SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

INTEGRATED SURVEILLANCE REPORT FOR COMMUNICABLE DISEASES

2014

POPULATION HEALTH DIVISION
SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH
APPLIED RESEARCH, COMMUNITY HEALTH EPIDEMIOLOGY, & SURVEILLANCE

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Cover photo by Frank Schulenburg.

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1. Human Immunodeficiency Virus (HIV)

15,979
San Francisco residents living with HIV

13%
Proportion of CA's living HIV cases residing in SF at time of diagnosis

2%
Proportion of national living HIV cases residing in SF at time of diagnosis

As of December 31, 2014, there were 15,979 San Francisco residents diagnosed with HIV infection who were alive (Table 1.1). These persons comprised 13% of California's living HIV cases and 2% of persons living with HIV (PLWH) reported nationally. Compared to cases reported in California and the United States, San Francisco living HIV cases were more likely to be male and white, and to occur among men who have sex with men (MSM), including MSM who also inject drugs intravenously (MSM-PWID).

Compared to all living HIV cases in San Francisco, newly diagnosed HIV cases in San Francisco had a similar gender distribution, a greater proportion of Latinos and Asian/Pacific Islanders, and a smaller proportion of MSM-PWID. Compared to newly diagnosed national HIV cases, newly diagnosed San Francisco cases were more likely to be male, white, and MSM. The number of newly diagnosed HIV cases may be revised upward in future reports due to reporting delay.

Table 1.1 Characteristics of living HIV cases and newly diagnosed HIV cases in San Francisco, California and the United States

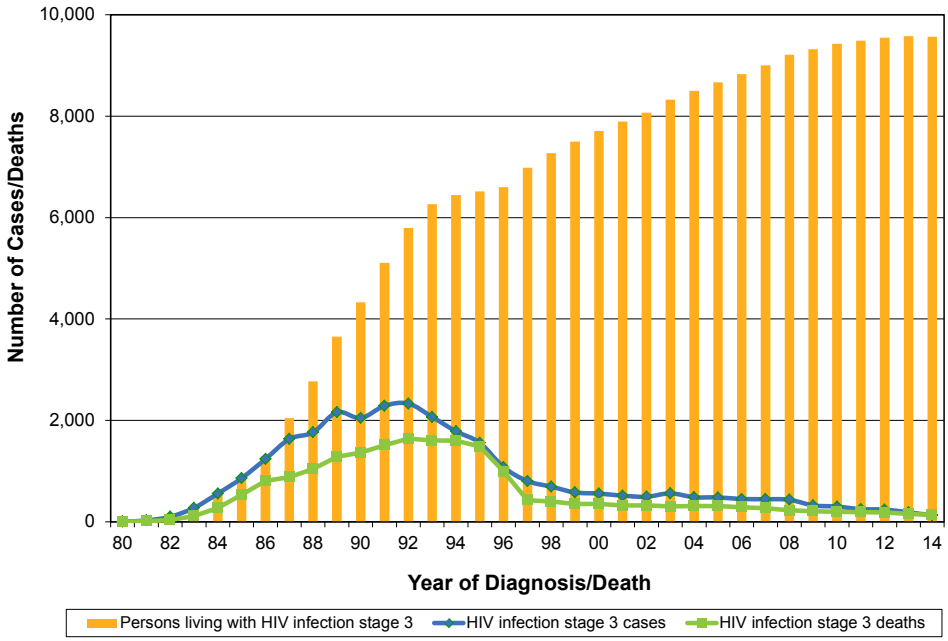
	Living HIV Cases			Newly Diagnosed HIV Cases	
	San Francisco[1] (N = 15,979) %	California[2] (N = 119,878) %	United States[3] (N = 929,646) %	San Francisco[1], 2014 (N = 302) %	United States[3], 2013 (N = 42,018) %
Gender					
Male	92%	87%	75%	93%	80%
Female	6%	12%	25%	5%	20%
Transgender[4]	2%	1%	--	2%	--
Race/Ethnicity					
White	61%	43%	33%	45%	28%
African American	13%	18%	43%	11%	45%
Latino	18%	33%	20%	27%	23%
Asian/Pacific Islander	6%	4%	1%	13%	2%
Native American	1%	<1%	<1%	<1%	<1%
Other/Unknown	2%	2%	2%	4%	2%
Transmission Category					
MSM	74%	66%	43%	75%	52%
PWID	6%	7%	13%	6%	4%
MSM-PWID	15%	8%	5%	11%	2%
Heterosexual	3%	9%	19%	3%	11%
Other/Unidentified	2%	10%	20%	5%	31%

1 San Francisco data are reported through April 10, 2015 for cases diagnosed through December 31, 2014.
2 California data are reported through December 2014, for cases living as of December 31, 2013.
3 U.S. data are reported through June 30, 2014 and reflect cases diagnosed through December 31, 2013. U.S. data reflect unadjusted numbers for 50 states and 6 dependent areas and may be found in the CDC HIV Surveillance Report, 2013; vol. 25. http://www.cdc.gov/hiv/library/reports/surveillance/. Published February 2015.
4 Transgender data are not reported by the United States. See Technical Notes "Transgender Status."

HIV infection stage 3 (AIDS) cases diagnosed each year among San Francisco residents reached a peak of 2,332 cases in 1992 and declined since then (Figure 1.1). Deaths among HIV infection stage 3 (AIDS) cases decreased dramatically beginning in 1995 due to the impact of combination antiretroviral therapies (ART). From 1999 and on, both cases and deaths have shown slight declines. However, reporting delays affect the numbers for recent years (2013 and 2014). The definition of HIV infection stage 3 (AIDS) cases was updated in 2014, and the case definition is applied to cases diagnosed in 2014 and onward (see Technical Notes "Stage of Disease at Diagnosis of HIV Infection"). The decrease in 2014 diagnosed stage 3 (AIDS) cases may be attributed in part to the updated case definition.

The number of San Franciscans living with HIV infection stage 3 (AIDS) has continued to rise since 1980 through 2013. This is due to effective ART and a lower number of deaths than new cases each year. In 2014, number of deaths in stage 3 (AIDS) cases was similar to number of stage 3 (AIDS) diagnoses. There were 9,567 San Francisco residents living with HIV infection stage 3 (AIDS) by the end of 2014.

Figure 1.1 HIV infection stage 3 (AIDS) cases, deaths, and prevalence, 1980-2014, San Francisco



Year	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
HIV infection stage 3 cases	2	26	99	274	557	860	1237	1632	1764	2160	2046	2287
HIV infection stage 3 deaths	0	8	32	111	273	534	807	878	1040	1279	1364	1512
Persons living with HIV infection stage 3	2	20	87	250	534	860	1290	2044	2768	3649	4331	5106

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
HIV infection stage 3 cases	2332	2068	1784	1558	1077	804	693	579	557	515	494	561
HIV infection stage 3 deaths	1641	1603	1601	1485	993	424	402	353	350	324	323	303
Persons living with HIV infection stage 3	5797	6262	6445	6518	6602	6982	7273	7499	7706	7897	8068	8326

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
HIV infection stage 3 cases	485	481	449	446	434	324	299	250	241	185	128
HIV infection stage 3 deaths	310	312	289	271	229	211	195	188	183	154	139
Persons living with HIV infection stage 3	8501	8670	8830	9005	9210	9323	9427	9489	9547	9578	9567

302

NEW HIV CASES DIAGNOSED IN SF, 2014

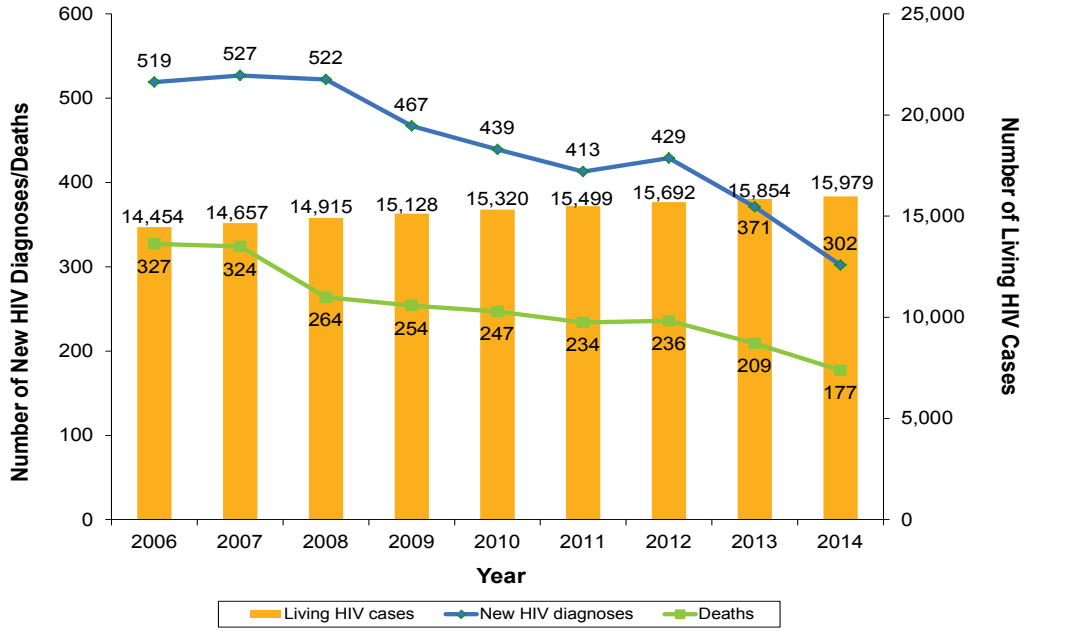
Figure 1.2 illustrates the number of persons newly diagnosed with HIV infection (green line), number of deaths each year (blue line), and number of PLWH between 2006 and 2014 (yellow bars). The number of new HIV diagnoses shown by year includes persons who were diagnosed with HIV in that year, persons initially diagnosed with HIV infection Stage 3 (AIDS), and persons initially diagnosed with HIV (stage 0, 1, 2, unknown) and developed stage 3 in a later year.

The number of new HIV diagnoses declined between 2007 and 2011, stabilized in 2012, and continued to decline through 2014.

The number of deaths was steady from 2006 to 2007, declined through 2011 and then remained level in 2012. Death reporting for 2013 and 2014 is not complete. Also for recent years, the number of cases diagnosed may be underestimated due to reporting delays.

The number of living cases by year includes persons who were diagnosed with HIV during or prior to the year shown and not known to have died by the end of that year. PLWH increased from 14,454 in 2006 to 15,979 in 2014. The increasing number of living cases is a reflection of a steady addition of newly diagnosed cases over time coupled with a decline in deaths in each year. These data only include persons who have been diagnosed and reported to the health department. HIV-infected persons who are unaware of their infection and persons diagnosed with an anonymous HIV test are not included unless they also tested confidentially or entered care in San Francisco. These figures therefore may underestimate the true prevalence and incidence of HIV in the city.

Figure 1.2 New HIV diagnoses[1], deaths, and prevalence, 2006-2014, San Francisco



1 See Technical Notes "Date of Initial HIV Diagnosis."

Table 1.2 shows the characteristics of persons diagnosed with HIV between 2006 and 2014. The majority were male, white, age 30-49 years, and MSM. Trends in race/ethnicity distributions show small increases in proportions of Latinos and Asian/Pacific Islanders since 2012. The proportion of new diagnoses among persons aged 25-29 years also increased in recent years, beginning in 2010. No children (<13 years) were diagnosed with HIV during these years. Proportions of annual diagnoses due to heterosexual transmission decreased starting in 2011, while proportions of MSM who do not inject drugs have been increasing.

Number of HIV cases diagnosed each year

Table 1.2 Trends in persons diagnosed with HIV infection by demographic and risk characteristics, 2006-2014, San Francisco

	Year of Initial HIV Diagnosis[1]								
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Total Number	519	527	522	467	439	413	429	371	302
Gender									
Male	90%	87%	89%	91%	89%	88%	94%	91%	93%
Female	7%	8%	8%	5%	8%	10%	5%	6%	5%
Transfemale[2]	3%	4%	3%	4%	3%	2%	1%	3%	2%
Race/Ethnicity									
White	54%	51%	49%	52%	48%	52%	49%	46%	45%
African American	14%	15%	16%	15%	14%	16%	10%	13%	11%
Latino	22%	20%	23%	21%	25%	20%	25%	25%	27%
Asian/Pacific Islander	6%	9%	8%	8%	8%	8%	11%	13%	13%
Native American	1%	0%	1%	0%	0%	0%	1%	1%	0%
Multi-race	3%	4%	3%	4%	5%	3%	2%	2%	4%
Unknown	0%	0%	0%	0%	0%	1%	1%	1%	0%
Age at HIV Diagnosis (years)									
13 - 17	<1%	<1%	1%	<1%	<1%	<1%	0%	0%	<1%
18 - 24	12%	10%	10%	12%	13%	11%	12%	13%	12%
25 - 29	13%	19%	16%	12%	13%	15%	17%	21%	17%
30 - 39	34%	36%	35%	31%	31%	26%	31%	29%	30%
40 - 49	28%	24%	29%	27%	28%	31%	29%	25%	24%
50+	14%	10%	9%	17%	15%	17%	11%	12%	17%
Transmission Category									
MSM	70%	66%	72%	71%	64%	72%	78%	77%	75%
PWID	8%	6%	6%	5%	8%	7%	3%	6%	6%
MSM-PWID	16%	17%	12%	16%	15%	11%	10%	10%	11%
Heterosexual	5%	8%	7%	5%	8%	6%	6%	5%	3%
Other/Unidentified	2%	3%	3%	3%	5%	3%	3%	2%	5%

1 Data include persons diagnosed with HIV infection in any stage and reported as of April 10, 2015. Percentages may not add to 100% due to rounding.

2 Transfemale data include all transgender cases. Transmale data are not released separately due to potential small population size. See Technical Notes "Transgender Status."

58%

PROPORTION OF PLWH AGE 50 YEARS AND OLDER, 2014

As of December 31, 2014, 15,979 San Francisco residents were living with HIV (Table 1.3). Demographic and risk characteristics of PLWH remained mostly stable between 2011 and 2014; cases were predominately white, aged 50 years and older, and MSM (including MSM-PWID). This table demonstrates aging of PLWH: the proportion of persons aged 50 years and older increased from 48% to 58% between 2011 and 2014, while the proportions of persons aged 30-39 and 40-49 years decreased.

Proportion of PLWH, age 30-49

Proportion of PLWH, age 50+

Table 1.3 Trends in persons living with HIV by demographic and risk characteristics, 2010-2013[1], San Francisco

	2011		2012		2013		2014	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Gender								
Male	14,230	(92)	14,423	(92)	14,587	(92)	14,722	(92)
Female	907	(6)	911	(6)	906	(6)	901	(6)
Transfemale[2]	362	(2)	358	(2)	361	(2)	356	(2)
Race/Ethnicity								
White	9,547	(62)	9,611	(61)	9,664	(61)	9,708	(61)
African American	2,023	(13)	2,022	(13)	2,027	(13)	2,014	(13)
Latino	2,702	(17)	2,777	(18)	2,840	(18)	2,894	(18)
Asian/Pacific Islander	779	(5)	825	(5)	870	(5)	904	(6)
Native American	74	(<1)	80	(1)	81	(1)	82	(1)
Multi-race	349	(2)	349	(2)	342	(2)	346	(2)
Unknown	25	(<1)	28	(<1)	30	(<1)	31	(<1)
Age in Years (at end of each year)								
0 - 12	4	(<1)	3	(<1)	3	(<1)	3	(<1)
13 - 17	12	(<1)	8	(<1)	4	(<1)	3	(<1)
18 - 24	160	(1)	160	(1)	148	(1)	124	(1)
25 - 29	446	(3)	457	(3)	465	(3)	452	(3)
30 - 39	1,992	(13)	1,923	(12)	1,874	(12)	1,837	(11)
40 - 49	5,448	(35)	5,127	(33)	4,769	(30)	4,358	(27)
50+	7,437	(48)	8,014	(51)	8,591	(54)	9,202	(58)
Transmission Category								
MSM	11,288	(73)	11,487	(73)	11,657	(74)	11,787	(74)
PWID	1,016	(7)	988	(6)	966	(6)	951	(6)
MSM-PWID	2,423	(16)	2,418	(15)	2,413	(15)	2,408	(15)
Heterosexual	495	(3)	512	(3)	526	(3)	526	(3)
Transfusion/Hemophilia	25	(<1)	25	(<1)	25	(<1)	25	(<1)
Other/Unidentified	252	(2)	262	(2)	267	(2)	282	(2)

1 Persons living with HIV at the end of each year.
2 Transfemale data include all transgender cases. Transmale data are not released separately due to potential small population size. See Technical Notes “Transgender Status.”

