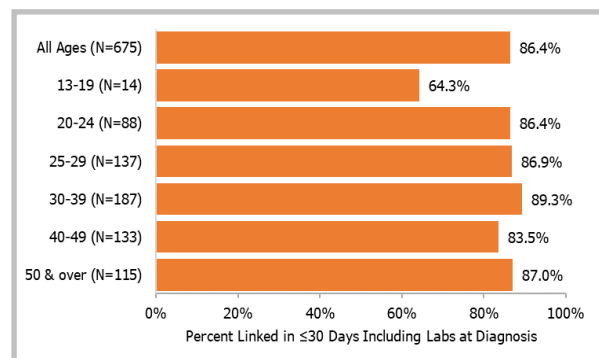
Figure 4.4: Linkage to HIV Care Within 30 Days of Diagnosis by Race/Ethnicity, Alameda County, 2016-2018



NOTE: Excludes persons who died within 30 days of diagnosis (N=2).

Linkage was generally consistent across age groups except for the youngest group, 13 to 19 years of age. This estimate is less reliable due to a small number of cases.

Figure 4.5: Linkage to HIV Care within 30 Days of Diagnosis by Age, Alameda County, 2016-2018



NOTE: Excludes persons who died within 30 days of diagnosis (N=2).

## D2C: Partner Services and Linkage to Care Among Newly Diagnosed

Referral to the D2C program follows a series of steps. Using laboratory surveillance data, HIV surveillance staff investigate cases to identify and confirm HIV diagnoses that have not been previously reported in another jurisdiction. Cases determined to be a new HIV diagnosis in Alameda County are referred to the D2C program. The average time between diagnosis of a client and the completion of the surveillance investigation was 27 days. The average time between completion of the surveillance investigation and referral to the D2C program was 3.7 days. The average time between diagnosis of a client and referral to the D2C program was approximately 33 days. The average time between referral to the D2C program and delivery of PS was 21.2 days.

In 2018 and 2019, the D2C program identified 431 clients who were presumed to be new diagnoses. D2C field staff determined that 55 were cases and were previously diagnosed more than six months ago in another jurisdiction. Thus, these clients were not eligible for D2C services; the remainder—376 clients—were eligible. Of eligible clients, 136 (36.1%) were African American, 124 (32.9%) were Latino, 76 (20.2%) were white, 37 (9.8%) were API, and 3 (0.7%) were multiracial or American Indian/Alaska Native.

PS is a key prevention strategy supported within the Alameda County D2C program. Assisting newly diagnosed clients in disclosing to their partners anonymously gives them the opportunity to get tested for HIV, initiate PrEP, or receive other prevention services as appropriate. Overall, D2C field staff were able to offer PS to 266 (70.7%) of the 376 eligible clients. Among the 266 clients offered PS, 52 (19.5%) accepted PS, 94 (35.3%) were found to have already disclosed to their partner and 64 (24.0%) were offered PS by an alternative source. D2C field staff were not able to provide PS to 110 (29.6%) of the 376 clients for several reasons. These included: 46 (41.8%) clients who could not be located, 20 (18.1%) who moved out of Alameda County, 28 (25.4%) clients with social and medical factors that made outreach unattainable, 13 (11.8%) who were administratively closed, and 3 (2.7%) who were being assessed.

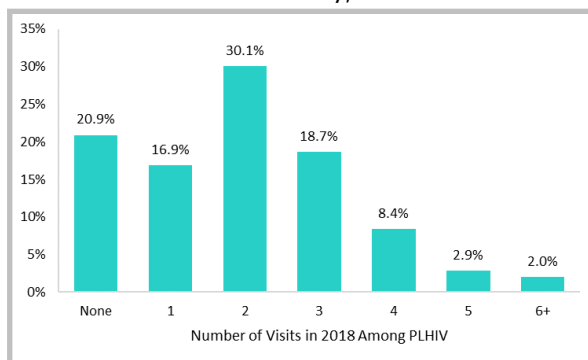
Of the 376 eligible clients, 267 (71.0%) were confirmed to have been linked to care at the time of D2C referral and 20 (5.3%) were linked to care by D2C field staff. Field staff were still investigating 43 (11.4%) clients at time of analysis. Of the remaining 46 clients, D2C field staff referred 19 out of Alameda County, 11 clients could not be located, 10 moved out of Alameda County, 4 refused services, and 2 were determined to not be a new case.

## Retention in Care

In 2018, 79.1% of PLHIV\* were in care, i.e., had one or more visits to an HIV care provider as indicated by a new lab result. The proportion of all PLHIV who had only a single visit resulting in a lab was 16.9%. However, it is possible that some had additional visits in which no lab tests were done.

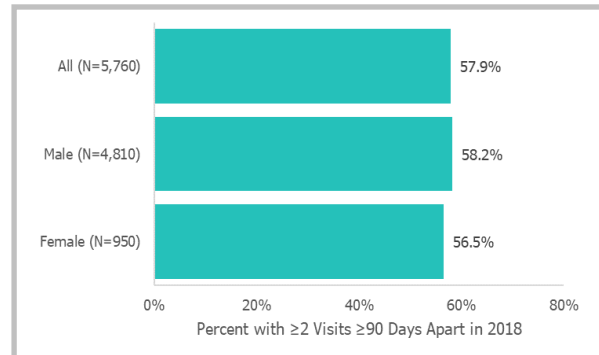
\*PLHIV that died or moved in 2018 were excluded from all analyses of retention in care.

Figure 4.6: Number of HIV Care Visits per PLHIV, Alameda County, 2018



In 2018, 57.9% of PLHIV were retained in care, i.e., had two or more visits 90 or more days apart. Differences by sex were not statistically significant.

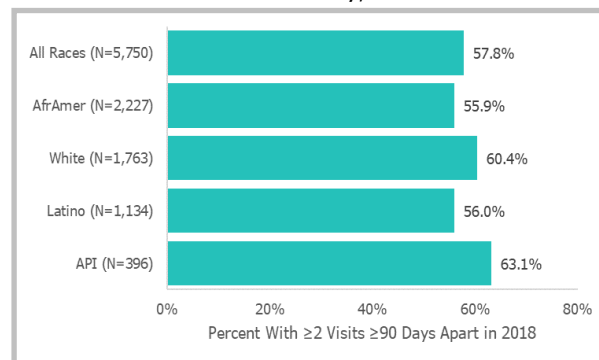
Figure 4.7: Retention in HIV Care by Sex, Alameda County, 2018



NOTE: "Sex" refers to sex assigned at birth.

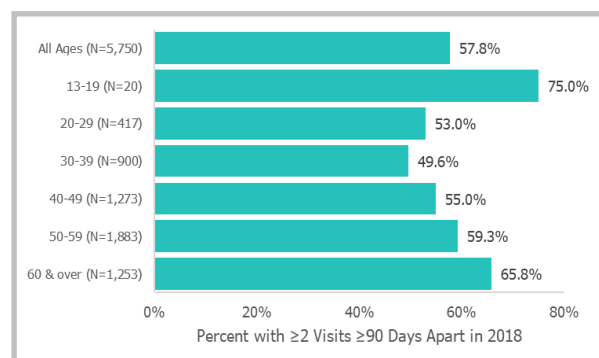
Rates of retention in HIV care were highest among API (63.1%) and white (60.4%) PLHIV in 2018. Only 56.0% of Latino and African American PLHIV were retained in care. Differences by race/ethnicity were statistically significant.

Figure 4.8: Retention in HIV Care by Race/Ethnicity, Alameda County, 2018



PLHIV aged 30 to 39 at the end of 2018 had the lowest rates of retention in care; younger and successively older age groups had higher retention rates. Retention was highest among those aged 13 to 19 and 60 and over; however, the number of PLHIV aged 13 to 19 was small. The general trend of higher retention in older age groups was statistically significant.

Figure 4.9: Retention in HIV Care by Age, Alameda County, 2018



## D2C: Re-Engagement Among PLHIV

Retention of PLHIV in HIV care is critical in preventing ongoing transmission of HIV in the community. A key component of the Alameda County D2C program is identifying PLHIV who have fallen out of care and re-engaging them in care. One approach to identifying PLHIV who are OOC is through referrals from their providers who can contact D2C field staff about clients whom they believe to be OOC based on their own observations. Another approach to identifying OOC clients is through an analysis of HIV lab and case surveillance data, referred to as the Surveillance Based List (SBL). Clients who meet specific criteria, which includes a lack of HIV laboratory results for one year, are periodically identified and assessed for eligibility for D2C re-engagement services.

In 2018 and 2019, the D2C program identified 257 referrals who were deemed OOC either by provider referral, through the SBL, or other means. These referrals include clients who are first-time referrals, or those referred previously and found to be OOC again. Of the 257 OOC referrals, 198 were first-time referrals and 59 had been previously referred for re-engagement.

Of these 257 referrals, the D2C program identified 47 (18.2%) clients through the SBL method. Another 141 (54.8%) PLHIV were referred by a provider who considered them to be OOC. D2C staff referred 23 (8.9%) as OOC after investigation, surveillance staff referred 5 (1.9%), 14 (5.4%) clients had another referral source, 5 (1.9%) were referred from out of county, and 5 (1.9%) self-referred as OOC.

Of the 198 unique, first-time referrals, 101 (51.0%) were African American, 43 (21.7%) were Latino, 32 (16.1%) were white, 12 (6.0%) were API, and 10 (5.0%) were Other/Unknown (multiracial, American Indian/Alaska Native or unknown race/ethnicity). The most common barriers to retention in HIV care identified were homelessness (17.7%), mental health issues (14.6%), lack of health insurance (7.0%), and incarceration (6.0%). Among the 198 unique OOC clients, 59 were repeat OOC. Barriers to care among repeat OOC included mental health issues (27.1%), experiencing homelessness (15.25%) and alcohol or drug use (11.8%).

Of the 257 OOC referrals to the D2C program, 133 (51.7%) were re-engaged into care by D2C staff or found to be in care. D2C staff confirmed that 16 (6.2%) moved out of Alameda County and referred 17 (6.6%) out of county. There were 16 (6.2%) clients who refused services and 29 (11.2%) clients who could not be located. Staff found 8 (3.1%) to be deceased, 1 (0.3%) to be not eligible; and 35 (13.6%) were still being investigated. Of the 47 SBL clients, 5 (10.6%) were found to be in care by D2C staff; of the 141 provider referrals, 33 (23.4%) were found to be in care and confirmed to be in care by D2C staff.

## Virologic Status

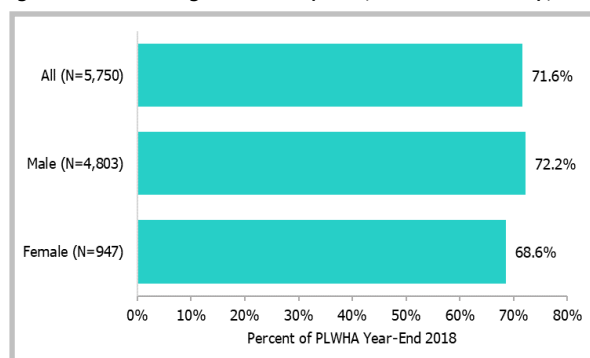
The final measure along the care continuum is virologic suppression, defined as a viral load under 200 copies/mL. For the purposes of these analyses, an undetectable viral load is defined as 75 copies/mL or less. PLHIV that died or moved in 2018 were excluded. Disparities in virologic suppression among PLHIV in care can suggest possible differences in ART use or access to care.

Approximately 71.6% of PLHIV were virally suppressed at their most recent test in 2018, with the majority being undetectable. Virologic suppression was not statistically different between male and female PLHIV.

In 2018, 76.3% and 77.2% of API and white PLHIV, respectively, were virally suppressed. Viral suppression was about 7 to 10% lower in all other racial/ethnic groups. The differences between racial/ethnic groups were significant. Similar disparities were seen among those retained in care (Table 4.9).

Viral suppression rates generally increased as age increased, ranging from 64.4% among those ages 30 to 39 to 77.0% among those ages 60 and over. A similar pattern was seen among those retained in care (Table 4.8).

Figure 4.10: Virologic Status by Sex, Alameda County, 2018



NOTE: "Sex" refers to sex assigned at birth.

