



Syphilis Surveillance Supplemental Slides, 2018–2022

Technical Notes

Division of STD Prevention
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Background

In the United States, the national rate of primary and secondary (P&S) syphilis has increased steadily since 2001.¹ In 2022, 59,016 cases of P&S syphilis were reported in the United States for a national rate of 17.7 cases per 100,000 persons. Rates of P&S syphilis increased among both men and women and in all regions of the United States. During 2021 to 2022, the national rate of P&S syphilis among women increased 19.2% with increases observed in 36 states and the District of Columbia. These increases among women are concurrent with increases among men who have sex with women only (MSW), reflecting an expanding heterosexual syphilis epidemic in the United States. Additionally, men who have sex with men (MSM) continue to be disproportionately impacted by syphilis, accounting for almost half (45.1%) of all male P&S syphilis cases in 2022. During 2021 to 2022, the number of cases of P&S syphilis among MSM increased 4.0%.

Syphilis Surveillance Supplemental Slides, 2018–2022 provides surveillance data on selected reported behaviors among P&S syphilis cases in the United States during 2018–2022, stratified by region, race/Hispanic ethnicity, and sex and sex of sex partners. The figures in these supplemental slides supersede those in earlier publications of these data. The supplemental slides and data points are available at: <https://www.cdc.gov/std/statistics/syphilis-supplement/default.htm>.

Syphilis Surveillance Supplemental Slides, 2018–2022 are best viewed as a companion to *Sexually Transmitted Infections Surveillance 2022*,¹ which includes descriptions of trends in the number of syphilis cases and rates over time, as well as comparison of syphilis rates and trends among demographic groups. Both of these publications are intended as reference documents for policy makers, program managers, researchers, and others who are concerned with syphilis and its public health implications.

Methods

Data source

P&S syphilis case notification data were extracted from the National Notifiable Diseases Surveillance System (NNDSS), the system through which the Centers for Disease Control and Prevention (CDC) receives syphilis and other sexually transmitted infections (STI) case notifications from state, local, and territorial health departments. Case notification data include demographic information and, for cases interviewed or investigated by public health staff, also include additional information about behaviors and characteristics, such as information about sexual behaviors and substance use within the past 12 months.

Calculation of proportions

Although P&S syphilis cases are typically prioritized by STI control programs for case investigation and are more likely to be reported with behavioral data compared to cases with other stages of syphilis, some P&S syphilis case notifications are submitted with missing or unknown data on behaviors and other characteristics. For the figures in these slides, the proportion of cases reporting each behavior or characteristic was calculated among cases with known data for that variable (i.e., cases with unknown data for each variable were excluded from the analysis). The numerators and denominators used to calculate the proportions presented in the slides are included in the data points file.

Geography

Data presented in this report are limited to cases reported by the 50 states and District of Columbia, and do not include cases reported by territories and outlying areas of the United States. For the figures in these supplemental slides, trends are presented stratified by geographic region. Regions were defined according to census regions of the United States: the West (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming); Midwest (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin); South (Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia); and Northeast (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont).

Race/Hispanic Ethnicity

STI case notifications are able to be reported with information on both race and Hispanic ethnicity. For the figures in these supplemental slides, categorization of race and Hispanic ethnicity involves a stepwise process whereby case notifications with Hispanic ethnicity are first classified as Hispanic/Latino, regardless of the presence or absence of race data included with the case notification. Case notifications noted to be non-Hispanic or those with missing or unknown Hispanic ethnicity are considered non-Hispanic and categorized based on race. Among these cases without Hispanic ethnicity, case notifications that include more than one race are next categorized as Multiracial with remaining cases grouped into the corresponding single race category noted in the case notification. Because the vast majority of P&S syphilis cases reported during 2018–2022 occurred among non-Hispanic White, non-Hispanic Black or African American, and Hispanic or Latino persons, figures in these supplemental slides displaying race and Hispanic ethnicity data are limited to trends among non-Hispanic White, non-Hispanic Black/African American, and Hispanic or Latino persons.

Case notification race and Hispanic ethnicity data and the race and ethnicity categorization methodology described above may not accurately reflect how a person identifies. For these reasons and others not described, some case notification data included in this report may be misclassified by race and/or Hispanic ethnicity emphasizing the importance of interpreting these results with caution. Additionally, differences by race and/or Hispanic ethnicity cannot be understood without consideration of long-standing structural contributors that are not adequately captured in case notification data such as systemic racism, challenges with healthcare access, and disparities in social determinants of health. For more information on reporting of race/Hispanic ethnicity for STI case notifications, including changes over time, see: <https://www.cdc.gov/std/statistics/2022/technical-notes.htm>.

