



CONGENITAL SYPHILIS IN TEXAS IN 2020



DSHS HIV/STD Section

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Executive Summary

The bacterium *Treponema pallidum* causes syphilis. Congenital syphilis (CS) occurs when a pregnant woman passes syphilis to her baby during pregnancy.¹ CS may lead to miscarriage, stillbirth, premature birth, and death immediately after birth. Death occurs in up to 40 percent of infants born to women with untreated syphilis because of the infection.¹ While CS can occur without symptoms, it can also present with a spectrum of serious manifestations, including but not limited to vision or hearing loss and improper bone or tooth development. A woman can avoid these outcomes with early detection and proper treatment during pregnancy. Benzathine penicillin G is the only treatment for syphilis during pregnancy, and adequate treatment can prevent CS with a success rate of 98 percent.²

In the U.S., the number of CS cases has increased each year since 2012.^{2,3} In 2020, there were 2,148 cases reported nationally, which included 149 stillbirths and deaths.³ Of these nationally reported cases, Texas accounted for approximately one in four cases (561), ranking Texas third in the nation's CS case rate in 2020. Four jurisdictions: Harris County (26 percent), Dallas County (18 percent), Bexar County (14 percent), and the Rio Grande Valley (9 percent).

Texas CS cases increased by over 700 percent since 2016, which totaled 70 reported cases. Over eight out of ten infants reported with CS were delivered by Hispanic (41 percent) and Black (41 percent) women. CS cases rise when syphilis cases in women of childbearing age (aged 15-44 years) rise. In 2020, the rate for primary and secondary syphilis among women of childbearing age resulted in 7.5 cases per 100,000. Early syphilis cases (including primary, secondary, and early non-primary non-secondary cases) in Texas increased by 176 percent from 2011 to 2020 (642 cases in 2011 to 1,769 cases in 2020). In 2020, nearly half (44 percent) of the women who delivered an infant with CS received their diagnosis late in pregnancy, at delivery, or post-partum. Additionally, among women delivering an infant with CS, 34 percent had inadequate treatment, and 19 percent had no treatment. Several

¹ Centers for Disease Control and Prevention (CDC), "Congenital Syphilis-Fact Sheet" 31 January 2017 [Online] Available: [cdc.gov/std/syphilis/stdfact-congenital-syphilis.htm](https://www.cdc.gov/std/syphilis/stdfact-congenital-syphilis.htm). [Accessed 29 December 2022].

² Bowen, V., Su, J., Torrone, E., Kidd, S., & Weinstock, H. "Increase in Incidence of Congenital Syphilis – United States, 2012–2014" 13 November 2015 [Online] Available: [cdc.gov/mmwr/preview/mmwrhtml/mm6444a3.htm](https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6444a3.htm). [Accessed 29 December 2022].

³ Centers for Disease Control and Prevention, "National Overview of STDs, 2020," 12 April 2022 [Online]. Available: [cdc.gov/std/statistics/2020/overview.htm#CongenitalSyphilis](https://www.cdc.gov/std/statistics/2020/overview.htm#CongenitalSyphilis) [Accessed 14 September 2022].

common examples of barriers to care include transportation, finding a provider, or access to Medicaid.

DSHS continues working towards reducing CS cases. DSHS continues conducting trainings, collaborating with providers on prevention strategies, and incorporating outreach efforts such as the podcast “Exploring an Epidemic”. DSHS will further efforts in collaboration with local and regional health departments to reduce CS by enhancing sexually transmitted disease (STD) surveillance, increasing documented pregnancy status among women with or exposed to syphilis, and providing supplementary resources to communities with the highest rates of CS.

About This Report

The DSHS created this epidemiologic profile for CS to inform planners, public health professionals, policymakers, and other stakeholders at the local and state levels about the epidemiology of CS, syphilis in women of childbearing age, and the underlying factors which may contribute to CS.

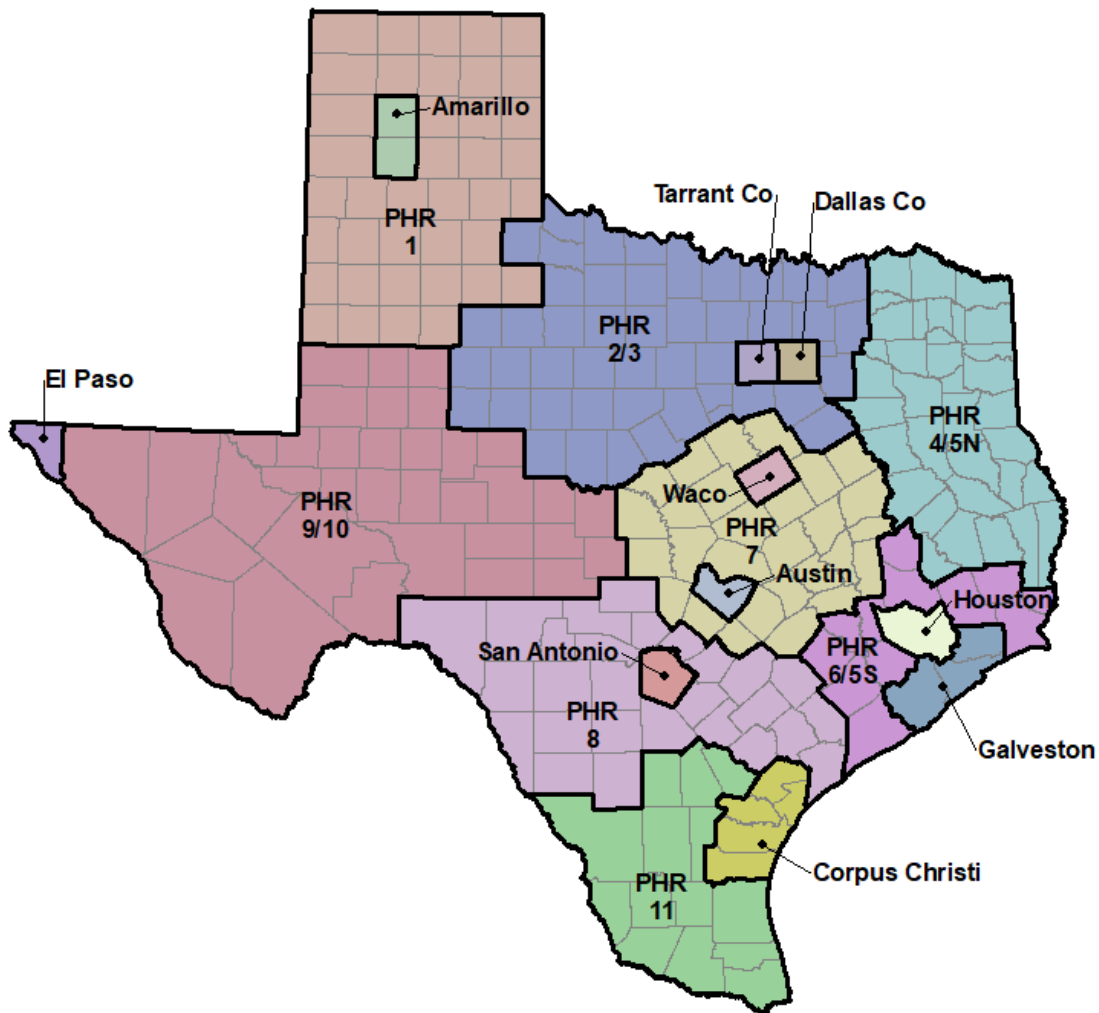
This profile only includes CS and syphilis cases among women of childbearing age residing in Texas at the time of diagnosis. The cases analyzed met the Centers for Disease Control and Prevention (CDC) and Council of State and Territorial Epidemiologists (CSTE) surveillance case definitions, which may differ from clinical diagnoses.

Public Health Follow-Up and Sexually Transmitted Disease Surveillance and Data Sources

The data for this profile came from DSHS public health follow-up (PHFU) and routine STD surveillance activities. PHFU supports disease intervention specialists (DIS), who act to interrupt STD transmission by notifying people of STD exposure, providing STD results and testing, and referring for treatment. Surveillance and PHFU staff perform case and data management for STD investigations. Methods of case identification include partner services interviews, provider reporting, lab reporting, and matching with vital statistics data.

Texas STD surveillance includes 18 STD local and regional reporting jurisdictions (Figure 1). Local reporting sites report on multiple surrounding counties. This consists of city health departments (which cover their surrounding county(ies)), two health districts, Corpus Christi/Nueces County Health District and Galveston County Health District. Public Health Regions (PHRs) include DSHS regional offices which report on counties in their area not reported by a local health authority.

Figure 1. PHFU and STD Surveillance Sites, Texas



Understanding Syphilis

The bacteria *Treponema pallidum* causes syphilis and can cause serious health problems when not treated. People can transmit syphilis sexually and from a pregnant woman to her unborn baby.⁴ Syphilis infections progress through clinical stages, which have different signs and symptoms. Although there are common signs and symptoms for syphilis, many people do not have symptoms or may not recognize them as syphilis. The signs and symptoms of

⁴ Centers for Disease Control and Prevention, "Syphilis Pocket Guide for Providers"-1 November 2017 [Online] Available: [cdc.gov/std/syphilis/Syphilis-Pocket-Guide-FINAL-508.pdf](https://www.cdc.gov/std/syphilis/Syphilis-Pocket-Guide-FINAL-508.pdf). [Accessed 16 November 2022]

syphilis can go away without treatment, but the disease will continue to progress.⁵

A medical provider performs a blood test to determine if a person has syphilis. The provider can do additional testing during the primary stage of syphilis when a sore is present.

Early syphilis (primary, secondary, and early latent) in a pregnant woman requires a single dose of long-acting antibiotics for treatment. Late or unknown duration syphilis requires three doses of long-acting antibiotics, one week apart. Pregnant women diagnosed with syphilis should receive treatment as early as possible to prevent transmission to the baby, complications during their pregnancy, and serious health problems once their infant is born. Treatment, which is ideally initiated at least 30 days prior to delivery, effectively prevents the transmission of syphilis from a pregnant woman to the baby with a success rate of up to 98 percent.⁶ Women diagnosed with and treated for syphilis before they become pregnant are unlikely to transmit syphilis to the infant during pregnancy. However, when a woman contracts syphilis during pregnancy, the infection can cross the placenta and infect the developing baby. Women with symptomatic syphilis (primary or secondary syphilis) during their pregnancy have an 80 percent chance of a negative pregnancy outcome (e.g., stillbirth, neonatal death, or signs and symptoms at birth).

Women with untreated or inadequately treated non-symptomatic syphilis (early latent, late latent, or latent syphilis of unknown duration) have a 23 percent chance of having a negative pregnancy outcome.⁷ Therefore, the DSHS focuses program efforts on women of childbearing age (women 15-44 years old), pregnant women diagnosed with syphilis, and women who have delivered an infant exposed to syphilis.

