2018 Healthy Texas Mothers & Babies Data Book

Prepared by: Texas Department of State Health Services, Maternal & Child Health Epidemiology Unit

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Purpose

The 2018 Healthy Texas Mothers & Babies Data Book provides an overview of infant and maternal health in Texas. It is hoped that the trends and disparities in infant and maternal health outcomes highlighted in this report can help programs and policymakers make data-driven decisions about how to improve these outcomes in Texas. This data book is not meant to repeat results found in other places; rather, it is meant to bring different data sources together to be analyzed and reported in a way that creates a cohesive view of the status of both infant and maternal health in Texas.

Data Sources & Terms

Data Sources Used

Vital records data (information from Texas birth, death, fetal death, and linked birth-death files), as well as results from the Texas Pregnancy Risk Assessment Monitoring System (PRAMS) survey, were used in this report.

The Texas Department of State Health Services (DSHS) Vital Statistics Section collects demographic data on all (or the vast majority of) births and deaths in Texas, as well as information on fetal deaths weighing 350 grams or more or, if weight is unknown, occurring at 20 weeks of gestation or more. Vital records files are a rich and comprehensive source of data; however, the quality of birth certificate data is dependent on how accurately birth records are completed by hospital staff or providers. It is also thought that the birth file likely underreports the prevalence of several maternal health indicators, such as diabetes and preeclampsia [1, 2]. In addition, 2016 and 2017 Texas birth and death file data are provisional (are available for analysis before these datasets have been thoroughly 'cleaned' and finalized), and as such, certain provisional data elements were not presented due to potential data quality concerns. In this report, no geographic information was analyzed or reported using provisional 2017 data, and 2017 provisional data were also not used when presenting maternal and infant death outcomes by race/ethnicity. This year only, since final 2016 data were not available at the time of this report, these aforementioned outcomes and maps were presented using provisional 2016 data. All other years of data used in this report are final.

Data were suppressed in maps when there were between 1 and 4 cases in the numerator, to prevent identification of affected individuals that could be possible with such small numbers, thereby protecting the confidentiality and privacy of these individuals and their families. The suppression rule used in this report differs from the rule used in recent past Healthy Texas Babies Data Books. As a result, the maps of the average of a woman with a live birth (see Figure 4), the infant mortality rate (see Figure 9), the percent of live births not receiving prenatal care in the first trimester (see Figure 23), and the percent of births to an obese mother (see Figure 30) look markedly different from the corresponding maps presented in recent past Healthy Texas Babies Data Books.

In 2016, for the first time, all 50 states implemented the 2003 revision of the U.S. Standard Certificate of Live Birth. As a result, national vital statistics data are available in this report for several new health indicators, including: prenatal care, smoking, pre-pregnancy obesity, hypertension, and diabetes.

In Texas, the PRAMS survey provides the most comprehensive population-based data on maternal health before, during, and after pregnancy. Conducted in partnership with the Centers for Disease Control and Prevention (CDC), DSHS has been implementing PRAMS annually since 2002. The PRAMS survey asks questions (via mail or telephone) of mothers who have recently given birth on topics such as prenatal care, pregnancy intention, alcohol use, smoking, intimate partner violence, postpartum depression, breastfeeding, infant sleep position, and infant secondhand smoke exposure. Unlike vital records data, which include information on almost all births and deaths in Texas, PRAMS data are obtained from a sample of women who are residents of Texas and gave birth to a live infant. CDC provides Texas with a survey data file that includes survey weights, and CDC ensures that analyses are representative of women who have given birth to a live infant and are residents of Texas. For example, the 1,849 women who completed the survey in 2016 were representative of all 390,637 Texas residents who had a live birth [3]. PRAMS data/results are generalizable to *women* who are Texas residents with at least one live birth within a specific year, whereas the birth file represents all *live births* in Texas. Because of this, along with potential sampling and reporting differences, PRAMS findings may differ from results obtained from vital statistics data. PRAMS results are reported along with confidence intervals, and the width of the confidence interval – in other words, the distance between its upper and lower limits – is an indicator of the variability, and thus the reliability, of the results. Texas PRAMS data are presented as estimated percentages or prevalence estimates to account for complex sampling and weighting. As with any self-reported survey, possibility of recall bias exists; that is, women may not answer the question correctly or leave it blank because they may not remember the event. However, the schedule of survey mailings begins 61 to 183 days after the birth of the infant in order to minimize this risk.

Despite the few limitations described above, Texas vital records are invaluable sources of data on the status of infant and maternal health, and PRAMS provides much-needed information about maternal risk and health

pre-pregnancy, during pregnancy, and post-pregnancy that is not available elsewhere. Both Texas vital records and PRAMS data are used by DSHS and other state agencies and stakeholders to inform, develop, and drive policies and programs to improve the health of mothers and babies, and to understand their emerging health needs. These sources provide a rich understanding of both infant and maternal health, and serve as an important resource for risk factor analysis and for identification of possible avenues for prevention.

Data Terms

Baby-Friendly Hospital: A designation given to birthing facilities that offer an optimal level of care for infant feeding (breastfeeding) and for mother/baby bonding. To achieve accreditation as a Baby-Friendly Hospital, a facility must demonstrate a 75 percent exclusive breastfeeding rate or higher among mothers at discharge, must adhere to the International Code of Marketing Breastmilk Substitutes, and must successfully implement the Ten Steps to Successful Breastfeeding [4].

Body Mass Index: Body mass index (BMI) is a measure of weight-for-height that is often used to classify adults as being underweight, of normal weight, overweight, or obese [5]. In this report, maternal BMI is calculated using the mother's pre-pregnancy weight and height. Consistent with National Center for Health Statistics (NCHS) standards, BMI categories are defined using the standard cutoffs for adults, even if the mother is younger than 22 years of age [6].

Causes of Infant Death: Cause of death categories from the NCHS Instruction Manual are used to calculate information regarding the leading causes of infant death in this report [7]. Not all infant deaths in Texas are due to the leading causes shown in the report. Causes of infant death are reported as the number of deaths per 10,000 live births.

Gestational Age: Gestational age is used to calculate whether or not a birth is preterm, as well as to calculate when in pregnancy the mother first received prenatal care. However, exact gestational age is often unknown and must be estimated. Beginning with final 2014 data, NCHS has changed the variable used to estimate gestation [8]. The current standard, starting in 2014, uses the obstetric estimate of gestation on the birth certificate, and not a combination of last menstrual period and the obstetric estimate, as

had been done in the past. This current standard for calculating gestational age is used throughout the report.

Infant Mortality: Infant mortality rate (IMR) is defined as the number of infants who died in a given year divided by the number of live births in that same year. This number is then multiplied by 1,000 to calculate the IMR. All of the births that comprise this rate are restricted to those women with Texas listed as their state of residence.

Perinatal Periods of Risk: A comprehensive approach designed to help communities use data to improve infant and maternal health outcomes. In addition to infant deaths, fetal deaths are also included in the perinatal periods of risk (PPOR) analysis to provide more information. The PPOR analysis divides fetal and infant deaths into four risk periods (maternal health/prematurity, maternal care, newborn care, and infant health), based on birth weight and age of death. An excess feto-infant mortality rate (F-IMR) is then calculated for each of these periods, both for the state as a whole and for specific demographic study populations. The reference group for each of these calculations is a state-level reference population of mothers with near-optimal birth outcomes [9].

Race/Ethnicity: For information obtained from birth records, fetal death records, or from PRAMS, race/ethnicity information shown throughout this report refers to the mother, not the infant. However, infant death data are classified according to infant's race/ethnicity. Women who identified themselves as only White or Black and who did not indicate that they were Hispanic were classified as White or Black, respectively. Women who identified themselves as Hispanic were classified as Hispanic, regardless of their race designation. Women of all other races, including multiracial women, were classified as "Other", as long as the woman did not self-identify as Hispanic. The "Other" category is not homogeneous, and there have been shifts in the demographics of women within this category. Since 2004, there has been an increase in the number of women identifying themselves as multiracial. Starting in 2016, as a result of the nationwide implementation of the 2003 revision of the U.S. Standard Certificate of Live Birth, national vital statistics data can also be classified using the above race/ethnicity group definitions.

Maternal Mortality: In this report, the rate of confirmed maternal deaths occurring while pregnant or within 365 days of the end of pregnancy is presented. This maternal death rate is defined as the number of confirmed

maternal deaths while pregnant or within 365 days of the end of pregnancy for every 100,000 live births. Maternal deaths were confirmed by matching each woman's death record with a live birth or fetal death event that occurred within 365 days of the date of death.

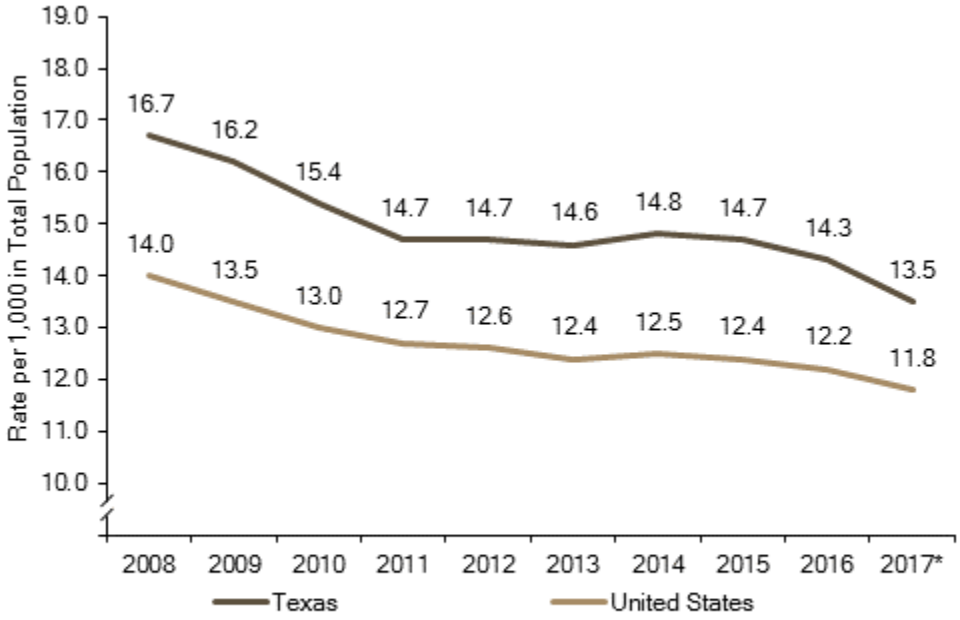
Severe Maternal Morbidity: Severe maternal morbidity (SMM) is a term used to describe any unintended outcomes of labor and delivery that result in significant consequences for a mother's health [10]. A hospital delivery was considered an SMM case if the mother had one or more of the conditions or procedures indicated on a list of SMM-related medical codes, including conditions such as acute renal failure, cardiac arrest, eclampsia, and sepsis, and including procedures such as blood transfusion and hysterectomy. The Alliance of Innovation on Maternal Health (AIM) implementation of the CDC SMM definition was used in this report to make ICD-9 more comparable to ICD-10 [11].