Figure 4.11: Virologic Status by Race/Ethnicity, Alameda County, 2018

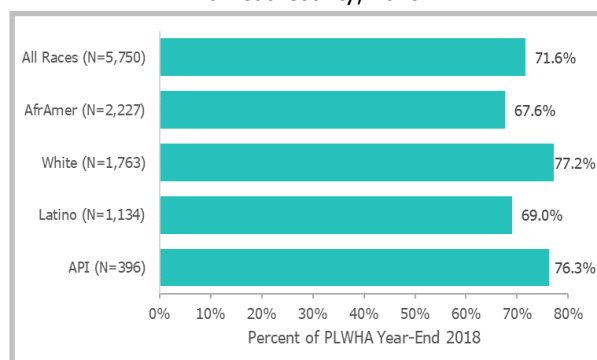


Figure 4.12: Virologic Status by Age, Alameda County, 2018

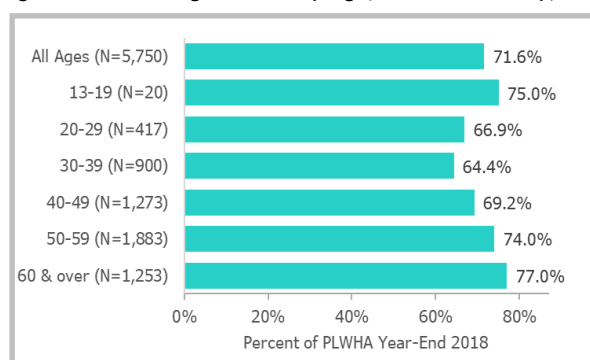
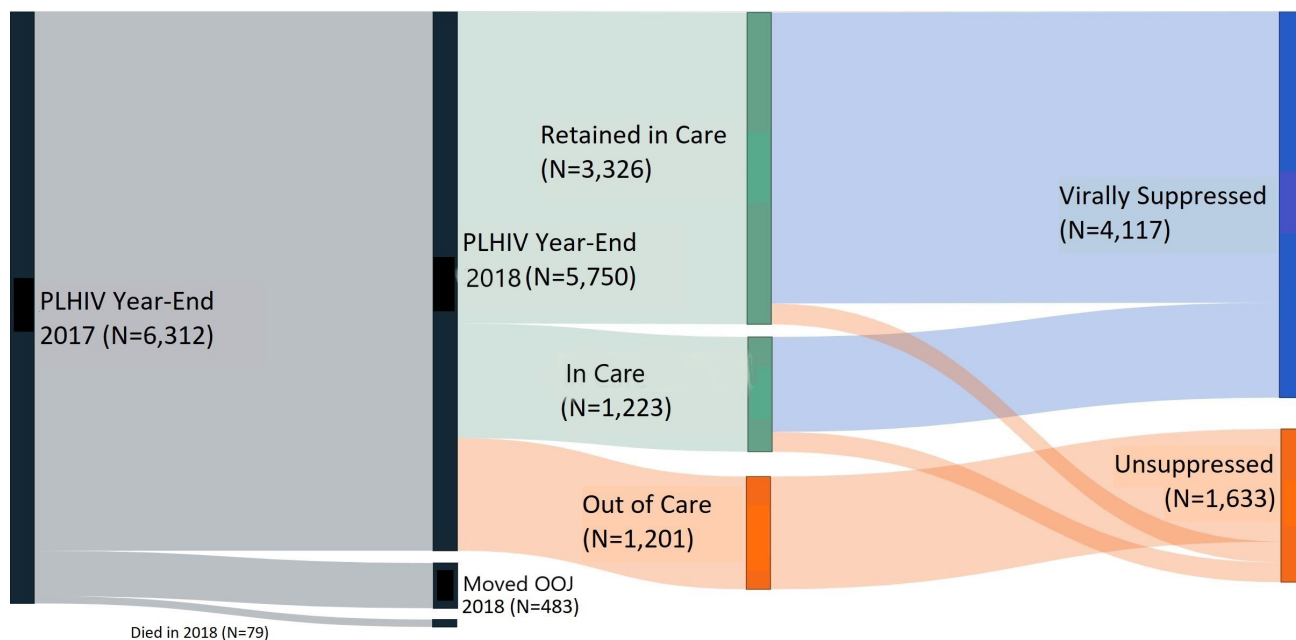


Figure 4.13: Progression Through the Continuum of HIV Care Among PLHIV, Alameda County, 2018



A Sankey diagram is useful for showing how PLHIV progressed through the care continuum and reached viral suppression (Figure 4.13). The width of each bar is proportional to the number of PLHIV represented by the identified outcome. Starting with all PLHIV at year-end 2017, most were still living in Alameda County at the end of 2018. A majority of those living in Alameda County for all of 2018 were either engaged in or retained in care during 2018 (green) while some were considered out of care (orange). The diagram shows the proportion of PLHIV engaged in or retained in care that were virally suppressed in 2018 (blue). Most PLHIV identified as virally unsuppressed were considered out of care, i.e., did not have a viral load or CD4 test in 2018. Only 17.3% of PLHIV engaged in care and 6.6% of those retained in care were unsuppressed.

### D2C: Viral Suppression Among Out of Care

Virologic suppression is an important metric to monitor clinical outcomes among PLHIV. When PLHIV fall out of care, they are at risk of discontinuing ART, resulting in increased viral load over time. The Alameda County D2C program aims to actively identify and re-engage these clients with a provider who can help the client achieve and maintain viral load suppression. Among PLHIV who were referred to D2C as OOC, many clients had a viral load that suggested they were not adherent to their antiretroviral therapy. Among 562 clients who were referred to D2C and who had a viral load test available, 190 (33.8%) were virally unsuppressed, i.e., had a viral load of 200 copies/mL or higher. There were 205 (36.4%) clients who were suppressed, i.e. had a viral load lower than 200 copies/mL but higher than 75 copies/mL and there were 146 (25.9%) who were undetectable, i.e., had a viral load under 75 copies/mL. These findings indicate that those identified as OOC by the D2C program have elevated viral load compared to PLHIV in the county as a whole and could be contributing to ongoing transmission of HIV in the community.



Table 4.1: Linkage to HIV Care Within 30 Days Among New Diagnoses by Sex and Age, Alameda County, 2016-2018

Sex <sup>a</sup>	Age at Diagnosis	New Diagnoses		Linked to Care ≤ 30 Days	
		Average Annual Count	Column Percent	Average Annual Count	Row Percent
All	All ages	224.7	100.0%	194.3	86.4%
	5-12	*	*	0.3	*
	13-19	*	*	3.0	*
	20-24	29.3	13.1%	25.3	**
	25-29	45.7	20.3%	39.7	86.8%
	30-39	62.3	27.7%	55.7	89.4%
	40-49	44.0	19.6%	37.0	84.1%
	50 & older	38.3	17.1%	33.3	87.0%
Male	All ages	191.7	85.3%	165.7	86.3%
	5-12	*	*	0.0	*
	13-19	*	*	2.3	*
	20-24	24.7	11.0%	21.3	**
	25-29	41.3	18.4%	36.0	87.2%
	30-39	56.0	24.9%	49.7	88.7%
	40-49	35.0	15.6%	29.7	84.8%
	50 & older	30.7	13.6%	26.7	**
Female	All ages	33.0	14.7%	28.7	86.9%
	5-12	*	*	0.3	*
	13-19	*	*	0.7	*
	20-24	4.7	2.1%	4.0	**
	25-29	4.3	1.9%	3.7	**
	30-39	6.3	2.8%	6.0	**
	40-49	9.0	4.0%	7.3	**
	50 & older	7.7	3.4%	6.7	**

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes N=2 persons who died within 30 days of diagnosis

[a]Refers to sex assigned at birth

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

Table 4.2: Linkage to HIV Care Within 30 Days Among New Diagnoses by Sex and Race/Ethnicity, Alameda County, 2016-2018

Sex <sup>a</sup>	Race/Ethnicity <sup>b</sup>	New Diagnoses		Linked to Care ≤ 30 Days	
		Average Annual Count	Column Percent	Average Annual Count	Row Percent
All	All races	224.7	100.0%	194.3	86.4%
	AfrAmer	82.0	36.5%	69.3	84.6%
	White	43.0	19.1%	37.3	86.2%
	Latino	71.7	31.9%	63.7	88.8%
	API	21.3	9.5%	19.0	**
	Other/Unk	6.7	3.0%	5.0	**
Male	All races	191.7	85.3%	165.7	86.3%
	AfrAmer	61.3	27.3%	51.7	84.3%
	White	38.3	17.1%	33.3	**
	Latino	66.7	29.7%	59.3	89.0%
	API	*	*	17.0	*
	Other/Unk	*	*	4.3	*
Female	All races	33.0	14.7%	28.7	86.9%
	AfrAmer	20.7	9.2%	17.7	85.3%
	White	4.7	2.1%	4.0	**
	Latino	5.0	2.2%	4.3	**
	API	*	*	2.0	*
	Other/Unk	*	*	0.7	*

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes N=2 persons who died within 30 days of diagnosis

[a] Refers to sex assigned at birth

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

Table 4.3: Linkage to HIV Care Within 30 Days Among New Diagnoses by Race/Ethnicity and Age, Alameda County, 2016-2018

Race/Ethnicity <sup>a</sup>	Age at Diagnosis	New Diagnoses		Linked to Care ≤ 30 Days	
		Average Annual Count	Column Percent	Average Annual Count	Row Percent
All races	All ages	224.7	100.0%	194.3	86.5%
	5-12	*	*	0.3	*
	13-19	*	*	3.0	*
	20-24	29.3	13.1%	25.3	86.4%
	25-29	45.7	20.3%	39.7	86.9%
	30-39	62.3	27.7%	55.7	89.3%
	40-49	44.0	19.6%	37.0	83.5%
	50 & older	38.3	17.1%	33.3	87.0%
AfrAmer	All ages	82.0	36.5%	69.3	84.6%
	5-12	*	*	0.3	*
	13-19	*	*	1.7	*
	20-24	13.3	5.9%	11.3	**
	25-29	15.3	6.8%	13.3	**
	30-39	17.3	7.7%	15.0	**
	40-49	14.0	6.2%	11.3	**
	50 & older	19.0	8.5%	16.3	**
White	All ages	43.0	19.1%	37.3	100.0%
	5-12	0.0	0.0%	0.0	**
	13-19	0.0	0.0%	0.0	**
	20-24	3.0	1.3%	2.0	**
	25-29	7.7	3.4%	6.7	**
	30-39	14.7	6.5%	13.3	**
	40-49	8.7	3.9%	7.0	**
	50 & older	9.0	4.0%	8.3	92.6%
Latino	All ages	71.7	31.9%	63.7	88.8%
	5-12	*	*	0.0	*
	13-19	*	*	1.0	*
	20-24	9.3	4.2%	8.7	**
	25-29	16.7	7.4%	14.7	**
	30-39	22.7	10.1%	20.3	**
	40-49	16.0	7.1%	14.3	**
	50 & older	5.7	2.5%	4.7	**
API	All ages	21.3	9.5%	19.0	**
	5-12	0.0	0.0%	0.0	**
	13-19	*	*	0.3	*
	20-24	*	*	2.7	*
	25-29	4.0	1.8%	3.3	**
	30-39	5.7	2.5%	5.0	**
	40-49	*	*	4.0	*
	50 & older	*	*	3.7	*
Other/Unk	All ages	6.7	3.0%	5.0	**
	5-12	0.0	0.0%	0.0	**
	13-19	0.0	0.0%	0.0	**
	20-24	*	*	0.7	*
	25-29	2.0	0.9%	1.7	**
	30-39	2.0	0.9%	2.0	100.0%
	40-49	*	*	0.3	*
	50 & older	*	*	0.3	*

Source: Alameda County eHARS, 2012Q 2

NOTE: Excludes N=2 persons who died within 30 days of diagnosis

[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

Table 4.4: Linkage to HIV Care Within 90 Days Among New Diagnoses, Alameda County, 2016-2018

Characteristic	Category	New Diagnoses		Linked to Care ≤ 90 Days	
		Average Annual Count	Column Percent	Average Annual Count	Row Percent
All newly diagnosed		224.7	100.0%	202	89.9%
Sex <sup>a</sup>	Male	191.7	85.3%	174.0	90.8%
	Female	33.0	14.7%	28.0	84.8%
Race/Ethnicity <sup>b</sup>	AfrAmer	82.0	36.5%	71.0	86.6%
	White	43.0	19.1%	39.3	91.5%
	Latino	71.7	31.9%	67.3	94.0%
	API	21.3	9.5%	18.7	**
	Other/Unk	6.7	3.0%	5.7	**
Age (years) <sup>c</sup>	5-12	*	*	0.3	*
	13-19	*	*	4.3	*
	20-24	29.3	13.1%	27.7	85.9%
	25-29	45.7	20.3%	41.0	98.8%
	30-39	62.3	27.7%	57.0	91.4%
	40-49	44.0	19.6%	37.7	85.6%
	50 & older	38.3	17.1%	34.0	88.7%

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes N=3 persons who died within 90 days of diagnosis

[a] Refers to sex assigned at birth

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race

[\*] Some cells suppressed to protect confidentiality

[\*\*] Unstable estimates not shown

Table 4.5: Any Evidence of Care in 2018 Among PLHIV at Year-End 2017 by Sex and Age, Alameda County

Sex <sup>a</sup>	Age	All PLHIV		Any Visit in 2018	
		Count	Column Percent	Count	Row Percent
All	All ages	5,750	100.0%	4,549	79.1%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	339	5.9%	272	80.2%
	30-39	876	15.2%	656	74.9%
	40-49	1,205	21.0%	931	77.3%
	50-59	1,896	33.0%	1,523	80.3%
	60 & older	1,415	24.6%	1,149	81.2%
Female	All ages	947	16.5%	729	77.0%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	39	0.7%	28	71.8%
	30-39	120	2.1%	87	72.5%
	40-49	226	3.9%	169	74.8%
	50-59	302	5.3%	245	81.1%
	60 & older	251	4.4%	191	76.1%
Male	All ages	4,803	83.5%	3,820	79.5%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	300	5.2%	244	81.3%
	30-39	756	13.2%	569	75.3%
	40-49	979	17.0%	762	77.8%
	50-59	1,594	27.7%	1,278	80.2%
	60 & older	1,164	20.2%	958	82.3%

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] Refers to sex assigned at birth.

[\*] Some cells suppressed to protect confidentiality

Table 4.6: Any Evidence of Care in 2018 Among PLHIV at Year-End 2017 by Sex and Race/Ethnicity, Alameda County

Sex <sup>a</sup>	Race/Ethnicity <sup>b</sup>	All PLHIV		Any Visit in 2018	
		Count	Column Percent	Count	Row Percent
All	All races	5,750	100.0%	4,549	79.1%
	AfrAmer	2,227	38.7%	1,731	77.7%
	White	1,763	30.7%	1,443	81.8%
	Latino	1,134	19.7%	863	76.1%
	API	396	6.9%	322	81.3%
	Other/Unk	230	4.0%	190	82.6%
Male	All races	4,803	83.5%	3,820	79.5%
	AfrAmer	1,662	28.9%	1,292	77.7%
	White	1,616	28.1%	1,327	82.1%
	Latino	987	17.2%	758	76.8%
	API	340	5.9%	275	80.9%
	Other/Unk	198	3.4%	168	84.8%
Female	All races	947	16.5%	729	77.0%
	AfrAmer	565	9.8%	439	77.7%
	White	147	2.6%	116	78.9%
	Latino	147	2.6%	105	71.4%
	API	56	1.0%	47	**
	Other/Unk	32	0.6%	22	**

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] Refers to sex assigned at birth.