Syphilis Case Definitions

Case definitions are utilized to uniformly classify, count, and report syphilis case across the United States. Syphilis surveillance case definitions are

⁵ Centers for Disease Control and Prevention, "Syphilis-CDC Detailed Fact Sheet", 12 April 2022 [Online]. Available: [cdc.gov/std/syphilis/stdfact-syphilis-detailed.htm](https://www.cdc.gov/std/syphilis/stdfact-syphilis-detailed.htm). [Accessed 16 November 2022]

⁶ Centers for Disease Control and Prevention "Sexually Transmitted Infections Treatment Guidelines-2021", 30 March 2022 [Online]. Available: [cdc.gov/std/treatment-guidelines/syphilis.htm](https://www.cdc.gov/std/treatment-guidelines/syphilis.htm). [Accessed 16 November 2022]

⁷ Arnold, S., Ford-Jones, E. (2000). "Congenital Syphilis: A guide to diagnosis and management. Pediatrics & Child Health", 5 November 2000 [Online]. Available: [ncbi.nlm.nih.gov/pmc/articles/PMC2819963/](https://pubmed.ncbi.nlm.nih.gov/pmc/articles/PMC2819963/). [Accessed 28 October 2022].

similar to syphilis clinical stage. Syphilis definitions consist of four subtypes which depend on the uniform case criteria set by the Council of State and Territorial Epidemiologists (CSTE) for reporting to the CDC.⁸

This document references the four subtypes: primary, secondary, early non-primary non-secondary, and unknown duration or late. Primary and secondary syphilis are considered the most infectious subtypes.

Four subtypes are caused by the bacteria *Treponema pallidum*. Primary syphilis is characterized by one or more ulcerative lesion (e.g., chancre). Syphilis testing for primary syphilis can include a reactive non-treponemal serologic test *or* a reactive treponemal test. Secondary syphilis is characterized by a rash (i.e., non-pruritic macular, maculopapular, papular, or pustular lesions). Other symptoms may include mucous patches, condyloma lata, enlarged lymph nodes, and hair loss. During the presence of secondary symptoms, the primary syphilis lesion may still be present. Syphilis testing for secondary syphilis must include a reactive non-treponemal serologic test *and* a reactive treponemal test.

Primary and secondary syphilis can be *confirmed* with specific laboratory testing (e.g., darkfield microscopy, polymerase chain reaction (PCR), or similar), not obtained from a mouth or throat lesion. The laboratory test uses a microscope to look for the appearance of spirochetes, the syphilis causing bacteria.

Early non-primary non-secondary and unknown duration or late syphilis represent two of the four subtypes which do not present signs and symptoms of syphilis. Both subtypes must include a reactive non-treponemal serologic test *and* a reactive treponemal test in order to meet the CSTE surveillance case definition for reporting.

Early non-primary non-secondary syphilis is an infection which occurs within the previous 12 months. The timeframe can be determined by different criteria: 1) in a person with no history of syphilis, a seroconversion of a nontreponemal or treponemal test during the previous 12 months, 2) in a person with syphilis history, a fourfold or greater increase in titer of a nontreponemal test during the previous 12 months, 3) a history of symptoms consistent with primary or secondary syphilis during the previous 12 months, or epidemiologic criteria is met. Epidemiologic criteria is a history of sexual exposure to a partner meeting the case definitions for primary, secondary, or

⁸ Centers for Disease Control and Prevention, "Surveillance Case Definitions for Current and Historical Conditions", 4 October 2022 [Online]. Available: ndc.services.cdc.gov. [Accessed 17 July 2023]

early non-primary non-secondary within the previous 12 months, or the first sexual contact (sexual debut) of a client within the previous 12 months.

Unknown duration or late syphilis is defined as an infection occurring more than 12 months prior to testing or if there is not enough evidence to determine the infection occurred during the previous 12 months. ⁹

A Note on Maternal Syphilis Treatment

Assessment of adequate maternal syphilis treatment relies on documentation of diagnosis, treatment date(s), and dosage. The DSHS uses treatment information documented on the CS investigation form and in treatment tables in databases for complete ascertainment to analyze maternal treatment.

A Note on Case Rates for CS and Syphilis Among Women of Childbearing Capacity

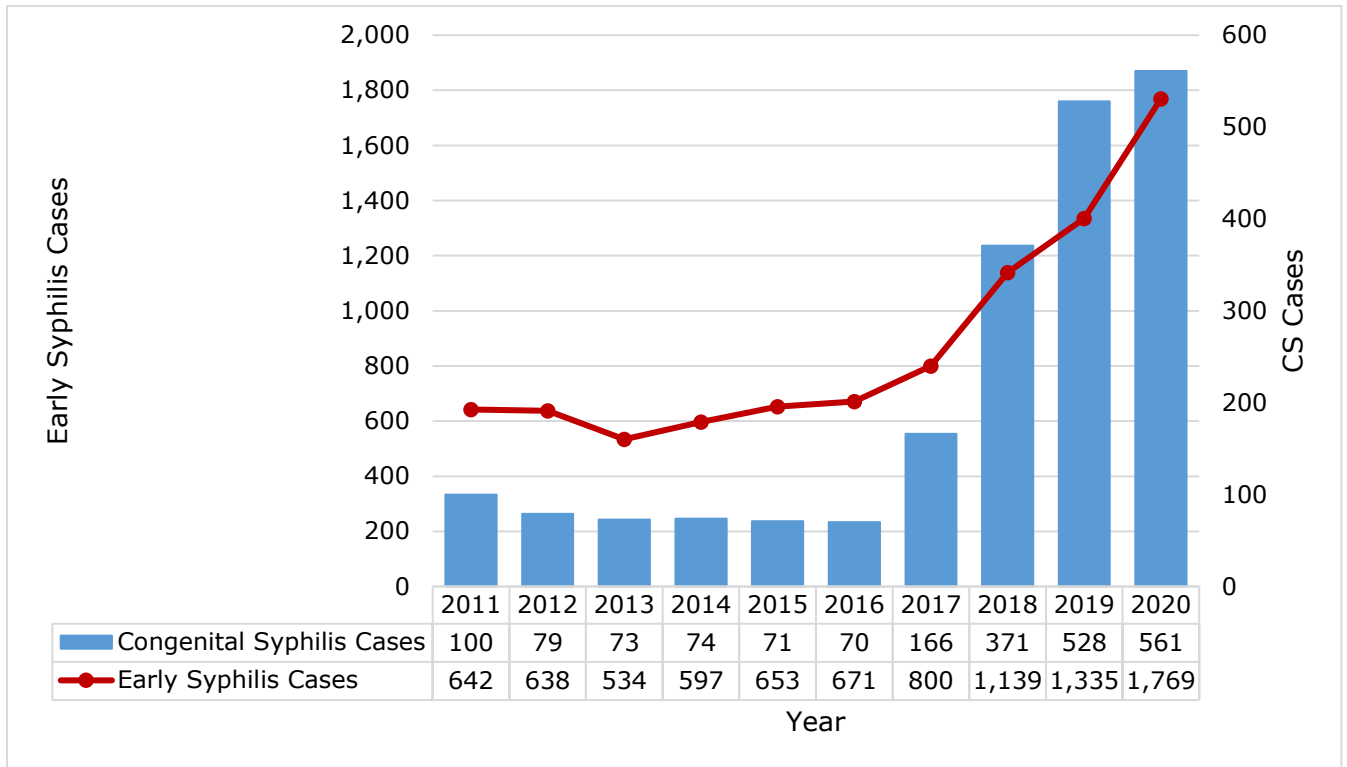
Population numbers used to calculate 2011-2020 CS rates are from the vital event-birth data disseminated by the DSHS Center for Health Statistics (CHS). CS rates are per 100,000 live births. Population numbers used to calculate rates for syphilis among women of childbearing age are from the U.S. Census Bureau and include estimates of the resident population of the United States from January 1, 2010, to December 1, 2020, by year, county, single year of age (0, 1, 2,... 85 years and over), race categories, Hispanic origin, and sex.

An Overview of CS and Syphilis in Women of Childbearing Age in Texas

In 2020, there were 561 CS cases reported in Texas, about a six percent increase from 2019 (Figure 2). This results in a rate of 149.8 CS cases per 100,000 live births. Concurrently, there was an increase in the reporting of all stages of syphilis in women of childbearing age. In 2020, there were 1,769 cases of early syphilis (primary, secondary, and early non-primary non-secondary) reported among women of childbearing age in Texas during 2020, representing a 33 percent increase from 2019 (Figure 2). There were 3,707 total syphilis cases (primary, secondary, early non-primary non-secondary, and unknown or late duration) among women of childbearing age, which is a 19 percent increase from 2019 (Figure 3).

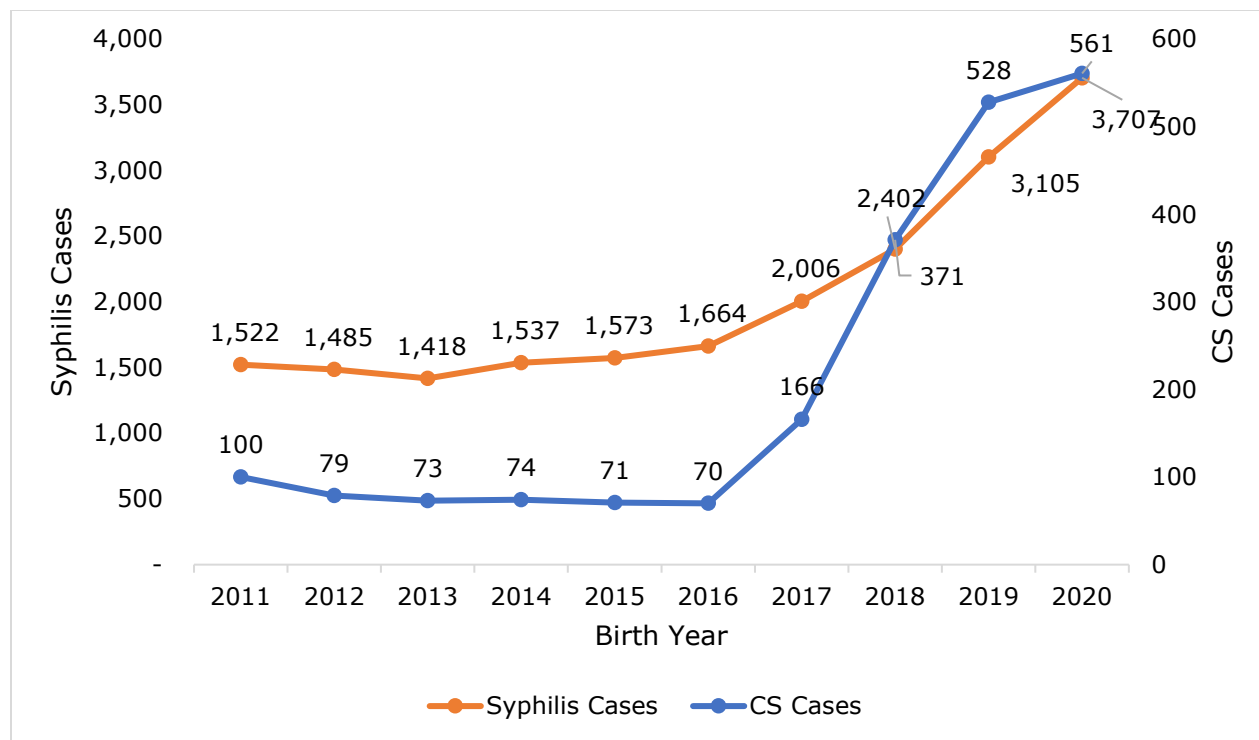
⁹ Centers for Disease Control and Prevention, "Syphilis (*Treponema pallidum*) 2018 Case Definition", 16 April 2021 [Online]. Available: ndc.services.cdc.gov/case-definitions/syphilis-2018/. [Accessed 17 July 2023]

Figure 2: CS and Early Syphilis Cases* in Women of Childbearing Age in Texas, 2011-2020



*Includes primary, secondary, and early non-primary non-secondary.