Early Non-medically Indicated Elective Deliveries: The early non-medically indicated elective delivery rate is defined as the percent of early deliveries, without medical conditions potentially justifying early delivery, that occur via labor induction or cesarean section without trial of labor [12]. Medical conditions documented on the birth certificate that could potentially justify early delivery include chronic or gestational hypertension or diabetes, eclampsia, non-vertex presentation, certain congenital anomalies, and previous poor birth outcome [12]. Criteria that would identify an early delivery as medically necessary (e.g., gestational diabetes, preeclampsia) are not well documented on the birth certificate [1, 2]. However, in this report, early non-medically indicated (NMI) elective delivery rates were estimated, based on a method developed for The Collaborative Improvement and Innovation Network to Reduce Infant Mortality (IM CoIIN) using data available from the birth certificate [12]. Rates are presented separately for the percent of early non-medically indicated deliveries occurring via elective cesarean section and the percent occurring via elective labor induction.

Birth Demographics

The birth rate in Texas continued to decrease in 2017, after remaining fairly stable from 2011 to 2015 (see Figure 1). Texas has the fifth highest birth rate in the United States [12]. In 2017, almost 390,000 babies were born in the state, and there were more than 380,000 births to mothers that live in Texas.

Figure 1
Birth Rate in Texas and The United States, 2008-2017



*2017 Texas and United States data are provisional
Source: National Center for Health Statistics
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

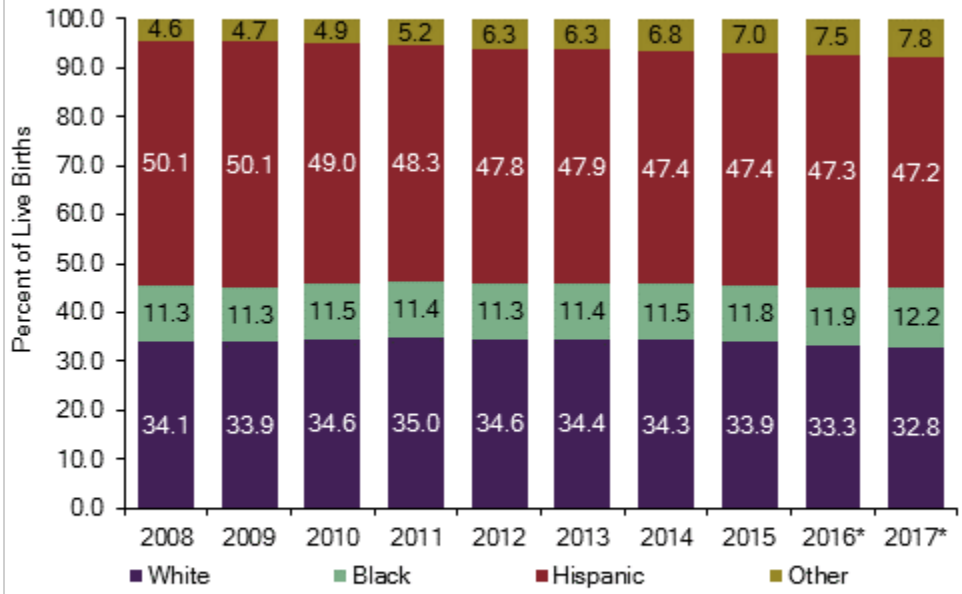
Maternal Race/Ethnicity

Births to Hispanic women make up the largest percentage of all births in Texas, followed by births to White women, Black women, and women classified as 'Other' race/ethnicity (see Figure 2).

Although women who are classified as being of 'Other' race/ethnicity make up a small proportion of the total number of Texas births, this race/ethnic group has had the largest increase in the percent of total live births over the past decade in Texas (see Figure 2). Almost 30,000 births in 2017 were to mothers who classified themselves as Asian, multiracial, or other race/ethnic designations. However, it is important to keep in mind that this group is quite heterogeneous (encompassing many different races/ethnicities), which often limits the interpretability of results for this particular race/ethnic category.

Figure 2

Distribution of Race/Ethnic Groups Among All Live Births, 2008-2017



*2016 and 2017 Texas data are provisional
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
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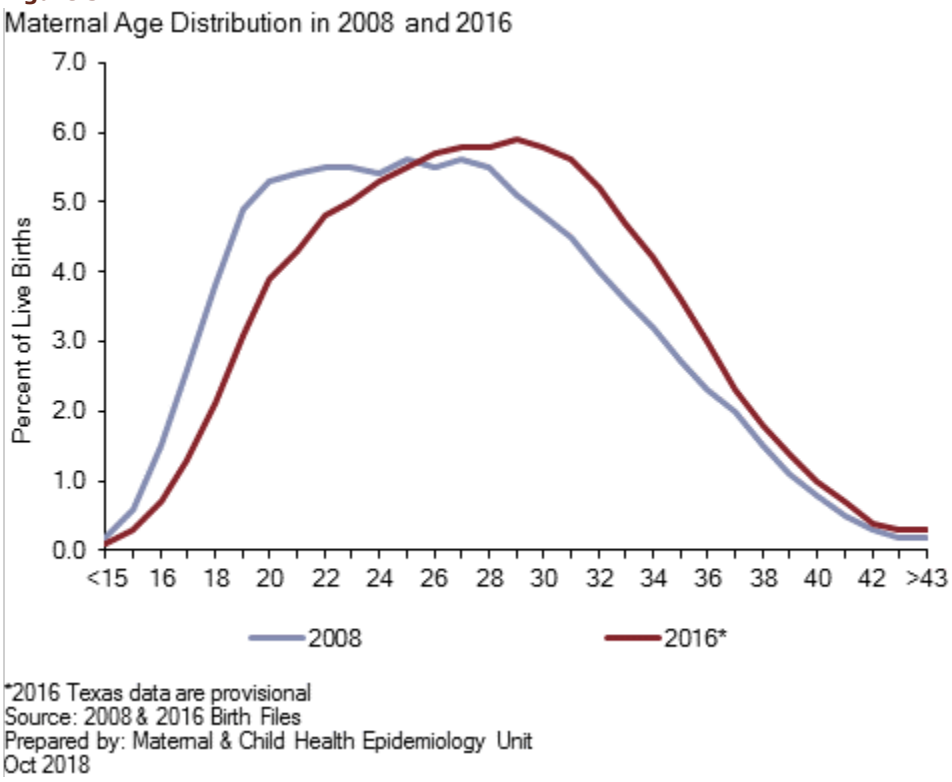
Maternal Age

As in the United States as a whole, Texas has seen a shift in the maternal age of women giving birth over time (see Figure 3) [13]. The average maternal age at birth in 2016 was 28.0 years of age, a significant increase from an average age of 26.6 years in 2008.

Figure 3

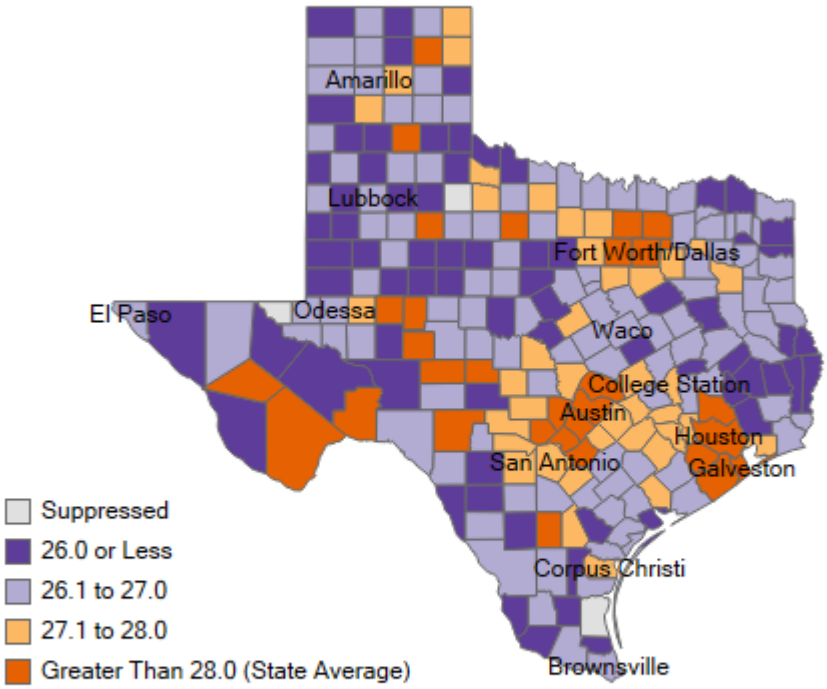


*2016 Texas data are provisional
Source: 2008 & 2016 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

The average age for women with a live birth in 2016 differed by region (see Figure 4). Counties with major urban centers tended to have older average maternal ages.

Figure 4

Average Age of a Woman with a Live Birth, 2016



2016 Texas data are provisional
Source: 2016 Birth File
Prepared by: Maternal & Child Health Epidemiology Unit
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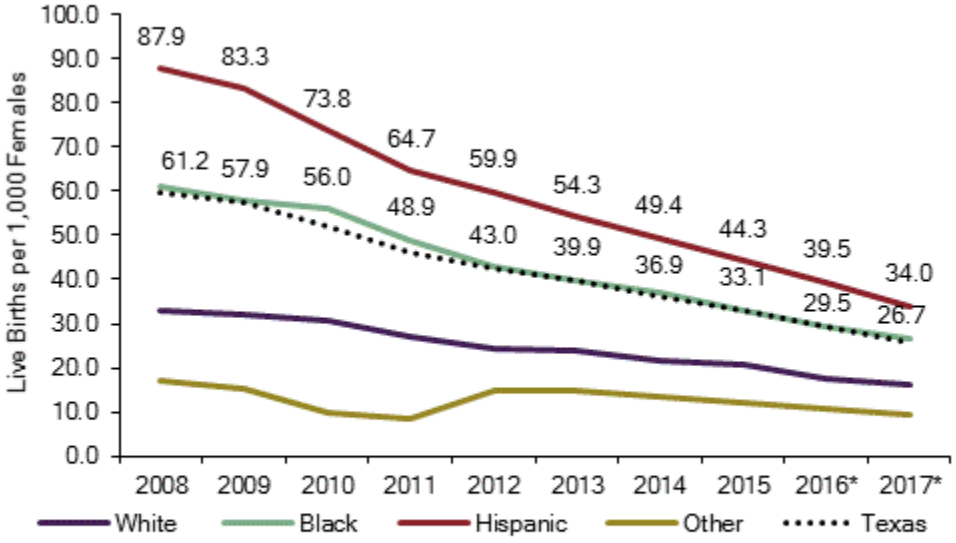
The increase in average maternal age observed over the past decade is likely due in part to a marked decrease in the teen birth rate. Texas, like the rest of the country, has reported dramatic decreases in the teen birth rate since 2008 [14]. This drop has been particularly steep for Hispanic and Black youth (see Figure 5). Over the past 10 years, the teen birth rate has declined by 61.3 percent among Hispanic youth and has declined by 56.4 percent among Black youth.

