



Sexually Transmitted Infections Annual Surveillance Report

SAINT LOUIS COUNTY DEPARTMENT OF PUBLIC HEALTH
6121 NORTH HANLEY ROAD, BERKELEY, MO 63134

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Saint Louis County Department of Public Health

Mission

The Saint Louis County Department of Public Health (DPH) strives to keep Saint Louis County one of the best places in the region to live, work, or visit. This is accomplished by regularly assessing the health and environment of the county and responding with sound policies that help assure the availability of high quality public health services for everyone.

Vision

The Saint Louis County Department of Public Health's vision is a collaborative public health system entrusted to coordinate and allocate resources for prevention and outreach to promote and create a healthy and safe environment.

Values

The Saint Louis County Department of Public Health is committed to:

- being a public health leader in the community;
- operating in a manner that recognizes the value of all people;
- continuously improving its operations;
- using evidence-based practices;
- attaining the highest level of service through efficiency, consistency, and relationship development;
- promoting innovation to ensure all people in the community are served; and
- operating in a transparent manner and accepting responsibility for outcomes.

Report Preparation

This report was prepared by the Saint Louis County Department of Public Health, Division of Communicable Disease Control Services.

- Epidemiology Program
- Sexually Transmitted Infection Program

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The STI Program

The Sexually Transmitted Infection (STI) Program seeks to promote healthier, safer sexual behavior, to reduce the transmission of STIs and HIV, and to thereby reduce the incidence of chlamydia, gonorrhea, syphilis, and HIV among Saint Louis County residents. To this end, the STI program:

- Investigates reported STI cases to determine the source of infection and ensure that infected persons are treated according to CDC guidelines;
- Offers partner services, including partner notification, STI/HIV testing, risk reduction counseling, and treatment or linkage to care;
- Through evidence-based initiatives, increases the accessibility of free sexual health resources for residents and visitors of Saint Louis County;
- Regularly analyzes STI epidemiological data to monitor local trends in STI incidence and guide the program's decision-making;
- Conducts educational outreach to high-risk populations to increase awareness of STIs and promote healthy sexual behavior, and;
- Collaborates with partner organizations throughout the Saint Louis region to improve STI screening, reporting, treatment, and prevention.

Executive Summary

Chlamydia and early syphilis rates continued to rise in 2017; gonorrhea incidence remained high, but stable. Between 2016 and 2017, chlamydia incidence in Saint Louis County increased by 8% and syphilis incidence increased by 42%, while gonorrhea incidence decreased by 1%. Since 2013, however, chlamydia incidence has increased by 18%, gonorrhea incidence by 50%, and syphilis incidence by 159%.

The overlapping socioeconomic factors of race, geography, and poverty continue to contribute to pronounced disparities in STI incidence. Chlamydia, gonorrhea, and early syphilis rates were much higher among Saint Louis County's black population, people living in the Inner North region of the county, and people living in very high poverty census tracts than among whites, people living West county, and people living in low poverty census tracts.

Increased syphilis incidence among women is contributing to increases in congenital syphilis rates. In five years, syphilis incidence has increased by 420% among women in Saint Louis County, from 1.0 case per 100,000 women in 2013 to 4.9 cases per 100,000 in 2017. Eighty-eight percent of female early syphilis cases reported in that period were diagnosed among women of childbearing age. In 2017, three cases of congenital syphilis were diagnosed among infants born to Saint Louis County mothers – the first cases reported in Saint Louis County since 2012.

HIV status was unknown for 44% of reported early syphilis cases in 2017, indicating a need for improved HIV screening and reporting in Saint Louis County. The Centers for Disease Control and Prevention (CDC) recommends that sexually active men who have sex with men (MSM) be screened for HIV at least annually and that all persons seeking evaluation and treatment for STIs should be screened for HIV infection.

Public STI clinics are a critical resource for STI screening and treatment. The Saint Louis County Department of Public Health's STI Clinic at North Central Community Health Center diagnosed 613 cases of chlamydia, 457 cases of gonorrhea, and 39 cases of early syphilis among Saint Louis County residents in 2017, making the clinic the number one reporter in Saint Louis County for all three conditions.

Notes About the Data

Data about chlamydia, gonorrhea, and syphilis cases were obtained from the Missouri Health Surveillance Information System (WebSurv), which is maintained by the Missouri Department of Health and Senior Services (MDHSS). Missouri's communicable disease reporting law, 19 CSR 20-20.020, requires reporting of chlamydia, gonorrhea, and HIV/AIDS diagnoses within three days, and syphilis diagnoses within one day, to the local health authority or to MDHSS.

Saint Louis County rates were calculated with population totals from the 2016 American Community Survey 5-Year Estimates.

To protect confidentiality, case counts and rates have been suppressed for groups with fewer than five cases of a particular disease in a particular year.

When stratifying STI cases by sex, transgender persons are categorized according to the sex they were assigned at birth, in accordance with CDC reporting guidelines.

In Figures 8 and 21, the "Total" rates were calculated after excluding chlamydia and gonorrhea cases for which the person's ethnicity was unknown.

The Saint Louis County Department of Public Health, along with the Saint Louis County Department of Planning, established five Saint Louis County regions based on the social and demographic characteristics of the regions' residents. Using five County regions also allows for sub-County-level comparisons, without the volatility or risk of individual identifiers which may be present in ZIP Code- or census tract-level comparisons.

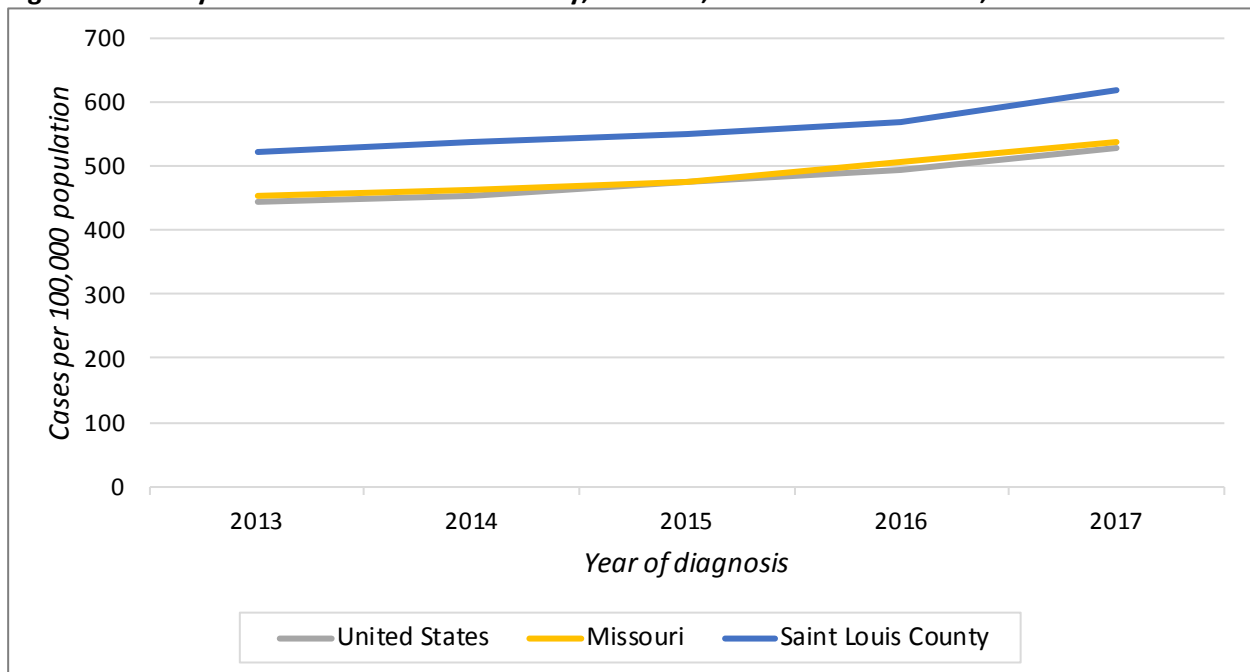
"Neighborhood poverty level" is a census tract-level measure. Based on the proportion of each census tract's population living below the federal poverty level (FPL), census tracts were categorized as low (<10% below FPL), medium (10% to <20% below FPL), high (20% to <30% below FPL), or very high ($\geq 30\%$) poverty neighborhoods. Census tract poverty estimates were obtained from the 2012–2016 American Community Survey. Chlamydia, gonorrhea, and syphilis cases were geocoded to census tracts based on their residential address at the time they were reported to the health department.

Case counts by region and neighborhood poverty level may not sum to the total number of reported cases. Some cases were reported without addresses or with addresses that could not be geocoded (e.g., PO Boxes).

Chlamydia

There were 6,184 *Chlamydia trachomatis* infections diagnosed among Saint Louis County residents in 2017, corresponding to a rate of 618.1 cases per 100,000 population. This represents an 8% increase in chlamydia incidence from 2016 (570.2 cases per 100,000) and a 19% increase since 2013 (520.5 cases per 100,000). The chlamydia rate in Saint Louis County in 2017 was 1.15 times the Missouri rate (536.4 per 100,000) and 1.17 times the national rate (528.8 per 100,000). Chlamydia incidence increased by 19% in all three jurisdictions between 2013 and 2017.

Figure 1. Chlamydia Rates in Saint Louis County, Missouri, and the United States, 2013 to 2017



Chlamydia by Sex and Age Group

Sixty-six percent (n=4,058) of Saint Louis County’s chlamydia cases were reported among women in 2017, for a rate of 771.2 cases per 100,000 women – a 10% increase from 2016 (703.0 cases per 100,000). There were 2,126 chlamydia cases reported among Saint Louis County males, for a rate of 448.2 per 100,000 men – a 6% increase from the previous year (422.9 cases per 100,000 men). Between 2013 and 2017, chlamydia incidence increased by 15% among women and by 26% among men.

Chlamydia rates were highest among 20 to 24 year olds (3,656.5 cases per 100,000) and 15 to 19 year olds (2,750.9 cases per 100,000). Between 2016 and 2017, chlamydia incidence increased by 9% among 15 to 19 year olds and by 5% among 20 to 24 year olds. Notably, chlamydia incidence increased by 17% among people aged 25 to 29 years between 2016 (1,488.6 cases per 100,000) and 2017 (1,745.9 cases per 100,000) – the largest relative increase in any age group with significant chlamydia morbidity.

Figure 2. Chlamydia Rates by Sex, Saint Louis County, 2013 to 2017

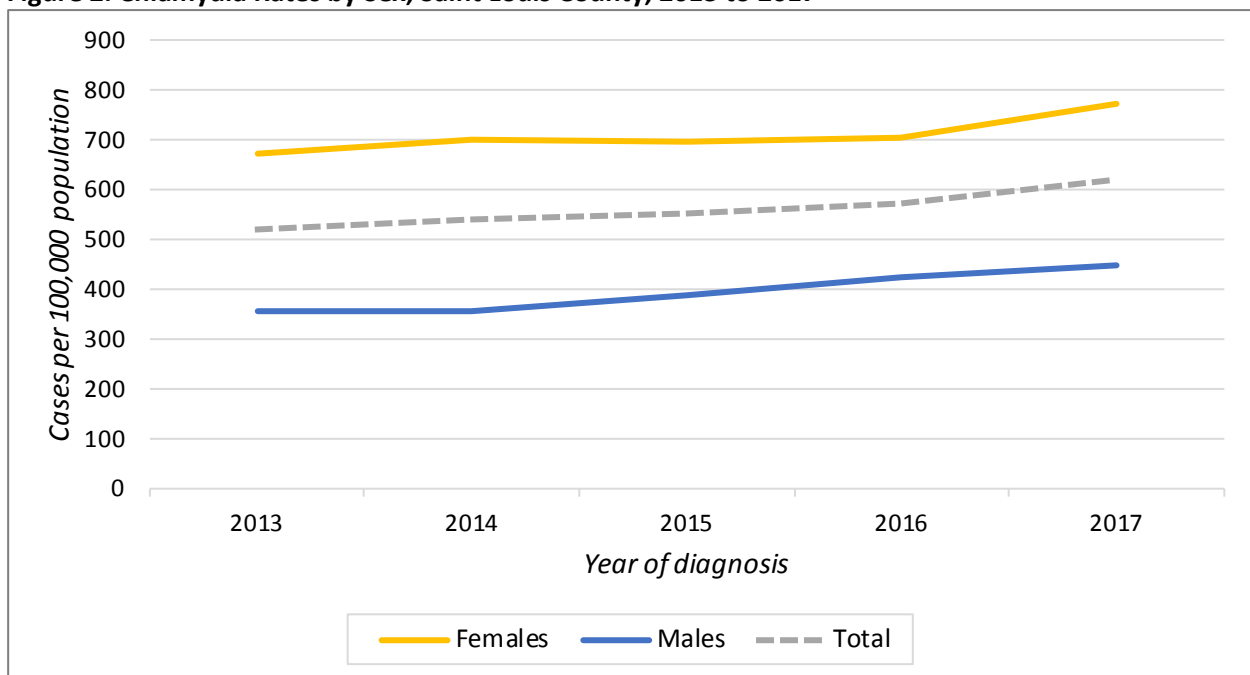


Figure 3. Chlamydia Rates by Age Group, Saint Louis County, 2013 to 2017

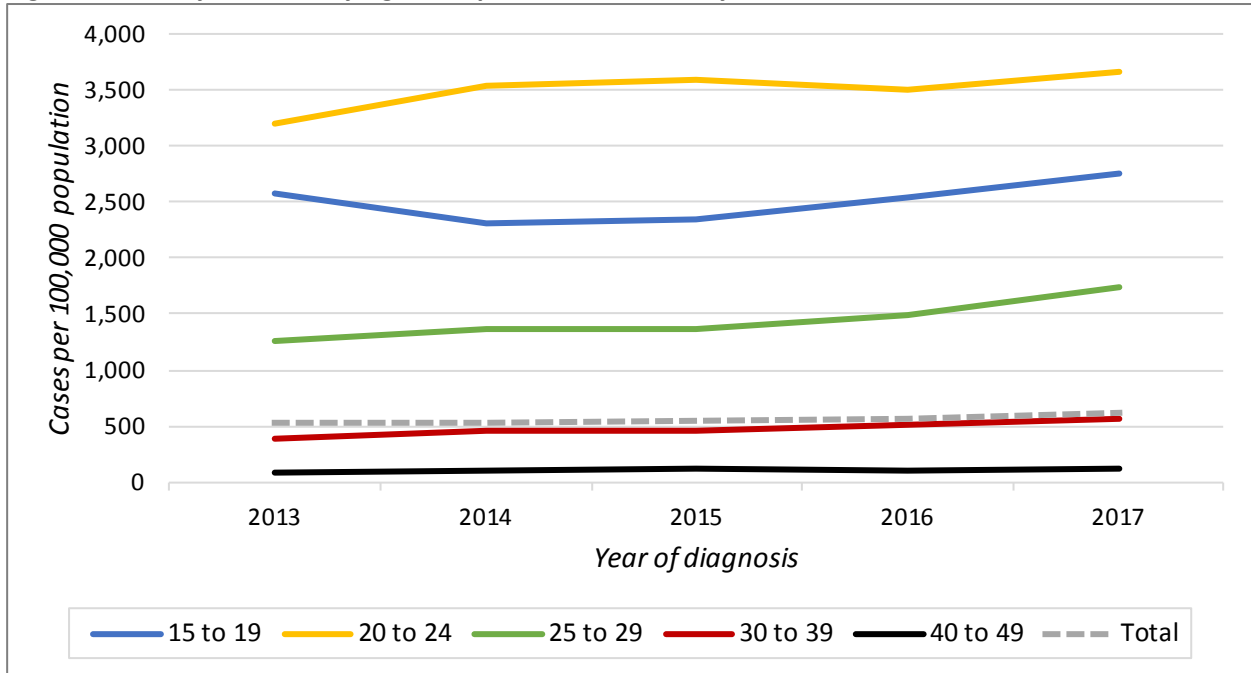
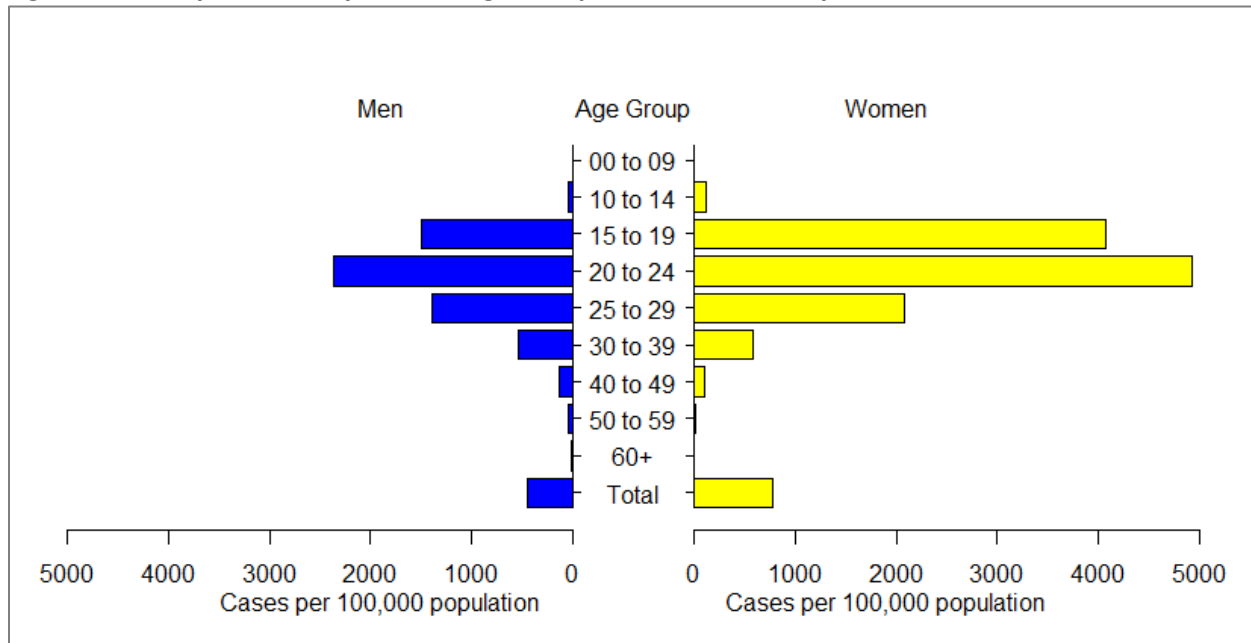
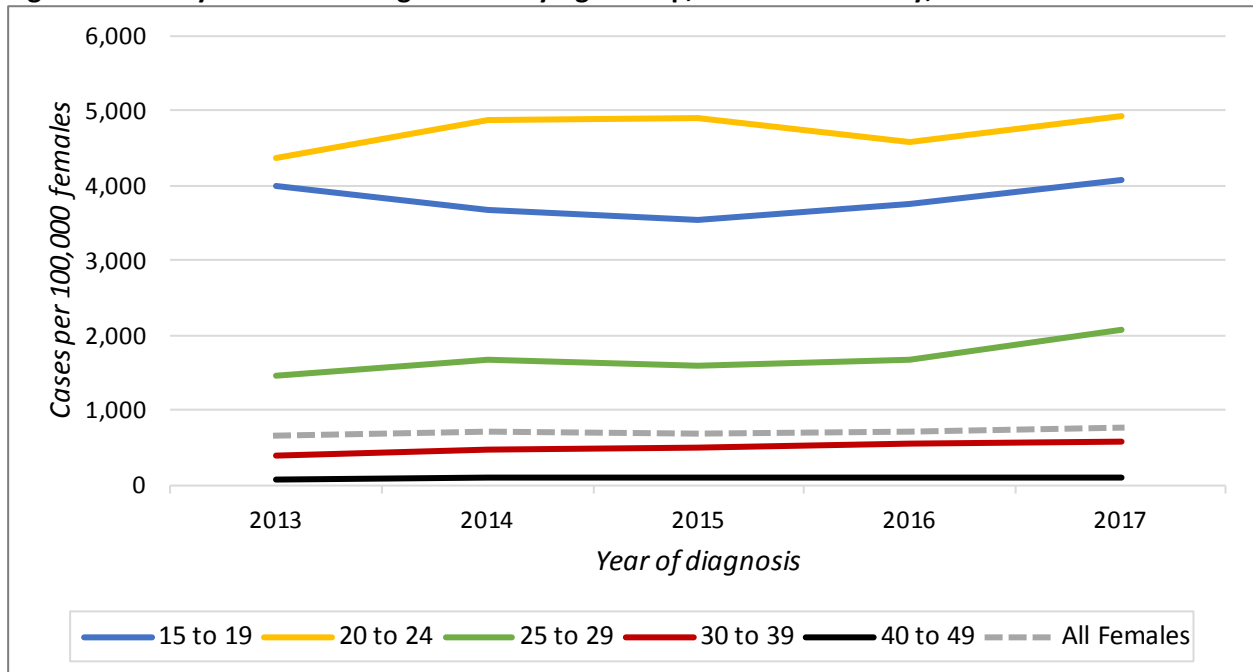