Figure 3: CS Cases by Year of Birth and Total Syphilis Cases in Women of Childbearing Age in Texas, 2011-2020



*Includes primary, secondary, early non-primary non-secondary, and unknown or late duration.

CS and Syphilis in Women of Childbearing Age by Geographic Area

The majority of CS and syphilis cases in women of childbearing age occurred around Texas’ metropolitan areas. In 2020, the top three Texas jurisdictions reporting the highest number of CS cases accounted for 60 percent of CS cases (Figure 4). The same three jurisdictions accounted for half the cases of women of childbearing age diagnosed with syphilis (4). More than half of Texas’ 254 counties reported cases of syphilis among women of childbearing age (153 counties) (Figure 5), and 74 counties reported at least one case of CS (Figure 6).

STD surveillance sites with a higher population of childbearing age women diagnosed with syphilis also had a higher proportion of CS cases (Figure 7).

Figure 4: Syphilis Cases in Women of Childbearing Age and CS Cases by STD Surveillance Site in Texas, 2020

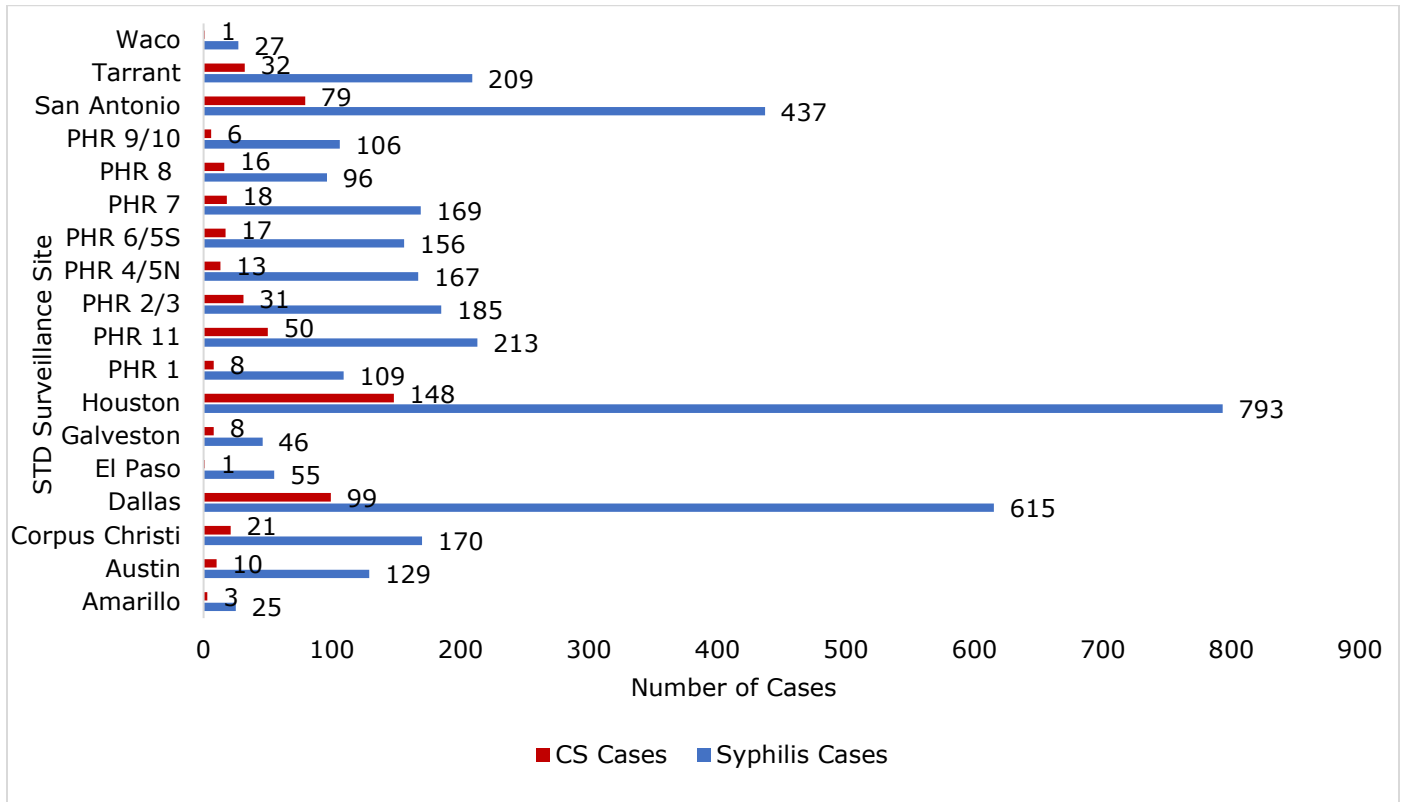
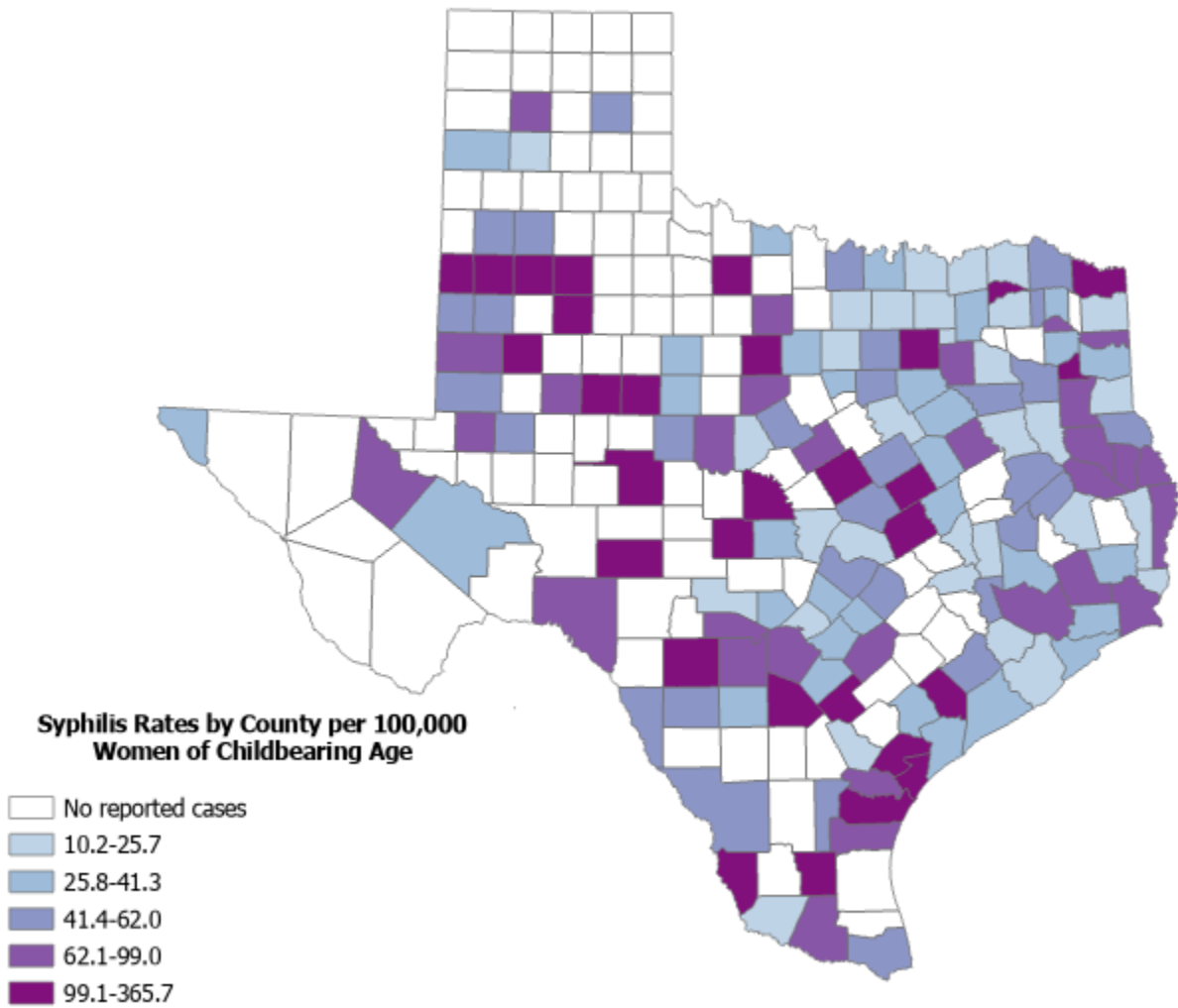
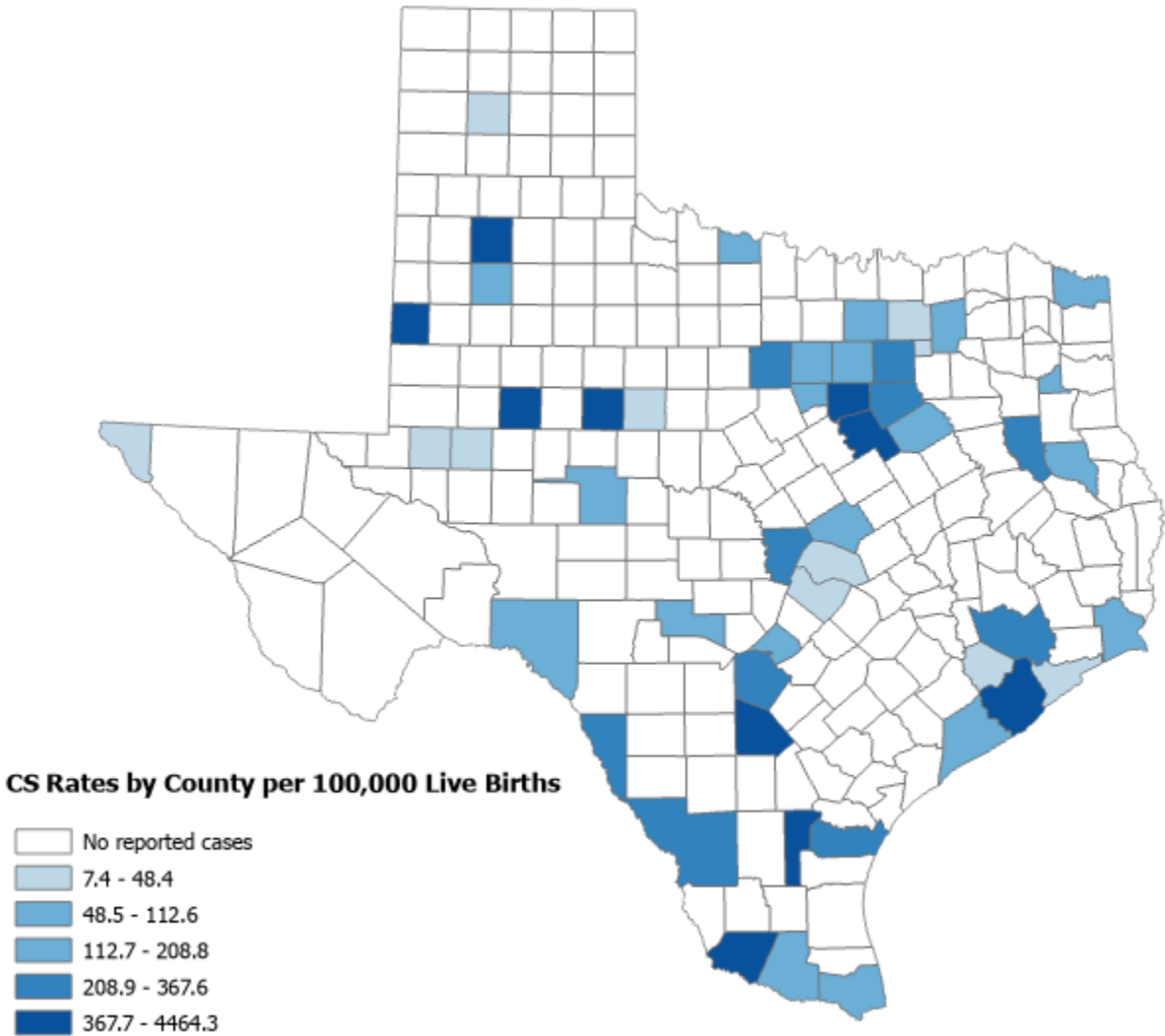


