

Sexually Transmitted Disease Surveillance 2006 Supplement

Syphilis Surveillance Report

**Division of STD Prevention
December 2007**

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Suggested Citation

Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2006 Supplement, Syphilis Surveillance Report*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, December 2007.

Printed copies can be obtained from either the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, 1600 Clifton Road, Mailstop E-07, Atlanta, Georgia 30333 or the STD publication ordering system at: <http://www.cdc.gov/std>

The report is also available by Internet via the CDC home page at: <http://www.cdc.gov/std/Syphilis2006/>

Acknowledgements

The publication of this report would not have been possible without the contributions of the State and Territorial Health Departments and the STD Control Programs, which provided state and local surveillance data to CDC.

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Update: U.S. Syphilis Elimination Effort

In October 1999, the Centers for Disease Control and Prevention (CDC), in collaboration with federal, state, local, and non-governmental partners, launched the National Plan to Eliminate Syphilis.¹ The plan's five key strategies included: 1) enhanced surveillance, 2) rapid outbreak response activities, 3) enhanced clinical and laboratory services, 4) strengthened community involvement and organizational partnerships, and 5) enhanced health promotion. In the seven years since its establishment, numerous gains have been made in reducing disease incidence in key groups, raising professional and public awareness of syphilis, increasing financial investment into public Sexually Transmitted Disease (STD) clinic services, and building local public health and community capacity to fight this devastating disease.

However, new challenges have emerged. After reaching a nadir in 2000, case reports of primary and secondary syphilis are again on the increase, and today more than 60% of new infections are estimated to occur in men who have sex with men.² Syphilis is now increasingly diagnosed in the private sector, generating concerns about the effectiveness of its detection and management in this setting. The

evolving epidemiology, changing risk groups, and social environments pose challenges for elimination and STD program activities. Moreover, public health services face increasing pressures from rising demand and decreasing financial resources; and the social contexts of poverty, racism, homophobia, and socio-economic discrimination continue to drive the concentration of the disease in those with high-risk sexual behaviors, poor access to care, or both.

In 2006 CDC, in consultation with state, local, and community partners, updated the national plan to eliminate syphilis.³ The 2006 plan, *Together We Can SEE: The National Plan to Eliminate Syphilis from the United States* provides a dynamic, evidence-based framework to guide current and future syphilis elimination efforts and promotes culturally competent prevention and control services.⁴ By 2010, interim elimination targets will be to:

- reduce rates of primary and secondary syphilis in the United States to 2.2 cases per 100,000 population;
- reduce congenital syphilis to 3.9 cases per 100,000 live births; and

- reduce the Black:White racial disparity to 3:1.

In order to achieve this, CDC will focus syphilis elimination activities towards achieving three strategic goals: investment in and enhancement of public health services; prioritization of evidence-based, culturally competent interventions; and increasing accountability for syphilis elimination services and interventions. Each of the three

goals in the updated plan corresponds with 3 specific strategies, resulting in a total of nine strategies : 1) Surveillance, 2) Clinical and Laboratory Services, 3) Community Mobilization, 4) Health Care Provider Mobilization, 5) Tailoring of Interventions, 6) Evidence-based Action Planning, 7) Monitoring and Evaluation, 8) Training and Staff Development, and 9) Research. The 3-by-3 approach to implementing syphilis elimination is illustrated below.

SYPHILIS ELIMINATION GOAL	SYPHILIS ELIMINATION STRATEGIES
<p>Investment in, and enhancement of, public health services and interventions - Public health services will achieve excellence in the diagnosis, management, and reporting of syphilis and its adverse outcomes, especially those at greatest risk of health disparities.</p>	<ol style="list-style-type: none"> 1. Improve and enhance syphilis surveillance and outbreak response 2. Improve and quality assure clinical and partner services 3. Improve and quality assure laboratory services
<p>Prioritization of evidence-based, culturally competent interventions - Public health services will improve the advocacy, acceptability, and appropriateness of their response to syphilis epidemics through the creation of productive and proactive partnerships with external stakeholders.</p>	<ol style="list-style-type: none"> 1. Mobilization of affected communities 2. Tailoring intervention strategies for affected populations. 3. Mobilization of, and creating alliances with health care providers
<p>Accountable services and interventions - Public health services will improve the effectiveness of their interventions by improving accountability for their planning, implementation, and evaluation.</p>	<ol style="list-style-type: none"> 1. Training and staff development 2. Evidence-based action planning, monitoring, and evaluation 3. Research and development

This updated plan provides guidance to assist local, state, and national partners to effectively focus on the infectious syphilis epidemic in order to get the most important things done in the most cost-effective, ethical, and acceptable ways possible. Further details on the recommended strategies and recommended activities are contained in an accompanying Syphilis Elimination Technical Appendix (SETA).⁵

In 1999, the persistence of syphilis in the United States was said to reflect a failure in our public health capacity. Today, population-wide changes in sexual behavior, in turn driven by a number of social and economic factors, continue to influence which locale and who is affected by this disease. However, the benefits of elimination - improvements in health, reductions in healthcare costs, development of public health capacity, and reductions in racial disparities - nevertheless remain as pertinent today as ever.

Introduction

Syphilis, a genital ulcerative disease, can cause significant complications if untreated and facilitates the transmission of HIV.⁶ Untreated early syphilis during pregnancy results in perinatal death in up to 40% of cases and, if acquired during the four years preceding pregnancy, may lead to infection of the fetus in 80% of cases.⁷

Reports of outbreaks and increased numbers of primary and secondary syphilis cases among men who have sex with men have been documented and characterized by high rates of HIV co-infection and high-risk sexual behavior.⁸⁻¹¹ In recent years, men who have sex with men have accounted for an increasing number of estimated primary and secondary syphilis cases in the United States¹² and now account for 64% of primary and secondary syphilis based on information available from 29 states and Washington, D.C.¹³

After decreasing from 2001 to 2004, the rate of primary and secondary syphilis among women increased from 0.8 cases per 100,000 population in 2004 to 1.0 cases per 100,000 population in 2006.¹⁴ After 14 years of decline in the United States, the rate of congenital syphilis increased 3.7% from 2005 to 2006 (from 8.2 to 8.5 cases per 100,000 live births).¹⁴ Despite the majority of U.S. syphilis cases occurring among

men who have sex with men, heterosexual syphilis may be an emerging problem given the recent increases among women and infants.

Additionally, a substantial proportion of early syphilis cases is from correctional facilities,¹⁵ in which high rates of reactive serologies and disease are known to occur,¹⁶⁻¹⁹ particularly in areas experiencing heterosexual syphilis epidemics.¹⁵⁻¹⁷ Information from both case reports and STD Prevalence Monitoring Projects is important for STD prevention, treatment, planning, and evaluation activities.

