

# HIV/AIDS in Arizona Integrated Epidemiologic Profile 2013-2017

## HIV Surveillance Program Office of Disease Integration Services

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Exec	cutive Summary
1.	Arizona Demographic Profile4
2.	Arizona Case Surveillance7
3.	Incidence17
4.	Survival Analysis21
5.	Linkage to Care23
6.	Specific Populations: Men who have Sex with Men26
7.	Specific Populations: Injection Drug Use29
8.	Specific Populations: Corrections
9.	Specific Populations: Blacks
10.	Specific Populations: American Indian/Alaska Natives
11.	Specific Populations: Hispanics46
12.	Specific Populations: Perinatal50
13.	Specific Populations: Young Men53
14.	Specific Populations: Refugee57
15.	Comorbidity: Coccidioidomycosis (Valley Fever)60
16.	Comorbidity: Hepatitis C66
17.	Comorbidity: Tuberculosis71
18.	Comorbidity: Syphilis76
19.	Glossary of Terms79
Ack	nowledgements

## **Executive Summary**

The state of Arizona has a history of population growth. During the five years included in this report (2013-2017), the growth rate was 5.9% with an increase of 389,646 residents. From 2016-2017, Arizona ranked sixth in the nation for population growth with 1.6%<sup>1</sup>. Furthermore, the City of Phoenix increased its ranking to the fifth largest city in the United States with a population of 1.6 million.

According to 2017 surveillance data, 18,190 people were living with HIV/AIDS in Arizona. Of those, 9,480 had a diagnosis of HIV and 8,710 were classified as AIDS.

In 2017, Maricopa County accounted for 61.4% of Arizona's population and 68.0% of incident HIV/AIDS cases. Pima County accounted for 14.6% of the state population and 15.3% of HIV/AIDS cases. Maricopa also had the most prevalent cases (12,498), followed by Pima (2,862) and Pinal (1,053) counties.

Unless otherwise noted, rates in this report are measured per 100,000 people. The incidence rate of HIV/AIDS from 2013-2017 was 10.7 per 100,000 and the prevalence rate was 262.4 per 100,000. In the five years represented in this report, the highest incidence rate was in 2014 at 11.2 per 100,000.

By sex, males accounted for 85.8% of new HIV/AIDS infections from 2013-2017. Over the five-year period, 3,121 cases of HIV/AIDS were male and 517 were female. The prevalence rate among males (460.1 per 100,000) was six times higher than the prevalence rate among females (74.2 per 100,000).

The most impacted age group was 25-34 years, which accounted for 34.6% of incident HIV/AIDS cases.

While non-Hispanic blacks made up just 4.8% of Arizona's population in 2017, 17.5% of new HIV/AIDS infections from 2013-2017 occurred in this population. The incidence rate for blacks was 40.0 per 100,000 over the five-year period. Nationally, blacks made up 13% of the population and accounted for over 43% of new HIV/AIDS cases in 2017<sup>2</sup>.

The highest incidence and prevalence of HIV/AIDS were observed among persons who engaged in high-risk sexual activity, injection drug use, or lived in urban regions of the state. Men who have sex with men (MSM) was the most commonly reported transmission risk in Arizona, with 61.3% of incident HIV/AIDS cases reporting this risk.

<sup>&</sup>lt;sup>1</sup> <u>https://www.census.gov/newsroom/press-releases/2017/estimates-idaho.html</u>. Accessed April 30, 2019.

<sup>&</sup>lt;sup>2</sup> <u>https://www.cdc.gov/hiv/group/racialethnic/africanamericans/index.html</u>. Accessed May 30, 2019.

# 1. Arizona Demographic Profile

#### State of Arizona

The state of Arizona contains the sixth largest land mass in the United States. The fifteen counties in the state are: Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Maricopa, Mohave, Navajo, Pima, Pinal, Santa Cruz, Yavapai, and Yuma. Within the counties, densely populated areas are classified as urban, while less populated areas are considered rural. Arizona is home to 22 federally recognized American Indian tribes, located on 24 reservations throughout the state.

#### **Population Growth**

Arizona's population grew from 6,626,624 residents in 2013 to 7,016,270 in 2017, which is an increase of 389,646 residents and a growth rate of 5.9%. From 2016-2017, Arizona ranked sixth in the nation with a population growth of  $1.6\%^3$ .

In 2017, Maricopa County was the largest growing county in the nation. The Phoenix Metropolitan Statistical Area increased to 4.7 million and

## QUICK FACTS

- Arizona's population in 2017 was 7,016,270.
- Maricopa was the largest county in Arizona with a population of 4,307,033 in 2017.
- Pinal County had the greatest growth rate at 10.5%.
- Cochise county had the highest population decline at -3.6%.
- 55.9% of the Arizona population was white.
- 31.4% of the Arizona population was Hispanic.

ranked fourth among largest-gaining metropolitan areas (numeric increase) in the United States<sup>4</sup>. The City of Phoenix, which is in Maricopa County, became the fifth largest city in the United States with a population of 1.6 million.

Because 76% of incident HIV/AIDS cases in 2017 occurred in Maricopa and Pima counties, resources for HIV/AIDS such as testing and treatment services are heavily concentrated in these areas. Other counties with large urban areas, such as Coconino and Yavapai counties, also experienced a greater proportion of HIV/AIDS cases compared to counties that are predominantly rural.

<sup>&</sup>lt;sup>3</sup> <u>https://www.census.gov/newsroom/press-releases/2017/estimates-idaho.html</u>. Accessed April 30, 2019.

<sup>&</sup>lt;sup>4</sup> <u>https://www.census.gov/newsroom/press-releases/2018/popest-metro-county.html</u>. Accessed April 30, 2019.

#### **County Population**

Among the 15 counties in Arizona, Maricopa County demonstrated the largest population increase (297,621) from 2013-2017. Pinal County had the largest growth rate, with an increase of 10.5%. Apache, Cochise, Graham, and Santa Cruz counties declined in population, with the greatest decline in Cochise County (-3.6%). See Table 1.1.

	2013	2017	Change		
	2015	2017	Ν	%	
Apache	71,934	71,606	-328	-0.5	
Cochise	129,473	124,756	-4,717	-3.6	
Coconino	136,539	140,776	4,237	3.1	
Gila	53,053	53,501	448	0.8	
Graham	37,482	37,466	-16	-0.04	
Greenlee	9,049	9,455	406	4.5	
La Paz	20,324	20,601	277	1.4	
Maricopa	4,009,412	4,307,033	297,621	7.4	
Mohave	203,030	207,200	4,170	2.1	
Navajo	107,322	108,956	1,634	1.5	
Pima	996,554	1,022,769	26,215	2.6	
Pinal	389,350	430,237	40,887	10.5	
Santa Cruz	46,768	46,212	-556	-1.2	
Yavapai	215,133	228,168	13,035	6.1	
Yuma	201,201	207,534	6,333	3.2	
Total	6,626,624	7,016,270	389,646	5.9	

Table 1.1. Arizona population change by county, 2013-2017\*.

\*Source: U.S. Census Bureau

#### Age

Age is an important factor to consider because age may affect both the acquisition and progression of a disease. In 2017, 17.1% of the Arizona population was age 65 or older. Age groups 2-12 and 13-19 made up 14.2% and 9.3% of the population, respectively. The remainder of the Arizona population was evenly distributed from ages 20-64. See Figure 1.1.



Figure 1.1. Arizona population (%) by age group, 2017.

#### Race

Five categories are used for analyses by race/ethnicity: white, Hispanic, black, American Indian/Alaska Native (AI/AN), and Asian/Pacific Islander/ Native Hawaiian (A/PI/NH). In this report, individuals with an ethnicity of Hispanic/Latino are categorized as Hispanic, and all other groups are non-Hispanic. In 2017, white individuals made up the largest percent of Arizona's population at 55.9%. Hispanics (31.4%) were the second largest racial/ethnic group in Arizona. Other races including A/PI/NH (3.7%), AI/AN (4.2%), and black (4.8%) complete the racial/ethnic profile of Arizona. See Figure 1.2.





# 2. Arizona Case Surveillance

#### Background

The HIV Surveillance Program at Arizona Department of Health Services (ADHS) monitors HIV/AIDS by tracking new cases and completing out of state matches for existing cases, which increases the accuracy of prevalence counts. De-identified information is provided to the Centers for Disease Control and Prevention (CDC) on an annual basis to contribute to national estimates.

