**Syphilis Surveillance Supplemental Slides, 2019–2023**

**Technical Notes**

**Division of STD Prevention**

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Division of STD Prevention

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**Methods**

*Syphilis Surveillance Supplemental Slides, 2019–2023* provides surveillance data on selected reported behaviors among P&S syphilis cases in the United States during 2019–2023, 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/sti-statistics/syphilis-supplement/index.html>

*Syphilis Surveillance Supplemental Slides, 2019–2023* are best viewed as a companion to *Sexually Transmitted Infections Surveillance 2023*,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.

**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 substance use and history of being incarcerated within the past 12 months.

**Calculation of percentages**

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 percentage 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 percentages presented in the slides are included in the data points file.

**Geography**

Data presented in this report are limited to case notifications sent by the 50 states and District of Columbia, and do not include case notifications sent 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 can 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 2019–2023occurred 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/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/sti-statistics/annual/technical-notes.html>

**Reported substance use behaviors, sexual behaviors, and incarceration**

***Substance use*:** For the figures in these supplemental slides, trends in the percentage 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 percentage 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), some jurisdictions likely 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 percentage of cases that reported sex with an anonymous partner, sex while intoxicated and/or high on drugs, sex with persons who inject drugs (PWID), or exchanging sex for drugs/money are presented. Additionally, for cases among women, trends in the percentage that reported having sex with a person who is known to her to be MSM are presented. The time period for all sexual behaviors is “in the past 12 months.” For each behavior, the percentage 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 percentage of cases that reported having been incarcerated within the past 12 months are presented. The percentage 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* percentages

Trends in the percentage of P&S syphilis case notifications 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 comparing 2019 to 2023, the number of cases among MSM, MSW, and women increased. Therefore, it is possible that trends in the ***percentage*** of cases reporting a specific behavior differ from trends in the ***number*** of cases reporting this behavior; the percentage 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 percentages are included in the data points file for reference. When interpreting trends in reported percentages over time, we considered changes of one percent or more in either direction to be increases or decreases, while changes within one percent indicated stable trends.

*Impact of missing data*

The percentages 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 percentages reporting specific behaviors, these Technical Notes include a table providing trends in the percentage of cases with complete information for each behavior stratified by sex and sex of sex partners ([Table](#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. 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. Consequently, trends for STI surveillance data collected during the pandemic that are presented in the figures in these supplemental slides should be interpreted cautiously.

**Additional Resources**

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

* 2023 STI Surveillance Report, available at: https://www.cdc.gov/sti-statistics/annual/index.html
* 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/about/atlasplus.html>
* National Notifiable Diseases Surveillance System overview, available at: <https://www.cdc.gov/nndss/>
* Current syphilis surveillance 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 2023.* Atlanta: U.S. Department of Health and Human Services; 2024. Available at: https://www.cdc.gov/sti-statistics/annual/index.html