Figure 4. Chlamydia Rates by Sex and Age Group, Saint Louis County, 2017



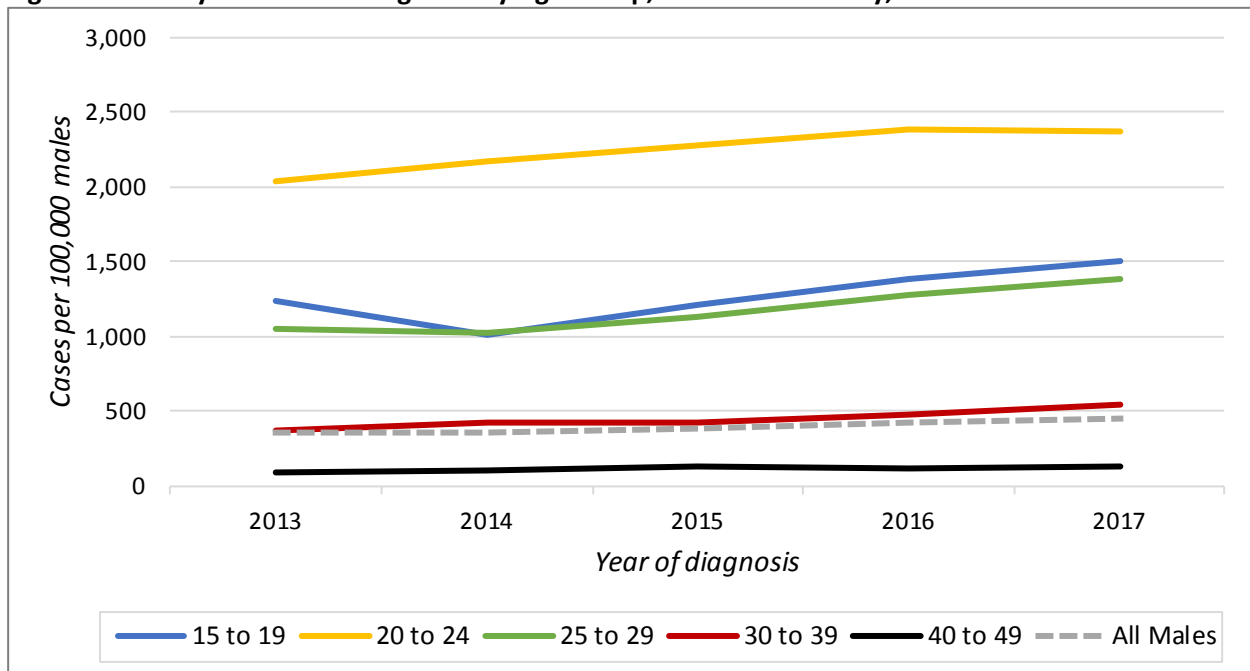
Women aged 15 to 24 years accounted for 47% of all reported chlamydia cases in 2017. There were 1,315 cases reported among females aged 15 to 19 (4,069.8 cases per 100,000) and 1,570 cases among females aged 20 to 24 years (4,931.1 cases per 100,000). Chlamydia incidence increased between 2016 to 2017 among women aged 15 to 19, 20 to 24, 25 to 29, 30 to 39, and 40 to 49 years. The chlamydia rate among women aged 25 to 29 years increased by 23% between 2016 and 2017 (from 1,692.8 to 2,085.4 cases per 100,000) and has increased by 42% since 2013 (1,472.0 cases per 100,000).

Figure 5. Chlamydia Rates among Women by Age Group, Saint Louis County, 2013 to 2017



Of the 2,126 chlamydia cases reported among males in 2017, 510 cases (24%) were reported among males aged 15 to 19 years (1,498.6 cases per 100,000), 743 cases (35%) were reported among males aged 20 to 24 years (2,364.8 cases per 100,000), and 680 cases (20%) were reported among males aged 25 to 29 years (1,385.8 cases per 100,000). Between 2016 and 2017, chlamydia incidence remained stable among males aged 20 to 24 years, 40 to 49 years, and 50 to 59 years, while increasing among males aged 10 to 14 years (71%), 15 to 19 years (8%), 25 to 29 years (8%), 30 to 39 years (12%). Since 2013, male chlamydia incidence has increased substantially among all age groups except 10 to 14 year olds.

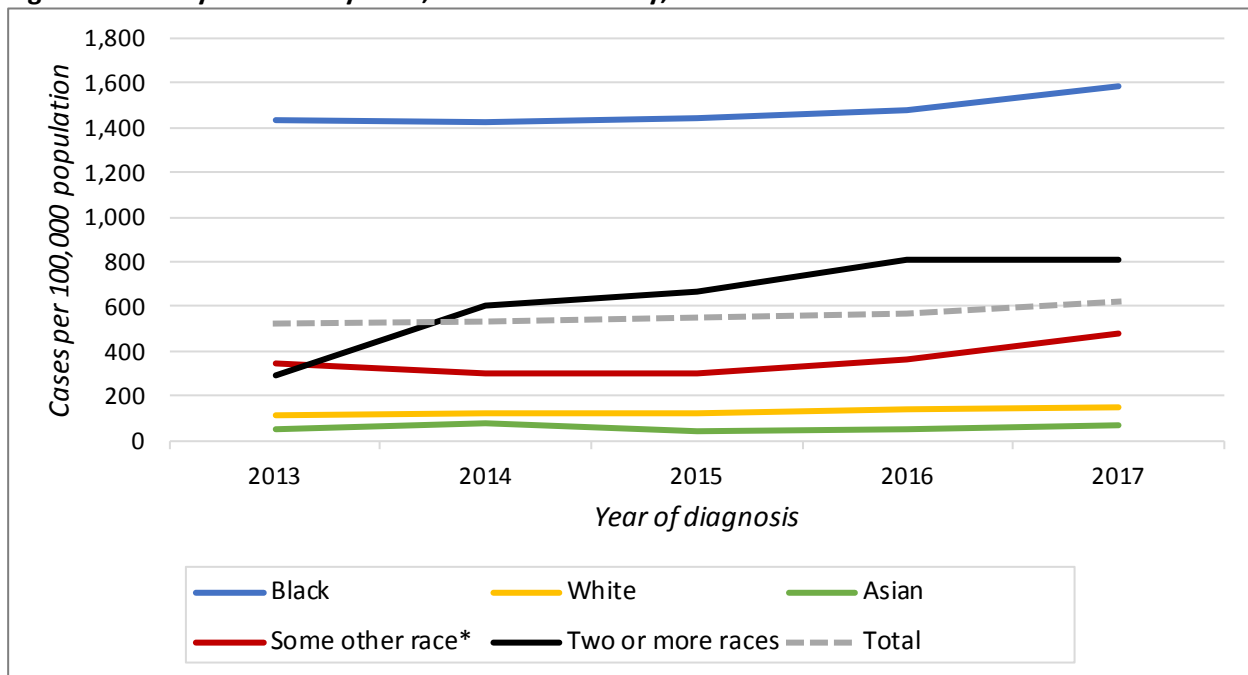
Figure 6. Chlamydia Rates among Men by Age Group, Saint Louis County, 2013 to 2017



Chlamydia by Race and Ethnicity

While Missouri law requires that communicable disease case reports include the patient’s race, race is nonetheless frequently not reported or reported as “Unknown.” Race was unknown for 18% of reported chlamydia cases in 2017. For cases where race was known, the chlamydia rate among black residents of Saint Louis County (1,586.1 cases per 100,000) was 10.7 times the rate among whites (148.8 cases per 100,000). The rate among Asians (70.2 cases per 100,000) was 0.5 times the rate among whites. There were too few chlamydia cases reported among American Indians/Alaska Natives or Native Hawaiians/Other Pacific Islanders to calculate rates for those groups. The chlamydia rate among people identifying as multiracial (822.1 cases per 100,000) was 5.5 times the rate among whites. Between 2016 and 2017, chlamydia incidence increased among all racial groups.

Figure 7. Chlamydia Rates by Race, Saint Louis County, 2013 to 2017

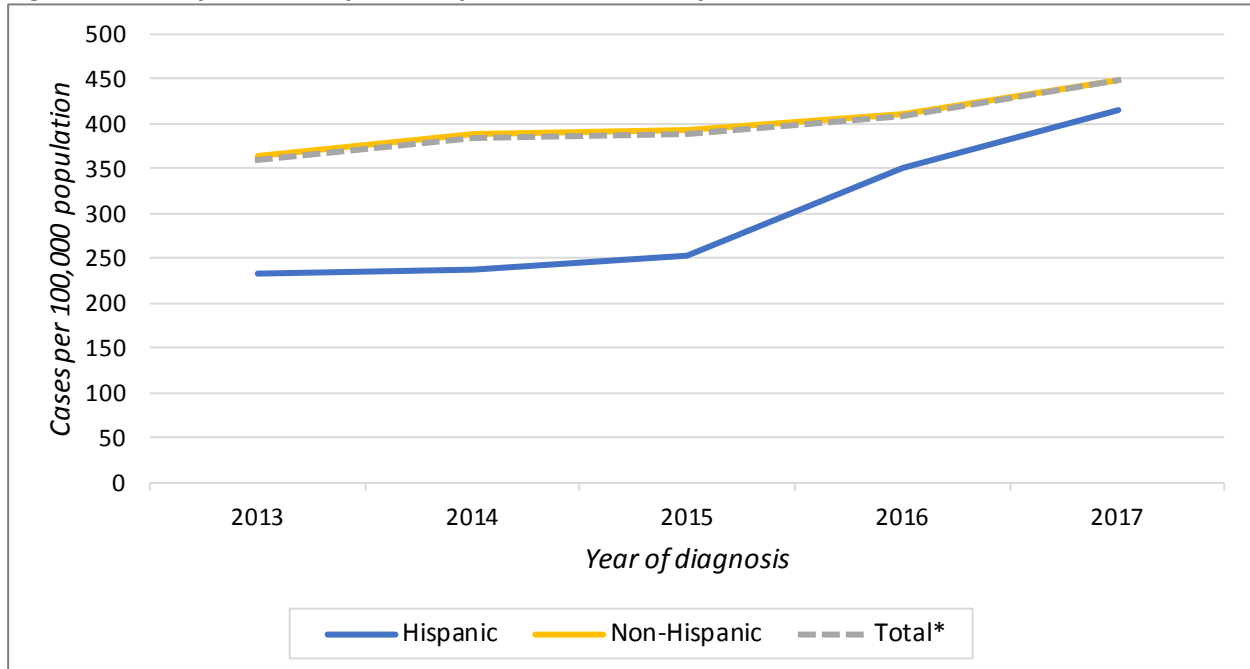


*Excludes American Indians/Alaska Natives and Native Hawaiians/Other Pacific Islanders

Missouri law does not require that communicable disease case reports include the patient’s ethnicity. As a result, ethnicity was missing or reported as “Unknown” for 28% of Saint Louis County chlamydia cases in 2017. For cases where ethnicity was reported, the chlamydia rate among non-Hispanics (448.2 cases per 100,000) was 1.1 times the rate among Hispanics (414.7 cases per 100,000). The non-Hispanic chlamydia rate has increased by 9% since 2016 (410.0 cases per 100,000) and by 23% since 2013 (363.0 cases per 100,000). The Hispanic chlamydia rate has increased by 19% since 2016 (348.0 cases per 100,000) and by 78% since 2013 (233.3 cases per 100,000). However, given the incompleteness of the

ethnicity data and the relatively small size of Saint Louis County’s Hispanic population (2.7% of the total population), this trend is difficult to interpret.

Figure 8. Chlamydia Rates by Ethnicity, Saint Louis County, 2013 to 2017



*Total excludes cases where ethnicity was unknown

Chlamydia by Region

In 2017, the chlamydia rate was highest in the Inner North region of the county (1,484.0 cases per 100,000), followed by the Outer North (917.0 cases per 100,000), Central (481.1 cases per 100,000), South (255.6 cases per 100,000), and West regions (206.9 cases per 100,000). Between 2016 and 2017, chlamydia incidence increased in the Inner North (3%), Outer North (15%), Central (19%), and South (7%) regions, and decreased by 3% in the West region. Since 2013, chlamydia incidence has increased in all five regions.

Figure 9. Chlamydia Rates by Sub-County Region, Saint Louis County, 2013 to 2017

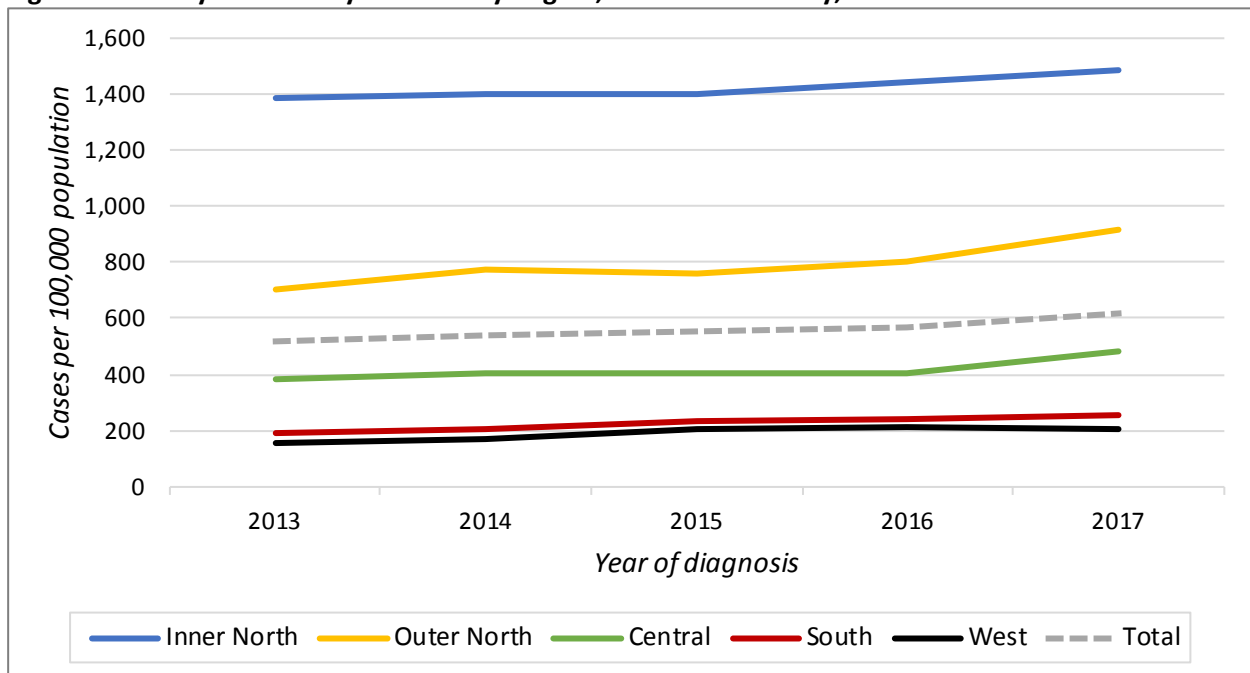
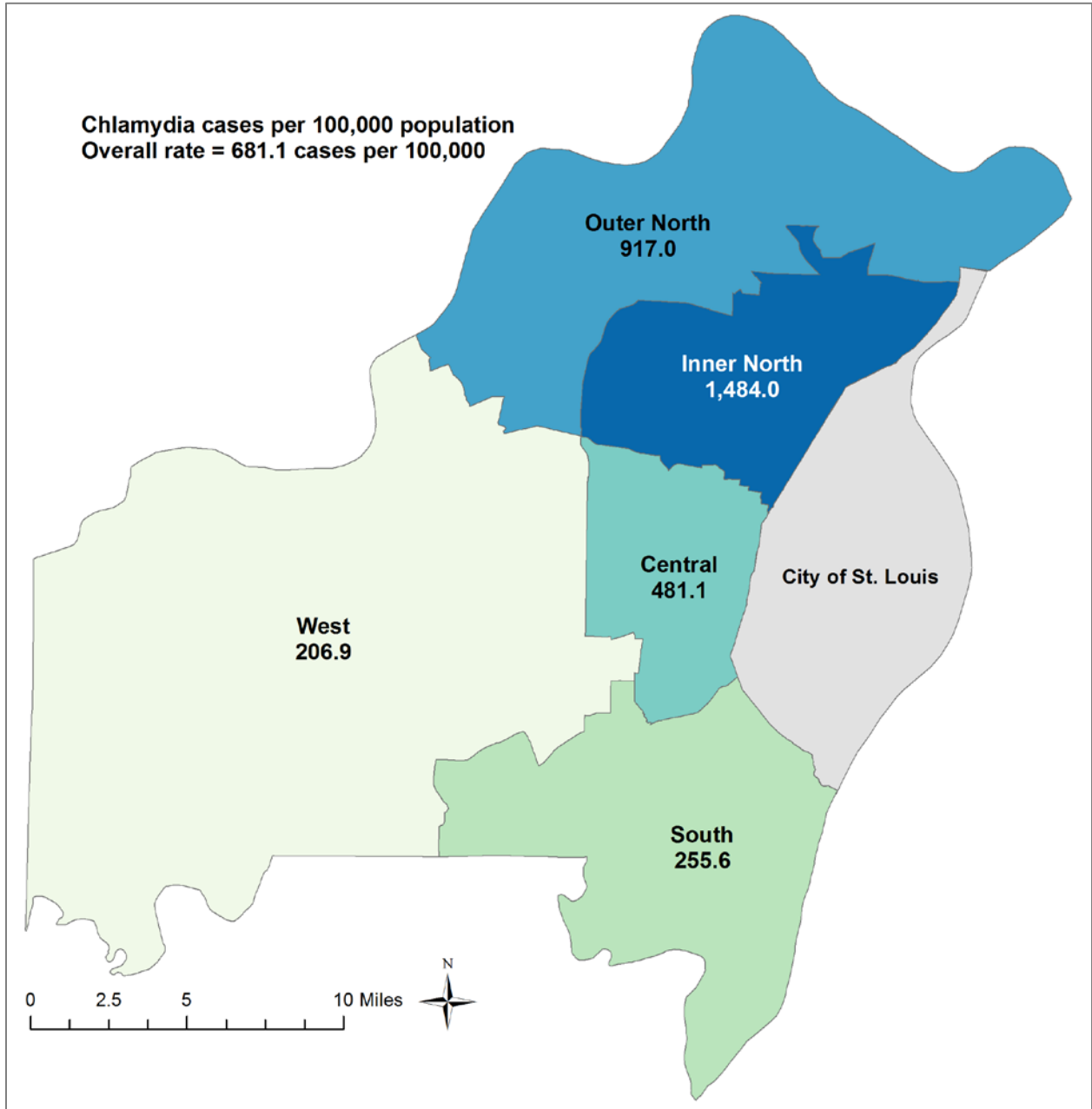


Figure 10. Chlamydia Rates by Sub-County Region, Saint Louis County, 2017



Chlamydia by Neighborhood Poverty Level

In 2017, census tracts with very high poverty rates also had the highest chlamydia rates (1,755.9 cases per 100,000), followed by high poverty (1,503.4 cases per 100,000), medium poverty (858.9 cases per 100,000), and low poverty census tracts (302.8 cases per 100,000). Between 2016 and 2017, chlamydia rates increased in low poverty (9%), medium poverty (7%), and high poverty (6%) census tracts and remained stable in very high poverty census tracts. Since 2013, chlamydia incidence has increased in low poverty (33%), medium poverty (22%), and high poverty (8%) census tracts, and decreased by 2% in very high poverty census tracts.