Although Texas has experienced a steady decrease in the teen birth rate over the past decade, as of 2016, Texas had the fourth highest teen birth rate in the United States (among females 15-19 years old) [12].

Figure 5

Teen (15 - 19 year old) Birth Rate per 1,000 Females by Race/Ethnicity, 2008-2017

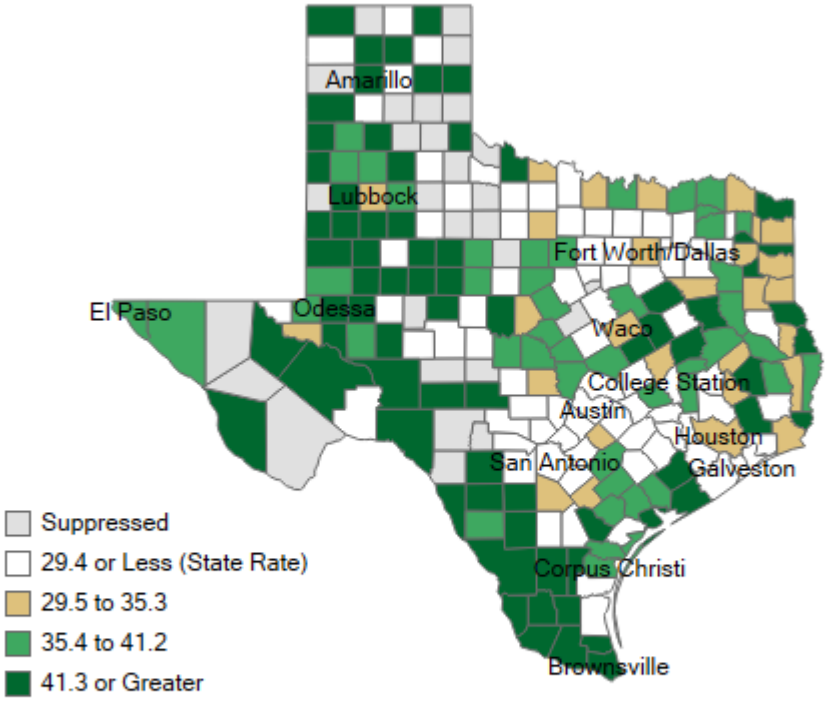


*2017 Texas data are provisional
Source: 2008-2017 Birth Files
2008-2016 Population Estimates
2017 Population Projections
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Additionally, several areas in Texas have high teen birth rates when compared to the rest of the state (see Figure 6). Many counties in the border regions of the state and in the Texas Panhandle have high teen birth rates.

Figure 6

Teen Birth Rate per 1,000 Females Age 15-19 Years Old, 2016



2016 Texas data are provisional
Source: 2016 Birth File
Texas Demographic Center 2016 Population Estimates
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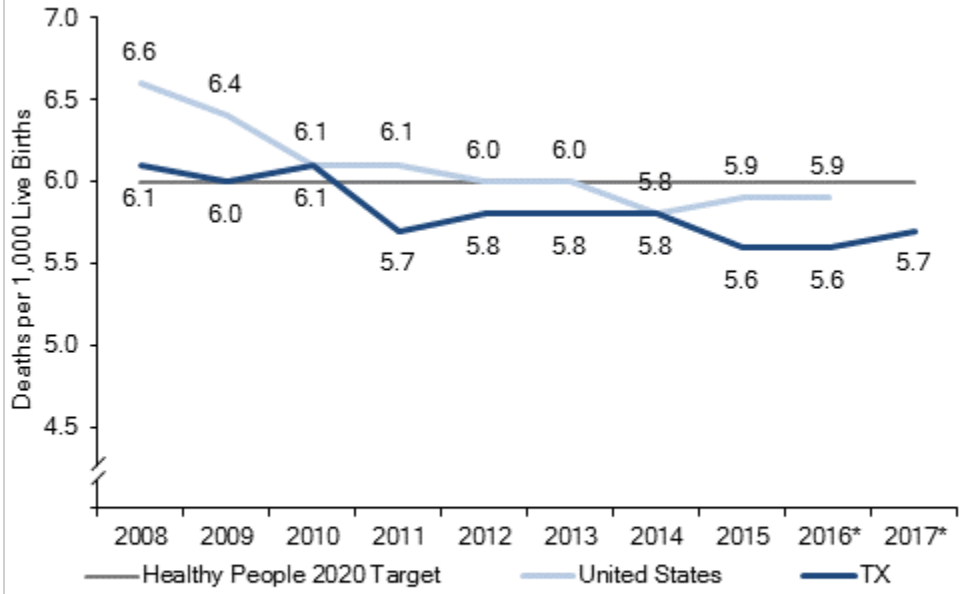
Infant Mortality Rate

In 2017, the Texas infant mortality rate (IMR) was 5.7 deaths per 1,000 live births. The IMR in Texas has been at or below the national rate for the past 10 years (see Figure 7). Moreover, since 2011, the state has consistently been below (exceeded) the Healthy People 2020 (HP2020) target of 6.0 deaths per 1,000 live births.

Figure 7

Infant Mortality Rate in Texas and the US, 2008-2017



*2016 and 2017 Texas data are provisional
Source: 2008-2017 Texas Birth and Death Files, National Center for Health Statistics
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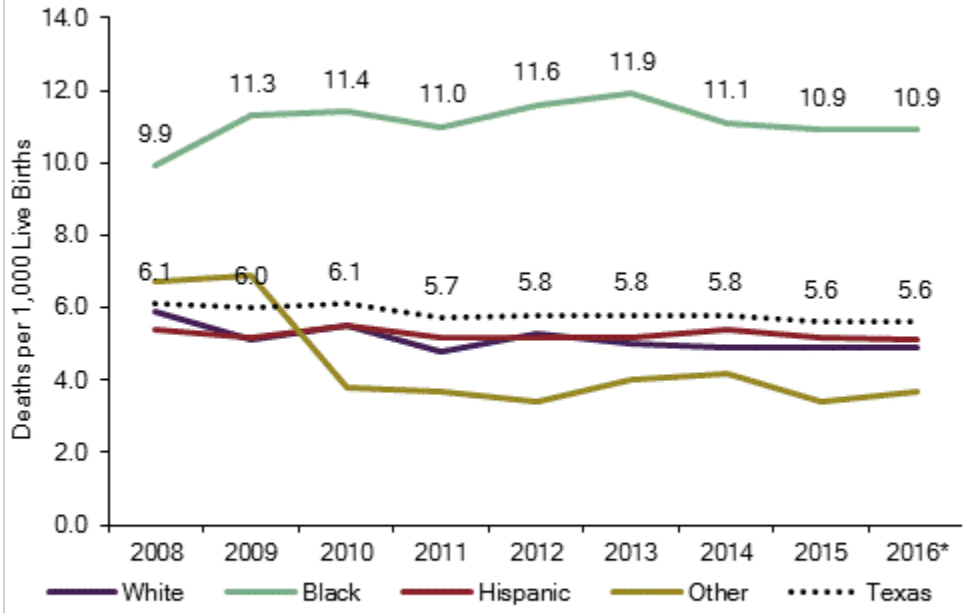
However, racial/ethnic disparities in IMR have persisted in Texas, and it is clear that the overall decrease in IMR observed in Texas over the past decade was not equally distributed across all race/ethnic groups (see Figure 8). IMRs for Black mothers have been twice as high as IMRs for White and Hispanic mothers over much of this timeframe.

Figure 8

Infant Mortality Rate in Texas by Race/Ethnicity, 2008-2016



*2016 Texas data are provisional
Source: 2008-2016 Texas Birth and Death Files
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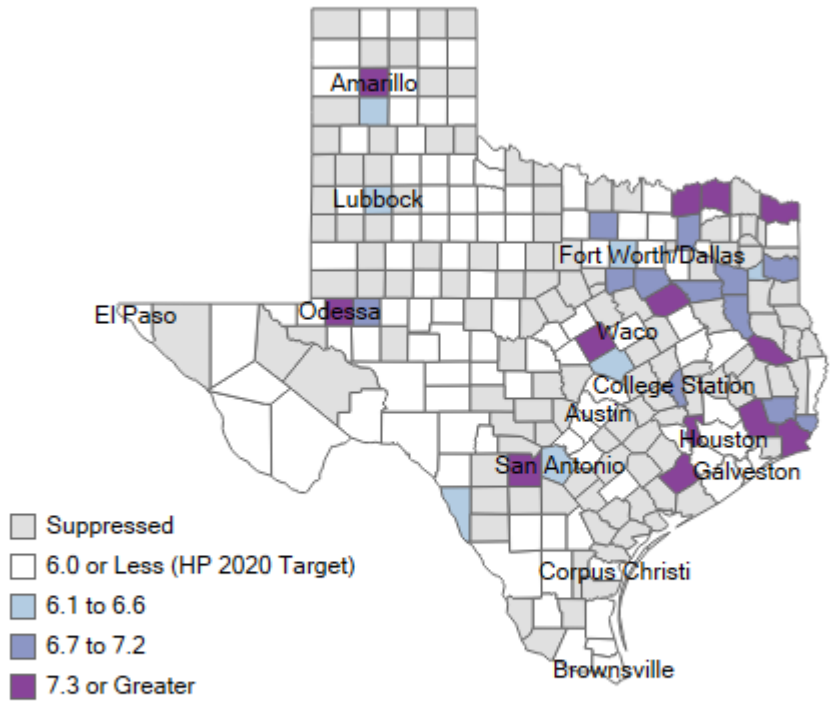
In addition to race/ethnic disparities, substantial regional differences in IMR persist within the state. In 2016, many Texas counties met the HP2020 target of 6 or fewer infant deaths per 1,000 live births (see Figure 9). In contrast, Angelina County, Fannin County, Wharton County, and Medina County had the highest IMRs; more than 10 deaths per 1,000 live births were reported in these counties in 2016.