#### Incidence

The incidence of HIV/AIDS in Arizona increased each year during this five-year report period with a range of 700-751 cases. From 2013-2017, 3,638 people were diagnosed with HIV/AIDS in Arizona. The incidence rate was 10.7 per 100,000 from during this time frame. See Table 2.1.

On average, 22.2% of new diagnoses were classified as AIDS at the time of diagnosis; this percentage declined from 27.9% in 2013 to 19.9% in 2017. See Table 2.1.

## QUICK FACTS

- The average incidence rate from 2013-2017 was 10.7 cases per 100,000.
- In 2017, 737 new cases of HIV/AIDS were diagnosed.
- Of the new cases in Arizona in 2017, 68% were in Maricopa County.
- In 2017, 18,190 people in Arizona were living with HIV/AIDS.
- Those aged 25-29 had the highest incidence rate (31 per 100,000).

#### Table 2.1. Arizona HIV/AIDS incidence with rates per 100,000, 2013-2017.

		2013			2014			2015			2016			2017	
	Ν	%	Rate												
нιν	505	72.1	7.6	593	79.0	8.8	560	78.5	8.2	585	79.4	8.4	590	80.1	8.1
AIDS	195	27.9	2.9	158	21.0	2.4	153	21.5	2.2	152	20.6	2.2	147	19.9	2.1
Total	700	100	10.6	751	100	11.2	713	100	10.4	737	100	10.6	737	100	10.5

#### **Incidence by County**

Maricopa County had the most incident HIV/AIDS cases in 2017 with 501 (68.0%), followed by Pima County with 113 (15.3%). The majority of the state's population resides in these two counties, and they accounted for a combined 83.3% of HIV/AIDS incidence in 2017. See Figure 2.1.



Figure 2.1. Map of HIV/AIDS incidence case counts by county, 2017. \*Data for counties with low case counts are suppressed (denoted by gray shading)

#### **Prevalence by County**

Maricopa County had the greatest HIV/AIDS prevalence with 12,498, followed by Pima (2,862) and Pinal (1,053) counties. The counties with the fewest cases were Graham (35), La Paz (23), and Greenlee (data not shown). See Figure 2.2.





#### Region

HIV/AIDS diagnoses in Arizona were strongly concentrated in urban areas. Maricopa County (including the City of Phoenix) had the highest number and rate of new HIV/AIDS cases from 2013-2017. Among the 3,638 incident HIV/AIDS cases, 2,592 (71.2%) were diagnosed in Maricopa County, 503 (13.8%) were diagnosed in Pima County (including the City of Tucson) and 543 (14.9%) were diagnosed in the remaining counties, which are predominantly rural.

The HIV/AIDS incidence rate was also highest in Maricopa County during this time frame. Per 100,000 people, the incidence rate in Maricopa County was 11.8 in 2013 and 11.6 in 2017. The incidence rate in Pima County increased over time and was almost the same as Maricopa County in 2017 (11.1 per 100,000). The incidence rate was lower in rural counties, with an average of 6.6 over the five-year period. See Figure 2.3.



Figure 2.3. HIV/AIDS incidence rates in Maricopa, Pima, and rural counties, 2013-2017.

#### Prevalence

In 2013, there were 15,798 people living with HIV/AIDS in Arizona (241.1 per 100,000). In 2017, the prevalence increased to 18,190 (262.4 per 100,000), an increase of 15%. See Figure 2.4.



Figure 2.4. Prevalence of HIV/AIDS in Arizona, 2013-2017.

#### Sex

Males accounted for 85.8% of HIV/AIDS cases from 2013-2017, compared to 14.2% for females. During this time frame, the highest percentage of female cases occurred in 2014 (15.2%) and the lowest percentage was in 2013 (12.7%). See Figure 2.5.



Figure 2.5. Percent of Arizona HIV/AIDS cases by sex, 2013-2017.

The average incidence rate of HIV/AIDS from 2013-2017 was 18.4 per 100,000 for males and 3.0 per 100,000 for females. The highest rates among both sexes occurred in 2014, at 19.1 and 3.4 per 100,000 for males and females, respectively. See Table 2.2.

	2013		2014		2015		2016		2017	
	Ν	Rate								
Male	611	18.5	637	19.1	612	18.1	632	18.4	629	18.0
Female	89	2.7	114	3.4	101	2.9	105	3.0	108	3.1
Total	700	10.6	751	11.2	713	10.4	737	10.6	737	10.5

Table 2.2. HIV/AIDS incidence count and rate by sex, 2013-2017.

#### Age

Ages 25-29 had the highest incidence rate of HIV/AIDS (31.0 cases per 100,000) in 2017. Ages 20-24 (22.9 per 100,000), 30-34 (21.7 per 100,000), and 35-39 (19.1 per 100,000) also had higher incidence rates compared to other groups. See Figure 2.6.



Figure 2.6. HIV/AIDS incidence rate by age group, 2017.

The age group with the highest HIV/AIDS prevalence rate in 2017 was 50-54 with 722.3 per 100,000. Ages 45-49 (604.1 per 100,000) and ages 55-59 (620.2 per 100,000) also had high rates when compared to other groups. See Figure 2.7.



Figure 2.7. HIV/AIDS prevalence rate by age group, 2017.

#### **Race/Ethnicity**

Among new cases of HIV/AIDS reported from 2013-2017, blacks consistently had higher incidence rates than other racial/ethnic groups. The incidence rate for blacks was four times greater than the average incidence rate for all race/ethnicities and two times greater than the next closest racial/ethnic group (AI/AN). Whites had the lowest HIV/AIDS incidence rate, despite accounting for the greatest proportion of the population. See Figure 2.8.



Figure 2.8. HIV/AIDS incidence rates by race/ethnicity, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Risk

The most commonly reported risk factor for HIV/AIDS was MSM. From 2013-2017, 61.1% of incident cases self-reported a risk of MSM. Other risk categories include high-risk heterosexual contact (9.7%), injection drug use (IDU) (6.9%), MSM/IDU (5.3%), and no risk reported/unknown risk (NRR/UR) (16.4%). See Figure 2.9.



Figure 2.9. HIV/AIDS incidence proportion by risk factor, 2013-2017.

MSM was also the predominant risk factor among prevalent cases. In 2017, 61.3% of all prevalent cases had MSM as a reported risk. Other risk categories include high-risk heterosexual contact (11.1%), IDU (9.2%), MSM/IDU (8.2%), NRR/UR (8.9%), and Perinatal/Blood/Other (1.3%). See Figure 2.10.



Figure 2.10. HIV/AIDS prevalence proportion by risk factor, 2017.

#### Subpopulations – Race and Risk

When analyzing both race and risk, the groups with the most incident cases of HIV/AIDS from 2013-2017 were Hispanic MSM (894), white MSM (821), black MSM (295), and AI/AN MSM (145). See Figure 2.11.



Figure 2.11. HIV/AIDS incidence counts by race and risk, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

# 3. Incidence

The annual incidence of HIV/AIDS between 2013-2017 ranged from a minimum of 700 cases to a maximum of 751 cases. From 2013-2017, there were a total of 3,638 people diagnosed with HIV/AIDS in Arizona with an incidence rate of 10.7 per 100,000. The number of incident HIV/AIDS cases in 2017 (737) increased 5% from 2013 (700). However, the percent of cases that were classified as AIDS at the time of diagnosis declined from 28% in 2013 to 20% in 2017. See Figure 3.1.

### QUICK FACTS

- The average incidence rate from 2013-2017 was 10.7 cases per 100,000.
- From 2013-2017, 3,638 cases of HIV/AIDS were diagnosed.
- The rate of new infection is 5.8 times higher for males than females.
- Those aged 25-34 accounted for 34.6% of the HIV/AIDS cases in 2017.



Figure 3.1. Incident HIV/AIDS cases, 2013-2017.

#### Sex

Among males, HIV/AIDS incidence increased from 611 cases in 2013 to 629 cases in 2017, with a high of 637 cases reported in 2014. The number of incident cases also increased for females from 89 in 2013 to 108 in 2017. The highest number of female cases was 114 in 2014. See Table 3.1.

	2012	2014	2015	2010	2017
Table 3.1.	HIV/AIDS inc	ident case	counts by	sex, 2013-	-2017.