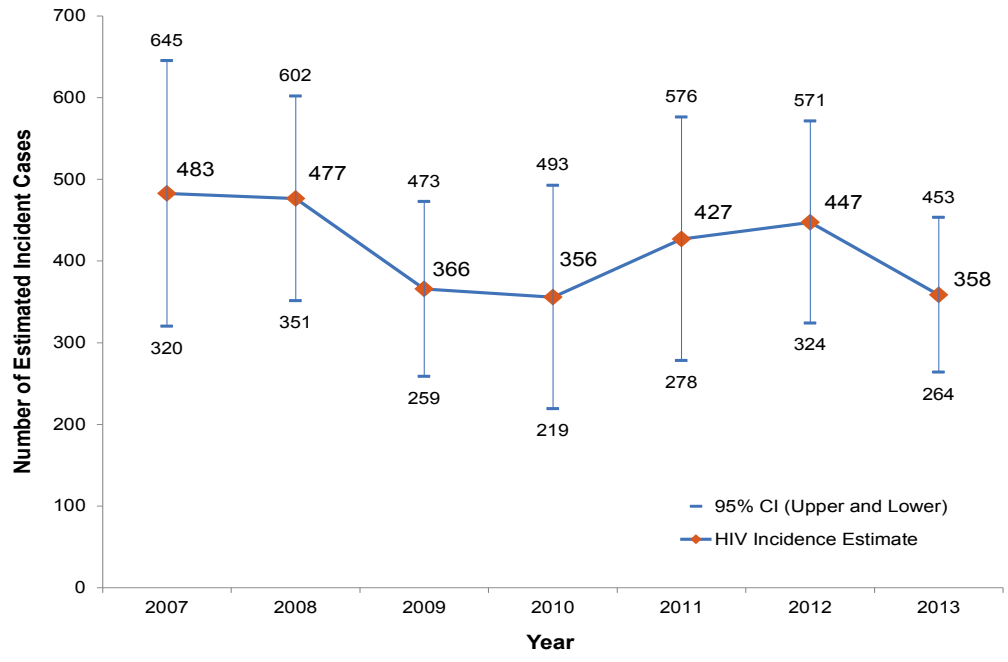
HIV incidence estimates

The SFDPH serves as one of the 25 national HIV incidence surveillance sentinel sites monitoring the number and rates of new HIV infections. Estimates of new infections track the leading edge of the HIV epidemic and are critical for allocating resources and evaluating effectiveness of prevention programs.

To identify incident HIV cases, blood from persons newly diagnosed with HIV is retested using a laboratory assay (called BED) that classifies individuals as having either a recently acquired HIV infection or a long-standing infection. These results are used with a statistical adjustment for HIV testing history to estimate HIV incidence. We applied this method, developed by the CDC, to 2007-2013 data.

Overall, the estimated number of new HIV infections has remained relatively stable since 2007 (Figure 1.4). While there were fluctuations in the estimates, the confidence intervals overlap from year to year, indicating there were no large decreases or increases in HIV incidence over the last several years.

Figure 1.3 Estimated number of new HIV infections, 2007-2013, San Francisco



CI: Confidence Interval.

Continuum of HIV care among persons newly diagnosed with HIV

83%

NEWLY-DIAGNOSED INDIVIDUALS LINKED TO CARE WITHIN 3 MONTHS OF DIAGNOSIS, 2013

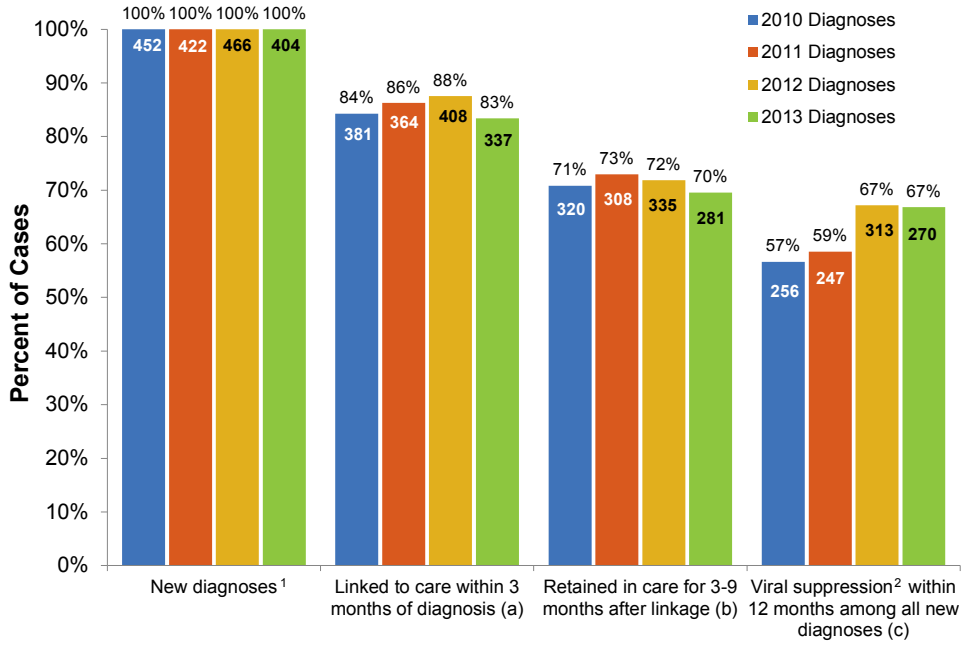
67%

NEWLY-DIAGNOSED INDIVIDUALS WHO ACHIEVED VIRAL SUPPRESSION WITHIN 12 MONTHS, 2013

To improve health outcomes for HIV-infected persons, rapid entry into care, ongoing engagement in care, and use of ART to achieve viral suppression are required. The SFDPH monitors these outcomes using reports of CD4 and viral load tests. For the four years from 2010 to 2013, the proportion of newly diagnosed persons who entered care within three months of diagnosis increased between 2010 and 2012 but decreased in 2013 to a level comparable to that in 2010(a). However, not all persons who entered care continued to receive care; 70%-73% of persons diagnosed in 2010 to 2013 remained in care three to nine months after initial linkage to care (i.e., had a second visit after their first medical visit)(b). The proportion of newly diagnosed persons who achieved viral suppression within 12 months increased from 57% in 2010 to 67% in 2012 and 2013(c).

Because not all newly diagnosed San Francisco residents receive care in the city and some move outside of San Francisco, our ability to measure these care outcomes is partially limited. For example, about 15% of newly diagnosed persons in the four-year period were known to have moved outside of San Francisco after diagnosis. The decrease in the proportion of timely linkage to care in 2013 could be due in part to a greater number of cases who moved soon after diagnosis in that year.

Figure 1.4 Continuum of HIV care among persons diagnosed with HIV, 2010-2013, San Francisco



1 Number of new diagnoses shown each year is based on the evidence of a confirmed HIV test and does not take into account patient self-report of HIV infection

2 Defined as the latest viral load test during the specified period ≤ 200 copies/mL.

2. Sexually Transmitted Diseases

As shown in Table 2.1, the most prevalent of the reportable sexually transmitted diseases (STDs) are chlamydia, gonorrhea, and syphilis. While previous evaluations of the San Francisco STD surveillance system indicate that reporting of all positive test results is nearly complete, the reported morbidity is still an underestimate of the true disease burden in the population. Many STDs among men and women are not diagnosed because people do not always seek care when their infection is asymptomatic or they do not have access to health care.

Table 2.1 Annual numbers and rates of cases diagnosed with reportable STDs, 2010-2014, San Francisco

	Reported cases					Rate[1]				
	2010	2011	2012	2013	2014	2010	2011	2012	2013	2014
Chlamydia	4,599	4,734	4,873	5,092	5,972	571.1	587.9	605.2	632.4	741.6
Gonorrhea	1,942	2,245	2,478	2,522	3,277	241.2	278.8	307.7	313.2	407.0
Syphilis (Total)	764	804	1,053	1,178	1,290	94.9	99.8	130.8	146.3	160.2
Primary	150	146	189	208	185	18.6	18.1	23.5	25.8	23
Secondary	223	240	309	292	277	27.7	29.8	38.4	36.3	34.4
(Total P&S)	373	386	498	500	462	46.3	47.9	61.8	62.1	57.4
Early Latent	286	293	392	521	655	35.5	36.4	48.7	64.7	81.3
(Total Early)	659	679	890	1,021	1,117	81.8	84.3	110.5	126.8	138.7
Unknown Latent[2]	1	0	1	1	10	0.1	0	0.1	0.1	1.2
Late Latent	104	125	162	156	163	12.9	15.5	20.1	19.4	20.2
Neurosyphilis	10	17	7	10	14	1.2	2.1	0.9	1.2	1.7
Congenital Syphilis (Total)	0	1	0	0	0	0	11.3	0	0	0
Births	0	0	0	0	0	0	0	0	0	0
Stillbirths	0	1	0	0	0	0	11.3	0	0	0
Pelvic Inflammatory Disease[3]	86	91	110	89	110	21.7	22.9	27.7	22.4	27.7
Non-Gonococcal Urethritis	733	802	812	879	826	179.5	196.3	198.8	215.2	202.2

1 Rates equal cases per 100,000 residents per year, except for non-gonococcal urethritis (NGU) (rates equal cases per 100,000 men), pelvic inflammatory disease (PID) (cases per 100,000 women), and congenital syphilis (cases per 100,000 live births).
2 Cases not known to be less than one year's duration where the patient is 40 years old or less and the initial titer is 1:32 or higher.
3 PID cases meeting CDC case definition.

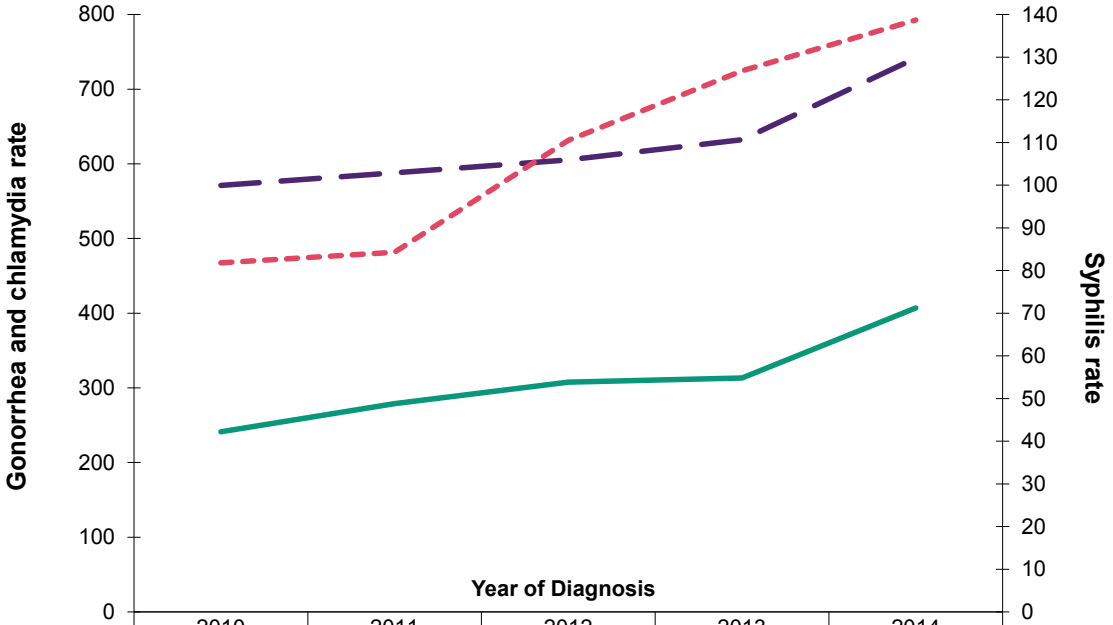
As reflected in Figure 2.1, STD rates have continued to increase over the past 5 years. The greatest STD burden in San Francisco is among two priority populations: men who have sex with men (MSM) and adolescents/young adults. Inequities by sex and race/ethnicity persist as well.

741.6
CHLAMYDIA RATE IN 2014

407.0
GONORRHEA RATE IN 2014

138.7
EARLY SYPHILIS RATE IN 2014

Figure 2.1 Annual rates of cases diagnosed with major reportable STDs per 100,000 population, 2010-2014, San Francisco



	2010	2011	2012	2013	2014
Chlamydia	571.1	587.9	605.2	632.4	741.6
Gonorrhea	241.2	278.8	307.7	313.2	407.0
Early Syphilis	81.8	84.3	110.5	126.8	138.7

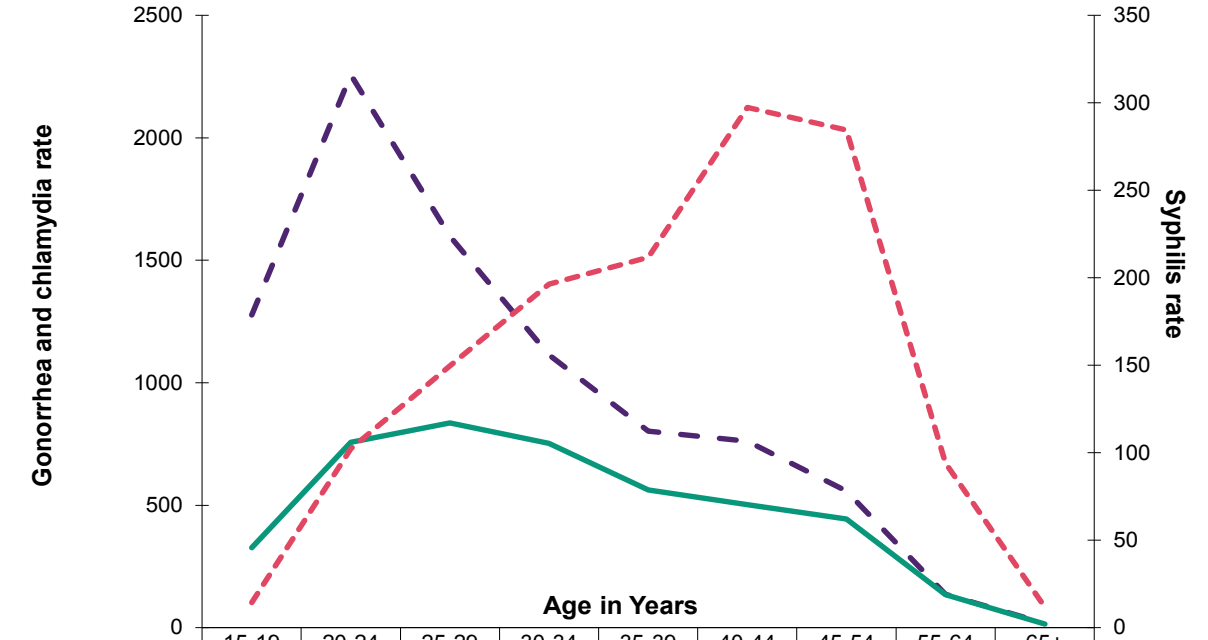
Chlamydia rates were highest among young adults (ages 20-24) and early syphilis rates peaked among the 40-44 year-old age group. Gonorrhea in San Francisco affects both priority populations, as seen in Figure 2.2, with heightened rates among the 20-29 and 40-44 age groups that are composed primarily of MSM.