Figure 9

Infant Mortality Rate per 1,000 Live Births, 2016



2016 Texas data are provisional
Source: 2016 Birth File
2016 Death File
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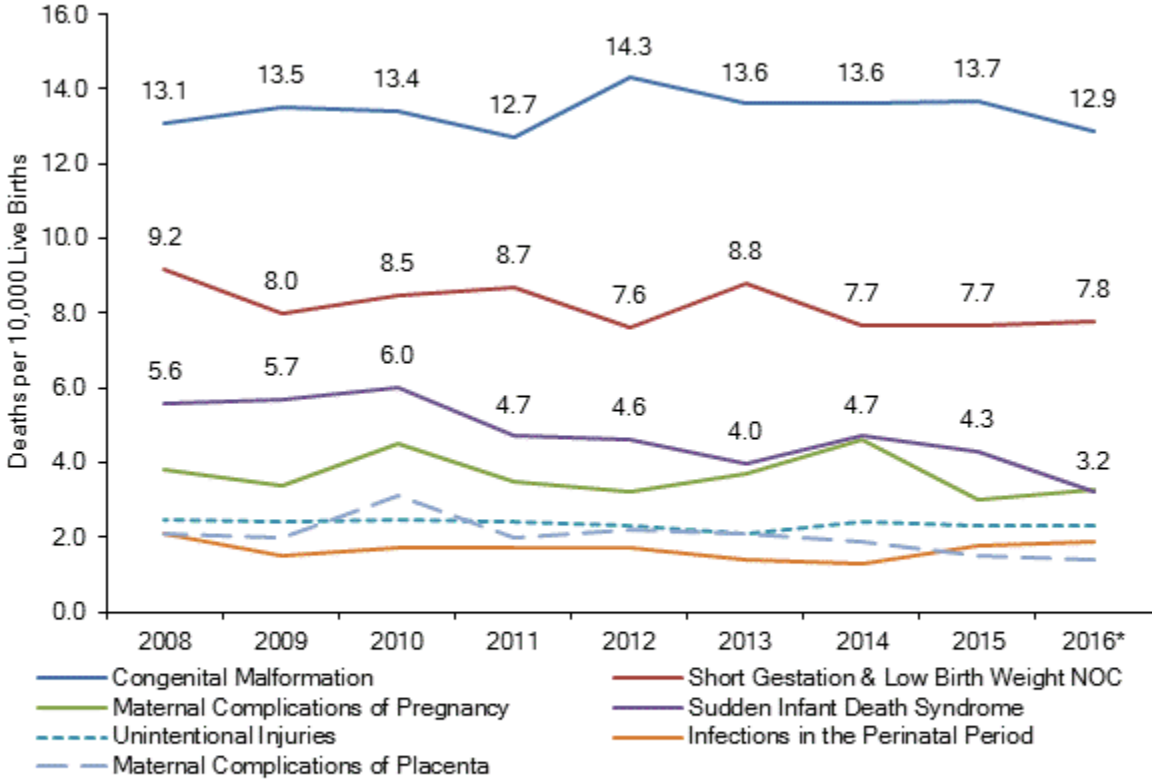
Differences in IMR also exist by maternal age. In 2015, a higher IMR was observed among mothers age 40 or older than among mothers of any other age group, followed by young mothers less than 20 years of age (see Figure 10). Mothers in these two age groups comprised 10.8 percent of all Texas resident births in 2015.

Figure 10

Causes of Infant Death

Causes of infant death are presented in this 2018 Data Book using provisional 2016 data before they are finalized, because final 2016 data were not available at the time of this report. Overall, the leading cause of death for infants younger than one year in Texas is congenital malformation (birth defects; see Figure 11). Among infants older than 28 days, Sudden Infant Death Syndrome (SIDS) is the second leading cause of death. The provisional 2016 SIDS rate is likely an underestimate of the final 2016 SIDS rate, because deaths due to SIDS have a longer reporting lag time compared to deaths due to other infant causes of death [15].

Figure 11
Leading Causes of Infant Death, 2008-2016



*2016 data are provisional
NOC: Not otherwise classified
Source: 2008-2016 Death & Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Leading causes of infant death also differ by race/ethnicity. In 2016, the leading cause of death among Black infants was short gestation and low birth weight, whereas congenital malformation was the leading cause of death among infants of all other race/ethnic groups (see Figure 12).

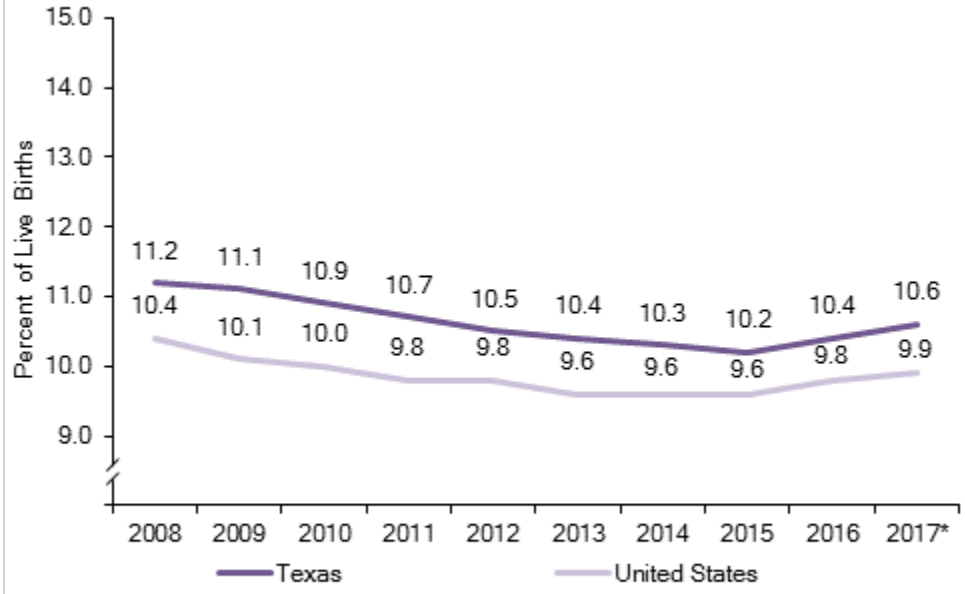
Figure 12

Preterm Birth

Preterm births are those that occur prior to 37 weeks of gestation. Preterm birth rates in both Texas and the nation have decreased over the past decade. However, in 2016, the Texas preterm birth rate increased for the second year in a row, as did the national rate of preterm birth. The preterm birth rate in Texas has consistently been higher than the national average over the past 10 years (see Figure 13).

Figure 13

Percent of Live Births Born Preterm (less than 37 weeks) in Texas and United States Using Obstetric Estimate of Gestation, 2008-2017



*2017 Texas and United States data are provisional
Source: National Center for Health Statistics
Prepared by: Maternal & Child Health Epidemiology Unit
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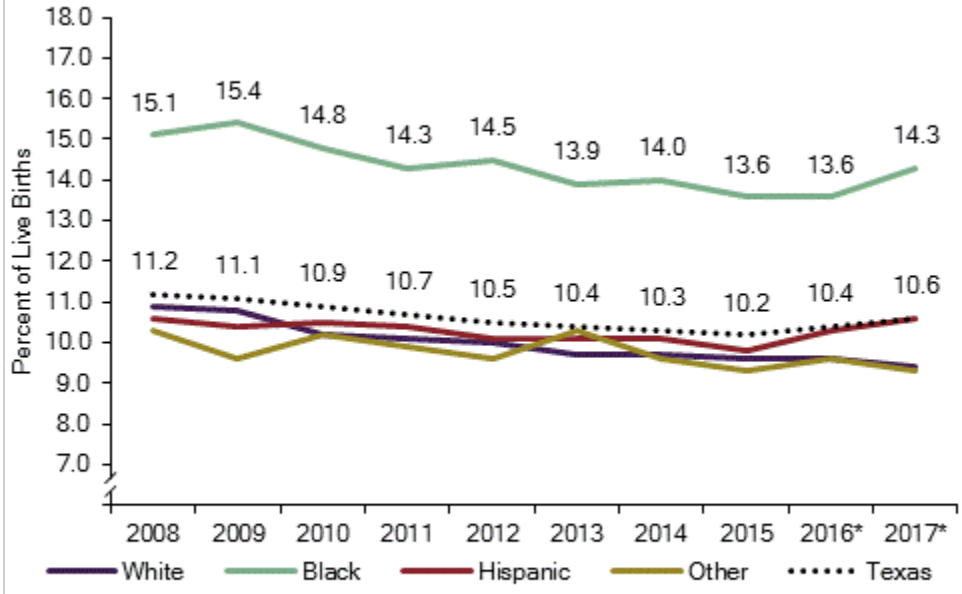
Preterm births can be further divided into early preterm births (<34 weeks) and late preterm births (34-36 weeks). Texas has seen an increase in both the percentage of early preterm births (2.9 percent in 2017 vs. 2.8 percent in 2015) and late preterm births (7.7 percent in 2017 vs. 7.3 percent in 2015). Nationally, the increase in preterm birth primarily occurred among late preterm births [16].

As with IMR, there are substantial racial/ethnic disparities in the preterm birth rate (see Figure 14). Black infants have a higher preterm birth rate than do infants of any other race/ethnic group.

Figure 14

Percent of Live Births Born Preterm (less than 37 weeks) in Texas by Race/Ethnicity Using Obstetric Estimate of Gestation, 2008-2017

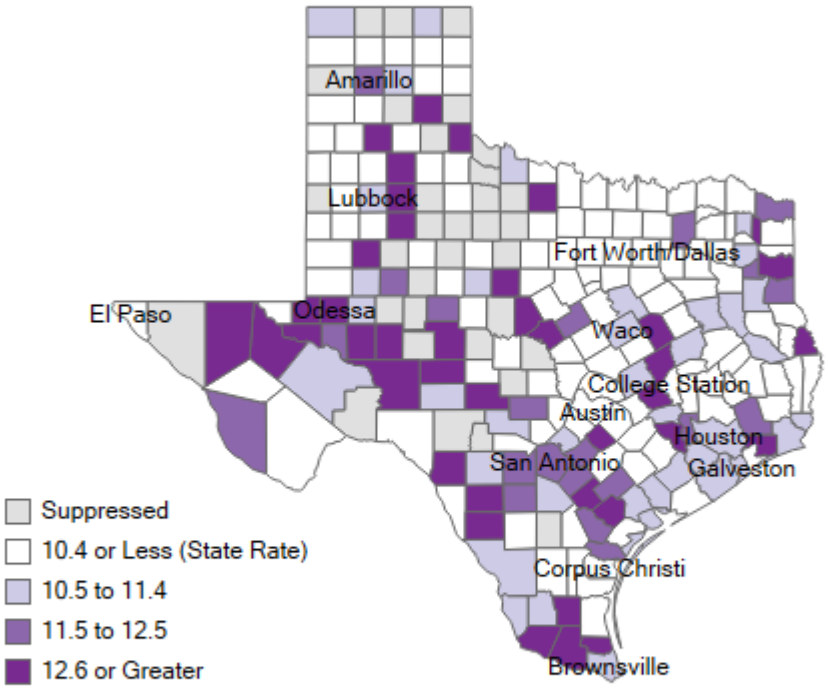


*2016 and 2017 Texas data are provisional
Source: 2008-2017 Texas Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Figure 15 shows the percentage of preterm births by county in Texas. Regional differences were observed; many counties in south and west Texas had higher rates of preterm birth than the state as a whole.