Figure 11. Chlamydia Rates by Neighborhood Poverty Level, Saint Louis County, 2013 to 2017

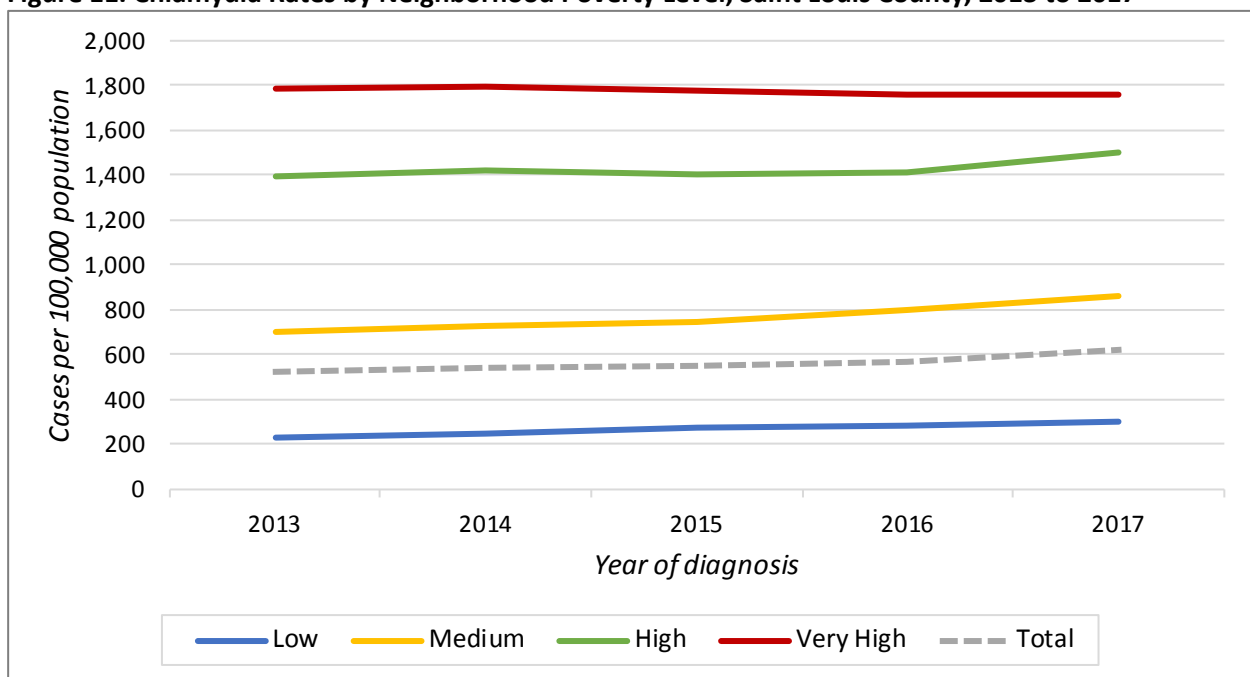
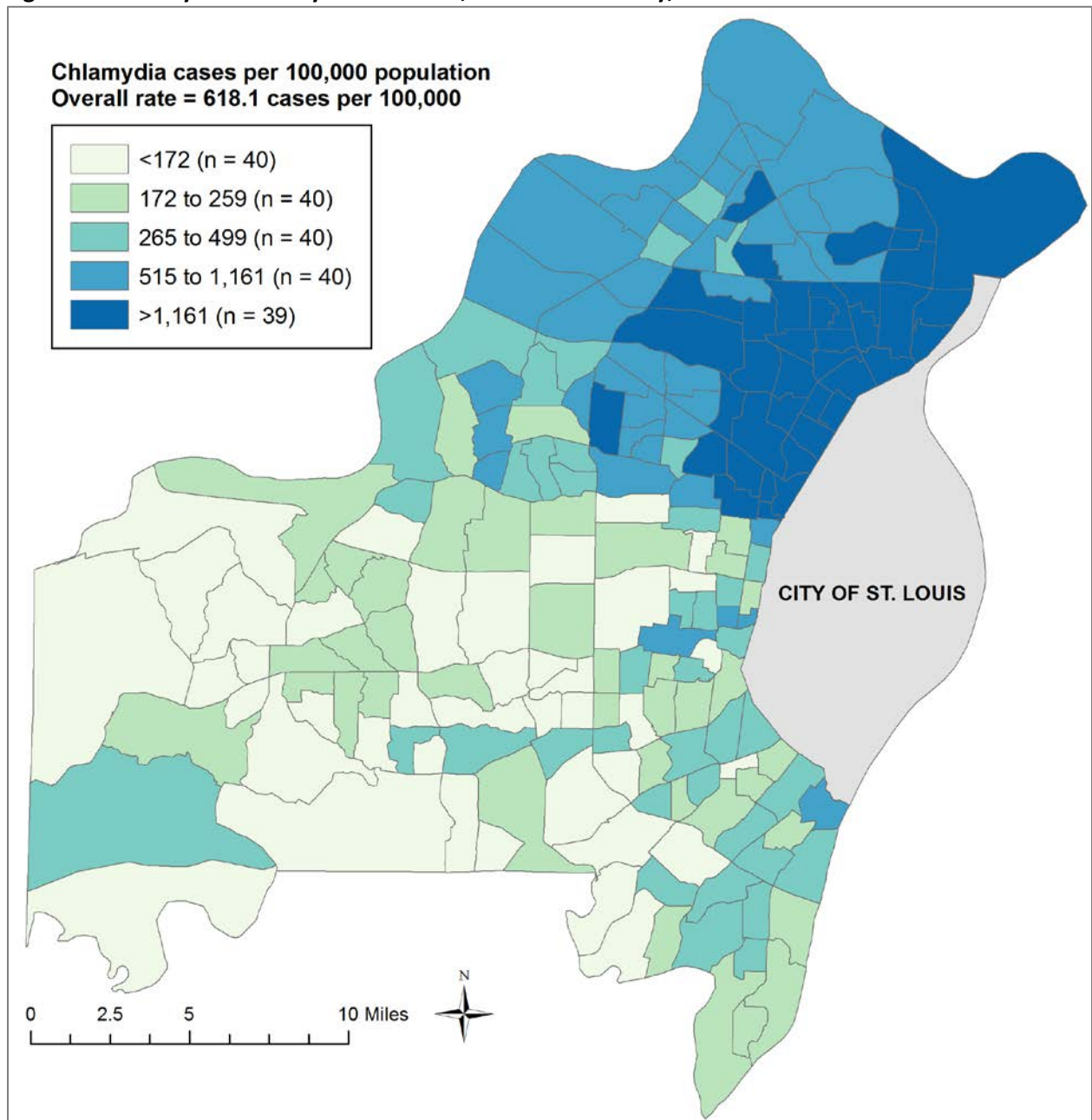


Figure 12. Chlamydia Rates by Census Tract, Saint Louis County, 2017

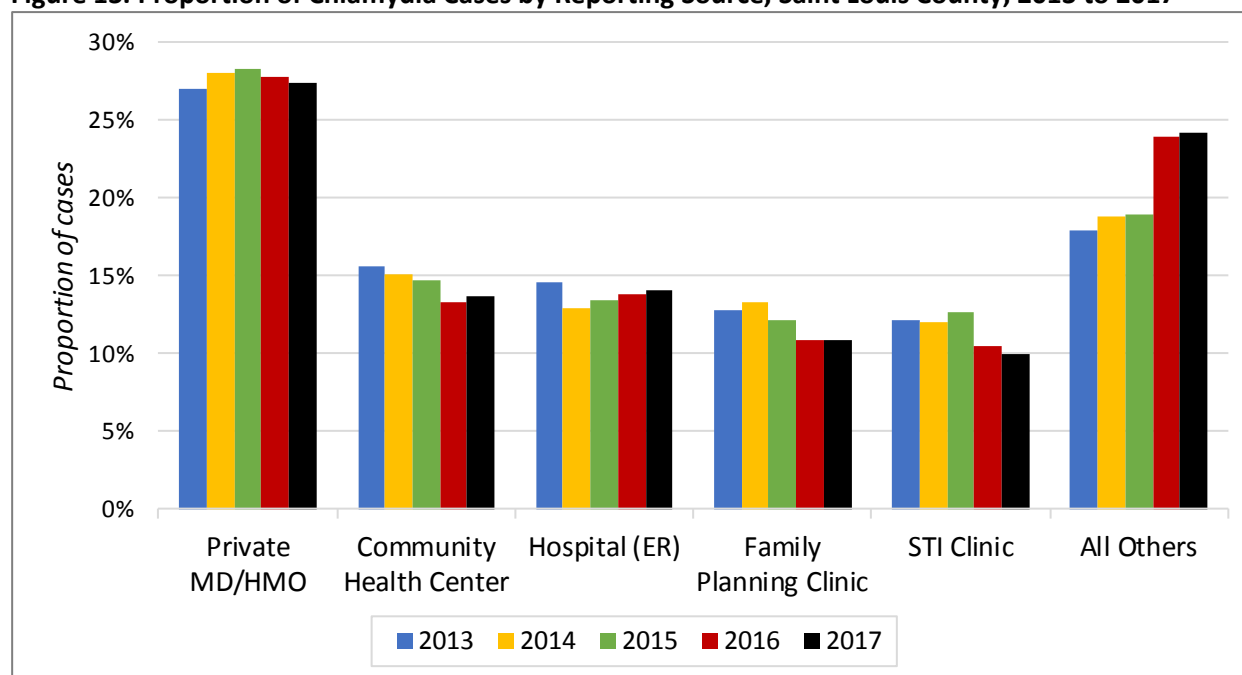


Chlamydia by Reporting Source

In 2017, the five most common sources of chlamydia case reports were private physicians/HMOs (27% of cases), hospital emergency departments (14%), community health centers (14%), family planning clinics (11%), and STI clinics (10%). The remaining 24% of chlamydia cases were reported by a variety of other sources, including (in no particular order) infectious disease physicians/clinics, labor and delivery units, other hospital clinics/facilities, outreach sites, other health department clinics, correctional facilities, HIV counseling/testing sites, student health centers, military, Job Corps, laboratories, drug treatment, and mental health services.

The Saint Louis County Department of Public Health’s STI Clinic at North Central Community Health Center diagnosed more Saint Louis County chlamydia cases (n=613) than any other single provider in 2017.

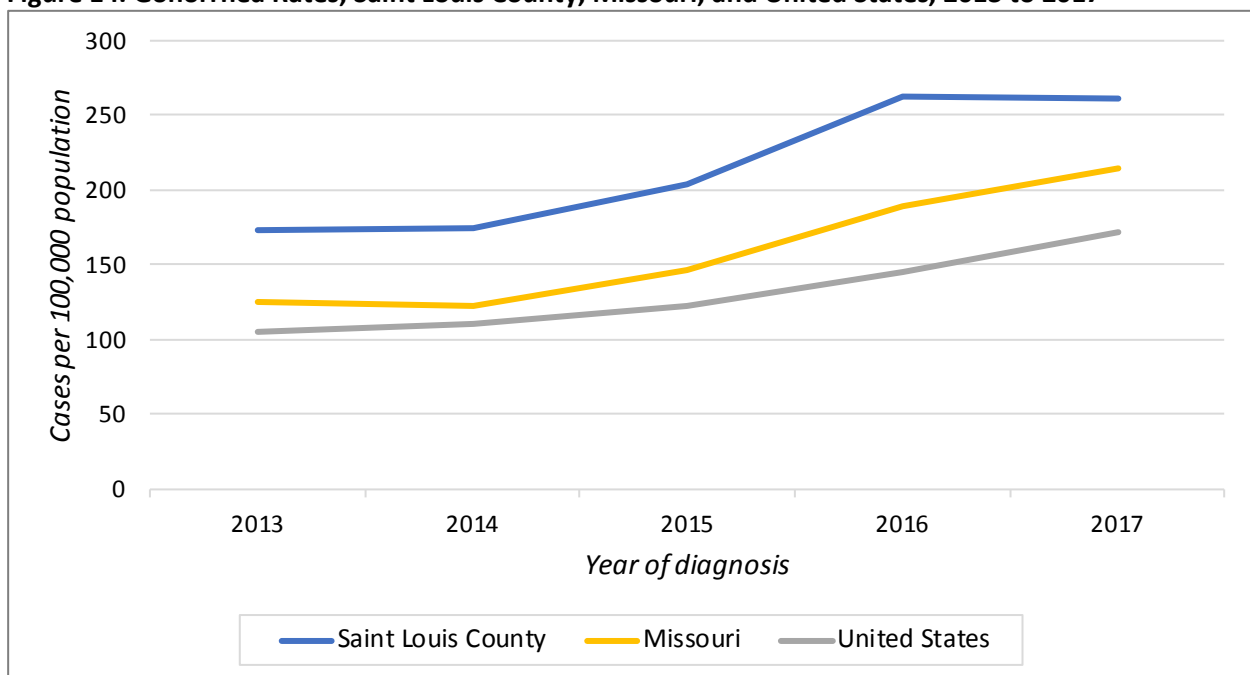
Figure 13. Proportion of Chlamydia Cases by Reporting Source, Saint Louis County, 2013 to 2017



Gonorrhea

There were 2,609 *Neisseria gonorrhoeae* infections diagnosed among Saint Louis County residents in 2017, corresponding to a rate of 260.8 cases per 100,000 population. After increasing by 52% between 2013 (173.2 cases per 100,000) and 2016 (262.6 cases per 100,000), gonorrhea incidence decreased by 1% in 2017. The gonorrhea rate in Saint Louis County in 2017 was 1.21 times the Missouri rate (214.8 per 100,000) and 1.52 times the national rate (171.9 per 100,000). Gonorrhea incidence increased by 51% in Saint Louis County between 2013 and 2017, compared to a 72% increase at the state level and a 63% increase at the national level.

Figure 14. Gonorrhea Rates, Saint Louis County, Missouri, and United States, 2013 to 2017



Gonorrhea by Sex and Age Group

In 2017, there were 1,489 gonorrhea cases reported among men (313.9 cases per 100,000) and 1,120 cases reported among women (212.9 cases per 100,000). Between 2016 and 2017, male gonorrhea incidence decreased by 2% and female gonorrhea incidence increased by 1%. Since 2013, however, gonorrhea incidence has increased by 69% among men (from 185.9 cases per 100,000) and by 32% among women (from 161.7 cases per 100,000).

Gonorrhea incidence is highest among people aged 20 to 24 years (1,324.7 cases per 100,000 population). In 2017, this group accounted for 32% of all cases, despite making up 6.3% of the county's population. After increasing by 36% between 2013 and 2016 (from 1,030.7 to 1,406.9 cases per 100,000), the gonorrhea rate among people aged 20 to 24 years decreased by 6% in 2017.