2256.8
CHLAMYDIA RATE WAS HIGHEST AMONG PERSONS AGE 20-24, 2014

836.0
GONORRHEA RATE WAS HIGHEST AMONG PERSONS AGE 25-29, 2014

297.4
EARLY SYPHILIS RATE WAS HIGHEST AMONG PERSONS AGE 40-44, 2014

Figure 2.2 Rates of cases diagnosed with major reportable STDs per 100,000 population by age group, 2014, San Francisco



	15-19	20-24	25-29	30-34	35-39	40-44	45-54	55-64	65+
Chlamydia	1277.2	2256.8	1599.4	1114.3	802.1	761.9	558.1	136.7	18.2
Gonorrhea	326.5	757.2	836.0	752.8	562.0	502.6	444.5	135.6	14.6
Early Syphilis	14.4	102.3	149.7	196.3	211.8	297.4	284.4	94.2	11.8

Chlamydia

5,972

REPORTED CASES IN 2014

Chlamydia rates in San Francisco mirror the annual trends of those in the U.S. and other large metropolitan cities, including New York City (NYC) and Los Angeles (LA). San Francisco's chlamydia rate continued the upward trend seen since 2010, increasing by 17.3% over 2013 (Figure 2.3). The 5,972 reported cases in San Francisco in 2014 were part of the steady increase seen in the past 18 of 20 years.

Unlike national rates, chlamydia incidence in San Francisco is greater in males than females (Figure 2.4) because of the prevalence among MSM. The burden of chlamydia has been greater among MSM in San Francisco for many years but the increased availability of testing for pharyngeal and rectal infections has increased the identification and treatment of these infections.

As is also seen nationally, the highest chlamydia rates by race/ethnicity in San Francisco are among African Americans (Figure 2.5); though the inequity had been improving as rates in this group were decreasing, there were increases in 2014 across all race/ethnicities.

Figure 2.3 Chlamydia incidence rates by year, 2010-2014, San Francisco

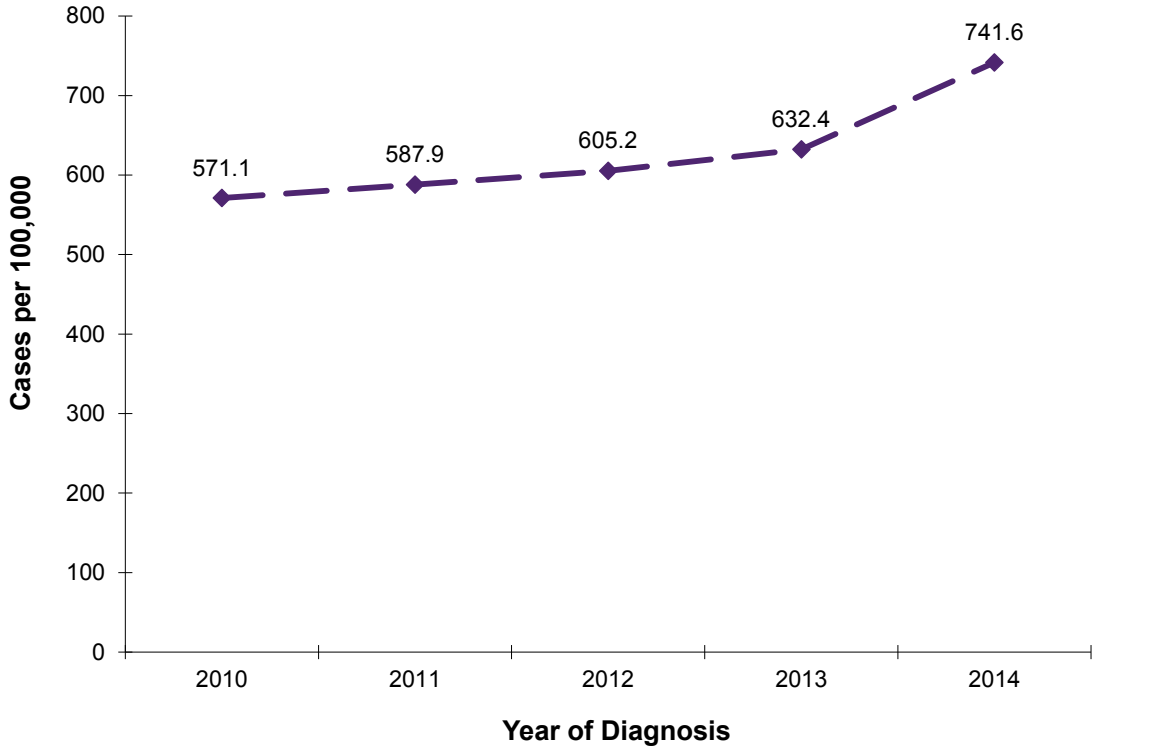


Figure 2.4 Chlamydia incidence rates by gender, 2010-2014, San Francisco

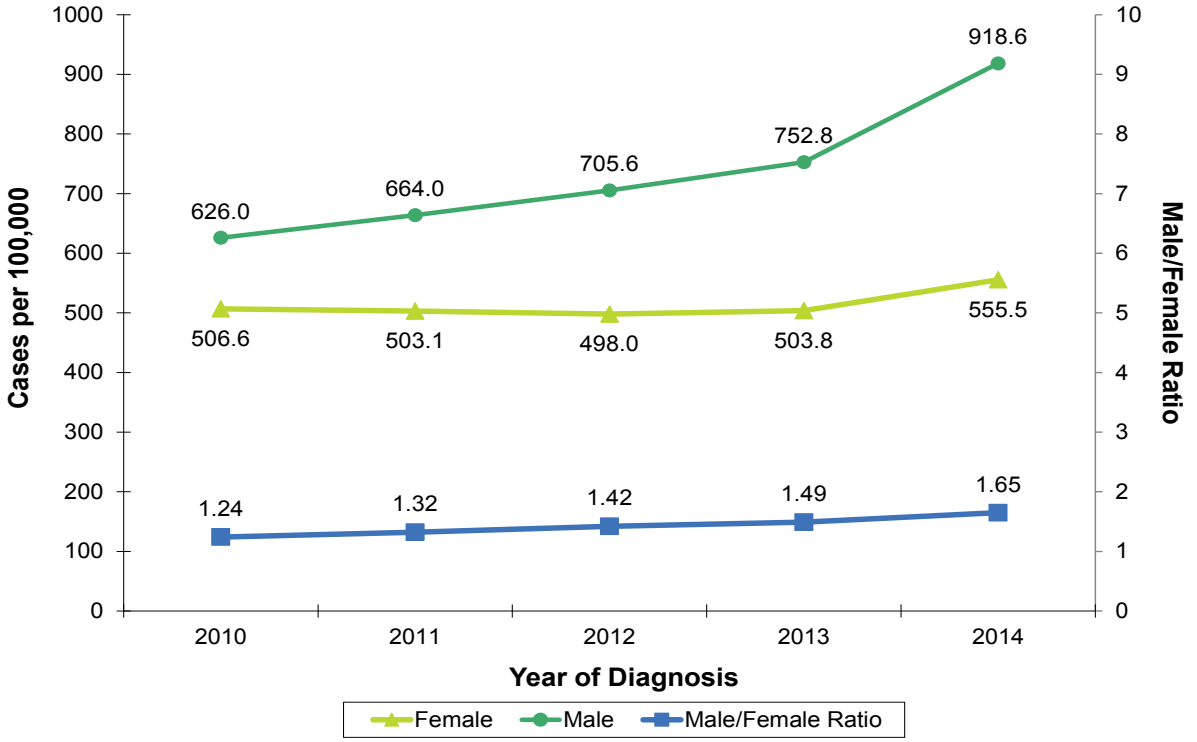
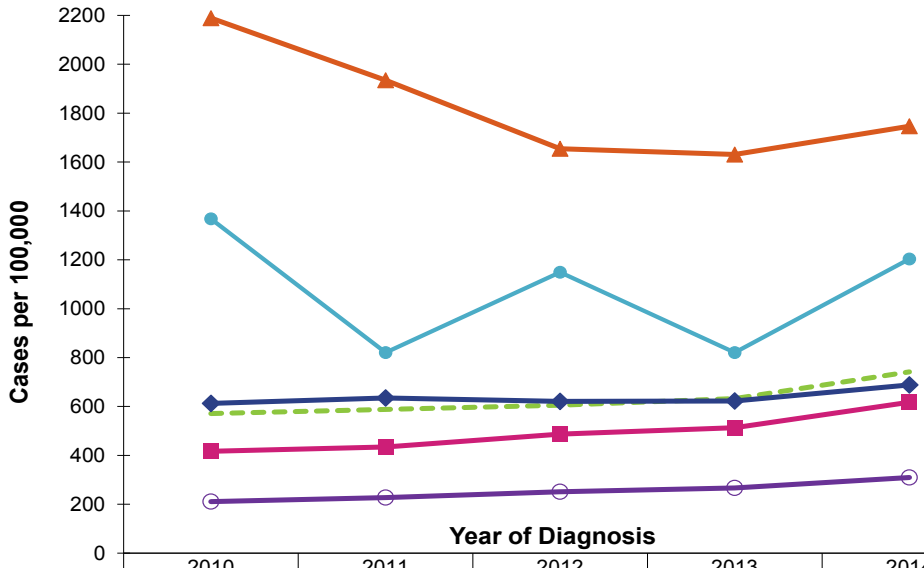


Figure 2.5 Chlamydia incidence rates by race/ethnicity, 2010-2014, San Francisco



	2010	2011	2012	2013	2014
All Races	571.1	587.9	605.2	632.4	741.6
African American	2188.9	1934.5	1654.5	1631.0	1746.4
Native American	1367.6	820.6	1148.8	820.6	1203.5
Hispanic	612.6	634.8	620.8	622.5	688.2
White	416.7	434.4	486.9	513.3	617.3
Asian/Pacific Islander	210.8	227.3	251.0	266.8	309.4

Gonorrhea

3,277

REPORTED CASES IN 2014

Although gonorrhea rates in San Francisco have generally followed annual trends seen in the U.S., NYC, and LA, rates in San Francisco have always been higher. In 2014, the 3,277 reported cases were a nearly 30% increase from the previous year.

The male/female ratio of gonorrhea incidence is much more striking in San Francisco (Figure 2.7) than in the U.S. The gonorrhea incidence rate has always been much greater among males in San Francisco than females primarily because of the high burden of infections among MSM. The ratio in the U.S. is very similar between males and females. Female gonorrhea rates have been higher in the U.S. than for males since 2000, but males had a higher rate (710.7 cases per 100,000 population) in 2014 than females (93.8 cases per 100,000 population).

Similar to the U.S., African Americans in San Francisco are disproportionately affected by gonorrhea (Figure 2.8). The inequity with white residents had decreased over the past years, but a 74% increase in the gonorrhea rate among African Americans in 2014 altered the improvements in inequities. The fluctuation in rates seen among Native Americans is due to their small population size in San Francisco.