Figure 15

Percent of Births That Were Preterm (Obstetric Estimate), 2016



2016 Texas data are provisional
Source: 2016 Birth File
Prepared by: Maternal & Child Health Epidemiology Unit
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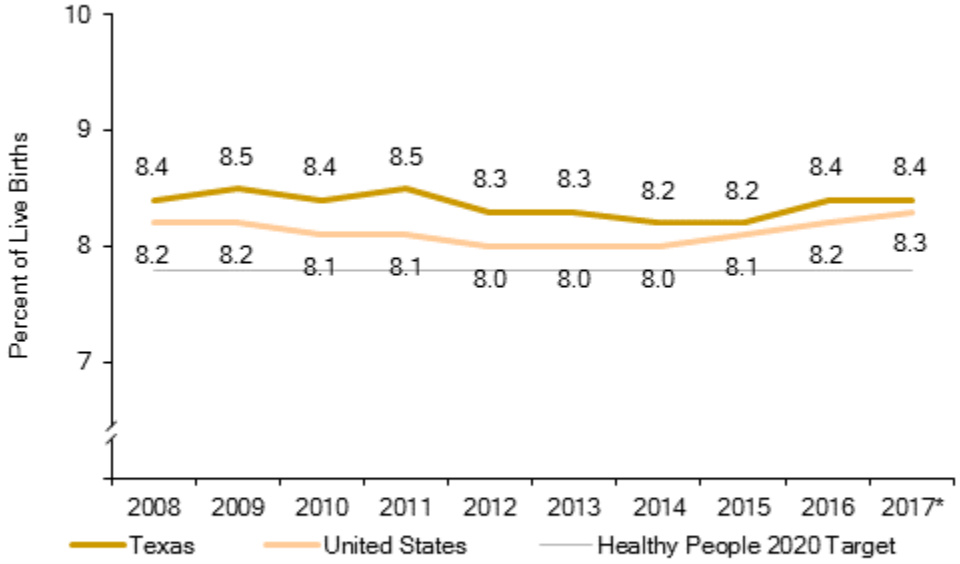
Low Birth Weight

The percentage of babies born with a low birth weight in Texas (weighing less than 2500 grams) stayed constant in 2017 after increasing slightly from 2015 to 2016. The rate of low birth weight infants in Texas is slightly higher than the national rate, and Texas is currently not meeting the HP2020 target of 7.8 percent or fewer of all live births weighing less than 2500 grams (see Figure 16).

Figure 16

Percent of Births that are Low Birth Weight (less than 2500 g) in Texas and the United States, 2008-2017

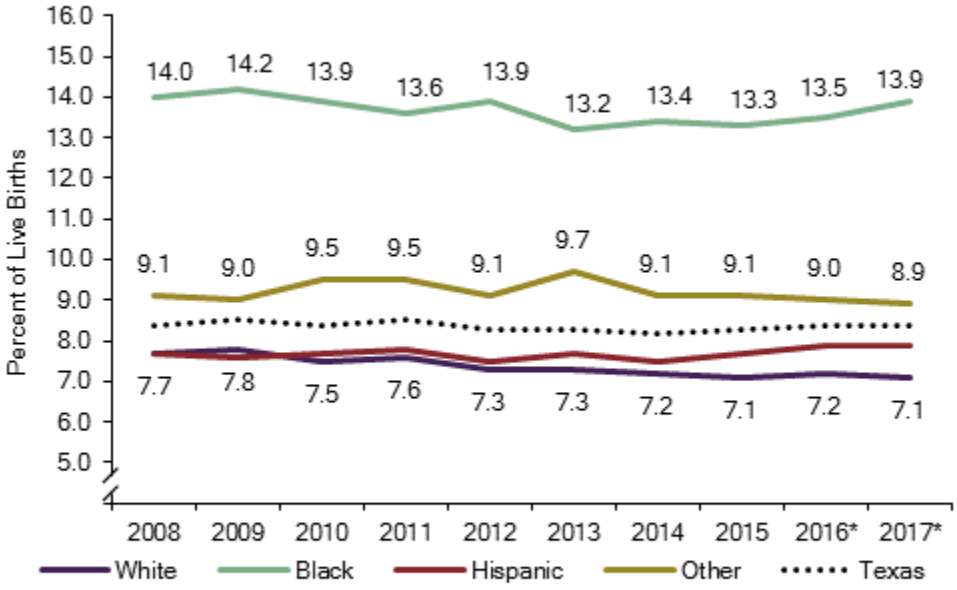


*2017 Texas and United States data are provisional
Source: 2017 Texas Birth File
National Center for Health Statistics
Prepared by: Maternal & Child Health Epidemiology Unit

As with IMR and preterm births, Black mothers have a disproportionately high percentage of low birth weight infants (see Figure 17). The rate of low birth weight infants is also higher among mothers in the 'Other' race/ethnic category than among White or Hispanic mothers.

Figure 17

Percent of Births that are Low Birth Weight (less than 2500 g) in Texas by Race/Ethnicity, 2008-2017



*2016 and 2017 Texas data are provisional
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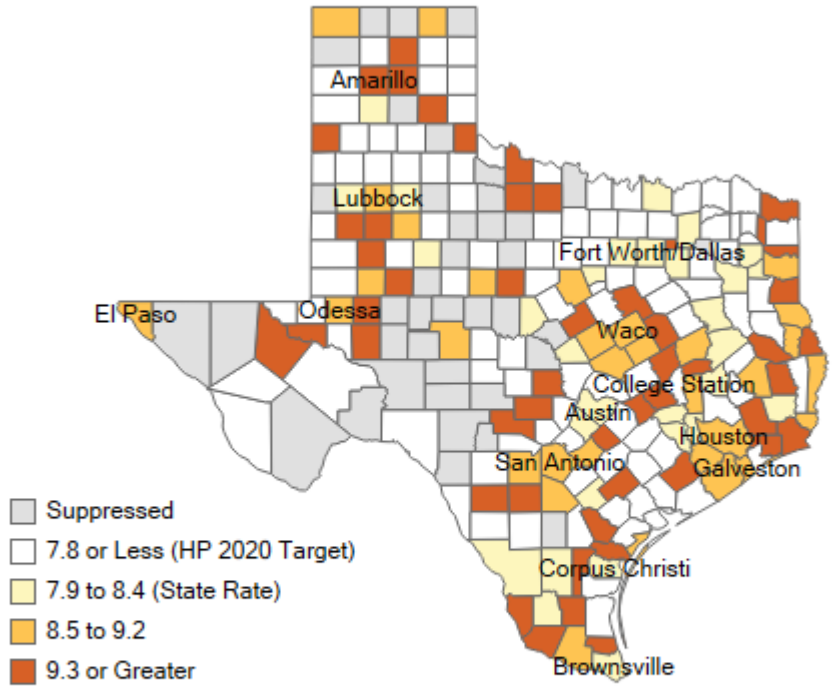
Although some counties in Texas met the HP2020 target for percentage of low birth weight infants in 2015, many counties did not (see Figure 18). There were no clear geographic patterns or regional disparities for low birth weight rates within the state.

Figure 18

Percent of Infants Born Low Birth Weight, 2016



2016 Texas data are provisional
Source: 2016 Birth File
Prepared by: Maternal & Child Health Epidemiology Unit
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Perinatal Periods of Risk

Although Texas has made significant progress in reducing infant mortality, data show continued disparities in infant mortality and feto-infant mortality among different racial/ethnic groups, especially between Black and White women. To better understand these disparities, a perinatal periods of risk analysis (PPOR) is undertaken, which examines the risk of feto-infant mortality during different perinatal periods.

In 2018, as part of the Regional Analysis of Maternal and Infant Health in Texas, PPOR analyses were conducted for Texas overall, as well as for each of the eight Texas Public Health Regions. The Regional Analysis of Maternal and Infant Health in Texas reports are available online at https://www.dshs.texas.gov/opds/Reports.aspx.

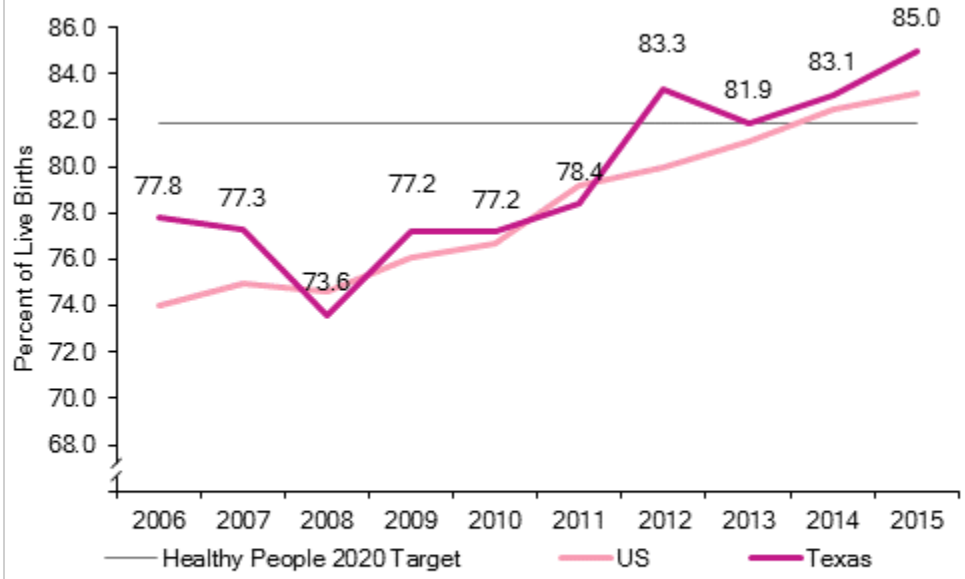
Breastfeeding

Breast milk is the best source of nutrition for infants, as it contains essential nutrients and antibodies necessary to best nourish infants and protect them from disease. Formula-fed babies are at higher risk of several adverse outcomes, including necrotizing enterocolitis (a condition that affects the gastrointestinal tract of preterm infants), lower respiratory infections, and chronic diseases such as asthma, obesity, and type 2 diabetes [17]. Exclusive breastfeeding has also been shown to be protective against infant mortality due to SIDS, as well as deaths from childhood illnesses [18, 19].