Figure 15. Gonorrhea Rates by Sex, Saint Louis County, 2013 to 2017

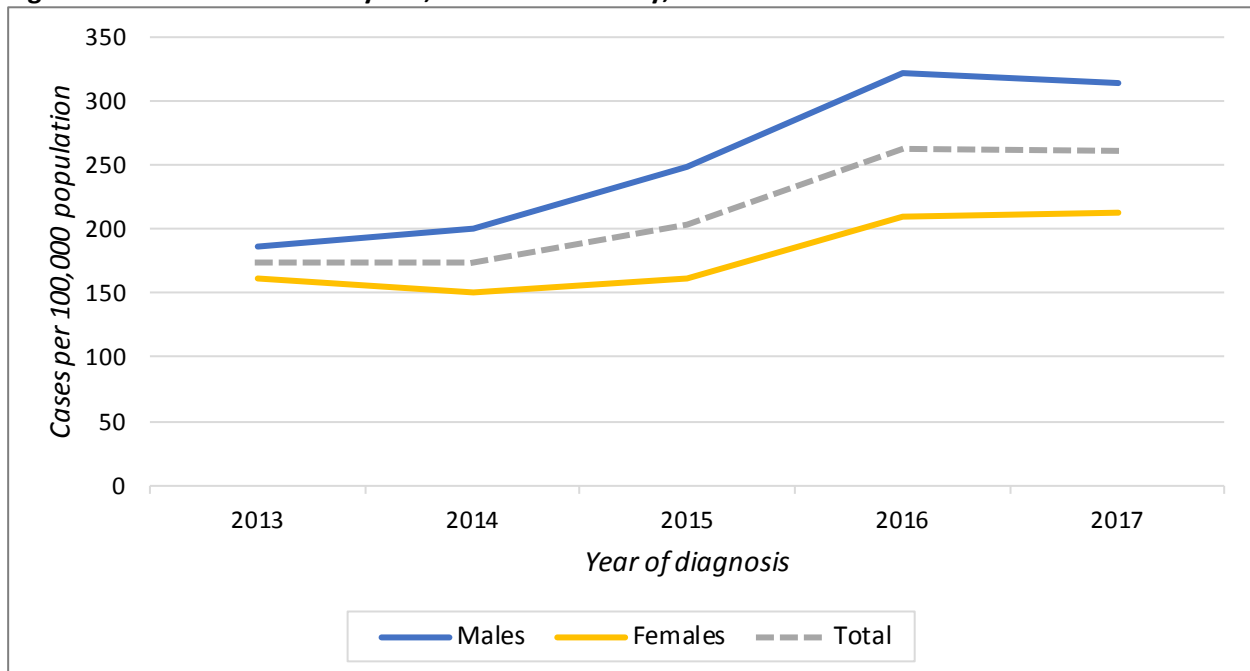


Figure 16. Gonorrhea Rates by Age Group, Saint Louis County, 2013 to 2017

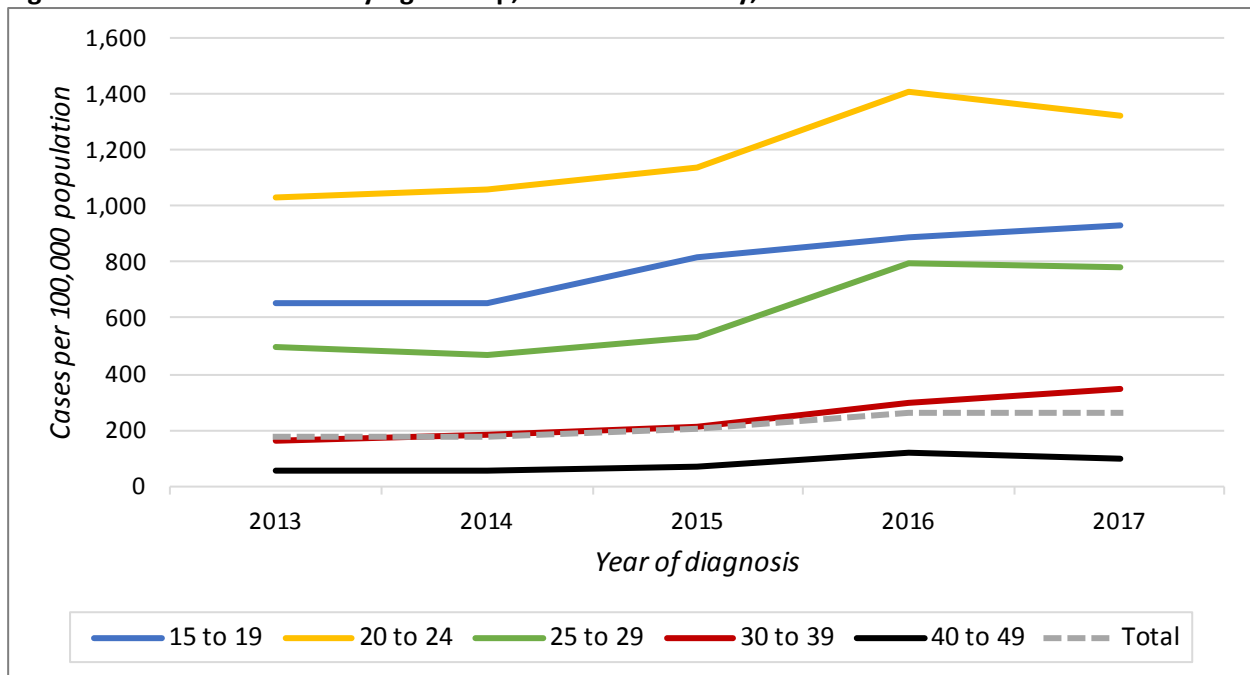
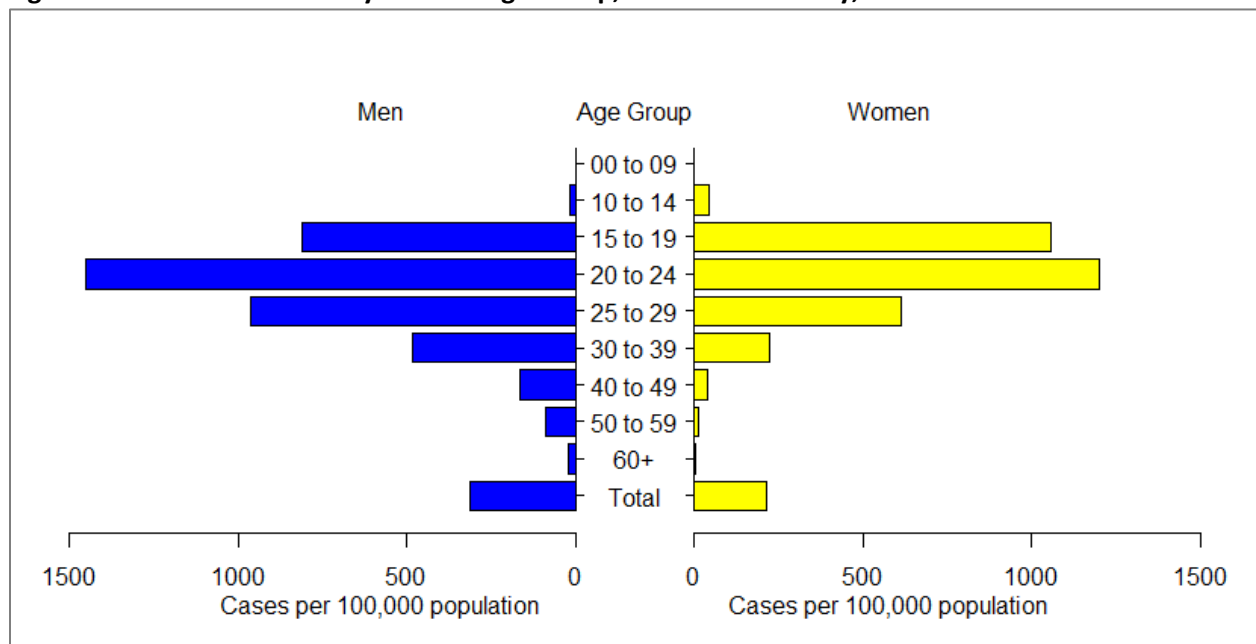
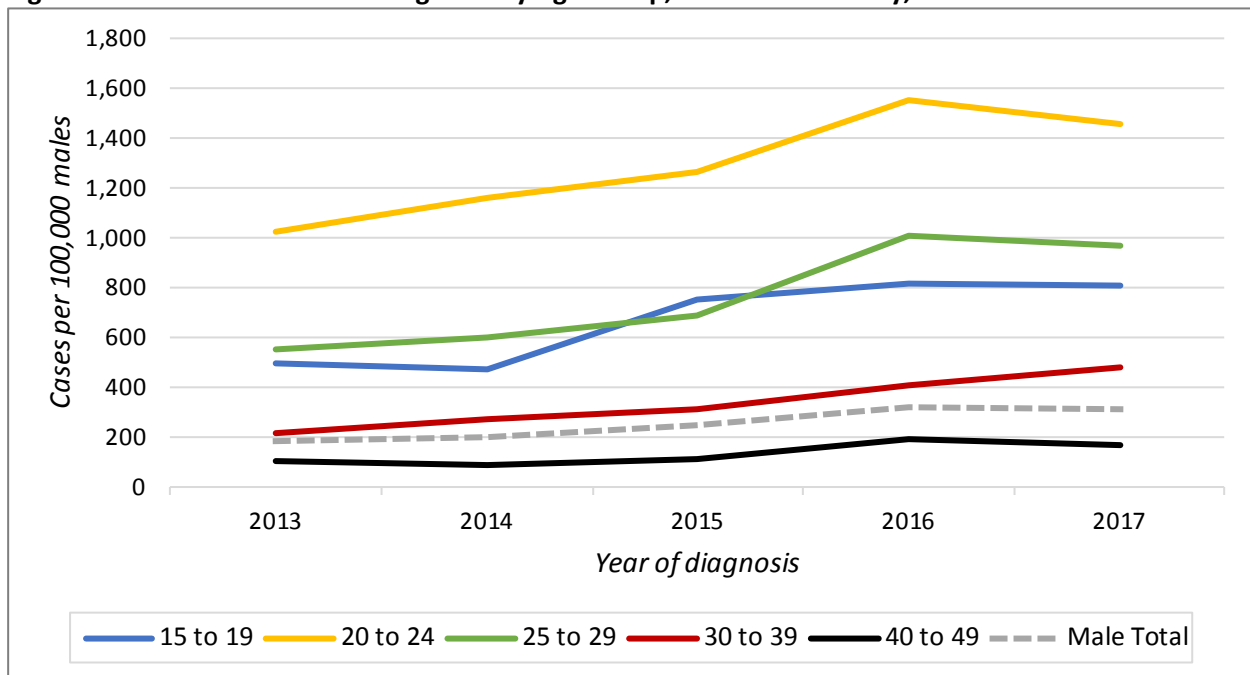


Figure 17. Gonorrhea Rates by Sex and Age Group, Saint Louis County, 2017



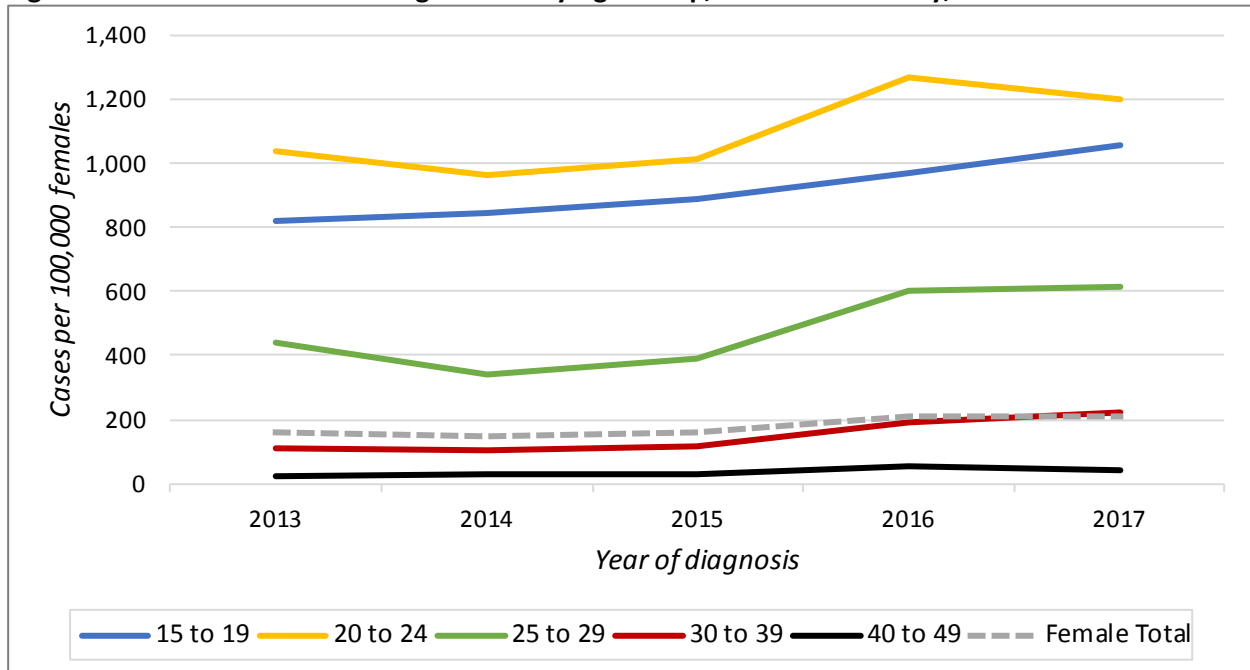
Among men, gonorrhea rates were highest among those aged 20 to 24 years (1,451.4 cases per 100,000) and 25 to 29 years (962.9 cases per 100,000) in 2017. Between 2016 and 2017, gonorrhea incidence increased by 18% among males aged 30 to 39 years (from 409.1 to 482.2 cases per 100,000) and decreased among all other age groups. Since 2013, gonorrhea incidence has increased substantially among males of all age groups.

Figure 18. Gonorrhea Rates among Men by Age Group, Saint Louis County, 2013 to 2017



Among women, gonorrhea rates were highest among those aged 20 to 24 years (1,199.8 cases per 100,000) and 15 to 19 years (1,058.5 cases per 100,000). Between 2016 and 2017, gonorrhea incidence increased among females aged 15 to 19 years, 25 to 29 years, and 30 to 39 years, and decreased among females aged 10 to 14 years, 20 to 24 years, 40 to 49 years, and 50 to 59 years.

Figure 19. Gonorrhea Rates among Women by Age Group, Saint Louis County, 2013 to 2017

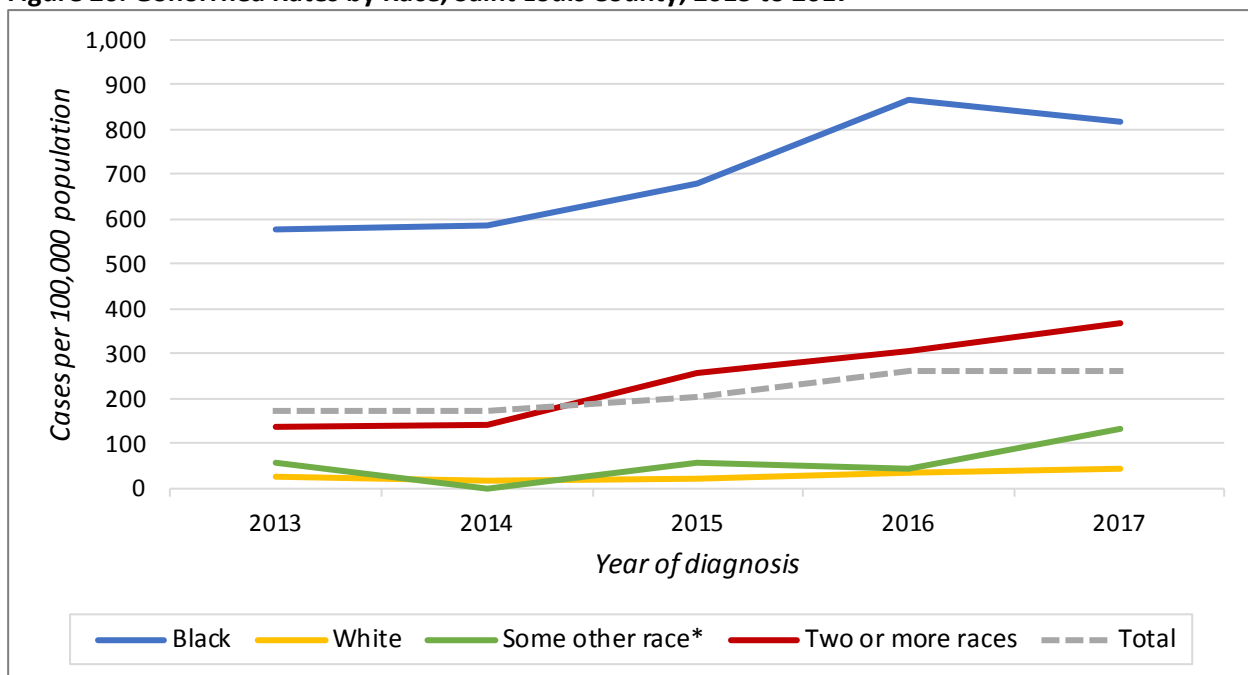


Gonorrhea by Race and Ethnicity

While Missouri law requires that communicable disease case reports include the patient’s race, race is nonetheless frequently not reported or reported as “Unknown.” Race was unknown for 11% of reported gonorrhea cases in 2017. For cases where race was known, the gonorrhea rate among black residents of Saint Louis County (816.0 cases per 100,000) was 18.8 times higher than the rate among whites (43.5 cases per 100,000). There were too few gonorrhea cases reported among Asians, American Indians/Alaska Natives, and Native Hawaiians/Other Pacific Islanders to calculate rates for those groups. The gonorrhea rate among people who identified as multiracial (372.6 per 100,000) was 8.6 times the rate among whites.

Between 2016 and 2017, gonorrhea incidence increased among whites (23%) and people who identified as multiracial (21%) and decreased by 5% among blacks.

Figure 20. Gonorrhea Rates by Race, Saint Louis County, 2013 to 2017

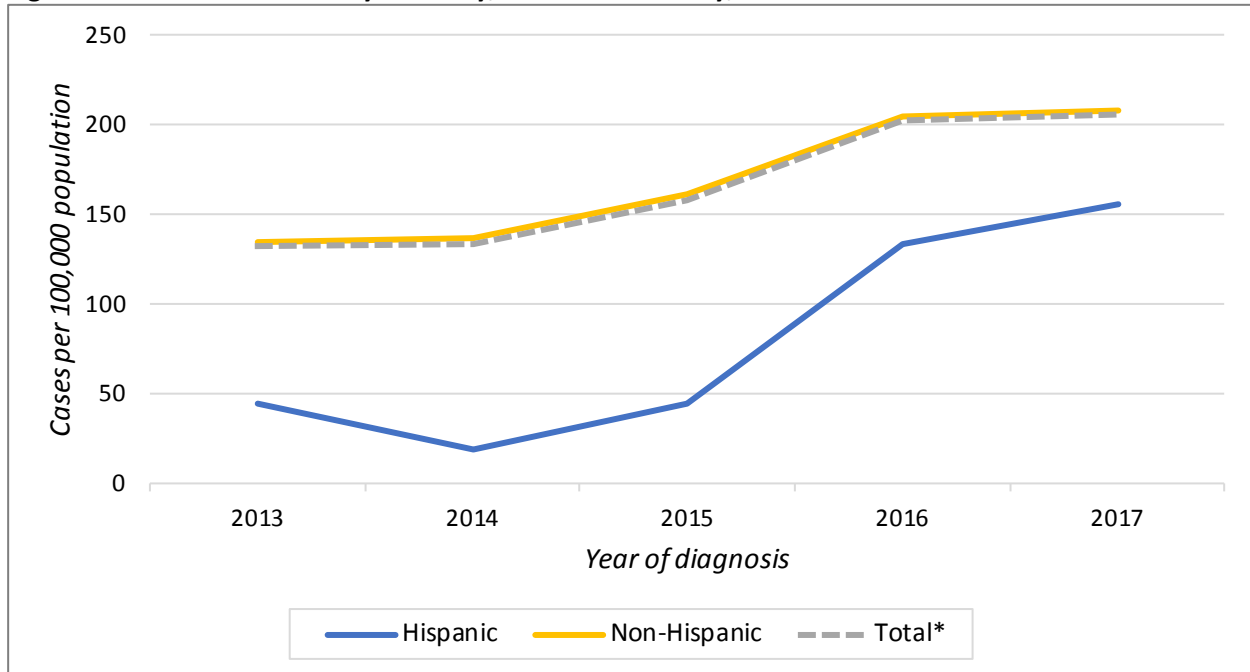


*Excludes Asians, American Indians/Alaska Natives, and Native Hawaiians/Other Pacific Islanders

Missouri law does not require that communicable disease case reports include the patient’s ethnicity. As a result, ethnicity was missing or reported as “Unknown” for 21% of Saint Louis County gonorrhea cases in 2017. For cases where ethnicity was reported, the gonorrhea rate among non-Hispanics (207.0 cases per 100,000) was 1.3 times the rate among Hispanics (159.2 cases per 100,000). The non-Hispanic gonorrhea rate increased by 2% between 2016 (203.8 cases per 100,000) and 2017 and has increased by 54% since 2013 (134.7 cases per 100,000). The Hispanic gonorrhea rate increased by 19% between 2016

(133.3 cases per 100,000) and 2017 and has increased by 258% since 2013 (44.4 cases per 100,000). However, given the incompleteness of the ethnicity data and the relatively small size of Saint Louis County's Hispanic population (2.7% of the total population), this trend is difficult to interpret.

Figure 21. Gonorrhea Rates by Ethnicity, Saint Louis County, 2013 to 2017



*Total excludes cases where ethnicity was unknown

Gonorrhea by Region

In 2017, gonorrhea incidence was highest in the Inner North region of Saint Louis County (791.7 cases per 100,000), followed by the Outer North (377.8 cases per 100,000), Central (172.8 cases per 100,000), South (63.9 cases per 100,000), and West (50.9 cases per 100,000) regions. Between 2016 and 2017, gonorrhea incidence increased in the Outer North (12%), Central (4%), and South (31%) regions, decreased by 9% in the Inner North region, and remained stable in the West region. Since 2013, gonorrhea incidence has increased in all five regions.