Sex and Sex of Sex Partners

For the figures in these supplemental slides, trends are presented stratified by sex and sex of sex partners. Male cases were categorized as MSM if they reported having sex with any male partner in the last 12

months, including men who also reported sex with female partners in the last 12 months. Male cases were categorized as MSW if they reported having sex with only female partners in the last 12 months. Data for male cases reported with unknown sex of sex partners are not included in this report. Sexual transmission of bacterial STIs between two women is feasible; however, it is uncommonly reported in STI case notification data. In 2022, less than 0.5% of reported P&S syphilis cases among women were among women who reported only female sex partners.

Reported substance use behaviors, sexual behaviors, and incarceration

Substance use: For the figures in these supplemental slides, trends in the proportion of cases that reported using cocaine, crack, heroin, injection drugs, or methamphetamines in the past 12 months are presented. Injection drug use is collected and reported as a “yes/no” variable; therefore, the proportion of cases with reported injection drug use was calculated among those cases reported with a “yes” response or a “no” value. For the remaining substance use variables (e.g., crack, heroin, etc.), some reporting jurisdictions collected data in a “check all that apply” format and did not routinely report “no” responses to these variables. Therefore, for these variables, missing data could indicate either (1) the case reported that they did not use that substance, or (2) it is unknown if the case used that substance. For this reason, for each of the substance variables other than injection drug use, missing and unknown responses for the variable were considered to be “no” responses and were included in the denominator if there was indication that the jurisdiction reported the variable in a “check all that apply” manner (e.g., the case had a “yes” response for another substance use variable and did not have a “no” response to any of the substance use variables).

Sexual behaviors: For the figures in these supplemental slides, trends in the proportion of cases that reported sex with an anonymous partner, sex while intoxicated and/or high on drugs, sex with a person who injects drugs (PWID), or exchanging sex for drugs/money are presented. Additionally, for female cases, trends in the proportion that reported having had sex with a person who is known to her to be an MSM are presented. The time period for all sexual behaviors is “in the past 12 months.” For each behavior, the proportion of cases reporting the behavior was calculated among cases with known data for the variable; cases with unknown data for the variable were excluded from the analysis.

Incarceration: For the figures in these supplemental slides, trends in the proportion of cases that reported having been incarcerated within the past 12 months are presented. The proportion of cases reporting incarceration was calculated among cases with known data for this variable; cases with unknown data for the variable were excluded from the analysis.

Interpreting Trends

Interpreting trends in proportions

Trends in the proportion of reported P&S syphilis cases with reported behaviors should be interpreted in the context of overall case burden and trends during this time period. Specifically, it is important to note that during 2018–2022, the number of cases among MSM, MSW, men with unknown sex of sex partners, and women increased. Therefore, it is possible that trends in the **proportion** of cases reporting a specific behavior differ from trends in the **number** of cases reporting this behavior; the proportion of cases that reported a behavior could have remained stable while the number of cases reporting that behavior

increased. For this reason, both numbers and proportions are included in the data points file for reference.

Impact of missing data

The proportions in this report are calculated among persons with complete information on specific behaviors, and missingness could be related to the behavior (e.g., persons who use heroin may face challenges maintaining a stable residence and are more difficult to contact during disease intervention activities). Therefore, estimates may be biased towards populations easier to contact (e.g., non-substance using populations) resulting in an underestimate of some behaviors. To provide context for trends in proportions reporting specific behaviors, these Technical Notes include a table providing trends in the proportion of cases with complete information for each behavior stratified by sex and sex of sex partners (Table).

Impact of the COVID-19 pandemic

The COVID-19 pandemic led to disruptions in STI-related prevention and care activities, including reduced STI screening and redirection of STI program resources to COVID-19 activities. Because STIs often do not show symptoms, and screening is necessary for timely diagnosis and treatment, changes in access to sexual health care, as well as disruptions in public health services, can affect the number of infections diagnosed and reported. Consequently, trends for STI surveillance data collected during the pandemic that are presented in the figures in these supplemental slides should be interpreted cautiously.