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race.

[\*\*] Unstable estimates not shown.

Table 4.7: Any Evidence of Care in 2018 Among PLHIV at Year-End 2017 by Race/Ethnicity and Age, Alameda County

Race/Ethnicity <sup>a</sup>	Age	All PLHIV		Any Visit in 2018	
		Count	Column Percent	Count	Row Percent
All races	All ages	5,750	100.0%	4,549	79.1%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	339	5.9%	272	80.2%
	30-39	876	15.2%	656	74.9%
	40-49	1,205	21.0%	931	77.3%
	50-59	1,896	33.0%	1,523	80.3%
	60 & older	1,415	24.6%	1,149	81.2%
AfrAmer	All ages	2,227	38.7%	1,731	77.7%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	169	2.9%	135	79.9%
	30-39	347	6.0%	253	72.9%
	40-49	408	7.1%	316	77.5%
	50-59	718	12.5%	571	79.5%
	60 & older	573	10.0%	444	77.5%
White	All ages	1,763	30.7%	1,443	81.8%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	43	0.8%	33	76.7%
	30-39	173	3.0%	132	76.3%
	40-49	303	5.3%	243	80.2%
	50-59	685	11.9%	566	82.6%
	60 & older	557	9.7%	468	84.0%
Latino	All ages	1,134	19.7%	863	76.1%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	78	1.4%	64	82.1%
	30-39	232	4.0%	174	75.0%
	40-49	318	5.5%	230	72.3%
	50-59	328	5.7%	250	76.2%
	60 & older	174	3.0%	141	81.0%
API	All ages	396	6.9%	322	81.3%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	33	0.6%	28	84.8%
	30-39	78	1.4%	62	79.5%
	40-49	121	2.1%	95	78.5%
	50-59	99	1.7%	82	82.8%
	60 & older	64	1.1%	54	84.4%
Other/Unk	All ages	230	4.0%	190	82.6%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	16	0.3%	12	75.0%
	30-39	46	0.8%	35	76.1%
	40-49	55	1.0%	47	85.5%
	50-59	66	1.2%	54	81.8%
	60 & older	47	0.8%	42	89.4%

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race.

[\*] Some cells suppressed to protect confidentiality

Table 4.8: Retention in Continuous HIV Care in 2018 Among PLHIV at Year-End 2017 by Sex and Age, Alameda County

Sex <sup>a</sup>	Age	All PLHIV		Retained 2018	
		Count	Column Percent	Count	Row Percent
All	All ages	5,750	100.0%	3,326	57.8%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	417	6.6%	221	53.0%
	30-39	900	13.4%	446	49.6%
	40-49	1,273	21.1%	700	55.0%
	50-59	1,883	33.6%	1,117	59.3%
	60 & older	1,253	24.8%	824	65.8%
Female	All ages	947	16.5%	534	56.4%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	46	0.8%	25	54.4%
	30-39	124	2.2%	69	56.7%
	40-49	246	4.3%	133	54.1%
	50-59	290	5.0%	164	56.6%
	60 & older	231	4.0%	136	58.9%
Male	All ages	4,803	83.5%	2,792	58.1%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	371	6.5%	196	52.8%
	30-39	776	13.5%	377	48.6%
	40-49	1,027	17.9%	567	55.2%
	50-59	1,593	27.7%	953	59.8%
	60 & older	1,022	17.8%	688	67.3%

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] Refers to sex assigned at birth.

[\*] Some cells suppressed to protect confidentiality



Table 4.9: Retention in Continuous HIV Care in 2018 Among PLHIV at Year-End 2017 by Sex and Race/Ethnicity, Alameda County

Sex <sup>a</sup>	Race/Ethnicity <sup>b</sup>	All PLHIV		Retained 2018	
		Count	Column Percent	Count	Row Percent
All	All races	5,750	100.0%	3,326	57.8%
	AfrAmer	2,227	38.7%	1,244	55.9%
	White	1,763	30.7%	1,065	60.4%
	Latino	1,134	19.7%	635	56.0%
	API	396	6.9%	250	63.1%
	Other/Unk	230	4.0%	132	57.4%
Male	All races	4,803	83.5%	2,792	58.1%
	AfrAmer	1,662	28.9%	931	56.0%
	White	1,616	28.1%	983	60.8%
	Latino	987	17.2%	550	55.7%
	API	340	5.9%	213	62.6%
	Other/Unk	198	3.4%	115	58.1%
Female	All races	947	16.5%	534	56.4%
	AfrAmer	565	9.8%	313	55.4%
	White	147	2.6%	82	55.8%
	Latino	147	2.6%	85	57.8%
	API	56	1.0%	37	**
	Other/Unk	32	0.6%	17	**

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] Refers to sex assigned at birth.

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race.

[\*\*] Unstable estimates not shown.

Table 4.10: Retention in Continuous HIV Care in 2018 Among PLHIV at Year-End 2017 by Race/Ethnicity and Age, Alameda County

Race/Ethnicity <sup>a</sup>	Age	All PLHIV		Retained 2018	
		Count	Column Percent	Count	Row Percent
All races	All ages	5,750	100.0%	3,326	57.8%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	417	6.6%	221	53.0%
	30-39	900	13.4%	446	49.6%
	40-49	1,273	21.1%	700	55.0%
	50-59	1,883	33.6%	1,117	59.3%
AfrAmer	60 & older	1,253	24.8%	824	65.8%
	All ages	2,227	38.7%	1,244	55.9%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	199	3.5%	97	48.7%
	30-39	353	6.1%	171	48.4%
	40-49	438	7.6%	235	53.7%
White	50-59	715	12.4%	418	58.5%
	60 & older	507	8.8%	311	61.3%
	All ages	1,763	30.7%	1,065	60.4%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	59	1.0%	29	49.2%
	30-39	183	3.2%	77	42.1%
Latino	40-49	330	5.7%	204	61.8%
	50-59	696	12.1%	418	60.1%
	60 & older	493	8.6%	337	68.4%
	All ages	1,134	19.7%	635	56.0%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	100	1.7%	60	60.0%
API	30-39	238	4.1%	126	52.9%
	40-49	322	5.6%	159	49.4%
	50-59	311	5.4%	176	56.6%
	60 & older	157	2.7%	109	69.4%
	All ages	396	6.9%	250	63.1%
	0-12	*	*	*	*
	13-19	*	*	*	*
Other/Unk	20-29	37	0.6%	27	73.0%
	30-39	82	1.4%	48	58.5%
	40-49	122	2.1%	68	55.7%
	50-59	95	1.7%	65	68.4%
	60 & older	59	1.0%	41	69.5%
	All ages	230	4.0%	132	57.4%
	0-12	*	*	*	*
Other/Unk	13-19	*	*	*	*
	20-29	22	0.4%	8	36.4%
	30-39	44	0.8%	24	54.5%
	40-49	61	1.1%	34	55.7%
	50-59	66	1.1%	40	60.6%
	60 & older	37	0.6%	26	70.3%

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race.

[\*] Some cells suppressed to protect confidentiality

Table 4.11: Viral Suppression in 2018 Among PLHIV at Year-End 2017 by Sex and Age, Alameda County

Sex <sup>a</sup>	Age	All PLHIV		Suppressed at Last Viral Load in 2018	
		Count	Column Percent	Count	Row Percent
All	All ages	5,750	100.0%	4,117	71.6%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	417	6.6%	279	66.9%
	30-39	900	13.4%	580	64.4%
	40-49	1,273	21.1%	881	69.2%
	50-59	1,883	33.6%	1,393	74.0%
	60 & older	1,253	24.8%	965	77.0%
Female	All ages	947	16.5%	650	68.6%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	46	0.8%	22	47.8%
	30-39	124	2.2%	77	62.1%
	40-49	246	4.3%	163	66.3%
	50-59	290	5.0%	208	71.7%
	60 & older	231	4.0%	172	74.5%
Male	All ages	4,803	83.5%	3,467	72.2%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	371	6.5%	257	69.3%
	30-39	776	13.5%	503	64.8%
	40-49	1,027	17.9%	718	69.9%
	50-59	1,593	27.7%	1,185	74.4%
	60 & older	1,022	17.8%	793	77.6%

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=78) or moved out of the county (N=428) in 2018

[a] Refers to sex assigned at birth

[\*] Some cells suppressed to protect confidentiality

Table 4.12: Viral Suppression in 2018 Among PLHIV at Year-End 2017 by Sex and Race/Ethnicity, Alameda County

Sex <sup>a</sup>	Race/Ethnicity <sup>b</sup>	All PLHIV		Suppressed at Last Viral Load in 2018	
		Count	Column Percent	Count	Row Percent
All	All races	5,750	100.0%	4,117	71.6%
	AfrAmer	2,227	38.7%	1,506	67.6%
	White	1,763	30.7%	1,361	77.2%
	Latino	1,134	19.7%	782	69.0%
	API	396	6.9%	302	76.3%
	Other/Unk	230	4.0%	166	72.2%
Male	All races	4,803	83.5%	3,467	72.2%
	AfrAmer	1,662	28.9%	1,118	67.3%
	White	1,616	28.1%	1,256	77.7%
	Latino	987	17.2%	687	69.6%
	API	340	5.9%	259	76.2%
	Other/Unk	198	3.4%	147	74.2%
Female	All races	947	16.5%	650	68.6%
	AfrAmer	565	9.8%	388	68.7%
	White	147	2.6%	105	71.4%
	Latino	147	2.6%	95	64.6%
	API	56	1.0%	43	**
	Other/Unk	32	0.6%	19	**

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] Refers to sex assigned at birth.

[b] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race.

[\*\*] Unstable estimates not shown.

Table 4.13: Viral Suppression in 2018 Among PLHIV at Year-End 2017 by Race/  
Ethnicity and Age, Alameda County

Race/Ethnicity <sup>a</sup>	Age	All PLHIV		Suppressed at Last Viral Load in 2018	
		Count	Column Percent	Count	Row Percent
All race	All ages	5,750	100.0%	4,117	71.6%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	417	6.6%	279	66.9%
	30-39	900	13.4%	580	64.4%
	40-49	1,273	21.1%	881	69.2%
	50-59	1,883	33.6%	1,393	74.0%
	60 & older	1,253	24.8%	965	77.0%
AfrAmer	All ages	2,227	38.7%	1,506	67.6%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	199	3.5%	120	60.3%
	30-39	353	6.1%	216	61.2%
	40-49	438	7.6%	288	65.8%
	50-59	715	12.4%	503	70.3%
	60 & older	507	8.8%	367	72.4%
White	All ages	1,763	30.7%	1,361	77.2%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	59	1.0%	42	71.2%
	30-39	183	3.2%	122	66.7%
	40-49	330	5.7%	252	76.4%
	50-59	696	12.1%	546	78.4%
	60 & older	493	8.6%	398	80.7%
Latino	All ages	1,134	19.7%	782	69.0%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	100	1.7%	74	74.0%
	30-39	238	4.1%	153	64.3%
	40-49	322	5.6%	205	63.7%
	50-59	311	5.4%	222	71.4%
	60 & older	157	2.7%	123	78.3%
API	All ages	396	6.9%	302	76.3%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	37	0.6%	31	83.8%
	30-39	82	1.4%	58	70.7%
	40-49	122	2.1%	91	74.6%
	50-59	95	1.7%	74	77.9%
	60 & older	59	1.0%	47	79.7%
Other/Unknown	All ages	230	4.0%	166	72.2%
	0-12	*	*	*	*
	13-19	*	*	*	*
	20-29	22	0.4%	12	54.5%
	30-39	44	0.8%	31	70.5%
	40-49	61	1.1%	45	73.8%
	50-59	66	1.1%	48	72.7%
	60 & older	37	0.6%	30	81.1%

Source: Alameda County eHARS, 2020 Q2

NOTE: Excludes PLHIV at year-end 2017 who died (N=79) or moved out of the county (N=483) in 2018.

[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race.

[\*] Some cells suppressed to protect confidentiality

Table 4.14: Viral Suppression in 2018 Among PLHIV at Year-End 2017 and In Care in 2017 by Sex, Alameda County

	All PLHIV		Suppressed at Last Viral Load in 2018	
Sex <sup>a</sup>	Count	Column Percent	Count	Row Percent
All	4,549	100.0%	4,117	90.5%
Male	3,820	84.0%	3,467	90.8%
Female	729	16.0%	650	89.2%

Source: Alameda County eHARS, 2020 Q2  
NOTE: Excludes PLHIV at year-end 2017 who died (N=78) or moved out of the county (N=428), or did not have any HIV labs reported (N=1201) in 2018  
[a] Refers to sex assigned at birth

Table 4.15: Viral Suppression in 2018 Among PLHIV at Year-End 2017 and In Care in 2017 by Race/Ethnicity, Alameda County

	All PLHIV		Suppressed at Last Viral Load in 2018	
Race/Ethnicity <sup>a</sup>	Count	Column Percent	Count	Row Percent
All races	4,549	100.0%	4,117	90.5%
AfrAmer	1,731	38.1%	1,506	87.0%
White	1,443	31.7%	1,361	94.3%
Latino	863	19.0%	782	90.6%
API	322	7.1%	302	93.8%
Other/Unk	190	4.2%	166	87.4%

Source: Alameda County eHARS, 2020 Q2  
NOTE: Excludes PLHIV at year-end 2017 who died (N=78) or moved out of the county (N=428), or did not have any HIV labs reported (N=1201) in 2018  
[a] 'Other/Unk' = American Indians and Alaskan Natives, multiple race, unknown race



## Key Populations

- *Transgender*
- *Men Who Have Sex with Men*
- *People Who Inject Drugs*
- *Young People of Color*
- *Non-US-Born*

### Transgender

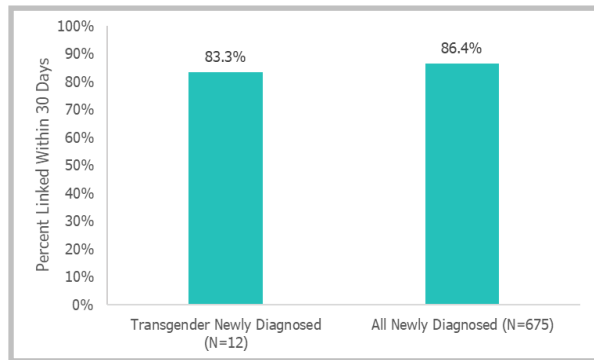
Transgender is an umbrella term used to describe a population whose gender identity differs from their sex at birth. Transgender people face high levels of discrimination, exclusion from employment, and social marginalization, resulting in increased rates of poverty, substance use, and barriers to healthcare. As a result of these intersecting factors that influence all stages of HIV diagnosis, treatment, and the care continuum, transgender people experience unique vulnerability to HIV.