Figure 2.6 Gonorrhea incidence rates by year, 2010-2014, San Francisco

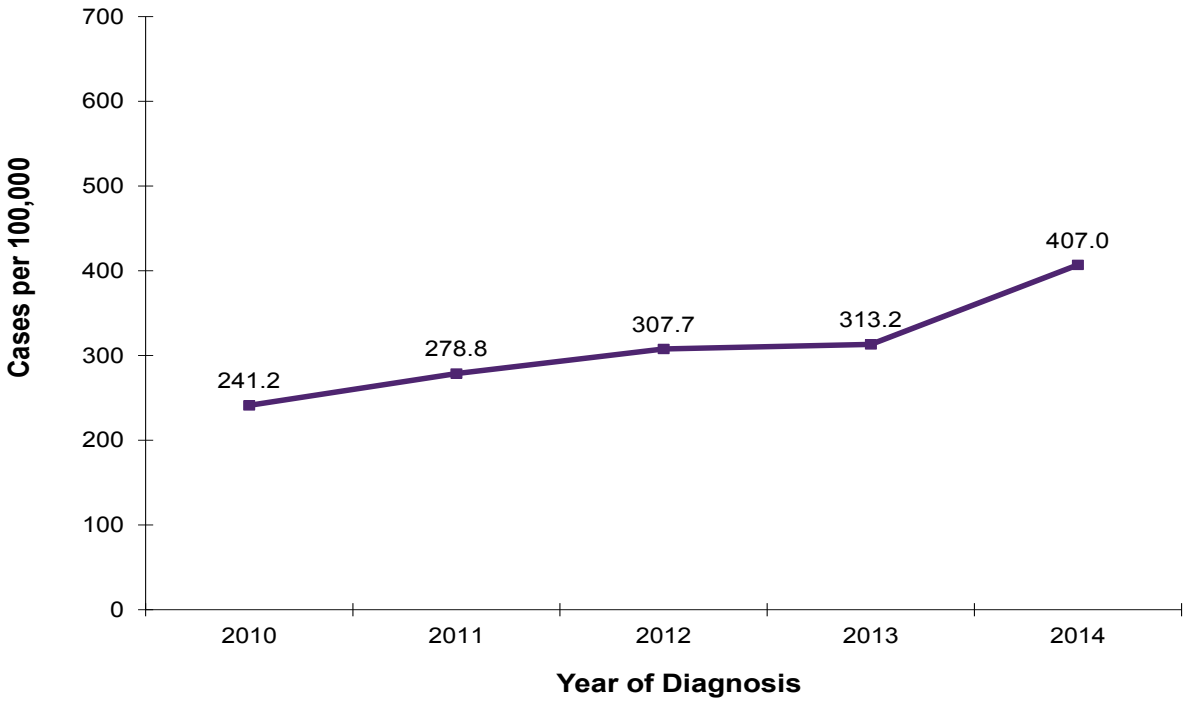


Figure 2.7 Gonorrhea incidence rates by gender, 2010-2014, San Francisco

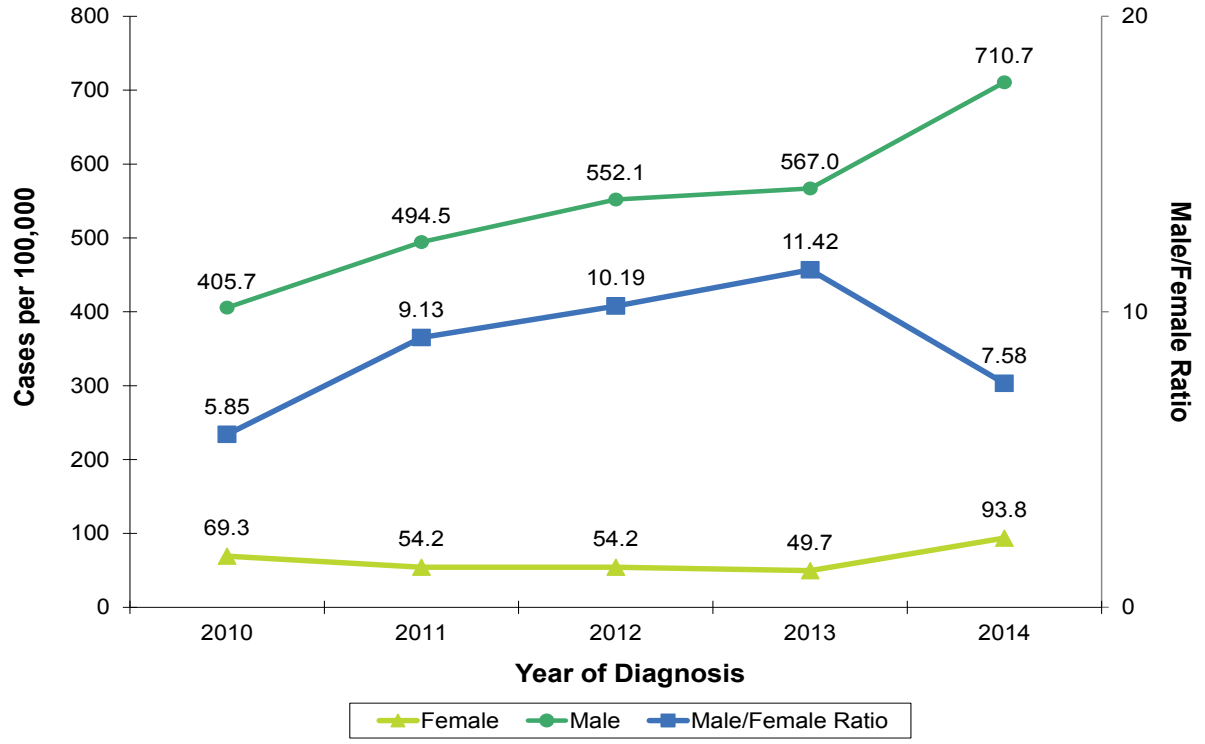
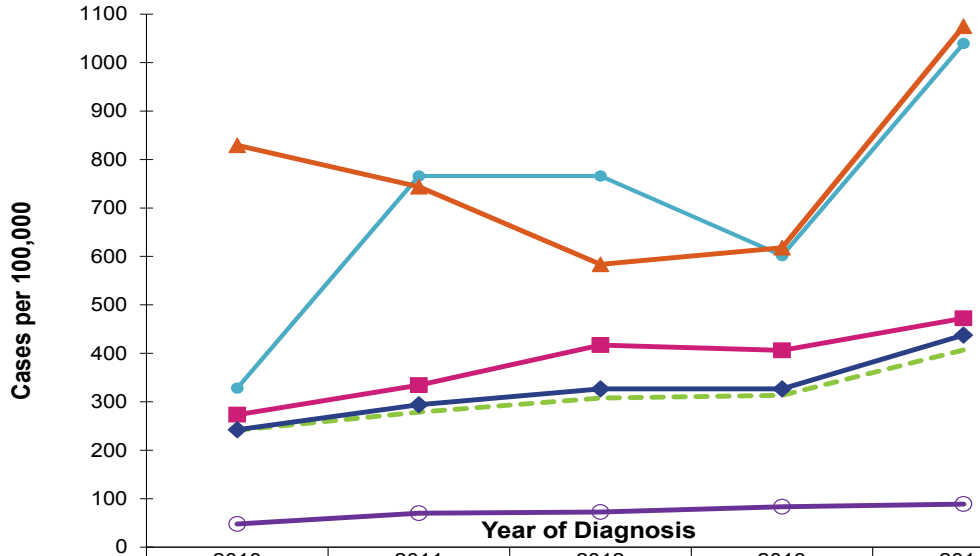


Figure 2.8 Gonorrhea incidence rates by race/ethnicity, 2010-2014, San Francisco



	2010	2011	2012	2013	2014
All Races	241.2	278.8	307.7	313.2	407.0
Native American	328.2	765.9	765.9	601.8	1039.4
African American	829.4	743.9	583.6	617.8	1075.2
White	273.2	334.3	417.2	406.3	472.4
Hispanic	242.3	294.0	326.8	326.8	437.7
Asian/Pacific Islander	47.8	70.0	72.3	83.2	88.8

Syphilis

1,290

REPORTED CASES IN 2014

The highest number of early syphilis cases since 1984 was reported in 2014; the 1,290 cases were an increase of 9.5 percent over 2013. Syphilis rates in San Francisco continue to exceed the rates seen in the U.S., LA, and NYC.

Only 16 of the 1,290 early syphilis cases were diagnosed in females. Syphilis in San Francisco remains a disease predominantly among men because of the prevalence among MSM (Figure 2.10). No congenital syphilis cases were found in San Francisco in 2014. The last reported congenital syphilis live birth was in 2009 and the last reported syphilitic stillbirth was in 2011.

The inequity in syphilis rates between African-American residents and white residents decreased in 2014 as a result of both a slight increase in the rate among whites and no change in the rate among African Americans (Figure 2.11). The fluctuation in rates seen among Native Americans is due to their small population size in San Francisco.

Figure 2.9 Syphilis incidence rates by year, 2010-2014, San Francisco

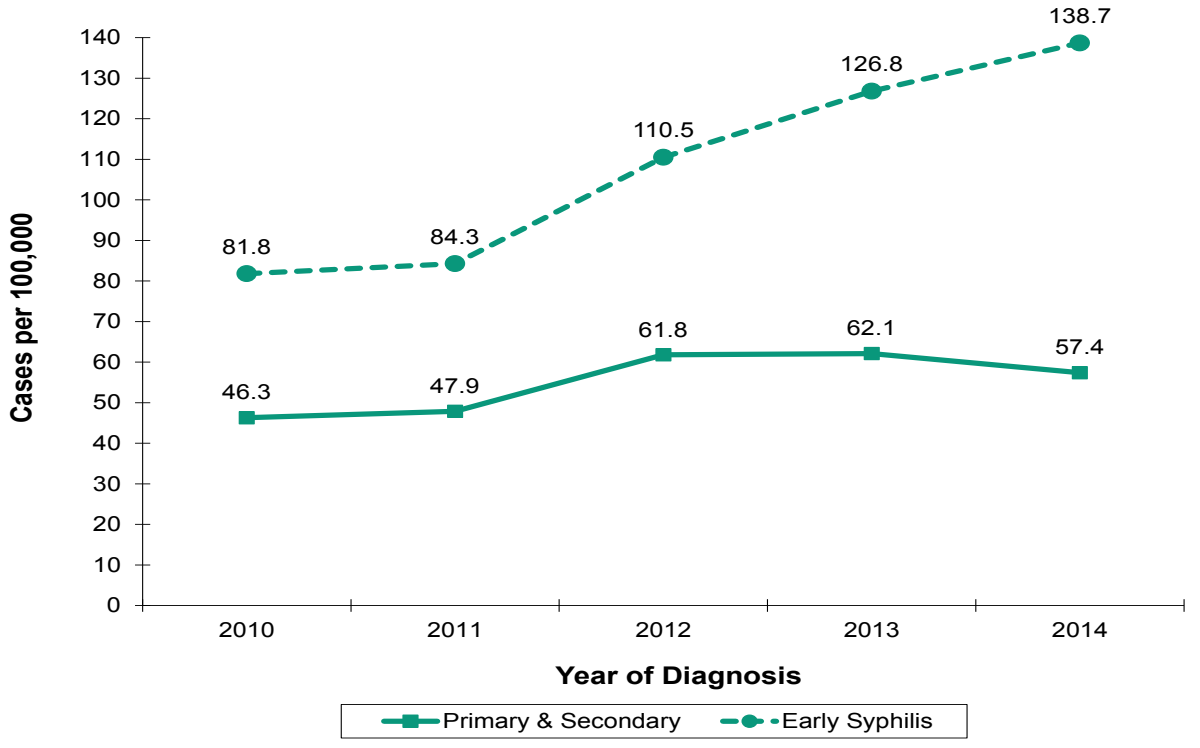


Figure 2.10 Early syphilis incidence rates by gender, 2010-2014, San Francisco

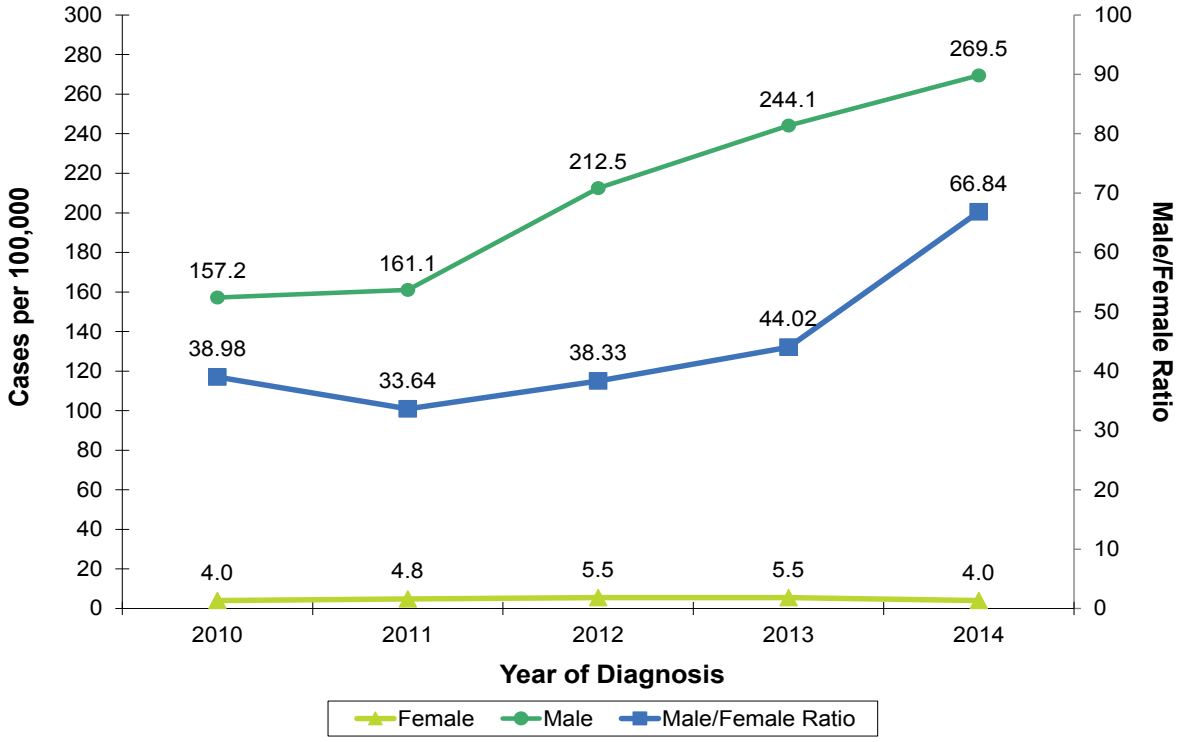
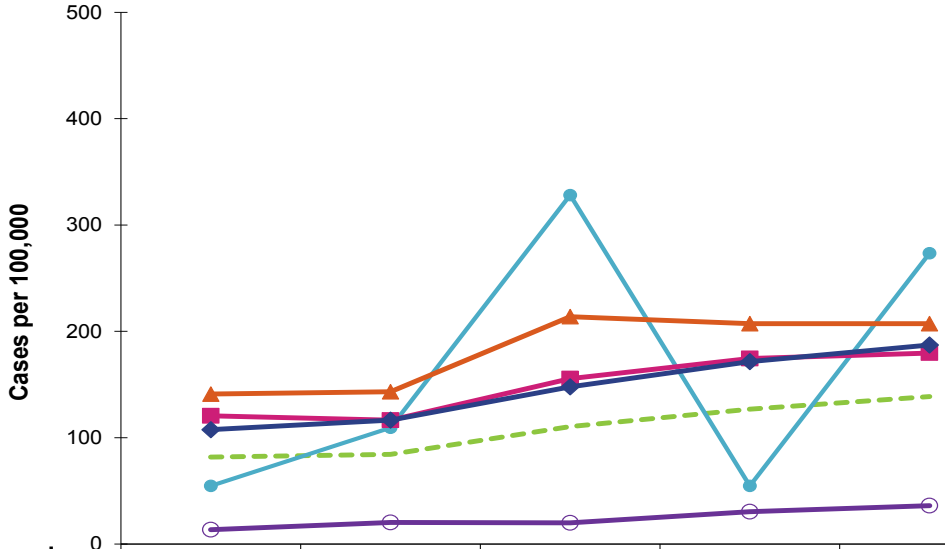


Figure 2.11 Early syphilis incidence rates by race/ethnicity, 2010-2014, San Francisco



Year of Diagnosis	2010	2011	2012	2013	2014
All Races	81.8	84.3	110.5	126.8	138.7
Native American	54.7	109.4	328.2	54.7	273.5
African American	141.1	143.2	213.8	207.3	207.3
White	120.6	116.5	155.6	174.5	179.6
Hispanic	107.6	116.6	147.8	171.6	187.2
Asian/Pacific Islander	13.5	20.3	19.9	30.5	36.1

STDs among priority populations

78.9%

PROPORTION OF EARLY SYPHILIS CASES AMONG GAY/BI MEN, 2014

3.7%

PROPORTION OF EARLY SYPHILIS CASES AMONG OTHER MEN, 2013

1.4%

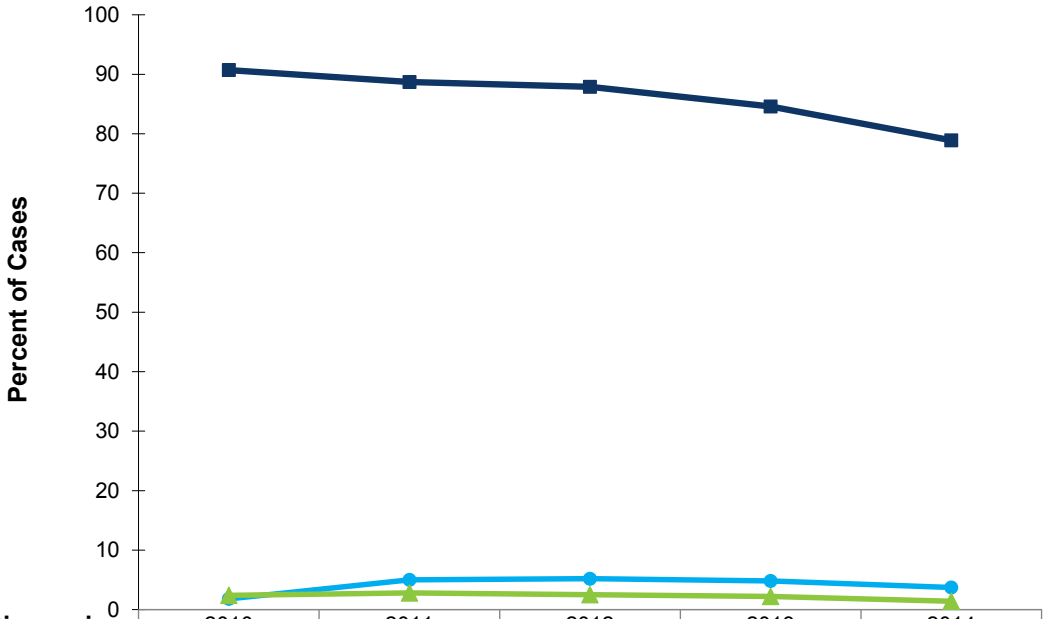
PROPORTION OF EARLY SYPHILIS CASES AMONG WOMEN, 2014

As noted previously, MSM are one of the priority populations for the prevention and control of STDs because of their disproportionate burden of infections. As reflected in the city's early syphilis rates, nearly 100% of cases were among males, of whom 81% were gay and bisexual men (Figure 2.12).

