

# Sexually Transmitted Infections in Colorado



**CO L O R A D O**

**Department of Public  
Health & Environment**

2016 Annual Report

## Colorado 2016 Sexually Transmitted Infections Annual Report

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### Suggested Citation:

Colorado 2016 Sexually Transmitted Infections Annual Report  
Colorado Department of Public Health and Environment, Denver, CO  
January 2018

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## Acknowledgements

This Sexually Transmitted Infections Annual Report was produced by the STI/HIV/Viral Hepatitis Branch, Colorado Department of Public Health & Environment.

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## Executive Summary

The 2016 Sexually Transmitted Infection Annual Report presents statistics and trends for reportable sexually transmitted infections (STIs) in Colorado. These include chlamydia, gonorrhea and syphilis. STIs are the most commonly reported diseases in Colorado, and are among the world's most common diseases, with an annual incidence exceeded only by diarrheal diseases, malaria, and lower respiratory infections. In 2016, 32,068 cases of chlamydia, gonorrhea and early syphilis were newly reported in Colorado. This report describes trends in reportable STIs in Colorado by person, place, and time.

STI surveillance data are used to detect outbreaks, prioritize resources, develop and target interventions, and evaluate the effectiveness of interventions. Some of the reasons for preventing and controlling STIs include high rates of complications and adverse health outcomes. STIs also can facilitate the transmission of HIV, and are closely related to other co-morbidities such as substance abuse and mental illness. STIs can also serve as a marker to identify health-related disparities that may exist in Colorado communities.

## Data Sources, Methods and Limitations

Under Colorado law, health care providers and laboratories must report all diagnosed cases of chlamydia and gonorrhea to the Colorado Department of Public Health and Environment (CDPHE) within seven days and all syphilis cases within 24 hours.<sup>1</sup> These case reports are entered into the statewide STI reporting database. Case reports entered into this database are the primary data source for diagnosed cases of STIs in Colorado. Chlamydia, gonorrhea and syphilis cases most often require laboratory confirmation; all laboratories submit STI reports to CDPHE, and all major laboratories report STIs electronically via secure data networks.

Due to a decrease in staffing in the Laboratory Surveillance Unit the percent of unknown race/ethnicity has increased since 2012. This was most evident in chlamydia where the percent of unknown race/ethnicity went from 28.1 percent in 2012 to 47.7 percent in 2016. Gonorrhea also showed an increase in unknown race/ethnicity from 13.9 percent in 2012 to 31.8 percent in 2016. Due to these proportion of cases over 30 percent having unknown race/ethnicity for both chlamydia and gonorrhea, trends of the rates by this variable are not displayed.

Beginning in January 2009, Colorado began using a new STI reporting system (PRISM). This system allows for electronic disease reporting and helps to reduce the reporting delays of the

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<sup>1</sup> Colorado Department of Public Health and Environment, Disease Control and Environmental Epidemiology Division, Colorado Revised Statutes § 6 CCR 1009-1, Rules and Regulations Pertaining to Epidemic and Communicable Disease Control (Promulgated by The State Board of Health). <https://www.colorado.gov/pacific/cdphe/regulations-adopted-board-health-division>. Amended Jan 6, 2016.

former paper-based case reporting processes. This has led to an improvement in the speed of partner management and treatment activities. Case information is updated as provider reports are received and interviews with patients are completed. Additionally, STI related reports are now geocoded, providing assurance that cases are attributed to the right jurisdiction for official reporting purposes and allowing for more accurate calculation of incidence rates at a geographic level.

Crude incidence rates in this report are calculated based on cases diagnosed in the calendar year per 100,000 persons. The 2016 disease incidence rates for all Colorado counties are calculated by dividing the number of cases diagnosed for that county in 2016 by the 2016 total population for each county estimated by the Colorado State Demography Office and multiplying by 100,000.

Crude age and gender-specific incidence rates are presented in this report. The counts presented are summations of all valid data reported in the 2016 reporting year. Rates based on a small number of cases are often statistically unreliable especially for counties with small populations or where rates are calculated for age, gender or race/ethnicity with small cell sizes.

## Guidelines for Accurate Use of Data

The following guidelines are provided to ensure an accurate understanding of the use, interpretation and limitations of the data presented in this report. These guidelines can help prevent data misuse, and increase understanding of the accuracy and correct use of the STI data. These guidelines may be considered when reviewing data from any source.

1. Data in this report are primarily reported for new cases of STIs diagnosed in 2016. They are not for unique persons diagnosed with disease, e.g. a person may have more than one infection in a single year.
2. Data in this report are based on cases reported to the STI/HIV Surveillance Program, Disease Control and Environmental Epidemiology Division, CDPHE. These data represent infections among persons seeking and receiving care for STIs.
3. Small changes in numbers from year to year can appear dramatic if the actual number of cases is small. For example, if two cases of gonorrhea are counted in a county in one year and three cases are counted the next year, this is an increase of 50 percent. While this may sound significant, a change of one case does not represent a meaningful increase in the burden of disease. Although disease rates were calculated for counties reporting fewer than five cases, rates based on low case counts are considered statistically unreliable. Caution is recommended in interpreting trends or comparing across counties.
4. Data are presented for all reported cases and are known not to be 100% complete. Factors that impact the completeness and accuracy of STI data include:
  - Level of STI screening by health care providers

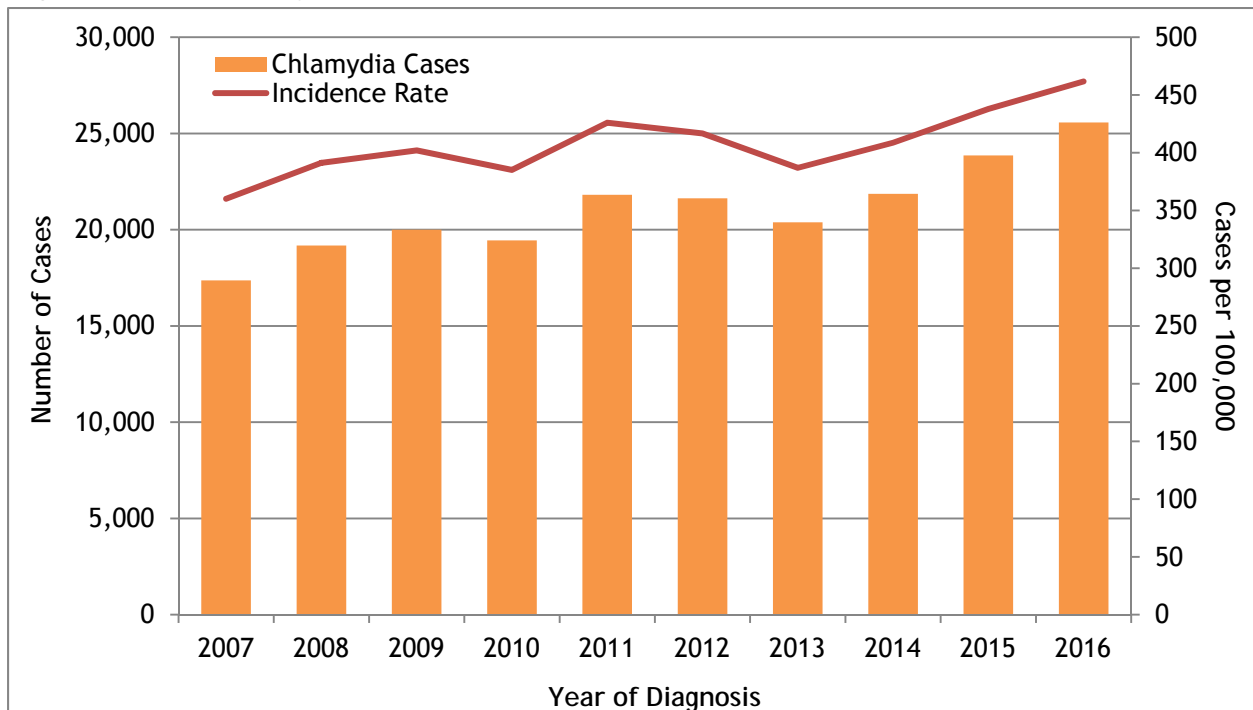
- Individual test-seeking behavior (awareness of illness often depends on whether individual is symptomatic or not)
  - Sensitivity of diagnostic tests
  - Compliance with case reporting
  - Completeness of case reporting
  - Timeliness of case reporting
5. Increases and decreases in STI rates can be due to actual changes in disease occurrence and/or changes in one or more of the above factors.
  6. CDPHE does not maintain statistics for other, non-reportable STI, e.g. herpes, HPV, genital warts, but does maintain statistics for HIV and Hepatitis C, which are not included in this report.
  7. Early syphilis comprises of Primary & Secondary (P&S) syphilis, which is symptomatic, and Early Latent (EL) syphilis, which is asymptomatic. Syphilis infectivity varies based on its presentation; while P&S syphilis is considered to be highly infective, EL syphilis is not. For this reason, public health programming may base interventions and evaluation methods on P&S syphilis infection rate alone. That said, given the morbidity of both P&S and EL syphilis, we have included information on both presentations.
  8. Trends in chlamydia incidence rates are not only influenced by changes in incidence of infection but also changes in screening practices. As chlamydia infection is usually asymptomatic, incidence rate may appear to increase simply because of increases in screening. For this reason, Health People 2020 objectives focus on increasing chlamydia screening rather than decreasing incidence rate. Chlamydia rate changes over time should be interpreted with caution.

Anyone with questions about how these data should be interpreted is encouraged to contact the STI/HIV Surveillance Program at (303) 692-2700.

# Chlamydia Infections

Chlamydia remains the most commonly reported STI in Colorado. In 2016, there were 25,569 cases diagnosed and reported for a statewide crude incidence rate of 461.7 per 100,000 persons. Figure C.1 shows annual case counts and rates of chlamydia in Colorado from 2007 to 2016. Cases and rates have increased steadily from 2007 to 2016, with two dips in 2010 and 2013. According to the Centers for Disease Control and Prevention (CDC), the US chlamydia rate increased from 478.8 per 100,000 reported in 2015<sup>2</sup> to 497.3 per 100,000 in 2016.<sup>3</sup> This is a 4.7 percent increase.

**Figure C.1: Chlamydia Cases and Incidence Rates, Colorado, 2007-2016**



Case rates per 100,000 vary significantly by gender and age. The chlamydia incidence rate is nearly two times greater among females, 612.7 per 100,000, than males, 311.0 per 100,000 in 2016 (Table 2). Rates are highest among adolescents and young adults for both males and females.

Figure C.2 shows age and gender case counts and rates for chlamydia diagnosed in 2016. The mean age at diagnosis is 25.2 with a range of 0 to 99 years of age. Females account for nearly two-thirds (66.3%) of the chlamydia cases. Among 15-19 year olds, the chlamydia rate for

<sup>2</sup> Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2015*. Atlanta: U.S. Department of Health and Human Services; Oct 2016. <http://www.cdc.gov/std/stats>.

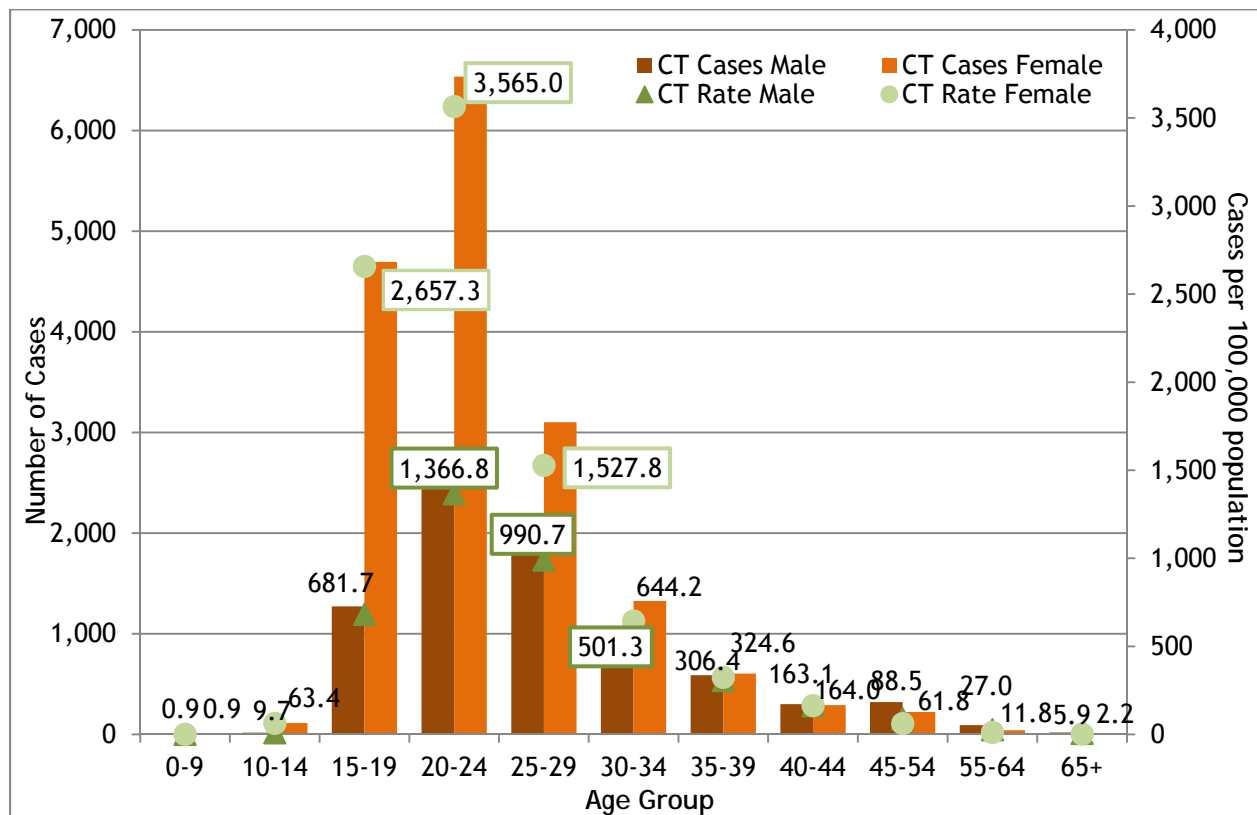
<sup>3</sup> Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atlanta: U.S. Department of Health and Human Services; Sept 2017. <http://www.cdc.gov/std/stats>.



females, 2,657.3 per 100,000, is nearly four times greater than the rate for males, 681.7 per 100,000.

The marked difference in case rates by gender is primarily an artifact of screening efforts which target females in reproductive health settings. To a lesser degree, this difference may also reflect the natural history of chlamydia infections. Males may be less susceptible to infection, are generally asymptomatic, and are less likely to access health services and receive routine screening. The result of these factors is the burden of chlamydia infections among males remains largely undiagnosed, untreated and unreported. Rates of reported chlamydia infections among women have been increasing annually since the late 1980s when public programs for screening and treatment of women were first established to prevent pelvic inflammatory disease (PID) and related complications.

**Figure C.2: Chlamydia Cases and Rates by Gender and Age Group, Colorado, 2016**



Persons of color continue to be disproportionately affected by STIs. Non Hispanic Blacks represent 4.2 percent of Colorado’s population, but represent 7.3 percent of reported chlamydia cases in 2016.

Figure C.3 shows the geographical distribution of chlamydia incidence rates for Colorado at the county level. Figure C.4 shows chlamydia infection rates by county for 2016. Denver, Montezuma, and Pueblo counties had the three highest rates of reported chlamydia infections

and accounted for 29.2 percent of chlamydia diagnoses in 2016. As shown in both Figures C.3 & C.4 chlamydia infections were largely concentrated in Denver County. In 2016, only one rural county had no reported chlamydia infections.