Figure 5: Syphilis Rates in Women of Childbearing Age by County in Texas, 2020*



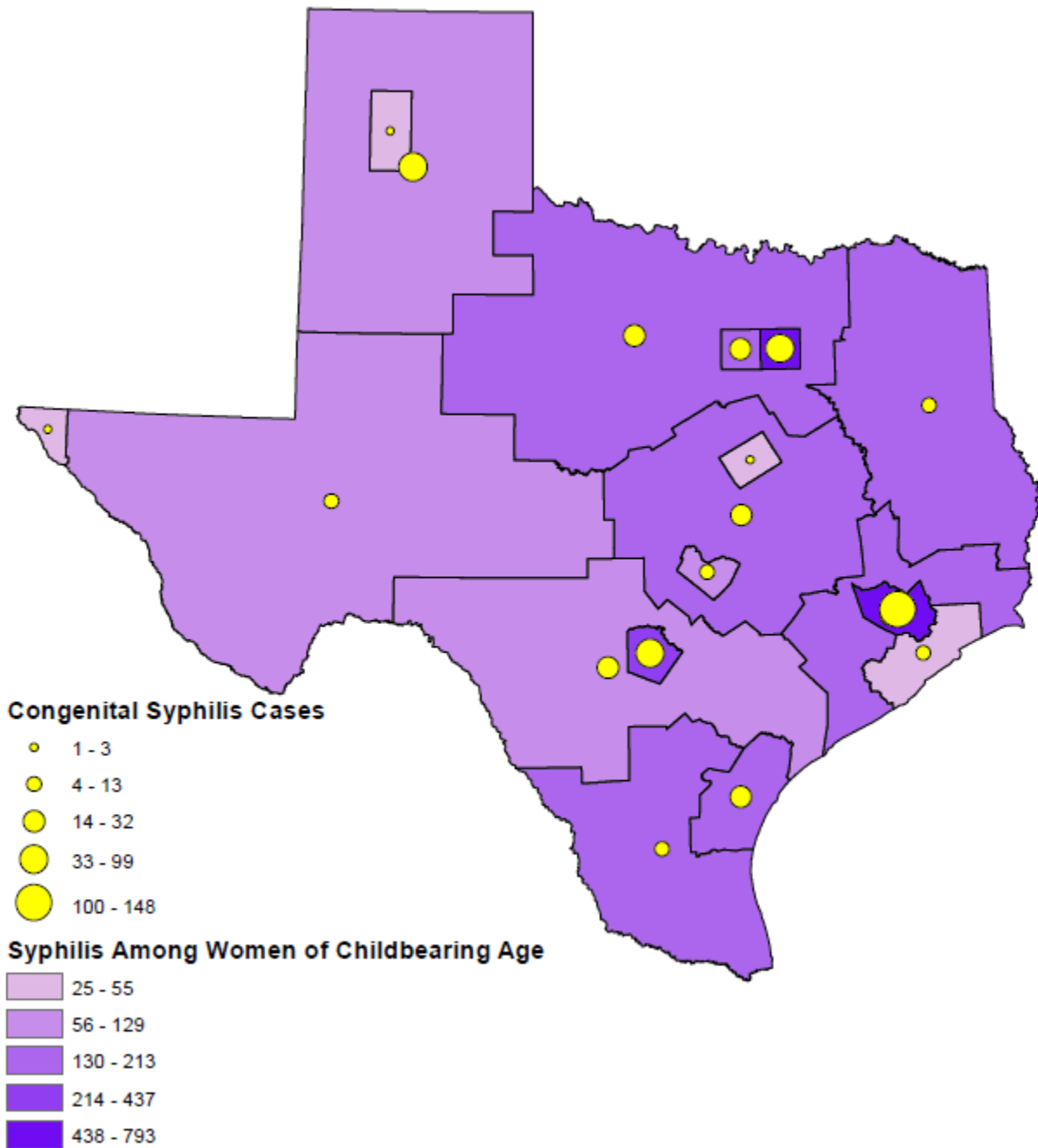
*Denominator used to calculate rate is women of childbearing age by county. Population numbers used to calculate rates from the U.S. Census Bureau include estimates of the resident population of the United States from January 1, 2010 to December 1, 2020, by year, county, single-year of age (0, 1, 2, .., 85 years and over), bridged race, Hispanic origin, and sex.

Figure 6: CS Rates by County in Texas, 2020*



*Denominator used to calculate rate is the 2020 CHS birth data by county. DSHS CHS disseminates population numbers used to calculate congenital syphilis rates from the vital event-birth data, which suppresses data when the population denominator is <50 or the denominator is <2x the number of cases, or fewer than 5 total cases.

Figure 7: Proportion of Childbearing Age Women with Syphilis and Proportion of CS Cases by STD Surveillance Site in Texas, 2020

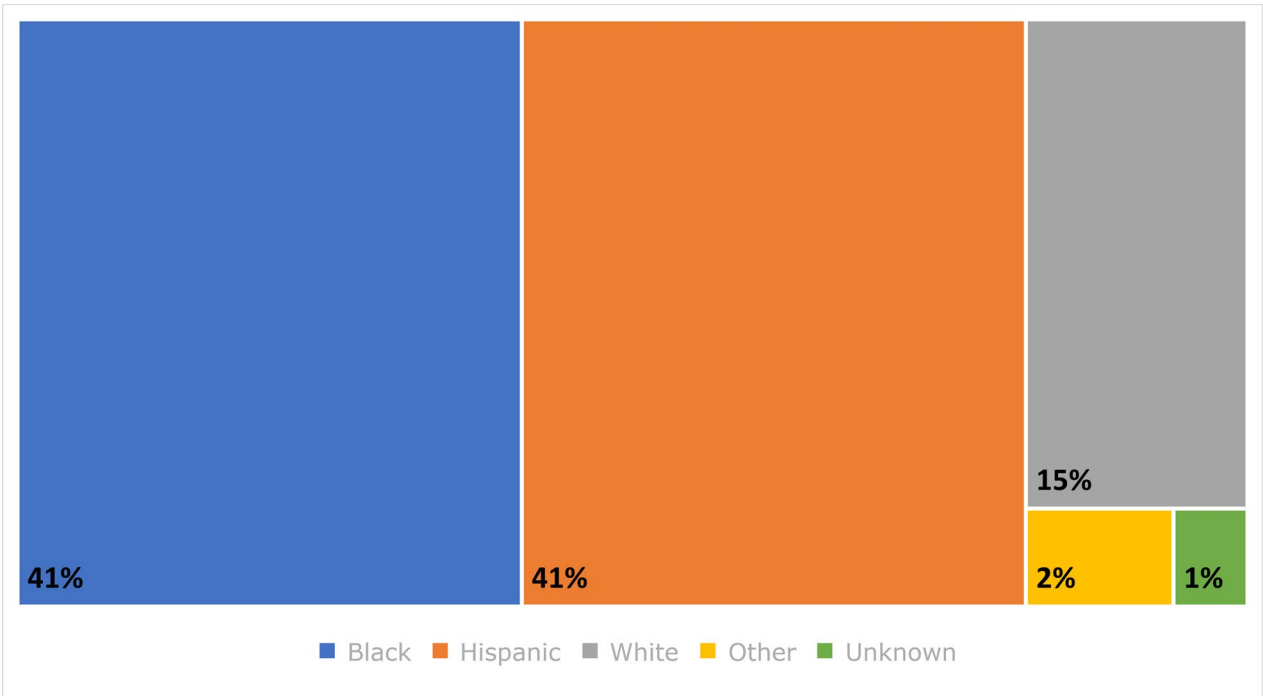


Maternal Demographics for Women Delivering Infants with CS

Race/Ethnicity

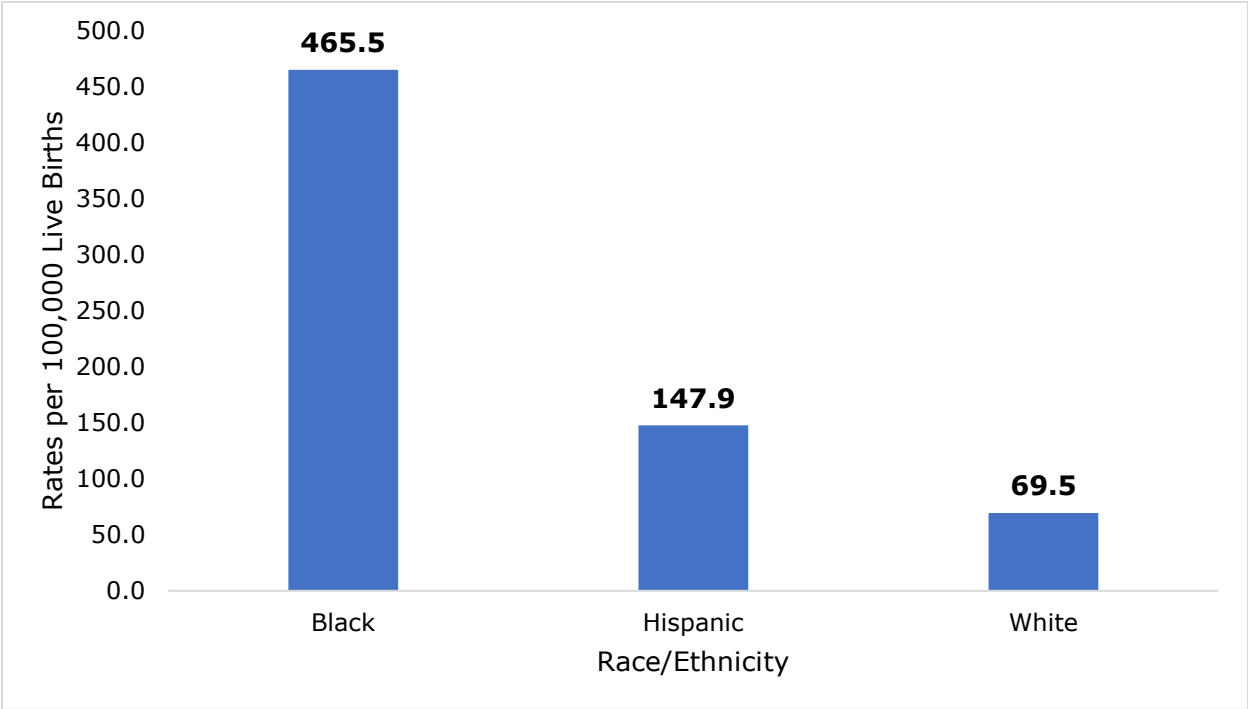
Among the 561 infants reported with CS in 2020, almost eight out of ten were born to Hispanic (41 percent) and Black (41 percent) Texas women (Figure 7). For rates of deliveries by mother’s race and ethnicity, Black women had the highest rate at 465.5 cases per 100,000 live births, followed by Hispanic women with a rate of 147.9 cases per 100,000 live births (Figure 8).