Figure 22. Gonorrhea Rates by Sub-County Region, Saint Louis County, 2013 to 2017

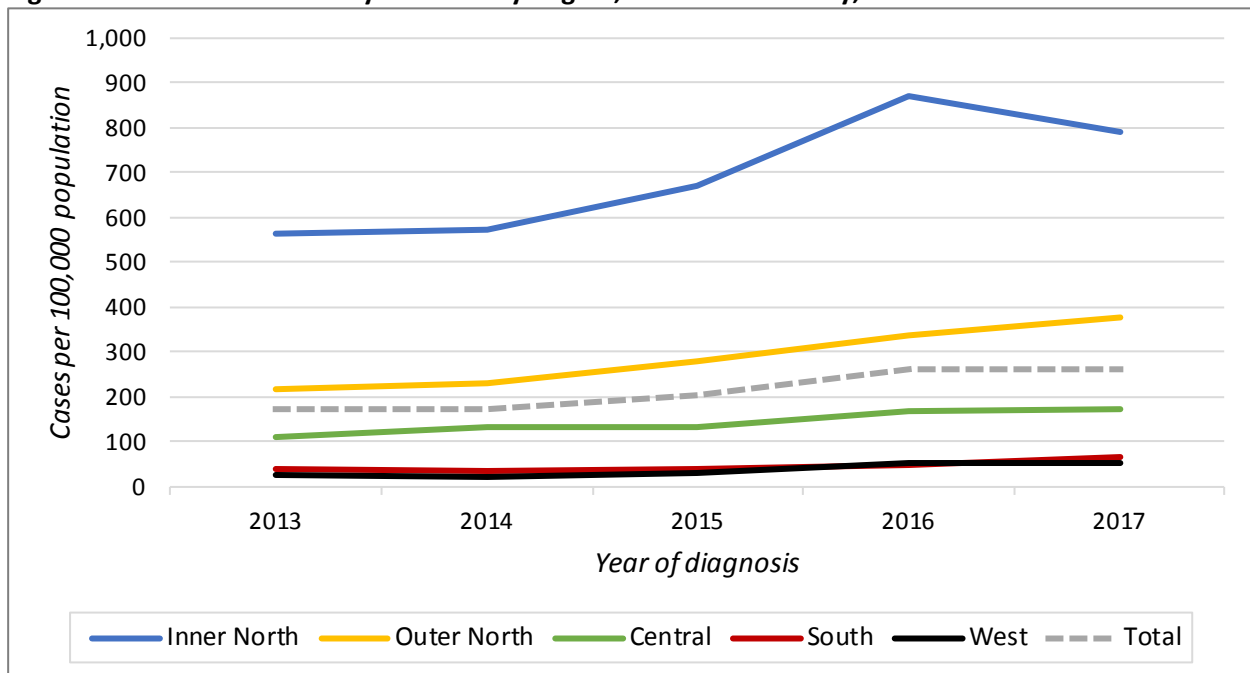
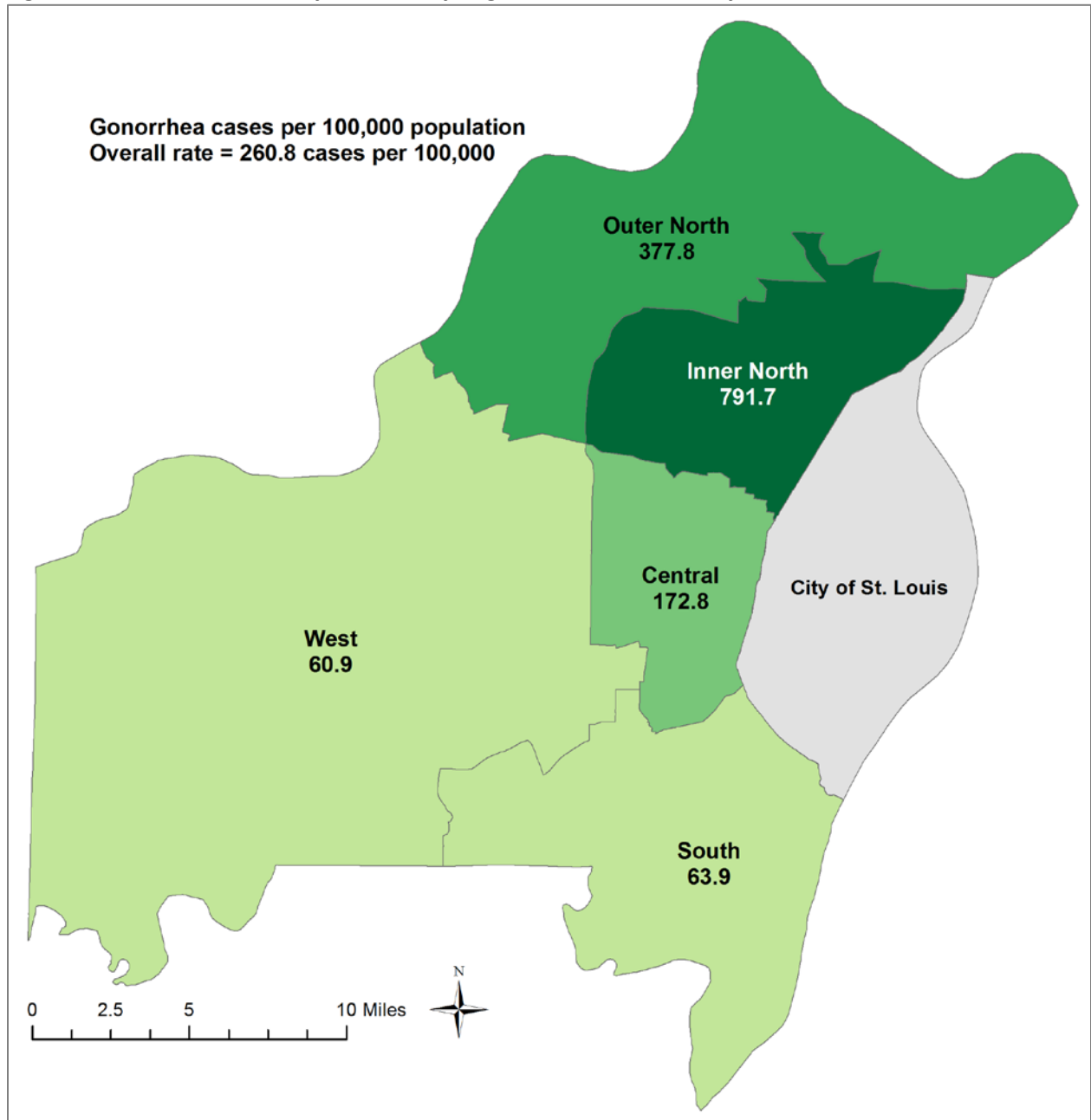


Figure 23. Gonorrhea Rates by Sub-County Region, Saint Louis County, 2017



Gonorrhea by Neighborhood Poverty Level

In 2017, the highest gonorrhea rates were reported in census tracts with very high poverty rates (907.1 cases per 100,000), followed by high poverty (810.9 cases per 100,000), medium poverty (379.0 cases per 100,000), and low poverty census tracts (90.5 cases per 100,000). Between 2016 and 2017, gonorrhea incidence decreased in high poverty (−5%) and very high poverty (−19%) census tracts, remained stable in medium poverty census tracts, and increased by 16% in low poverty census tracts. Since 2013, however, gonorrhea incidence has increased substantially across all neighborhood poverty levels.

Figure 24. Gonorrhea Rates by Neighborhood Poverty Level, Saint Louis County, 2013 to 2017

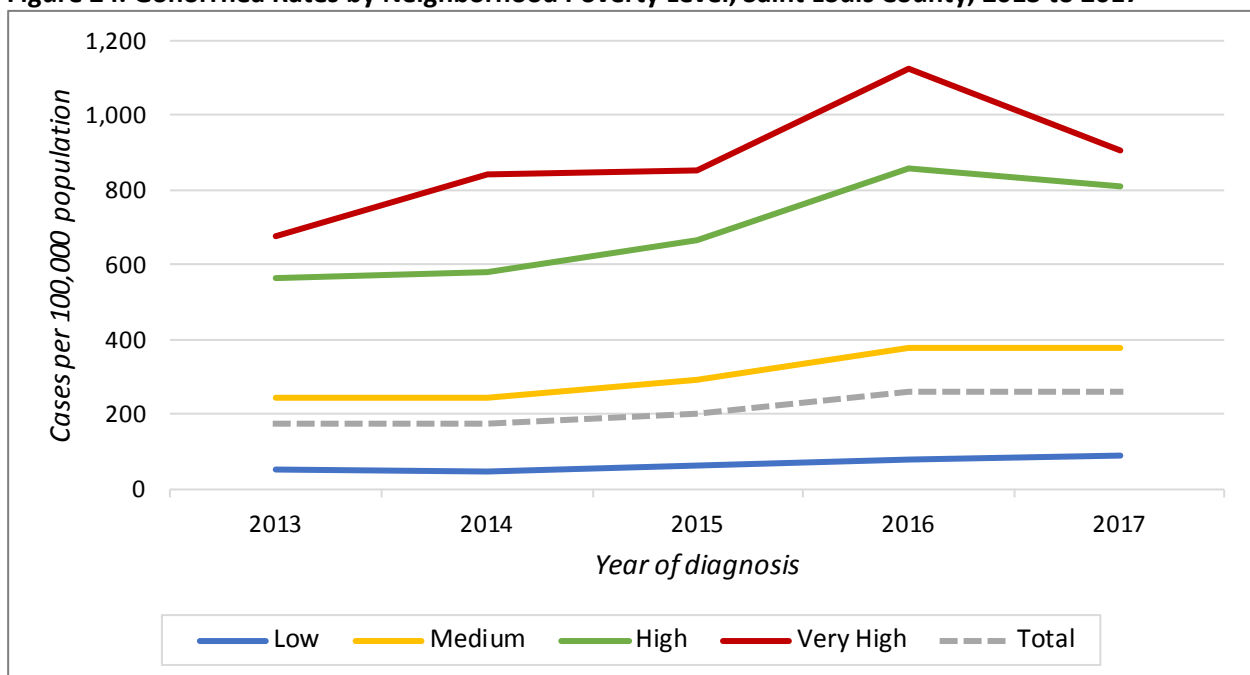
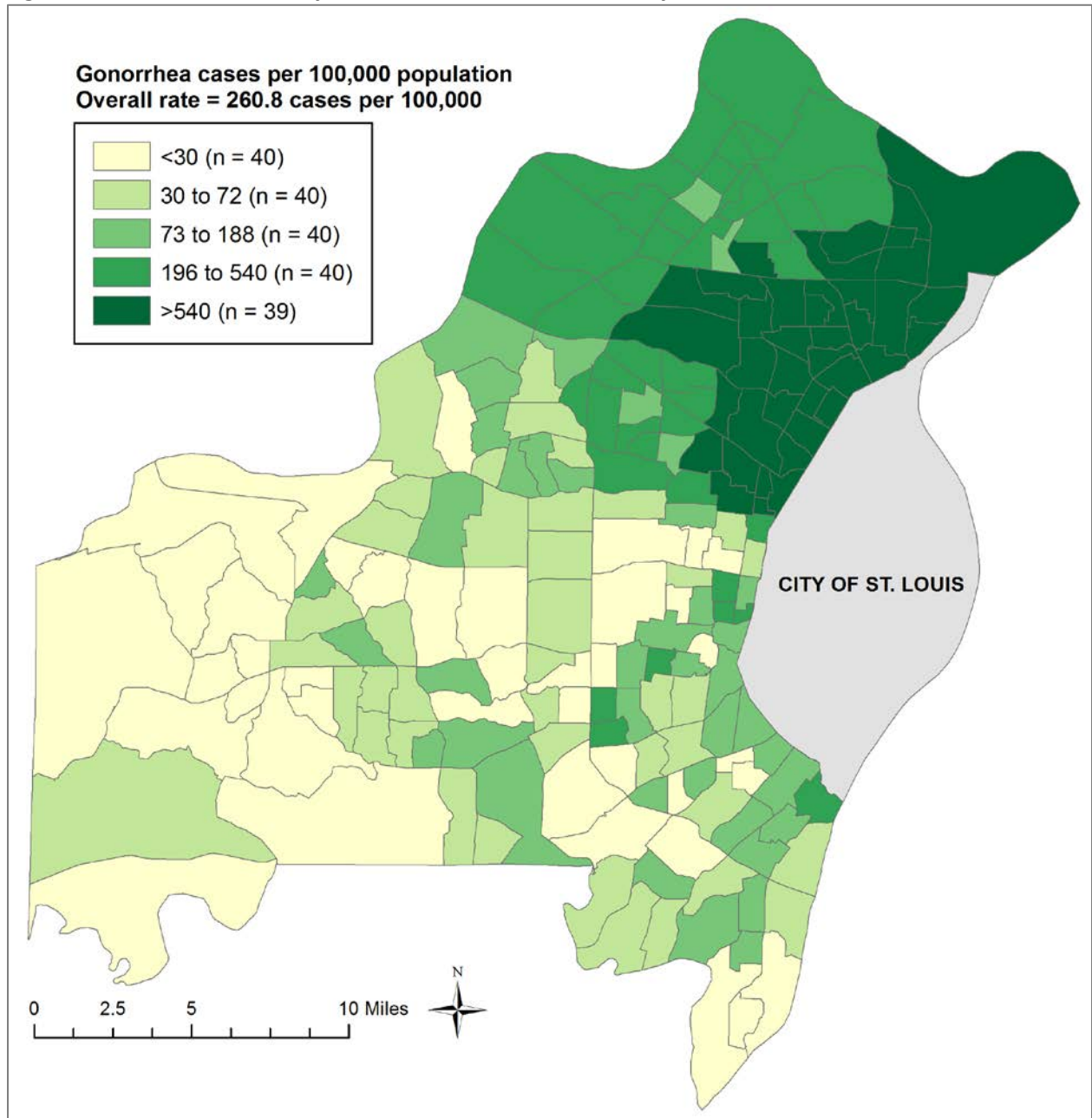


Figure 25. Gonorrhea Rates by Census Tract, Saint Louis County, 2017

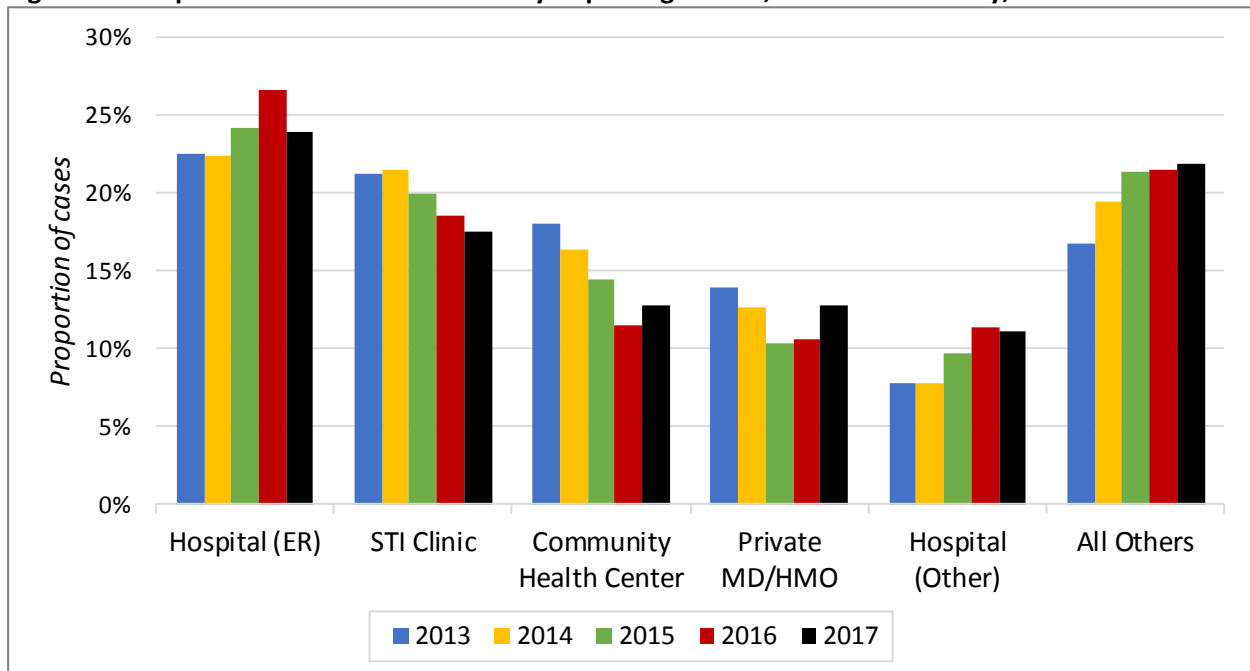


Gonorrhea by Reporting Source

In 2017, the five most common sources of gonorrhea case reports were hospital emergency departments (24%), STI clinics (17%), community health centers (13%), private physicians/HMOs (13%), and other hospital clinics/facilities (11%). The remaining 22% of gonorrhea cases were reported by a variety of other sources, including (in no particular order) family planning clinics, infectious disease physicians/clinics, labor and delivery units, correctional facilities, HIV counseling/testing sites, military, student health centers, laboratories, and drug treatment facilities.

The Saint Louis County Department of Public Health’s STI Clinic at North Central Community Health Center diagnosed more Saint Louis County gonorrhea cases (n=456) than any other single provider in 2017.

Figure 26. Proportion of Gonorrhea Cases by Reporting Source, Saint Louis County, 2013 to 2017



Syphilis

“Early syphilis” refers to the primary, secondary, and early latent stages of *Treponema pallidum* infection. Syphilis cases diagnosed in those stages are known to have been transmitted in the previous 12 months. Cases classified as “late latent” are cases in which there is no evidence that the patient acquired the disease in the previous 12 months. Because they are indicators of incident infection, syphilis surveillance focuses on early syphilis cases.

In 2017, there were 114 cases of primary and secondary syphilis diagnosed among Saint Louis County residents, for a primary and secondary syphilis rate of 11.4 cases per 100,000 population. With an additional 88 cases of early latent syphilis, Saint Louis County’s early syphilis rate was 20.2 cases per 100,000. This represents a 42% increase in syphilis incidence from 2016 (14.2 cases per 100,000) and a 159% increase from 2013 (7.8 cases per 100,000). Though they do not reflect recent infections, the number of reported late latent syphilis cases increased by 35% from 48 in 2016 to 65 in 2017. The early syphilis rate in Saint Louis County in 2017 was 1.32 times the Missouri rate (15.3 per 100,000) and roughly equal to the national rate (20.0 per 100,000). Between 2013 and 2017, the relative increase in Saint Louis County’s rate (+159%) was greater than the increase in the state (+96%) and national (+85%) rates.