According to the National Immunization Survey, 85.0 percent (CI: 82.5-87.6) of infants born in Texas in 2015 were ever breastfed (see Figure 19) [20]. This rate was slightly higher than the 2015 national rate (83.2 percent; CI: 82.2-84.2). Since 2012, Texas has met or exceeded the HP2020 target for proportion of infants having ever breastfed (81.9 percent).

Figure 19

Percent of Infants Who Were Ever Breastfed in Texas and the United States, 2006-2015

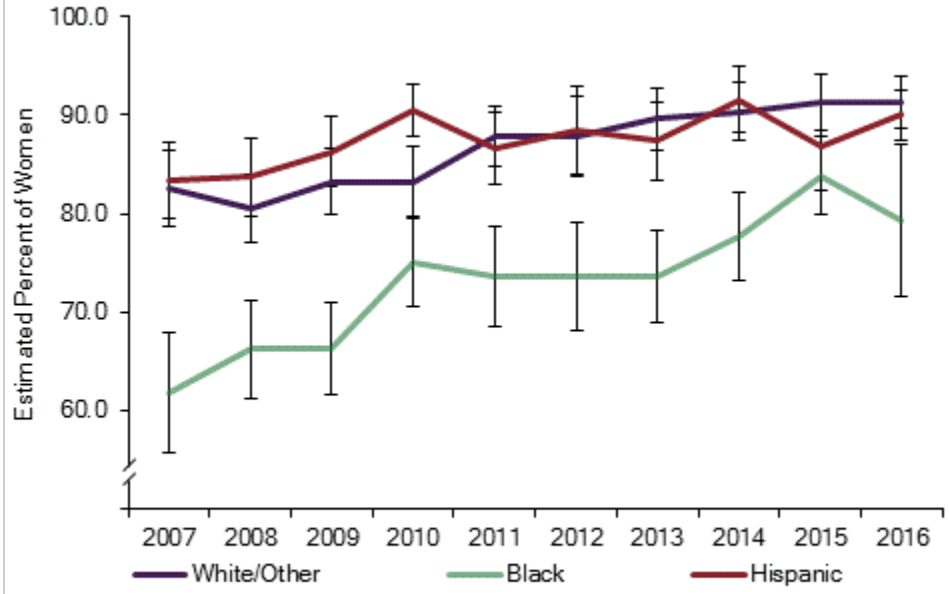


Breastfeeding rates through 2008 births are based on the landline sampling frame. Starting with 2009 births, rates are based on a dual-frame sample.
Source: National Immunization Survey
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

However, significant race/ethnic disparities exist in the rate of women who have ever breastfed their infant. Black mothers report lower rates of ever breastfeeding than both White and Hispanic mothers (see Figure 20).

Figure 20

Women Who Ever Breastfed Their Baby by Race/Ethnicity, Texas PRAMS 2007-2016



Error Bars: 95% Confidence Interval
Source: 2007-2016 Texas PRAMS
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

While a relatively large proportion of Texas mothers report having ever breastfed, rates of exclusive breastfeeding are significantly lower. Research has shown that the benefits of breastfeeding are greatest when the baby is exclusively fed breast milk for the first 6 months after birth. According to the National Immunization Survey, 24.1 percent (C.I.: 21.3-26.9) of Texas mothers reported breastfeeding exclusively at 6 months in 2015 [20]. Among mothers enrolled in Texas WIC in 2016, only 6.0 percent reported exclusively breastfeeding at 6 months of age [21].

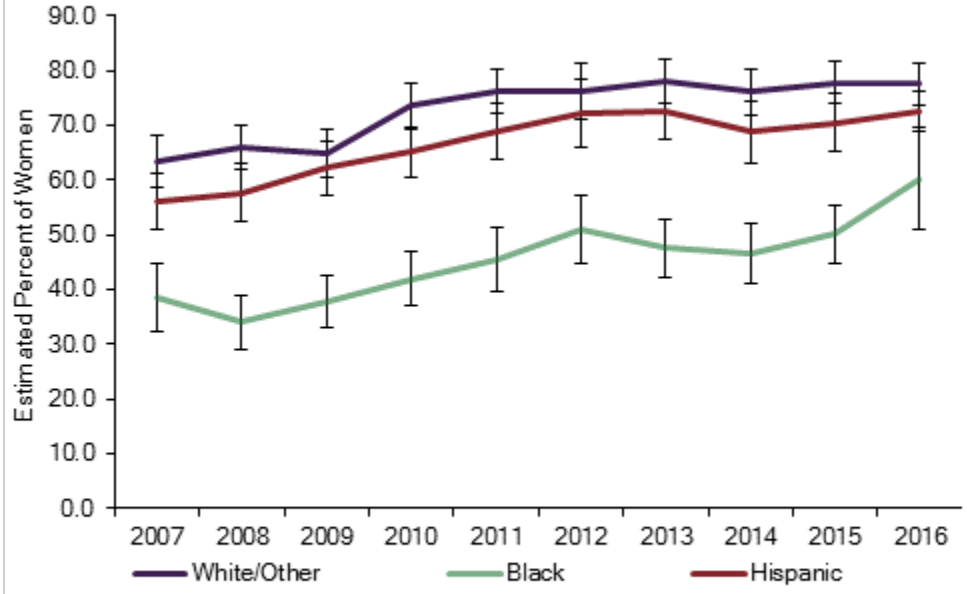
It has been shown that initiating breastfeeding in the hospital is an important first step towards exclusive breastfeeding. In Texas, only 20.1 percent of births in 2018 occurred in a Baby-Friendly Hospital, according to 2018 Baby-Friendly USA and 2017 National Center for Health Statistics data [22].

Placing Infants on their Back to Sleep

Placing an infant on his/her back to sleep, rather than on the stomach or side, is an important strategy to reduce sleep-related deaths [23]. According to Texas PRAMS data, 73.3 percent of mothers reported placing their infant on their back to sleep in 2016. This percentage has increased by almost 30 percent since 2007. Despite this significant increase, substantial race/ethnic differences still exist. In particular, although the proportion of Black mothers placing their infant on their back to sleep increased by 57 percent between 2007 and 2016, this proportion was still significantly lower among Black mothers than among White mothers in 2016 (see Figure 21).

Figure 21

Women Who Reported Placing Infant on Back to Sleep by Race/Ethnicity, Texas PRAMS 2007-2016



Error Bars: 95% Confidence Interval
Source: 2007-2016 Texas PRAMS
Prepared by: Maternal & Child Health Epidemiology Unit
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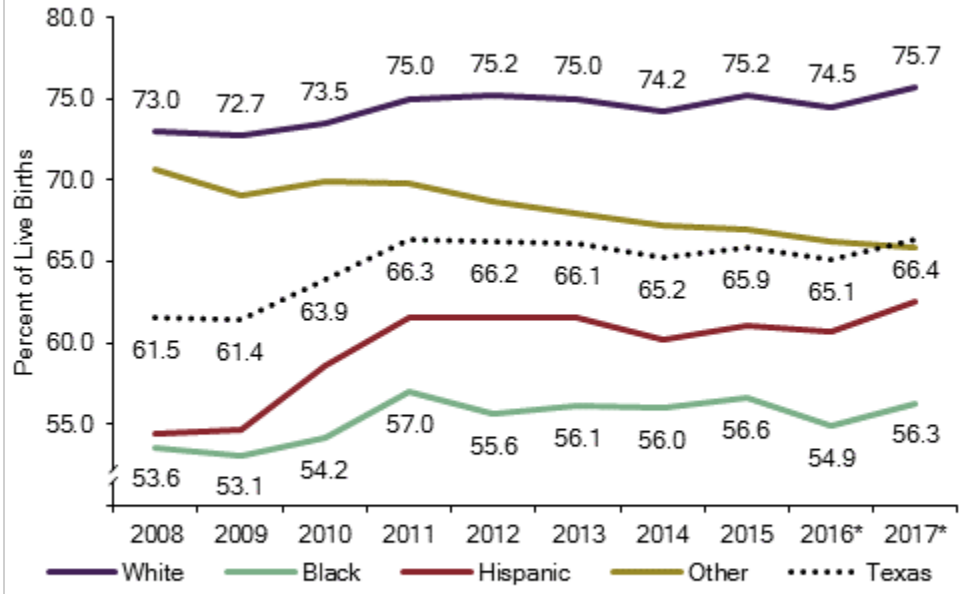
Prenatal Care

The HP2020 target is to increase the proportion of pregnant women who begin prenatal care in the first trimester of pregnancy to 77.9 percent. Texas, as a whole, is not meeting this target percentage; in 2017, 66.4 percent of mothers entered prenatal care within the first trimester (see Figure 22). In 2016, Texas had a lower proportion of women receiving first trimester care than any other state [24]. Nationally, 77.1 percent of mothers entered prenatal care during the first trimester in 2016.