Epidemiologic data shows that the transgender community carries a disproportionately high HIV burden compared to other groups.<sup>8</sup> However, attempts to characterize the specifics of such burden is often hindered by the lack of accurate transgender data in healthcare.<sup>9</sup> Historically, systems for collecting and sharing medical data did not always have distinct fields to describe birth sex, current gender, or transgender status. In addition, risk of stigmatization and discrimination may prevent transgender people from seeking out healthcare or accurately disclosing their gender to providers. Transgender PLHIV is a critical population that deserves more visibility as they are likely to be underestimated in routine surveillance and experience a significant HIV burden.

A national systemic review in 2019 estimated 14% of transwomen and 3% of transmen are living with HIV.<sup>10</sup> Based on testing reported to CDC, the percentage of transgender people who received a new HIV diagnosis was three times the national average in 2017.<sup>11</sup> Transgender people of color make up the majority of HIV diagnoses among all transgender people in the United States. In California, transgender PLHIV report lower rates of linkage, retention, and viral suppression compared to newly diagnosed PLHIV overall. Based on 2017 data, 75% of transgender PLHIV were linked to care within 12 months, 58% retained in care, and 59% achieved viral suppression<sup>12</sup> compared to 90% linked in 12 months, 74% retained, and 72% suppressed overall.<sup>13</sup>

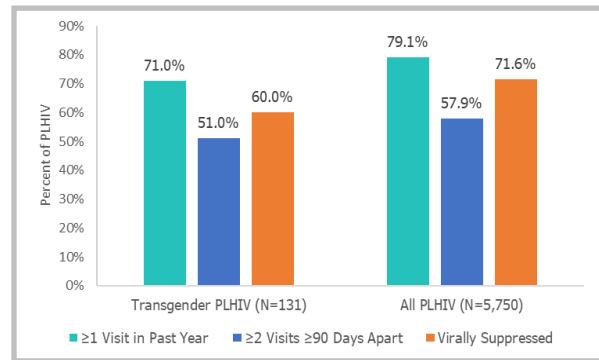
In Alameda County, surveillance data showed 131 transgender PLHIV at year-end 2019; the true count is likely higher due to reasons outlined above. Over half were African American, 22.1% identified as Latino, 13% white, and 3.8% API. Ninety-two percent identified as male-to-female and 8% identified as female-to-

Figure 5.1: Linkage to HIV Care Among Transgender, Alameda County, 2016-2018



NOTE: Excludes persons who died within 30 days of diagnosis (N=2).

Figure 5.2: Engagement in HIV Care and Virologic Status Among Transgender PLHIV, Alameda County, 2018



male. Among transgender PLHIV diagnosed between 2016 to 2018, 83.3% were linked to care within 30 days and 91.7% were linked to care within 90 days. Linkage rates were lower compared to the overall newly diagnosed population in Alameda County during the same period. Retention and viral suppression outcomes among transgender PLHIV were also poorer compared to overall PLHIV. Seventy-one percent of transgender PLHIV had evidence of care in 2018, 51% were retained in care, and 60% were virally suppressed. In comparison, among Alameda County PLHIV at year-end 2018, 79.1% had evidence of care, 57.9% were retained in care, and 71.6% were virally suppressed.

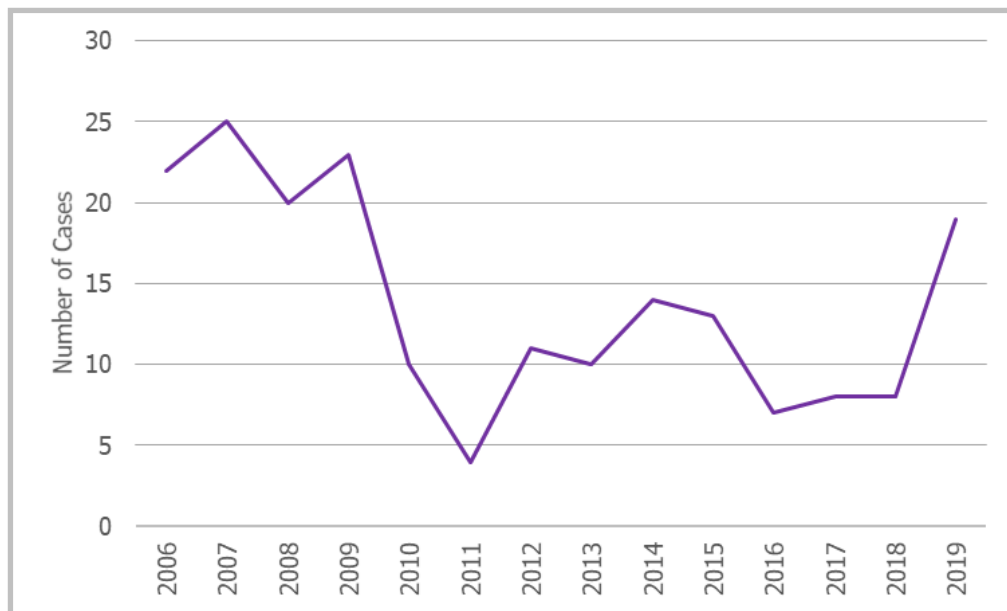
## People Who Inject Drugs

People who inject drugs (PWID) experience a greater burden of HIV compared to other groups as they have a greater risk for acquiring HIV and limited access to treatment or prevention services. Risk for HIV is increased through the practices of sharing needles, syringes, and other drug use equipment, and higher likelihood to engage in unsafe sexual practices including condomless sex, sex with multiple partners, and exchanging sex for drugs. All these practices can also result in elevated risk for acquiring and transmitting hepatitis B, hepatitis C, and other bloodborne infections in addition to HIV. The common overlap between PWID populations and people who experience homelessness or incarceration brings into play social obstacles such as stigma and legal barriers that further hinder access to services for these marginalized groups. For all these reasons, PWID is a key population for HIV prevention.

Since 2013, the opioid and heroin epidemic has resulted in increased numbers of PWID throughout the country, increasing the population at risk for HIV. Furthermore, the rise in PWID in nonurban areas has generated new prevention challenges—fewer specialty providers practice in rural settings and both patients and providers may be less familiar with advances in ART.<sup>14</sup>

According to the CDC, there are more than 122,000 PWID living with HIV in 2018, of which 46% are Black, 27% are Latino, and 21% are white.<sup>15</sup> PWID account for about 1 in 15 new HIV diagnoses in the US. Within California, PWID made up 5.9% of an estimated 153,000 PLHIV in year-end 2017. Although linkage rates do not differ significantly from the statewide average, viral suppression in six months among PWID is the lowest of all transmission categories.<sup>16</sup>

Figure 5.3: New Diagnoses Among PWID, Alameda County, 2006-2019

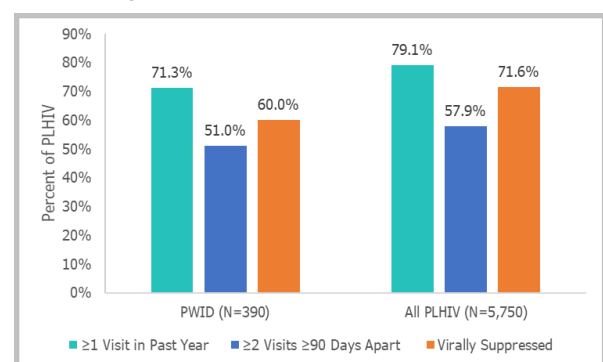


Alameda County was alerted of a time-space HIV cluster among PWID occurring across 2019. This type of cluster is defined as an increase in the number of diagnoses in a geographic area to levels above expected based on previous patterns, meaning that a significant rise in HIV diagnosis among PWID was detected at the local level. With a growing population both nationally and locally, worse reported health outcomes, and complex social and structural barriers, PWID is a crucial subpopulation of PLHIV in the county.

Over the years 2010 to 2018, the number of new HIV diagnoses among PWID in Alameda County hovered around an average of 10 per year. However, 2019 saw a spike of 19 new cases, prompting a specific examination of the epidemic among the local PWID population. Prominent characteristics of newly diagnosed PWID from 2017 to 2019 were: male (57.1%), African American (45.7%), and aged 30 to 39 (31.4%).

In the years 2016 to 2018, 65.2% of newly diagnosed PWID were linked to care within 30 days and 78.3% were linked within 90 days, which is significantly lower than the overall newly diagnosed population during the same period. Fifty-one percent of PLHIV who inject drugs and resided in Alameda County for the entirety of 2018 had two or more visits 90 or more days apart in that year and were considered retained in care, compared to 57.9% of the overall PLHIV population. Viral suppression among PLHIV who inject drugs was 60% compared to 71.6% of PLHIV in the county.

Figure 5.4: Retention in HIV Care and Virologic Status Among PWID, Alameda County, Year-End 2018



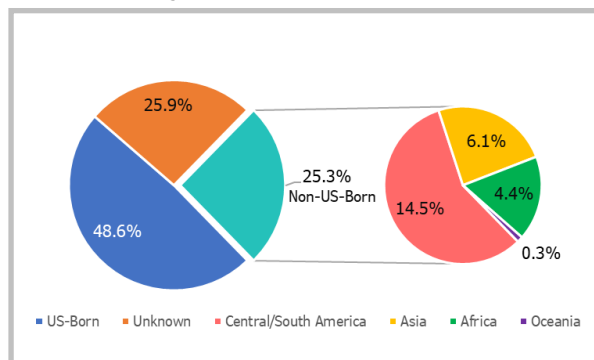
PLHIV\* who inject drugs showed lower levels of engagement in care on all measures along the continuum of care compared to PLHIV in the county.

## Non-US-Born

Non-US-born persons face a variety of challenges that put them at risk of developing HIV or facing barriers to receiving appropriate HIV care. The challenges experienced by non-US-born persons include lack of acculturation, discrimination, and language barriers. All these issues combined may negatively impact or obstruct their ability to access affordable and culturally competent health care, employment, education, and housing. Some studies show that non-US-born persons are more likely to hold lower wage jobs and are less likely to have health insurance through their employer. Further, 23% of documented immigrants were uninsured and 45% of undocumented immigrants were uninsured.<sup>17</sup>

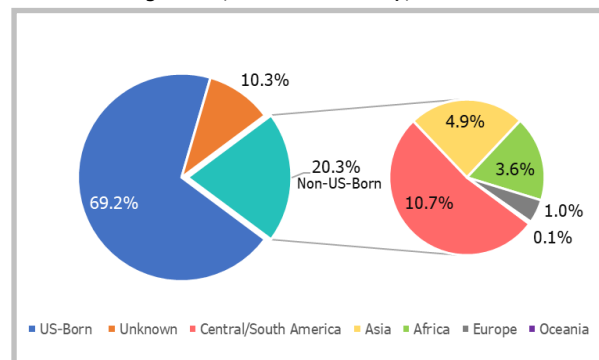
According to the US Census, non-US-born persons made up 13% of the US population in 2010. In the same year, non-US-born persons comprised 16% of all persons living with HIV.<sup>18</sup> In Alameda County, there were approximately 541,000 non-US-born persons, which made up nearly one-third of its population of 1.6 million people in 2019.<sup>19</sup> Among the 6,350 people living with HIV at year-end 2019 in Alameda County, one-fifth were non-US-born. Thus non-US-born persons are a key population with regards to risk and burden of HIV. Data on nativity status can help in describing the need for culturally appropriate HIV services for non-US-born persons.

Figure 5.5: Nativity Status and Region of Origin Among Newly Diagnosed, Alameda County, 2017-2019



NOTE: N= 633 newly diagnosed.

Figure 5.6: Nativity Status and Region of Origin Among PLHIV, Alameda County, 2017-2019



NOTE: N= 6,350 PLHIV.