	2013	2014	2015	2016	2017
Male	611	637	612	632	629
Female	89	114	101	105	108
Total	700	751	713	737	737

In 2017, the incidence of HIV/AIDS for males was 5.8 times greater than the incidence for females.

#### Age

In 2017, individuals aged 25-34 had the most incident cases of HIV/AIDS with 254 cases (34.6%). The 35-44 age group had the second most with 150 cases (20.4%). Nationwide, the 25-34 age group had the greatest proportion of new cases with 34.8%, followed by 13-24 with 21.1%<sup>5</sup>. See Figure 3.2.



Figure 3.2. Incident HIV/AIDS cases in the United States and Arizona, 2017.

<sup>&</sup>lt;sup>5</sup> HIV in the United States and Dependent Areas. New HIV Diagnoses in the US and Dependent Areas by Age, 2017. https://www.cdc.gov/hiv/statistics/overview/ataglance.html. Accessed May 12, 2019.

#### Race

Whites and Hispanics ranked first and second for HIV/AIDS incidence in 2017—of the 737 new HIV/AIDS infections, 298 (40.4%) were white and 251 (34.1%) were Hispanic. A/PI/NH experienced a 156% increase from 9 cases in 2013 to 23 cases in 2017, but the number of cases was significantly lower than other racial/ethnic groups. See Figure 3.3.



Figure 3.3. HIV/AIDS Incidence by race/ethnicity, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Risk

Since the beginning of the epidemic in the United States, men have been disproportionately affected by HIV/AIDS. Men who have sex with men (MSM) remains the single largest risk factor for acquiring HIV. In 2017, 452 of 737 incident cases (61.3%) reported MSM as their risk factor. From 2013-2017, there was a 5% increase in incidence among MSM. Meanwhile, the number of incident HIV/AIDS cases with risk transmission categories of IDU and high-risk heterosexual decreased by 34% and 10%, respectively. See Table 3.2.

	2013	2014	2015	2016	2017	
MSM	431	471	420	449	452	
IDU	53	55	53	54	35	
MSM/IDU	34	40	48	31	39	
Heterosexual	70	77	79	64	63	
NRR/UR	107	103	108	136	144	
Perinatal/Blood/Other	5	5	5	3	4	
Total	700	751	713	737	737	

Table 3.2. HIV/AIDS incidence by risk, 2013-2017.

# 4. Survival Analysis

#### **HIV/AIDS Deaths**

Approximately 200 deaths per year are related to HIV/AIDS in Arizona. However, modern treatments collectively known as Highly Active Antiretroviral Therapy (HAART) provide effective treatment to manage the disease and increase survival to near normal life expectancy.

From 2013-2017, death certificates for 1,034 people listed HIV/AIDS as a related cause of death. From 2013-2017, the maximum number of HIV/AIDS-related deaths occurred in 2016 (232) and the lowest was in 2017 (181). See Figure 4.1.

## QUICK FACTS

- From 2013-2017, 1,034 deaths were related to HIV/AIDS.
- On average, there were 207 HIV/AIDS-related deaths each year.
- The most HIV-related deaths occurred among whites and American Indian/Alaska Natives.



Figure 4.1. Deaths related to HIV/AIDS in Arizona, 2013-2017.

#### **Deaths by Race**

Substantial differences exist in the number of deaths between racial/ethnic groups. Whites had the largest number of deaths (593) but also had the most diagnosed cases (4,447). A/PI/NH had the lowest percentage of deaths (7.9%), and Hispanics had the second lowest (9.9%). Among groups that had more than 1,000 diagnosed cases, whites and AI/AN had the highest percentage of deaths (13.3% each). See Table 4.1.

	Cases	Deaths	%
White	4,447	593	13.3
Black	1,445	150	10.4
Hispanic	3,670	363	9.9
AI/AN	595	79	13.3
A/PI/NH	203	16	7.9
Multi-race	108	17	15.7
Total	10,468	1,218	100.0

Table 4.1. Percent of HIV/AIDS incident cases that resulted in death by race/ethnicity, 2003-2017.

\*Race/ethnicity categories other than Hispanic are non-Hispanic

\*AI/AN – American Indian/ Alaska Native

\*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

# 5. Linkage to Care

The Spectrum of Care, also referred to as the HIV Care Continuum, is a method designed by Gardner et al., in 2011 to illustrate how people living with HIV/AIDS are engaged with health care. At the end of 2017, 80.6% of people living with HIV/AIDS in Arizona were linked to medical care. Linked to medical care means that a person had at least one medical visit, lab test, or reported HIV/AIDS medication use within the calendar year. This measure indicates an individual's ability to receive medication, which may improve their prognosis and potentially prevent transmission of the virus.

At the end of 2017, 59.0% of people living with HIV/AIDS in Arizona were retained in medical care. Retained in medical care is determined by having a medical visit, lab test, or reported HIV/AIDS medication use within the current calendar year, and at least one of these in the prior

## QUICK FACTS

- Of those with HIV/AIDS in Arizona, 80.6% were linked to care.
- By race, blacks had the fewest people linked to care, on ARV therapy, and with undetectable viral loads.
- By risk, injection drug users had the fewest people linked to care, on ARV therapy, and with undetectable viral loads.

calendar year as well. Based on data from Arizona's enhanced HIV/AIDS reporting system (eHARS) and the Arizona AIDS Drug Assistance Program (ADAP) database, 58.8% of Arizona cases were on Anti-Retroviral Therapy (ART) at the end of 2017. Of this group, an estimated 58.3% were virally suppressed (viral load <200 C/mL) and 48.0% had a viral load less than 50 C/mL. This is a key HIV/AIDS prevention measure as people who are virally suppressed cannot transmit the virus via sexual contact. See Figure 5.1.



Figure 5.1. HIV Care Continuum for people living with HIV/AIDS in Arizona, 2017.

#### Linkage to Care by Race/Ethnicity

The HIV Care Continuum is a useful tool to illustrate differences between specific populations, such as racial/ethnic group. Of the cases living in Arizona at the end of 2017, whites, American Indian/Alaska Natives, and Asian/Pacific Islander/Native Hawaiian had the largest percentages of people linked to HIV care. American Indian/Alaska Natives had the greatest percentage of all races/ethnicities retained in HIV care (67.8%), on ART (67.8%), and virally suppressed (67.8%).

In all aspects of the HIV Care Continuum, blacks had poorer outcomes compared to other race/ethnicities including linked to care (78.2%), retained in HIV care (51.5%), on ARV therapy (51.2%), virally suppressed (50.9%), and with viral load less than 50 C/mL (41.1%).



Figure 5.2. HIV Care Continuum for people living with HIV/AIDS in Arizona by race, 2017.
\*Race/ethnicity categories other than Hispanic are non-Hispanic
\*AI/AN – American Indian/ Alaska Native
\*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Care by Risk

At the end of 2017, people living with HIV/AIDS in Arizona who reported high-risk heterosexual (HRH) contact as their risk factor had the largest percentage of people linked to care (85.0%), followed by MSM (82.1%). Those reporting IDU as their risk factor had the lowest percentage of people linked to HIV care (67.9%) or with a viral load less than 50 C/mL (37.6%).



Figure 5.3. HIV Care Continuum for people living with HIV/AIDS in Arizona by risk, 2017.

# 6. Specific Populations: Men who have Sex with Men

MSM is the most commonly reported risk factor for transmission of HIV/AIDS. From the onset of the epidemic in the 1980s, MSM have been disproportionately impacted by the disease. From 2013-2017, 61.1% of individuals diagnosed with HIV/AIDS in Arizona identified MSM as a risk factor. MSM accounted for 75.1% of new HIV diagnoses and 58.0% of new AIDS diagnoses. See Figure 6.1.

## QUICK FACTS

- From 2013-2017, 75.1% of new HIV cases and 58.0% of new AIDS cases had a risk of MSM.
- MSM was the most common risk factor reported for HIV/AIDS diagnoses for males ages 20-29 (43.2%).
- The most MSM cases were reported among whites (22.6%) and Hispanics (24.6%).



Figure 6.1. Percent of incident HIV/AIDS cases with MSM as reported risk factor compared to other risks, 2013-2017.

Of the 3,638 HIV/AIDS cases reported from 2013-2017, 2,223 (61.1%) were MSM and 192 (5.3%) were MSM/IDU. From 2013-2017, the number of HIV/AIDS diagnoses with MSM as the risk factor ranged from 431-471 per year with the highest number reported in 2014. The number of diagnoses with MSM/IDU ranged from 31-48 with the highest number reported in 2015. See Figure 6.2.