Figure 22

Percent of Live Births Where Mother Received Prenatal Care in the First Trimester, 2008-2017



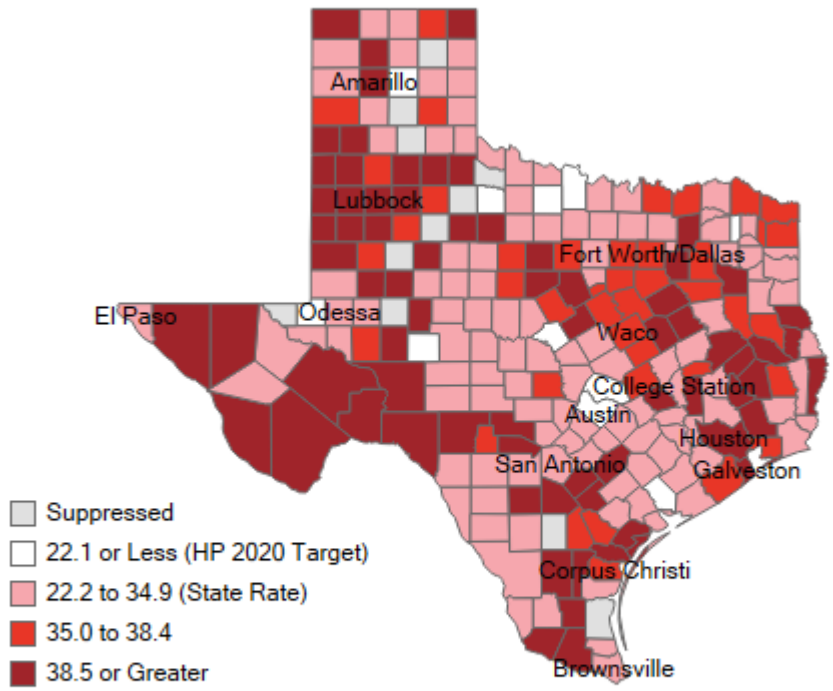
*2016 and 2017 Texas data are provisional
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Timely access to prenatal care increased in Texas from 2009-2011, but appears to have plateaued since then. Disparities in timely prenatal care access exist between different race/ethnic groups. A larger proportion of White women begin receiving prenatal care in the first trimester of pregnancy, compared to all other race/ethnic groups. Conversely, a smaller proportion of Black women receive prenatal care in the first trimester than any other race/ethnic group. Only a little more than half of Black mothers begin prenatal care in the first trimester of pregnancy. While a relatively high proportion of women of 'Other' race/ethnicity receive timely access to prenatal care, the proportion of women in this race/ethnic group who receive prenatal care in the first trimester has steadily decreased over the past decade.

Late entry into prenatal care is a statewide problem. In 2016, only eleven Texas counties met the HP2020 target percentage of women entering prenatal care in the first trimester (see Figure 23).

Figure 23

Percent of Live Births Not Receiving Prenatal Care in the First Trimester, 2016



2016 Texas data are provisional
Source: 2016 Birth File
Prepared by: Maternal & Child Health Epidemiology Unit
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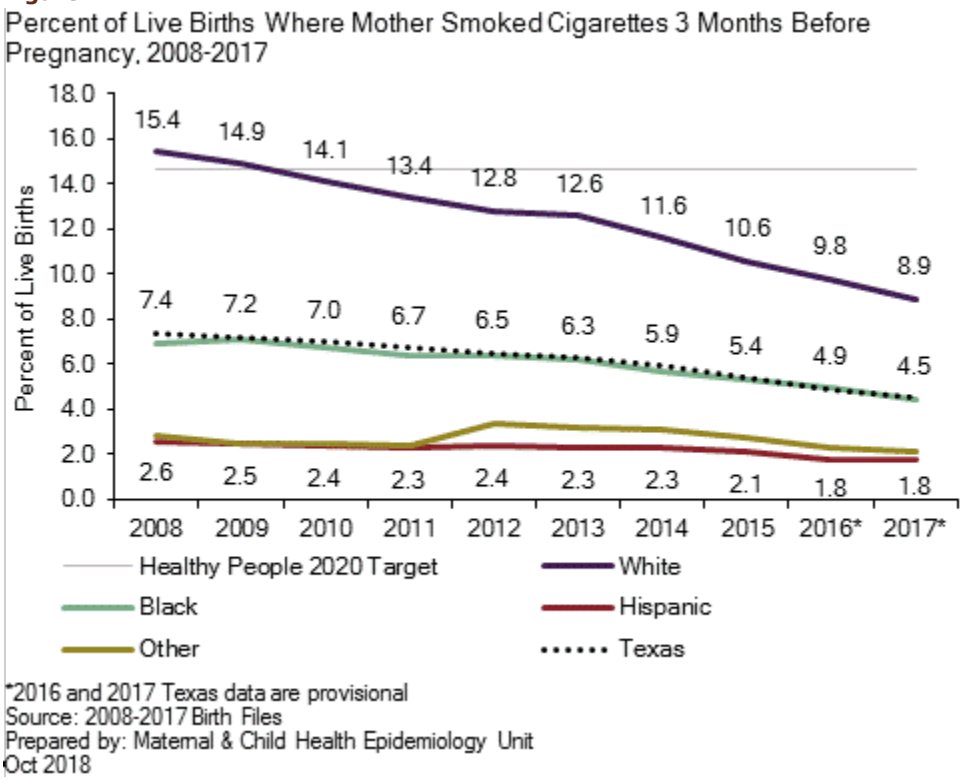
Using PRAMS 2016 survey data, among mothers who reported that they did not receive care in the first trimester of their pregnancy, 54.1 (C.I.: 47.2-60.9) percent still reported that they had received prenatal care as early as they had wanted [3]. These findings indicate a need for increased education and awareness of the importance of obtaining prenatal care starting in the first trimester.

Smoking

Texas is one of the better performing states when it comes to smoking during pregnancy [25]. This is due, in large part, to the high number of births to Hispanic women in the state (47 percent of all births in Texas were to Hispanic women in 2017).

In general, Hispanic women have a lower prevalence of smoking than women of all other races/ethnicities in Texas. A smaller proportion of both Hispanic women and women of 'Other' race/ethnicity smoked three months prior to becoming pregnant, compared to all other race/ethnic groups (see Figure 24).

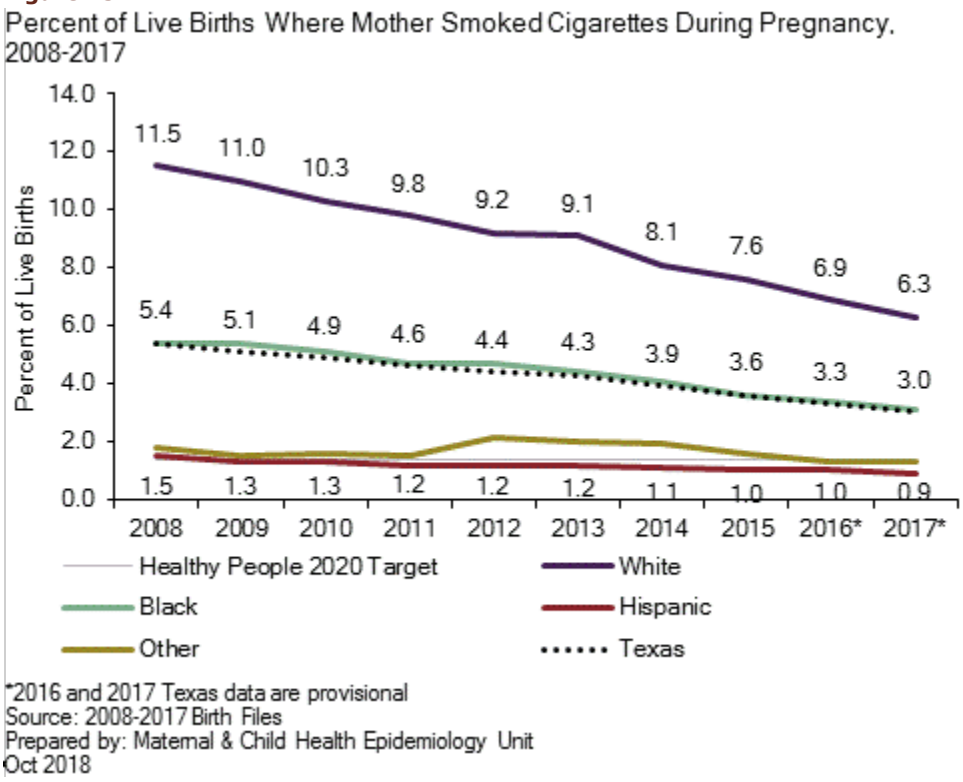
Figure 24



*2016 and 2017 Texas data are provisional
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Women of these race/ethnic groups also have the lowest prevalence of smoking during pregnancy, both in Texas and in the nation [26]. Currently, only Hispanic women and women of 'Other' race/ethnicity are meeting the Healthy People 2020 target of at least 98.6 percent abstinence from smoking during pregnancy in Texas. While the overall proportion of women who smoke during pregnancy has decreased 44.6 percent in Texas over the past decade, there is still room for improvement, especially among White women (see Figure 25).

Figure 25



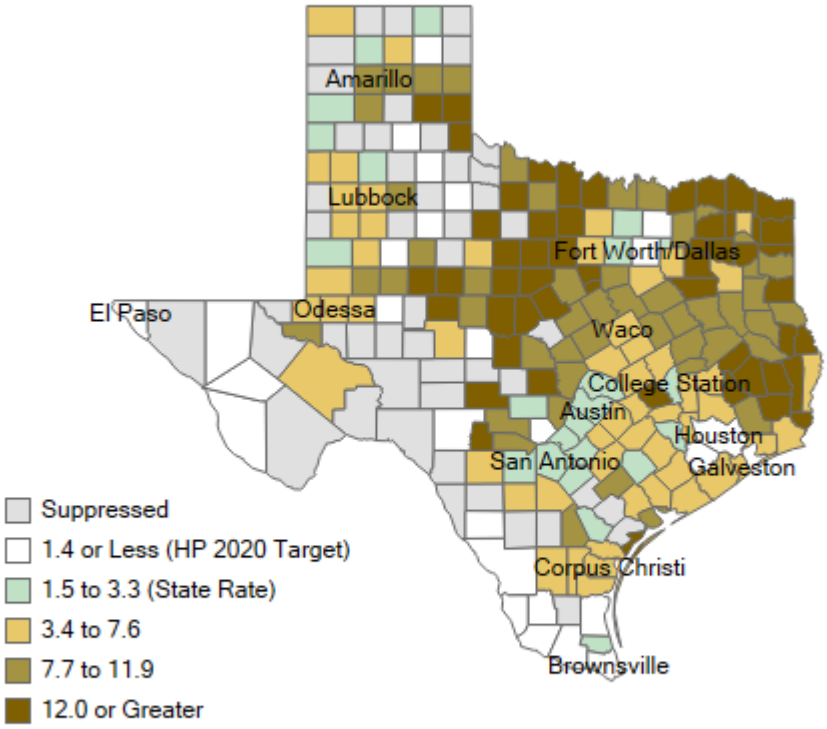
*2016 and 2017 Texas data are provisional
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

In 2008, 29.6 percent of women who smoked 3 months prior to pregnancy abstained from smoking (did not smoke at all) once becoming pregnant. In 2017, this rate of total abstinence from smoking during pregnancy among previous smokers had risen to 35.4 percent.

Regional differences in the prevalence of smoking during pregnancy exist throughout Texas (see Figure 26). In 2016, counties near the Texas-Mexico border generally had lower rates of smoking during pregnancy, whereas higher rates of smoking during pregnancy were observed in many counties in north and east Texas.