The use of data to inform, evaluate, and modify interventions and other activities is critical to the effort to prevent syphilis. To that end, this Syphilis Surveillance Report consists of national and state profiles that contain and describe figures and tables, which provide an overview of syphilis morbidity in the United States. These profiles present adult and congenital syphilis trends and other statistics in the United States through 2006 and are based on case reports from the 65 sexually transmitted disease (STD) project areas. Case report data are the foundation of surveillance systems, which are operated by state and local health department STD control programs.

Any comments or suggestions that would improve the usefulness of future publications are appreciated and should be sent to Director, Division of STD Prevention, National Center for HIV/AIDS, STD, Viral Hepatitis, and TB Prevention, Centers for Disease Control and Prevention, 1600 Clifton Road, Mailstop E-02, Atlanta, Georgia, 30333.

National Profile of Syphilis Surveillance Data

Overall

The rate of primary and secondary (P&S) syphilis reported in the United States decreased during the 1990s and in 2000 was the lowest since reporting began in 1941.¹⁴ However, the number of cases of P&S syphilis increased during 2000-2005.

In 2006, P&S syphilis cases reported to CDC increased to 9,756 from 8,724 in 2005, an increase of 11.8% (Figure 1). The rate of P&S syphilis in the United States was 13.8% higher in 2006 than in 2005 (3.3 vs. 2.9 cases per 100,000 population).¹⁴

During 2005-2006, the number of cases reported to CDC increased 12.4% for early latent syphilis (from 8,176 to 9,186), 9.9% for late and late latent syphilis (from 16,049 to 17,644), and 11.0% for the total number of cases of syphilis (P&S, early latent, late, late latent, and congenital syphilis) (from 33,288 to 36,935).¹⁴

Sex

The overall increase in primary and secondary (P&S) syphilis cases during 2000-2006 was observed primarily among men.¹⁴ During 2005-2006, P&S syphilis reported to CDC increased among men (from 7,383 to 8,293 cases) and

women (from 1,339 to 1,458 cases).¹⁴

During 2005-2006, the rate of P&S syphilis increased 11.8% among men (from 5.1 cases to 5.7 cases per 100,000 men) and increased 11.1% among women (from 0.9 cases to 1.0 cases per 100,000 women) (Figure 2).¹⁴

In 2006, the rate of P&S syphilis was highest among women in the 20-24 year-old age group (2.9 cases per 100,000 population) and among men in the 35-39 year-old age group (13.5 cases per 100,000 population) (Figure 3).¹⁴ In 2004 and 2005, the highest rates of syphilis among women and men were in these same respective age groups.

The male-to-female (M:F) rate ratio for P&S syphilis had risen steadily since 1996 when it was 1.2 (Figure 4), suggesting an increase in syphilis among men who have sex with men during this time. From 2005-2006, the M:F rate ratio increased in Puerto Rico, the District of Columbia, and in 20 of 34 (59%) states that reported at least 25 cases in 2006.¹⁴

During 2005-2006, the M:F rate ratio for P&S syphilis increased among whites (from 11.0 to 11.7), African Americans (from 3.5 to

3.7), Asian/Pacific Islanders (from 11.0 to 25.0), American Indian/Alaska Natives (from 2.1 to 2.5), and Hispanics (from 6.0 to 7.9).¹⁴

Congenital Syphilis

During 1996-2003, the rate of primary and secondary (P&S) syphilis reported among women decreased from 3.9 to 0.8 cases per 100,000 population, remained the same in 2004, and then increased to 0.9 and 1.0 cases per 100,000 population in 2005 and 2006, respectively.¹⁴ During 1996-2005, the average yearly percent decrease in the congenital syphilis (CS) rate was 14.1%.¹⁴ Between 2005 and 2006, the overall rate of CS increased 3.7% in the United States, from 8.2 to 8.5 cases per 100,000 live births.¹⁴

In 2006, 26 states, the District of Columbia, and one outlying area had rates of CS that exceeded the HP2010 target of 1.0 case per 100,000 live births (Figure 6).¹⁴

Race/Ethnicity

During 1990-1996, rates of primary and secondary (P&S) syphilis decreased among all racial and ethnic groups. From 1997 to 2000, rates of P&S syphilis were fairly stable in all racial and ethnic groups except African Americans, in whom the rate continued to decrease steadily.¹⁴

During 2000-2006, the P&S syphilis rate increased among non-Hispanic whites (from 0.5 to 1.9 cases per 100,000 population), Hispanics (from 1.6 to 3.6 cases per

100,000 population), and Asian/Pacific Islanders (from 0.3 to 1.3 cases per 100,000 population) (Figure 7). During 2000-2003, the P&S syphilis rate among African Americans decreased (from 12.0 to 7.7 cases per 100,000 population), but during 2003-2006, the rate increased to 11.3 per 100,000 population. The rate among American Indian/Alaska Natives increased during 2000-2001 (from 2.2 to 3.8 cases per 100,000 population), decreased to 2.1 cases per 100,000 population in 2002, and then increased to 3.3 cases per 100,000 population in 2006.¹⁴

In 2006, 43.2% of reported cases of P&S syphilis occurred among African Americans compared with 41.4% of cases reported in 2005.¹⁴ Although the rate of P&S syphilis remains higher among African Americans than among non-Hispanic whites, the difference in rates between the two populations has decreased over time because of the declining rate of P&S syphilis among African Americans and the increasing rate of infection among non-Hispanic whites. In 2005 and 2006, the rate of P&S syphilis was 5.4 and 6.0 times higher among African Americans than among non-Hispanic whites, respectively, in contrast to 1992 when the African American rate was 62 times that of the non-Hispanic white rate.

In 2006, the rates of P&S syphilis were highest among African American men (18.3 cases per 100,000 population) and Hispanic

men (6.3 cases per 100,000 population) (Figure 8).¹⁴

Geography

In 2006, the South continued to have a higher rate of primary and secondary (P&S) syphilis (4.3 cases per 100,000 population) than any other region in the United States, and cases in the South accounted for 47.1% of total P&S syphilis cases reported, compared to 46.4% in 2005.¹⁴ (See page 12 for definition of regions). Since 2000, however, the percentage of cases from the South has decreased from 62%. At the same time, the percentage of cases from the West has increased from 10.5% in 2000 to 26.5% in 2006.

During 2005-2006, the P&S syphilis rate increased 13.2% in the South (from 3.8 to 4.3 cases per 100,000 population), 13.0% in the Northeast (from 2.3 to 2.6 cases per 100,000 population), and 15.2% in the West (from 3.3 to 3.8 cases per 100,000 population), but remained the same in the Midwest (1.8 cases per 100,000 population). Rates in all regions were greater than the HP2010 target of 0.2 case per 100,000 persons in 2006 (Figure 9).²⁰

During 2005-2006, M:F P&S syphilis rate ratios increased in the Northeast (from 14.7 to 16.7) and West (from 8.3 to 9.9), decreased in the Midwest (from 8.3 to 6.2), and remained the same in the South (3.8).¹⁴

Of the 30 counties and independent cities with the most cases in 2006, 20 counties and two independent cities had increases in

the M:F P&S syphilis rate ratio, and 10 counties had a decrease between 2005 and 2006 (Table 1).