Figure 6.2. Incident HIV/AIDS cases with MSM and MSM/IDU as a risk factor compared to other groups, 2013-2017.

#### Age

The majority of incident HIV/AIDS cases with a reported risk of MSM from 2013-2017 were among men aged 20-29 — 22.2% were 20-25 years and 21.0% were 25-29 years. See Figure 6.3.



Figure 6.3. Percent of HIV/AIDS cases reporting MSM for risk by age, 2013-2017.

#### Race

In 2017, 61.1% of new HIV/AIDS cases reported MSM and 5.3% reported MSM/IDU as the risk factor. Of the MSM cases, 24.6% were Hispanic and 22.6% were white. Of the MSM/IDU cases, 2.6% were white, and 1.8% were Hispanic. See Figure 6.4.



Figure 6.4. Percent of HIV/AIDS cases reporting MSM or MSM/IDU for risk by race, 2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

# 7. Specific Populations: Injection Drug Use

IDU is another prominent risk factor for HIV/AIDS transmission. From 2013-2017, 250 (6.9%) incident HIV/AIDS cases in Arizona had a reported risk of IDU. In this section, individuals with MSM and IDU (MSM/IDU) as reported risk factors are also included. From 2013-2017, 192 (5.3%) incident HIV/AIDS cases had MSM/IDU as a reported risk factor. See Figure 7.1.

## QUICK FACTS

- 250 (6.9%) incident HIV/AIDS cases reported IDU as a risk factor from 2013-2017.
- 192 (5.3%) incident HIV/AIDS cases reported MSM/IDU as a risk factor from 2013-2017.
- Females ages 30-34 comprised 20.3% of IDU-related cases.



Figure 7.1. Incident HIV/AIDS cases with IDU or MSM/IDU as a reported risk factor compared to other risk categories, 2013-2017.

The number of HIV/AIDS cases with IDU as a reported risk was relatively consistent between 2013-2016 but decreased significantly in 2017. However, HIV/AIDS cases with MSM/IDU as a reported risk factor increased during this same time period. See Figure 7.2.



Figure 7.2. Number of HIV/AIDS cases reporting IDU or MSM/IDU as a risk factor, 2013-2017.

#### Age

From 2013-2017, the age groups with the greatest percentage of females that reported IDU as a risk factor included ages 30-34 (20.3%), 35-39 (17.4%), 25-29 (13.0%), and 50-54 (13.0%). Among males reporting either IDU or MSM/IDU, the age groups were 25-29 (21.4%), 30-34 (15.8%), 40-44 (13.9%), and 35-39 (12.3%). See Figure 7.3.



Figure 7.3. Percent of incident HIV/AIDS cases with IDU or MSM/IDU (males only) as a reported risk factor by sex and age, 2013-2017.

#### Sex

A slightly greater proportion of females reported IDU as their risk factor from 2013-2017 compared to males. Among females, 13.3% of cases reported IDU as their risk factor, while 12% of male cases reported either IDU or MSM/IDU as a risk factor. See Figure 7.4.



Figure 7.4. HIV/AIDS cases that reported IDU or MSM/IDU (males only) as a risk factor by sex, 2013-2017.

By race, 47.8% of females who reported IDU as a risk factor were white, compared to 27.9% for males with a reported risk of MSM or MSM/IDU. In contrast, 47.6% of males reporting IDU or MSM/IDU were Hispanic and only 20.3% of females reporting IDU were Hispanic. For both males and females, the race/ethnicity with the third highest proportion of cases with IDU as a risk was AI/AN. See Figure 7.5.



Figure 7.5. Percent of HIV/AIDS cases that reported IDU or MSM/IDU as a risk factor by sex and race, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

# 8. Specific Populations: Corrections

The rate of HIV/AIDS among the incarcerated population is 5 to 7 times greater than the rate among the general population<sup>6</sup>. According to 2010 data, over 20,000 individuals incarcerated in the United States had HIV/AIDS.

Among people living with HIV/AIDS in Arizona, 735 (4.0%) were reported to be incarcerated at the end of 2017. Pinal County had the greatest number among those incarcerated in Arizona with 563 (53.5%). Among the 737 incident HIV/AIDS cases in Arizona in 2017, 43 (5.9%) were correctional cases. See Table 8.1.

### QUICK FACTS

- 96.5% of those incarcerated with HIV/AIDS in Arizona are male.
- At 29.4%, injection drug use is the main risk factor.
- The majority of correctional facilities are located in Pinal County.
- 735 (4%) people living with HIV/AIDS in Arizona are incarcerated.

	Non-Correctional		Correct	ional
	Ν	%	Ν	%
Apache	6	100	0	0
Cochise	5	100	0	0
Coconino	17	100	0	0
Gila			0	0
Graham				
Greenlee	0	0	0	0
La Paz			0	0
Maricopa	487	97.2	14	2.8
Mohave	6	85.7		
Navajo	12	100	0	0
Pima	105	92.9	8	7.1
Pinal	20	48.8	21	51.2
Santa Cruz	6	100	0	0
Yavapai	7	87.5		
Yuma	16	100	0	0
Total	687	94.1	43	5.9

#### Table 8.1. HIV/AIDS incidence in Arizona by county and correctional status, 2017.

\*Data for counties with low case counts are suppressed

<sup>&</sup>lt;sup>6</sup> Prisons and Jails. HIV Law & Policy. <u>https://www.hivlawandpolicy.org/issues/prisons-and-jails</u>. Accessed June 21, 2019.

#### Sex

In 2017, the majority (96.5%) of incarcerated people living with HIV/AIDS in Arizona were male. This percentage is higher than the percentage of non-incarcerated individuals living with HIV/AIDS, 85.8% of which were male. Among non-incarcerated people living with HIV/AIDS, 14.2% were female compared to 3.5% who were incarcerated. See Figure 8.1.



Figure 8.1. HIV/AIDS prevalence by correctional status and sex, 2017.

#### Race

There are also differences in the racial/ethnic breakdown of the incarcerated HIV/AIDS population compared to the non-correctional HIV/AIDS population in Arizona. Among incarcerated people living with HIV/AIDS in Arizona, 16.9% are white, 9.4% are black, 67.6% are Hispanic, 2.7% are A/PI/NH, and 2.0% are AI/AN. In comparison, of those living with HIV/AIDS who are not incarcerated, 50.7% are white, 13.8% are black, 28.3% are Hispanic, 1.6% are A/PI/NH, and 4.0% are AI/AN. See Figure 8.2.



Figure 8.2. HIV/AIDS prevalence by correctional status and race, 2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Age

In 2017, there were distinct differences in the age breakdown of people with HIV among the incarcerated population compared to the general HIV population. There were greater proportions of HIV among those incarcerated in the 35-39 (14.6%), 40-44 (19.6%), and 45-49 (18.1%) age groups than the general population. Also, there were more people living with HIV/AIDS over the age of 50 in the non-incarcerated population compared to the incarcerated population. See Figure 8.3.



Figure 8.3. HIV/AIDS prevalence by correctional status and age, 2017.
#### Risk

In 2017, a greater proportion of incarcerated individuals living with HIV/AIDS reported IDU as a risk factor compared to those who were not incarcerated—29.4% and 9.2%, respectively. A smaller percentage of cases reported MSM as a risk factor among the correctional (35.5%) population compared to the non-correctional population (61.3%). At 15%, a greater percentage of the incarcerated population reported MSM/IDU compared to 8.2% of individuals living with HIV/AIDS who are not incarcerated. See Figure 8.4.



Figure 8.4. HIV/AIDS prevalence by correctional status and risk factor, 2017.

## 9. Specific Populations: Blacks

Blacks consistently had the highest incidence rates of HIV/AIDS in Arizona of all races/ethnicities from 2013-2017. The highest incidence rate per 100,000 was in 2014 (43.2) and the lowest was in 2017 (34.2). From 2016-2017, the incidence rate for blacks decreased by 19%. From 2013-2017, the rate for blacks was five times greater than for whites and 1.5 times greater than the next closest racial/ethnic group (AI/AN). See Figure 9.1.