The other priority population in San Francisco for STD prevention and control is adolescents, particularly those who are African American. Adolescents, compared to adults in San Francisco, have high rates of both chlamydia (Figure 2.13) and gonorrhea, which result from the higher prevalence of disease among adolescents that necessitates the targeted screening recommendation for sexually active persons ages less than 25.

Though there had been recent decreases in rates of gonorrhea among African-American adolescents and young adults, the increased rate in 2013 and 2014 among African Americans reflects the persistence in inequities with white adolescents and young adults (Figure 2.14).

Figure 2.12 Early syphilis cases by sexual orientation, 2010-2014, San Francisco



Year of Diagnosis	2010	2011	2012	2013	2014
Gay/Bi Men	90.7	88.7	87.9	84.6	78.9
Other Men	1.8	5.0	5.2	4.8	3.7
Women	2.4	2.8	2.5	2.2	1.4

Figure 2.13 Chlamydia incidence rates among adults and adolescents by race/ethnicity, 2014, San Francisco

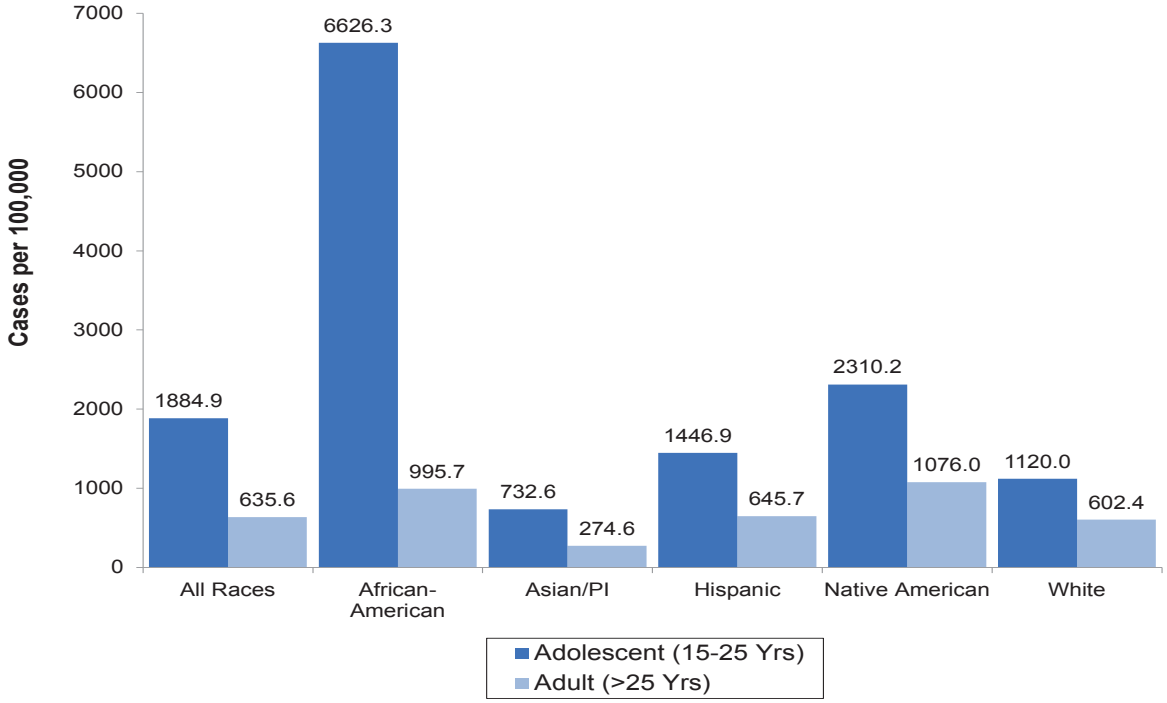
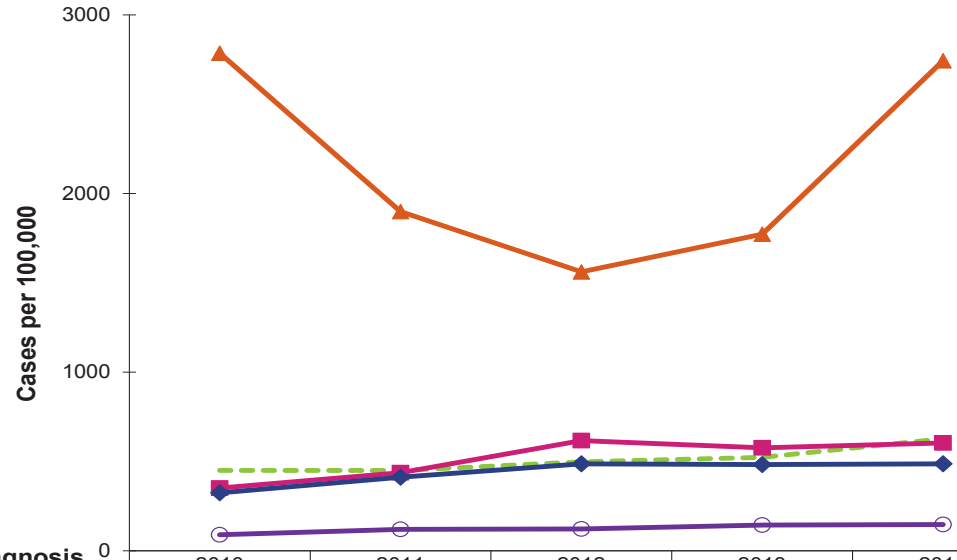


Figure 2.14 Gonorrhea incidence rates among adolescents (15-25 years) by race/ethnicity, 2010-2014, San Francisco



Year of Diagnosis	2010	2011	2012	2013	2014
All Races	450.6	449.7	498.6	522.6	627.4
Native American	*Due to small number of Native American cases, data are suppressed.				
African American	2785.6	1899.3	1561.6	1772.7	2743.4
White	351.4	437.4	616.9	576.4	604.2
Hispanic	324.4	412.1	486.7	482.3	486.7
Asian/Pacific Islander	89.9	119.8	122.5	144.3	147.1

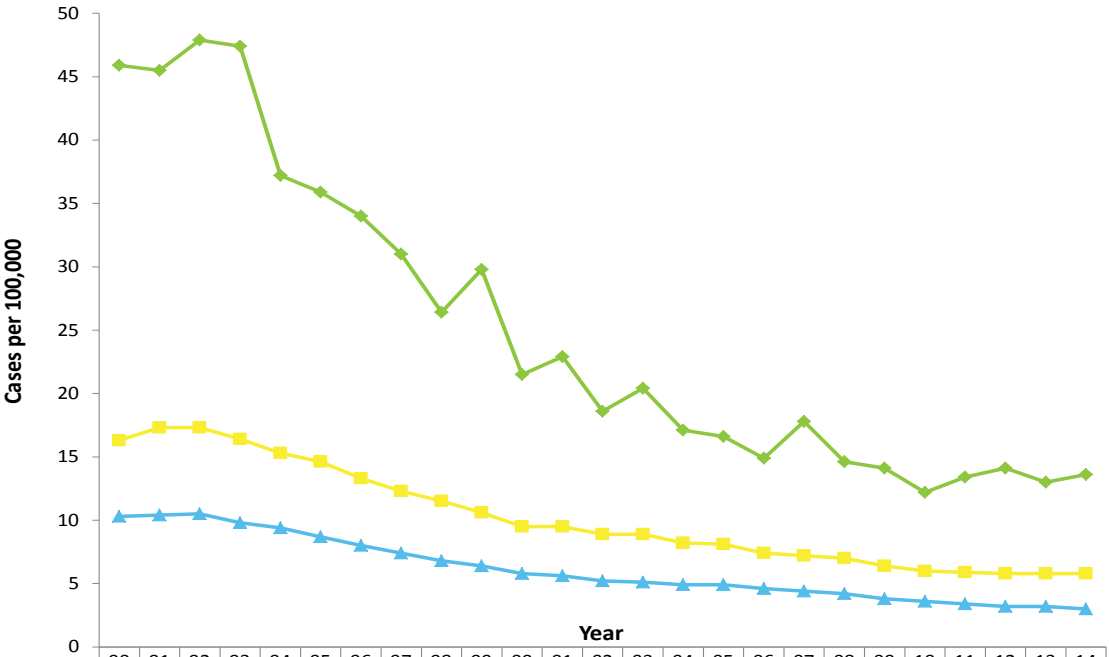
⇨ Please refer to the San Francisco Sexually Transmitted Disease Annual Reports for more details at https://www.sfdph.org/dph/files/reports/default.asp#2S.

3. Tuberculosis

114
NEW TB CASES REPORTED IN 2014

In 2014, 114 new tuberculosis (TB) cases were reported in San Francisco, for an incidence rate of 13.6 cases per 100,000 population (Figure 3.1). This represents an increase of 6.5% in case number from 2013; however, since 2010 when TB cases were at an all time low, the number of new cases each year has remained relatively stable. The rate of TB in San Francisco is more than four times the national average of 3.0 cases per 100,000 and more than twice the California average of 5.8 cases per 100,000.

Figure 3.1 TB incidence rates, 1990-2014, San Francisco, California and the United States



	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
San Francisco	45.9	45.5	47.9	47.4	37.2	35.9	34.0	31.0	26.4	29.8	21.5	22.9	18.6	20.4	17.1	16.6	14.9	17.8	14.6	14.1	12.2	13.4	14.1	13.0	13.6
CA	16.3	17.3	17.3	16.4	15.3	14.6	13.3	12.3	11.5	10.6	9.5	9.5	8.9	8.9	8.2	8.1	7.4	7.2	7.0	6.4	6.0	5.9	5.8	5.8	5.8
U.S.	10.3	10.4	10.5	9.8	9.4	8.7	8.0	7.4	6.8	6.4	5.8	5.6	5.2	5.1	4.9	4.9	4.6	4.4	4.2	3.8	3.6	3.4	3.2	3.2	3.0

Age, Race/Ethnicity, and Place of Birth

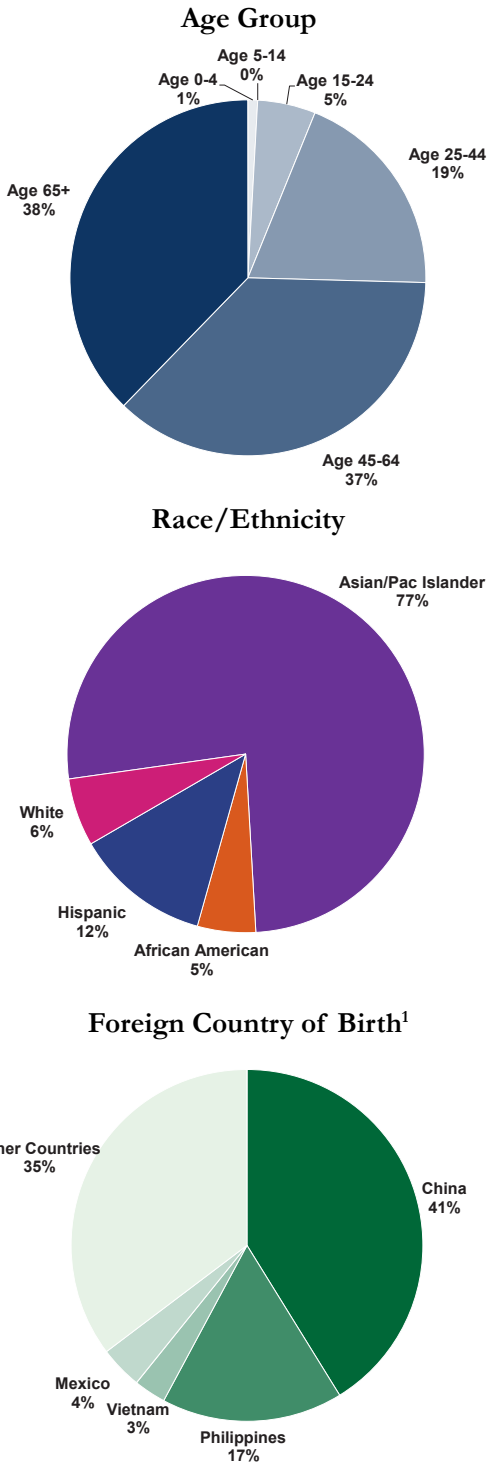
75%
TB CASES REPORTED AMONG PERSONS ≥45 YEARS OF AGE

The average age of persons with TB in 2014 was 57 years, with 75% of cases occurring among persons 45 years and older (Figure 3.2). Asian cases are older, with over half of cases in this group greater than 61 years of age, while African American cases tend to be younger with over half under 50 years of age. Only one pediatric case (0–14 years old) were diagnosed in 2014.

The largest proportion of cases reported annually are Asian (76%). As in prior years, the majority of Asian (98%) and Hispanic cases (86%) were foreign-born.

In 2014, 90% of cases were reported among foreign-born individuals – 41% from China, 17% from the Philippines, 3% from Vietnam, and 4% from Mexico. The median length of residence in the U.S. prior to TB diagnosis was 14 years; however this varies by country of origin. For example, Filipino cases reside in the U.S. a median of 12 years prior to diagnosis, while Mexican cases are in the U.S. for a median of only 7 years.

Figure 3.2 TB cases by age group, race/ethnicity, and country of birth, 2014, San Francisco



1 Excluding U.S. born TB cases (N=20).

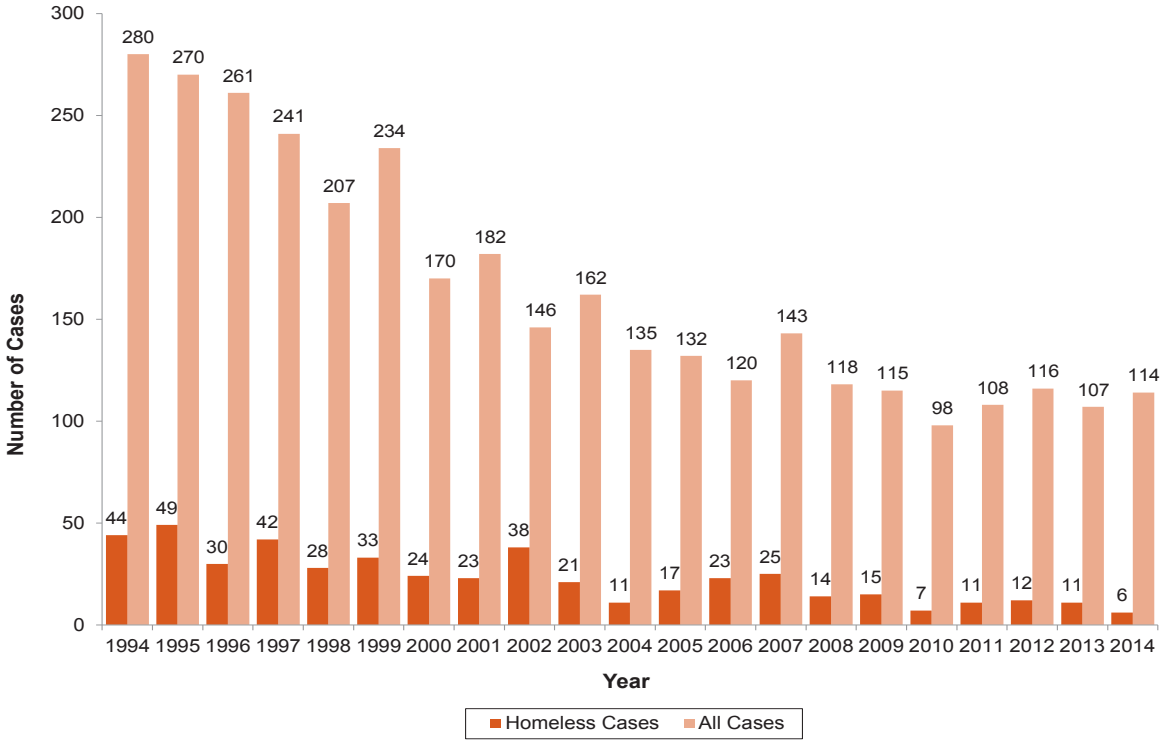
Homelessness

TB in the homeless/marginally housed population decreased in 2014, with 6 cases reported (Figure 3.3); 50% of these cases were HIV-positive.