Figure C.3: Chlamydia Incidence Rates by County Map, Colorado, 2016

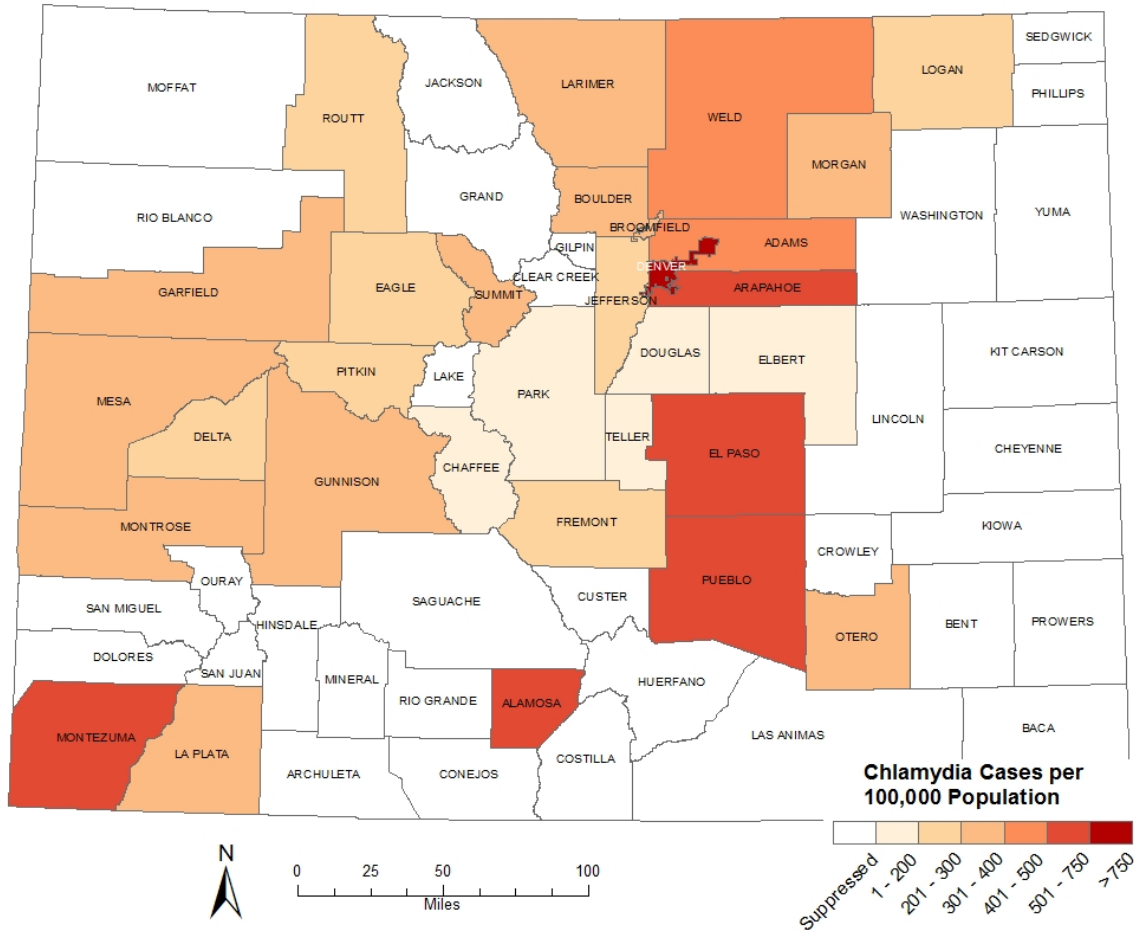
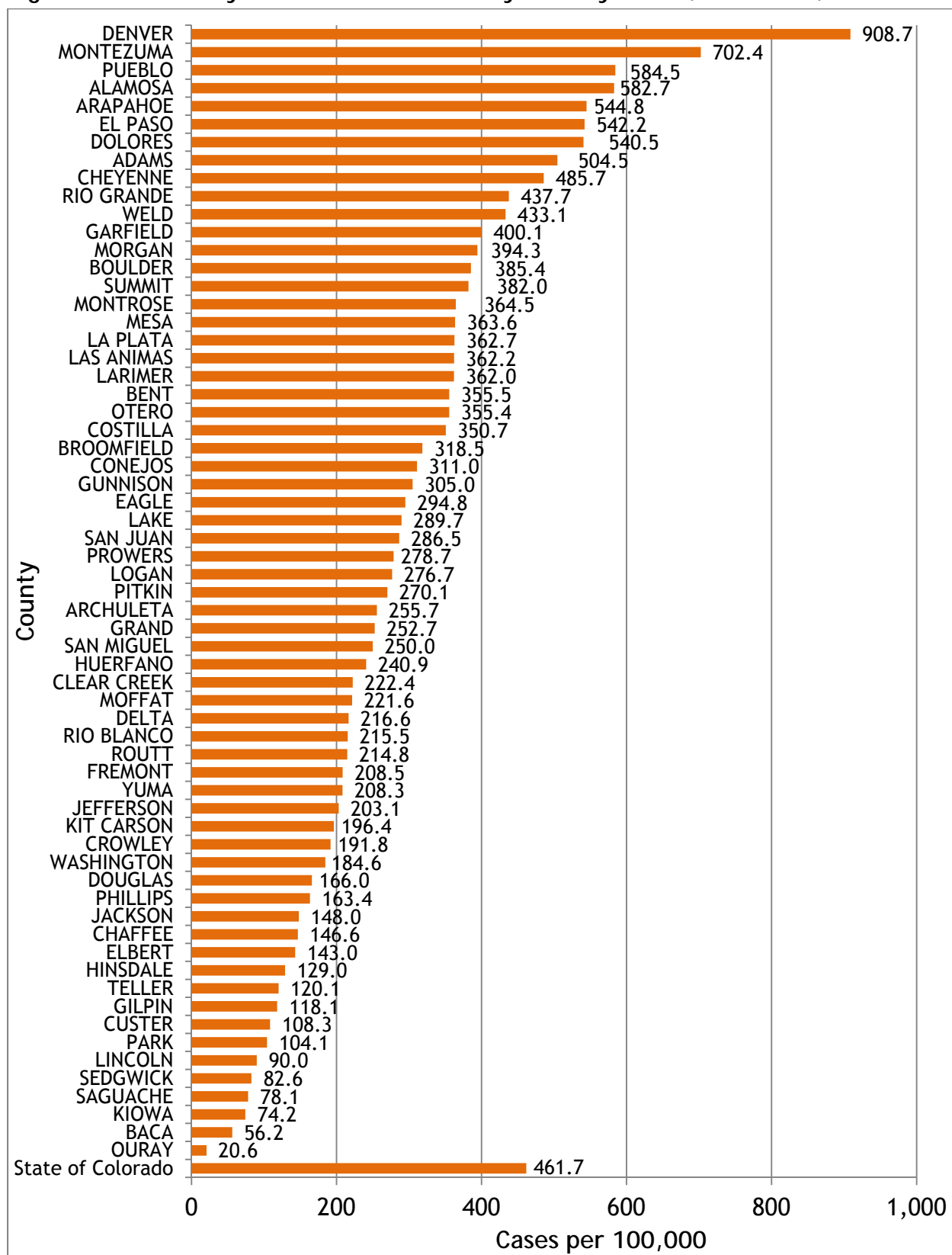


Figure C.4: Chlamydia Incidence Rates by County Chart, Colorado, 2016



## Gonorrhea Infections

Gonorrhea remains the second most commonly reported STI in Colorado with 5,975 cases reported in 2016, yielding a rate of 107.9 per 100,000 population. According to CDC, the US gonorrhea rate increased from 123.9 per 100,000 reported in 2015<sup>4</sup> to 145.8 per 100,000 in 2016<sup>5</sup>. This is an increase of 18.5 percent.

Figure G.1 shows cases diagnosed each year and the incidence rate per 100,000 from 2007 to 2016. Over this ten year period, overall gonorrhea rates remained relatively consistent from 2009 through 2013. 2014 saw a slight increase followed by a couple of sharp increases in 2015 and 2016.

Figure G.1: Gonorrhea Cases and Incidence Rates, Colorado, 2007-2016

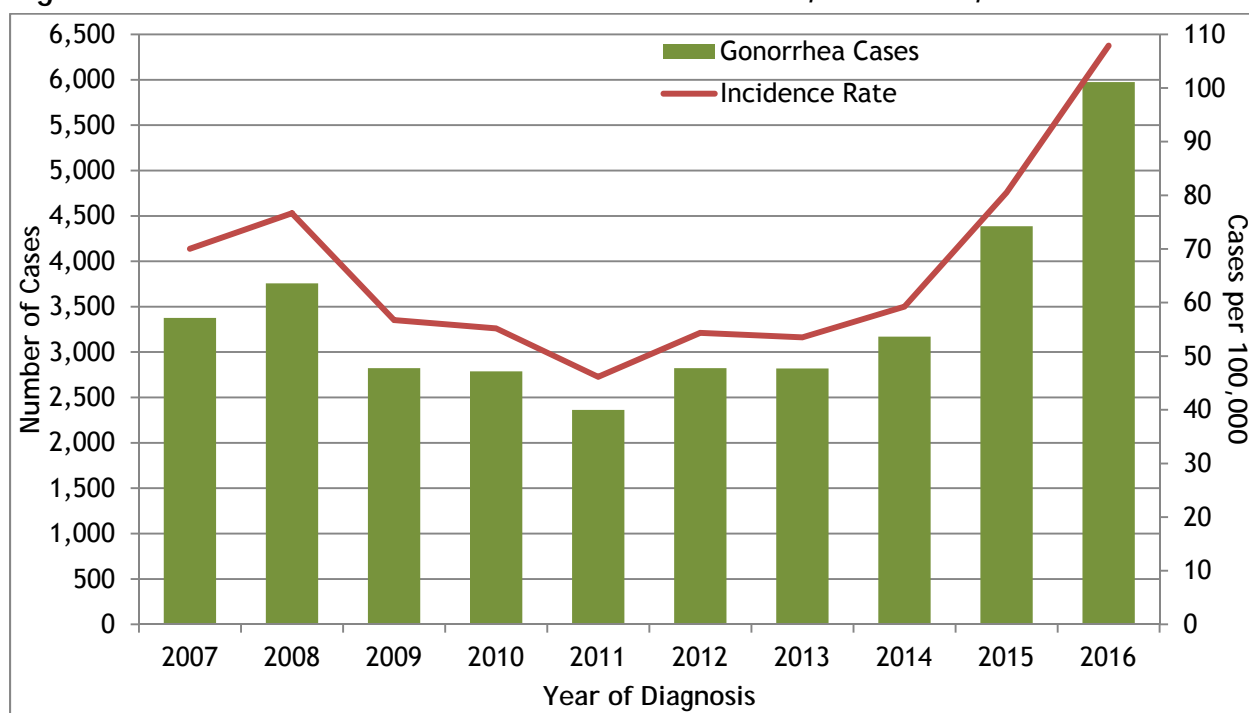
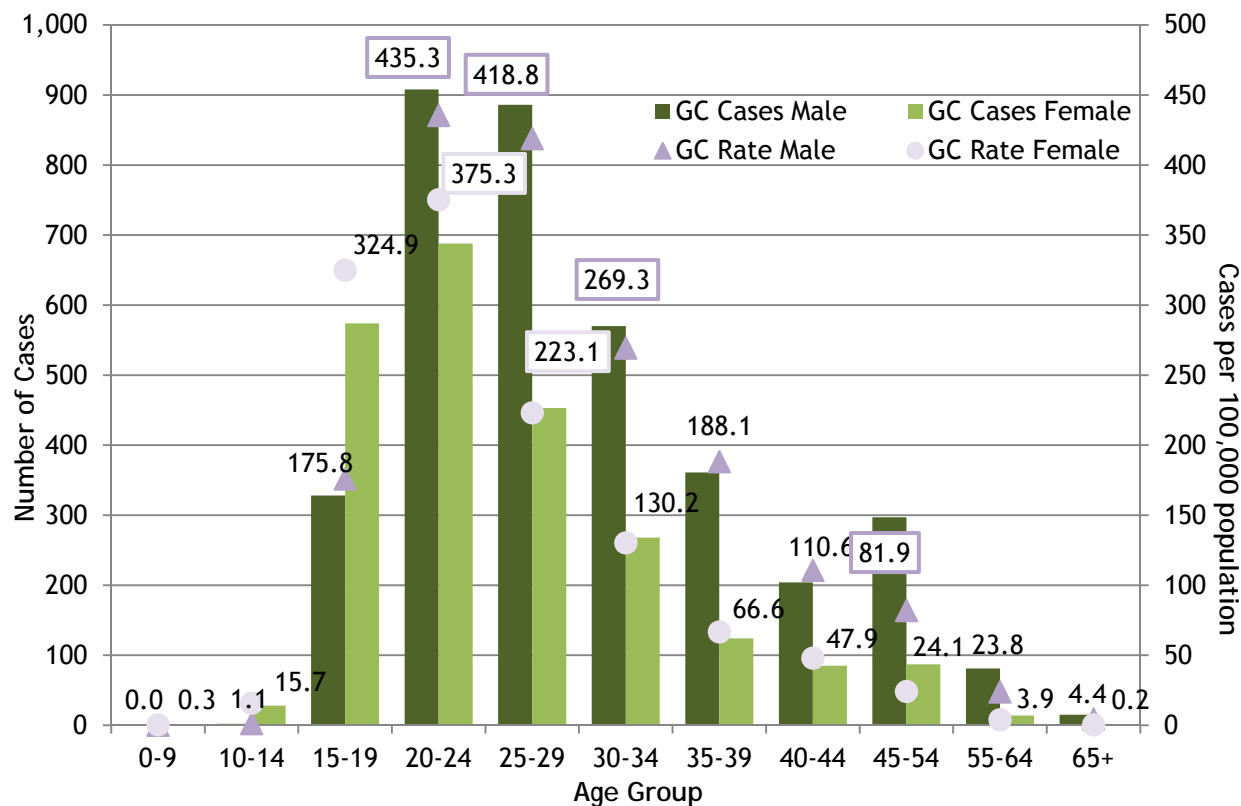


Figure G.2 shows age and gender case counts for gonorrhea (GC) diagnosed in 2016. The mean age at diagnosis is 28.8 with a range of 1 to 98 years of age. Males account for 61.1 percent of total cases and rates by gender and age are typically higher for males. However, among 15-19 year olds, the gonorrhea rate for females, 324.9 per 100,000, is almost two times greater than the rate for males, 175.8 per 100,000.

<sup>4</sup> Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2015*. Atlanta: U.S. Department of Health and Human Services; Oct 2016. <http://www.cdc.gov/std/stats>.

<sup>5</sup> Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atlanta: U.S. Department of Health and Human Services; Sept 2017. <http://www.cdc.gov/std/stats>.

Figure G.2: Gonorrhea Cases and Rates by Gender and Age Group, Colorado, 2016



As seen with chlamydia, Non Hispanic Blacks were disproportionately affected by gonorrhea infections in 2016. They represented 4.2 percent of Colorado’s population, but represented 14.2 percent of reported gonorrhea cases.

Figures G.3 & G.4 describe the geographical distribution of gonorrhea incidence rates of Colorado at the county level. The map shows gonorrhea infections are not as widespread as chlamydia. Fifteen rural counties did not report any gonorrhea cases in 2016. A large proportion, 64.6 percent, of all cases was reported in just three counties; Denver, Arapahoe, and El Paso, with Denver County accounting for 33.1 percent of reported cases. Denver, Pueblo, and Montezuma have the highest rates of gonorrhea infection.