Figure 27. Early Syphilis Rates, Saint Louis County, Missouri, and United States, 2013 to 2017

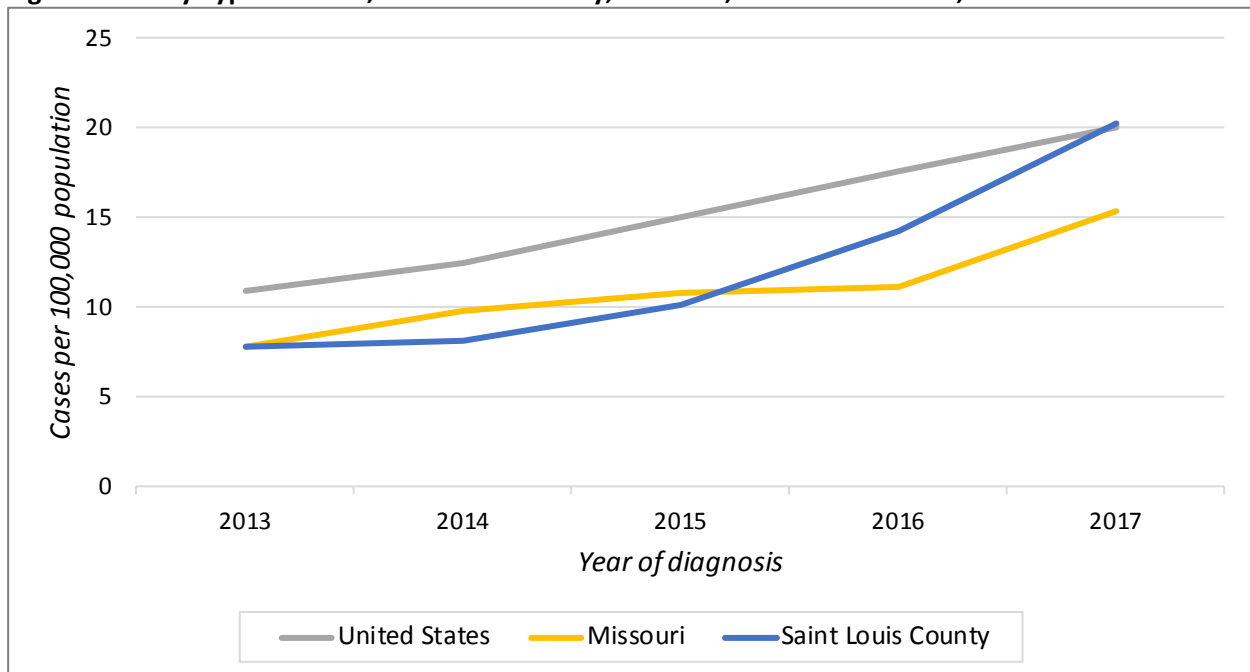
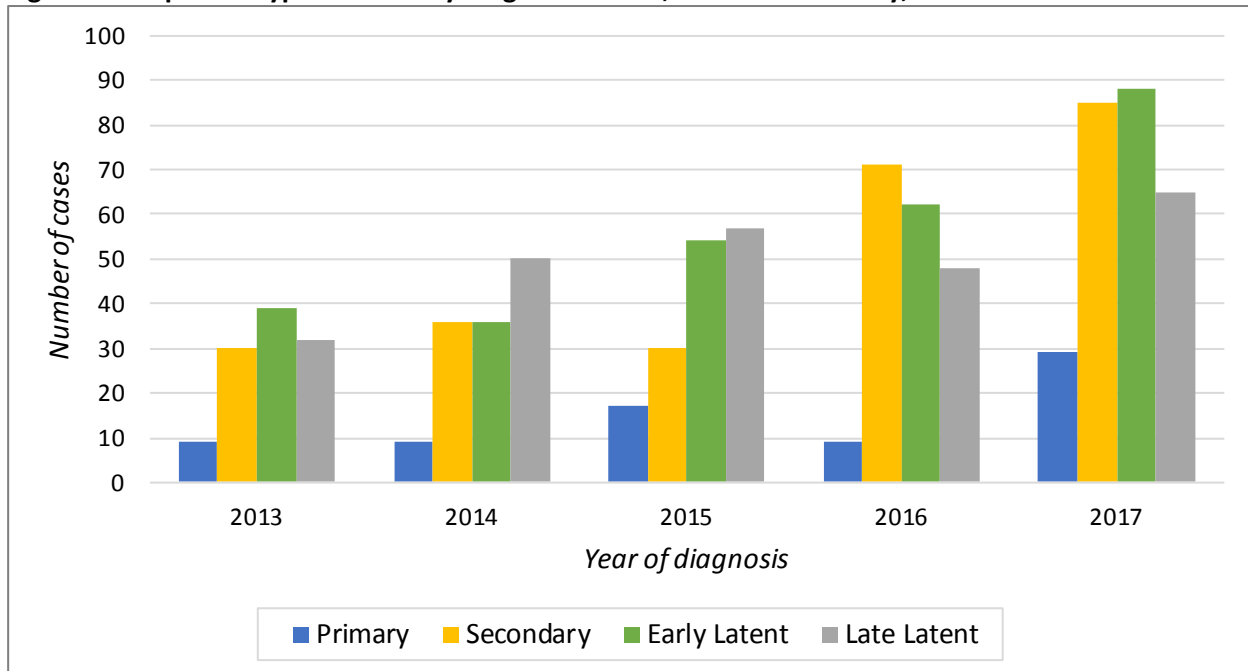


Figure 28. Reported Syphilis Cases by Stage of Disease, Saint Louis County, 2013 to 2017

Early Syphilis by Sex and Age Group

In 2017, 176 cases of early syphilis were reported among men (37.1 cases per 100,000) and 26 cases were reported among women (4.9 cases per 100,000). Between 2016 and 2017, syphilis incidence increased by 44% among men (from 25.7 cases per 100,000) and by 30% among women (from 3.8 cases per 100,000). Since 2013, syphilis incidence has increased by 141% among men and by 420% among women.

People aged 20 to 29 years accounted for 50% of early syphilis cases reported in 2017. Overall, syphilis incidence was highest among people aged 25 to 29 years (91.6 cases per 100,000) and 20 to 24 years (66.4 cases per 100,000). The early syphilis rate among men aged 20 to 24 years was 108.2 cases per 100,000, compared to 25.1 cases per 100,000 women aged 20 to 24 years. The early syphilis rate among men aged 25 to 29 years was 175.7 cases per 100,000, compared to 12.3 cases per 100,000 women aged 25 to 29 years. From 2016 to 2017, syphilis incidence remained relatively stable among people aged 15 to 19 years and 20 to 24 years, while increasing among people aged 25 to 29 years (49%), 30 to 39 years (50%), 40 to 49 years (85%), and 50 to 59 years (217%). Since 2013, syphilis incidence has increased considerably among all groups aged 20 years and older. In relative terms, syphilis rates have increased most among older adults, though older adults still represent a minority of cases. Notably, people aged 50 years and older, who accounted for fewer than 3% of early syphilis cases in 2013, accounted for 12% of cases in 2017.

Figure 29. Early Syphilis Rates by Sex, Saint Louis County, 2013 to 2017

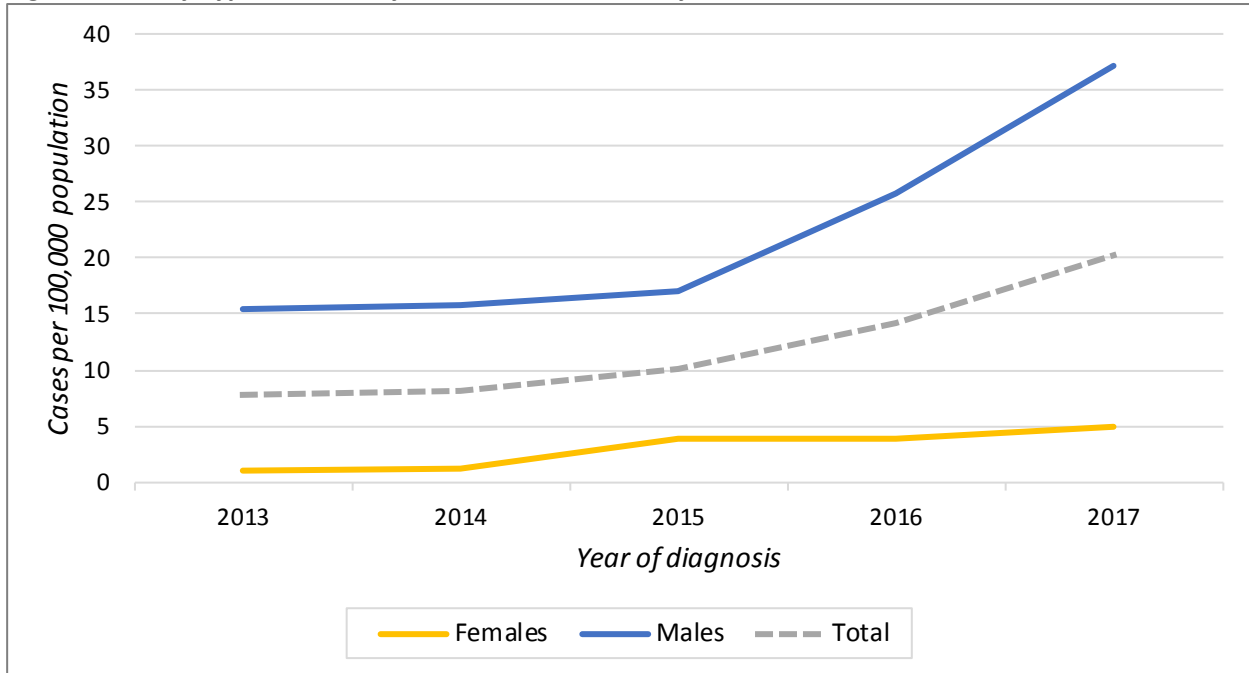


Figure 30. Early Syphilis Rates by Age Group, Saint Louis County, 2013 to 2017

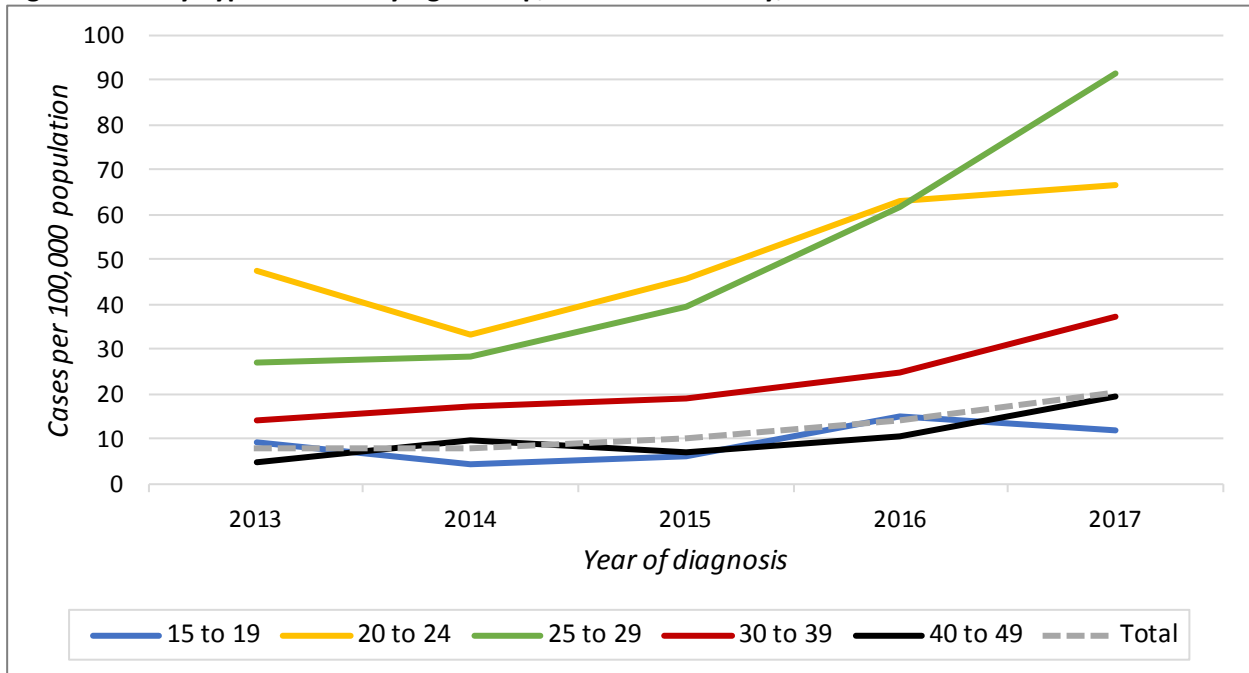
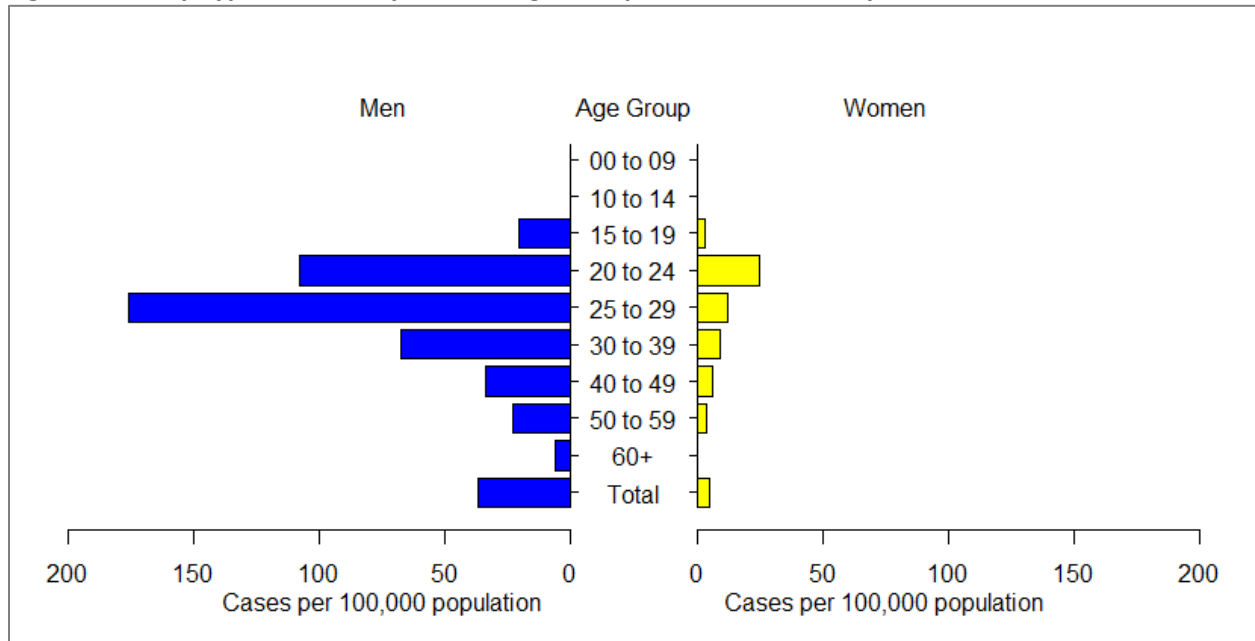


Figure 31. Early Syphilis Rates by Sex and Age Group, Saint Louis County, 2017

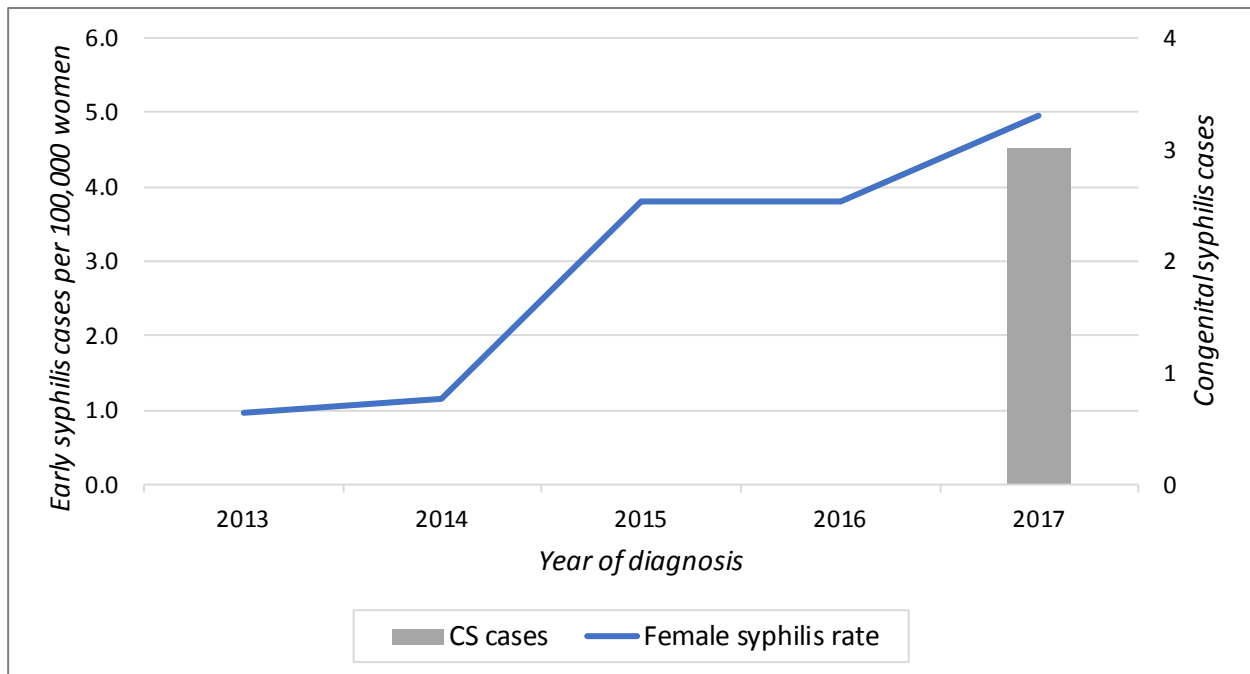


Though syphilis incidence has increased dramatically among Saint Louis County women since 2013, there are too few cases in most age groups to support analyzing trends in age-specific incidence rates. As cited above, however, early syphilis incidence among women in Saint Louis County increased by 420% between 2013 (1.0 case per 100,000 women) and 2017 (4.9 cases per 100,000). Of the 77 female early syphilis cases reported in that period, 88% were diagnosed in women of childbearing age (15 to 44 years). The median age of women in Saint Louis County diagnosed with early syphilis in 2017 was 29.5 years (IQR 24.0 to 40.5 years).

Congenital Syphilis

Three cases of congenital syphilis (2.6 per 10,000 live births) were diagnosed in Saint Louis County in 2017, the first cases reported in the county since 2012.

Figure 32. Congenital Syphilis Cases and Rates of Early Syphilis among Women, Saint Louis County, 2013 to 2017

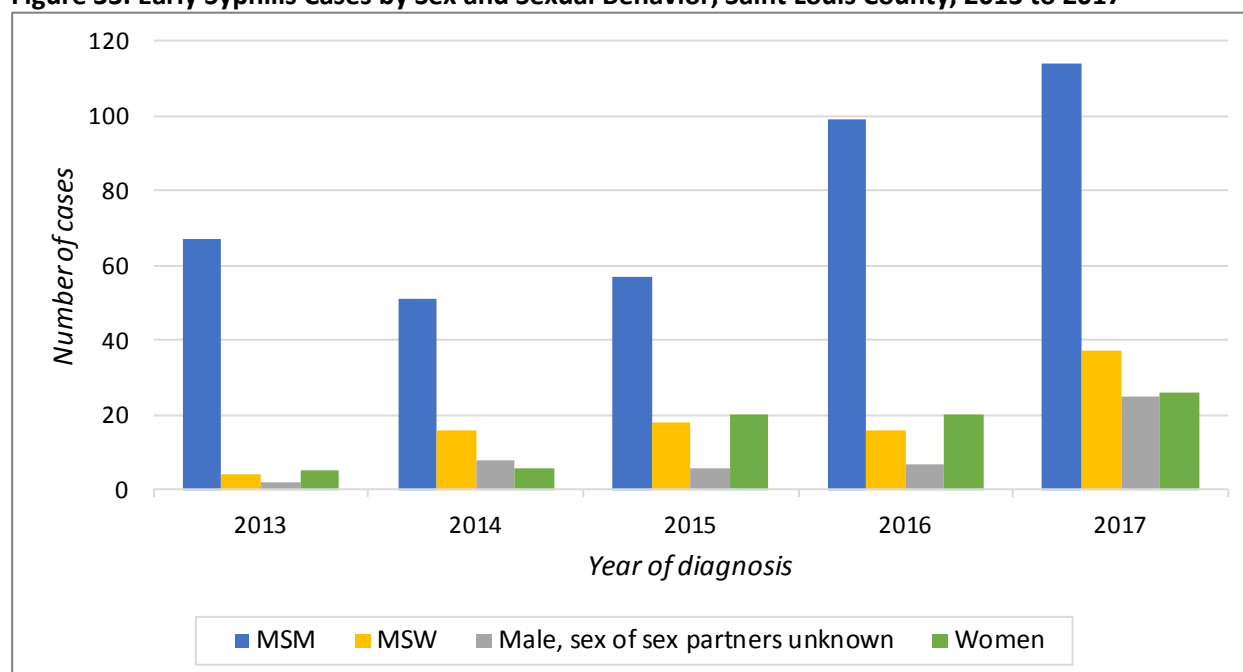


Early Syphilis by Sexual Behavior

Men who have sex with men (MSM) continued to account for a majority of Saint Louis County’s early syphilis cases in 2017. Of 202 reported early syphilis cases, 114 (56%) were among MSM, 37 (18%) were among men who have sex with women only (MSW), 25 (12%) were among men without information regarding sex of sex partners, and 26 (13%) were among women.