### QUICK FACTS

- The incidence rate of HIV/AIDS among blacks was the highest of all race/ethnicities at 34.2 per 100,000.
- The average incidence rate among blacks was 5 times greater than for whites.
- At 42.9%, MSM was the most commonly reported risk factor among blacks with HIV/AIDS.



Figure 9.1. HIV/AIDS incidence rates for blacks compared to other race/ethnicities, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Sex

In Arizona, black males had a significantly higher incidence rate than black females. In 2013, 75.9% of new HIV/AIDS infections in blacks were male and 24.1% were female. From 2013-2017, the HIV/AIDS incidence rate among black males was 3.1 times higher than black females. However, incidence among black females increased 33% between 2013-2017. See Figure 9.2.



Figure 9.2. Proportion of HIV/AIDS incidence by sex in the black populations, 2013-2017.

#### Risk

At 42.9%, the most common risk factor reported among blacks living with HIV/AIDS in 2017 was MSM. Other risk factors included high-risk heterosexual (22.0%), NRR/UR (16.5%), IDU (9.5%), and MSM/IDU (6.1%). See Figure 9.3.



Figure 9.3. HIV/AIDS prevalence among blacks by reported risk factor, 2017.

#### Age

At 1,870 per 100,000, the black age group with the highest HIV/AIDS prevalence rate in 2017 was 50-54. Prevalence rates were lowest among people ages 2-19 (35.8 per 100,000), followed by ages 20-24 (360.1 per 100,000). Of those over the age of 19, the age group with the lowest rate was 20-24. Blacks ages 50-54 had a prevalence rate 5.2 times greater than young adults aged 20-24. See Figure 9.4.



Figure 9.4. HIV/AIDS prevalence rates for blacks by age group, 2017.

# 10. Specific Populations: American Indian/Alaska Natives

Arizona has a prominent AI/AN presence. There are 22 federally recognized Native American tribes within the state. As of 2017, 292,899 (4.2%) people in Arizona self-reported race as AI/AN, including those living on and off reservations.

Although the HIV/AIDS incidence rates among AI/AN remained somewhat stable from 2013-2017, they were the second highest among all race/ethnicities. The highest incidence rate for AI/AN occurred in 2014 (20.4) and the lowest was in 2017 (15.7). See Figure 10.1.

## **QUICK FACTS**

- The incidence rate of HIV/AIDS among AI/AN was the second highest of all race/ethnicities at 17.8 per 100,000.
- In 2017, 19.6% of AI/AN HIV/AIDS cases were female.
- At 53.1%, MSM was the most commonly reported risk factor among AI/AN with HIV/AIDS.



Figure 10.1. HIV/AIDS incidence rates for AI/AN compared to other race/ethnicities, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Sex

Similar to other race/ethnicities, the majority (84.6%) of HIV/AIDS cases among AI/AN from 2013-2017 were male. AI/AN females had higher incidence rates of HIV/AIDS when compared to females from other races/ethnicities. Among all incident cases in Arizona from 2013-2017, 14.2% were female. Among AI/AN in Arizona, females accounted for 18.5% of incident cases in 2016 and 19.6% in 2017. From 2013-2017, incidence of HIV/AIDS among AI/AN females with HIV/AIDS increased by 29%. See Figure 10.2.



Figure 10.2. Proportion of HIV/AIDS incidence by sex in the AI/AN population, 2013-2017.

#### Risk

At 53.1%, the most commonly reported risk factor reported among AI/AN in 2017 was MSM. Other risk factors included IDU (14.0%), high-risk heterosexual (13.0%), MSM/IDU (10.5%), and NRR/UR (8.2%). See Figure 10.3.



Figure 10.3. HIV/AIDS prevalence among AI/AN by risk, 2017.

#### Age

Among Al/AN in 2017, the age group with the highest prevalence rate of HIV/AIDS was 45-54. For those aged 45-49, the rate was 582.3 per 100,000, while the rate was 596.3 per 100,000 for those aged 50-54. The prevalence rates were lowest among people under the age of 19. Of those aged 19 and older, the age group with the lowest rate was 20-24 (117.8 per 100,000). Those aged 50-54 had a HIV/AIDS prevalence rate five times greater than young adults aged 20-24. See Figure 10.4.



Figure 10.4. HIV/AIDS prevalence rates for AI/AN by age, 2017.

## **11. Specific Populations: Hispanics**

The Hispanic community has the second largest population in Arizona. The HIV/AIDS incidence rate for Hispanics in Arizona from 2013-2017 was the third highest among racial/ethnic groups at 12.7 per 100,000 from 2013-2017. See Figure 11.1.

## QUICK FACTS

- The average incidence rate of HIV/AIDS among Hispanics was the third highest of all race/ethnicities.
- At 61.5%, MSM was the most commonly reported risk factor among Hispanics with HIV/AIDS.
- The age group with the highest prevalence rate was ages 50-54 at a rate of 712.4 per 100,000.



Figure 11.1. HIV/AIDS incidence rates for Hispanics compared to other race/ethnicities, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Sex

Males comprised the majority of incident HIV/AIDS cases (90.3%) in the Hispanic population from 2013-2017. Hispanic females accounted for a particularly low number of incident cases. The highest percentage of Hispanic HIV/AIDS cases that were female was 13.8% in 2014, and the lowest percentage was in 5.8% 2016. See Figure 11.2.



Figure 11.2. Proportion of HIV/AIDS incidence by sex in the Hispanic population, 2013-2017.

#### Risk

At 61.5%, the most commonly reported risk factor for Hispanics was MSM. Other risk factors included high-risk heterosexual (11.3%), NRR/UR (9.7%), IDU (9.5%), and MSM/IDU (7.1%). See Figure 11.3.



Figure 11.3. HIV/AIDS prevalence among Hispanics by risk, 2017.

#### Age

Among Hispanics, the age group with the highest prevalence rate of HIV/AIDS was ages 50-54 (712.4 per 100,000). The HIV/AIDS prevalence rates were lowest for people under the age of 19. Of those aged 19 years and older, the 20-24 age group had the lowest rate (99.3 per 100,000). Those aged 50-54 had a prevalence rate 7.2 times greater than young adults ages 20-24. See Figure 11.4.



Figure 11.4. HIV/AIDS prevalence rates among Hispanics by age, 2017.

## 12. Specific Populations: Perinatal

The majority of pediatric (ages 0-13) cases occur via perinatal transmission, or from mother to child at birth. Only children born to an HIV-positive mother, whose infection was confirmed at 18 months of age or later, or who had a detectable viral load at any age were included in these statistics.

#### Incidence

From 2013-2017, 14 pediatric cases of HIV/AIDS in Arizona were attributed to perinatal transmission. Of the 14 cases, eight were born outside of the United States — six were born in an African country and the country of birth was unknown for four. See Table 12.1.

### QUICK FACTS

- 14 new cases of HIV/AIDS were attributed to perinatal transmission from 2013-2017 in Arizona.
- Of the 14 cases, 50% were born outside of the United States.
- In 2017, the prevalence of HIV/AIDS cases by perinatal transmission was 177.

The number of incident perinatal cases in Arizona was relatively stable from 2013-2017. These cases were identified in Maricopa, Pima, and Apache counties, and they all were under the age of 13 when diagnosed in Arizona.

	Non-U.S. Born	U.SBorn	Total*
2013	4	0	4
2014	0	1	2
2015	2	0	4
2016	1	0	2
2017	1	1	2
Total	8	2	14

Table 12.1. HIV/AIDS pediatric cases due to perinatal status by country of birth, 2013-2017.

\*Country of birth was missing for four pediatric cases

#### Age

In 2017, there were 177 people living with HIV/AIDS in Arizona whose reported risk category was perinatal transmission. Less than 25% were under the age of 13 (n=39 cases), and 31.6% (n=56) were aged 13-19. A total of 82 (46.3%) people living with HIV/AIDS who were perinatal cases were aged 20 or older in 2017. See Figure 12.1.



Figure 12.1. HIV/AIDS prevalence among individuals with a risk of perinatal transmission by age, 2017.

#### Race

Of the perinatal HIV/AIDS prevalence cases in 2017, 59 (33.3%) were born outside of the United States. Furthermore, the majority (69.5%) of these cases were black. For all perinatal HIV/AIDS cases, 71 (40.1%) were black, 55 (33.1%) were white, and 35 (19.8%) were Hispanic. See Figure 12.2.