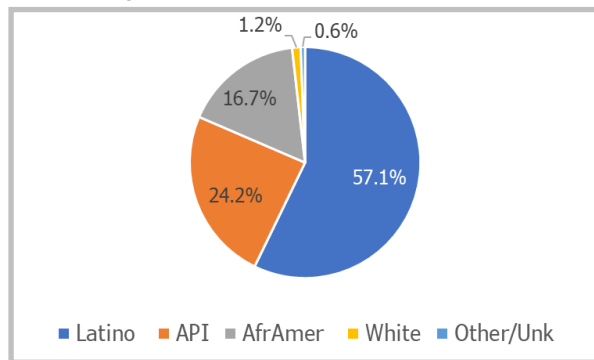
Among 633 new HIV diagnoses from 2017 to 2019 in Alameda County, a quarter (25.3%) were born in another country. US-born persons comprised 48.6% and persons with unknown country of birth comprised 25.9%. Of the 161 non-US-born new HIV diagnoses, 57.1% came from Central or South America, 24.2%

\*Those who met the criteria of injection drug use as a risk factor for transmission at the time of HIV diagnosis were considered PWID. Transmission risk factors such as MSM, heterosexual contact, perinatal exposure, and injection drug use were assessed at the time of diagnosis. Analysis of PWID as a risk factor among PLHIV should be interpreted with caution as it may not represent current risk—which is not assessed in routine case surveillance and could potentially be a more reliable indicator of transmission risk. Consequently, those in the PWID category may not have consistently met or be currently meeting the definition of IDU as a risk factor, but this nuance is not distinguishable in the presented analyses.

came from Asia, followed by 17.3% from Africa and 1.2% from Oceania. The top three countries of birth were Mexico, the Philippines, and India with 33.5%, 6.2%, and 5.5% of non-US-born new diagnoses respectively.

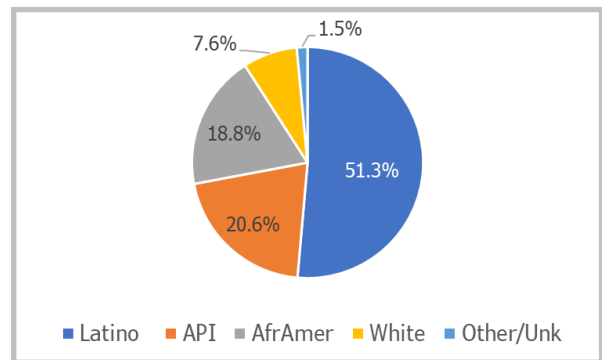
Between 2017 and 2019 there were 6,350 PLHIV in Alameda County. Of these, 4,399 (69.2%) were US-born, 1,292 (20.3%) were non-US-born and 659 (10.3%) had unknown country of birth. Non-US-born PLHIV were primarily from Central or South America (52.6%), followed by Asia (24.1%), Africa (17.5%), Europe (4.7%) and Oceania (0.8%) regions. Among non-US-born PLHIV, Mexico (32.3%), the Philippines (6.5%) and Ethiopia (4.9%) were the top three countries of birth.

Figure 5.7: Race/Ethnicity Among Non-US-Born Newly Diagnosed in Alameda County, 2017-2019



NOTES: 1) N=161 newly diagnosed  
2) "AfrAmer" refers to Blacks originating from Africa and other regions for non-US-born.

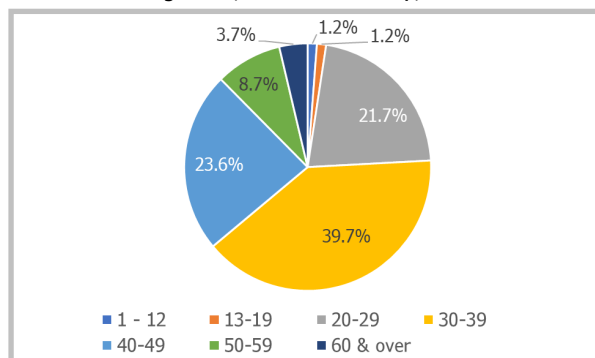
Figure 5.8: Race/Ethnicity Among Non-US-Born PLHIV in Alameda County, 2017-2019



NOTES: 1) N=1,292 PLHIV  
2) "AfrAmer" refers to Blacks originating from Africa and other regions for non-US-born.

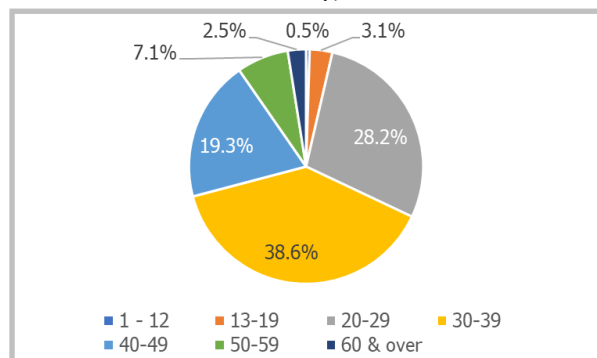
Latinos comprised 57.1% of all non-US-born persons newly diagnosed with HIV. The next largest racial/ethnic group was API (24.2%), followed by Blacks originating from Africa and other regions (16.7%). Non-US-born PLHIV had a similar racial/ethnic distribution—the largest group was Latino (51.3%) followed by API (20.6%) and Blacks originating from Africa and other regions (18.8%).

Figure 5.9: Age at HIV Diagnosis Among Non-US-Born New Diagnoses, Alameda County, 2017-2019



NOTE: N=161 newly diagnosed.

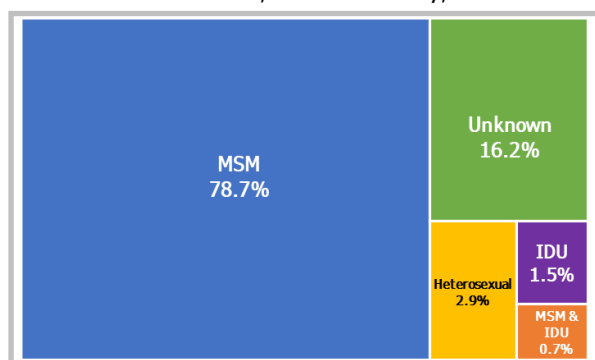
Figure 5.10: Age Among Non-US-Born PLHIV, Alameda County, 2017-2019



NOTE: N=1,292 PLHIV.

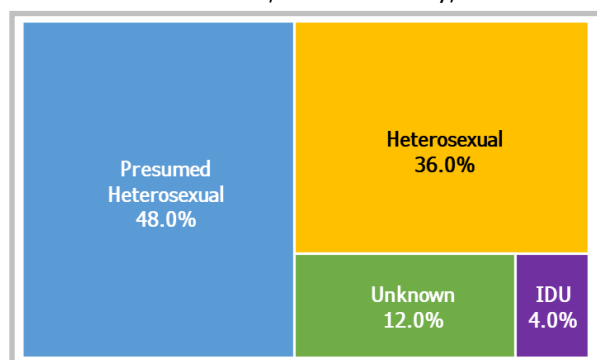
Those aged 30 to 39 comprised 39.7% of newly diagnosed non-US-born persons followed by those 40 to 49 (23.6%), and those aged 20 to 29 (21.7%). Non-US-born PLHIV had a similar age distribution. Persons aged 30 to 39 (38.6%) were the largest group, followed by those aged 20 to 29 (28.5%) and 40 to 49 (19.3%).

Figure 5.11: Transmission Category Among Newly Diagnosed, Non-US-Born Males, Alameda County, 2017-2019



NOTE: N=136 Non-US-born males.

Figure 5.12: Transmission Category Among Newly Diagnosed, Non-US-Born Females, Alameda County, 2017-2019



NOTE: N=25 Non-US-born females.

From 2017 to 2019, the most common mode of transmission for new HIV diagnoses among non-US-born males was MSM (78.7%). For new diagnoses among non-US-born females, presumed (48.0%) or reported heterosexual contact (36.0%) were the predominant modes of transmission.

Figure 5.13: Linkage Within 30 Days Among Non-US-Born, Alameda County, 2016-2018

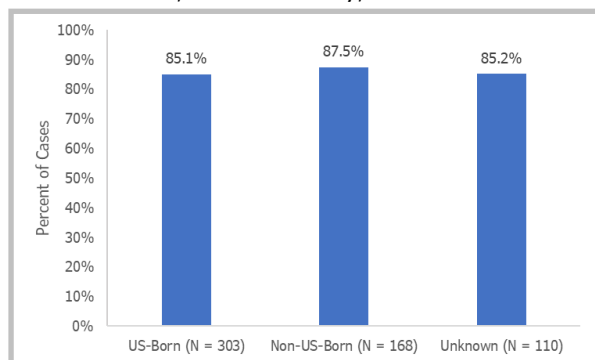
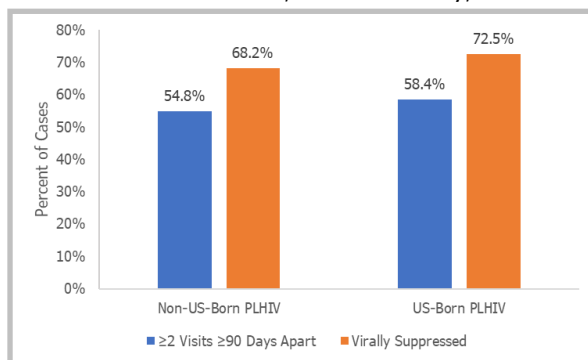


Figure 5.14: Retention in Care and Viral Suppression for US-Born and Non-US-Born, Alameda County, 2016-2018



From 2016 to 2018, 88.8% of US-born newly diagnosed persons were linked to care within 90 days of diagnosis, including labs done on the diagnosis date. During the same period, 91.7% of non-US-born newly diagnosed persons were linked to care within 90 days of diagnosis, including labs done on the diagnosis date.

Of newly diagnosed US-born persons 85.1% were linked to care within 30 days of diagnosis including labs done on the diagnosis date compared to 87.5% of newly diagnosed non-US-born persons. Excluding labs done on diagnosis date, 75.5% of US-born persons were linked to care within 30 days compared to 64.5% of non-US-born persons.

Among PLHIV, 58.4% of US-born persons were retained in care, compared to 54.8% of non-US-born persons. With regards to viral suppression, 72.5% of US-born persons were virally suppressed, compared to 68.2% of non-US-born persons.

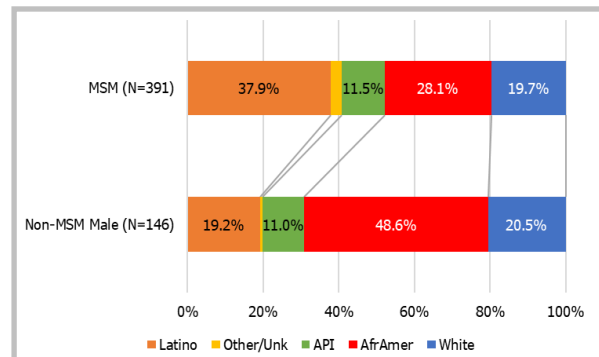
## Men Who Have Sex With Men

Local, state, and national data indicate that men who have sex with men are at an increased risk of acquiring HIV. A recent study has shown that overall incidence of HIV has decreased between 2008 and 2015 in all transmission risk groups except for MSM.<sup>20</sup> In 2013, the US Preventative Services Task Force recommended annual screening for MSM in contrast to just once for all persons aged 13 to 64 who were not considered at higher risk. In Alameda County from 2017 to 2019, 76% of newly diagnosed cases had a transmission risk category of MSM.



Among the 633 new diagnoses from 2017 to 2019, 391 had a risk category of MSM. Among those identified as MSM, 37.9% were Latino and 28.1% were African American. This contrasts with other transmission risk categories among men which were 19.2% Latino and 48.6% African American.

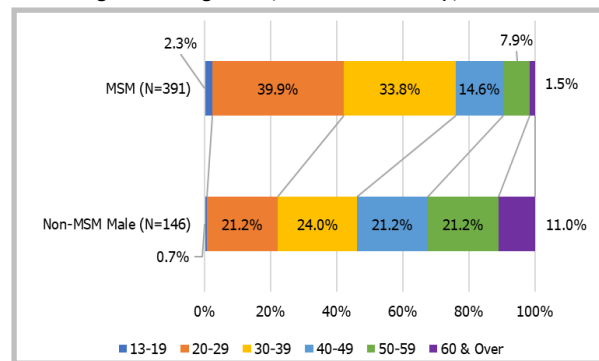
Figure 5.15: Race/Ethnicity of MSM and Non-MSM Among New Diagnoses, Alameda County, 2017-2019



NOTE: Male as defined by sex assigned at birth.

The age distribution among newly diagnosed MSM was much younger with 76% under the age of 40. In contrast among newly diagnosed males not identified as MSM only 45.9% were under the age of 40 at diagnosis.

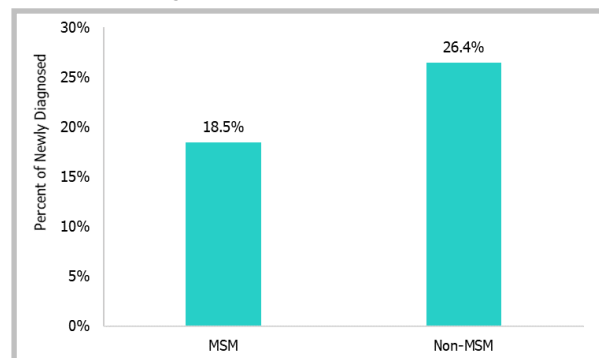
Figure 5.16: Age at Diagnosis of MSM and Non-MSM Among New Diagnoses, Alameda County, 2017-2019



NOTE: Male as defined by sex assigned at birth.

The rate of late diagnosis was higher among newly diagnosed non-MSM males (26.4%) than MSM males (18.5%).

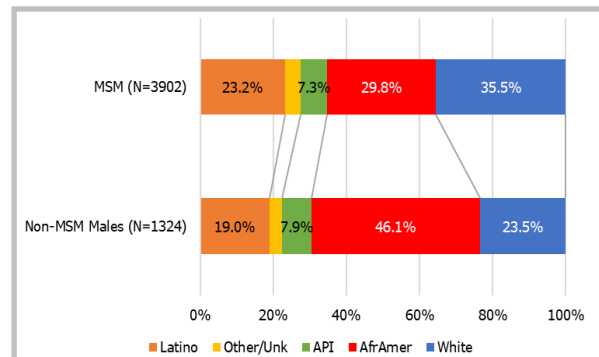
Figure 5.17: Late Diagnosis Rates of MSM and Non-MSM Among Newly Diagnosed, Alameda County, 2016-2018



NOTE: Male as defined by sex assigned at birth.