6
HOMELESS TB CASES REPORTED IN 2014

50%
HOMELESS TB CASES WERE HIV+

Figure 3.3 Number of Homeless TB cases, 1994-2014, San Francisco



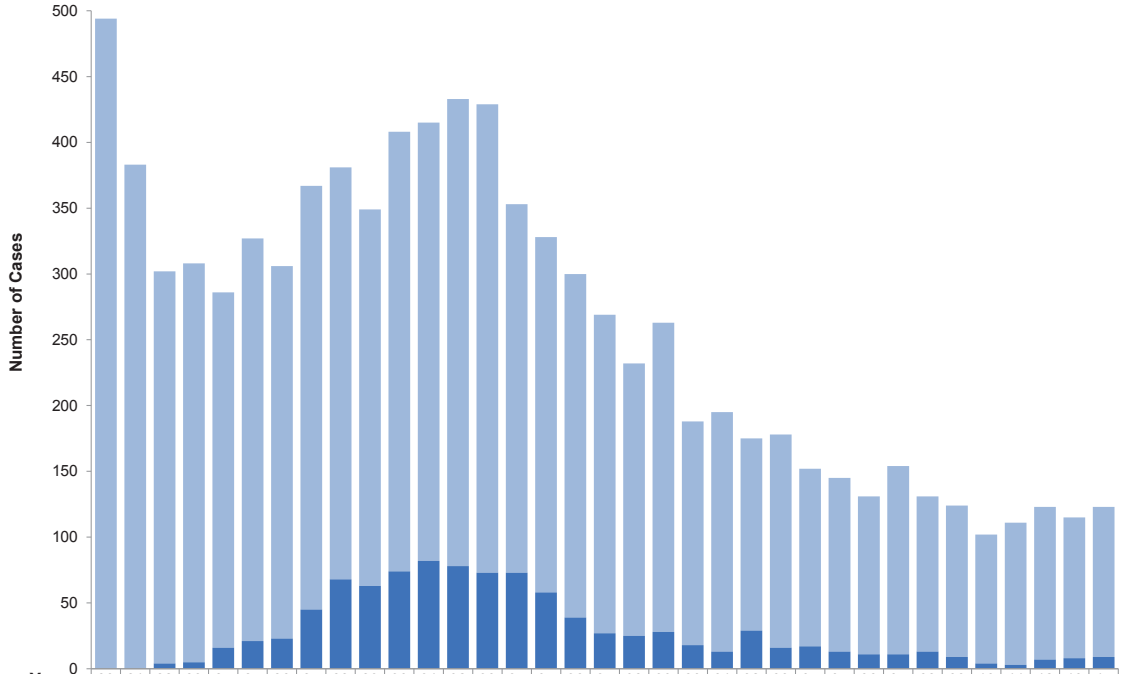
Co-morbidities and Deaths

8%
TB CASES CO-INFECTED WITH HIV, 2014

Comorbid conditions, such as diabetes and tobacco use, are becoming increasingly important risk factors for active TB, much more so than HIV infection. In 2014, 8% of TB cases were co-infected with HIV (Figure 3.4) while 28% of active TB cases reported current or past use of tobacco and 20% had diabetes.

There were 9 deaths among TB cases in 2014 and 8 died due to complications of their TB disease.

Figure 3.4 Number of TB cases co-infected with HIV, 1980-2014, San Francisco



Year	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
All Cases	494	383	298	303	270	306	283	322	313	286	334	333	355	356	280	270	261	242	207	235	170	182	146	162	135	132	120	143	118	115	98	108	116	107	114
HIV co-infected Cases	0	0	4	5	16	21	23	45	68	63	74	82	78	73	73	58	39	27	25	28	18	13	29	16	17	13	11	11	13	9	4	3	7	8	9

Drug Resistance

13
TB CASES RESISTANT TO AT LEAST ONE ANTI-TB DRUG, 2014

Over the past three years, the percent of culture-positive TB cases with any form of drug resistance has ranged from 14-23%. In 2014, 13 cases (14% of culture-positive cases) were resistant to at least one anti-TB drug. The majority of cases were resistant to Isoniazid (INH) alone (4%) or in combination with another non-Rifampin, first-line drug (2%). There were 2 MDR-TB cases reported this year (2%).

⇨ Please refer to the Annual Summary of TB Incidence in San Francisco for more details at http://www.sfcdcp.org/tbcontrol.

4. Vaccine Preventable Diseases

This section presents the epidemiology of the following reportable vaccine preventable diseases (VPDs) in San Francisco: chickenpox (hospitalization or death only), diphtheria, invasive *Haemophilus influenzae* disease, hepatitis A, acute hepatitis B, measles, invasive meningococcal disease, mumps, pertussis, poliovirus infection, rubella and tetanus (Table 4.1). Other vaccine preventable diseases, such as rotavirus gastroenteritis or human papillomavirus (HPV) infection, are not described because they are not currently reportable under state reporting regulations. The low incidence of reportable vaccine-preventable diseases in San Francisco and the United States depends on maintaining high immunization rates in the population.

Table 4.1 Number of cases of vaccine preventable diseases, 2004-2014, San Francisco

Vaccine Preventable Diseases	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Chickenpox, hospitalizations or death[1]	NR	NR	NR	1	0	1	1	3	2	2	1	**11**
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	**0**
Haemophilus influenzae, invasive, under 15 years	1	3	2	0	0	0	0	0	0	1	2	**9**
Hepatitis A	21	11	17	27	11	4	5	6	5	4	6	**117**
Acute Hepatitis B	25	29	22	10	12	16	12	7	3	3	2	**141**
Measles	3	0	0	0	1	5	1	1	0	1	0	**12**
Meningococcal disease, invasive	5	7	9	21	17	4	1	8	4	4	2	**82**
Mumps	0	1	1	2	0	0	0	2	1	2	1	**10**
Pertussis[2]	28	45	35	19	15	20	139	56	29	45	79	**510**
Poliovirus[3]	0	0	0	0	0	0	0	0	0	0	0	**0**
Rubella	1	0	0	0	0	0	1	0	0	0	0	**2**
Rubella, congenital	0	0	0	0	0	0	0	0	0	0	0	**0**
Tetanus	0	0	1	0	0	0	0	0	0	0	0	**1**

NR: Not Reportable.
1 Hospitalization or death due to chickenpox became reportable June 2007.
2 Changes in case definitions and investigation procedures may affect year-to-year comparisons in case counts.
3 Reportable as poliomyelitis until December 2009.

Chickenpox (varicella), hospitalization and death

Before the varicella vaccine was introduced in the United States (U.S.) in 1995, chickenpox was a common disease, affecting millions of people within the U.S. every year. In California, chickenpox resulting in hospitalization or death was not reportable until June 2007. From 2007 to 2014, eleven cases resulting in hospitalization or death were reported among San Francisco residents.

Haemophilus influenzae, invasive

9
CASE REPORTED IN 2004-2014

In California, only invasive disease (e.g., pneumonia, bacteremia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis; less common infections include endocarditis and osteomyelitis) due to *Haemophilus influenzae* in children under 15 years of age is reportable. From 2004 to 2014, only nine cases were reported in San Francisco children.

Hepatitis A

6
CASES REPORTED IN 2014

The hepatitis A vaccine was licensed for use in the U.S. in 1995. After 1997, there was a marked decrease in the number of hepatitis A cases in San Francisco residents, attributed to vaccination. In 1997, 593 cases of hepatitis A were reported in San Francisco residents; from 2004 to 2014, only 117 cases among San Francisco residents were reported. In 2014, six cases were reported. Currently, the most important risk factor for contracting disease is a history of foreign travel, although foodborne transmission of hepatitis A, often related to imported food items, has also been documented in the U.S.

Hepatitis B

2
CASES REPORTED IN 2014

The hepatitis B vaccine has been available in the U.S. since 1981 and since 1991, the hepatitis B vaccine has been recommended for all infants. A decrease in the number of acute hepatitis B cases reported in San Francisco began in the late 1980s before this recommendation. The decline is thought to be associated with HIV/AIDS prevention strategies, i.e., reduction of high risk sexual behaviors and needle sharing by injection drug use, both of which are also major risk factors for hepatitis B.

In 2014, only two cases of acute hepatitis B were reported.

Measles

0
CASES REPORTED IN 2014

According to the Centers for Disease Control and Prevention (CDC), widespread use of measles vaccine has led to a greater than 99% reduction in measles cases in the U.S. compared with the pre-vaccine era. In 2000, measles was declared eliminated in the U.S.; however, measles is endemic in other countries and most cases in the U.S. are associated with foreign importation.

From 2004 to 2014, 12 cases of measles were reported among San Francisco residents. No cases of measles were reported in San Francisco in 2014.

Invasive Meningococcal Disease

2
CASES REPORTED IN 2014

From 2004 to 2014, 82 cases of invasive meningococcal infection were reported among San Francisco residents, ranging from 1-21 cases per year. In 2014, two cases in San Francisco residents were reported.

Pertussis – Whooping cough

79
CASES REPORTED IN 2014

Pertussis is endemic in the U.S. with epidemic cycles every three to five years. People of all ages can get the disease, though death and serious complications are most likely in young infants. To help prevent morbidity and mortality in infants, the Advisory Committee on Immunization Practices (ACIP) in October 2012 recommended pertussis immunization during pregnancy[1]. The previous 2011 recommendations did not include vaccinating pregnant women who had been previously vaccinated for pertussis.

Rates of pertussis have been increasing in the last 30-40 years. Reasons for this increase are unknown but hypotheses include increased recognition and diagnosis, increased access to laboratory tests, introduction of new laboratory tests such as nucleic acid amplification tests, increased surveillance and reporting, and waning immunity following vaccination with the acellular pertussis vaccine that was introduced in the 1990s.

A pertussis outbreak occurred in California in 2010 with over 9,000 cases reported, the highest number of cases reported in over 60 years. During this outbreak, 139 cases of pertussis were reported among San Francisco residents; no deaths occurred. In 2014, another statewide outbreak occurred. Seventy-nine cases were reported among San Francisco residents; again no deaths occurred.

1 Centers for Disease Control and Prevention. Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Vaccine (Tdap) in Pregnant Women — Advisory Committee on Immunization Practices (ACIP), 2012. MMWR. 2013: 62(07);131-135. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6207a4.htm (Accessed October 28, 2016).

5. Enteric Diseases

This section presents the epidemiology of select enteric diseases in San Francisco (Table 5.1 and Figure 5.1). Enteric diseases can be caused by bacteria, parasites, or viruses. There can be a range of symptoms, including diarrhea and vomiting. They are generally transmitted by eating or drinking contaminated food or water or having direct contact with contaminated feces or vomit.

Amebiasis and Giardiasis

6.5

Amebiasis rate per 100,000 residents, 2014

19.5

Giardiasis rate per 100,000 residents, 2014

The enteric protozoal infections amebiasis and giardiasis are among the most frequently reported diseases in San Francisco. Rates of these two diseases declined overall from 2004 to 2014. In the last 25 years, amebiasis rates were highest in 1986 (67.3 cases per 100,000 residents) and have generally been declining since, with the lowest rate observed in 2014 (6.5 cases per 100,000 residents). Giardiasis rates have been decreasing since 1995 (55.4 cases per 100,000 residents); the rate was 19.5 cases per 100,000 population in 2014.

In San Francisco, rates of amebiasis and giardiasis were higher in males than in females for all years for which data was available (1986-2014). For these diseases, the disparity between the rates of disease in males and females has decreased over time. In 2014, the rate of amebiasis in women was 0.2 (N=1) and in men was 12.7 (N=54), and the rate of giardiasis in women was 8.7 (N=36) and in men was 29.6 (N=126). This disparity is attributed to transmission of these infections through sexual contact among MSM (men who have sex with men)[1].

Campylobacteriosis

48.2

Campylobacteriosis rate per 100,000 residents, 2014

Campylobacteriosis is the most frequently reported enteric disease in San Francisco (2014: N=405, rate=48.2 cases per 100,000 residents), with rates higher than any other California jurisdiction[2]. The rates of campylobacteriosis have increased overall from 2004 to 2014 with some year-to-year fluctuations. The 2014 rate was slightly higher than the previous year (2013: 47.5 cases per 100,000 residents) but lower than two years before (2012: 53.8 cases per 100,000 residents).

1 Fletcher, SM et al. "Enteric Protozoa in the Developed World: A Public Health Perspective." Clinical Microbiology Reviews 25.3 (2012): 420-449.

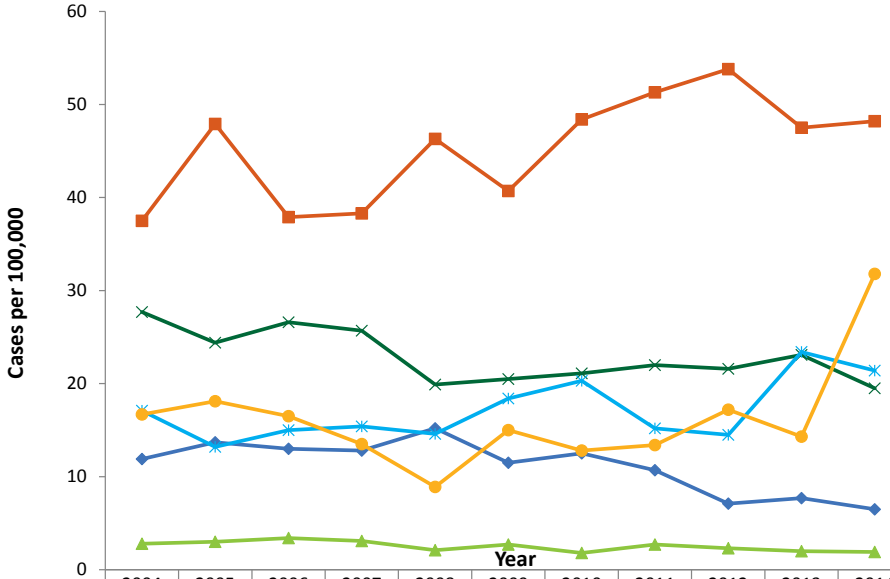
2 California Department of Public Health. Yearly Summary of Selected General Communicable Diseases in California, 2011-2015. Available from: https://www.cdph.ca.gov/data/statistics/Documents/YearlySummaryReportsofSelectedGeneralCommDiseasesinCA2011-2015.pdf.

Table 5.1 Number of cases of selected enteric diseases, 2004-2014, San Francisco

Enteric Diseases	2004 Number	2005 Number	2006 Number	2007 Number	2008 Number	2009 Number	2010 Number	2011 Number	2012 Number	2013 Number	2014 Number
Amebiasis	94	109	104	103	123	94	102	88	59	64	55
Campylobacteriosis	297	381	303	308	375	331	396	422	444	396	405
Cryptosporidiosis	22	24	27	25	17	22	15	22	19	17	16
Giardiasis	219	194	213	207	161	167	173	181	178	193	164
Salmonellosis - non-typhoidal	135	105	120	124	118	150	166	125	120	195	180
Shigellosis	132	144	132	109	72	122	105	110	142	119	267
Shiga toxin-producing *Escherichia coli* (STEC), including *E. coli* O157:H7*				14	7	15	8	15	12	26	25
E. coli O157:H7	6	13	8								
Hemolytic Uremic Syndrome (HUS)	0	0	1	0	0	0	0	0	0	6	0
Shiga toxin in feces*				0	0	0	0	0	2	1	7

* Shiga toxin-producing *Eschericia coli* (STEC) and Shiga toxin in feces became reportable October 2006.