Figure G.3: Gonorrhea Incidence Rates by County Map, Colorado, 2016

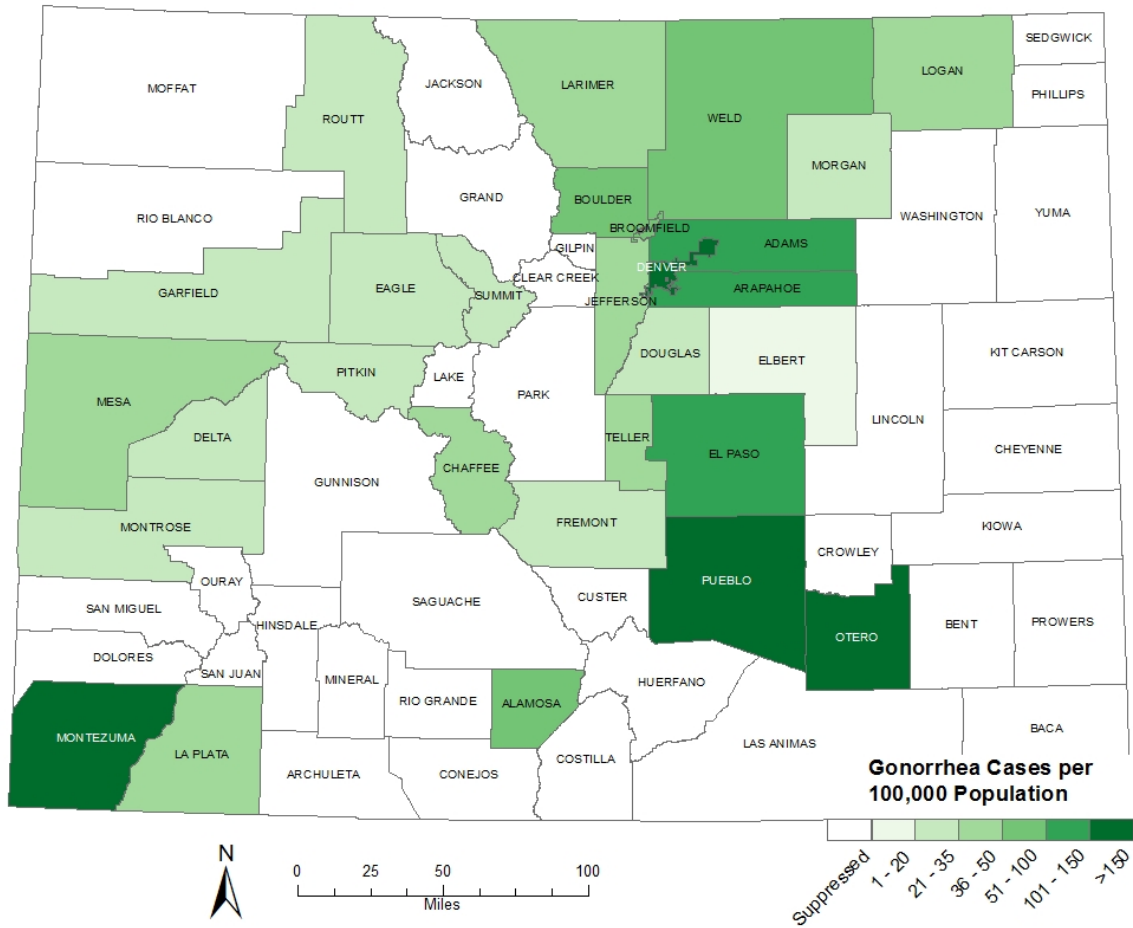
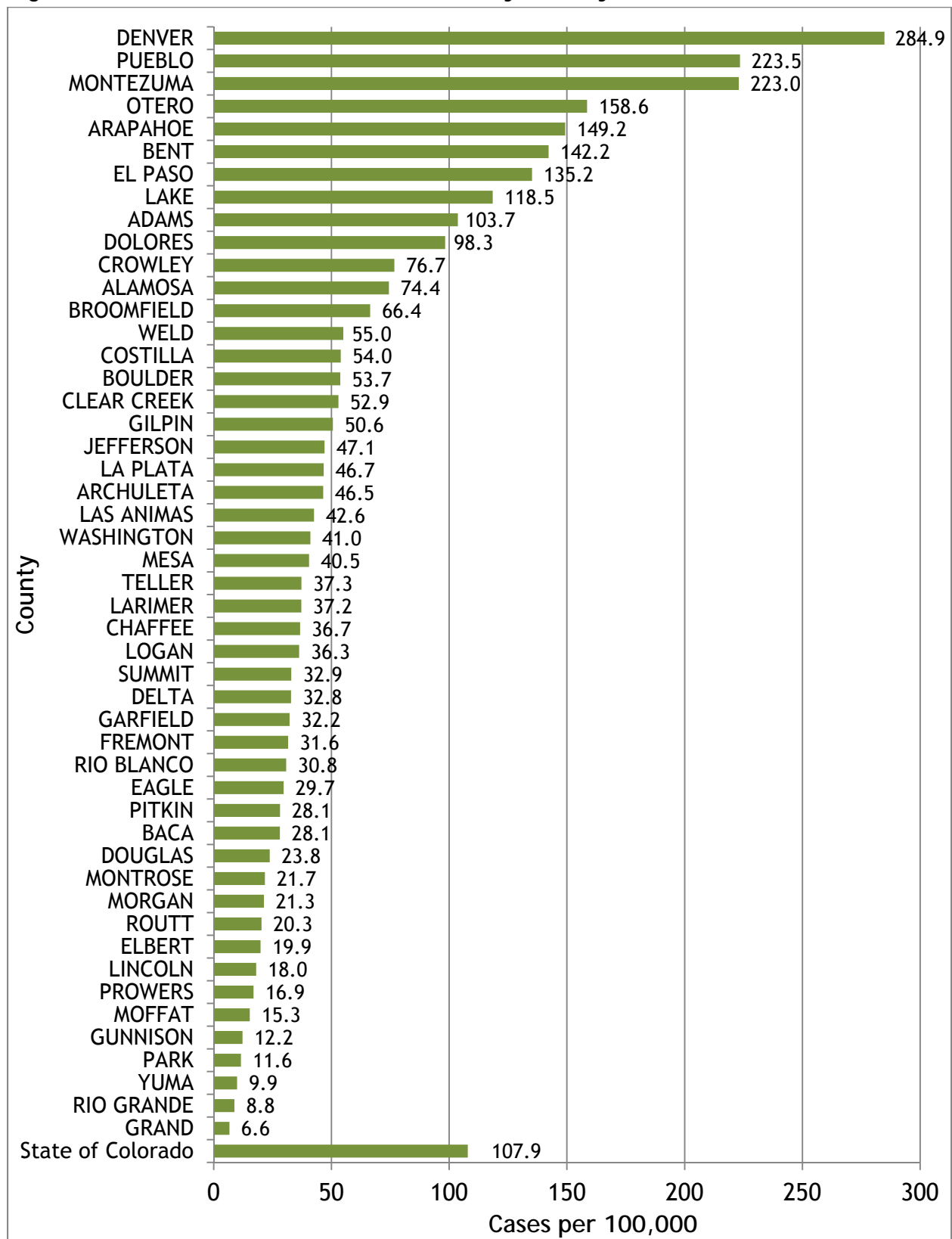


Figure G.4: Gonorrhea Incidence Rates by County Chart, Colorado, 2016



## Primary and Secondary (P&S) Syphilis Infections

There were 250 cases of primary and secondary (P&S) syphilis diagnosed and reported in 2016 and the rate was 4.5 per 100,000. From 2007 to 2016, Colorado reported a 3 times increase in P&S syphilis cases as shown in Figure PS.1. According to CDC, the US P&S syphilis rate increased from 7.5 per 100,000 reported in 2015<sup>6</sup> to 8.7 per 100,000 in 2016<sup>7</sup>. This is a 17.6 percent increase.

The syphilis infections are primarily occurring in Non Hispanic White males, representing 51.6 percent of reported primary and secondary cases. Additionally, 75.2 percent of all cases were among men who have sex with men (MSM). In 2016, 35.6 percent of P&S syphilis diagnoses were co-infected with HIV and 39.4 percent of those who reported MSM risk were co-infected with HIV.

**Figure PS.1: Primary & Secondary Syphilis Cases and Incidence Rates, Colorado, 2007-2016**

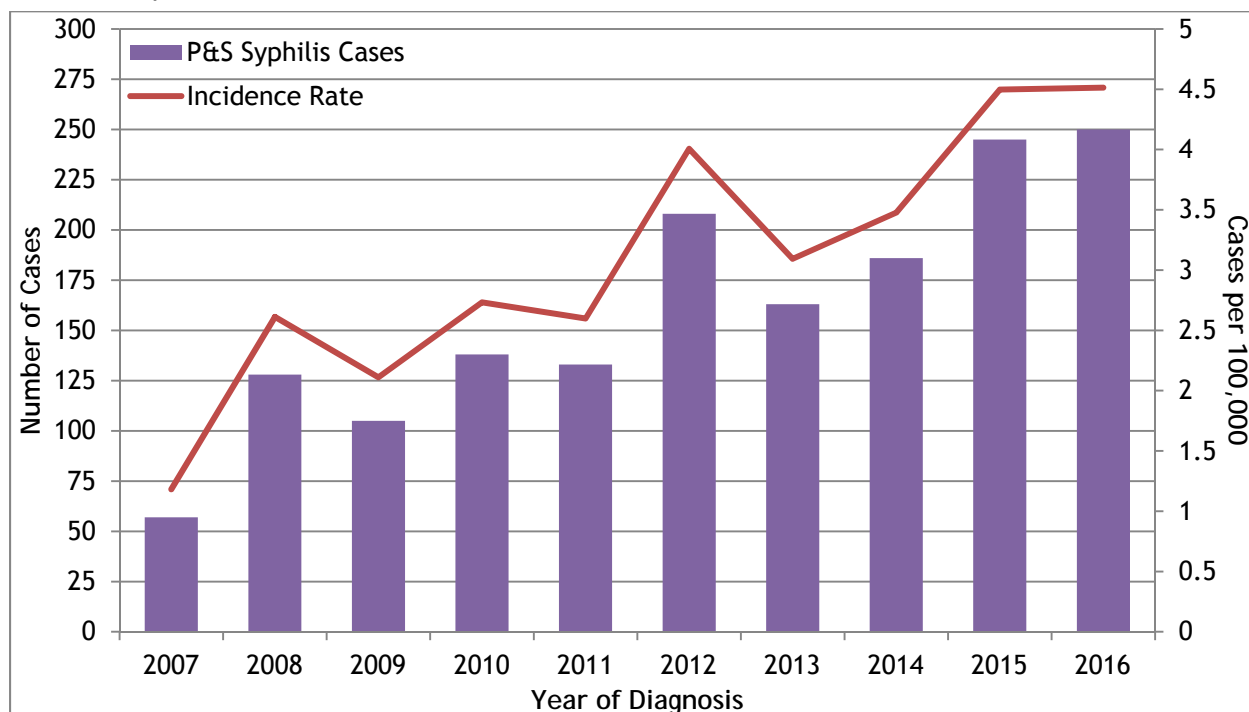


Figure PS.2 shows age and gender case counts for P&S syphilis diagnosed in 2016. The mean age at diagnosis is 35.5 with a range of 16 to 64 years of age. The highest rates were reported among 25-29 year old males whose infection rate was 28.4 cases per 100,000. In 2016, 24.0

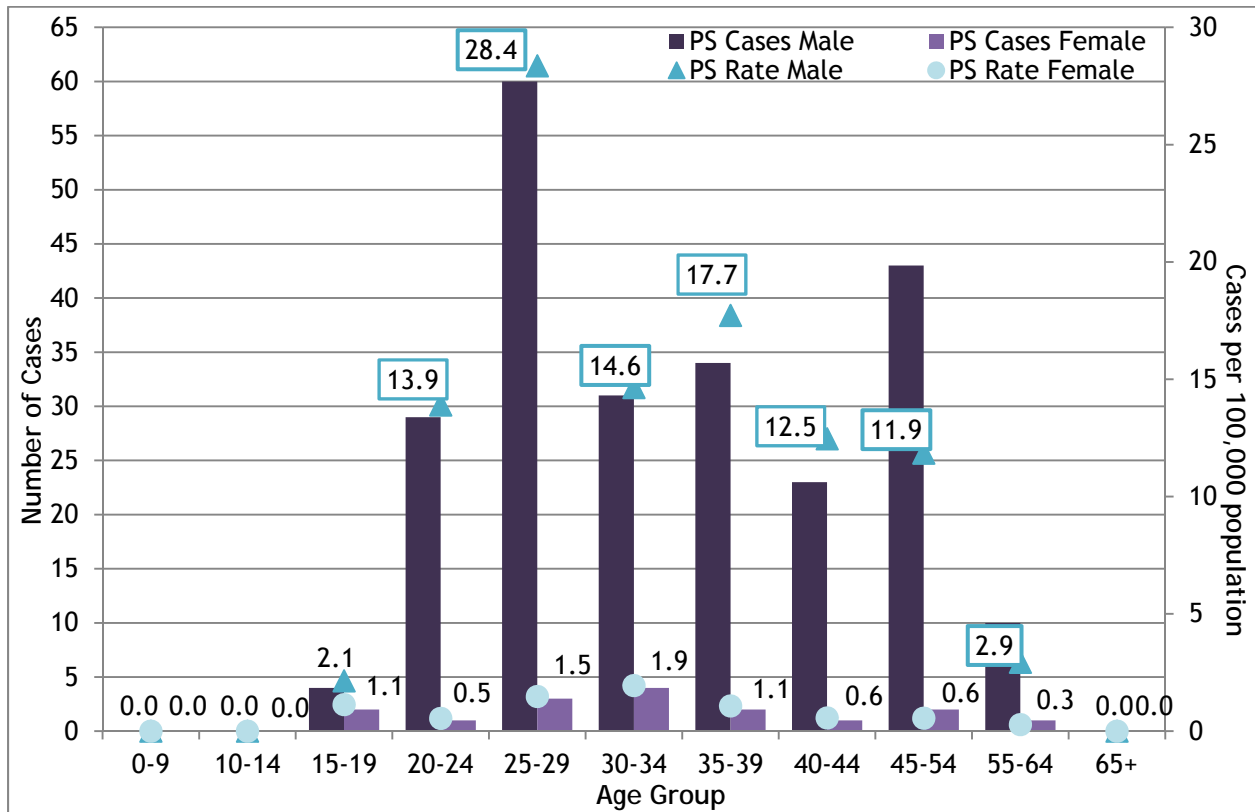
<sup>6</sup> Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2015*. Atlanta: U.S. Department of Health and Human Services; Oct 2016. <http://www.cdc.gov/std/stats>.

<sup>7</sup> Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atlanta: U.S. Department of Health and Human Services; Sept 2017. <http://www.cdc.gov/std/stats>.



percent of the cases occurred among 25-29 year old males followed by 35-39 year old males, accounting for 13.6 percent of all reported primary and secondary syphilis cases.