The racial/ethnic distribution among male PLHIV largely mirrored that for those newly diagnosed. However, while the proportion of newly diagnosed males who were white was approximately equal for MSM and non-MSM (19.7% and 20.5%, respectively), that proportion diverged among PLHIV—35.5% of MSM were white compared to 23.5% of non-MSM males.

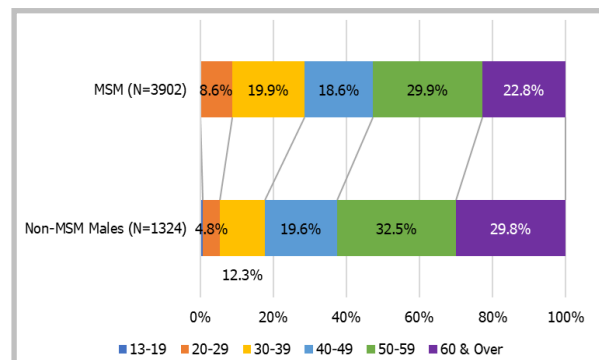
Figure 5.18: Race/Ethnicity of MSM and Non-MSM Among PLHIV, Alameda County, Year-End 2019



NOTE: Male as defined by sex assigned at birth.

Among males living with HIV, a greater portion of MSM (28.5%) were under the age of 40 than non-MSM (17.1%).

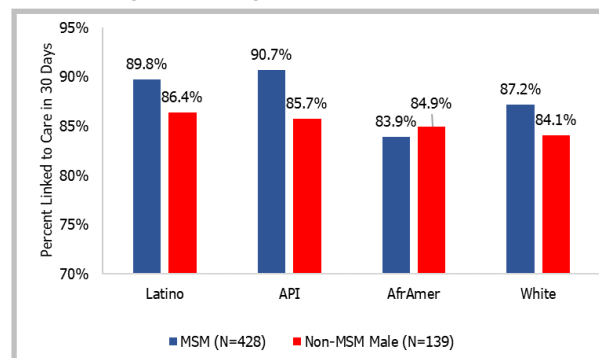
Figure 5.19: Age of MSM and Non-MSM Among PLHIV, Alameda County, Year-End 2019



NOTE: Male as defined by sex assigned at birth.

MSM in Alameda County were linked to care within 30 days of diagnosis at higher rates than non-MSM males. This was consistent across racial/ethnic groups except in the case of African Americans, where 84.9% of non-MSM African American males were linked to care compared to 83.9% who of MSM African American males.

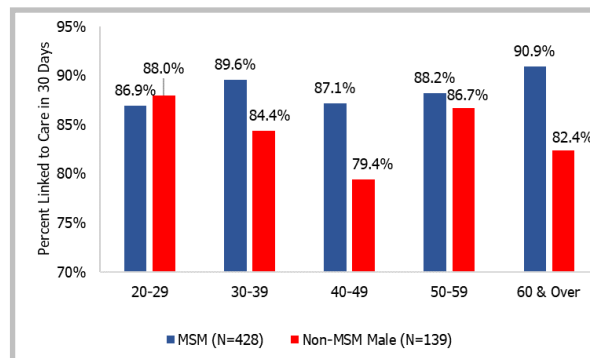
Figure 5.20: Race/Ethnicity and Linkage to Care in 30 Days of MSM and Non-MSM Among Newly Diagnosed, Alameda County, 2016-2018



NOTES: 1) Male as defined by sex assigned at birth  
2) Includes labs at diagnosis date.

MSM were linked to care at higher rates than non-MSM males in all age groups with the exception of the 20 to 29 year age group.

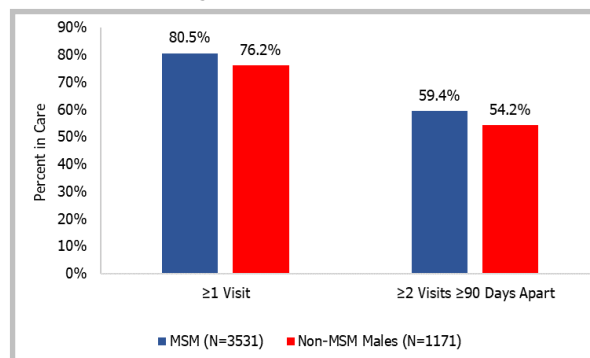
Figure 5.21: Age Group and Linkage to Care in 30 Days of MSM and Non-MSM Among Newly Diagnosed, Alameda County, 2016-2018



NOTE: Male as defined by sex assigned at birth.

Evidence of being in care and retention in care were slightly higher among MSM than non-MSM males in 2018.

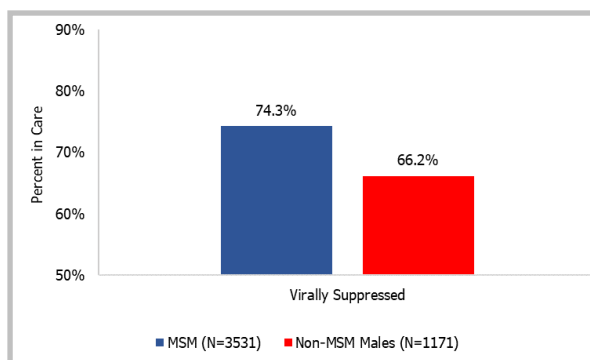
Figure 5.22: Evidence of Care and Retention in Care of MSM and Non-MSM Among PLHIV, Alameda County, Year-End 2018



NOTE: Male as defined by sex assigned at birth.

Viral suppression was higher among MSM (74.3%) than non-MSM males (66.2%).

Figure 5.23: Viral Suppression of MSM and Non-MSM Among PLHIV, Alameda County, Year-End 2018



NOTE: Male as defined by sex assigned at birth.

## Young People of Color

As discussed in Chapter 2, African Americans and Latinos experience higher HIV diagnosis rates than whites. Diagnosis rates are also higher among younger age groups such as those aged 20 to 29. Between 2006 and 2019, Latinos aged 20 to 29 experienced a statistically significant increase in diagnosis rate (4.3% increase annually, on average).

For this analysis “young” is defined as those age 13 to 29 years at the time of diagnosis when discussing those newly diagnosed or at a specific year-end when looking at PLHIV. The term “people of color (POC)” refers to individuals not identified as white or of unknown race/ethnicity.

Figure 5.24: Birth Sex Among Young POC and Whites, Newly Diagnosed, Alameda County, 2017-2019

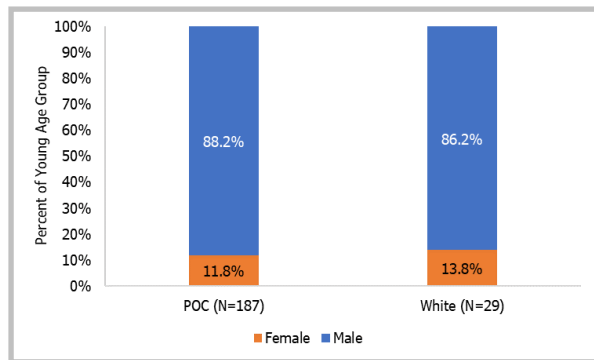
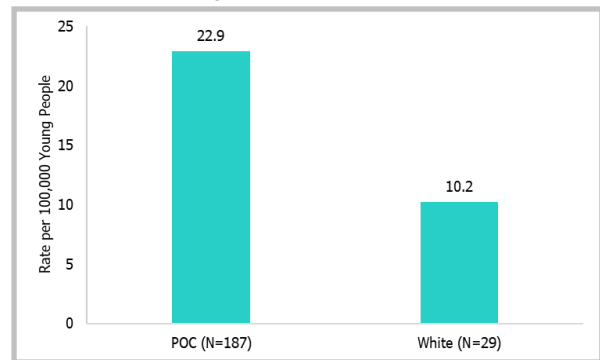


Figure 5.25: Diagnosis Rate Among Young POC and Whites, Newly Diagnosed, Alameda County, 2017-2019



From 2017 to 2019, the proportion of young people who were male and female was similar among whites and POC. Diagnosis rates were more than twice as high for young POC than young whites in Alameda County.

Figure 5.26: Late Diagnosis Among Young POC and Whites, Newly Diagnosed, Alameda County, 2016-2018

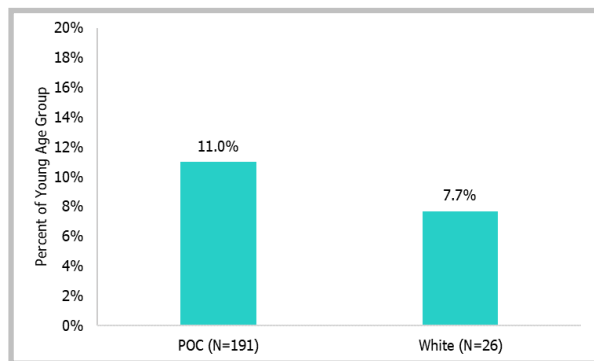
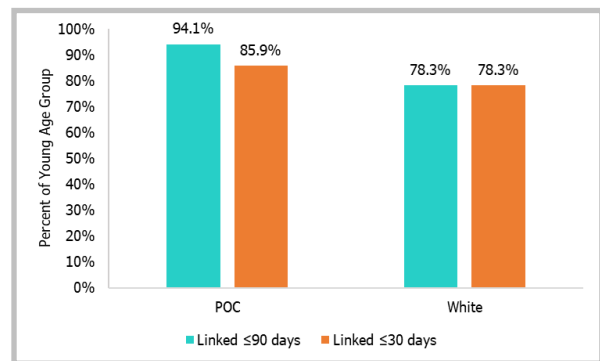


Figure 5.27: Linkage to Care Among Young POC and Whites, Newly Diagnosed, Alameda County, 2016-2018



Late diagnoses were more common among young POC (11.0%) than among young whites (7.7%). This finding is consistent with higher rates of late diagnoses among the non-US born population, which is disproportionately comprised of POC.

Young POC were linked to care at higher rates than young whites. The rate of linkage to care within 90 days including labs on the date of diagnosis was 94.1% among young POC and 78.3% among young whites. For linkage to care within 30 days the difference narrowed to 85.9% and 78.3% for POC and young whites, respectively.

Figure 5.28: Retention in Care Among Young POC and Whites, PLHIV, Alameda County, Year-End 2018

At year-end 2018, young POC had higher rates of being in care and retention in care than young white PLHIV. While 57.0% of young POC were retained in care only 48.9% of young white PLHIV were.

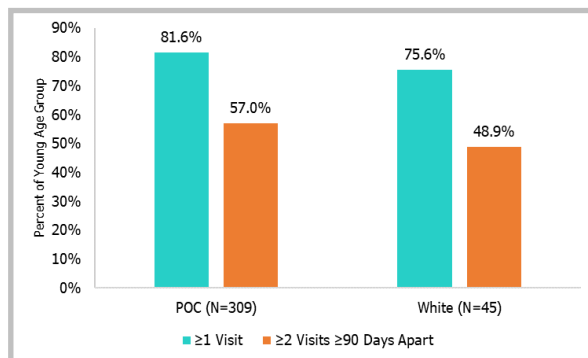
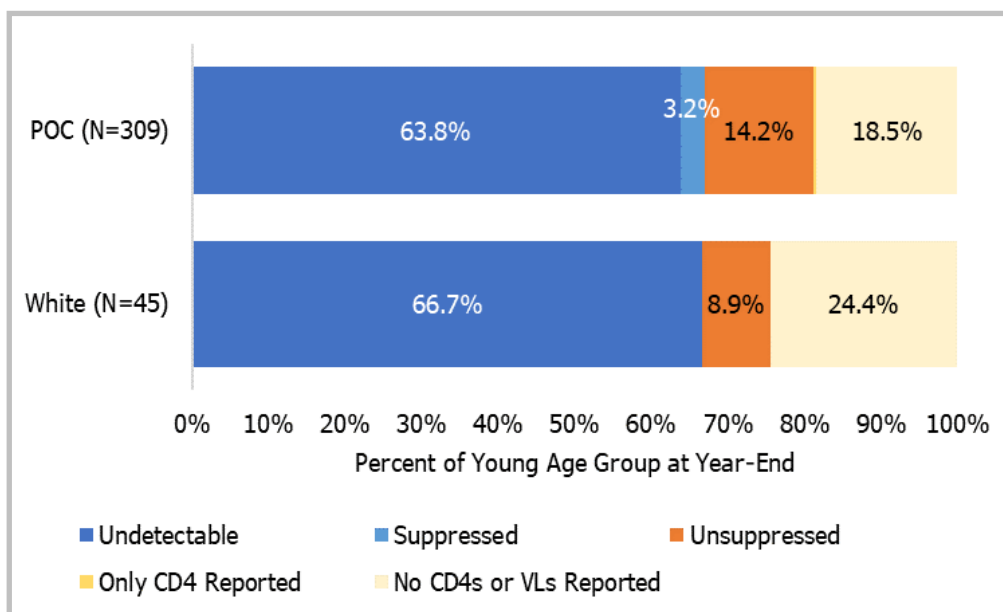


Figure 5.29: Viral Suppression Among Young POC and Whites, PLHIV, Alameda County, Year-End 2018



Overall viral suppression was similar between both groups with 67.0% of young POC virally suppressed and 66.7% of young white PLHIV suppressed. However, among the unsuppressed, 24.4% of young white PLHIV had no CD4 or viral load tests reported in 2018 compared to just 18.5% of young POC—a finding consistent with the higher retention rates among young POC.