Figure 12.2. HIV/AIDS prevalence among individuals with a risk of perinatal transmission by race/ethnicity and country of birth, 2017.

## 13. Specific Populations: Young Men

Young males ages 13-29 comprise 24.3% of Arizona's population. From 2013-2017, 1,306 (35.9%) HIV/AIDS incidence cases occurred in this group. In 2013, 244 new cases were reported among men aged 13-29 compared to 260 in 2017. See Figure 13.1.

## QUICK FACTS

- 35.9% of new HIV/AIDS cases from 2013-2017 were among young men ages 13-29.
- MSM was the primary transmission risk for 81.2% of young male cases.



Figure 13.1. Cases of HIV/AIDS incidence among young men aged 13-29, 2013-2017.

#### Incidence

From 2013-2017, the HIV/AIDS incidence rate for young men (31.7 per 100,000) was 1.7 times higher than the rate for all men (18.4 per 100,000).

Young black men had the highest HIV/AIDS incidence rate from 2013-2017 at 97.8 per 100,000. This rate was 5.3 times greater than the incidence rate for all males during this same time frame (18.4 per 100,000). AI/AN also had high incidence rates among men aged 13-29 with a high of 65.9 cases per 100,000 in 2014. See Figure 13.2.



Figure 13.2. HIV/AIDS incidence rates among young men by race, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Prevalence

For men of all ages, the HIV/AIDS prevalence rate was 460.1 per 100,000 in 2017. Among young men aged 13-29, it was 178.8 per 100,000.

Young black men had the highest prevalence rate at 664.7 per 100,000, which was 2.8 times greater than the next group (AI/AN). A/PI/NH had the lowest rate (93.4 per 100,000). See Figure 13.3.



Figure 13.3. HIV/AIDS prevalence rates for young men aged 13-29 by race/ethnicity, 2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Risk

At 81.2%, MSM was the predominant risk factor reported by young men aged 13-29 who were diagnosed between 2013-2017. Of the remaining cases, 7.5% were NRR/UR, 6.0% were MSM/IDU, and 3.6% were IDU. See Figure 13.4.



Figure 13.4. HIV/AIDS incidence among young men by reported risk category, 2013-2017.

MSM was the most commonly reported risk factor by young men aged 13-29 for all races. The greatest proportion of HIV/AIDS incidence cases reporting MSM as a risk factor by race/ethnicity occurred in A/PI/NH men (84.8%), followed by Hispanic (84.1%), and black (81.3%). AI/AN had the lowest proportion of HIV/AIDS cases citing MSM as a risk factor (76.6%). See Figure 13.5.



Figure 13.5. Percent of incident HIV/AIDS young male cases reporting MSM as their risk factor by race, 2013-2017.

\*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

## 14. Specific Populations: Refugee

From 2013-2017, 15,187 refugees from 111 countries settled in Arizona. The countries with the highest number of refugees included: Iraq, Democratic Republic of the Congo (Kinshasa), Somalia, Syria, Myanmar, Tanzania, Philippines, Afghanistan, Ethiopia, and Kenya. See Figure 14.1.

### QUICK FACTS

- More than 3,000 refugees were settled in Arizona each year.
- 15.3% of refugees in Arizona from 2013-2017 were from Iraq.
- Of the 15,187 refugees from 2013-2017, 98 were living with HIV/AIDS prior to their arrival



Figure 14.1. Number of refugees that settled in Arizona by country of origin, 2013-2017.

Maricopa County had the largest population of refugees from 2013-2017 with 6,537, followed by Pima County (3,893). Graham, Gila, Greenlee, La Paz, and Santa Cruz counties each had a very small refugee population. Information for county of settlement for 4,412 refugees was missing. See Figure 14.2.



Figure 14.2. Number of refugees that settled in Arizona by county of residence, 2013-2017. \*Data for counties with low case counts are suppressed (denoted by gray shading)

#### **HIV/AIDS** in the Refugee population

Of the 15,187 refugees that entered Arizona from 2013-2017, 0.65% (98) were living with HIV/AIDS prior to their arrival; less than five were diagnosed after arriving in Arizona. In 2015, 34 refugees were living with HIV/AIDS. The annual count of HIV/AIDS in the refugee population fluctuated with a peak of 34 in 2015 and a low of 8 in 2017. See Figure 14.3.



Figure 14.3. Prevalence of HIV/AIDS among refugees living in Arizona, 2013-2017.

# 15. Comorbidity: Coccidioidomycosis (Valley Fever)

#### Background

Coccidioidomycosis, also known as Valley Fever, is an infection caused by the fungus *Coccidioides* spp. This fungus is found in the soil of the southwestern United States, Washington state, Mexico, and other parts of Central and South America. When soil is disrupted, fungal spores become dispersed in the air, and susceptible individuals can breathe in the spores, resulting in infection. Infection causes mild or no symptoms in about 60% of cases. The remaining 40% experience a flu-like respiratory illness with symptoms including cough, fever, fatigue, chest pain, shortness of breath, headaches, rash, and joint and muscle aches.

Most cases recover without treatment and become immune for life. Less than five percent of people experience severe illness in the form of severe respiratory or disseminated disease. Because people living with HIV/AIDS may be immunocompromised, they are more susceptible to certain diseases and infections. Disseminated coccidioidomycosis is considered an AIDS-defining and opportunistic infection.

#### Surveillance

Coccidioidomycosis is a reportable disease in Arizona, and surveillance is conducted by the ADHS Office of Infectious Disease Services (OIDS). Arizona accounts for 50-60% of cases reported nationally. Rates of reported coccidioidomycosis increased in the last decade from 73.0 cases per 100,000 persons in 2008 to 98.8 cases per 100,000 persons in 2017.

In 2017, 6,885 cases were reported in Arizona. Of those, 94% were reported in Maricopa, Pima, and Pinal counties. According to coccidioidomycosis surveillance data, there were 725 hospitalizations and 48 deaths attributed to coccidioidomycosis.

In 2017, the rates per 100,000 cases were greatest in Gila, Maricopa, and Pinal counties with more than 100 cases per 100,000 in each county. The rates in La Paz and Pima counties ranged from 48-100 per 100,000; Apache, Graham, and Navajo counties ranged from 34-47 per 100,000; Coconino, Cochise, Greenlee, Mohave, Santa Cruz, and Yavapai counties had 13-33 per 100,000; and Yuma County had less than 13 cases per 100,000.

#### Risk

Groups at higher risk for severe disease due to coccidioidomycosis infection include those with immunosuppression (e.g. people living with HIV/AIDS), blacks, Filipinos, pregnant women, and people with diabetes.

Coccidioidomycosis case counts have fluctuated significantly in recent years. Contributing factors may include migration of susceptible people to the endemic area, changes in climate and weather-related phenomena, increased construction or desert soil disturbance in areas where the fungus is present, increased recognition and testing of the disease by healthcare providers, and increased awareness and care-seeking among the general public. Changes in reporting and testing methods in 2009 and 2012 at a major commercial laboratory also greatly affected the number of cases reported to ADHS. See Figure 15.1.



Figure 15.1. Coccidioidomycosis incidence rate per 100,000 people, 1990-2017.

#### **HIV/AIDS and Coccidioidomycosis**

Coccidioidomycosis is of particular importance for people living with HIV/AIDS. When the immune system is suppressed, the normally pulmonary-based infection may disseminate to other tissues, such as the extrapulmonary chest cavity, lymph tissues, circulatory system, and/or major organs.

In Arizona, a total of 32,059 cases of coccidioidomycosis were reported from 2013-2017. Of those, 727 (2.3%) were co-infected with HIV/AIDS and 2.4% of those were disseminated cases. At 84.9%, most of the co-infections were male.

#### **Race and Sex**

Looking at the co-infections by race, the majority were white (42.1%), followed by Hispanic (28.6%), black (16.1%), and AI/AN (9.5%). See Figure 15.2.



Figure 15.2. Percent of HIV/AIDS and coccidioidomycosis co-infections by race, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian By race and sex, 34.5% of co-infected female cases and 43.4% of co-infected male cases were white. Hispanics accounted for the second highest number of cases, with 29.7% of male cases 22.7% of female cases identifying as Hispanic. See Figure 15.3.