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| **Table. Percentage 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, 2019–2023** | | | | | | | | | | | | | | | | | | | | | | |
| **Reported behavior\*** | 2019 | | |  | 2020 | | | |  | 2021 | | |  | | 2022 | | | |  | 2023 | | |
| # 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** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 4,335/6,493 | 66.8% | |  | 4,957/7,901 | | 62.7% |  | | 7,393/12,265 | 60.3% | | |  | | 8,954/14,652 | | 61.1% |  | 8,467/13,763 | 61.5% | |
| MSW | 5,530/7,289 | 75.9% | |  | 5,743/7,801 | | 73.6% |  | | 8,273/11,228 | 73.7% | | |  | | 9,543/13,359 | | 71.4% |  | 9,349/12,829 | 72.9% | |
| MSM | 13,977/18,381 | 76.0% | |  | 13,675/17,968 | | 76.1% |  | | 14,537/19,229 | 75.6% | | |  | | 14,807/20,004 | | 74.0% |  | 12,830/17,331 | 74.0% | |
|  |  |  | |  |  | |  |  | |  |  | | |  | |  | |  |  |  |  | |
| **Crack** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 4,330/6,493 | 66.7% | |  | 4,947/7,901 | | 62.6% |  | | 7,376/12,265 | 60.1% | | |  | | 8,929/14,652 | | 60.9% |  | 8,436/13,763 | 61.3% | |
| MSW | 5,517/7,289 | 75.7% | |  | 5,721/7,801 | | 73.3% |  | | 8,246/11,228 | 73.4% | | |  | | 9,508/13,359 | | 71.2% |  | 9,325/12,829 | 72.7% | |
| MSM | 13,959/18,381 | 75.9% | |  | 13,663/17,968 | | 76.0% |  | | 14,514/19,229 | 75.5% | | |  | | 14,775/20,004 | | 73.9% |  | 12,815/17,331 | 73.9% | |
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| **Heroin** |  |  | |  |  | |  |  | |  |  | | |  | |  | |  |  |  |  | |
| Women | 4,347/6,493 | 66.9% | |  | 4,975/7,901 | | 63.0% |  | | 7,422/12,265 | 60.5% | | |  | | 8,973/14,652 | | 61.2% |  | 8,480/13,763 | 61.6% | |
| MSW | 5,537/7,289 | 76.0% | |  | 5,750/7,801 | | 73.7% |  | | 8,264/11,228 | 73.6% | | |  | | 9,545/13,359 | | 71.4% |  | 9,341/12,829 | 72.8% | |
| MSM | 13,969/18,381 | 76.0% | |  | 13,669/17,968 | | 76.1% |  | | 14,519/19,229 | 75.5% | | |  | | 14,791/20,004 | | 73.9% |  | 12,824/17,331 | 74.0% | |
|  |  |  | |  |  | |  |  | |  |  | | |  | |  | |  |  |  |  | |
| **IDU** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 4,154/6,493 | 64.0% | |  | 4,798/7,901 | | 60.7% |  | | 7,367/12,265 | 60.1% | | |  | | 9,188/14,652 | | 62.7% |  | 9,014/13,763 | 65.5% | |
| MSW | 5,700/7,289 | 78.2% | |  | 6,136/7,801 | | 78.7% |  | | 9,178/11,228 | 81.7% | | |  | | 10,888/13,359 | | 81.5% |  | 10,856/12,829 | 84.6% | |
| MSM | 14,054/18,381 | 76.5% | |  | 13,755/17,968 | | 76.6% |  | | 14,939/19,229 | 77.7% | | |  | | 15,383/20,004 | | 76.9% |  | 13,640/17,331 | 78.7% | |
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| **Methamphetamine** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 4,416/6,493 | 68.0% | |  | 5,055/7,901 | | 64.0% |  | | 7,567/12,265 | 61.7% | | |  | | 9,118/14,652 | | 62.2% |  | 8,625/13,763 | 62.7% | |
| MSW | 5,576/7,289 | 76.5% | |  | 5,797/7,801 | | 74.3% |  | | 8,340/11,228 | 74.3% | | |  | | 9,644/13,359 | | 72.2% |  | 9,419/12,829 | 73.4% | |
| MSM | 14,024/18,381 | 76.3% | |  | 13,732/17,968 | | 76.4% |  | | 14,591/19,229 | 75.9% | | |  | | 14,883/20,004 | | 74.4% |  | 12,897/17,331 | 74.4% | |
| \*Within the past 12 months  **ACRONYMS:** MSM = Men who have sex with men; MSW = Men who have sex with women only | | | | | | | | | | | | | | | | | | | | | | |
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| **Table (cont). Percentage 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, 2019–2023** | | | | | | | | | | | | | | | | | | | | | | | |