Before preventive measures to reduce the spread of COVID-19 were put in place in the United States, the weekly number of diagnosed and reported P&S syphilis case counts were all higher in 2020 compared to 2019. The impact of the COVID-19 pandemic on STI surveillance data was most acute in March and April 2020, when the weekly number of diagnosed and reported P&S syphilis cases rapidly fell during the initial shelter-in-place orders. P&S syphilis case counts began increasing in May 2020, and by the end of 2020, the total number of reported cases of P&S syphilis had increased 7% compared to 2019. More information on the impact of COVID-19 on trends in STI surveillance is available at:

<https://www.cdc.gov/std/statistics/2022/impact.htm>.

Additionally, COVID-19 may have impacted observed trends in reported behaviors among P&S syphilis cases. For example, it is possible that there were changes in behaviors among persons with P&S syphilis related to COVID-19, such as reduced frequency of anonymous sex due to social distancing or reduced substance use due to shelter-in-place orders. Syphilis case investigations were also likely affected by public health staff redirection to address COVID-19 (e.g., reduced attempts to contact P&S syphilis cases for interview), resulting in fewer cases with complete behavioral information. Among women and MSW, the proportion of cases with complete information decreased during 2019–2020 for most behaviors; however, these decreases were similar to those seen in previous years. Among MSM, the proportion of cases with complete information for specific behaviors remained mostly unchanged during 2019–2020 (Table).

Additional Resources

For additional STI surveillance data and information, please see the following:

- 2022 STI Surveillance Report, available at: <https://www.cdc.gov/std/statistics/2022/impact.htm>
- National Center for HIV, Viral Hepatitis, STD, and TB Prevention (NCHHSTP) AtlasPlus, an interactive tool for accessing STD surveillance data, as well as HIV, TB, and viral hepatitis data; available at: <https://www.cdc.gov/nchhstp/atlas/>
- National Notifiable Diseases Surveillance System overview, available at: <https://www.cdc.gov/nndss/>
- Current syphilis case definition (in effect beginning in 2018), available at: <https://ndc.services.cdc.gov/case-definitions/syphilis-2018/>

References

1. Centers for Disease Control and Prevention. *Sexually Transmitted Infections Surveillance 2022*. Atlanta: U.S. Department of Health and Human Services; 2024. Available at: <https://www.cdc.gov/std/statistics/2022/>.

Table. Proportion of primary and secondary syphilis cases with complete information for selected substance use and sexual behaviors, and incarceration by sex and sex of sex partners, United States, 2018–2022

Reported behavior*	2018		2019		2020		2021		2022	
	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information
Cocaine use										
Women	3,594/4,995	72.0%	4,335/6,493	66.8%	4,957/7,901	62.7%	7,393/12,265	60.3%	8,954/14,652	61.1%
MSW	4,203/5,416	77.6%	5,530/7,289	75.9%	5,743/7,801	73.6%	8,273/11,228	73.7%	9,543/13,359	71.4%
MSM	14,995/18,760	79.9%	13,977/18,381	76.0%	13,675/17,968	76.1%	14,537/19,229	75.6%	14,807/20,004	74.0%
Crack use										
Women	3,595/4,995	72.0%	4,330/6,493	66.7%	4,947/7,901	62.6%	7,376/12,265	60.1%	8,929/14,652	60.9%
MSW	4,194/5,416	77.4%	5,517/7,289	75.7%	5,721/7,801	73.3%	8,246/11,228	73.4%	9,508/13,359	71.2%
MSM	14,984/18,760	79.9%	13,959/18,381	75.9%	13,663/17,968	76.0%	14,514/19,229	75.5%	14,775/20,004	73.9%
Heroin use										
Women	3,603/4,995	72.1%	4,347/6,493	66.9%	4,975/7,901	63.0%	7,422/12,265	60.5%	8,973/14,652	61.2%
MSW	4,207/5,416	77.7%	5,537/7,289	76.0%	5,750/7,801	73.7%	8,264/11,228	73.6%	9,545/13,359	71.4%
MSM	14,989/18,760	79.9%	13,969/18,381	76.0%	13,669/17,968	76.1%	14,519/19,229	75.5%	14,791/20,004	73.9%
Injection drug use										
Women	3,407/4,995	68.2%	4,154/6,493	64.0%	4,798/7,901	60.7%	7,367/12,265	60.1%	9,188/14,652	62.7%
MSW	4,210/5,416	77.7%	5,700/7,289	78.2%	6,136/7,801	78.7%	9,178/11,228	81.7%	10,888/13,359	81.5%
MSM	15,117/18,760	80.6%	14,054/18,381	76.5%	13,755/17,968	76.6%	14,939/19,229	77.7%	15,383/20,004	76.9%
Methamphetamine use										
Women	3,643/4,995	72.9%	4,416/6,493	68.0%	5,055/7,901	64.0%	7,567/12,265	61.7%	9,118/14,652	62.2%
MSW	4,232/5,416	78.1%	5,576/7,289	76.5%	5,797/7,801	74.3%	8,340/11,228	74.3%	9,644/13,359	72.2%
MSM	15,042/18,760	80.2%	14,024/18,381	76.3%	13,732/17,968	76.4%	14,591/19,229	75.9%	14,883/20,004	74.4%