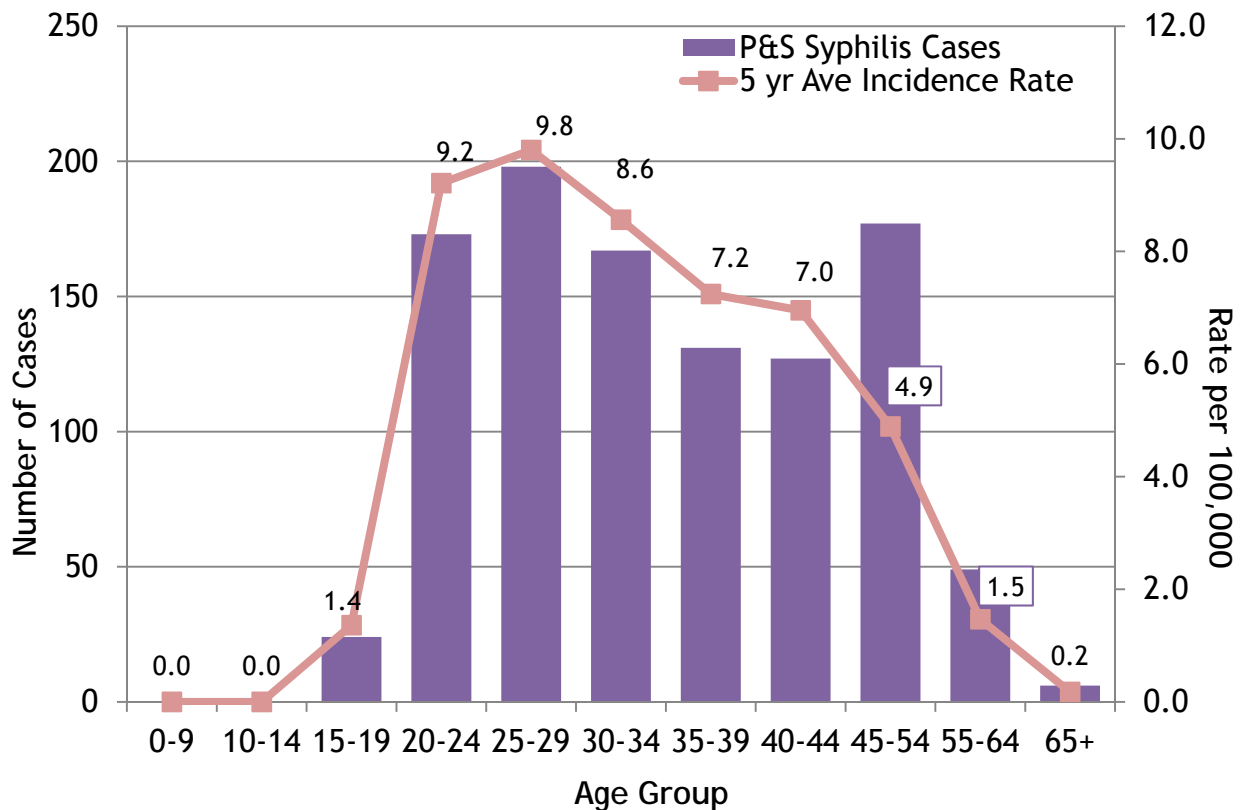
**Figure PS.2: Primary & Secondary Syphilis Cases and Rates by Gender and Age Group, Colorado, 2016**



Caution: these rates use small numbers and thus are unstable

Figure PS.3 below depicts age group case counts and rates for P&S syphilis diagnosed in 2012-16. Since numbers from one year are small, the five-year average rate helps to stabilize the rate and thus produces a more accurate representation of the disease.

Figure PS.3: Primary & Secondary Syphilis 5-year Cases and Rates by Age Group, Colorado, 2012-2016



More stable than the 1-year incidence rate from Figure 12

Figure PS.4 shows that the highest rate of P&S syphilis is seen among Non Hispanic Blacks, 11.6 per 100,000 in 2016. The next highest rate is among Hispanics of all races, 5.3 per 100,000. Although Non Hispanic Whites account for the majority of the P&S syphilis cases, 54.4 percent, their infection rate per 100,000 is only higher than Non Hispanic Asian/Pacific Islanders, 1.0 per 100,000, in 2016.

Figure PS.4: Primary & Secondary Syphilis Incidence Rates by Race/Ethnicity, Colorado, 2016

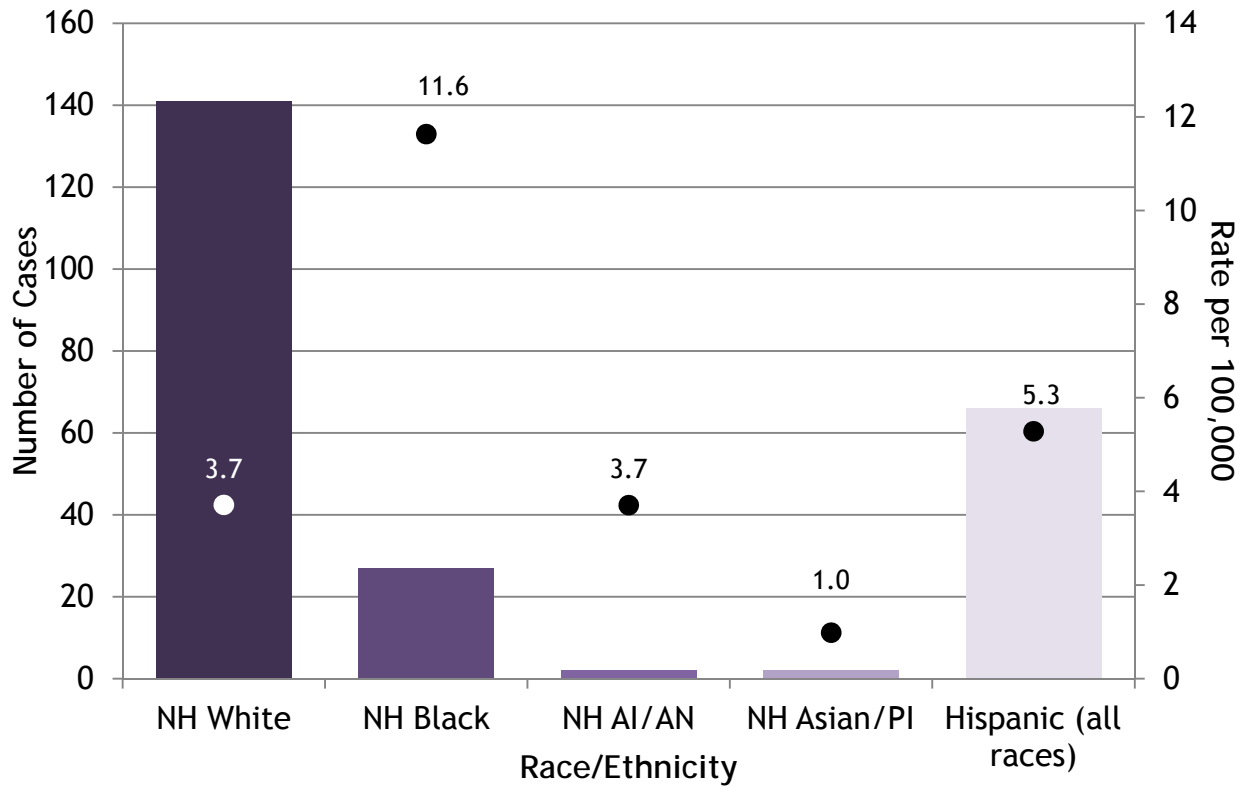
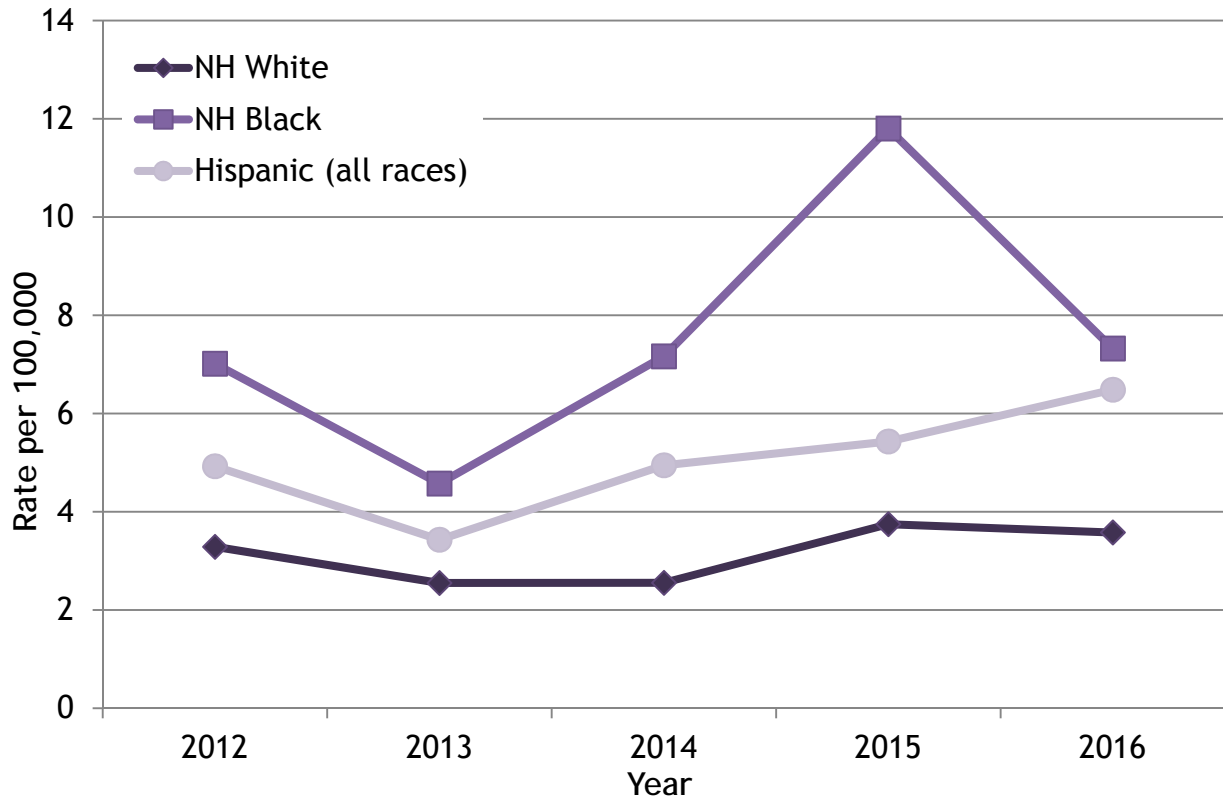


Figure PS.5 shows the 5 year trend in rates for Non Hispanic Whites, Non Hispanic Blacks and Hispanics. Other races were not displayed due to small numbers. The rates for Hispanics and Non Hispanic Blacks have had an increasing trend 2013-2015, though Non Hispanic Blacks saw a sharper increase. The rates for Non Hispanic Whites have been relatively stable.

Figure PS.5: Primary & Secondary Syphilis Infection Rates by Race/Ethnicity, Colorado, 2012-2016



Figures PS.6 & PS.7 describe the geographical distribution of P&S syphilis incidence rates for Colorado at the county level. The map shows P&S syphilis infections have been diagnosed in 22 of 64 counties with Denver County reporting the highest proportion of cases, 42.8 percent in 2016. The highest rates were in Rio Grande, Denver, and Arapahoe Counties with a rate of 17.5, 15.4 and 6.7, respectively. However, the Rio Grande rate was produced from one or two cases and is not reliable. Use caution when interpreting some of these rates as the county may have a small population and small case numbers.

Figure PS.6: Primary & Secondary Syphilis Incidence Rate by County Map, Colorado, 2016

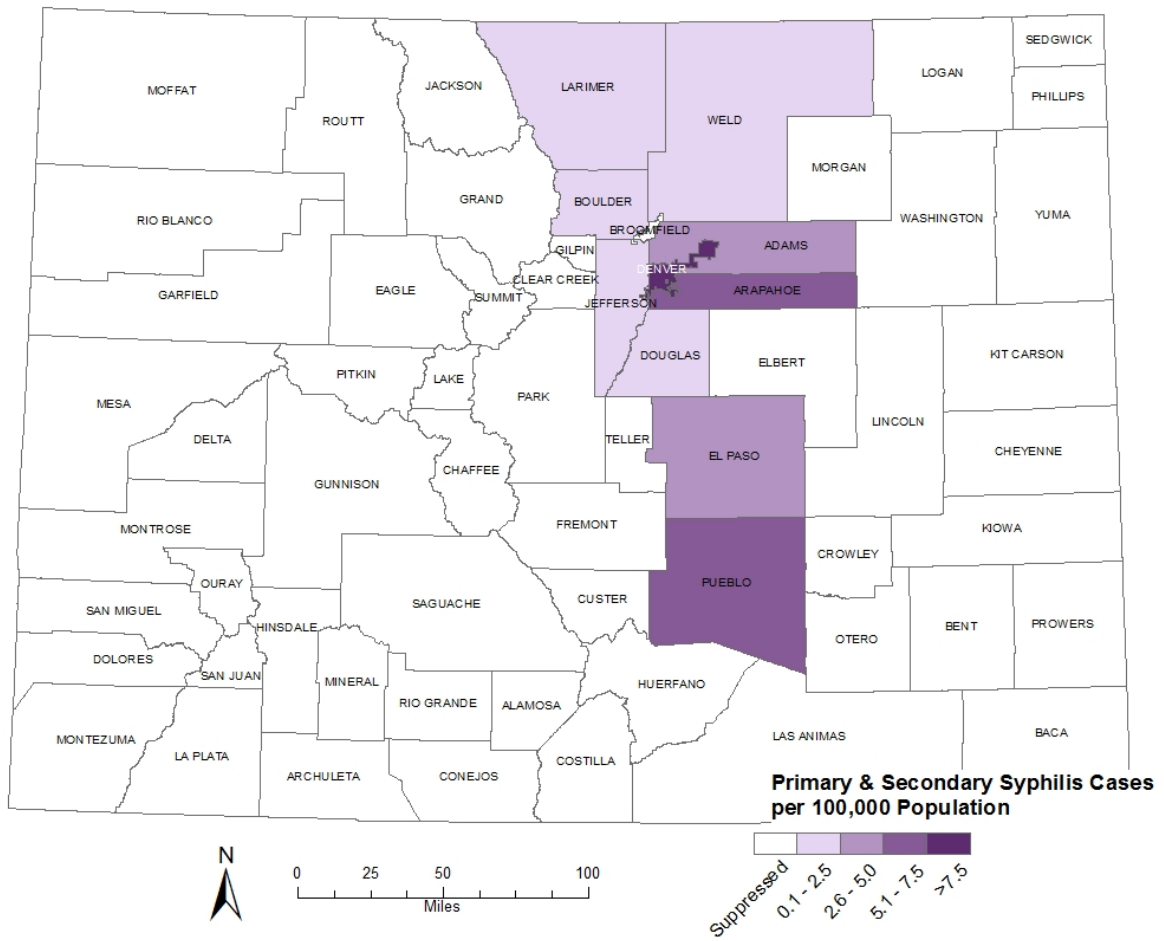


Figure PS.7: Primary & Secondary Syphilis Incidence Rates by County Chart, Colorado, 2016