Figure 15.3. Percent of HIV/AIDS and coccidioidomycosis co-infections by race and sex, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian \*Percent totals for each sex add up to 100%

63

#### **Risk and Sex**

The most commonly reported risk factor among the cases with a co-infection of coccidioidomycosis and HIV/AIDS from 2013-2017 was MSM (56.4%). Other risk factors were evenly distributed between high-risk heterosexual (12.2%), NRR/UR (11.8%), and MSM/IDU (10.2%). See Figure 15.4.



Figure 15.4. Percent of HIV/AIDS and coccidoidomycosis co-infections by reported risk factor, 2013-2017.

Looking at risk factors by sex, 51.8% of female cases and 5.2% of male cases were high-risk heterosexual. At 18.2%, IDU was more commonly reported by female cases compared to male cases (7.1%). Among males, 66.5% of coccidioidomycosis and HIV/AIDS co-infections were MSM and 12.0% were MSM/IDU. See Figure 15.5.



Figure 15.5. Percent of HIV/AIDS and coccidioidomycosis co-infections by sex and risk factor, 2013-2017.

# 16. Comorbidity: Hepatitis C

### Background

Hepatitis is an inflammation of the liver. There are three main viruses that cause viral hepatitis in the United States: hepatitis A (HAV), hepatitis B (HBV), and hepatitis C (HCV). Viral hepatitis caused by HBV or HCV are the leading causes of liver cancer and the most common reason for liver transplantation. HBV and HCV are two of the most commonly reported infectious diseases in the state of Arizona. HBV and HCV are bloodborne pathogens, meaning that the viruses are spread through exposure to blood or body fluids. HBV can be transmitted through sexual contact with an infected person or sharing needles or syringes. HBV can also be spread from mother to baby at birth. HCV is spread by exposure to blood from an infected person, such as through sharing needles. Up to 75% of Americans living with chronic HBV or HCV do not know they are infected. It is important for at-risk populations to get tested for HBV and HCV.

#### Surveillance

Since the loss of funding in 2008, ADHS has not conducted comprehensive surveillance or reporting of HCV. ADHS monitors electronic commercial and hospital laboratory records (ELR) as a proxy to estimate the burden of HCV in Arizona. While some cases of HCV may be missed by this method, the ELR records are indicative of the trends in newly identified cases, even if they do not represent the total.

From 2013-2017, the number of HCV cases reported through ELR in Arizona increased 37.4% from 5,333 cases in 2013 to 7,329 cases in 2017. See Figure 16.1.



Figure 16.1. Total HCV cases reported through ELR, 2013-2017.

In 2017, 59.8% of the reported HCV cases were among males. By age group, the majority of HCV cases were among baby boomers (ages 55 and older); however, there has been an increase of cases among those aged 18-30. Of the opioid overdoses reported in 2017, 12% reported also having HCV.

From 2002-2008, Mohave County had the highest HCV incidence rate. La Paz and Yavapai counties also had high rates of HCV. Using ELR data for more recent years (2013-2015), the highest rate of HCV was still found in Mohave County. Because the numbers for this time period were from ELR data only, the rates are underestimates and cannot be compared to the earlier time period.

From 2009-2014, 80,829 hospitalizations were associated with HCV. Of these, 6.2% (4,995) listed HCV as the principal diagnosis. Sixty-six percent of hospitalizations were among males. The highest hospitalization rates associated with HCV occurred in individuals ages 55-59.

#### **HIV/AIDS and Hepatitis C**

Both HIV/AIDS and HCV are spread through exposure to blood or bodily fluids. Both diseases have similar risk factors—men who have sex with men, injection drug users, and high-risk heterosexuals face an increased risk for both diseases. Due to limited HCV surveillance data, all cases included in this analysis had HIV before HCV.

From 2013-2017, 589 cases of HIV/AIDS were also co-infected with HCV. The majority (84.7%) of these co-infected cases were male. On average, 118 individuals living with HIV/AIDS were also diagnosed with HCV each year. See Figure 16.2.



Figure 16.2. Number of people living with HIV/AIDS who were diagnosed with HCV, 2013-2017.

#### Race

By race, 54.1% of HIV/AIDS and HCV co-infected cases from 2013-2017 were white, 24.3% were Hispanic, 12.1% were black, 5.1% were AI/AN, and 1.4% were A/PI/NH. See Figure 16.3.



Figure 16.3. Percent of HIV/AIDS and HCV co-infections by race, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Age

Among HIV/AIDS and HCV co-infected cases, the average age at diagnosis was 34.7 years and 45.7 years for HIV and HCV, respectively. The average time between HIV and HCV diagnoses was 11 years.

HIV diagnoses occurred most frequently in individuals less than 40 years old, whereas HCV diagnoses were more common in individuals greater than 40 years old. See Figure 16.4.



Figure 16. Age at HIV and HCV diagnosis among co-infected individuals, 2013-2017.

#### Risk

The most commonly reported HIV/AIDS risk factor among the co-infected cases from 2013-2017 was MSM (41.8%). IDU and MSM/IDU were reported by 23.3% and 21.2% of co-infected cases, respectively. Other risk factors included high-risk heterosexual (7.5%), NRR/UR (6.1%), and perinatal/blood/other (0.2%). See Figure 16.5.



Figure 16.5. Percent of HIV-HCV co-infected cases by risk, 2013-2017.

# **17. Comorbidity: Tuberculosis**

#### Background

Tuberculosis (TB) is a contagious disease caused by the bacterium *Mycobacterium tuberculosis* complex, and the pathogen is spread through the air from one individual to another. While the majority of active TB disease affects the lungs [pulmonary involvement], the bacteria can spread to any part of the body, causing disseminated disease. TB is a spectrum, starting with latent TB infection and ending in active TB disease for 10% of those infected. Latent TB infection occurs when an infected person's immune system has the bacteria under control and is not contagious. However, a weakened immune system can result in latent TB infection progressing to active TB disease, which can cause serious health complications. If left untreated, active TB can be fatal. Fortunately, there are highly effective treatment options for active TB disease. The vast majority of persons successfully complete treatment and go on to live full and healthy lives.

#### Surveillance

The ADHS TB Control Program is responsible for the surveillance, management, and evaluation of TB activities in Arizona. The program provides epidemiological, technical, medical, and programmatic consultative services regarding TB prevention and control to local and tribal health departments, health care providers, and facilities.

Since the 1950s, reported TB cases in the United States and Arizona have been declining; 2012 was the first year that less than 10,000 cases of TB were reported nationwide. In Arizona, the lowest reported number of active TB disease cases occurred in 2017 and again in 2018 with 178 cases. The incidence rate in Arizona in 2018 was 2.5 per 100,000, which was lower than the national rate (2.8 per 100,000). Of the TB cases in Arizona, 70% were pulmonary (culture-confirmed), while less than 30% were sputum smear and culture positive.

TB disproportionately affects individuals born outside of the U.S. Nationally and within Arizona, more than twothirds of reported cases are born outside the US. Additionally, TB cases in Arizona are more likely to be male than female with roughly two male cases for every one female case. By county, the highest five-year TB incidence rates occurred in Pinal (8.3 per 100,000) and Yuma (7.9 per 100,000) counties. The counties with the lowest rates were Greenlee (0 per 100,000), Yavapai (0.5 per 100,000), and Mohave (0.8 per 100,000). See Figure 17.1.



Figure 17.1. TB incidence rate per 100,000 people by county in Arizona, 2014-2018.
#### **Risk Factors**

The TB Control Program collects data on all active TB disease cases. Some of the important information collected are risk factors, which may help identify how the case may have been exposed to TB or how the case developed active TB. For example, if an individual has a disease that weakens the immune system such as diabetes mellitus or cancer, the likelihood of developing active TB disease after exposure is much higher than it is for a non-immunocompromised individual.

Some of the risk factors contributing to TB include: contact to someone with infectious active TB disease; incomplete latent TB infection treatment; diabetes mellitus; end-stage renal disease; post-organ transplant; silicosis; HIV/AIDS; and TNF- $\alpha$  antagonist therapy.

#### **HIV/AIDS and Tuberculosis**

People living with HIV and untreated latent TB infection are at an increased risk of developing TB disease. HIV and TB disease co-infection is also an AIDS-defining condition. Furthermore, co-infection may require longer and more complicated treatment courses to cure TB.

Historically, the proportion of individuals born outside of the U.S. has been higher for HIV-TB co-infected cases than for those with HIV/AIDS only. Of the HIV/AIDS only population, 87.6% were born in the U.S., whereas 53.5% of people co-infected with HIV/AIDS and TB were U.S.-born. See Figure 17.2.