In 2006, P&S syphilis rates in only 4 states were less than or equal to the Healthy People 2010 national target of 0.2 case per 100,000 persons (Figure 10).¹⁴

In 2006, 2,360 (75.2%) of 3,140 counties in the United States reported no cases of P&S syphilis compared with 2,434 (77.5%) counties reporting no cases in 2005.¹⁴ Of 773 counties reporting at least one case of P&S syphilis in 2006, 7 (0.9%) had rates at or below the Healthy People 2010 target of 0.2 cases per 100,000 population. Rates of P&S syphilis were above the Healthy People 2010 target for 766 counties in 2006 (Figure 11). These 766 counties (24.4% of the total number of counties in the United States) accounted for 99.9% of the total P&S syphilis cases reported in 2006.¹⁴

In 2006, half of the total number of P&S syphilis cases was reported from 20 counties and two cities.¹⁴

Corrections STD Prevalence Monitoring Project

The median percentage of reactive syphilis tests by facility was 3.9% (range, 0.0-21.7) for women entering 32 adult corrections facilities and 1.4% (range, 0.0-7.8) for men entering 58 adult corrections facilities in 2006 (Table 2).

Source of Case Report

The proportion of P&S syphilis cases reported from sources other than STD clinics increased from 1999 to 2006 among both men (42% to 66%) and women (49% to 61%) (Table 3).

Interpreting STD Surveillance Data

Data Limitations

Syphilis data should be interpreted with caution. Case report data are likely to underestimate the true burden of disease in the United States, because of underreporting of diagnosed cases, infected persons not accessing health care, and persons who are otherwise not screened. The prevalence of reactive serology from persons entering correctional facilities may not reflect the prevalence of syphilis in communities where the facilities are located or where the inmates were living at the time of arrest. Because confirmatory test results were not available for the majority of serologic tests for syphilis, biologic false positives could not be excluded from the proportion calculations.

Sources of Data

Syphilis case report data are used to create the tables and graphics in this report and are from either hardcopy summary reporting forms (monthly, quarterly, and annual) or individual case records transmitted electronically via the National Electronic Telecommunications System for Surveillance (NETSS), which is the system that provides notifiable disease information that is published in the Morbidity and Mortality Weekly Report (MMWR).

Project areas have been in the process of converting from hardcopy reporting of STD data to electronic submissions of individual line-listed data since 1996. In 2006, primary and secondary (P&S) syphilis data from hardcopy reports were used from Puerto Rico, Guam, and Virgin Islands. Data on reported cases of P&S syphilis were analyzed for this report because these cases best represent the incidence of infectious syphilis (i.e., newly acquired infections within a specific time period). For congenital syphilis (CS), 29 states and outlying territories used hardcopy reports. Reports and corrections sent to CDC on hardcopy forms and electronically via NETSS through April 29, 2005, were used to create the line-graphs, bar charts, and county-level maps in this report.

Sixteen states reported information from syphilis serology data from persons entering correctional facilities as part of the Corrections STD Prevalence Monitoring Project.

Population Denominators and Rate Calculations

2000–2005 Rates and Population

Crude incidence rates (new cases/population) were calculated on an annual basis per 100,000 population. In this report, the 2006 rates for the United States, all states, counties, metropolitan statistical areas (MSAs), and outlying areas were calculated by dividing the number of cases reported from each area in 2006 by the estimated area-specific 2005 population (the most current detailed population file available at time of publication).

The National Center for Health Statistics released bridged race population counts for 2000–2005 resident population based on the Census 2000 counts. These estimates resulted from bridging the 31 race categories used in Census 2000, as specified in the 1997 Office of Management and Budget (OMB) standards, to the five race/ethnicity groups specified under the 1977 OMB standards.

From 2001 to 2002, population estimates for Guam were obtained from the Guam Bureau of Statistics and Plans; estimates for Puerto Rico were obtained from the Bureau of Census; and estimates for the Virgin Islands were obtained from the University of the Virgin Islands. After 2002, population estimates for all outlying areas were obtained from the Bureau of Census web site <http://www.census.gov/ipc/w>

[www/idbprint.html](http://www.idbprint.html). The 2005–2006 rates for outlying areas were calculated using the 2005 population estimates.

Due to use of the updated population data, rates for the period 2000–2005 may be different from prior *Surveillance Reports*.

1990–1999 Rates and Population

The population counts for 1990–1999 incorporated the bridged single-race estimates of the April 1, 2000 resident population. These files were prepared by the U.S. Census Bureau with support from the National Cancer Institute.

1981–1989 Rates and Population

For the United States, rates were calculated using Bureau of the Census population estimates for 1981 through 1989 (Bureau of the Census; United States Population Estimates by Age, Sex and Race:1980–1989 [Series P-25, No. 1045]; Washington: U.S. Government Printing Office, 1990; and United States Population Estimates by Age, Sex and Race: 1989 [Series P-25, No. 1057]; Washington: U.S. Government Printing Office, 1990.

1941–1980 Rates and Population

Rates for 1941–1980 are based on population estimates from the Bureau of Census and currently maintained by the Division of STD Prevention.

1963–2005 Congenital Syphilis Rates and Live Births

CS data in Table 1 of *Sexually Transmitted Disease Surveillance 2006* present the number of CS

cases per 100,000 live births for all years during the period 1941 through 2006. Previous publications presented congenital syphilis rates per 100,000 population for 1941-1994 and for cases diagnosed at < 1 year of age per 100,000 live births. To allow for trends in CS rates to be compared over time, beginning in 2006 live births will be used as the denominator for CS and case counts will no longer be limited to those diagnosed within the first year of life. CS morbidity (cases)

are assigned to their year of birth. Rates of CS for 1963–1988 were calculated using published live birth data (NCHS; Vital Statistics Report, United States, 1988 [Vol.1-Natality]). CS rates for 1989–2003 were calculated using live births from the National Center for Health Statistics (NCHS) (Vital Statistics: Natality Tapes 1989–2002 or Vital Statistics Reports, United States 1999, Vol. 48 No.10-Natality). Race-specific rates for 2004–2006 were calculated using live birth data for 2004.