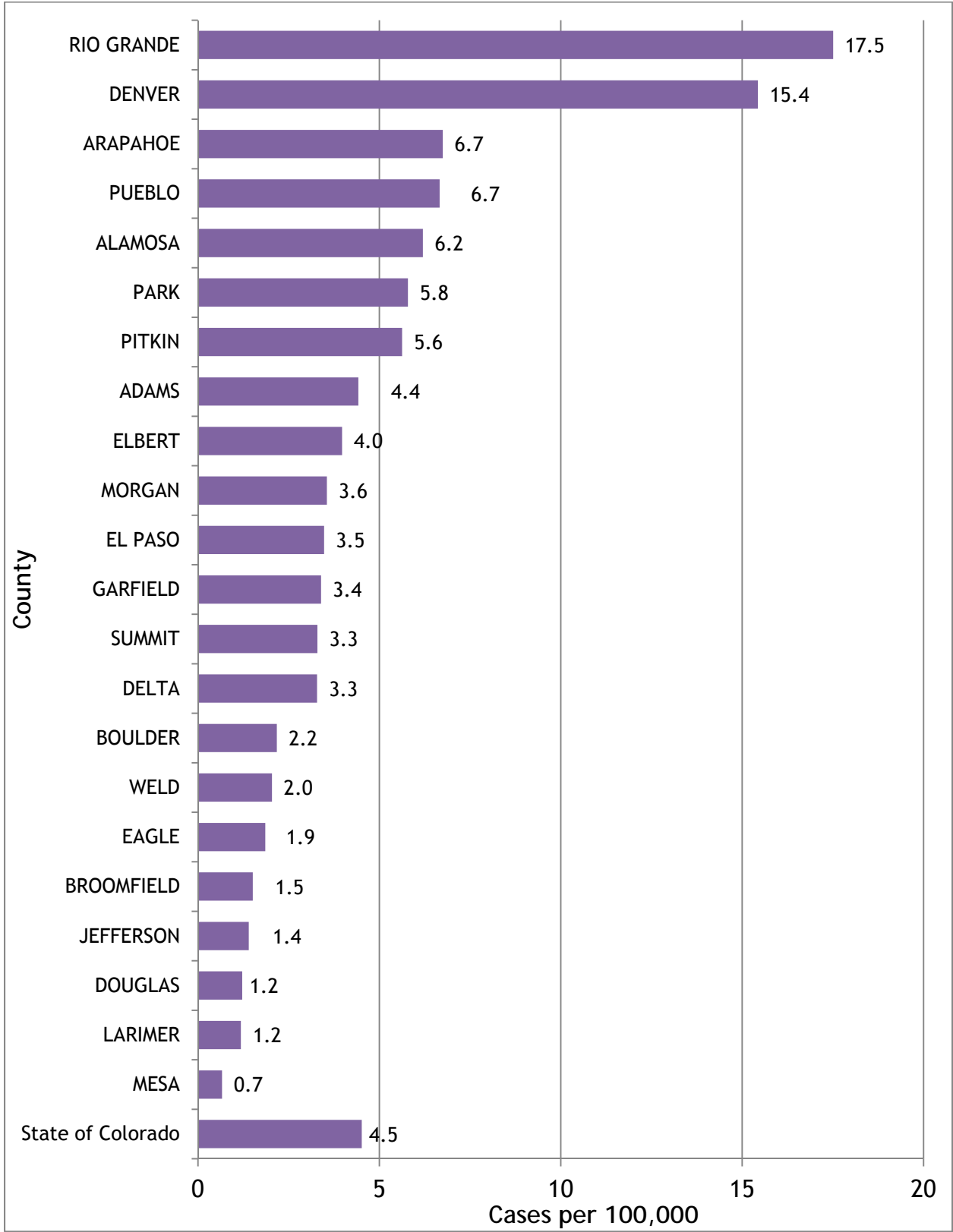
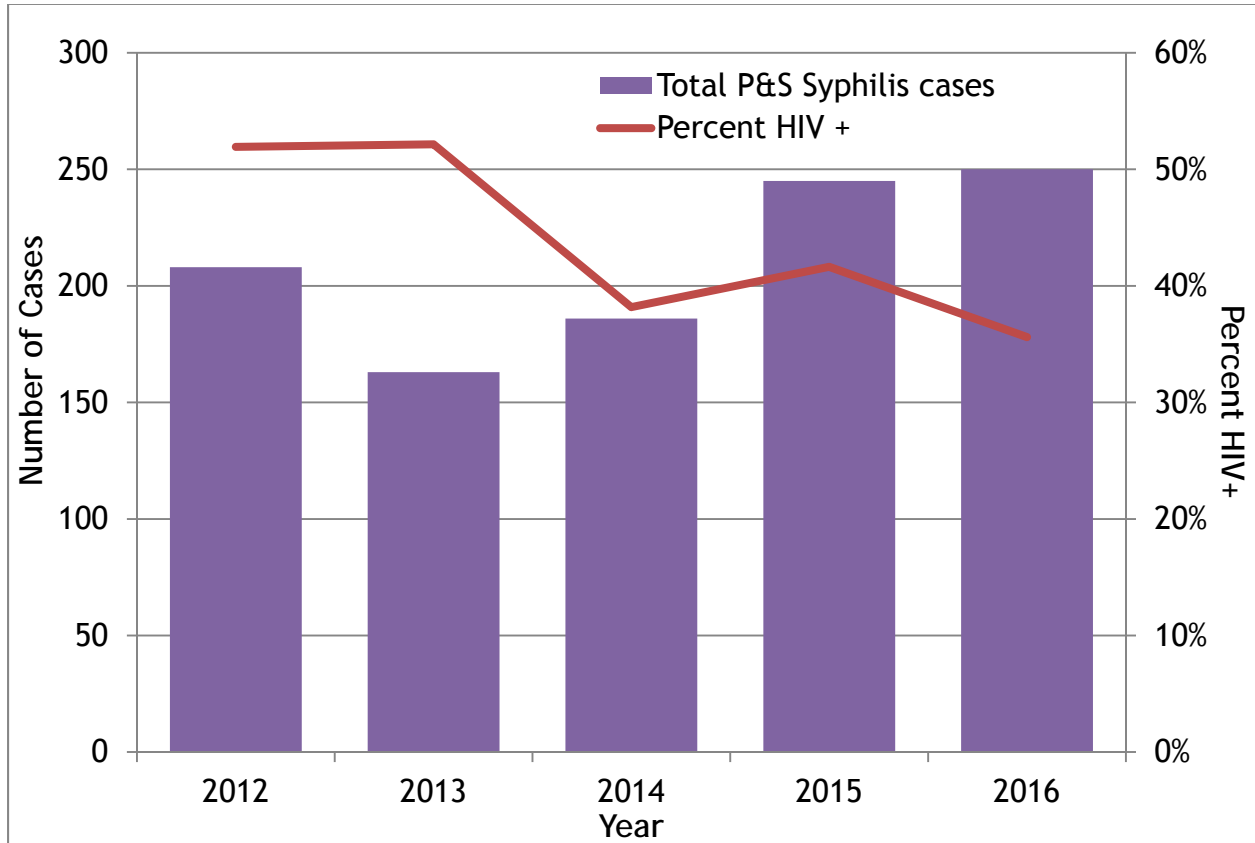


Figure PS.8 shows the rate of P&S syphilis and HIV co-infections, i.e. percent of syphilis cases with HIV, for 2012-2016. The co-infection rate has ranged from 52.1 percent in 2013 to 35.6 percent in 2016 producing a downward trend. The five-year average for P&S syphilis and HIV co-infections is 43.3 percent.

**Figure PS.8: Primary & Secondary Syphilis Cases and Percent HIV+ by Year of Diagnosis, Colorado, 2012-2016**



## Early Latent Syphilis Infections

There were 274 cases of early latent (EL) syphilis diagnosed and reported in 2016. Early latent syphilis is latent (no visible signs or symptoms) syphilis where the infection occurred within the past 12 months. From 2007 to 2016, Colorado reported a 6.8 times increase in early latent syphilis cases, as shown in Figure EL.1.

The syphilis epidemic is primarily occurring in Non Hispanic White males, representing 44.2 percent of reported early latent cases. Additionally, 73.7 percent of cases were among men who have sex with men (MSM). In 2016, 40.9 percent of early latent syphilis diagnoses were co-infected with HIV and 46.0 percent of those who reported MSM risk were co-infected with HIV.

Figure EL.1: Early Latent Syphilis Cases and Incidence Rates, Colorado, 2007-2016

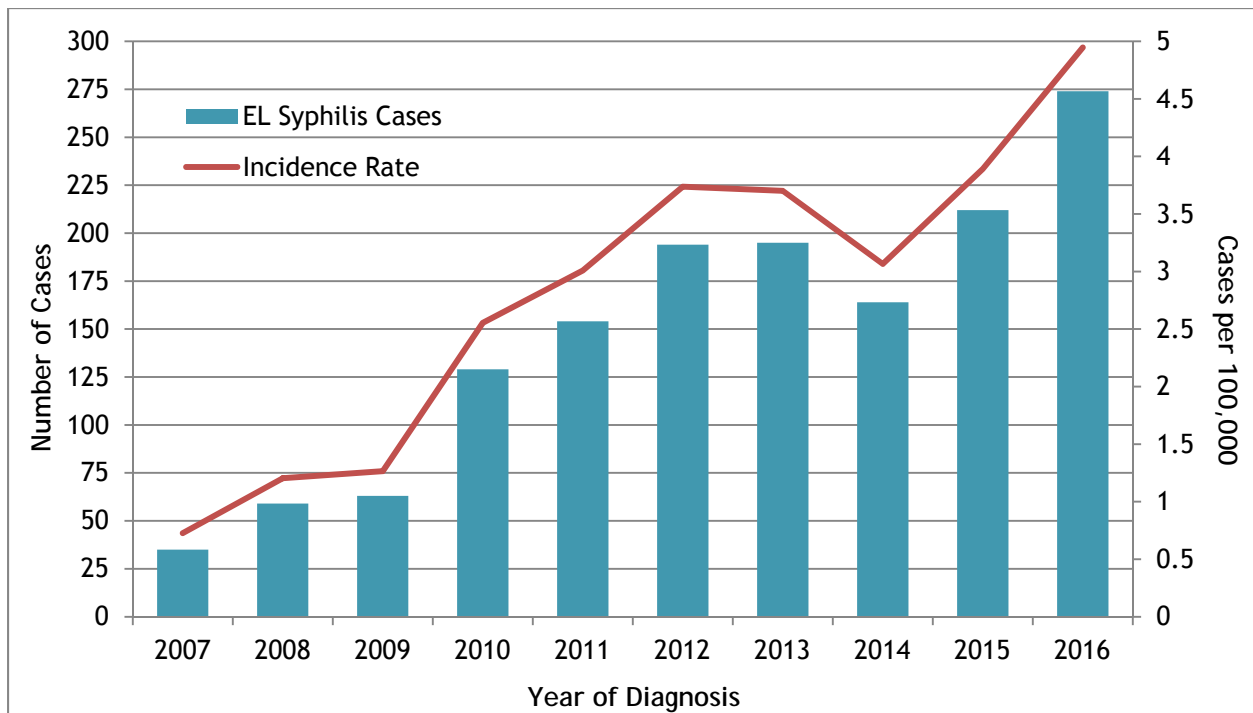
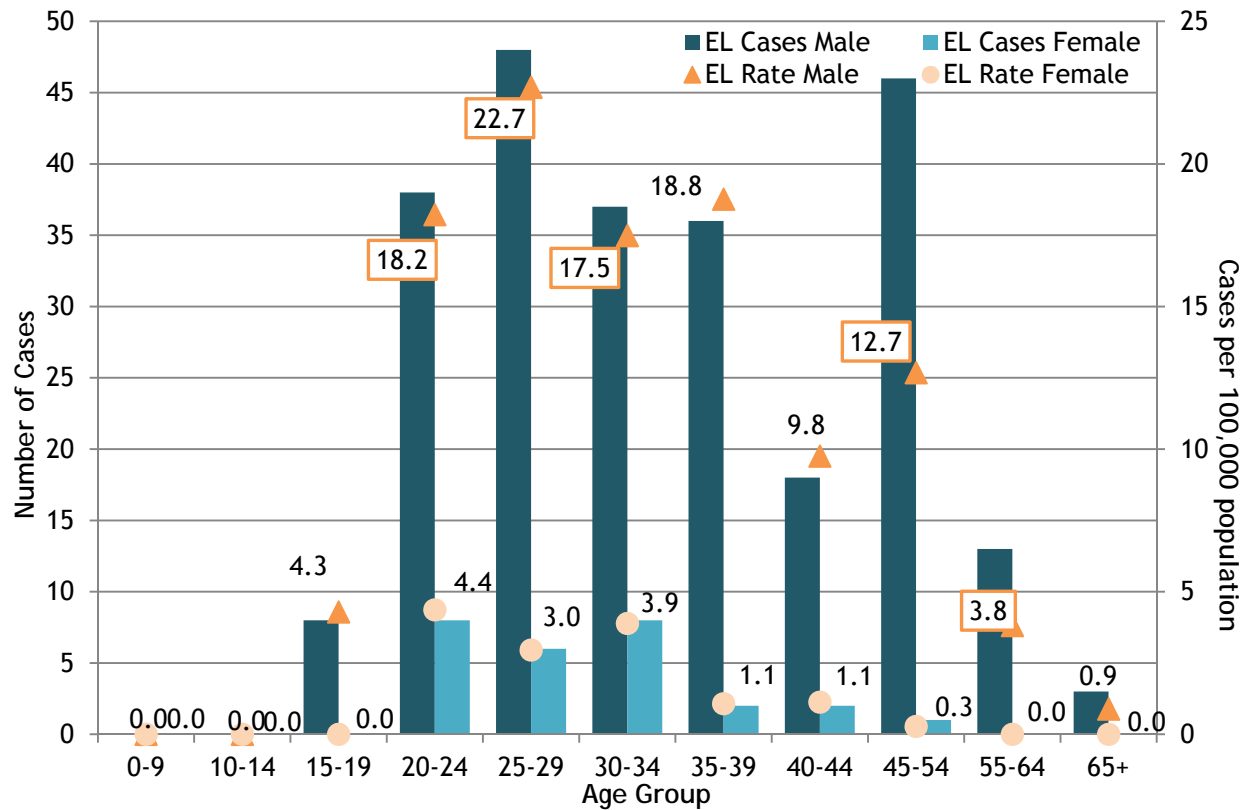


Figure EL.2 shows age and gender case counts for early latent syphilis diagnosed in 2016. The mean age at diagnosis is 35.5 with a range of 17 to 67 years of age. The highest rates were reported among 25-29 year old males whose infection rate was 22.7 cases per 100,000. In 2016, 17.5 percent of the cases occurred among 25-29 year old males; followed by 20-24 year old males which accounted for 13.9 percent of cases.



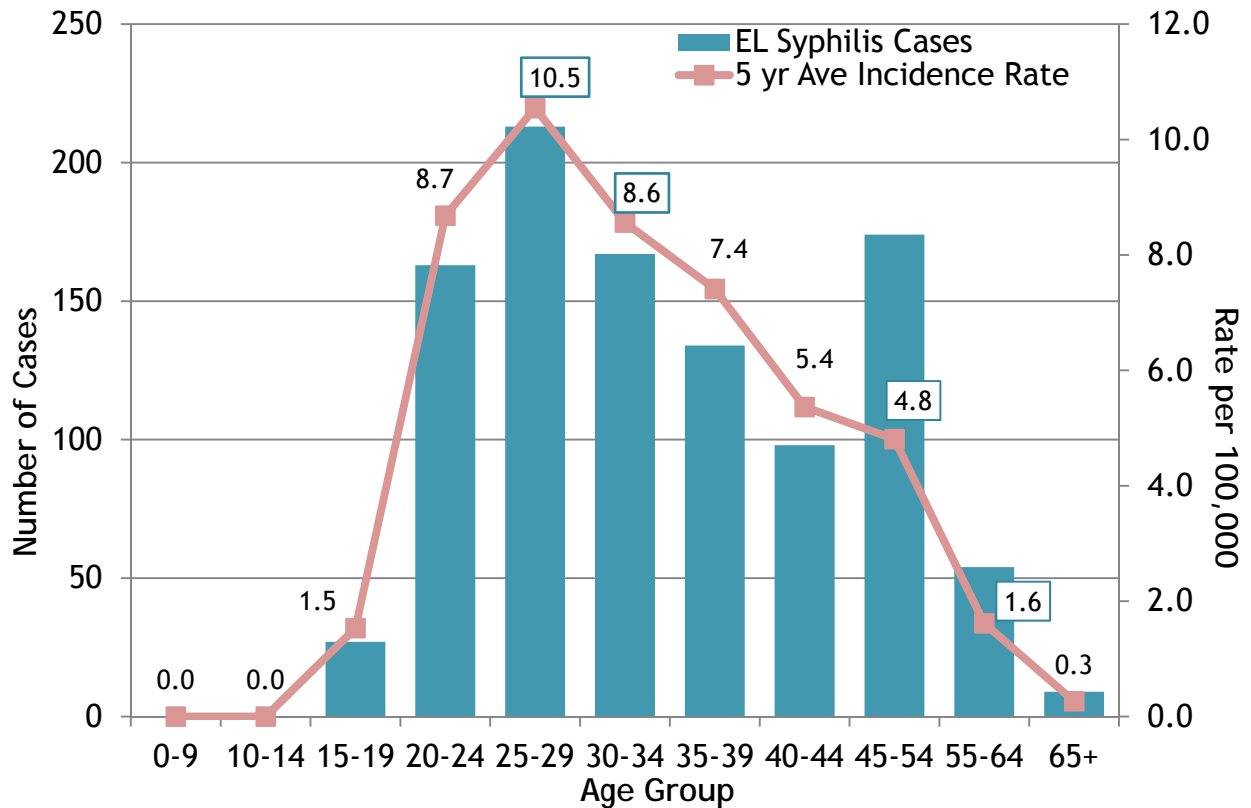
Figure EL.2: Early Latent Syphilis Cases and Rates by Gender and Age Group, Colorado, 2016



Caution: these rates use small numbers and may be unstable.