Figure 8: Percentage of CS Cases by Mother’s Race/Ethnicity in Texas, 2020



Race/Ethnicity

Figure 9: CS Rates in Infants by Mother's Race/Ethnicity in Texas, 2020*

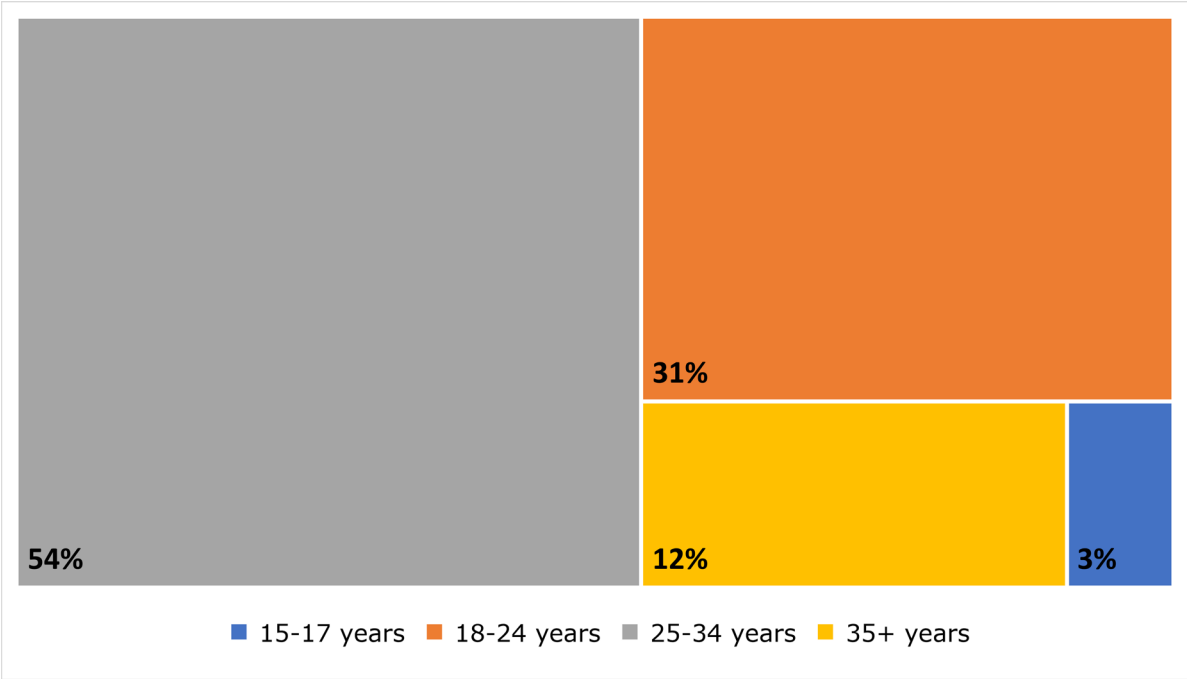


*Denominator used to calculate rate is the 2020 CHS birth data by county. Excludes Other and Unknown race.

Maternal Age at Delivery of an Infant with CS

At the time of delivery, more than half of the mothers were 25–34-years-old. Almost all the mothers were 18 years old or older (Figure 10).

Figure 10: Age of Mothers Delivering Infants Diagnosed with CS at the Time of Delivery in Texas, 2020



Age Group

Facility of Maternal Syphilis Diagnosis

Approximately eight out of ten women delivering an infant with CS accessed testing services at an inpatient hospital, a private physician’s office, or an obstetrics and gynecology or prenatal clinic.

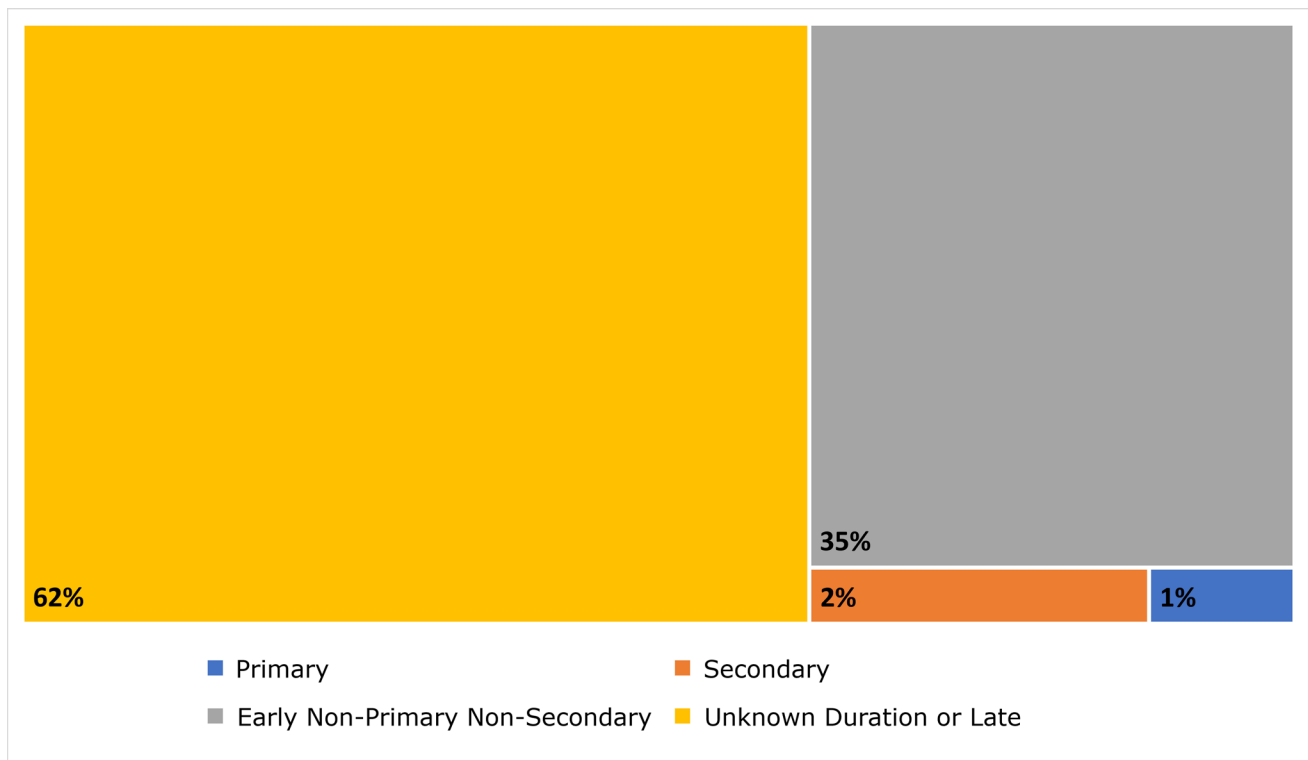
Table 1: Facility of Maternal Syphilis Diagnosis in Women Delivering an Infant Diagnosed with CS in Texas, 2020

Facility Type	Rate
Hospital Inpatient	38%
Private Physician Office/Primary Care Clinic	25%
Obstetrics and Gynecology/Prenatal Clinic	15%
STD Clinic	4%
Emergency Room/Urgent Care	3%
Correctional Facility	2%
Specialty Clinic/Hospital Clinic	2%
Blood Bank, Plasma Center	2%
Family Planning Clinic	2%
Health Department	2%
Prenatal	1%
Laboratory	1%
Other	1%
Unknown	1%
Adult HIV Clinic	1%
Community Health Center	1%
HIV Counseling and Testing Site	1%
Infectious Disease Clinic	<1%
Inpatient/Labor and Delivery	<1%
Military	<1%

Mother's Syphilis Stage at Diagnosis

Correct identification of the mother's syphilis stage is important in determining the appropriate treatment regimen for syphilis. Almost three out of five mothers received a syphilis diagnosis of unknown or late duration (Figure 11). Pregnant women diagnosed with syphilis of late or unknown duration require three treatments of benzathine penicillin G given one week apart. If a woman misses doses or receives them more than nine days apart, she must restart treatment. Failure to complete this therapy appropriately will result in a report of a CS case.

Figure 11: Percentage of CS Cases by Mother's Syphilis Stage at Diagnosis in Texas, 2020

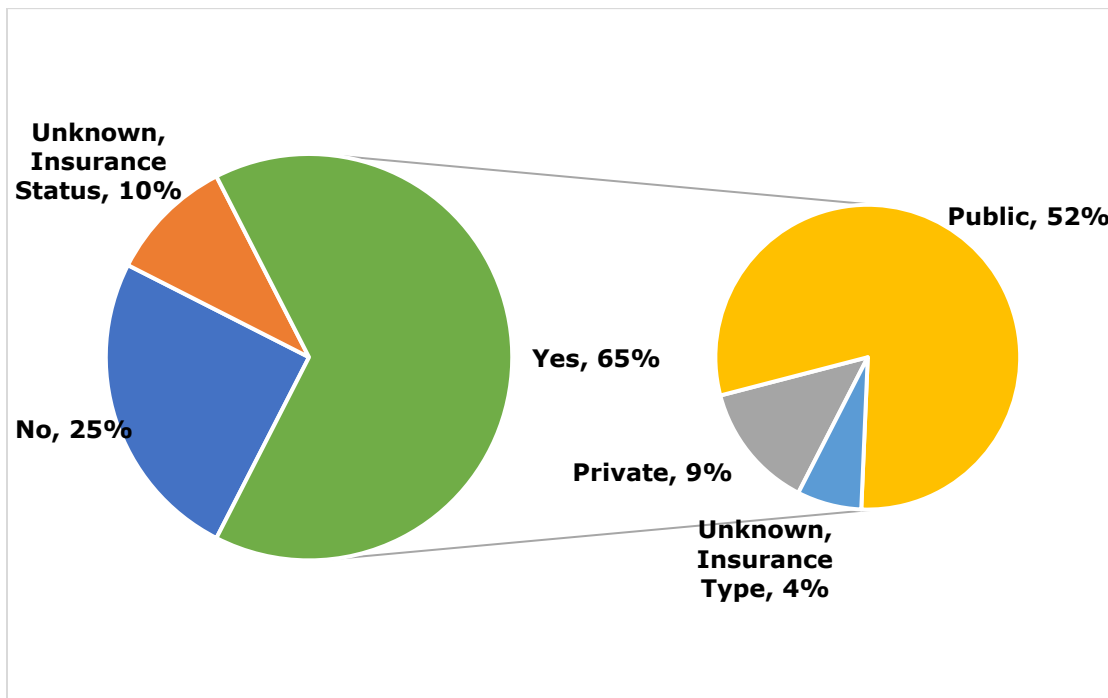


Maternal Syphilis Stage

Barriers to Care

Texas utilizes internal and external case review boards to thoroughly examine CS cases and syphilitic stillbirths and to review missed opportunities for CS prevention. DIS face challenges as they work to prevent maternal syphilis, such as delays in receiving a positive lab result or initiating partner services; there may be difficulty locating the client or their partner, leading to untreated syphilis cases or potential re-infection. Clients may experience housing instability, domestic or intimate partner violence, mental health issues, and substance use disorders, which create barriers to care for seeking healthcare. Review boards have also found women who deliver infants diagnosed with CS often have prior involvement with correctional facilities (local, state, or federal jails or prisons) or child protective services. Clients often cite transportation issues as a reason why they cannot make medical appointments. Clients report late prenatal care is due to Medicaid enrollment delays and difficulty finding a provider in their area. In 2020, among the two-thirds of mothers who reported having insurance during their pregnancy, over half had public insurance (Figure 12).