Definition of Regions

The four regions referred to in the text and figures include the following jurisdictions: Northeast=Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; 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; West=Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

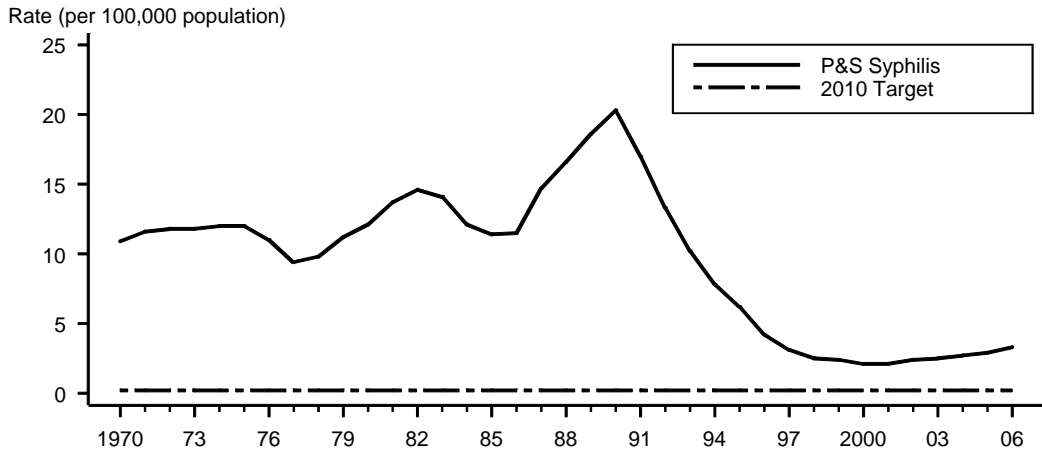
References

- ¹Centers for Disease Control and Prevention. The National Plan to Eliminate Syphilis from the United States. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, National Center for HIV, STD, and TB Prevention, 1999:1-84.
- ²Centers for Disease Control and Prevention. Primary and secondary—United States, 2003-2004. *MMWR* 2006;55:269-273.
- ³Centers for Disease Control and Prevention. Report of the Syphilis Elimination Consultation, August 1-2, 2005. Atlanta, GA. October 2005.
- ⁴Centers for Disease Control and Prevention. The Together We Can SEE. The National Plan to Eliminate Syphilis from the United States. Atlanta, GA: US Department of Health and Human Services, May 2006.
- ⁵Centers for Disease Control and Prevention. The Syphilis Elimination Technical Appendix. Atlanta, GA: US Department of Health and Human Services, May 2006.
- ⁶Holmes KK, Sparling PF, Mardh P-A, et al. eds. *Sexually Transmitted Diseases*. 3rd ed. New York: McGraw-Hill, 1999.
- ⁷Ingraham NR. The value of penicillin alone in the prevention and treatment of congenital syphilis. *Acta Derm Venereol* 1951;31(suppl24):60-87.
- ⁸Beltrami JF, Shouse RL, Blake PA. Trends in infectious diseases and the male to female ratio: possible clues to changes in behavior among men who have sex with men. *AIDS Educ Prev* 2005;17(Suppl B):49-59.
- ⁹D'Souza G, Lee JH, Paffel JM. Outbreak of syphilis among men who have sex with men in Houston, Texas. *Sex Transm Dis* 2003;30:872-873.
- ¹⁰Centers for Disease Control and Prevention. Primary and secondary syphilis among men who have sex with men – New York City, 2001. *MMWR* 2002;51:853-856.
- ¹¹Centers for Disease Control and Prevention. Outbreak of syphilis among men who have sex with men – Southern California, 2000. *MMWR* 2001;50:117-20.
- ¹²Heffelfinger JD, Swint EB, Berman SM, Weinstock HS. Trends in primary and secondary syphilis among men who have sex with men in the United States. *Am J Public Health* 2007;97:1076-1083.
- ¹³Beltrami JF, Weinstock H.S. Primary and secondary syphilis among men who have sex with men in the United States, 2005. In: program and abstracts of the 17th Biennial meeting of the ISSTD, Seattle, WA, July 29-August 1, 2006 [abstract O-069].
- ¹⁴Centers for Disease Control and Prevention. *Sexually Transmitted Disease Surveillance 2006*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, November 2007.
- ¹⁵Kahn RH, Voigt RF, Swint E, Weinstock H. Early syphilis in the United States identified in corrections facilities, 1999-2002. *Sex Transm Dis* 2004;31:360-364.
- ¹⁶Kahn RH, Scholl DT, Shane SM, Lemoine AL, Farley TA. Screening for syphilis in arrestees: usefulness for community-wide syphilis surveillance and control. *Sex Transm Dis* 2002;29:150-156.
- ¹⁷Finelli L, Farley TA, Gibson JJ, Langley C, Hwang L-Y, Levine WC. Prevalence monitoring in syphilis surveillance: results from a multicenter research program. *Sex Transm Dis* 2002;29:769-774.
- ¹⁸Mertz KJ, Voigt RF, Hutchins K, Levine WC. Jail STD Prevalence Monitoring Group. Findings from STD screening of adolescents and adults entering corrections facilities: implications for STD control strategies. *Sex Transm Dis* 2002;29:834-839.
- ¹⁹Silberstein GS, Coles FB, Greenberg A, Singer L, Voigt RF. Effectiveness and cost-benefit of enhancements to a syphilis

screening and treatment program at a county jail. *Sex Transm Dis* 2000;27:508-517.

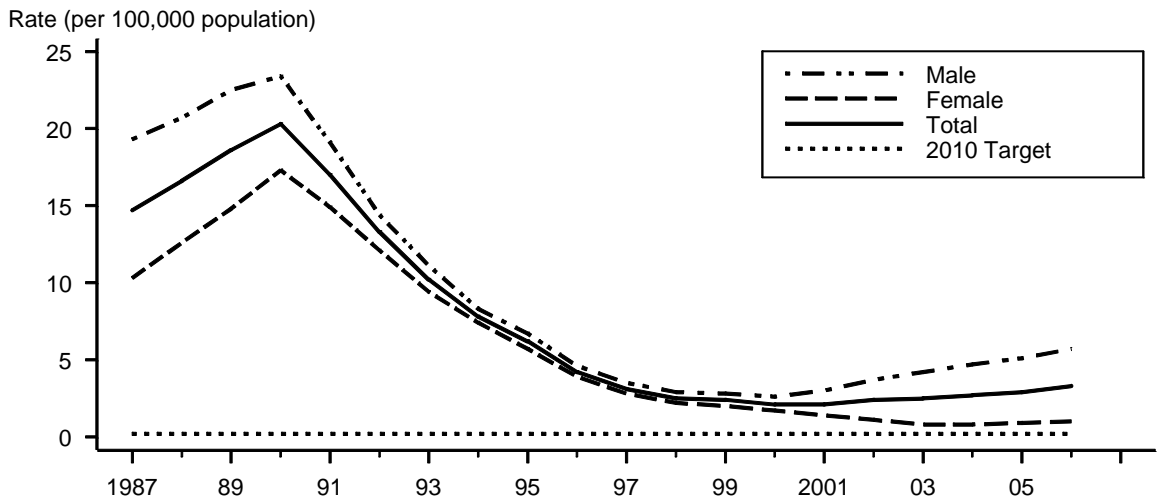
²⁰U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.

Figure 1. Primary and secondary syphilis — Reported rates: United States, 1970–2006 and the Healthy People 2010 target



Note: The Healthy People 2010 (HP2010) target for primary and secondary syphilis is 0.2 case per 100,000 population.