Figure EL.3 below depicts age group case counts and rates for early latent syphilis diagnosed in 2012-16. This five-year average rate helps to stabilize the rate and thus produces a more accurate representation of the disease.

Figure EL.3: Early Latent Syphilis 5-year Cases and Rates by Age Group, Colorado, 2012-2016



More stable than the 1-year incidence rate from Figure 20

Figure EL.4 shows that the highest rate of early latent syphilis is seen among Non Hispanic Blacks, 12.9 per 100,000 in 2016. The highest proportion of early latent is among Non Hispanic Whites, accounting for 47.8 percent, however their infection rate is one of the lowest at 2.8 per 100,000, only higher than Non Hispanic Asian/Pacific Islanders, 1.0 per 100,000.

Figure EL.4: Early Latent Syphilis Incidence Rates by Race/Ethnicity, Colorado, 2016

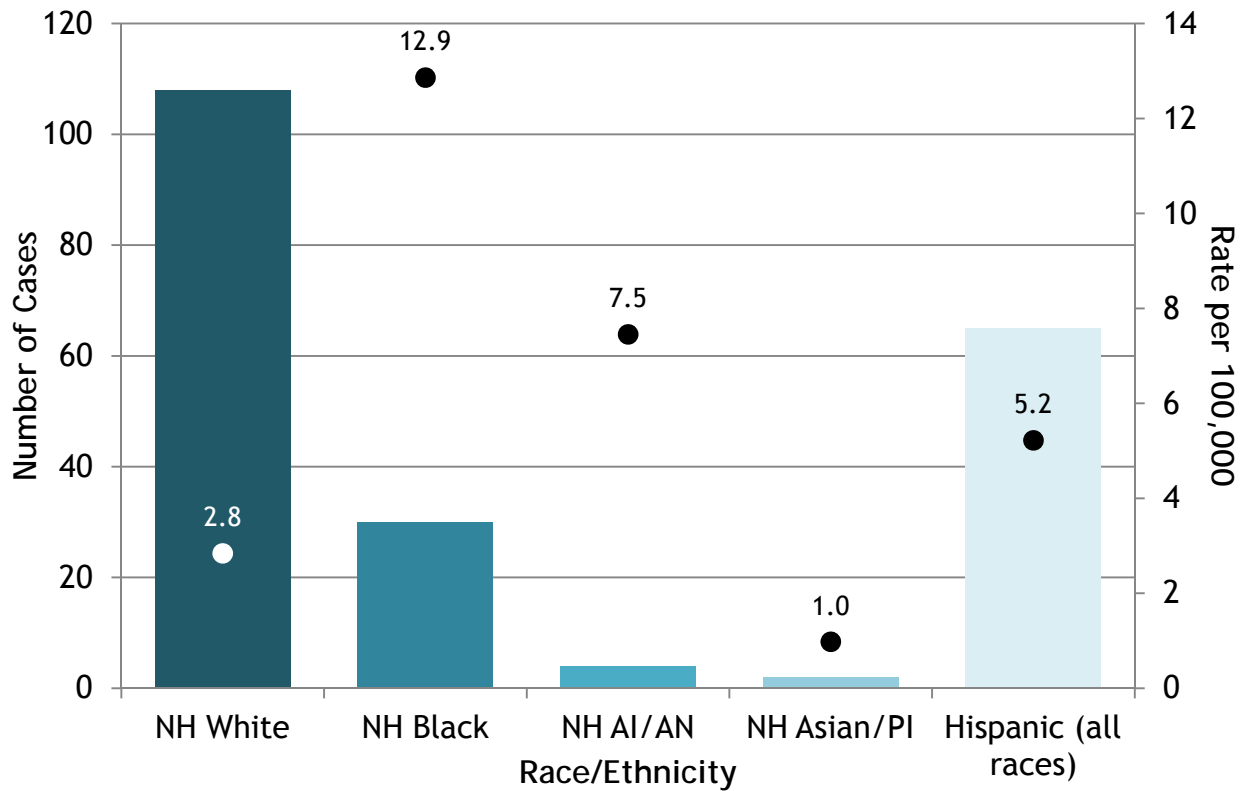
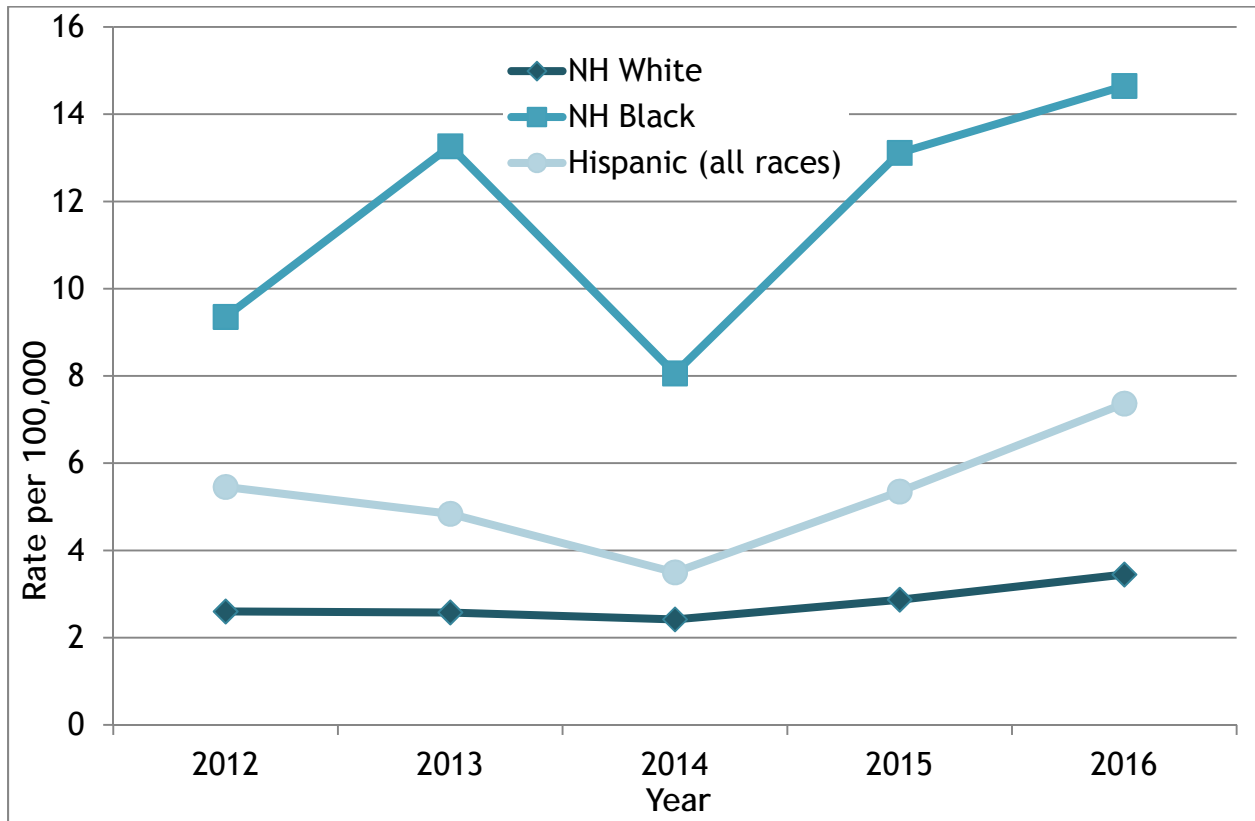


Figure EL.5 shows the 5 year trend in rates for Non Hispanic Whites, Non Hispanic Blacks and Hispanics. Other races were not displayed due to small numbers. The rates have been relatively stable for Non Hispanic Whites. Rates for Non Hispanic Blacks have been unstable, ranging from 8.1 in 2014 to 14.6 in 2016. Rates among Hispanics were decreasing through 2014, then increased in both 2015 & 2016.

Figure EL.5: Early Latent Syphilis Infection Rates by Race/Ethnicity, Colorado, 2012-2016



Figures EL.6 & EL.7 describe the geographical distribution of early latent syphilis incidence rates for Colorado at the county level. The map shows early latent syphilis infections have been diagnosed in residents of 18 of 64 counties with Denver County reporting the highest proportion and highest rate of cases, 47.5 percent and 18.8 per 100,000 population in 2016. The next highest rates are in Clear Creek and Rio Grande Counties (Table 1). However, the Clear Creek and Rio Grande rates were produced from one or two cases and are not reliable. Use caution when interpreting some of these rates as the county may have a small population and small case numbers.

Figure EL.6: Early Latent Syphilis Incidence Rate by County Map, Colorado, 2016

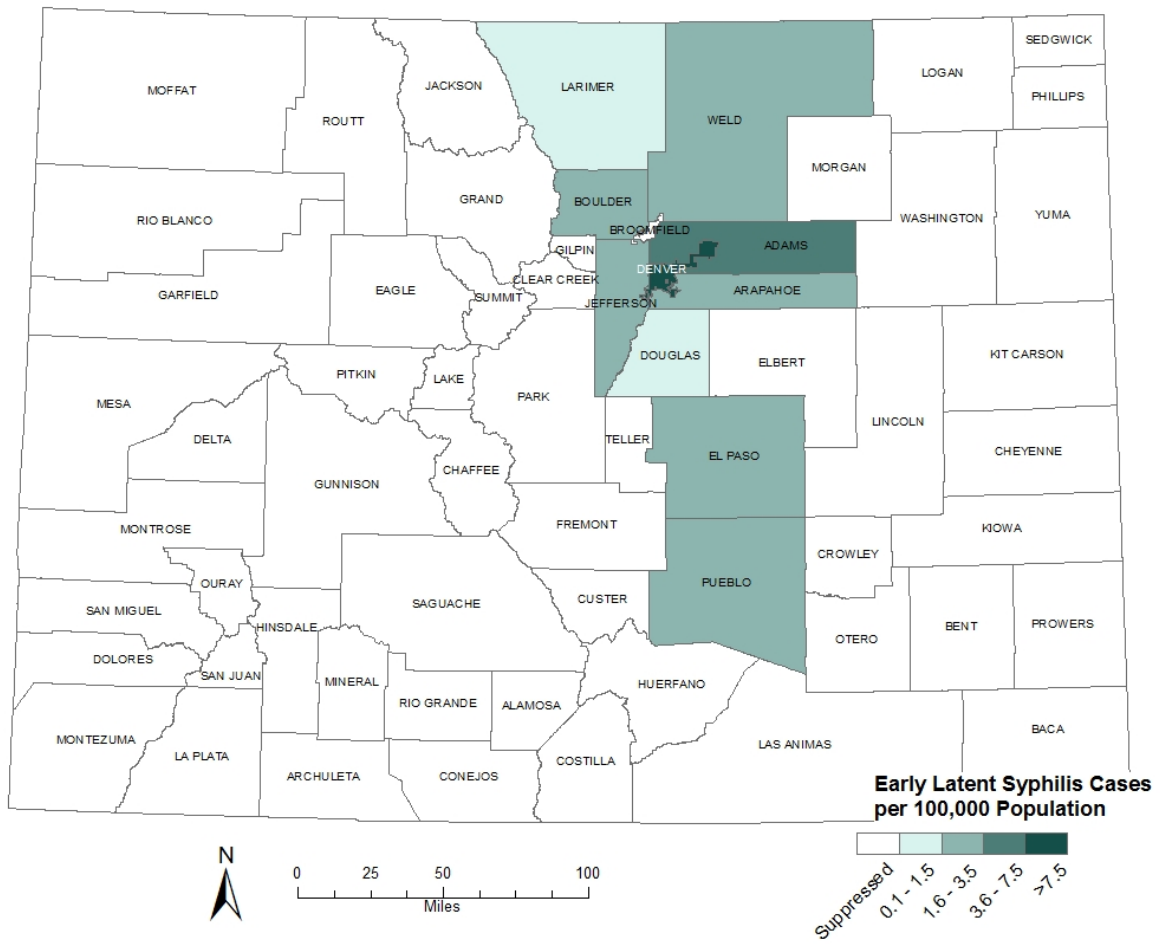


Figure EL.7: Early Latent Syphilis Incidence Rates by County Chart, Colorado, 2016