| **Reported behavior\*** | | 2019 | | |  | 2020 | | | |  | 2021 | | |  | | 2022 | | | |  | 2023 | | |
| # 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 | 4,359/6,493 | 67.1% | |  | 4,956/7,901 | | 62.7% |  | | 7,574/12,265 | 61.8% | | |  | | 9,201/14,652 | | 62.8% |  | 9,078/13,763 | 66.0% | |
| MSW | 5,930/7,289 | 81.4% | |  | 6,313/7,801 | | 80.9% |  | | 9,374/11,228 | 83.5% | | |  | | 10,987/13,359 | | 82.2% |  | 10,977/12,829 | 85.6% | |
| MSM | 14,769/18,381 | 80.3% | |  | 14,014/17,968 | | 78.0% |  | | 15,324/19,229 | 79.7% | | |  | | 15,203/20,004 | | 76.0% |  | 13,455/17,331 | 77.6% | |
|  |  |  | |  |  | |  |  | |  |  | | |  | |  | |  |  |  |  | |
| **Sex with an Anonymous Partner** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 4,450/6,493 | 68.5% | |  | 5,077/7,901 | | 64.3% |  | | 7,742/12,265 | 63.1% | | |  | | 9,468/14,652 | | 64.6% |  | 9,221/13,763 | 67.0% | |
| MSW | 6,065/7,289 | 83.2% | |  | 6,446/7,801 | | 82.6% |  | | 9,584/11,228 | 85.4% | | |  | | 11,289/13,359 | | 84.5% |  | 11,142/12,829 | 86.9% | |
| MSM | 14,927/18,381 | 81.2% | |  | 14,239/17,968 | | 79.2% |  | | 15,711/19,229 | 81.7% | | |  | | 15,762/20,004 | | 78.8% |  | 13,741/17,331 | 79.3% | |
|  |  |  | |  |  | |  |  | |  |  | | |  | |  | |  |  |  |  | |
| **Sex while Intoxicated/High on Drugs** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 4,256/6,493 | 65.5% | |  | 4,873/7,901 | | 61.7% |  | | 7,452/12,265 | 60.8% | | |  | | 9,031/14,652 | | 61.6% |  | 8,816/13,763 | 64.1% | |
| MSW | 5,728/7,289 | 78.6% | |  | 6,138/7,801 | | 78.7% |  | | 9,187/11,228 | 81.8% | | |  | | 10,602/13,359 | | 79.4% |  | 10,589/12,829 | 82.5% | |
| MSM | 14,374/18,381 | 78.2% | |  | 13,868/17,968 | | 77.2% |  | | 15,354/19,229 | 79.8% | | |  | | 15,172/20,004 | | 75.8% |  | 13,372/17,331 | 77.2% | |
|  |  |  | |  |  | |  |  | |  |  | | |  | |  | |  |  |  |  | |
| **Sex with a Person Who Injects Drugs** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 3,980/6,493 | 61.3% | |  | 4,490/7,901 | | 56.8% |  | | 6,833/12,265 | 55.7% | | |  | | 8,457/14,652 | | 57.7% |  | 8,405/13,763 | 61.1% | |
| MSW | 5,331/7,289 | 73.1% | |  | 5,755/7,801 | | 73.8% |  | | 8,442/11,228 | 75.2% | | |  | | 10,032/13,359 | | 75.1% |  | 10,140/12,829 | 79.0% | |
| MSM | 13,028/18,381 | 70.9% | |  | 12,550/17,968 | | 69.8% |  | | 13,680/19,229 | 71.1% | | |  | | 13,857/20,004 | | 69.3% |  | 12,367/17,331 | 71.4% | |
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| **Sex with a Man who has Sex with Men** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 3,803/6,493 | 58.6% | |  | 4,275/7,901 | | 54.1% |  | | 6,453/12,265 | 52.6% | | |  | | 7,846/14,652 | | 53.5% |  | 7,796/13,763 | 56.6% | |
|  |  |  | |  |  | |  |  | |  |  | | |  | |  | |  |  |  |  | |
| **Incarceration History** | | | | | | | | | | | | | | | | | | | | | | |
| Women | 4,199/6,493 | 64.7% | |  | 4,779/7,901 | | 60.5% |  | | 7,238/12,265 | 59.0% | | |  | | 8,942/14,652 | | 61.0% |  | 8,772/13,763 | 63.7% | |
| MSW | 5,655/7,289 | 77.6% | |  | 6,021/7,801 | | 77.2% |  | | 8,996/11,228 | 80.1% | | |  | | 10,624/13,359 | | 79.5% |  | 10,503/12,829 | 81.9% | |
| MSM | 13,804/18,381 | 75.1% | |  | 13,487/17,968 | | 75.1% |  | | 14,589/19,229 | 75.9% | | |  | | 14,810/20,004 | | 74.0% |  | 12,955/17,331 | 74.8% | |
| \*Within the past 12 months  **ACRONYMS:** MSM = Men who have sex with men; MSW = Men who have sex with women only | | | | | | | | | | | | | | | | | | | | | | |