Figure 2. Primary and secondary syphilis — Rates: Total and by sex: United States, 1987–2006 and the Healthy People 2010 target



Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population

Figure 3. Primary and secondary syphilis — Age- and sex-specific rates: United States, 2006

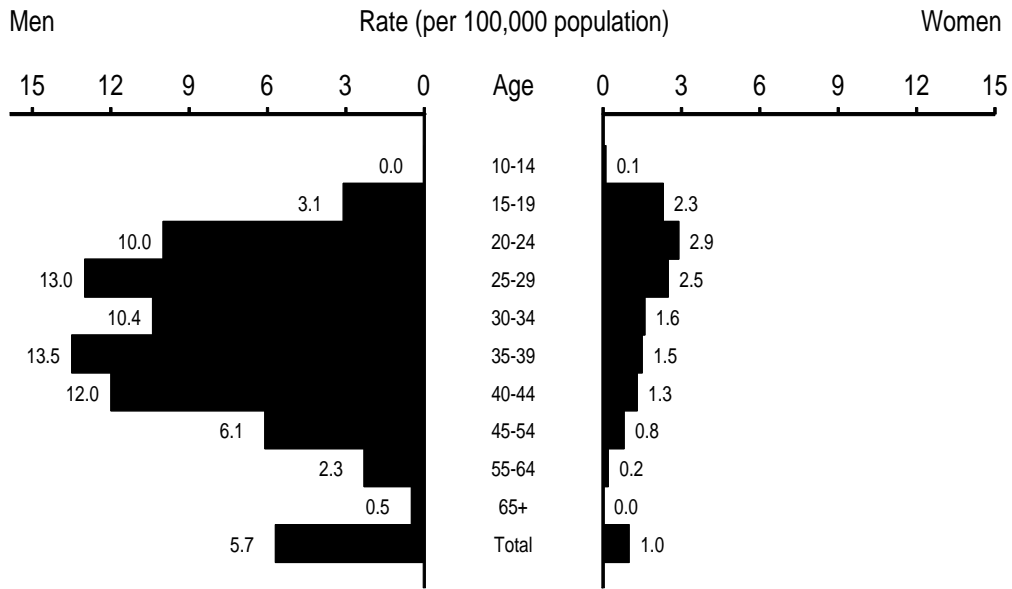


Figure 4. Primary and secondary syphilis — Male-to-female rate ratios: United States, 1997–2006

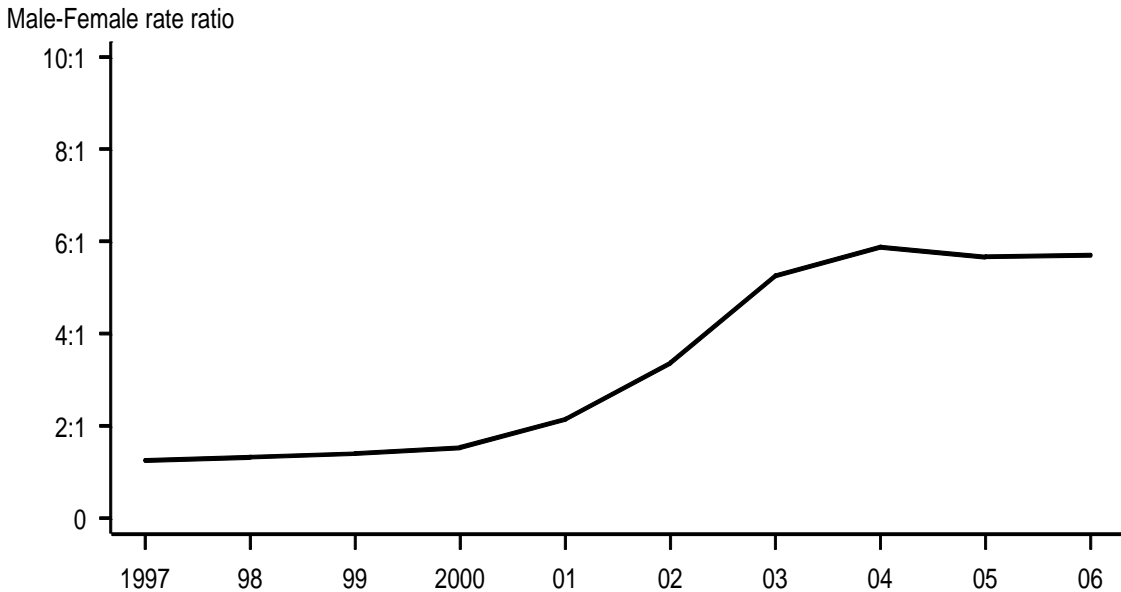


Figure 5. Congenital syphilis (CS) — Reported cases for infants <1 year of age and rates of primary and secondary syphilis among women: United States, 1997–2006

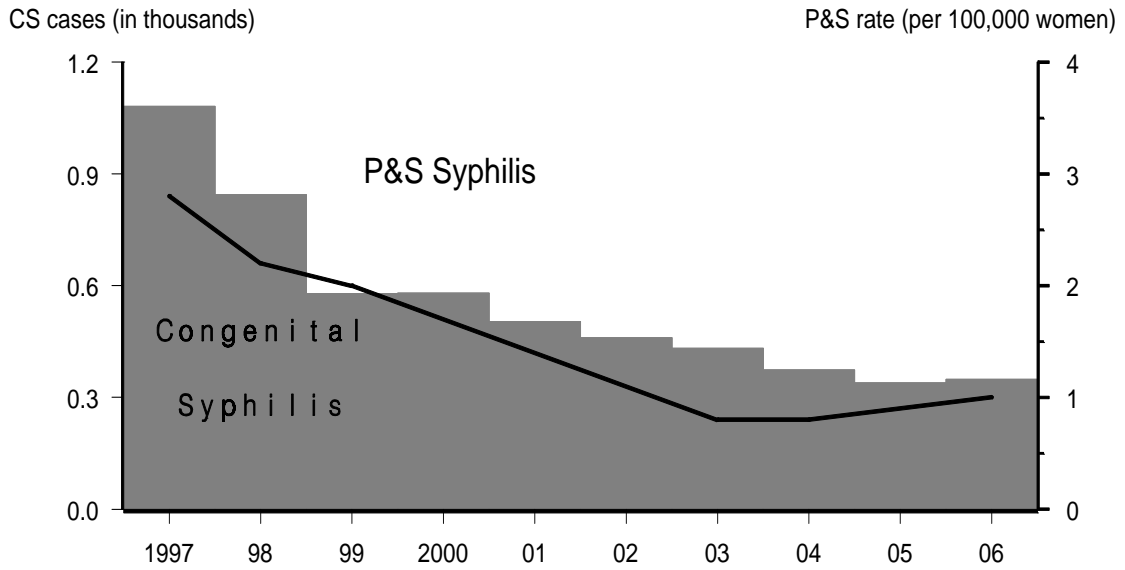
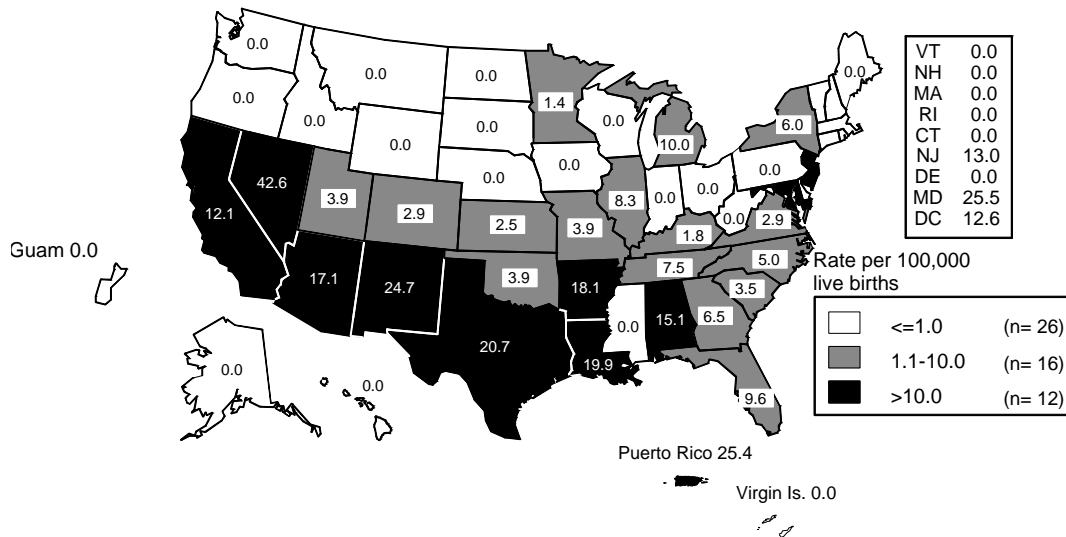