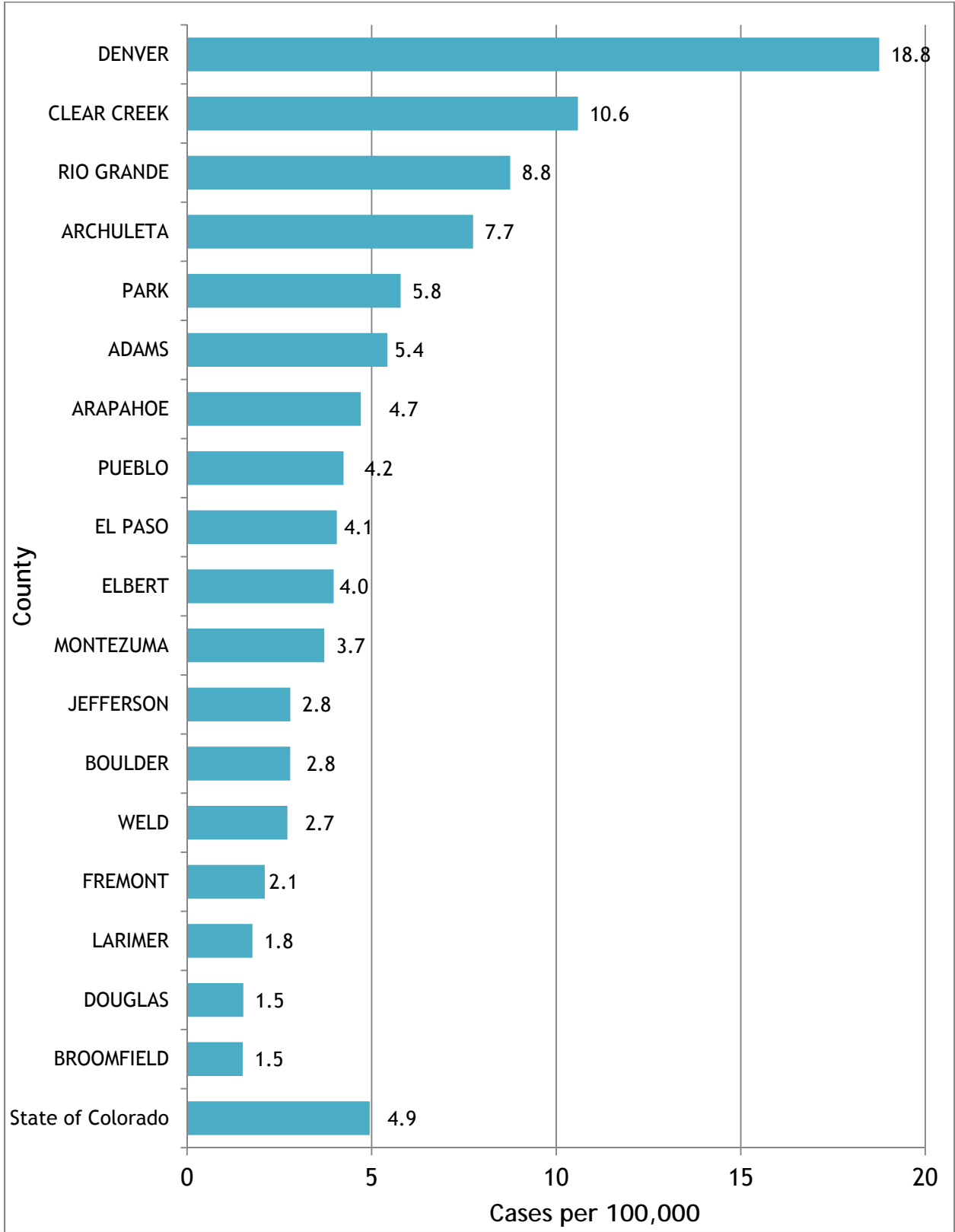
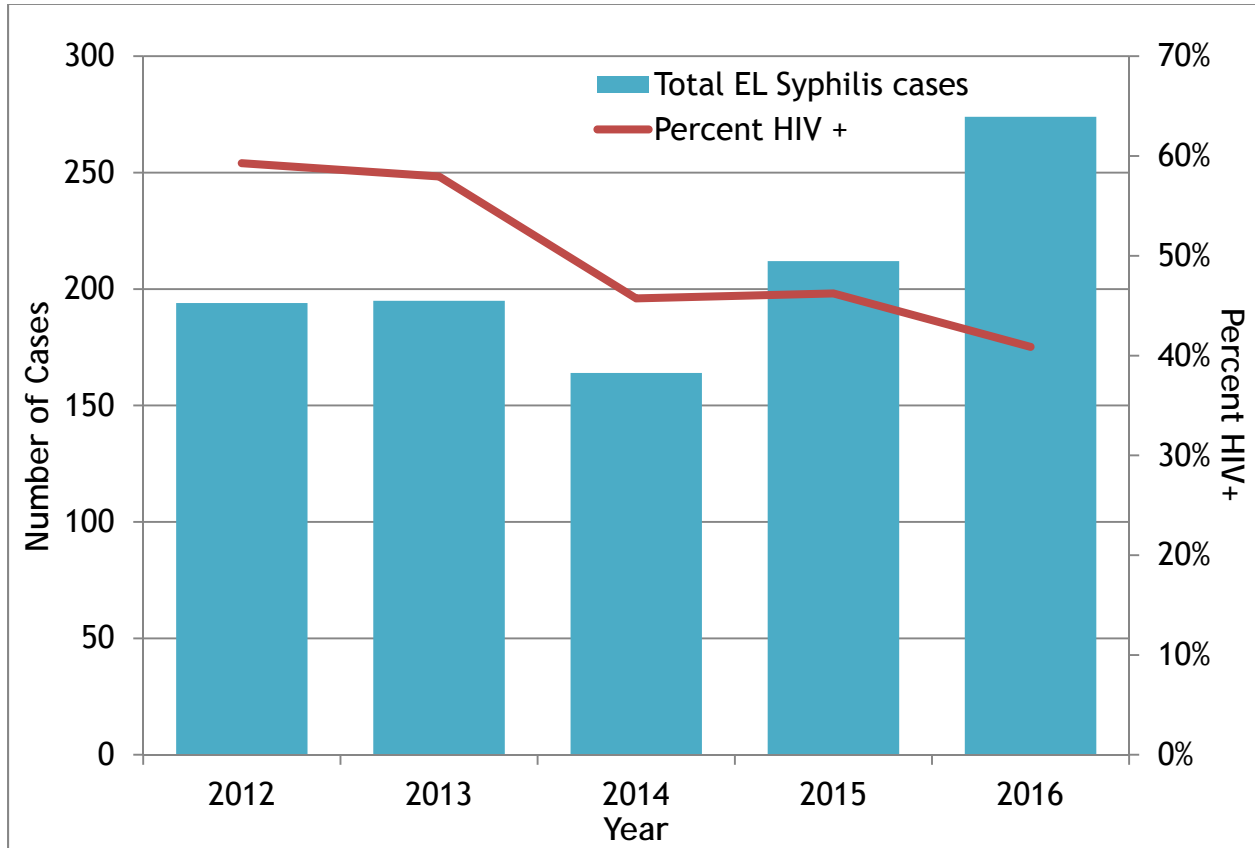


Figure EL.8 shows the rate of early latent syphilis and HIV co-infections for 2012-2016. The co-infection rate has ranged from 59.3 percent in 2012 to 40.9 percent in 2016. The five-year average for early latent syphilis and HIV co-infections is 49.4 percent.

Figure EL.8: Early Latent Syphilis Cases and Percent HIV+ by Year of Diagnosis, Colorado, 2012-2016



## Congenital Syphilis

The first case of a confirmed congenital syphilis, since 2007, occurred in 2016 resulting in a rate of 1.5 per 100,000 live births. Per the CDC case definition, a congenital syphilis case is confirmed through laboratory testing.<sup>8</sup>

2016 is the first year we are including probable congenital syphilis cases in this report. There were 4 cases of probable congenital syphilis. The following table describes the CDC case definition of a probable case.<sup>9</sup>

**Table CS.1: Probable Congenital Syphilis Case Definition**

<p>An infant whose mother had untreated or inadequately* treated syphilis at delivery, regardless of signs in the infant,</p> <p>OR</p> <p>An infant or child who has a reactive non-treponemal test for syphilis</p>
<p><b>AND any of the following:</b></p>
<ul style="list-style-type: none"> <li>• Any evidence of congenital syphilis on physical examination</li> <li>• Any evidence of congenital syphilis on radiographs of long bones</li> <li>• A reactive cerebrospinal fluid (CSF) venereal disease research laboratory (VDRL) test</li> <li>• In a non-traumatic lumbar puncture, an elevated CSF leukocyte (white blood cell, WBC) count or protein (without other cause)</li> </ul>
<p><b>Suggested parameters for abnormal CSF WBC and protein values:</b></p>
<ul style="list-style-type: none"> <li>• During the first 30 days of life, a CSF WBC count of &gt;15 WBC/mm<sup>3</sup> or a CSF protein &gt;120 mg/dL</li> <li>• After the first 30 days of life, a CSF WBC count of &gt;5 WBC/mm<sup>3</sup> or a CSF protein &gt;40 mg/dL, regardless of CSF serology</li> <li>• The treating clinician should be consulted to interpret the CSF values for the specific patient</li> </ul>

\*Defined as completion of a penicillin-based regimen, in accordance with CDC treatment guidelines, appropriate for stage of infection, initiated 30 or more days before delivery.

\*\*Venereal Disease Research Laboratory [VDRL], rapid plasma regain [RPR], or equivalent serologic methods

The U.S. has also seen an increase in cases of congenital syphilis from 12.3 cases per 100,000 live births in 2015 to 15.7 cases per 100,000 live births in 2016.<sup>10</sup>

<sup>8</sup> Centers for Disease Control and Prevention. STD Case Definitions. <https://www.cdc.gov/std/stats/casedefinitions.htm>. Effective January 1, 2015.

<sup>9</sup> Centers for Disease Control and Prevention. STD Case Definitions. <https://www.cdc.gov/std/stats/casedefinitions.htm>. Effective January 1, 2015.

<sup>10</sup> Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2016*. Atlanta: U.S. Department of Health and Human Services; Sept 2017. <http://www.cdc.gov/std/stats>.



## Data Tables

Table 1: Chlamydia, Gonorrhea and Early Syphilis Count and Incidence Rate with Ranking by County & Health Statistics Region (HSR), 2016

	2016 Population†	Chlamydia				Gonorrhea				Primary & Secondary Syphilis				Early Latent Syphilis			
		Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^
Region 1:	71,858	211	293.6	---	14	17	23.7	---	18	1	1.4	---	12	0	0.0	---	16
Logan	22,047	61	276.7	31	---	8	36.3	28	---	0	0.0	23	---	0	0.0	19	---
Morgan	28,148	111	394.3	13	---	6	21.3	39	---	1	3.6	10	---	0	0.0	19	---
Phillips	4,285	7	163.4	49	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Sedgwick	2,421	2	82.6	59	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Washington	4,875	9	184.6	47	---	2	41.0	23	---	0	0.0	23	---	0	0.0	19	---
Yuma	10,082	21	208.3	43	---	1	9.9	47	---	0	0.0	23	---	0	0.0	19	---
Region 2:																	
Larimer	338,663	1,226	362.0	20	11	126	37.2	26	13	4	1.2	20	14	6	1.8	16	13
Region 3:																	
Douglas	328,330	545	166.0	48	19	78	23.8	37	17	4	1.2	20	14	5	1.5	17	14
Region 4:																	
El Paso	690,207	3,742	542.2	6	4	933	135.2	7	4	24	3.5	11	6	28	4.1	9	5
Region 5:																	
Cheyenne	40,215	65	161.6	---	20	6	14.9	---	21	1	2.5	---	8	1	2.5	---	10
Elbert	1,853	9	485.7	9	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Lincoln	25,169	36	143.0	52	---	5	19.9	41	---	1	4.0	9	---	1	4.0	10	---
Kit Carson	7,639	15	196.4	45	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Region 6:																	
Baca	5,554	5	90.0	58	---	1	18.0	42	---	0	0.0	23	---	0	0.0	19	---
Bent	66,599	198	297.3	---	13	50	75.1	---	7	0	0.0	---	18	0	0.0	---	16
Crowley	3,557	2	56.2	62	---	1	28.1	35	---	0	0.0	23	---	0	0.0	19	---
Huerfano	5,626	20	355.5	21	---	8	142.2	6	---	0	0.0	23	---	0	0.0	19	---
Kiowa	5,214	10	191.8	46	---	4	76.7	11	---	0	0.0	23	---	0	0.0	19	---
Las Animas	6,642	16	240.9	36	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Otero	1,347	1	74.2	61	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Prowers	14,082	51	362.2	19	---	6	42.6	22	---	0	0.0	23	---	0	0.0	19	---
Region 7:																	
Pueblo	18,290	65	355.4	22	---	29	158.6	4	---	0	0.0	23	---	0	0.0	19	---
Region 8:																	
Alamosa	11,841	33	278.7	30	---	2	16.9	43	---	0	0.0	23	---	0	0.0	19	---
Conejos	165,109	965	584.5	3	2	369	223.5	2	2	11	6.7	3	2	7	4.2	8	4
Region 8:																	
Alamosa	46,442	187	402.7	---	8	15	32.3	---	15	3	6.5	---	4	1	2.2	---	11
Conejos	16,131	94	582.7	4	---	12	74.4	12	---	1	6.2	5	---	0	0.0	19	---
	8,039	25	311.0	25	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---

	2016 Population†	Chlamydia				Gonorrhea				Primary & Secondary Syphilis				Early Latent Syphilis			
		Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^
Costilla	3,707	13	350.7	23	---	2	54.0	15	---	0	0.0	23	---	0	0.0	19	---
Mineral	737	0	0.0	64	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Rio Grande	11,424	50	437.7	10	---	1	8.8	48	---	2	17.5	1	---	1	8.8	3	---
Saguache	6,404	5	78.1	60	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Region 9:	98,243	437	444.8	---	6	94	95.7	---	6	0	0.0	---	18	2	2.0	---	12
Archuleta	12,907	33	255.7	33	---	6	46.5	21	---	0	0.0	23	---	1	7.7	4	---
Dolores	2,035	11	540.5	7	---	2	98.3	10	---	0	0.0	23	---	0	0.0	19	---
La Plata	55,697	202	362.7	18	---	26	46.7	20	---	0	0.0	23	---	0	0.0	19	---
Montezuma	26,906	189	702.4	2	---	60	223.0	3	---	0	0.0	23	---	1	3.7	11	---
San Juan	698	2	286.5	29	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Region 10:	101,905	289	283.6	---	15	21	20.6	---	19	1	1.0	---	16	0	0.0	---	16
Delta	30,471	66	216.6	39	---	10	32.8	30	---	1	3.3	13	---	0	0.0	19	---
Gunnison	16,394	50	305.0	26	---	2	12.2	45	---	0	0.0	23	---	0	0.0	19	---
Hinsdale	775	1	129.0	53	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Montrose	41,421	151	364.5	16	---	9	21.7	38	---	0	0.0	23	---	0	0.0	19	---
Ouray	4,844	1	20.6	63	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
San Miguel	8,000	20	250.0	35	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Region 11:	45,615	98	214.8	---	16	9	19.7	---	20	0	0.0	---	18	0	0.0	---	16
Jackson	1,351	2	148.0	50	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Moffat	13,088	29	221.6	38	---	2	15.3	44	---	0	0.0	23	---	0	0.0	19	---
Rio Blanco	6,497	14	215.5	40	---	2	30.8	33	---	0	0.0	23	---	0	0.0	19	---
Routt	24,679	53	214.8	41	---	5	20.3	40	---	0	0.0	23	---	0	0.0	19	---
Region 12:	176,091	597	339.0	---	12	51	29.0	---	16	5	2.8	---	7	0	0.0	---	16
Eagle	53,928	159	294.8	27	---	16	29.7	34	---	1	1.9	17	---	0	0.0	19	---
Garfield	58,984	236	400.1	12	---	19	32.2	31	---	2	3.4	12	---	0	0.0	19	---
Grand	15,039	38	252.7	34	---	1	6.6	49	---	0	0.0	23	---	0	0.0	19	---
Pitkin	17,773	48	270.1	32	---	5	28.1	35	---	1	5.6	7	---	0	0.0	19	---
Summit	30,367	116	382.0	15	---	10	32.9	29	---	1	3.3	13	---	0	0.0	19	---
Region 13:	78,796	154	195.4	---	18	31	39.3	---	12	0	0.0	---	18	1	1.3	---	15
Chaffee	19,097	28	146.6	51	---	7	36.7	27	---	0	0.0	23	---	0	0.0	19	---
Custer	4,617	5	108.3	56	---	0	0.0	50	---	0	0.0	23	---	0	0.0	19	---
Fremont	47,487	99	208.5	42	---	15	31.6	32	---	0	0.0	23	---	1	2.1	15	---
Lake	7,595	22	289.7	28	---	9	118.5	8	---	0	0.0	23	---	0	0.0	19	---
Region 14: Adams	497,673	2,511	504.5	8	5	516	103.7	9	5	22	4.4	8	5	27	5.4	6	2
Region 15: Arapahoe	637,254	3,472	544.8	5	3	951	149.2	5	3	43	6.7	3	2	30	4.7	7	3

	2016 Population†	Chlamydia				Gonorrhea				Primary & Secondary Syphilis				Early Latent Syphilis			
		Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^	Cases	Rate	County Rank*	HSR Rank ^
Region 16:	388,241	1,452	374.0	---	9	217	55.9	---	8	8	2.1	---	9	10	2.6	---	9
Boulder	321,989	1,241	385.4	14	---	173	53.7	16	---	7	2.2	15	---	9	2.8	12	---
Broomfield	66,252	211	318.5	24	---	44	66.4	13	---	1	1.5	18	---	1	1.5	17	---
Region 17:	56,808	75	132.0	---	21	19	33.4	---	14	1	1.8	---	11	2	3.5	---	6
Clear Creek	9,443	21	222.4	37	---	5	52.9	17	---	0	0.0	23	---	1	10.6	2	---
Gilpin	5,926	7	118.1	55	---	3	50.6	18	---	0	0.0	23	---	0	0.0	19	---
Park	17,285	18	104.1	57	---	2	11.6	46	---	1	5.8	6	---	1	5.8	5	---
Teller	24,154	29	120.1	54	---	9	37.3	25	---	0	0.0	23	---	0	0.0	19	---
Region 18: Weld	294,397	1,275	433.1	11	7	162	55.0	14	9	6	2.0	16	10	8	2.7	14	8
Region 19: Mesa	150,731	548	363.6	17	10	61	40.5	24	11	1	0.7	22	17	0	0.0	19	16
Region 20: Denver	693,292	6,300	908.7	1	1	1,975	284.9	1	1	107	15.4	2	1	130	18.8	1	1
Region 21: Jefferson	571,711	1,161	203.1	44	17	269	47.1	19	10	8	1.4	19	12	16	2.8	12	7
Unknown	---	61	---	---	---	5	---	---	---	0	---	---	---	0	---	---	---
STATEWIDE TOTAL	5,538,180	25,569	461.7	---	---	5,975	107.9	---	---	250	4.5	---	---	274	4.9	---	---

\*Rate per 100,000 population

§Counties ranked by STI incidence rate per 100,000 population

^Health Statistics Regions ranked by STI incidence rate per 100,000 population

†2016 population estimate from the Colorado State Demography Office (SDO)

All STI surveillance data reported to the Colorado Department of Public Health and Environment for the year of 2016.