Figure 5.1 Annual rates per 100,000 population by selected enteric diseases, 2004-2014, San Francisco



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Amebiasis	11.9	13.7	13.0	12.8	15.2	11.5	12.5	10.7	7.1	7.7	6.5
Campylobacteriosis	37.5	47.9	37.9	38.3	46.3	40.7	48.4	51.3	53.8	47.5	48.2
Cryptosporidiosis*	2.8	3.0	3.4	3.1	2.1	2.7	1.8	2.7	2.3	2.0	1.9
Giardiasis	27.7	24.4	26.6	25.7	19.9	20.5	21.1	22.0	21.6	23.1	19.5
Salmonellosis - non-typhoidal	17.1	13.2	15.0	15.4	14.6	18.4	20.3	15.2	14.5	23.4	21.4
Shigellosis	16.7	18.1	16.5	13.5	8.9	15.0	12.8	13.4	17.2	14.3	31.8

* Unstable rates due to small number of cases (N<20) should not be compared statistically.

Cryptosporidiosis

16

CASES REPORTED IN 2014

Risk factors for acquiring cryptosporidiosis infection include consumption of recreational water (such as from contaminated swimming pools), contaminated food or drinking water, contact with animals, day care attendance or work, health care work, travel to developing countries, sexual contact with an infected person, and having a compromised immune system.

Historically in San Francisco, the high rates of cryptosporidiosis during the 1990s (highest rate in 1991 of 19.4 cases per 100,000) were predominantly attributable to disease among people with HIV/AIDS. Rates of cryptosporidiosis decreased during the late 1990s concomitant with the availability of highly active antiretroviral therapy (HAART). From 2004 to 2014, an average of 20.5 cases of cryptosporidiosis were reported per year (average annual rate 2.5 cases per 100,000 residents). In 2014, 16 cases were reported.

Rates of cryptosporidiosis have been higher in males than in females for all years of available data (1986-2014); however, in some years, the number of cases was too low for comparison. The disparity is attributable to transmission through sexual contact among MSM[1]. In San Francisco, sexual activity was the most prevalent risk factor in 2014.

The Bay Area Cryptosporidiosis Surveillance Project (CSP) monitors human cryptosporidiosis in Bay Area Counties served by the San Francisco Public Utilities Commission: Alameda, San Francisco, San Mateo, and Santa Clara, and Tuolumne County, where the Hetch Hetchy Reservoir is located. Routine monitoring and ultraviolet water disinfection for *Cryptosporidium* by the San Francisco Public Utilities Commission ensures that the water supply in San Francisco is safe to drink. In the U.S., contaminated recreational water is the most frequently recognized cause of reported water-associated outbreaks. In 2014, no system-wide drinking water associated or other cryptosporidiosis outbreaks were detected by CSP.

Salmonellosis

21.4

SALMONELLOSIS RATE PER 100,000 RESIDENTS, 2014

Since 2005, rates of salmonellosis have been increasing in San Francisco, with 2013 and 2014 having the highest rates (23.4 cases per 100,000 residents in 2013 and 21.4 cases per 100,000 residents in 2014). The increase in rates starting in 2013 is partly due to a prolonged multistate outbreak of *Salmonella* Heidelberg associated with chicken from three specific processing plants; however, the increase is not completely attributable to the outbreak since serotypes other than Heidelberg also contributed to the increase.

The most frequently reported *Salmonella* serotypes in 2014, which together accounted for 65.3% of the 180 cases with serotype information, were as follows: *S.* Enteriditis (18.2%), *S.* Infantis (14.7%), *S.* Adelaide (8.2%), *S.* I 4,5,12:i:- (7.0%), *S.* Typhimurium (5.3%), *S.* Heidelberg (4.7%), *S.* Muenchen (3.5%), and *S.* Saint-Paul (3.5%). The proportion of *S.* Enteritidis cases in 2014 (18.2%) is slightly higher than in 2013 (15.9%) but slightly lower than in 2012 (20.0%).

Shigellosis

31.8

Shigellosis rate per 100,000 residents, 2014

The rates of shigellosis in San Francisco are higher compared to other California jurisdictions[2] and have been increasing since 2008, with a significant increase from 2013 (14.3 cases per 100,000 residents) to 2014 (31.8 cases per 100,000 residents). The high incidence of shigellosis in San Francisco is partly attributable to sexual transmission among MSM[3]. The increase in 2014 is attributed to several outbreaks, including a citywide outbreak of ciprofloxacin-resistant shigellosis that disproportionately affected homeless and marginally housed individuals in San Francisco. Details of this citywide outbreak are provided in the Special Topics section of this report.

Escherichia coli O157:H7, Shiga toxin-producing *Escherichia coli* (STEC), Shiga toxin in feces, and Hemolytic Uremic Syndrome (HUS)

25

STEC cases reported in 2014

Public health surveillance and reporting requirements for *Escherichia coli* have changed over time as laboratory testing methods and understanding of pathogenesis have evolved. *E. coli O157:H7* is one of many Shiga toxin-producing *E. coli* serotypes that cause clinically and epidemiologically significant disease, including Hemolytic Uremic Syndrome (HUS). Until 2006, only *E. coli O157:H7* and/or HUS were reportable. Since October 2006, Shiga toxin-producing *E. coli* (STEC), which encompasses *E. coli O157:H7* and other serotypes, and Shiga toxin in feces have been reportable.

From 2007 to 2014, 122 cases of STEC were reported among San Francisco residents. The number of cases doubled from 2012 (N=12) to 2013 (N=26), primarily due to two *E. coli O157* outbreaks: an outbreak associated with a San Francisco restaurant and a multijurisdictional outbreak associated with pre-packaged salads. In 2014, case counts for STEC remained high with 25 cases reported (3.0 cases per 100,000 residents), and the number of Shiga toxin in feces cases increased from one in 2013 to seven in 2014. This recent increase in STEC cases is consistent with statewide trends[2]. The increase is hypothesized to be due to increased detection of non-O157 Shiga toxin-producing *E. coli*, increased use of Shiga toxin testing by clinical laboratories, and increased number of specimens forwarded to a public health laboratory for culture and identification[4].

No cases of HUS were reported in 2014 in San Francisco.

3 Aragón, T J., et al. "Case-control study of shigellosis in San Francisco: the role of sexual transmission and HIV infection." Clinical Infectious Diseases 44.3 (2007): 327-334.

4 California Department of Public Health. Epidemiologic Summary of Shiga toxin-producing Escherichia coli (STEC) infections and Hemolytic Uremic Syndrome (HUS) in California, 2009-2012. Available from: https://www.cdph.ca.gov/programs/sss/Documents/STECandHUSEpiSummary2009-2012.pdf

6. Chronic Hepatitis

Chronic Hepatitis B

1,095

INDIVIDUALS NEWLY REPORTED IN 2014

From January 1, 2014 through December 31, 2014, the San Francisco Department of Public Health (SFDPH) received over 9,600 positive hepatitis B laboratory reports on 5,845 individuals. Of the 5,845 individuals, 1,095 (18.7%) were newly reported to SFDPH. Of the 5,845 cases reported in 2014, 1,037 (17.7%) met the Centers for Disease Control and Prevention (CDC) laboratory criteria for a probable case of chronic hepatitis B and 4,808 (82.3%) met the CDC laboratory criteria for a confirmed case of chronic hepatitis B.

Data presented in Table 6.1 below are for all probable and confirmed cases of chronic hepatitis B with at least one test reported to SFDPH in 2014 (N=5,845). These data do not represent the number of incident or prevalent infections (see Technical Notes: "Hepatitis Surveillance Data Limitations"). Most cases were male (50.7%) and between the ages of 25-54 years (69.4%) at the time of initial report to SFDPH. Of the 64.2% of cases for whom race was known, 90.9% were Asian/Pacific Islander (API).

Table 6.1 Number of reported cases with chronic hepatitis B by demographic characteristics as of December 31, 2014, San Francisco

	Number	(%)
Gender		
Male	2,965	(50.7)
Female	2,878	(49.3)
Total	5,843	(100.0)
* Gender data missing for 2 (0.03%) of the 5,845 cases.		
Age in Years		
<15	60	(1.0)
15-24	349	(6.0)
25-34	1,322	(22.6)
35-44	1,395	(23.9)
45-54	1,340	(22.9)
55-64	947	(16.2)
65+	432	(7.4)
Total	5,845	(100.0)
Race		
Asian/Pacific Islander	3,414	(90.9)
White	184	(4.9)
African American	104	(2.8)
American Indian/Alaska Native	12	(0.3)
Other	41	(1.1)
Total	3,755	(100.0)
* Race data missing for 2,090 (35.8%) of the 5,845 cases.		

Past or Present Hepatitis C Infection

1,827

INDIVIDUALS NEWLY REPORTED IN 2014

From January 1, 2014 through December 31, 2014, the SFDPH received over 7,200 positive hepatitis C laboratory reports on 4,378 individuals with confirmed past or present hepatitis C virus (HCV) infection. Of these 4,378 individuals, 1,827 (41.7%) were newly reported to SFDPH.

Data presented in Table 6.2 below are for all persons who met laboratory criteria for confirmed past or present HCV infection with at least one test reported to SFDPH in 2014 (N=4,378). These data do not represent the number of incident or prevalent infections (see Technical Notes: "Hepatitis Surveillance Data Limitations"). Most infections were reported in males (69.0%) and in persons between the ages of 45-64 years (64.5%) at the time of initial report to SFDPH. Of the 67.3% of persons for whom race was known, 56.6% were White and 30.8% were African American.

Table 6.2 Number of reported cases with past or present hepatitis C infection by demographic characteristics as of December 31, 2014, San Francisco

	Number	(%)
Gender		
Male	3,021	(69.0)
Female	1,357	(31.0)
Total	4,378	(100.0)
Age in Years		
<15	3	(0.1)
15-24	82	(1.9)
25-34	344	(7.9)
35-44	641	(14.6)
45-54	1,332	(30.4)
55-64	1,492	(34.1)
65+	484	(11.1)
Total	4,378	(100.0)
Race		
White	1,668	(56.6)
African American	908	(30.8)
Asian/Pacific Islander	255	(8.7)
American Indian/Alaska Native	29	(1.0)
Other	86	(2.9)
Total	2,946	(100.0)

* Race data missing for 1,432 (32.7%) of the 4,378 cases.

⇨ Please refer to the Chronic Hepatitis B and Hepatitis C Infection Surveillance Reports in San Francisco for more details at http://www.sfcdcp.org/chronichepregistry.html.

7. Special Topics

Outbreaks

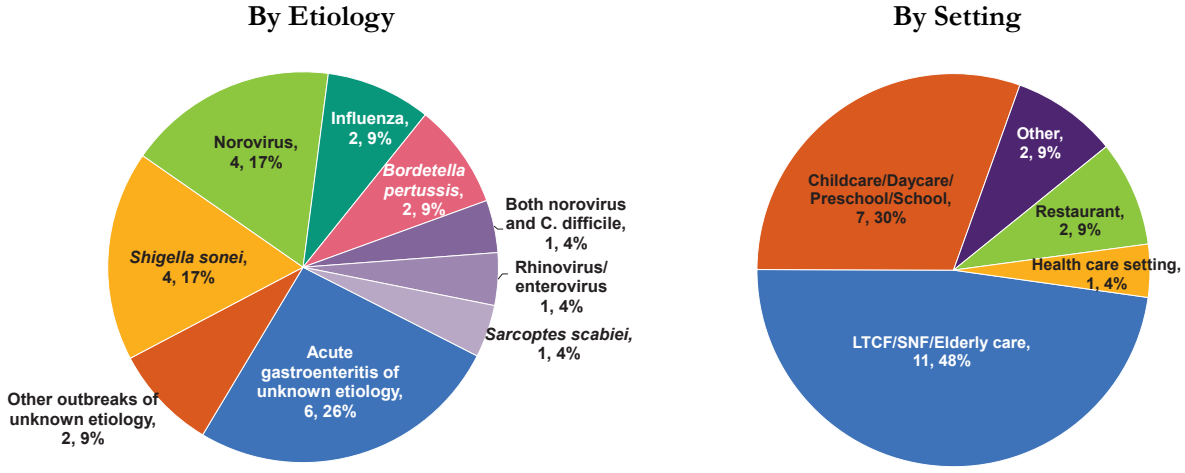
In 2014, the San Francisco Department of Public Health (SFDPH) Communicable Disease Control Unit (CDCU) identified and investigated a total of 23 communicable disease outbreaks, which is fewer than the 36 outbreaks identified and investigated in 2013. It is unclear what factors contribute to the fluctuation in the number of outbreaks identified and reported, but this decrease could be a result of changes in reporting practices or a true change in the number of outbreaks.

65%
OF OUTBREAKS CAUSED GASTROINTESTINAL ILLNESS

Etiology: Fifteen of the 23 (65%) outbreaks caused gastrointestinal illness (with two suspected to be foodborne) and five (22%) caused respiratory illness. Eight (35%) of the 23 outbreaks were of unknown etiology. Of the gastrointestinal outbreaks, four (17%) were caused by *Shigella sonnei* (including a large city-wide outbreak and a sub-outbreak within the city-wide outbreak; all confirmed) and four (17%) were caused by norovirus (two confirmed, two suspected). One outbreak was associated with both norovirus and *C. difficile*, but the most likely etiologic agent was norovirus. Of the respiratory outbreaks, two (9%) were caused by influenza (both influenza A; both confirmed), two (9%) by *Bordetella pertussis* (both confirmed), and one by Rhinovirus/enterovirus (confirmed). CDCU also provided consultation and follow-up for a confirmed outbreak of scabies (*Sarcoptes scabiei*).

Setting: Eleven (48%) of the 23 outbreaks were associated with a long-term care facility, a skilled nursing facility, or elderly care; seven (30%) were associated with childcare, daycare, preschool or schools; two (9%) were associated with a restaurant; one (4%) was associated with a health care setting, and two (9%) were associated with other types of settings.

Figure 7.1 Number and percent of reported outbreaks, 2014, San Francisco



Ebola Outbreak in West Africa & Monitoring of Travelers from Ebola-Affected Countries

0

EBOLA CASE REPORTED IN SF DURING THE OUTBREAK IN 2014

The 2014 Ebola Virus Disease (EVD) outbreak in West Africa was the largest outbreak of Ebola in history, with over 28,000 cases and over 11,000 deaths[1]. The outbreak started in December 2013 and was first reported to the World Health Organization (WHO) in March 2014; the outbreak primarily affected the countries of Guinea, Liberia, and Sierra Leone. In September 30, 2014, the Centers for Disease Control and Prevention (CDC) confirmed the first imported case of Ebola in a man who traveled from Liberia and was hospitalized in Dallas, Texas[2]. Subsequently, two healthcare workers caring for that patient in Dallas, Texas were diagnosed with Ebola. In October 2014, because of increased concerns related to imported Ebola cases to the U.S., CDC required daily monitoring for travelers returning from Ebola-affected countries[3]. The SFDPH conducted monitoring according to guidance from CDC and from the California Department of Public Health (CDPH). SFDPH staff interviewed returning travelers to assess their risk for developing Ebola and monitored travelers for symptoms via phone and/or video conference on a daily basis for up to 21 days. Monitoring ended in January 2016 once the WHO declared all three Ebola-affected countries (Guinea, Liberia and Sierra Leone) free of EVD[4]. SFDPH conducted Ebola monitoring for 112 instances of travel (several travelers made multiple trips). No cases of Ebola were identified in San Francisco or California during the outbreak; four cases in total were diagnosed in the U.S[2].