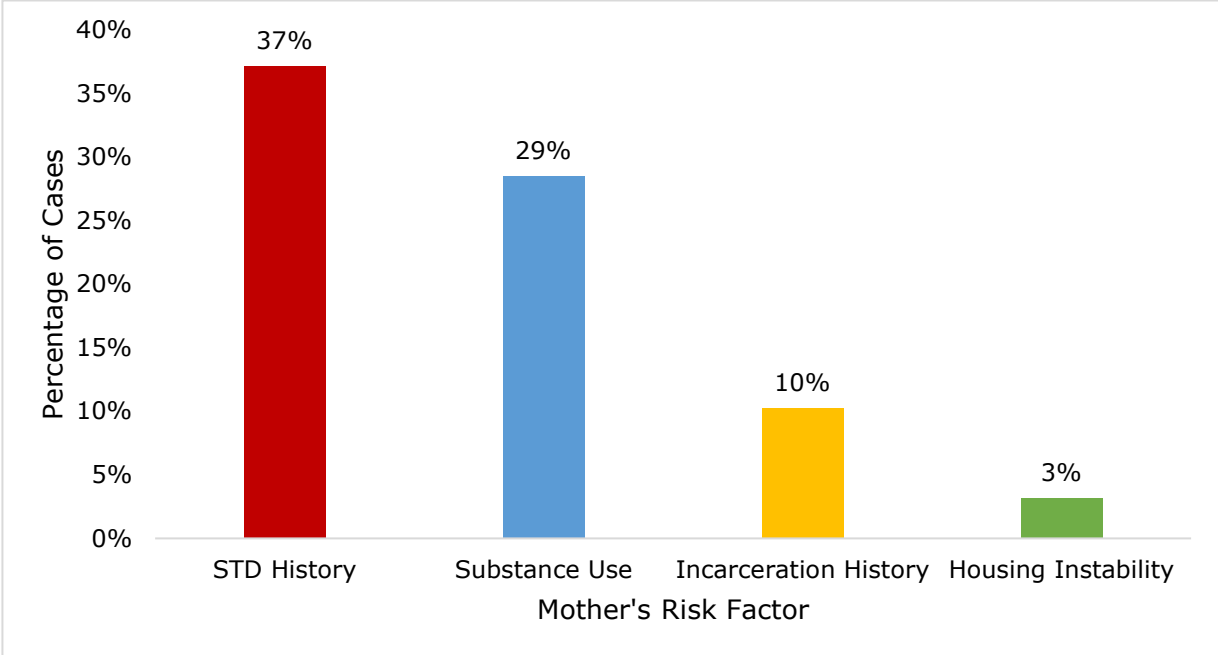
Figure 12: Percentage of CS Cases by Maternal Insurance Status in Texas, 2020*



Maternal Risk History

The maternal risk history provides insight into challenges faced by women who deliver infants with CS. Not all women who delivered an infant with CS have risk information available. Of the 312 women with maternal risk history, more than a third had a previous STD, and 40 percent had been incarcerated or had a history of substance use (Figure 13).

Figure 13: Risk History of Women Delivering an Infant with CS in Texas, 2020*

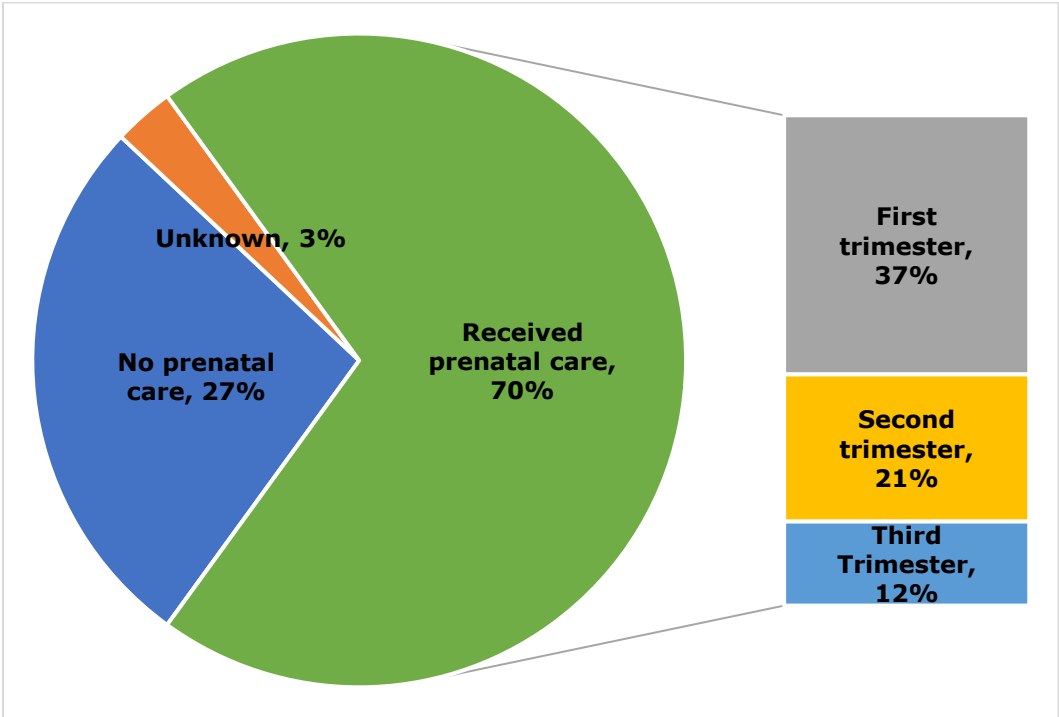


* Women delivering an infant with CS who received a partner services interview at the time of diagnosis.

Prenatal Care

Among all women giving birth in Texas, five percent did not receive prenatal care.¹⁰ For women who gave birth to an infant diagnosed with CS in 2020, the picture is very different. While 70 percent had some prenatal care, about one-third of women delivering an infant diagnosed with CS had no or unknown prenatal care. Among women with prenatal care, half entered prenatal care after the first trimester (Figure 14).

Figure 14: Prenatal Care in Mothers who Delivered an Infant with CS in Texas, 2020



¹⁰ Texas Department of State Health Services. Centers for Health Statistics. 2020 Provisional Texas Birth Certificate data.

Timing of Maternal Syphilis Diagnosis in Relation to Delivery

The timing of maternal syphilis diagnosis is critical for the initiation of timely treatment. A syphilis diagnosis at least 45 days prior to delivery allows enough time for providers and health departments to receive positive lab results and initiate adequate maternal treatment at least 30 days prior to delivery. In 2020, half of mothers received their syphilis diagnosis fewer than 45 days prior to delivery, at the time of delivery, or post-partum (Table 2).

Table 2: Timing of Maternal Syphilis Diagnosis Among Mothers Delivering an Infant with CS in Texas, 2020

Maternal Timing of Diagnosis	Percent
45 days or more before delivery	56%
Fewer than 45 days before delivery	14%
At Delivery	28%
Post-Partum	2%

Maternal Treatment for Syphilis

For treatment among women delivering an infant diagnosed with CS, 96 percent had inadequate or no syphilis treatment, and 4 percent had adequate syphilis treatment (Figure 15). Adequate syphilis treatment is dependent on the syphilis stage at the time of diagnosis. For a pregnant woman, adequate treatment must begin at least 30 days prior to delivery. For mothers diagnosed at least 45 days prior to delivery, approximately 70 percent had inadequate treatment or no treatment (Figure 16).

Figure 15: Maternal Syphilis Treatment for Women Delivering an Infant with CS in Texas, 2020

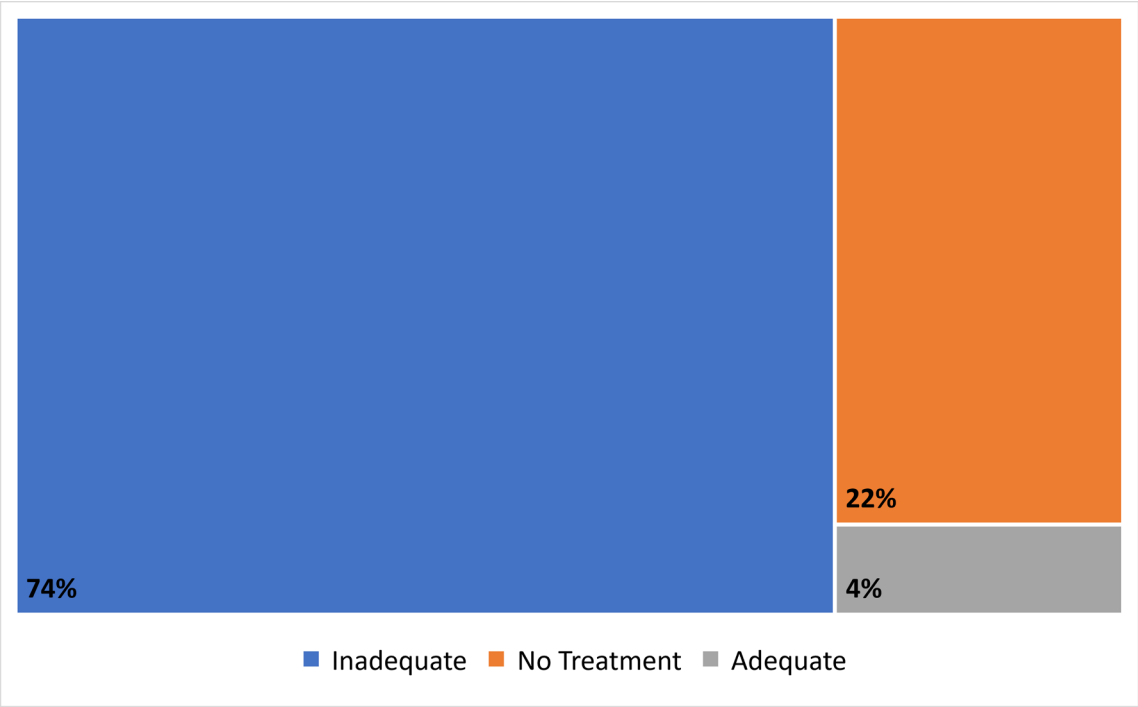
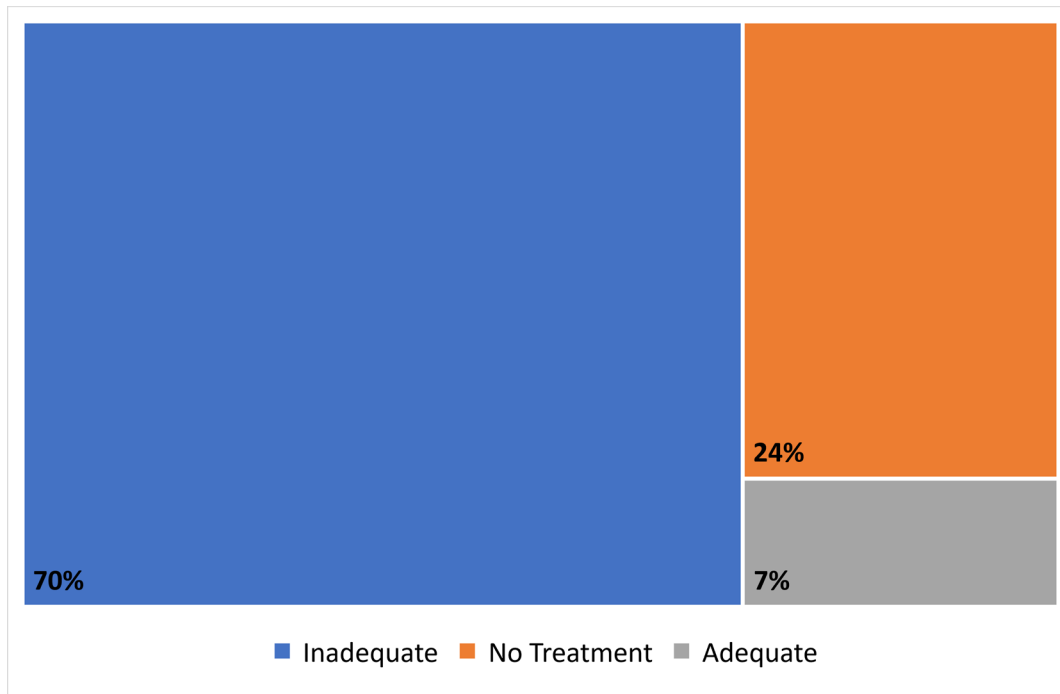