Figure 17.2. Percent of HIV/AIDS-TB and HIV/AIDS only cases by country of birth, 1993-2016.

According to a more in-depth analysis on HIV/AIDS and TB co-infections from 1993-2016, 361 (1.1%) of 33,280 individuals diagnosed with HIV/AIDS during this time period were also diagnosed with TB. Of those co-infected cases, 84.5% were male and 15.5% were female. See Figure 17.3.



Figure 17.3. Percent of HIV/AIDS-TB and HIV/AIDS only cases by sex, 1993-2016.

#### Age

From 1993-2016, persons with HIV/AIDS-TB tended to be older than those with HIV/AIDS only. Most cases of HIV/AIDS and HIV/AIDS-TB were among ages 25-44 with 67.4% and 73.1%, respectively. Ages 13-24 had more HIV/AIDS only (15.2%) cases than co-infected HIV/AIDS-TB (10.3%). See Figure 17.4.



Figure 17.4. Percent of HIV/AIDS-TB and HIV/AIDS only cases by age, 1993-2016.

#### Race

By race, significant differences were observed between individuals with HIV/AIDS-TB co-infection compared to those with HIV/AIDS only from 1993-2016. Comparing white and Hispanic individuals, 52.6% of HIV/AIDS-TB co-infections were Hispanic and 18.8% were white, compared to 22.8% Hispanic, and 58.2% white for HIV/AIDS only. See Figure 17.5.



Figure 17.5. Percent of HIV/AIDS-TB and HIV/AIDS only cases by race/ethnicity, 1993-2016. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

#### Risk

For co-infected HIV/AIDS and TB cases reported from 1993-2016, MSM was the most commonly reported risk factor (37.7%), followed by IDU (27.1%). Other risk factors included MSM/IDU (11.9%), and high-risk heterosexual (13.9%). See Figure 17.6.



Figure 17.6. Percent of HIV/AIDS-TB and HIV/AIDS only cases by reported risk factor, 1993-2016.

## 18. Comorbidity: Syphilis

#### Background

Both syphilis and HIV/AIDS are sexually transmitted diseases (STDs) that occur most often in men who have sex with men (MSM). This is an important co-infection as it not only indicates a continued risk behavior, but it also increases the risk of transmission for both diseases and other STDs.

The number of total syphilis cases increased from 493 in 2013 to 1,564 cases in 2017. An increasing trend in HIV/AIDS and syphilis co-infections was also observed from 2013-2017, with 189 in 2013 and 502 in 2017. See Figure 18.1.



Figure 18.1. HIV/AIDS-syphilis co-infections and syphilis only cases, 2013-2017.

#### Sex and Risk

Of the co-infected HIV/AIDS and syphilis cases from 2013-2017, the majority (99.5%) were male. Of the male cases, 96.1% of the cases had MSM as a reported risk factor. See Figure 18.2.



Figure 18.2. Percent of HIV/AIDS-syphilis co-infections by sex and MSM status, 2013-2017.

#### Age

Looking at the co-infected HIV/AIDS and syphilis cases by age from 2013-2017, 25.2% were aged 45-54. Roughly 53% of people with HIV/AIDS and syphilis co-infections were between the ages of 20-39. See Figure 18.3.



Figure 18.3. Percent of HIV/AIDS-syphilis co-infections by age, 2013-2017.

#### Race

By race, 45.1% of HIV/AIDS and syphilis co-infections from 2013-2017 were white and 33.4% were Hispanic. Other races included black (12.7%), AI/AN (4.3%), multi-race/other/unknown (3.4%), and A/PI/NH (1.1%). See Figure 18.4.



Figure 18.4. Percent of HIV/AIDS-syphilis co-infections by race/ethnicity, 2013-2017. \*Race/ethnicity categories other than Hispanic are non-Hispanic \*AI/AN – American Indian/ Alaska Native \*A/PI/NH – Asian/ Pacific Islander/ Native Hawaiian

# 19. Glossary of Terms

#### Age

With respect to incidence, age refers to the age at HIV/AIDS diagnosis. For prevalence, age corresponds to a person's age at the time of analysis (April 2019). This report, in accordance with CDC's guidelines, categorizes a person with HIV/AIDS as a pediatric case if they were diagnosed prior to the age of 13.

#### Incidence

Incidence is the number of cases newly diagnosed within a specified period of time. In Arizona, HIV/AIDS incidence estimates are based upon the sum of new HIV cases and new AIDS cases that were not diagnosed as HIV in any prior calendar years. Cases of HIV/AIDS are counted as incident only in the year they were first diagnosed. Persons who were newly diagnosed as HIV and diagnosed as AIDS in the same calendar year are counted as incident AIDS to avoid double counting.

#### Population

Population denominators for the state of Arizona are obtained annually from the U.S. Census Bureau. At the time of publication of this report, the most recent population numbers are from the 2017 bridged-race census estimate. Incidence rate calculations for each year use the 2017 population numbers; however, the 2017 prevalence rates are calculated with the 2016 population denominators. Population numbers are also available by county, sex, age and race/ethnicity, and these numbers are used when calculating rates for subpopulations.

#### Prevalence

Prevalence is the total number of persons currently living with HIV/AIDS (PLWH). In Arizona's HIV/AIDS surveillance, estimates of prevalence are based upon the total number of living HIV and AIDS cases regardless of the time of infection. Prevalence is often affected by migration, immigration, and deaths in the state of Arizona. Prevalence estimates are critical for planning and resource allocation efforts as they reflect the needs of HIV/AIDS care and treatment services for PLWH in an area.

#### **Race/Ethnicity**

In this surveillance report, ethnicity is categorized either as Hispanic or non-Hispanic. People who identify as Hispanic can be any race but are grouped under Hispanic for analysis in this report. Non-Hispanic individuals may be categorized as white, black, Asian/Pacific Islander/Native Hawaiian, or American Indian/Alaska Native.

#### **Risk Factors**

Through case investigations, information is collected about an individual's reported risk factors for HIV/AIDS. These risk factors include: sexual contact with men, sexual contact with women, injection drug use, heterosexual contact with persons considered to be high-risk, perinatal (mother-to-child) transmission, and medical, surgical, and/or occupational exposure to blood or blood/tissue products. For heterosexual contact, a "high-risk" individual includes injection drug users, bisexual men (for women only) and persons who are documented as

having HIV/AIDS. Unknown risks may be referred to as no identified risk (NIR), no risk reported (NRR), or unknown risk reported (URR).

Risk factor data categories are not mutually exclusive. For example, one person may be both an injection drug user and a participant in high-risk sexual activity. As a result, risk categories are often used for analysis among adult cases. The principal risk categories in HIV/AIDS surveillance include Men having Sex with Men (MSM), Injection Drug Use (IDU), Men having Sex with Men who also report Injection Drug Use (MSM/IDU) and High-Risk Heterosexuals (HRH). In scenarios where patients report multiple HIV/AIDS risks, the CDC uses a priority system to assign a mode of transmission to each report of HIV infection, with MSM and IDU receiving higher priority than high-risk heterosexual contact for both males and females. Only a person reporting high-risk heterosexual behavior with no other risk behaviors will be assigned to the HRH mode of transmission. In recent years, a presumed heterosexual contact category has been added to some analyses. Only persons who report no other risk behaviors and report heterosexual contact not considered to be high-risk are assigned to this category.

#### Sex

Cases are classified by sex at birth. Due to extremely small numbers of transgendered persons and persons who do not identify as male or female, analyses by gender were not included.

#### Spectrum of Care (HIV Care Continuum)

HIV-Diagnosed: People living with HIV/AIDS who are aware of their status.

Linked to HIV Care: Prevalent cases that also have a documented lab test, doctor visit, or medication use in the calendar year.

Retained in HIV Care: Prevalent cases that also have a documented lab test, doctor visit, or anti-retroviral (ARV) use in the first 6 months of the calendar year and the second 6 months of the calendar year or one documented lab test, doctor visit, or ARV use in the calendar year and a lab result indicating viral suppression status.

On ARV Therapy: Prevalent cases with documented ARV use or whose last viral load of the calendar year was undetectable. All "Adherent/Suppressed" are in this category.

Adherent/Undetectable: Prevalent cases whose last viral load of the calendar year was suppressed (<200 C/mL).

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