While MSM accounted for more than half of all early syphilis cases, the number of cases increased more sharply among non-MSM than among MSM in 2017. From 2016 to 2017, the number of reported cases increased by 131% among MSW (from 16 to 37 cases), by 30% among women, and by 15% among MSM.

Figure 33. Early Syphilis Cases by Sex and Sexual Behavior, Saint Louis County, 2013 to 2017

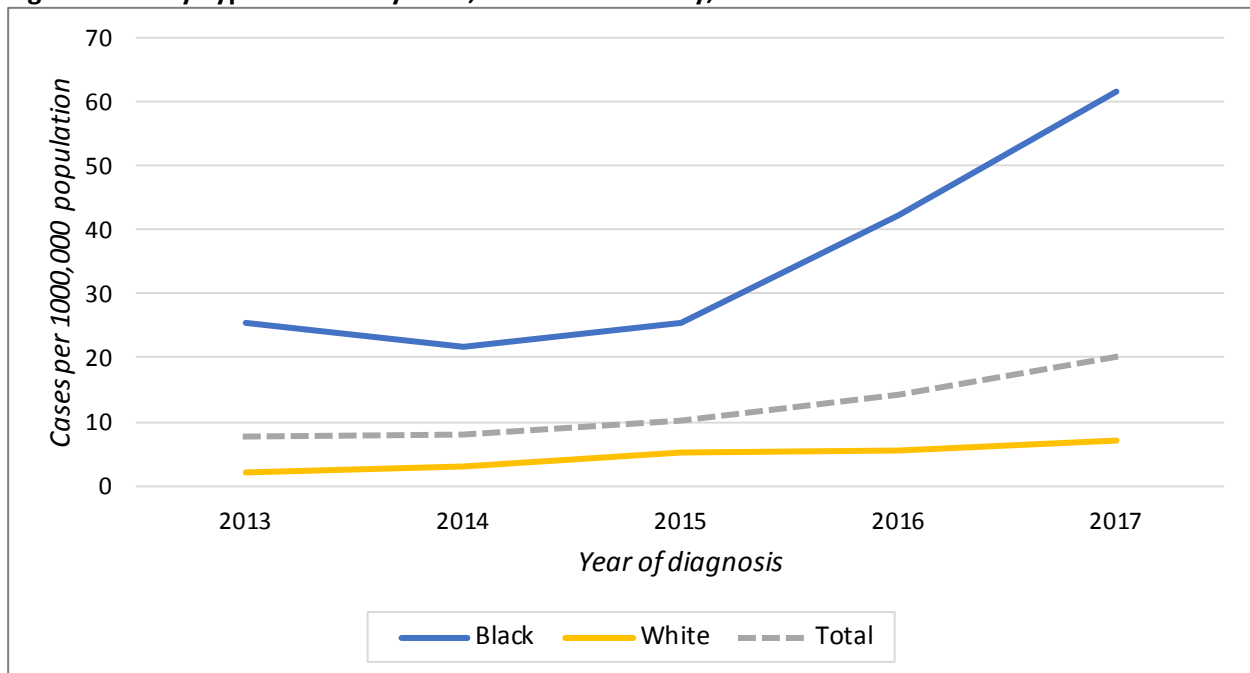


Early Syphilis by Race and Ethnicity

Race was unknown for 2% (n=4) of reported early syphilis cases in 2017. For cases where race was known, the early syphilis rate among black residents of Saint Louis County (61.0 cases per 100,000) was 8.8 times the rate among whites (6.9 cases per 100,000). From 2016 to 2017, syphilis incidence increased by 44% among blacks (from 42.4 cases per 100,000) and by 26% among whites (from 5.5 cases per 100,000). Since 2013, syphilis incidence has increased by 140% among blacks (from 25.4 cases per 100,000) and by 243% among whites (from 2.0 cases per 100,000). There were too few cases of early syphilis reported among other racial groups to calculate rates.

Missouri law does not require that communicable disease case reports include the patient’s ethnicity. Ethnicity was missing or reported as “Unknown” for 6% (n=13) of reported early syphilis cases in 2017. For cases where ethnicity was known, the early syphilis rate among Hispanics (25.9 cases per 100,000) was 1.4 times the rate among non-Hispanics (18.7 cases per 100,000). The early syphilis rate among non-Hispanics increased by 30% (from 14.4 cases per 100,000) in 2016 and has increased by 112% (from 6.8 per 100,000) since 2013. There were too few early syphilis cases reported among Hispanics between 2013 and 2016 to calculate historical rates.

Figure 34. Early Syphilis Rates by Race, Saint Louis County, 2013 to 2017

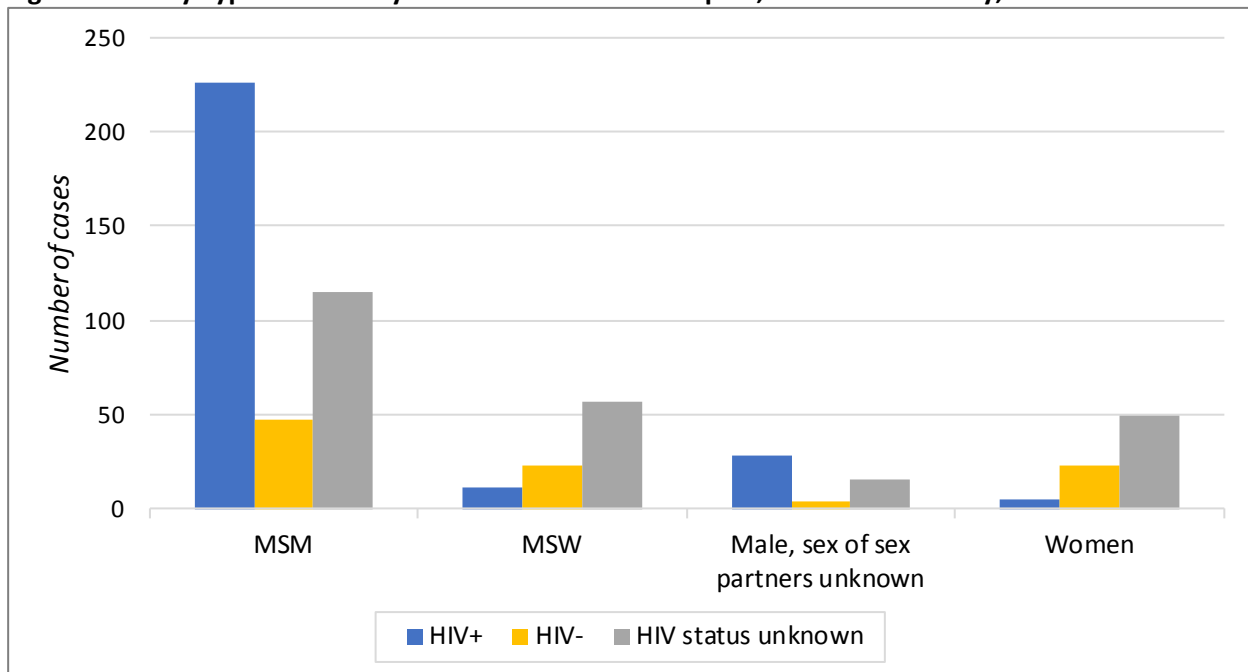


Syphilis and HIV Co-infection

Information about HIV co-infection among early syphilis cases in Saint Louis County is incomplete. In 2017, HIV status at the time of syphilis diagnosis was known for just 56% of reported early syphilis cases. However, completeness varied substantially by sex and sex of sexual partners – HIV status was known for 69% of cases among MSM, but for only 30% of cases among MSW and 23% of cases among women. Of the 114 early syphilis cases for whom HIV status was known in 2017, 98 (86%) were co-infected with HIV. Among the 79 cases among MSM where HIV status was known, the HIV co-infection rate was 90% (n=71).

During 2013–2017, HIV status at the time of syphilis infection was known for 70% of early syphilis cases among MSM, but HIV was known for just 37% of cases among MSW and 36% of cases among women. For those early syphilis cases where HIV status was known, the HIV co-infection rate was 83% among MSM, 32% among MSW, and 18% among women.

Figure 35. Early Syphilis Cases by HIV Status at Time of Report, Saint Louis County, 2013 to 2017



Early Syphilis by Region

In 2017, syphilis incidence was highest in the Inner North region of the county (53.7 cases per 100,000), followed by the Central (21.0 cases per 100,000), Outer North (20.9 cases per 100,000), South (7.6 cases per 100,000), and West (6.1 cases per 100,000) regions. From 2016 to 2017, syphilis incidence increased in the Inner North (107%), South (60%), and West (125%) regions, remained stable in the Central region, and decreased by 14% in the Outer North region. Since 2013, syphilis incidence has increased dramatically in all five regions.

Figure 36. Early Syphilis Rates by Region, Saint Louis County, 2013 to 2017

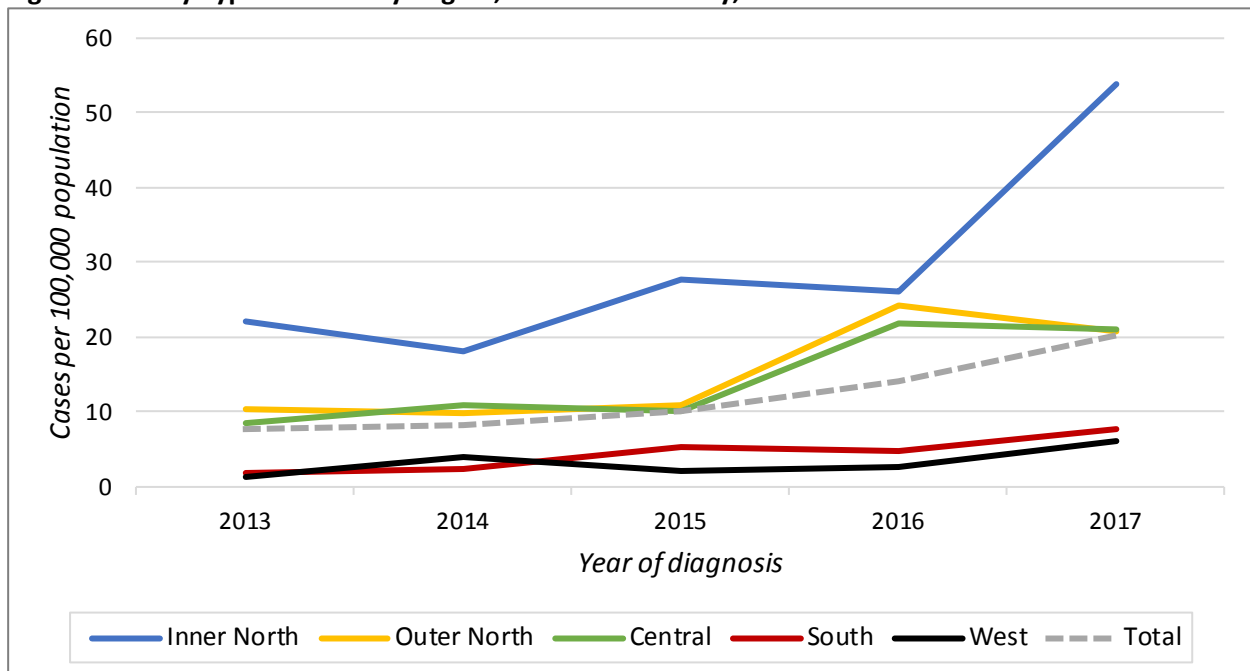
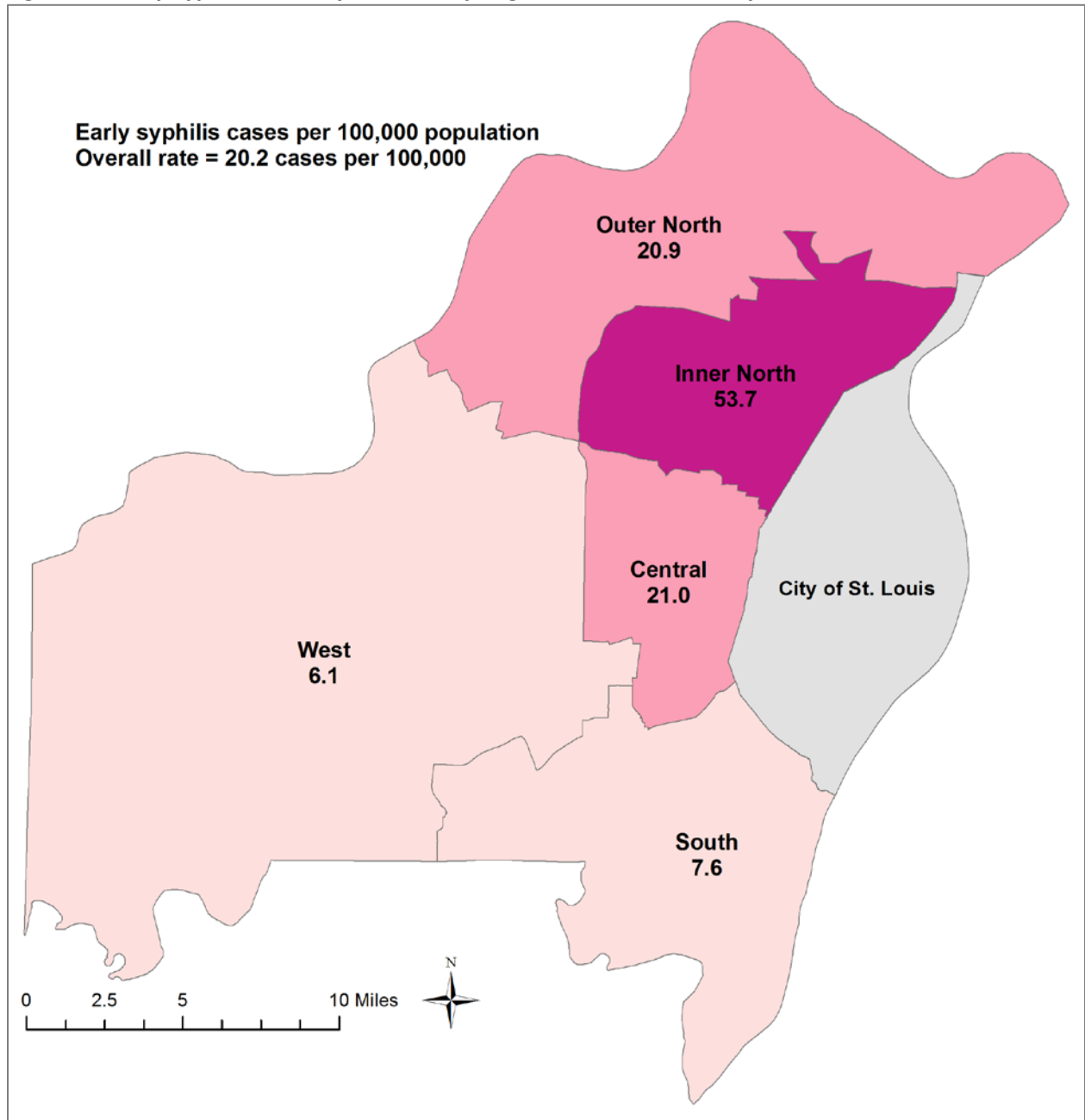


Figure 37. Early Syphilis Rates by Sub-County Region, Saint Louis County, 2017



Early Syphilis by Neighborhood Poverty Level

In 2017, syphilis incidence was highest in very high poverty census tracts (65.6 cases per 100,000), followed by high poverty census tracts (60.1 cases per 100,000), medium poverty census tracts (25.5 cases per 100,000), and low poverty census tracts (8.4 cases per 100,000). The poorest census tracts also saw the greatest increases in syphilis incidence. Early syphilis rates rose by 157% in very high poverty neighborhoods and by 100% in high poverty neighborhoods, compared to 21% and 13% increases in medium and low poverty neighborhoods, respectively. Since 2013, syphilis incidence has at least doubled across all neighborhood poverty levels.

Figure 38. Early Syphilis Rates by Neighborhood Poverty Level, Saint Louis County, 2013 to 2017

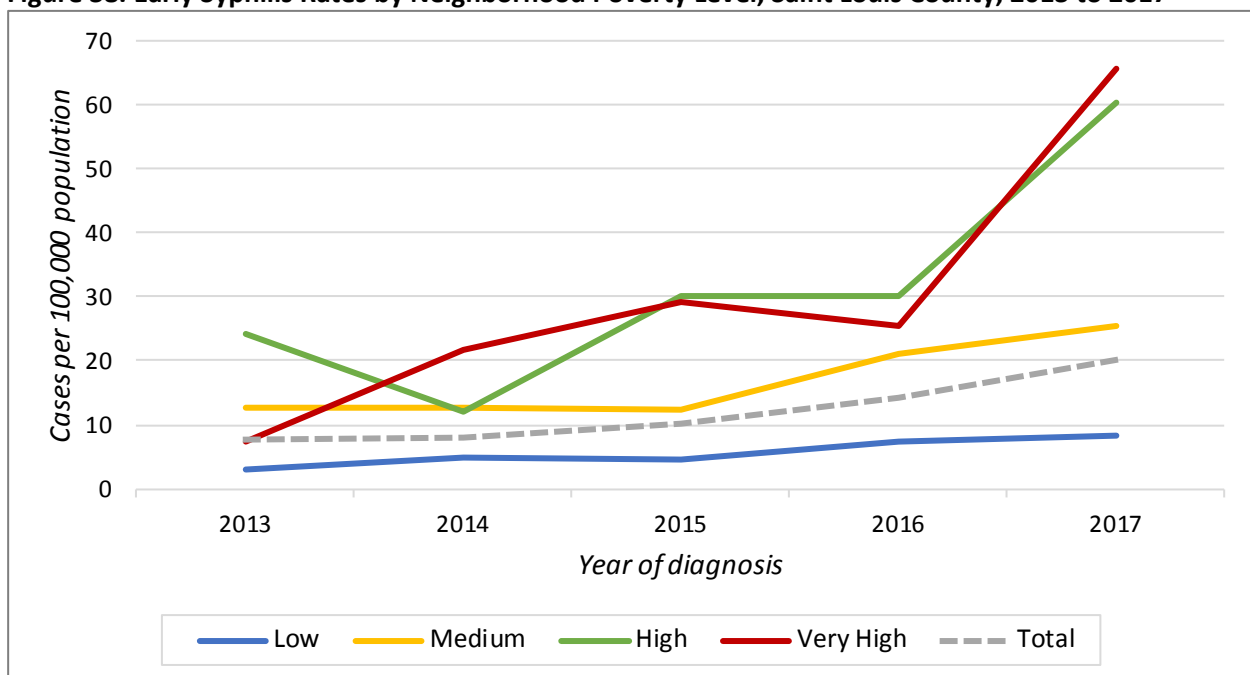
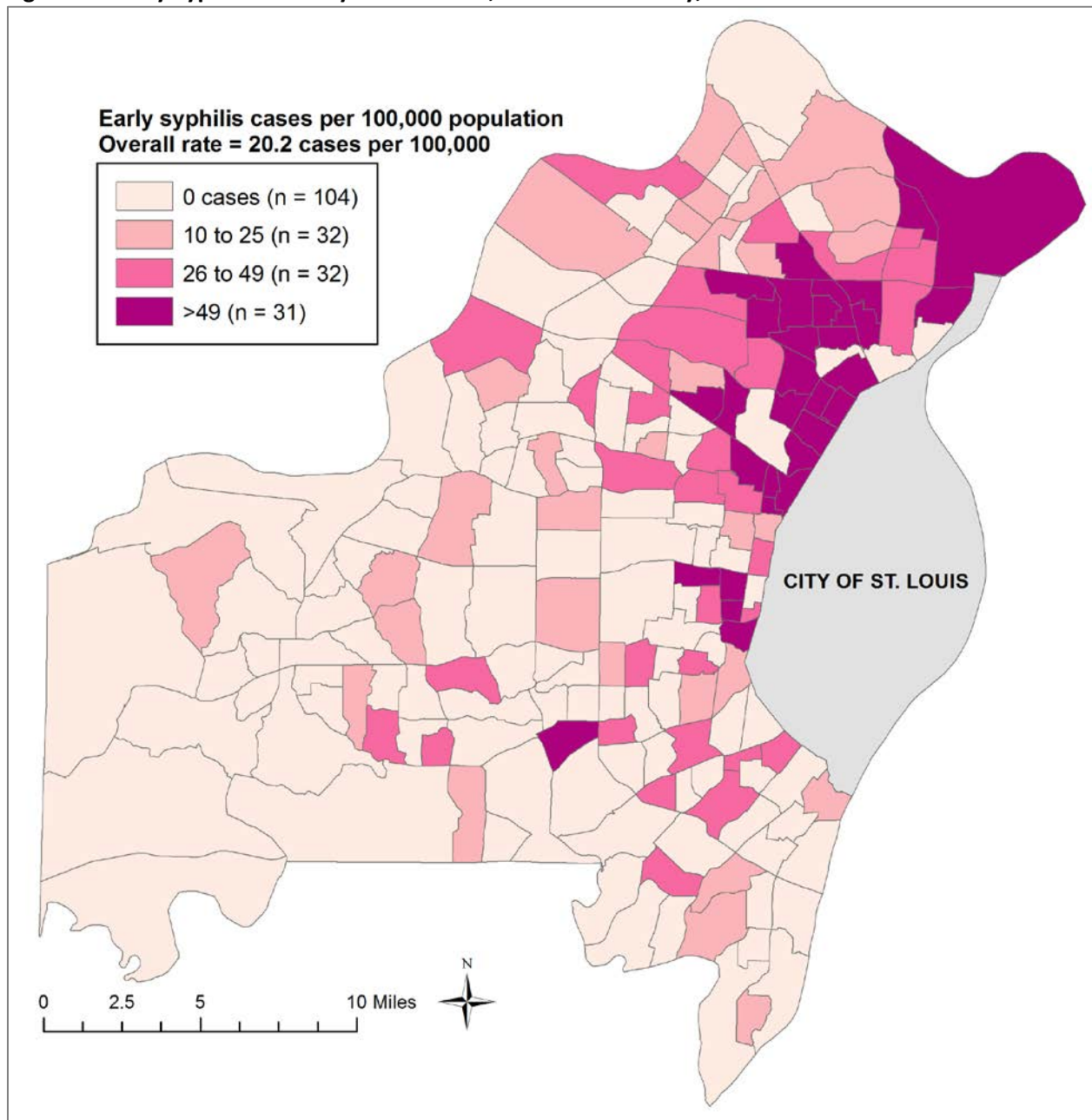