Figure 6. Congenital syphilis — Rates for infants < 1 year of age by state: United States and outlying areas, 2006



Note: The total rate of congenital syphilis for infants < 1 year of age for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 8.7 per 100,000 live births. The Healthy People 2010 target is 1.0 case per 100,000 live births.

Figure 7. Primary and secondary syphilis — Rates by race/ethnicity: United States, 1997–2006

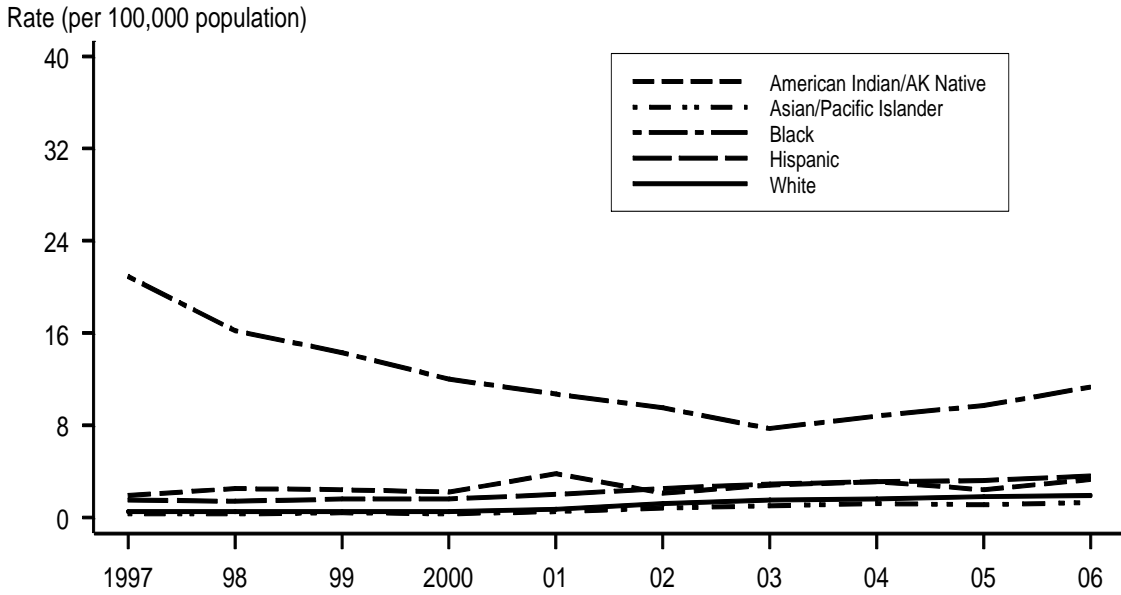


Figure 8. Primary and secondary syphilis — Rates by race/ethnicity and sex: United States, 2006