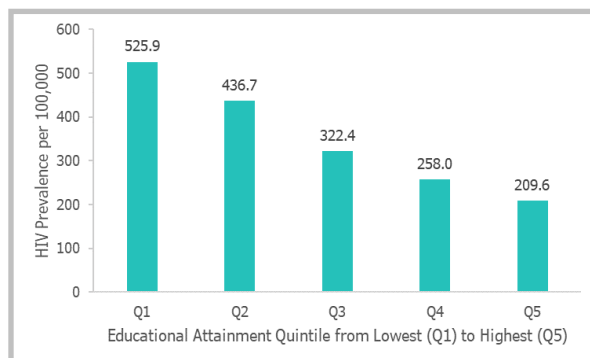
## *Social Determinants of Health and HIV*

Social determinants of health (SDOH) refer to the complex and overlapping economic and social structures that contribute to health inequities and disparities. Five core dimensions that are assessed by SDOH are: the physical neighborhood and built environment, healthcare services, social and community context, education, and economic stability.<sup>21</sup> SDOH are the social and physical conditions in which people grow, work, learn, and age, as well as the effects that those conditions have on community and individual health outcomes.<sup>22</sup> These are factors largely outside the realm of individual characteristics related to behavioral risk factors. For example, low income neighborhoods that lack affordable, fresh produce or safe recreational areas such as parks and playgrounds are associated with less physical activity and poor nutrition which may contribute to increased risk of chronic health conditions like heart disease and diabetes.<sup>23</sup> SDOH are mostly responsible for health inequities—the unfair and avoidable differences in health status in a community.<sup>24</sup> Adverse social conditions can potentially increase the risks for a person acquiring HIV or progressing to stage 3 HIV disease (AIDS). Research has indicated that HIV diagnosis rates increased as the number of unemployed persons in a census tract increased, as well as the number of adults with only a high school diploma increased.<sup>25</sup>

In this chapter we present analyses to examine HIV burden by select SDOH, using American Community Survey data. The SDOH examined include educational attainment, poverty, nativity, unemployment, and lack of health insurance. SDOH measures are presented as neighborhood measures in quintiles that represent groups of census tracts by percentage of each SDOH measure. These analyses illustrate the association of HIV prevalence with select social conditions and can help guide policies to address the underlying needs of communities disproportionately impacted by HIV in Alameda County.

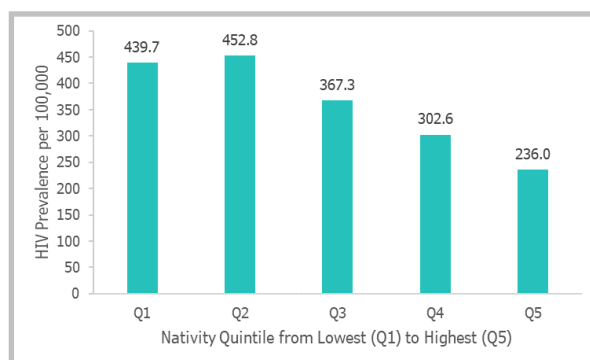
Educational attainment at the neighborhood level is measured by percentage of people over age 25 with a high school diploma or higher in a census tract. In census tracts with lower educational attainment (i.e. in the lower quintiles) the prevalence of HIV is higher. As educational attainment in a neighborhood increases (i.e. in the higher quintiles), the prevalence of HIV decreases.

Figure 6.1: HIV Prevalence by Educational Attainment Quintile, Alameda County, Year-End 2016



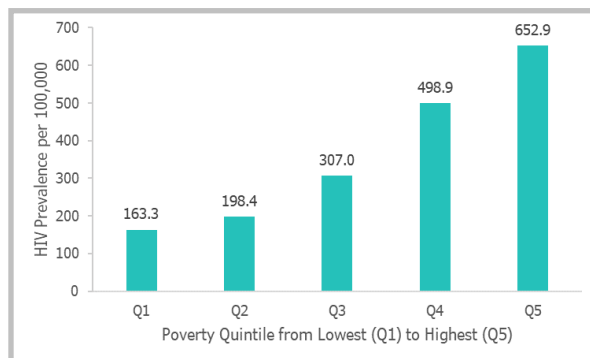
Nativity is measured by percentage of non-US-born residents in a census tract and is one indicator of the concentration of immigrants in a neighborhood or community. As the percentage of non-US-born residents in a census tract increases from lowest to highest quintile, prevalence of HIV decreases.

Figure 6.2: HIV Prevalence by Nativity Quintile, Alameda County, Year-End 2016



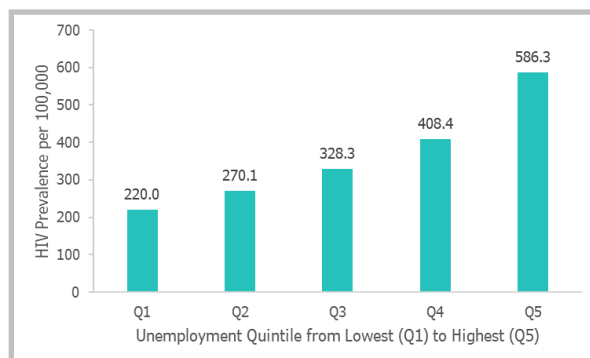
Neighborhood poverty is measured by percentage of residents living below the federal poverty level in a census tract. Higher poverty neighborhoods experience higher prevalence of HIV.

Figure 6.3: HIV Prevalence by Poverty Quintile, Alameda County, Year-End 2016



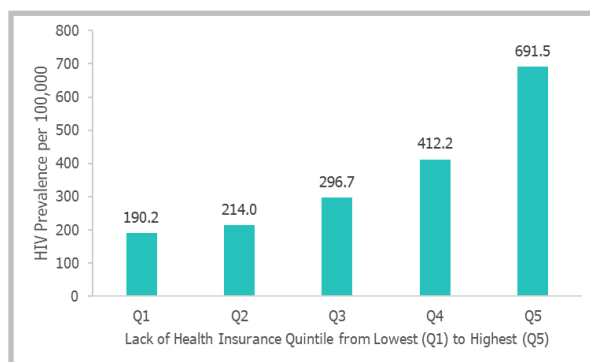
Unemployment is measured by percentage of residents experiencing unemployment in a census tract and is an indicator of economic stability in a neighborhood. Higher neighborhood unemployment is associated with higher HIV prevalence.

Figure 6.4: HIV Prevalence by Unemployment Quintile, Alameda County, Year-End 2016



Lack of health insurance coverage is measured by percentage of residents without health insurance in a census tract and is an indicator of access to health care in a neighborhood. Census tracts with a greater percentage of residents lacking health insurance have higher prevalence of HIV.

Figure 6.5: HIV Prevalence by Lack of Health Insurance Coverage Quintile, Alameda County, Year-End 2016





## Technical Notes

### Data Sources

All counts and proportions in this report were calculated using data from the Enhanced HIV/AIDS Reporting System (eHARS). Numerators of rates were also obtained from eHARS; denominators were derived using data from the United States Census (2000 and 2010) and Environmental Systems Research Institute (2012 and later). Mid-year population estimates for intercensal years prior to 2012 as well as all year-end estimates were obtained through linear interpolation. To calculate prevalence of HIV among non-US-born and US-born individuals, estimates of the proportions of non-US-born and US-born in Alameda County were obtained from American Community Survey (ACS) and applied to the Community Assessment, Planning, and Evaluation (CAPE) mid-year population estimates of all people living in Alameda County. PLHIV at the end of 2019 were identified from eHARS. Census tract level statistics such as poverty, educational attainment, percent living without health insurance, and percent non-US-born were obtained from the ACS 5-year survey estimates. Estimates were attributed to the middle year: for a 5-year estimate ending in 2018, 2016 is considered the middle year.

### Statistical Analysis

#### Calculation of Confidence Intervals

All confidence intervals (CI) depicted in the report are at the 95% confidence level. CIs for proportions are calculated on the log odds (“logit”) scale and then antilogit-transformed in order to preclude lower limits less than 0% and upper limits greater than 100%. Confidence limits for rates are calculated using a Poisson distribution for counts less than 100 and a binomial distribution for counts of 100 or greater.

#### Significance Testing and Statistical Modeling

The statistical significance of associations between categorical variables was tested by Pearson's chi square test or Fisher's exact test, as appropriate. Differences in CD4 count at diagnosis were assessed using ANOVA unless Levene's Test for Homogeneity of Variances yielded a significant result (at  $\alpha = 0.05$ ), in which case Welch's ANOVA was used. Trend analyses were performed using Join Point<sup>26</sup> to model crude rates as a log-linear function of year separately for each stratum of the categorical variable(s); errors were assumed to have Poisson variance and to be independent. Grid search and the modified Bayesian Information Criterion were used to select the best fitting model from among those with zero to four join points at least 2 years apart between 2007 and 2018 (the second and second-to-last years examined).

## Data Suppression Rules

### 0.0.1 Proportions

In accordance with draft guidelines released by the National Center for Health Statistics<sup>27</sup>, proportions are considered to be statistically unreliable and are not presented if they meet either of the following criteria:

1. The absolute CI width exceeds 20%.
2. The absolute CI width does not exceed 20%, but the relative CI width (the absolute CI width divided by the lesser of the proportion and its complement) exceeds 120%.

### Rates

Rates for subpopulations with fewer than 12 cases are considered to be statistically unreliable and were not presented. In these instances, the relative standard error of the rate exceeds 30%.

### Death Ascertainment

Alameda County HIV surveillance officials are notified by the local Office of Vital Registration whenever HIV is documented on a death certificate filed in Alameda County. Additionally, the California Office of AIDS periodically matches state HIV registry data to national death databases such as the National Death Index and the Social Security Administration's Death Master File. PLHIV who died outside of Alameda County and were ever associated with Alameda County or whose HIV was not documented on their death certificate are thus generally captured through this process with some delay.

## Reporting Requirements

The representativeness and accuracy of HIV surveillance data depend on the reliable, complete, and timely reporting of data by health care providers and laboratories in accordance with California law.

### Health Care Providers

Title 17, Section 2643.5, “HIV Reporting by Health Care Providers,” requires health care providers to report cases of HIV disease (at any stage) to the local health department in the jurisdiction of their practice:

- a) Each health care provider that orders a laboratory test used to identify HIV, a component of HIV, or antibodies to or antigens of HIV shall submit to the laboratory performing the test a pre-printed laboratory requisition form which includes all documentation as specified in 42 CFR 493.1105 (57 FR 7162, Feb. 28, 1992, as amended at 58 FR 5229, Jan. 19, 1993) and adopted in Business and Professions Code, Section 1220.
- b) The person authorized to order the laboratory test shall include the following when submitting information to the laboratory:
  1. Complete name of patient; and
  2. Patient date of birth (2-digit month, 2-digit day, 4-digit year); and
  3. Patient gender (male, female, transgender male-to-female, or transgender female-to-male); and
  4. Date biological specimen was collected; and
  5. Name, address, telephone number of the health care provider and the facility where services were rendered, if different.
- c) Each health care provider shall, within seven calendar days of receipt from a laboratory of a patient's confirmed HIV test or determination by the health care provider of a patient's confirmed HIV test, report the confirmed HIV test to the local Health Officer for the jurisdiction where the health care provider facility is located. The report shall consist of a completed copy of the HIV/AIDS Case Report form.
  1. All reports containing personal information, including HIV/AIDS Case Reports, shall be sent to the local Health Officer or his or her designee by:
    - A. courier service, US Postal Service Express or Registered mail, or other traceable mail; or
    - B. person-to-person transfer with the local Health Officer or his or her designee.
  2. The health care provider shall not submit reports containing personal information to the local Health Officer or his or her designee by electronic facsimile transmission or by electronic mail or by non-traceable mail.
- d) HIV reporting by name to the local Health Officer, via submission of the HIV/AIDS Case Report, shall not supplant the reporting requirements in Article 1 of this Subchapter when a patient's medical

condition progresses from HIV infection to an Acquired Immunodeficiency Syndrome (AIDS) diagnosis.

- e) A health care provider who receives notification from an out-of-state laboratory of a confirmed HIV test for a California patient shall report the findings to the local Health Officer for the jurisdiction where the health care provider facility is located.
- f) When a health care provider orders multiple HIV-related viral load tests for a patient or receives multiple laboratory reports of a confirmed HIV test, the health care provider shall be required to submit only one HIV/AIDS Case Report, per patient, to the local Health Officer.
- g) Nothing in this Subchapter shall prohibit the local health department from assisting health care providers to report HIV cases.
- h) Information reported pursuant to this Article is acquired in confidence and shall not be disclosed by the health care provider except as authorized by this Article, other state or federal law, or with the written consent of the individual to whom the information pertains or the legal representative of that individual.

Note: Authority cited: Sections 120125, 120130, 120140, 121022, 131080 and 131200, Health and Safety Code. Reference: Sections 1202.5, 1206, 1206.5, 1220, 1241, 1265 and 1281, Business and Professions Code; and Sections 1603.1, 101160, 120175, 120250, 120775, 120885-120895, 120917, 120975, 120980, 121015, 121022, 121025, 121035, 121085, 131051, 131052, 131056 and 131080, Health and Safety Code.