Outbreak of Ciprofloxacin-resistant Shigellosis in San Francisco

From November 1, 2014 to April 30, 2015, San Francisco experienced a city-wide outbreak of ciprofloxacin-resistant shigellosis that disproportionately affected homeless and marginally housed individuals. The outbreak was later linked to a nationwide cluster of ciprofloxacin-resistant *Shigella*. The nationwide cluster was identified based on a finding of closely related Pulsed-Field Gel Electrophoresis (PFGE) patterns in *Shigella* isolates[5].

247

SHIGELLOSIS OUTBREAK CASES REPORTED BETWEEN 2014 - 2015

A total of 247 cases of *S. sonnei* or untyped *Shigella* with ciprofloxacin-resistance or unknown antimicrobial susceptibility were reported with specimen collection dates from November 2014 to April 2015. Only individuals with residence in or travel to San Francisco during the exposure period and no recent international travel were included as part of the outbreak. The average age of patients was 44 years, with a range of one year to 88 years. 169 (68%) were male, and 123 (50%) were white. 83 patients (34%) were hospitalized. 68 cases (28%) were homeless and 31 cases (13%) resided in single room occupancy (SRO) hotels. Although homeless and marginally housed individuals were not

1 Centers for Disease Control and Prevention. 2014-2016 Ebola Outbreak in West Africa. Available from: https://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/.

2 Centers for Disease Control and Prevention. Cases of Ebola Diagnosed in the United States. Available from: http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/united-states-imported-case.html.

3 Centers for Disease Control and Prevention. Notes on the Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure. Available from: http://www.cdc.gov/vhf/ebola/exposure/monitoring-and-movement-of-persons-with-exposure.html.

4 California Department of Public Health. CDPH Concludes Ebola Monitoring Program for Travelers Returning from West African Countries. Available from: http://www.cdph.ca.gov/Pages/NR16-003.aspx.

5 Bowen, A et al. Importation and Domestic Transmission of *Shigella sonnei* Resistant to Ciprofloxacin — United States, May 2014–February 2015. MMWR. April 3, 2015 / 64(12);318320.

the majority of cases, they were disproportionately impacted by the outbreak.

Investigation and control activities in response to the outbreak included dissemination of a health advisory and press release, interviewing and providing health education to cases, and distribution of educational materials and hand sanitizer towelettes to agencies and organizations that serve the homeless. SFDPH's Environmental Health also conducted inspections and recommended prevention and control measures to SRO hotels and communal food facilities for the homeless. Despite extensive investigation, no point source or common exposure such as shelters, soup kitchens, or restaurants were identified.

Technical Notes

HIV Surveillance Methods

San Francisco HIV cases are reported primarily through active surveillance activities in which public health personnel review laboratory and pathology reports and medical records to identify cases and complete the case report forms. HIV cases are also identified through passive reporting, review of death certificates, validation studies using secondary data sources such as hospital billing records or other disease registries, and reports from other health departments. The surveillance system is evaluated regularly for completeness, timeliness, and accuracy.

Completeness of HIV case reporting in San Francisco was evaluated for cases diagnosed in 2013 using a reporting delay model[1] as recommended by the Centers for Disease Control and Prevention HIV Incidence and Case Surveillance Branch. Case report data for 2013 diagnoses did not meet the statistical assumptions of the capture-recapture model[2], hence this alternate method was used. In brief, the reporting delay statistical approach estimates the total number of diagnoses that occurred in a particular year by modeling reporting delay patterns observed among cases in the previous five years. The completeness of case reporting of HIV diagnoses in 2013 was found to be 94% (evaluated on data reported through December 26, 2014). In terms of timeliness, 89% of expected cases were reported within six months of the HIV diagnosis date.

The HIV data in this report include persons who were residents of San Francisco at the time they were diagnosed with HIV (all stages of infection) including San Francisco residents who were diagnosed in other jurisdictions. San Francisco started name-based case reporting for HIV cases in April 2006, as mandated by California law. The confidential name-based HIV reporting system in San Francisco is considered mature (more than six years have elapsed to allow for stabilization of data collection), and only cases reported confidentially by name are included in this report.

Stage of Disease at Diagnosis of HIV Infection

In 2014, the United States surveillance case definition[3] for HIV infection among adults and adolescents aged ≥13 years and children age<13 years was revised to expand the HIV infection classification staging system to five stages of HIV infection as described below. With the new case definition, stages 1-3 are classified on the basis of CD4 T-lymphocyte count and age on date of CD4 T-lymphocyte test, unless persons have had a stage-3-defining opportunistic illness. The CD4 T-lymphocyte percentage of total lymphocytes is only used when the corresponding CD4 T-lymphocyte count is unknown.

- HIV infection stage 0: This stage is early HIV infection and is established by a sequence of discordant HIV test results indicative of early HIV infection in which a negative or indeterminate result was within 180 days of a positive result. This sequence of discordant results may be based on testing history (previous documented negative/indeterminate results), or by a HIV testing algorithm. If the criteria for stage 0 are met, the stage is 0 (supersedes other stages) regardless of criteria for other stages (CD4 T-lymphocyte test results and opportunistic illness diagnoses).

1 M'ikanatha NM, & Iskander J (Eds.). (2014).Concepts and methods in infectious disease surveillance. Oxford,UK: Wiley-Blackwell.
2 Hall HI, Song R, Gerstel JE. Assessing the completeness of reporting human immunodeficiency virus diagnoses in 2002-2003: Capture recapture methods. American Journal of Epidemiology. 2006; 164:391-397.
3 Selik RE, Mokotoff ED, Branson B, Owen SM, Whitmore S, Hall HI. Revised Surveillance Case Definitions for HIV Infection -- United States, 2014. MMWR 2014;63(No. RR-3):1-10.

- HIV infection stage 1-3: HIV infection stage 1-3 is based on age-specific CD4 T-lymphocyte count or CD4 T-lymphocyte percentage of total lymphocytes.

	Age on date of CD4 T-lymphocyte test					
	<1 year		1-5 years		≥6 years	
Stage	Cells/ µL	%	Cells/ µL	%	Cells/ µL	%
1	≥1,500	≥34	≥1,000	≥30	≥500	≥26
2	750-1,499	26-33	500-999	22-29	200-499	14-25
3	<750	<26	<500	<22	<200	<14

Data on persons with HIV infection, stage 3 (AIDS) include persons whose infection has ever been classified as stage 3 (AIDS).

- HIV infection, stage unknown: No information available on CD4 count or percentage and no reported information on AIDS-defining conditions (every effort is made to collect CD4 counts or percentages at time of diagnosis).

Date of Initial HIV Diagnosis

The date of initial HIV diagnosis for newly diagnosed cases takes into account a number of dates and is determined based on the earliest of any of the following: positive HIV antibody test, positive HIV antigen/antibody combination test, viral load or CD4 test, initiation of ART, physician-documented diagnosis in absence of sufficient laboratory evidence, or patient self-report of a positive HIV test.

HIV Transgender Status

In September 1996, SFDPH began noting transgender status when this information is contained in the medical record. Transgender individuals are listed as either male-to-female or female-to-male. The majority of transgender HIV cases are male-to-female (transfemale). Due to the small number of transmale cases and potential small population size, their data are included with transfemale cases to protect confidentiality. Please note that there are several limitations of our transgender data. We believe that our report likely underestimated the number of transgender persons affected by HIV because data collected for HIV reporting are derived from the medical record. Consequently, information that may be discussed with the health care provider but not recorded in the medical record is generally not available for the purposes of HIV case reporting.

Grouping of HIV Data Categories

Data in certain racial/ethnic or risk categories are grouped together when the number of persons with HIV in that particular group is small and/or does not present significant trends. For example, “Other” in the Race/Ethnicity breakdown represents Asian/Pacific Islander, Native American, and people of mixed race. Whenever possible, this report presents the expanded racial/ethnic categories rather than aggregating into the group “Other.” The label “Other” in the Transmission Category breakdown may include transfusion recipients, hemophiliacs, heterosexuals, persons acquiring HIV perinatally, or persons of unidentified risk.

Sexually Transmitted Disease Rates

Rates have been listed in most tables along with reporting totals. Rates are equal to the number of STD cases within the specified population per 100,000 San Francisco residents in that population per year. Rates should be used when comparing STD levels among different populations, as differences in disease totals are affected by the size of the population as well as incidence.

Comparison rates for California, the United States and the New York-Newark-Edison, NY-NJ-PA and Los Angeles-Long Beach-Santa Ana, CA metropolitan statistical areas (MSAs) are from Sexually Transmitted Disease Surveillance, 2013, by the Centers for Disease Control and Prevention, U.S. Department of Health and Human Services (November, 2014). In these figures, "San Francisco MSA" represents data for the entire San Francisco-Oakland-Fremont MSA.

Population denominators for disease rates are based on 2010 U.S. Census Data. Data on race or ethnicity of STD patients are typically reported as a single value, with "Hispanic" or "Latino" as a category exclusive of all others. However, in the 2000 and 2010 U.S. Census surveys, race was collected as a multiple-choice item, with Hispanic ethnicity recorded independently of race. In order to make denominators from the census data match totals from case reports, totals for residents reporting more than one race in the census data were divided among totals for residents indicating only one race. Failure to do so would have artificially increased all race-specific rates because there are no patients recorded as "multi-racial" among the STD case reports.

Hepatitis Surveillance Data Limitations

The data presented are not an estimate of the prevalence of chronic hepatitis B or past or present HCV-infection in San Francisco residents. Prevalence cannot be calculated because some persons infected with HBV or HCV are not tested, and others were tested before consistent reporting to SFDPH was established. In addition, some persons who were tested anonymously may not have been reported to SFDPH. Finally, people who were included in these data may not live in San Francisco, either because their address information was not provided or because they have moved.

The data presented are not an estimate of the incidence rate of chronic hepatitis B or past or present HCV infected cases in 2014. The incidence rate is the number of newly infected persons occurring within a defined time in a defined geographical area. While SFDPH does identify the first date the case was reported to them, this date is not necessarily the date the case became infected or was newly diagnosed. For example, some cases may have been infected many years ago but had no symptoms and were not tested when newly infected, but were tested in 2014 because a clinician was following recommended screening practices or because symptoms of chronic hepatitis have developed.

Communicable Disease Methods and Definitions

Data Collection

General communicable disease data is collected through a mix of passive and stimulated passive surveillance. San Francisco health care providers, laboratories and other mandated reporters are required

under Title 17, California Code of Regulations (CCR) (§2500, §2505, §2593, §2641-2643, §2800-2812), to notify the local health authority of the diagnosis, detection or suspicion of certain diseases and conditions. Reports are confidentially received by fax, telephone, postal mail, or secure electronic file transfer. Reports by fax and postal mail are generally submitted using the California Confidential Morbidity Report (CMR) form. Limited case demographic and clinical information is provided on the CMR. Depending on the disease or condition, disease control staff attempt to contact the health care provider, laboratory and/or patient for follow-up and implementation of disease control measures. Clinical and risk factor data are subsequently collected according to departmental and state protocols. Data were managed with locally designed databases.

Population Under Surveillance

This report includes confirmed and probable reports, with the exception of campylobacteriosis (includes suspect in 2014), pertussis (includes suspect in 2010), salmonella (includes suspect in 2014), and shigellosis (includes suspect in 2014). The report consists of selected CCR Title 17 reportable diseases among San Francisco residents reported to SFDPH from January 1, 2004 through December 31, 2014.

San Francisco population estimates were obtained from the California Department of Finance (DOF) Demographic Research Unit; DOF estimates are based on the U.S. Census counts.

Notifiable Disease Definitions

The diseases required to be reported to public health and disease definitions can change over time. Changes in disease definitions can impact the numbers of cases of disease reported to the SFDPH. Please see the Annual Report of Communicable Diseases in San Francisco 2013 appendices for a list of notifiable disease definition changes from 2004 to 2012 and definitions for select notifiable diseases. Changes in notifiable disease definitions from 1986 to 2003 are documented in The San Francisco Communicable Disease Report 1986-2003. Reports are accessible at http://sfcdcp.org/publications.html.

Statistical Calculations

SAS version 9.3 (SAS Institute Inc., Cary, NC) was used to calculate crude incidence rates. For this report, the crude incidence rate (IR) is defined as the number of new cases of disease per 100,000 residents at risk during a given year. The denominator for all diseases, except infant botulism, congenital rubella, and invasive *H. influenzae*, was the total San Francisco population. The population at risk for infant botulism and congenital rubella was San Francisco residents less than one year of age, while for the invasive *H. influenzae* rate, it was persons less than 15 years of age. Age-adjusted rates were not calculated. Rates and proportions were generally rounded to one decimal place.

Formula 1. $$IR = \left(n / p \right) \times 100{,}000$$

where n= Number of Cases and p=Population at Risk, and each is identified for a one-year period.

Example: In 2013, there were 170 female cases of campylobacteriosis in San Francisco. The estimated number of female residents in 2013 was 410,680. Accordingly, the incidence among females was:

$$IR_{Campy\ 2013_{Females}} = \left(170 \big/ 410{,}680\right) \times 100{,}000 = 41.4$$ cases per 100,000 population.

Reliability of Rates

With rare diseases or with diseases where the number of cases for a particular population group is very small, a minor change in the number of incident cases can result in a relatively large shift in the corresponding rate. Rates and percents based on a small number of events may be unreliable and are generally subject to substantial variability over time. Unstable rates should not be statistically compared for differences with the rates for other populations or for San Francisco over time. Rates with a relative standard error (RSE) of 23% or greater were considered unstable and identified by an asterisk in tables of this report. Equivalently, numerators less than 20 result in unreliable rates.

Formula 2. $$RSE = \left(SE_{rate} \big/ r\right) \times 100 = \left(\frac{r \big/ \sqrt{n}}{r}\right) \times 100 = \left(\sqrt{1 \big/ n}\right) \times 100$$

where r = Rate and SErate = Standard Error of a Rate and n = Number of Cases

Example: In 2013, there were 396 cases of campylobacteriosis cases reported in San Francisco and one case of acute typhoid fever. Accordingly, the relative standard errors for campylobacteriosis and acute typhoid fever are:

$$RSE_{Campy2013} = \left(\sqrt{1 \big/ 396}\right) \times 100 = 5.0\%$$

The rate derived from the frequency of campylobacteriosis is considered stable (RSE < 23%).

$$RSE_{TyphoidFever2013} = \left(\sqrt{1 \big/ 1}\right) \times 100 = 100\%$$

The rate derived from the frequency of acute typhoid fever is not stable and is considered unreliable (RSE > 23%).

Data Limitations

The surveillance data was reported by laboratorians, clinicians and other mandated reporters to the local health authority in compliance with public health laws. Reports may be incomplete and/or important demographic, clinical or risk information may not be available upon active follow-up. Because not all cases of disease were detected by the health care system and not all detected cases were reported to the public health department, the information presented in this report may underestimate the true incidence of disease.

POPULATION HEALTH DIVISION
SAN FRANCISCO DEPARTMENT OF PUBLIC HEALTH

APPLIED RESEARCH, COMMUNITY HEALTH EPIDEMIOLOGY, & SURVEILLANCE