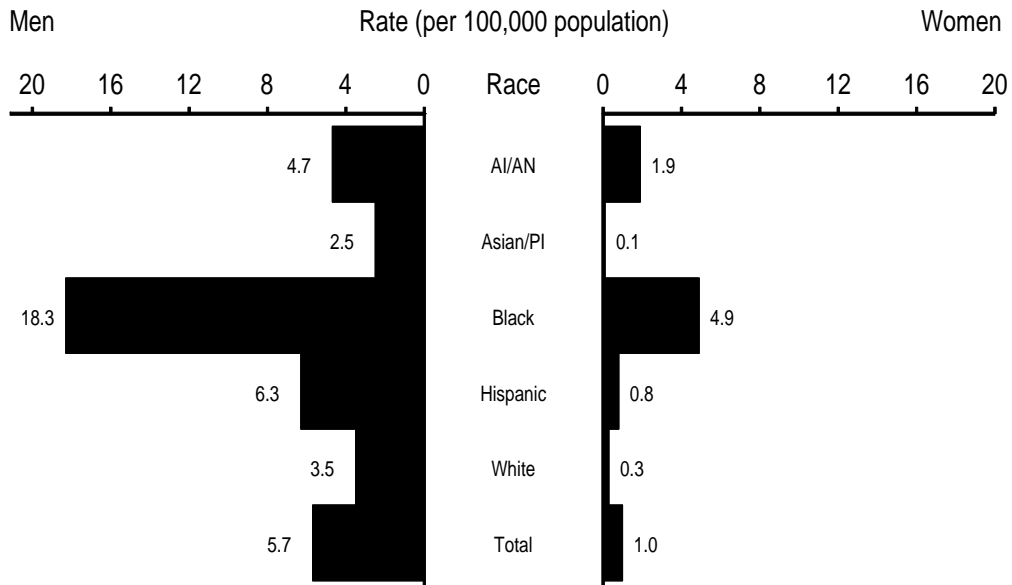
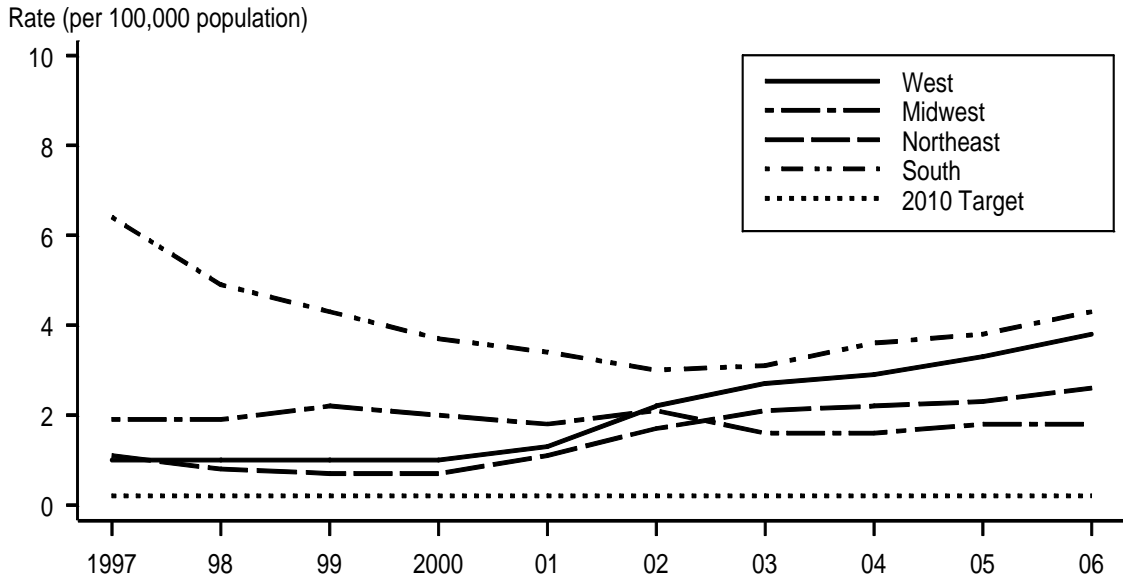
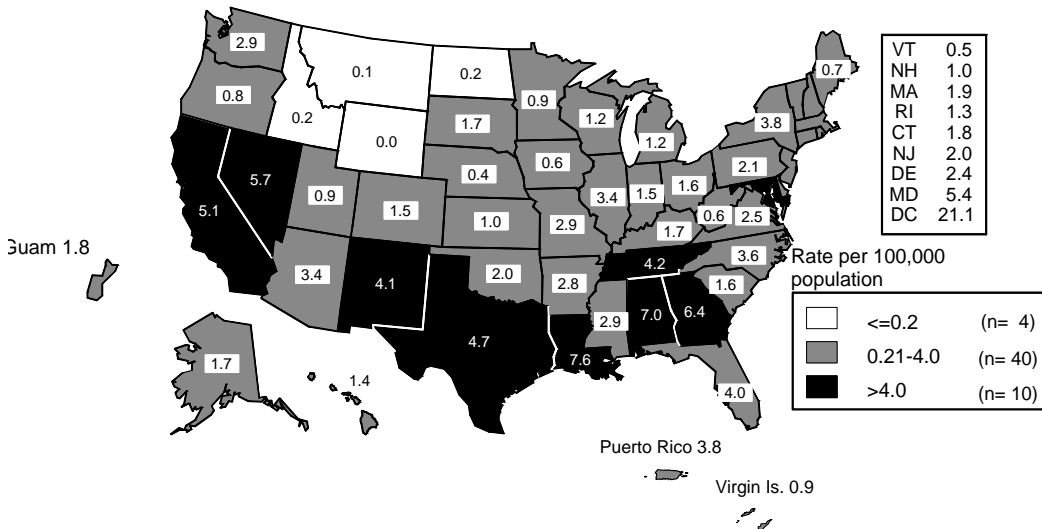


Figure 9. Primary and secondary syphilis — Rates by region: United States, 1997–2006 and the Healthy People 2010 target



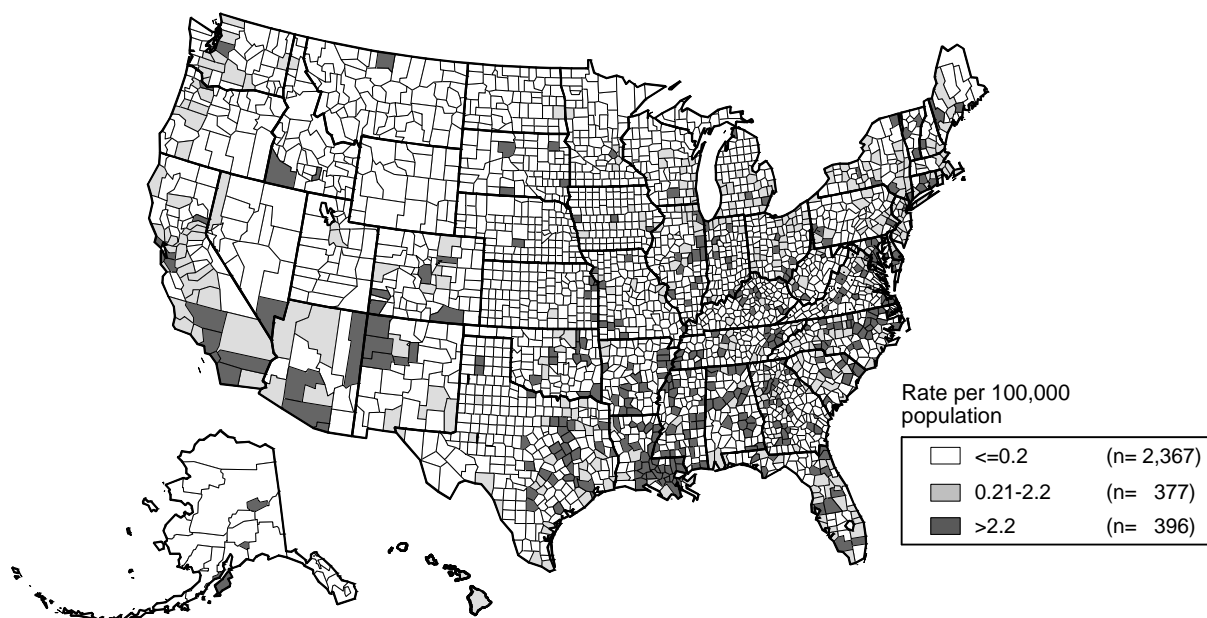
Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Figure 10. Primary and secondary syphilis — Rates by state: United States and outlying areas, 2006



Note: The total rate of P&S syphilis for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 3.3 per 100,000 population. The Healthy People 2010 target is 0.2 case per 100,000 population.

Figure 11. Primary and secondary syphilis — Rates by county: United States, 2006



Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population. In 2006, 2,360 (75.2%) of 3,140 counties in the U.S. reported no cases of P&S syphilis.