Table 2: Chlamydia, Gonorrhea and Early Syphilis Cases Diagnosed by Demographic Characteristics, 2016

	2016 Population*	Chlamydia			Gonorrhea			Primary & Secondary Syphilis			Early Latent Syphilis		
		Cases	%	Rate†	Cases	%	Rate†	Cases	%	Rate†	Cases	%	Rate†
<b>Total</b>	5,538,180	25,569	100.0	461.7	5,975	100.0	107.9	250	100.0	4.5	274	100.0	4.9
<b>Gender</b>													
Male	2,772,815	8,624	33.7	311.0	3,652	61.1	131.7	234	93.6	8.4	247	90.1	8.9
Female	2,765,365	16,945	66.3	612.8	2,323	38.9	84.0	16	6.4	0.6	27	9.9	1.0
<b>Race/Ethnicity</b>													
Hispanic (all races)	1,245,070	5,038	19.7	404.6	1,397	23.4	112.2	81	32.4	6.5	92	33.6	7.4
NH White	3,801,821	5,996	23.5	157.7	1,700	28.5	44.7	136	54.4	3.6	131	47.8	3.4
NH Black	233,272	1,872	7.3	802.5	849	14.2	364.0	17	6.8	7.3	34	12.4	14.6
NH NA/AN	53,669	194	0.8	361.5	75	1.3	139.7	0	0.0	0.0	1	0.4	1.9
NH Asian/PI	204,348	265	1.0	129.7	56	0.9	27.4	3	1.2	1.5	4	1.5	2.0
NH Other	---	380	1.5	---	97	1.6	---	4	1.6	---	4	1.5	---
Unknown	---	11,824	46.2	---	1,801	30.1	---	9	3.6	---	8	2.9	---
<b>Age Group</b>													
0 to 9	682,127	6	0.0	0.9	1	0.0	0.1	0	0.0	0.0	0	0.0	0.0
10 to 14	364,030	131	0.5	36.0	30	0.5	8.2	0	0.0	0.0	0	0.0	0.0
15 to 19	363,275	5,967	23.3	1642.6	902	15.1	248.3	6	2.4	1.7	8	2.9	2.2
20 to 24	391,924	9,387	36.7	2395.1	1,596	26.7	407.2	30	12.0	7.7	46	16.8	11.7
25 to 29	414,616	5,198	20.3	1253.7	1,339	22.4	322.9	63	25.2	15.2	54	19.7	13.0
30 to 34	417,484	2,387	9.3	571.8	838	14.0	200.7	35	14.0	8.4	45	16.4	10.8
35 to 39	377,973	1,192	4.7	315.4	485	8.1	128.3	36	14.4	9.5	38	13.9	10.1
40 to 44	361,978	592	2.3	163.5	289	4.8	79.8	24	9.6	6.6	20	7.3	5.5
45 to 54	723,614	544	2.1	75.2	384	6.4	53.1	45	18.0	6.2	47	17.2	6.5
55 to 64	697,001	134	0.5	19.2	95	1.6	13.6	11	4.4	1.6	13	4.7	1.9
65+	744,159	29	0.1	3.9	16	0.3	2.2	0	0.0	0.0	3	1.1	0.4
Unknown	---	2	0.0	---	0	0.0	---	0	0.0	---	0	0.0	---

†2016 SDO Population Estimate      \*Rate per 100,000 population

Table 3: Chlamydia Demographic Characteristics by Gender, 2016

	Chlamydia											
	Male				Female				Total			
	2016 Population^	Cases	%	Rate†	2016 Population^	Cases	%	Rate†	2016 Population^	Cases	%	Rate†
<b>Total</b>	2,772,815	8,624	100.0	311.0	2,765,365	16,945	100.0	612.8	5,538,180	25,569	100.0	461.7
<b>Race/Ethnicity</b>												
Hispanic (all races)	625,396	1,363	15.8	217.9	619,674	3,675	21.7	593.1	1,245,070	5,038	19.7	404.6
NH White	1,903,953	2,348	27.2	123.3	1,897,868	3,648	21.5	192.2	3,801,821	5,996	23.5	157.7
NH Black	123,034	845	9.8	686.8	110,238	1,027	6.1	931.6	233,272	1,872	7.3	802.5
NH NA/AN	26,977	70	0.8	259.5	26,692	124	0.7	464.6	53,669	194	0.8	361.5
NH Asian/PI	93,455	73	0.8	78.1	110,893	192	1.1	173.1	204,348	265	1.0	129.7
NH Other	---	90	1.0	---	---	290	1.7	---	---	380	1.5	---
Unknown	---	3,835	44.5	---	---	7,989	47.1	---	---	11,824	46.2	---
<b>Age Group</b>												
0 to 9	348,881	3	0.0	0.9	333,245	3	0.0	0.9	682,126	6	0.0	0.9
10 to 14	185,893	18	0.2	9.7	178,138	113	0.7	63.4	364,031	131	0.5	36.0
15 to 19	186,593	1,272	14.7	681.7	176,682	4,695	27.7	2657.3	363,275	5,967	23.3	1642.6
20 to 24	208,585	2,851	33.1	1366.8	183,339	6,536	38.6	3565.0	391,924	9,387	36.7	2395.1
25 to 29	211,578	2,096	24.3	990.7	203,039	3,102	18.3	1527.8	414,617	5,198	20.3	1253.7
30 to 34	211,651	1,061	12.3	501.3	205,833	1,326	7.8	644.2	417,484	2,387	9.3	571.8
35 to 39	191,880	588	6.8	306.4	186,093	604	3.6	324.6	377,973	1,192	4.7	315.4
40 to 44	184,529	301	3.5	163.1	177,450	291	1.7	164.0	361,979	592	2.3	163.5
45 to 54	362,828	321	3.7	88.5	360,786	223	1.3	61.8	723,614	544	2.1	75.2
55 to 64	340,861	92	1.1	27.0	356,140	42	0.2	11.8	697,001	134	0.5	19.2
65+	339,537	20	0.2	5.9	404,622	9	0.1	2.2	744,159	29	0.1	3.9
Unknown	---	1	0.0	---	---	1	0.0	---	---	2	0.0	---

†2016 SDO Population Estimate      \*Rate per 100,000 population

Table 4: Gonorrhea Demographic Characteristics by Gender, 2016

	Gonorrhea											
	Male				Female				Total			
	2016 Population ^	Cases	%	Rate†	2016 Population ^	Cases	%	Rate†	2016 Population ^	Cases	%	Rate†
<b>Total</b>	2,772,815	3,652	100.0	131.7	2,765,365	2,323	100.0	84.0	5,538,180	5,975	100.0	107.9
<b>Race/Ethnicity</b>												
Hispanic (all races)	625,396	761	20.8	121.7	619,674	636	27.4	102.6	1,245,070	1,397	23.4	112.2
NH White	1,903,953	1,173	32.1	61.6	1,897,868	527	22.7	27.8	3,801,821	1,700	28.5	44.7
NH Black	123,034	509	13.9	413.7	110,238	340	14.6	308.4	233,272	849	14.2	364.0
NH NA/AN	26,977	49	1.3	181.6	26,692	26	1.1	97.4	53,669	75	1.3	139.7
NH Asian/PI	93,455	32	0.9	34.2	110,893	24	1.0	21.6	204,348	56	0.9	27.4
NH Other	---	39	1.1	---	---	58	2.5	---	0	97	1.6	---
Unknown	---	1,089	29.8	---	---	712	30.7	---	---	1,801	30.1	---
<b>Age Group</b>												
0 to 9	348,881	0	0.0	0.0	333,245	1	0.0	0.3	682,126	1	0.0	0.1
10 to 14	185,893	2	0.1	1.1	178,138	28	1.2	15.7	364,031	30	0.5	8.2
15 to 19	186,593	328	9.0	175.8	176,682	574	24.7	324.9	363,275	902	15.1	248.3
20 to 24	208,585	908	24.9	435.3	183,339	688	29.6	375.3	391,924	1,596	26.7	407.2
25 to 29	211,578	886	24.3	418.8	203,039	453	19.5	223.1	414,617	1,339	22.4	322.9
30 to 34	211,651	570	15.6	269.3	205,833	268	11.5	130.2	417,484	838	14.0	200.7
35 to 39	191,880	361	9.9	188.1	186,093	124	5.3	66.6	377,973	485	8.1	128.3
40 to 44	184,529	204	5.6	110.6	177,450	85	3.7	47.9	361,979	289	4.8	79.8
45 to 54	362,828	297	8.1	81.9	360,786	87	3.7	24.1	723,614	384	6.4	53.1
55 to 64	340,861	81	2.2	23.8	356,140	14	0.6	3.9	697,001	95	1.6	13.6
65+	339,537	15	0.4	4.4	404,622	1	0.0	0.2	744,159	16	0.3	2.2
Unknown	---	0	0.0	---	---	0	0.0	---	---	0	0.0	---

†2016 SDO Population Estimate      \*Rate per 100,000 population

Table 5: Primary & Secondary Syphilis Demographic Characteristics by Gender, 2016

	Primary and Secondary Syphilis											
	Male				Female				Total			
	2016 Population ^	Cases	%	Rate†	2016 Population ^	Cases	%	Rate†	2016 Population ^	Cases	%	Rate†
<b>Total</b>	2,772,815	234	100.0	8.4	2,765,365	16	100.0	0.6	5,538,180	250	100.0	4.5
<b>Race/Ethnicity</b>												
Hispanic (all races)	625,396	75	32.1	12.0	619,674	6	37.5	1.0	1,245,070	81	32.4	6.5
NH White	1,903,953	129	55.1	6.8	1,897,868	7	43.8	0.4	3,801,821	136	54.4	3.6
NH Black	123,034	16	6.8	13.0	110,238	1	6.3	0.9	233,272	17	6.8	7.3
NH NA/AN	26,977	0	0.0	0.0	26,692	0	0.0	0.0	53,669	0	0.0	0.0
NH Asian/PI	93,455	3	1.3	3.2	110,893	0	0.0	0.0	204,348	3	1.2	1.5
NH Other	---	4	1.7	---	---	0	0.0	---	0	4	1.6	---
Unknown	---	7	3.0	---	---	2	12.5	---	---	9	3.6	---
<b>Age Group</b>												
0 to 9	348,881	0	0.0	0.0	333,245	0	0.0	0.0	682,126	0	0.0	0.0
10 to 14	185,893	0	0.0	0.0	178,138	0	0.0	0.0	364,031	0	0.0	0.0
15 to 19	186,593	4	1.7	2.1	176,682	2	12.5	1.1	363,275	6	2.4	1.7
20 to 24	208,585	29	12.4	13.9	183,339	1	6.3	0.5	391,924	30	12.0	7.7
25 to 29	211,578	60	25.6	28.4	203,039	3	18.8	1.5	414,617	63	25.2	15.2
30 to 34	211,651	31	13.2	14.6	205,833	4	25.0	1.9	417,484	35	14.0	8.4
35 to 39	191,880	34	14.5	17.7	186,093	2	12.5	1.1	377,973	36	14.4	9.5
40 to 44	184,529	23	9.8	12.5	177,450	1	6.3	0.6	361,979	24	9.6	6.6
45 to 54	362,828	43	18.4	11.9	360,786	2	12.5	0.6	723,614	45	18.0	6.2
55 to 64	340,861	10	4.3	2.9	356,140	1	6.3	0.3	697,001	11	4.4	1.6
65+	339,537	0	0.0	0.0	404,622	0	0.0	0.0	744,159	0	0.0	0.0
Unknown	---	0	0.0	---	---	0	0.0	---	---	0	0.0	---

†2016 SDO Population Estimate      \*Rate per 100,000 population

Table 6: Early Latent Syphilis Demographic Characteristics by Gender, 2016

	Early Latent Syphilis											
	Male				Female				Total			
	2016 Population ^	Cases	%	Rate†	2016 Population ^	Cases	%	Rate†	2016 Population ^	Cases	%	Rate†
<b>Total</b>	2,772,815	247	100.0	8.9	2,765,365	27	100.0	1.0	5,538,180	274	100.0	4.9
<b>Race/Ethnicity</b>												
Hispanic (all races)	625,396	84	34.0	13.4	619,674	8	29.6	1.3	1,245,070	92	33.6	7.4
NH White	1,903,953	121	49.0	6.4	1,897,868	10	37.0	0.5	3,801,821	131	47.8	3.4
NH Black	123,034	30	12.1	24.4	110,238	4	14.8	3.6	233,272	34	12.4	14.6
NH NA/AN	26,977	1	0.4	3.7	26,692	0	0.0	0.0	53,669	1	0.4	1.9
NH Asian/PI	93,455	3	1.2	3.2	110,893	1	3.7	0.9	204,348	4	1.5	2.0
NH Other	---	3	1.2	---	---	1	3.7	---	0	4	1.5	---
Unknown	---	5	2.0	---	---	3	11.1	---	---	8	2.9	---
<b>Age Group</b>												
0 to 9	348,881	0	0.0	0.0	333,245	0	0.0	0.0	682,126	0	0.0	0.0
10 to 14	185,893	0	0.0	0.0	178,138	0	0.0	0.0	364,031	0	0.0	0.0
15 to 19	186,593	8	3.2	4.3	176,682	0	0.0	0.0	363,275	8	2.9	2.2
20 to 24	208,585	38	15.4	18.2	183,339	8	29.6	4.4	391,924	46	16.8	11.7
25 to 29	211,578	48	19.4	22.7	203,039	6	22.2	3.0	414,617	54	19.7	13.0
30 to 34	211,651	37	15.0	17.5	205,833	8	29.6	3.9	417,484	45	16.4	10.8
35 to 39	191,880	36	14.6	18.8	186,093	2	7.4	1.1	377,973	38	13.9	10.1
40 to 44	184,529	18	7.3	9.8	177,450	2	7.4	1.1	361,979	20	7.3	5.5
45 to 54	362,828	46	18.6	12.7	360,786	1	3.7	0.3	723,614	47	17.2	6.5
55 to 64	340,861	13	5.3	3.8	356,140	0	0.0	0.0	697,001	13	4.7	1.9
65+	339,537	3	1.2	0.9	404,622	0	0.0	0.0	744,159	3	1.1	0.4
Unknown	---	0	0.0	---	---	0	0.0	---	---	0	0.0	---

†2016 SDO Population Estimate      \*Rate per 100,000 population