## Laboratories

Title 17, Section 2643.10, "HIV Reporting by Laboratories," requires laboratories to report all HIV-related laboratory tests to the local health department in the jurisdiction of the ordering provider:

- a) The laboratory director or authorized designee shall, within seven calendar days of determining a confirmed HIV test, report the confirmed HIV test to the Health Officer for the local health jurisdiction where the health care provider facility is located. The report shall include the
  - 1. Complete name of patient; and
  - 2. Patient date of birth (2-digit month, 2-digit day, 4-digit year); and
  - 3. Patient gender (male, female, transgender male-to-female, or transgender female-to-male); and
  - 4. Name, address, and telephone number of the health care provider and the facility that submitted the biological specimen to the laboratory, if different; and
  - 5. Name, address, and telephone number of the laboratory; and
  - 6. Laboratory report number as assigned by the laboratory; and
  - 7. Laboratory results of the test performed; and
  - 8. Date the biological specimen was tested in the laboratory; and
  - 9. Laboratory Clinical Laboratory Improvement Amendments (CLIA) number.
- b)
  - 1. All reports containing personal information, including laboratory reports, shall be sent to the local Health Officer or his or her designee by:
    - A. courier service, US Postal Service Express or Registered mail, or other traceable mail;
    - or

- B. person-to-person transfer with the local Health Officer or his or her designee.
- 2. The laboratory shall not submit reports containing personal information to the local Health Officer or his or her designee by electronic facsimile transmission or by electronic mail or by non-traceable mail.
- c) A laboratory that receives incomplete patient data from a health care provider for a biological specimen with a confirmed HIV test, shall contact the submitting health care provider to obtain the information required pursuant to Section 2643.5(b)(1)-(5), prior to reporting the confirmed HIV test to the local Health Officer.
- d) If a laboratory transfers a biological specimen to another laboratory for testing, the laboratory that first receives the biological specimen from the health care provider shall report confirmed HIV tests to the local Health Officer.
- e) Laboratories shall not submit reports to the local health department for confirmed HIV tests for patients of an Alternative Testing Site or other anonymous HIV testing program, a blood bank, a plasma center, or for participants of a blinded and/or unlinked seroprevalence study.
- f) When a California laboratory receives a biological specimen for testing from an out-of-state laboratory or health care provider, the California director of the laboratory shall ensure that a confirmed HIV test is reported to the state health department in the state where the biological specimen originated.
- g) When a California laboratory receives a report from an out of state laboratory that indicates evidence of a confirmed HIV test for a California patient, the California laboratory shall notify the local Health Officer and health care provider in the same manner as if the findings had been made by the California laboratory.
- h) Information reported pursuant to this Article is acquired in confidence and shall not be disclosed by the laboratory except as authorized by this Article, other state or federal law, or with the written consent of the individual to whom the information pertains or the legal representative of the individual.

Note: Authority cited: Section 1224, Business and Professions Code; and Sections 120125, 120130, 120140, 121022, 131080 and 131200, Health and Safety Code. Reference: Sections 1206, 1206.5, 1209, 1220, 1241, 1265, 1281 and 1288, Business and Professions Code; and Sections 101150, 120175, 120775, 120885-120895, 120975, 120980, 121022, 121025, 121035, 131051, 131052, 131056 and 131080, Health and Safety Code.

## *Surveillance in Alameda County*

California Code of Regulations (CCR) Title 17, Section 2643.5 requires all health care providers (HCP) to report all cases of HIV disease they encounter in their clinical practice to the county/local health jurisdiction in which the encounter occurs. Additionally, CCR Title 17, Section 2643.10 requires all commercial laboratories to report all HIV-related laboratory tests they conduct to the local health jurisdiction of the HCP who ordered the test, providing an additional means by which local health departments may learn of a case of HIV disease.

In November 2015, California adopted the Electronic Laboratory Reporting (ELR) system for laboratories performing HIV testing. HIV test results delivered through ELR meet the statutory and regulatory reporting requirements for HIV test results. HIV-related laboratory results are submitted to the California Department of Public Health (CDPH) and routed to Alameda County for investigation. Establishment of ELR resulted in major changes in the local processing and management of laboratory results for HIV surveillance. Figure A.1 on page 73 illustrates the steps involved in processing lab results, including ELR, for HIV surveillance in Alameda County. As shown in the figure, reported labs are checked against a local database to identify cases not previously reported. Potential new cases are investigated by trained field staff, who visit the office of the HCP that ordered the laboratory test(s) or submitted the lab report and complete a case report using information abstracted from the patient's medical record and obtained from the HCP. For adult cases, standardized case report forms are completed and submitted in the California Reportable Disease Information Exchange (CalREDIE)—the secure CDPH system for electronic disease reporting and surveillance. Hard copies of the Adult Case Report Form have largely been replaced by entry into CalREDIE, but are sometimes used by HCPs to notify the local health jurisdiction. A copy of the Adult Case Report form can be found here: <https://www.sccgov.org/sites/phd-p/programs/hiv-prev/Documents/HIV%20Forms/adults-aids-case-form.pdf>.<sup>28</sup> Hard copies of death certificates and pediatric HIV cases documented on a paper case report form found here: [https://www.sccgov.org/sites/phd-p/programs/hiv-prev/Documents/HIV%20Forms/HIV\\_Pediatric\\_Report\\_Form\\_DHS\\_8641\\_P.pdf](https://www.sccgov.org/sites/phd-p/programs/hiv-prev/Documents/HIV%20Forms/HIV_Pediatric_Report_Form_DHS_8641_P.pdf)<sup>29</sup>, are mailed to the CDPH Office of AIDS. All case reports submitted to CDPH are routinely de-identified and transmitted to CDC. When cases reported by different states appear to be the same person, CDC notifies the appropriate states to contact each other directly and determine whether the cases are duplicates.

### **Security and Confidentiality of Data**

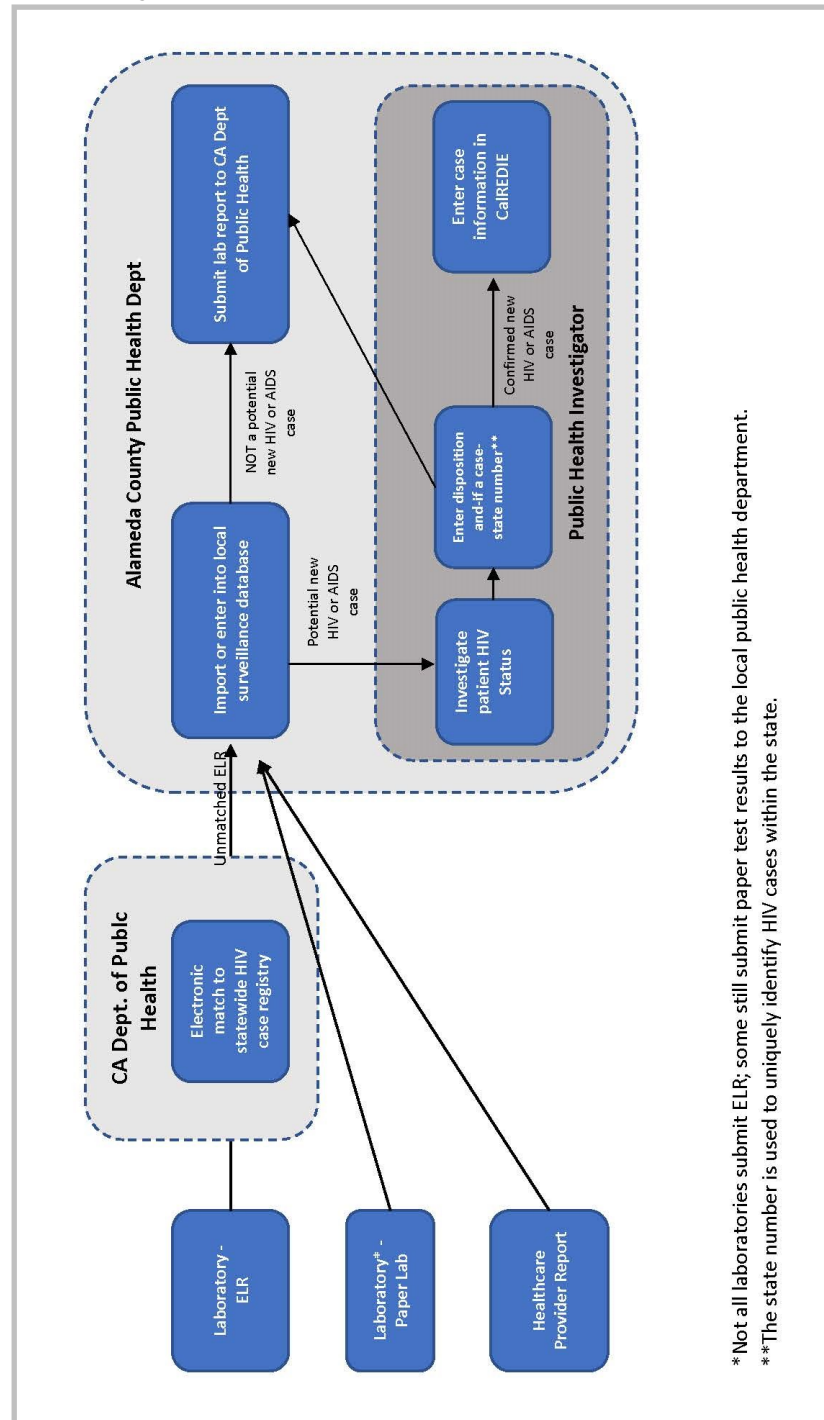
In accordance with the county's data use and disclosure agreement with CDPH, all data collected in the course of conducting HIV surveillance are used solely for public health purposes. Additionally, administrative, technical, and physical safeguards are in place to ensure the security and confidentiality of these data. All paper records are stored in locked file cabinets in an office with restricted access. Electronic



data transmissions are encrypted and occur over a secure file transfer network. All electronic data are stored in a restricted access directory on a protected server.

## HIV Surveillance Workflow

Figure A.1: The HIV Surveillance System in Alameda County

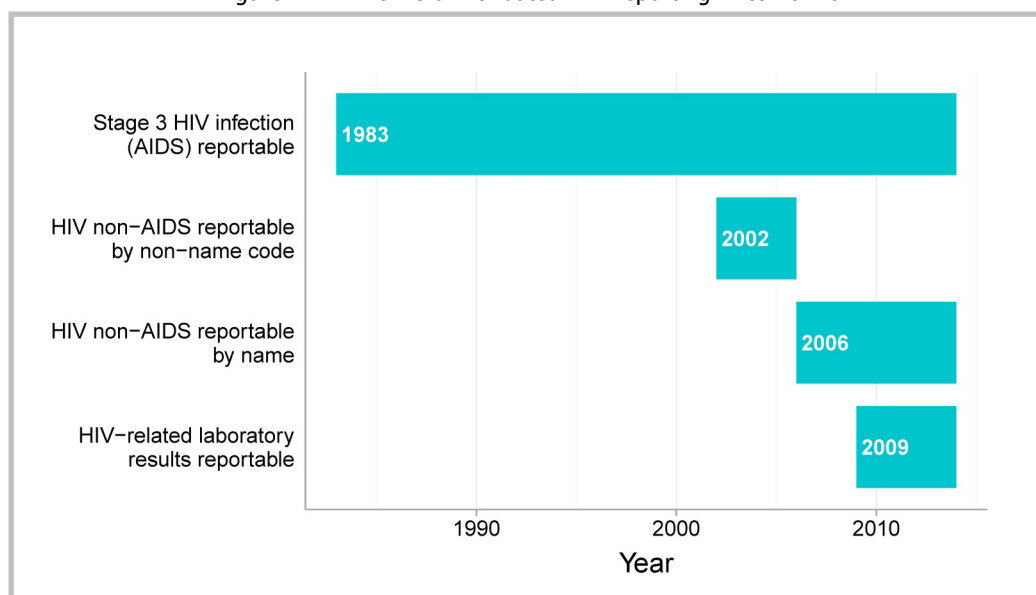


## Limitations of Surveillance Data and of County Analysis

A major strength of HIV surveillance data is that it captures and reflects the entire population of HIV diagnosed individuals. HIV surveillance data are not without their limitations however, which limit the analyses that can be done. These limitations include, but are not limited to:

- **Data quality:** Public health investigators extract required information from medical records for HIV reporting. Some information, such as risk factors or identification as transgender may not have been available in the medical record, elicited from the patient by the HCP, or adequately described. STDs are recognized to be widely under-reported, which may affect the figures reported here.
- **Data quantity:** In small subpopulations, the number of new diagnoses or PLHIV was not large enough to allow certain analyses. Statistical analyses based on small numbers may result in unstable estimates which can be misleading.
- **Timeliness of reporting:** Surveillance data are the product of a long process triggered by a visit to a HCP by an HIV-infected individual and culminating in the entry of case data into the statewide HIV surveillance database at the California Department of Public Health. Intermediate steps include, but are not limited to, laboratory testing, submission of case reports and lab results to the local health department, and investigation of each report. Data preparation, analysis and interpretation take additional time. For these reasons, there can be a 6 to 12-month delay in estimating numbers of diagnoses or PLHIV and in estimating any measures dependent on laboratory test results.
- **History of reporting laws:** The laws mandating the reporting of HIV-related laboratory test results and of cases of HIV disease at its different stages have changed over time, and this impacts our ability to characterize the epidemic at different points in the past. Although AIDS has been reportable since 1983, HIV disease at its earlier stages was not reportable until mid-2002 and even then only by a non-name code. More reliable, name-based data on HIV non-AIDS cases became mandated in 2006, and HIV-related labs became reportable in California in 2009. Consequently, most of analyses are limited to 2006 and later, and analyses relying on laboratory reporting are limited to 2010 and later.

Figure A.2: Timeline of Mandated HIV Reporting in California





- **Diagnosis date assigned to non-US-born cases:** A small number of non-US-born PLHIV may have been initially diagnosed with HIV in another country before arriving in the US, but due to the absence of verified information on date of initial diagnosis, their diagnosis date in the surveillance data reflects the earliest date of HIV diagnosis in the US. As a consequence new diagnoses and late diagnoses may be overestimated in our data.
- **Social Determinants of Health:** Analyses of social determinants of health primarily used census tract level data provided by the American Community Survey and not individual level data. As is the case with ecological methods, a person's assigned category regarding household poverty, educational attainment, or other variables related to geographic location of residence may not accurately reflect their individual situation.



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