*Within the past 12 months

ACRONYMS: MSM = Men who have sex with men; MSW = Men who have sex with women only

Table (cont). Proportion of primary and secondary syphilis cases with complete information for selected substance use and sexual behaviors, and incarceration by sex and sex of sex partners, United States, 2018–2022

Reported behavior*	2018		2019		2020		2021		2022	
	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information	# of cases with complete information / # of cases	% with complete information
Exchanged sex for drugs/money										
Women	3,662/4,995	73.3%	4,359/6,493	67.1%	4,956/7,901	62.7%	7,574/12,265	61.8%	9,201/14,652	62.8%
MSW	4,587/5,416	84.7%	5,930/7,289	81.4%	6,313/7,801	80.9%	9,374/11,228	83.5%	10,987/13,359	82.2%
MSM	15,925/18,760	84.9%	14,769/18,381	80.3%	14,014/17,968	78.0%	15,324/19,229	79.7%	15,203/20,004	76.0%
Sex with an anonymous partner										
Women	3,496/4,995	70.0%	4,450/6,493	68.5%	5,077/7,901	64.3%	7,742/12,265	63.1%	9,468/14,652	64.6%
MSW	4,435/5,416	81.9%	6,065/7,289	83.2%	6,446/7,801	82.6%	9,584/11,228	85.4%	11,289/13,359	84.5%
MSM	14,638/18,760	78.0%	14,927/18,381	81.2%	14,239/17,968	79.2%	15,711/19,229	81.7%	15,762/20,004	78.8%
Sex while intoxicated/high on drugs										
Women	3,470/4,995	69.5%	4,256/6,493	65.5%	4,873/7,901	61.7%	7,452/12,265	60.8%	9,031/14,652	61.6%
MSW	4,413/5,416	81.5%	5,728/7,289	78.6%	6,138/7,801	78.7%	9,187/11,228	81.8%	10,602/13,359	79.4%
MSM	15,157/18,760	80.8%	14,374/18,381	78.2%	13,868/17,968	77.2%	15,354/19,229	79.8%	15,172/20,004	75.8%
Sex with a person who injects drugs										
Women	3,287/4,995	65.8%	3,980/6,493	61.3%	4,490/7,901	56.8%	6,833/12,265	55.7%	8,457/14,652	57.7%
MSW	3,993/5,416	73.7%	5,331/7,289	73.1%	5,755/7,801	73.8%	8,442/11,228	75.2%	10,032/13,359	75.1%
MSM	14,363/18,760	76.6%	13,028/18,381	70.9%	12,550/17,968	69.8%	13,680/19,229	71.1%	13,857/20,004	69.3%
Sex with an MSM										
Women	3,174/4,995	63.5%	3,803/6,493	58.6%	4,275/7,901	54.1%	6,453/12,265	52.6%	7,846/14,652	53.5%
Incarceration										
Women	3,614/4,995	72.4%	4,199/6,493	64.7%	4,779/7,901	60.5%	7,238/12,265	59.0%	8,942/14,652	61.0%
MSW	4,482/5,416	82.8%	5,655/7,289	77.6%	6,021/7,801	77.2%	8,996/11,228	80.1%	10,624/13,359	79.5%
MSM	15,322/18,760	81.7%	13,804/18,381	75.1%	13,487/17,968	75.1%	14,589/19,229	75.9%	14,810/20,004	74.0%

*Within the past 12 months

ACRONYMS: MSM = Men who have sex with men; MSW = Men who have sex with women only