Figure 16: Maternal Syphilis Treatment for Women Delivering an Infant with CS who were Diagnosed at Least 45 Days before delivery in Texas, 2020



Birth Outcomes Associated with CS¹¹

A probable CS case most often occurs when a mother goes untreated or is inadequately treated for syphilis at the time of delivery. A CS case can also be considered probable when an infant has a reactive non-treponemal blood tests and one of the following: evidence of CS on physical exam, long-bone x-ray, reactive cerebrospinal fluid (CSF) venereal disease research laboratory (VDRL) test, or elevated CSF white blood cell or protein count without other cause identify CS cases in infants. A CSF analysis from a lumbar puncture can evaluate possible neurological involvement.¹²

¹¹ Centers for Disease Control and Prevention (CDC), "Congenital Syphilis-Fact Sheet" 31 January 2017 [Online] Available: [cdc.gov/std/syphilis/stdfact-congenital-syphilis.htm](https://www.cdc.gov/std/syphilis/stdfact-congenital-syphilis.htm). [Accessed 29 December 2022].

¹² Centers for Disease Control and Prevention "Sexually Transmitted Infections Treatment Guidelines-2021", 30 March 2022 [Online]. Available: [cdc.gov/std/treatment-guidelines/syphilis.htm](https://www.cdc.gov/std/treatment-guidelines/syphilis.htm). [Accessed 16 November 2022]

A syphilitic stillbirth is the birth of a fetus to a woman with untreated or inadequately treated syphilis who delivered at least 20 weeks' gestation, or the fetus weighed at least 500 grams.

Confirmed CS cases can occur in syphilitic stillbirths and non-syphilitic stillbirths. Confirmatory tests (darkfield, immunohistochemistry (IHC), polymerase chain reaction (PCR), or special stains) can definitively demonstrate the presence of *Treponema pallidum* in body fluids or tissue and can be performed on placentas, umbilical cords, or autopsy material.¹³ If an infant has positive or reactive confirmatory tests, the CS case is classified as a confirmed case, even if resulting in stillbirth.

Early CS is when the infant exhibits symptoms from birth up until their second birthday, and late CS is when symptoms start after age two. Early CS may cause vision or hearing loss, non-viral hepatitis causing jaundice of the skin and eyes, long-bone abnormalities, developmental delays, inflammation of the liver and/or spleen, snuffles (a physical symptom of CS consisting of large amounts of mucous around the eyes, nose, mouth, and highly contagious to those caring for the infant), rash, wart-like lesions on the genitals, and additional symptoms. Clinical manifestations of late CS include problems with bone and tooth development, hearing, and vision, as well as the central nervous and cardiovascular systems. Timely prenatal care, testing, and treatment can avert potentially devastating health outcomes for infants.¹⁴

Among the 561 CS cases in 2020, approximately one-quarter had a low birth weight (<2500g), more than one-quarter preterm (<37 weeks' gestation). Thirty-three (6 percent) of the reported CS cases resulted in stillbirth or neonatal death. Table 3 shows 561 infants reported with CS, 26 resulting in syphilitic stillbirths, one confirmed case, and 534 probable cases.

¹³ Center for Disease Control and Prevention "Congenital Syphilis (*Treponema pallidum*) 2015 Case Definition", 16 April 2021 [Online]. Available ndc.services.cdc.gov/case-definitions/congenital-syphilis-2015/. [Accessed 27 April 2023]

¹⁴ Centers for Disease Control and Prevention, "CS (*Treponema pallidum*) 2018 Case Definition," 16 April 2021 [Online]. Available: ndc.services.cdc.gov/case-definitions/syphilis-2018/. [Accessed 28 October 2022]

Table 3: Birth Outcomes of CS Cases, Texas 2020

Birth Outcomes	No. of Cases	Percent
Total Cases	561	100%
Birth Weight		
Low Birth Weight (<2500g)	121	22%
Normal Birth Weight (≥2500g)	440	78%
Gestational Age		
Preterm (<37 weeks)	147	26%
Full-term (≥37 weeks)	414	74%
Vital Status		
Alive	528	94%
Stillbirth or neonatal death	33	6%
Classification		
Probable Case	534	95%
Syphilitic Stillbirth	26	5%
Confirmed Case	1	<1%

Testing and Treatment for Infants with CS

Infant treatment and evaluation decisions are based on the mother’s testing and treatment history. Penicillin G is the only approved treatment for infants exposed to syphilis.

Per CDC treatment guidelines, all infants born to women with positive syphilis serology should have a non-treponemal test (rapid plasma reagin (RPR) or VDRL) drawn at delivery.¹⁵ Although 95 percent of CS cases result in probable or confirmed CS cases, only 80 percent of CS cases had an RPR or

¹⁵ Centers for Disease Control and Prevention “Sexually Transmitted Infections Treatment Guidelines-2021-Congenital Syphilis”, 30 March 2022 [Online]. Available: [cdc.gov/std/treatment-guidelines/syphilis.htm](https://www.cdc.gov/std/treatment-guidelines/syphilis.htm). [Accessed 16 November 2022]

VDRL test performed (Figure 17). Of the 80 percent of CS cases with non-treponemal tests performed, 61 percent were reactive (Figure 18).

Treponemal tests (i.e, FTA, TPPA, CIA) are performed to test for *Treponema pallidum* antibodies and confirm a syphilis diagnosis. Treponemal tests are not recommended for infants due to the likelihood of passively transferred maternal antibodies, which can persist for more than 15 months after delivery.¹⁶

Further evaluations of the infant may not be necessary for all CS cases. A medical provider utilizes the mother's syphilis history and the infant's evaluations to make a medical decision. Physical signs and symptoms of CS may not always be present at time of delivery, but CSF labs and long bone x-rays may assist in diagnosing CS. Although not commonly performed, IHC, PCR, darkfield, and special stain testing can confirm a CS diagnosis.¹⁷ Less than one percent of infants reported with CS had an evaluation using the confirmatory testing methodology; 50 percent of those tested had reactive results on darkfield, IHC, PCR, or special stains (Figure 18).

Among infants reported with CS, over half received treatment (Table 4).

¹⁶ Center for Disease Control and Prevention "Sexually Transmitted Infections Treatment Guidelines-2021-Congenital Syphilis", 30 March 2022 [Online]. Available [cdc.gov/std/treatment-guidelines/congenital-syphilis.htm](https://www.cdc.gov/std/treatment-guidelines/congenital-syphilis.htm). [Accessed 39 March 2023]

¹⁷ Center for Disease Control and Prevention "Congenital Syphilis (*Treponema pallidum*) 2015 Case Definition", 16 April 2021 [Online]. Available [ndc.services.cdc.gov/case-definitions/congenital-syphilis-2015/](https://www.ndc.services.cdc.gov/case-definitions/congenital-syphilis-2015/). [Accessed 27 April 2023]

Figure 17. Testing and Evaluation for Infants Reported with CS in Texas, 2020

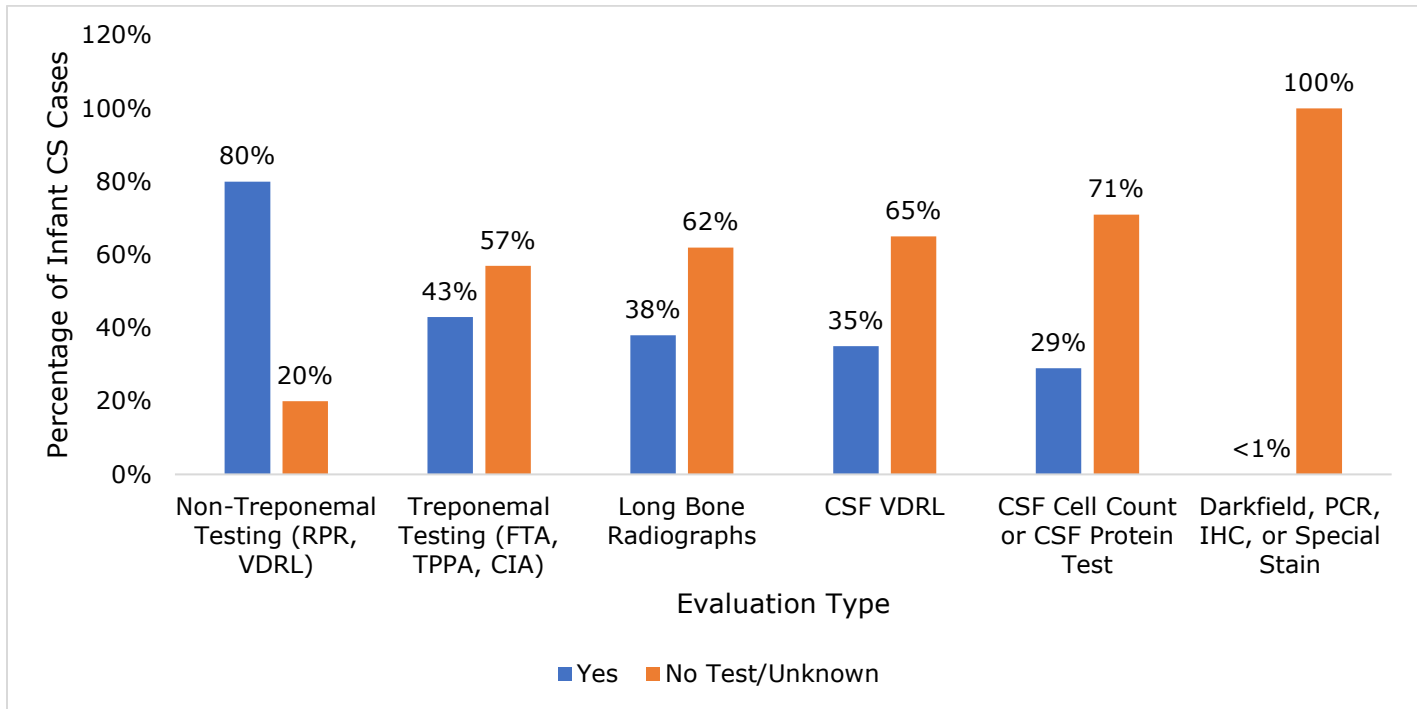


Figure 18. Reactive Testing and Evaluation Outcomes for Infants Reported with CS in Texas, 2020