Table 1. Primary and secondary syphilis — Reported cases and rates* among men and women and male-to-female rate ratios in the counties and independent cities ranked in the top 30 for cases in 2006: United States, 2005–2006

<i>Cities</i>	<i>Males</i>				<i>Females</i>				<i>Male-to-Female Rate Ratios</i>	
	<i>2005</i>		<i>2006</i>		<i>2005</i>		<i>2006</i>		<i>2005</i>	<i>2006</i>
	<i>Cases</i>	<i>Rates</i>	<i>Cases</i>	<i>Rates</i>	<i>Cases</i>	<i>Rates</i>	<i>Cases</i>	<i>Rates</i>		
Jefferson County, AL	61	19.6	149	47.8	34	9.8	89	25.7	2.0	1.9
Maricopa County, AZ	87	4.8	135	7.4	22	1.2	18	1.0	4.0	7.4
Los Angeles County, CA	650	13.2	798	16.2	59	1.2	68	1.4	11.0	11.6
Riverside County, CA	99	10.2	73	7.5	7	0.7	7	0.7	14.6	10.7
San Diego County, CA	169	11.4	223	15.1	25	1.7	12	0.8	6.7	18.9
San Francisco County, CA	246	65.6	241	64.3	3	0.8	2	0.5	82.0	128.6
Washington, DC	103	39.4	110	42.1	11	3.8	6	2.1	10.4	20.0
Broward County, FL	180	20.9	147	17.0	16	1.7	8	0.9	12.3	18.9
Miami-Dade County, FL	180	20.9	173	0.0	16	1.7	30	0.0	12.3	1.0
Orange County, FL	84	16.5	71	14.0	14	2.7	10	1.9	6.1	7.4
De Kalb County, GA	174	52.7	170	51.5	3	0.9	12	3.4	58.6	15.1
Fulton County, GA	269	59.3	226	49.8	24	5.2	16	3.5	11.4	14.2
Cook County, IL	418	16.2	317	12.3	44	1.6	32	1.2	10.1	10.3
East Baton Rouge County, LA	55	27.8	61	30.8	53	24.8	36	16.8	1.1	1.8
Baltimore (City), MD	121	40.8	113	38.1	74	21.8	46	13.6	1.9	2.8
Jackson County, MO	56	17.4	72	22.4	3	0.9	13	3.8	19.3	5.9
Clark County, NV	82	9.4	100	11.5	21	2.5	32	3.8	3.8	3.0
Bronx County, NY	64	10.1	98	15.4	3	0.4	3	0.4	25.3	38.5
Kings County, NY	174	14.9	152	13.0	8	0.6	7	0.5	24.8	26.0
New York County, NY	268	35.4	233	30.8	9	1.1	7	0.8	32.2	38.5
Mecklenburg County, NC	69	17.6	77	19.6	16	4.0	27	6.7	4.4	2.9
Franklin County, OH	81	15.2	72	13.5	22	4.0	28	5.0	3.8	2.7
Philadelphia County, PA	80	11.7	124	18.2	6	0.8	1	0.1	14.6	182.0
Shelby County, TN	83	19.0	88	20.2	47	9.9	44	9.3	1.9	2.2
Bexar County, TX	93	12.6	100	13.5	34	4.4	31	4.0	2.9	3.4
Dallas County, TX	128	11.0	124	10.7	44	3.9	82	7.2	2.8	1.5
Harris County, TX	202	10.9	316	17.1	50	2.7	58	3.1	4.0	5.5
Tarrant County, TX	61	7.6	64	7.9	43	5.3	20	2.5	1.4	3.2
Travis County, TX	35	7.6	70	15.3	2	0.5	11	2.6	15.2	5.9
King County, WA	116	13.0	145	16.2	3	0.3	2	0.2	43.3	81.0

*Cases per 100,000 population

Counties and independent cities are listed alphabetically by state.

Note: For calculating male-to-female rate ratios in instances of 0.0 rates among women, 0.5 was added to both the male and female rates, before dividing the male rate by the female rate.

Table 2. Syphilis — Positivity among men and women in adult corrections facilities, 2006

State	Men			Women		
	No. of Sites	No. of Tests	Median % Reactive (Range)	No. of Sites	No. of Tests	Median % Reactive (Range)
Arizona	1	25,009	2.6	1	5,382	5.6
California*	1	679	5.3	2	3,364	4.0 (2.5-5.4)
Florida	5	6,463	3.4 (2.9-4.3)	1	229	12.2
Illinois	1	320	0.3	1	117	1.7
Indianapolis	1	1,276	1.2	1	605	1.8
Kentucky	1	1,215	0.3	1	360	0.3
Louisiana	0	-	-	1	926	21.7
Maryland	10	24,971	1.8 (0.6-3.1)	7	3,540	4.1 (0.0-10.4)
Massachusetts	18	18,773	0.9 (0.0-1.4)	4	3,919	1.8 (1.2-3.1)
Mississippi	3	895	3.4 (2.5-7.8)	0	-	-
Missouri	2	5,957	1.6 (1.0-2.1)	2	1,191	4.0 (1.6-6.3)
New York**	2	8,513	1.3 (1.1-1.4)	2	1,023	2.6 (1.6-3.6)
North Carolina	5	3,969	1.4 (0.9-4.8)	3	1,544	7.8 (4.3-9.3)
Tennessee	2	9,695	3.3 (2.3-4.2)	1	5,275	9.4
Texas	5	33,863	3.3 (2.0-5.6)	4	6,654	6.9 (3.7-10.6)
Wisconsin	1	657	0.0	1	206	0.0
TOTAL	58	142,255	1.4 (0.0-7.8)	32	34,335	3.9 (0.0-21.7)

Note: The median positivity by facility is presented from facilities reporting > 100 test results.

*Includes San Francisco project area only.

**New York data are based on confirmatory tests.

Table 3. Primary and secondary syphilis — Reported cases by sex and reporting source: United States, 1999-2006.

Year	Male				Female				Total			
	<i>Non-STD Source</i>		<i>STD Source</i>		<i>Non-STD Source</i>		<i>STD Source</i>		<i>Non-STD Source</i>		<i>STD Source</i>	
	<i>Cases</i>	<i>Percent</i>	<i>Cases</i>	<i>Percent</i>	<i>Cases</i>	<i>Percent</i>	<i>Cases</i>	<i>Percent</i>	<i>Cases</i>	<i>Percent</i>	<i>Cases</i>	<i>Percent</i>
1999	1,610	42	2,224	58	1,352	49	1,425	51	2,964	45	3,652	55
2000	1,565	44	1,967	56	1,193	49	1,252	51	2,758	46	3,221	54
2001	2,099	51	2,035	49	1,025	52	942	48	3,125	51	2,978	49
2002	3,132	59	2,135	41	869	55	725	45	4,001	58	2,861	42
2003	3,979	67	1,886	32	741	61	444	36	4,722	66	2,331	32
2004	4,374	65	2,244	33	762	61	477	38	5,137	64	2,722	34
2005	5,031	68	2,222	30	853	64	463	35	5,885	67	2,686	31
2006	5,447	66	2,630	32	890	61	531	36	6,340	65	3,163	32

*The sum of male and female cases may not equal total cases because of some male or female cases with missing information for reporting source. Sex was not identified for < 1% of P&S syphilis cases during 1999-2006.