Figure 39. Early Syphilis Rates by Census Tract, Saint Louis County, 2017

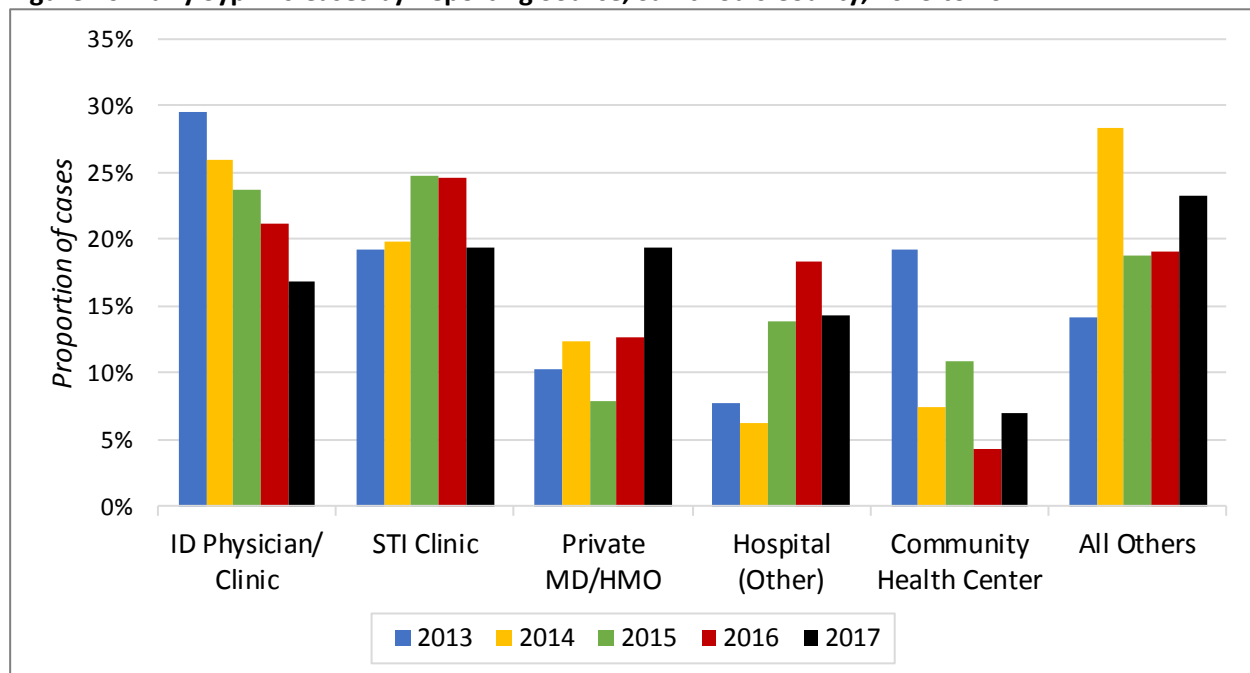


Early Syphilis by Reporting Source

In 2017, the five most common sources of early syphilis case reports were STI clinics (19%), private physicians/HMOs (19%), infectious disease physicians/clinics (17%), other hospital clinics/facilities (14%), and community health centers (7%). The remaining 23% of early syphilis cases were reported by a variety of other sources, including (in no particular order) HIV counseling/testing sites, correctional facilities, hospital emergency departments, other health department clinics, family planning clinics, blood banks, and the military.

The Saint Louis County Department of Public Health’s STI Clinic at North Central Community Health Center diagnosed more Saint Louis County early syphilis cases (n=39) than any other single provider in 2017.

Figure 40. Early Syphilis Cases by Reporting Source, Saint Louis County, 2013 to 2017



Appendix 1: Data Tables

Table 1. Sexually Transmitted Infections - Counts and Rates of Reported Cases, Saint Louis County, 2013 to 2017

	Case Counts					Rates per 100,000 Population*				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Chlamydia	5,208	5,376	5,502	5,705	6,184	520.5	537.3	549.9	570.2	618.1
Gonorrhea	1,733	1,741	2,033	2,627	2,609	173.2	174.0	203.2	262.6	260.8
Syphilis, All Stages	110	131	158	190	267	11.0	13.1	15.8	19.0	26.7
Primary	9	9	17	9	29	0.9	0.9	1.7	0.9	2.9
Secondary	30	36	30	71	85	3.0	3.6	3.0	7.1	8.5
Early Latent	39	36	54	62	88	3.9	3.6	5.4	6.2	8.8
Late Latent	32	50	57	48	65	3.2	5.0	5.7	4.8	6.5
Congenital*	0	0	0	0	3	0.0	0.0	0.0	0.0	2.6
P&S† Syphilis	39	45	47	80	114	3.9	4.5	4.7	8.0	11.4
Early‡ Syphilis	78	81	101	142	202	7.8	8.1	10.1	14.2	20.2

*Rates of congenital syphilis are per 10,000 live births

†Primary and secondary cases

‡Primary, secondary, and early latent cases

Table 2. Chlamydia - Case Counts and Rates by Sex and Age Group, Saint Louis County, 2013 to 2017

	Case Counts					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total	5,208	5,376	5,502	5,705	6,184	520.5	537.3	549.9	570.2	618.1
Female	3,526	3,689	3,661	3,699	4,058	670.1	701.1	695.8	703.0	771.2
00 to 09	--	--	--	--	--	--	--	--	--	--
10 to 14	43	33	35	47	40	135.5	104.0	110.3	148.1	126.0
15 to 19	1,290	1,190	1,140	1,210	1,315	3,992.4	3,683.0	3,528.2	3,744.9	4,069.8
20 to 24	1,388	1,553	1,560	1,460	1,570	4,359.4	4,877.7	4,899.7	4,585.6	4,931.1
25 to 29	478	544	524	550	680	1,465.9	1,668.3	1,607.0	1,686.7	2,085.4
30 to 39	253	298	312	348	366	398.3	469.1	491.2	547.8	576.2
40 to 49	57	60	71	62	71	86.6	91.2	107.9	94.2	107.9
50 to 59	13	10	13	21	10	16.5	12.7	16.5	26.7	12.7
60+	--	--	--	--	5	--	--	--	--	3.8
Male	1,682	1,687	1,841	2,006	2,126	354.6	355.6	388.1	422.9	448.2
00 to 09	--	--	--	--	--	--	--	--	--	--
10 to 14	14	12	12	7	12	42.6	36.5	36.5	21.3	36.5
15 to 19	420	345	414	472	510	1,234.2	1,013.8	1,216.5	1,387.0	1,498.6
20 to 24	638	680	715	749	743	2,030.6	2,164.3	2,275.7	2,383.9	2,364.8
25 to 29	322	316	346	393	426	1,047.5	1,028.0	1,125.6	1,278.5	1,385.8
30 to 39	212	247	242	276	309	369.1	430.0	421.3	480.5	537.9
40 to 49	53	64	75	72	76	90.1	108.8	127.5	122.4	129.2
50 to 59	16	20	30	33	35	22.9	28.6	43.0	47.3	50.1
60+	7	--	7	--	13	7.1	--	7.1	--	13.2

Table 3. Chlamydia – Case Counts and Rates by Race/Ethnicity, Region, and Poverty Level, Saint Louis County, 2013 to 2017

	Case Counts					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total	5,208	5,376	5,502	5,705	6,184	520.5	537.3	549.9	570.2	618.1
Race/Ethnicity										
White	767	846	866	962	1,034	110.7	122.1	125.0	138.9	149.3
Black	3,382	3,355	3,393	3,480	3,747	1,433.5	1,422.1	1,438.2	1,475.1	1,588.3
American Indian/Alaska Native	7	8	--	11	5	431.6	493.2	--	678.2	308.3
Asian	20	32	18	20	27	52.0	83.2	46.8	52.0	70.2
Native Hawaiian/Other Pacific Islander	--	--	--	--	--	--	--	--	--	--
Some other race	24	21	21	25	33	347.4	304.0	304.0	361.9	477.7
Two or more races	72	150	165	199	200	291.6	607.4	668.2	805.9	809.9
Hispanic	63	64	68	95	112	233.3	237.0	251.8	351.7	414.7
Region										
Central	491	515	522	521	618	382.2	400.9	406.4	405.6	481.1
Inner North	2,446	2,479	2,481	2,556	2,626	1,382.3	1,400.9	1,402.0	1,444.4	1,484.0
Outer North	1,284	1,403	1,386	1,455	1,670	705.1	770.4	761.1	799.0	917.0
South	407	433	488	507	540	192.6	205.0	231.0	240.0	255.6
West	467	504	604	636	614	157.4	169.9	203.6	214.4	206.9
Neighborhood Poverty Level										
Low	1,418	1,564	1,689	1,731	1,885	227.8	251.3	271.4	278.1	302.8
Medium	1,762	1,825	1,866	2,013	2,155	702.3	727.4	743.7	802.3	858.9
High	1,394	1,415	1,400	1,410	1,500	1,397.2	1,418.2	1,403.2	1,413.2	1,503.4
Very High	490	493	487	482	482	1,785.0	1,795.9	1,774.1	1,755.9	1,755.9

Table 4. Gonorrhea – Case Counts and Rates by Sex and Age Group, Saint Louis County, 2013 to 2017

	Case Counts					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total	1,733	1,741	2,033	2,627	2,609	173.2	174.0	203.2	262.6	260.8
Female	851	789	853	1,104	1,120	161.7	150.0	162.1	209.8	212.9
00 to 09	--	--	--	--	--	--	--	--	--	--
10 to 14	14	7	14	18	14	44.1	22.1	44.1	56.7	44.1
15 to 19	265	272	287	314	342	820.2	841.8	888.2	971.8	1,058.5
20 to 24	331	307	322	404	382	1,039.6	964.2	1,011.3	1,268.9	1,199.8
25 to 29	143	112	128	196	200	438.5	343.5	392.5	601.1	613.3
30 to 39	70	65	76	122	140	110.2	102.3	119.6	192.1	220.4
40 to 49	14	19	21	34	27	21.3	28.9	31.9	51.7	41.0
50 to 59	9	5	--	10	9	11.4	6.4	--	12.7	11.4
60+	--	--	--	5	5	--	--	--	3.8	3.8
Male	882	952	1,180	1,523	1,489	185.9	200.7	248.7	321.0	313.9
00 to 09	--	--	--	--	--	--	--	--	--	--
10 to 14	--	5	5	8	6	--	15.2	15.2	24.3	18.3
15 to 19	167	161	254	277	274	490.7	473.1	746.4	814.0	805.1
20 to 24	321	364	397	486	456	1,021.7	1,158.5	1,263.6	1,546.8	1,451.4
25 to 29	170	184	211	309	296	553.0	598.6	686.4	1,005.2	962.9
30 to 39	122	153	178	235	277	212.4	266.4	309.9	409.1	482.2
40 to 49	59	53	67	113	96	100.3	90.1	113.9	192.1	163.2
50 to 59	29	25	50	69	63	41.5	35.8	71.6	98.8	90.2
60+	11	7	18	26	21	11.2	7.1	18.3	26.4	21.3

Table 5. Gonorrhea – Case Counts and Rates by Race/Ethnicity, Region, and Poverty Level, Saint Louis County, 2013 to 2017

	Case Counts					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total	1,733	1,741	2,033	2,627	2,609	173.2	174.0	203.2	262.6	260.8
Race/Ethnicity										
White	177	130	161	245	302	25.6	18.8	23.2	35.4	43.6
Black	1,362	1,383	1,598	2,038	1,926	577.3	586.2	677.3	863.9	816.4
American Indian/Alaska Native	--	--	--	--	--	--	--	--	--	--
Asian	--	--	--	7	6	--	--	--	18.2	15.6
Native Hawaiian/Other Pacific Islander	--	--	--	--	--	--	--	--	--	--
Some other race	--	--	--	--	9	--	--	--	--	130.3
Two or more races	34	35	63	76	91	137.7	141.7	255.1	307.8	368.5
Hispanic	12	5	12	36	42	44.4	18.5	44.4	133.3	155.5
Region										
Central	141	169	168	214	222	109.8	131.6	130.8	166.6	172.8
Inner North	998	1,014	1,184	1,536	1,401	564.0	573.0	669.1	868.0	791.7
Outer North	396	416	512	617	688	217.4	228.4	281.1	338.8	377.8
South	84	71	79	103	135	39.8	33.6	37.4	48.8	63.9
West	73	66	88	149	151	24.6	22.2	29.7	50.2	50.9
Neighborhood Poverty Level										
Low	324	303	383	486	563	52.1	48.7	61.5	78.1	90.5
Medium	613	616	733	941	951	244.3	245.5	292.1	375.0	379.0
High	565	578	664	854	809	566.3	579.3	665.5	856.0	810.9
Very High	186	231	234	308	249	677.6	841.5	852.4	1,122.0	907.1

Table 6. Early Syphilis – Case Counts and Rates by Sex and Age Group, Saint Louis County, 2013 to 2017

	Case Counts					Rates per 100,000 population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total	78	81	101	142	202	7.8	8.1	10.1	14.2	20.2
Female	5	6	20	20	26	1.0	1.1	3.8	3.8	4.9
00 to 09	--	--	--	--	--	--	--	--	--	--
10 to 14	--	--	--	--	--	--	--	--	--	--
15 to 19	--	--	--	--	--	--	--	--	--	--
20 to 24	--	--	5	11	8	--	--	15.7	34.5	25.1
25 to 29	--	--	6	--	--	--	--	18.4	--	--
30 to 39	--	--	7	--	6	--	--	11.0	--	9.4
40 to 49	--	--	--	--	--	--	--	--	--	--
50 to 59	--	--	--	--	--	--	--	--	--	--
60+	--	--	--	--	--	--	--	--	--	--
Male	73	75	81	122	176	15.4	15.8	17.1	25.7	37.1
00 to 09	--	--	--	--	--	--	--	--	--	--
10 to 14	--	--	--	--	--	--	--	--	--	--
15 to 19	6	--	--	8	7	17.6	--	--	23.5	20.6
20 to 24	29	20	24	29	34	92.3	63.7	76.4	92.3	108.2
25 to 29	14	14	19	38	54	45.5	45.5	61.8	123.6	175.7
30 to 39	17	20	16	26	39	29.6	34.8	27.9	45.3	67.9
40 to 49	5	12	7	13	20	8.5	20.4	11.9	22.1	34.0
50 to 59	--	5	9	5	16	--	7.2	12.9	7.2	22.9
60+	--	--	--	--	6	--	--	--	--	6.1

Table 7. Early Syphilis - Case Counts and Rates by Race/Ethnicity, Region, and Poverty Level, Saint Louis County, 2013 to 2017

	Case Counts					Rates per 100,000 Population				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total	78	81	101	142	202	7.8	8.1	10.1	14.2	20.2
Race/Ethnicity										
White	14	22	36	39	50	2.0	3.2	5.2	5.6	7.2
Black	60	51	60	100	145	25.4	21.6	25.4	42.4	61.5
American Indian/Alaska Native	--	--	--	--	--	--	--	--	--	--
Asian	--	--	--	--	--	--	--	--	--	--
Native Hawaiian/Other Pacific Islander	--	--	--	--	--	--	--	--	--	--
Some other race	--	--	--	--	--	--	--	--	--	--
Two or more races	--	--	--	--	--	--	--	--	--	--
Hispanic	--	--	--	--	7	--	--	--	--	25.9
Region										
Central	11	14	13	28	27	8.6	10.9	10.1	21.8	21.0
Inner North	39	32	49	46	95	22.0	18.1	27.7	26.0	53.7
Outer North	19	18	20	44	38	10.4	9.9	11.0	24.2	20.9
South	--	5	11	10	16	--	2.4	5.2	4.7	7.6
West	--	12	6	8	18	--	4.0	2.0	2.7	6.1
Neighborhood Poverty Level										
Low	18	30	29	46	52	2.9	4.8	4.7	7.4	8.4
Medium	32	32	31	53	64	12.8	12.8	12.4	21.1	25.5
High	24	12	30	30	60	24.1	12.0	30.1	30.1	60.1
Very High	--	6	8	7	18	--	21.9	29.1	25.5	65.6

Table 8. Early Syphilis – Case Counts by Sex and Sexual Behavior, Saint Louis County, 2013 to 2017

	2013	2014	2015	2016	2017
Men who have sex with men (MSM)	67	51	57	99	114
Men who have sex with women (MSW)	--	16	18	16	37
Males, sex of sex partners unknown	--	8	6	7	25
Women	5	6	20	20	26
Total	72	81	101	142	202