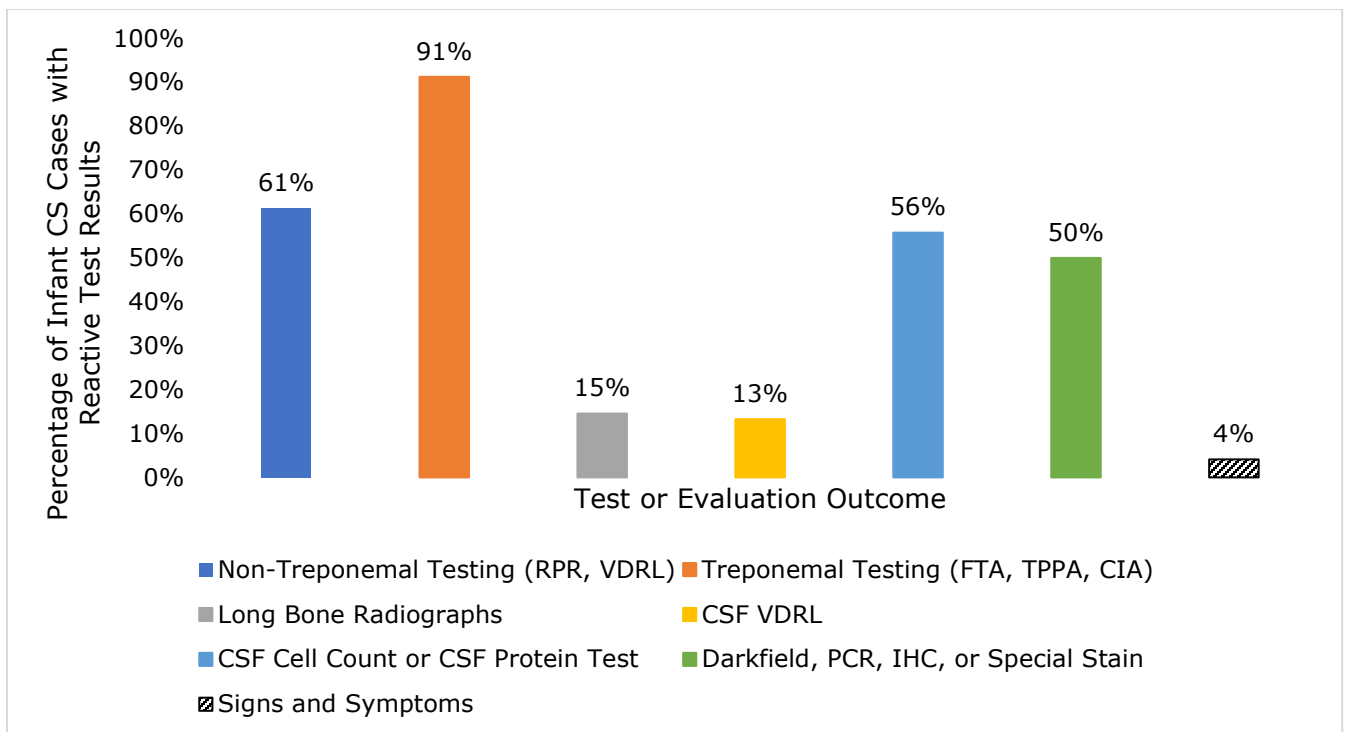


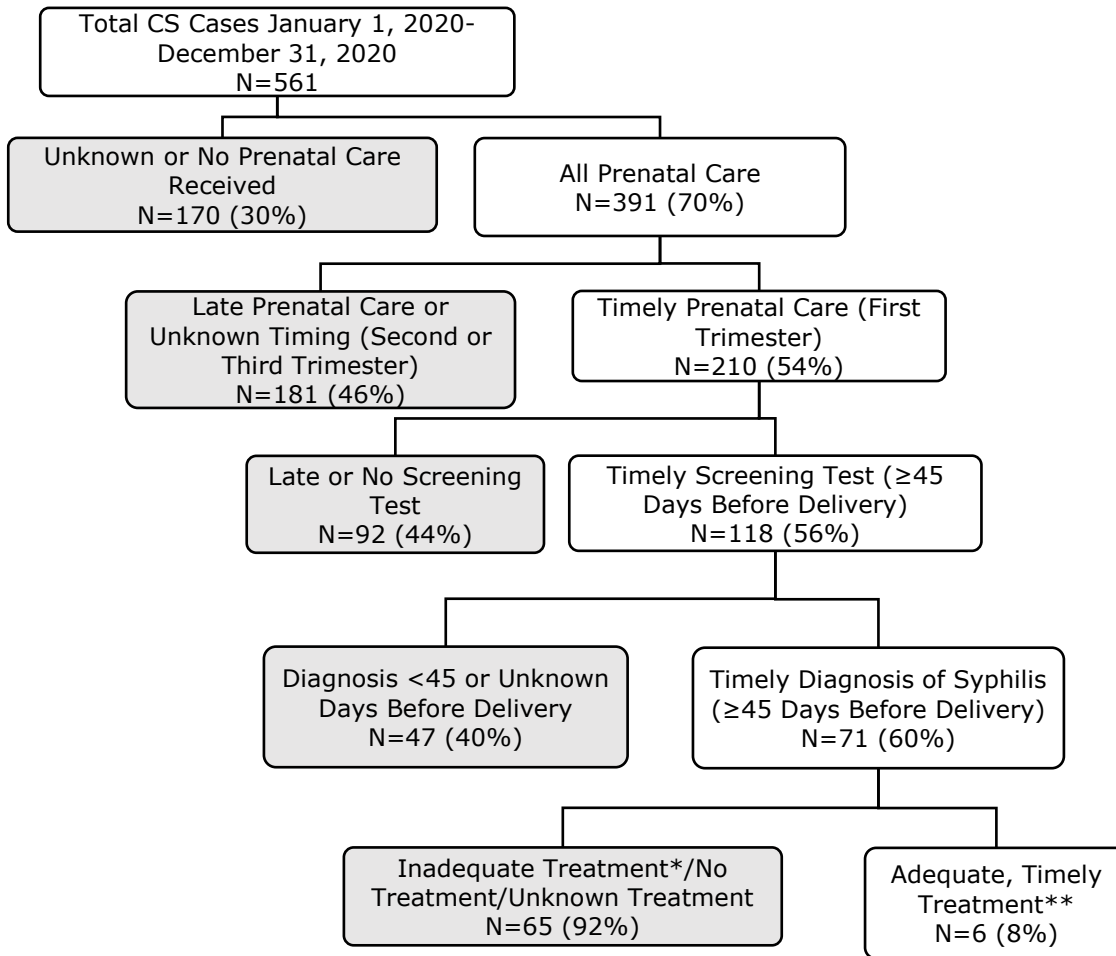
Table 4: Treatment for Infants with CS in Texas, 2020

Treatment for Infants Reported with CS	No. of Infants	Percent
Yes, Aqueous or Procaine penicillin for ≥ 10 days	241	43%
Yes, Benzathine penicillin X 1	75	13%
Yes, Ampicillin	3	1%
Yes, other treatment	14	2%
No treatment	222	40%
Unknown	6	1%
Total	561	100%

CS Cascade

This cascade is a tool used to help identify missed opportunities for prevention, which may contribute to CS, and areas for improvement. Based on information from the CS cascade, 71 (60 percent) mothers received timely prenatal care, testing, and diagnosis. However, despite receiving timely services, 92 percent had either inadequate treatment, received no treatment, or had unknown treatment (Figure 19).

Figure 19: CS Cascade in Texas, 2020



*Treatment initiated <30 days prior to delivery or incorrect dosage based on the CDC STD Treatment Guidelines, 2020 is inadequate.

**Persons in this group may have delivered infants who meet the CS case definition based on infant criteria.

Efforts to Decrease CS

While Texas is in line with the rise in CS and national trends for opportunities for prevention (e.g., maternal treatment adequacy, late identification of maternal syphilis diagnosis, and timely prenatal care).¹⁸ The DSHS began enhanced surveillance in 2017 with vital statistics data matching (the matching of laboratory reports with birth records). The enhanced surveillance activity contributed to the initial increase in CS cases. Texas continues to experience increases in both syphilis and CS cases. Texas uses CDC funding to support supplemental efforts in targeted areas to improve disease identification and reporting, increase referrals for women who have a syphilis diagnosis, and identify barriers to care and missed opportunities for disease intervention. These efforts have offered an opportunity for improved identification of CS cases in recent years.

Though it may be too early to see the impact of the DSHS's increased efforts, the DSHS deployed multiple strategies to help decrease the number of cases. These include:

- Increasing trainings for local and regional field staff to provide necessary tools and information to obtain pregnancy status and verify adequate and timely treatment, including hosting a CS symposium;
- Providing education for medical providers to increase early diagnosis of syphilis and efforts to raise awareness of the need to test pregnant women;
- Matching vital statistics data for regional and local health departments. The DSHS identifies and investigates possible unreported CS;
- Contracting with the University of Texas Rio Grande Valley School of Medicine to conduct provider education, improve syphilis testing of pregnant women, and enhance referrals for pregnant women, women of childbearing age, and their partners in the DSHS PHR 11;
- Hosting a virtual CS provider symposium for physicians, advanced practice nurses, and physician assistants. Sessions and presentations provided content to improve CS awareness among Texas providers and increase the knowledge base regarding the treatment of women and infants affected by syphilis; and

Center for Disease Control and Prevention "Sexually Transmitted Infections Treatment Guidelines-2021-Congenital Syphilis", 30 March 2022 [Online]. Available [cdc.gov/std/treatment-guidelines/congenital-syphilis.htm](https://www.cdc.gov/std/treatment-guidelines/congenital-syphilis.htm). [Accessed 39 March 2023]

- Producing a podcast titled “Exploring an Epidemic: CS in Texas” as an innovative way to reach wider audiences, including medical providers and the community, to increase awareness of CS. The DSHS has released six episodes, with an additional six in development.

Since 2015, the DSHS has supported Fetal Infant Morbidity Review (FIMR) activities in the highest morbidity areas of the state. FIMR case boards currently exist in the Houston, San Antonio, and Dallas-Fort Worth areas. These three areas account for most of the CS cases reported in Texas. FIMR boards in San Antonio and Dallas review CS cases which result in a stillbirth, perinatal death, infants with physical signs and symptoms, or which meet the criteria to be reported as a probable case. These review boards work to identify and address barriers to medical care which contribute to CS cases by conducting maternal interviews and enhancing medical chart abstractions. Medical providers, clinicians, and community members use information from both sources to develop appropriate interventions and action items for implementation at the local level.