Figure 26

Percent of Live Births Where the Mother Smoked During Pregnancy, 2016



2016 Texas data are provisional
Source: 2016 Birth File
Prepared by: Maternal & Child Health Epidemiology Unit
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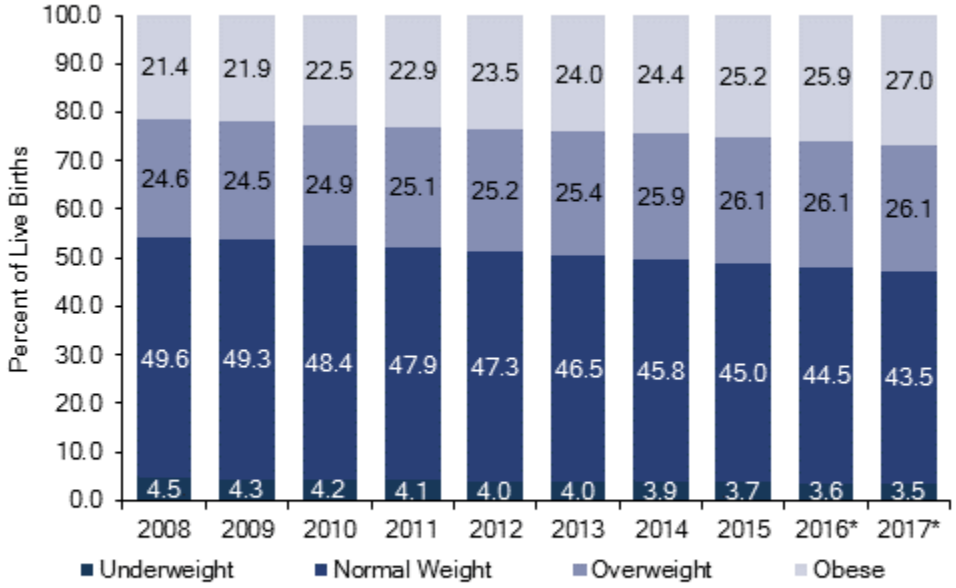
Pre-Pregnancy Obesity

Obesity is a well-known risk factor for developing hypertension, diabetes, and a variety of other medical problems during pregnancy [27, 28, 29]. Obese women are at higher risk for having a preterm birth or experiencing infant death than are non-obese women [30, 31, 32].

A rise in pre-pregnancy obesity has been observed over the past decade, both in Texas and in other states [6]. The proportion of mothers with a pre-pregnancy body mass index (BMI) in the obese range has increased 26.3 percent in Texas since 2008 (see Figure 27). In 2016, the pre-pregnancy obesity rate in Texas (25.9 percent) was very similar to the national rate (26.1 percent) [12].

Figure 27
Maternal Pre-pregnancy Body Mass Index Distribution for All Live Births, 2008-2017

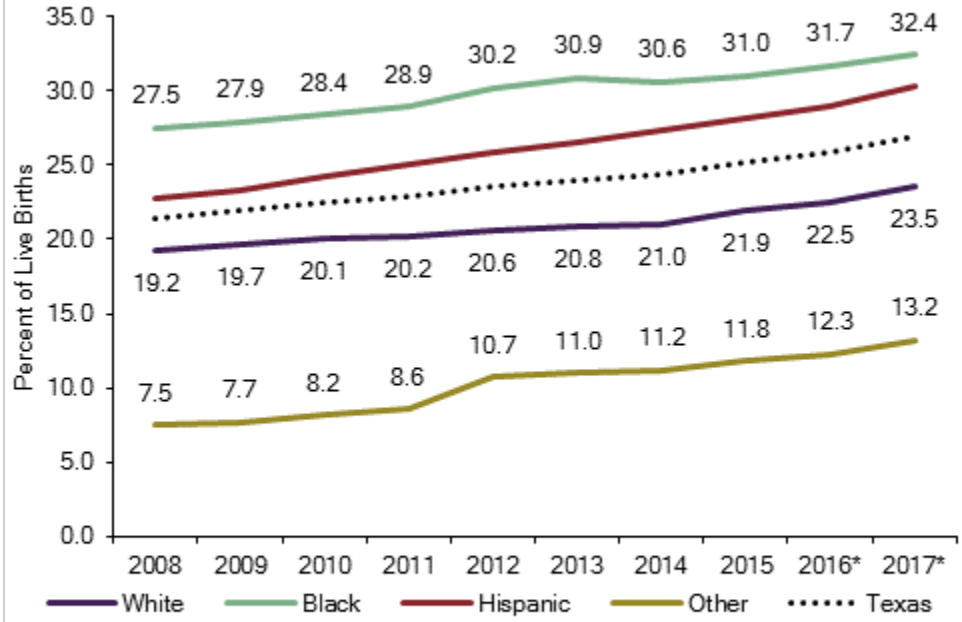


*2016 and 2017 Texas data are provisional
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Pre-pregnancy obesity is more prevalent among Black and Hispanic mothers than among White mothers or mothers of 'Other' race/ethnicity (see Figure 28). However, over the past decade, the rate of pre-pregnancy obesity has risen most steeply among mothers of 'Other' race/ethnicity; a 76.1 percent increase in pre-pregnancy obesity has been observed among mothers of this group since 2008. Hispanic mothers have also seen a relatively large increase in pre-pregnancy obesity between 2008 and 2017 (a 33.5 percent increase among Hispanic mothers, compared with increases of 17.8 and 21.9 percent among Black and White mothers, respectively).

Figure 28

Maternal Pre-pregnancy Obesity by Race/Ethnicity, 2008-2017

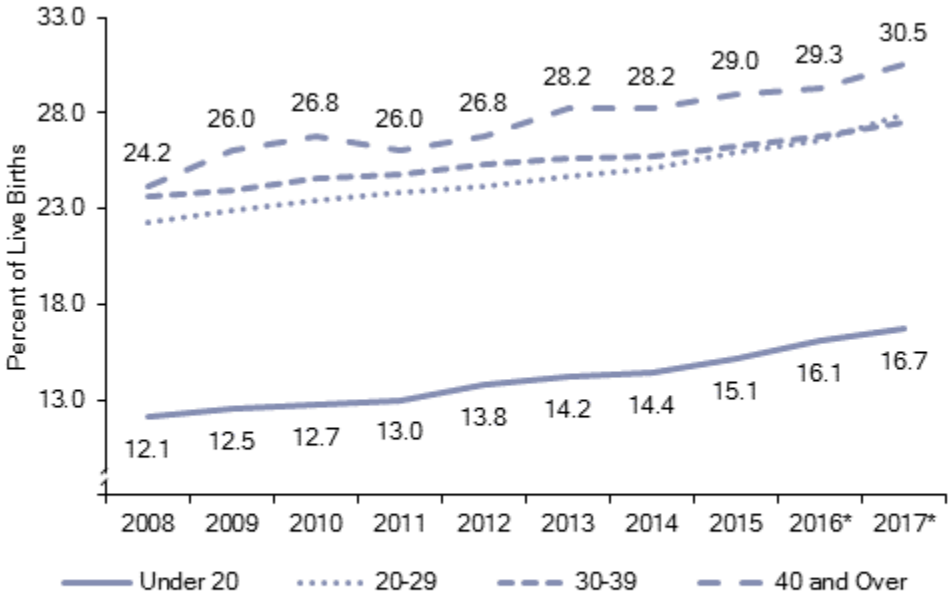


*2016 and 2017 Texas data are provisional
Source: 2008-2018 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Prevalence of pre-pregnancy obesity also differs by maternal age. In 2017, a much lower proportion of mothers younger than 20 years old were obese prior to pregnancy, compared with all older age groups. Mothers 40 years or older had the highest proportion of pre-pregnancy obesity. The rise in obesity rates over time has also differed by maternal age. Over the past decade, the largest percent increase in the prevalence of pre-pregnancy obesity has been observed for mothers younger than 20 years old, followed by mothers 40 years or older (see Figure 29).

Figure 29

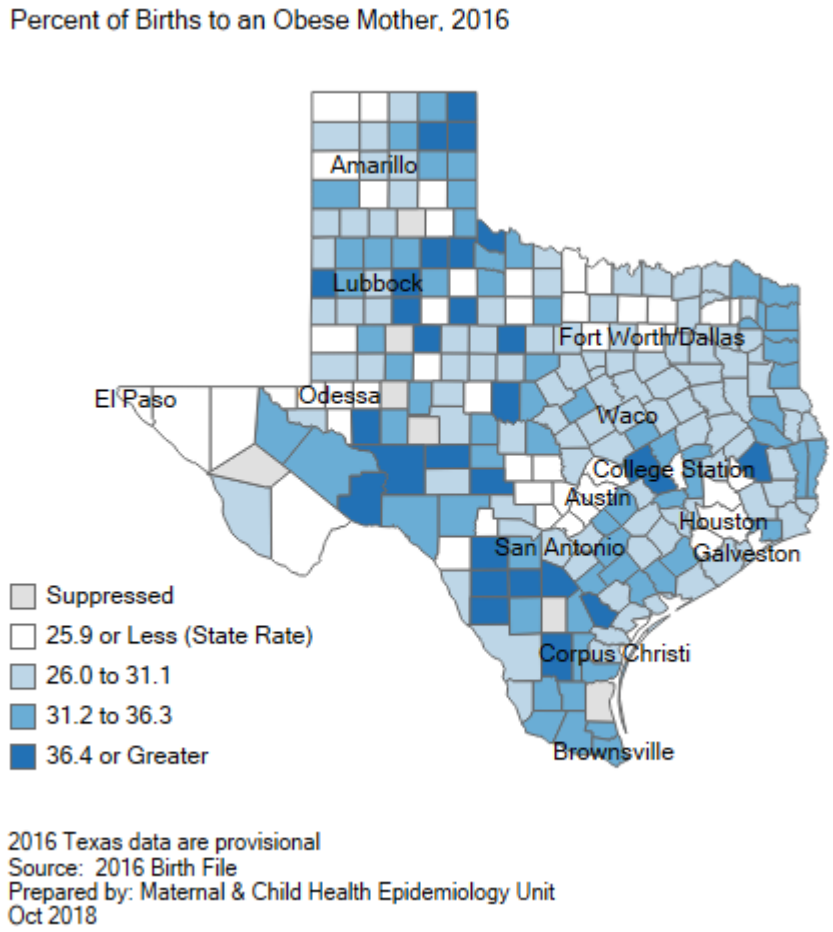
Maternal Pre-pregnancy Obesity by Age Group, 2008-2017



*2016 and 2017 Texas data are provisional
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Many rural and suburban counties in Texas have higher pre-pregnancy obesity rates than the state as a whole (see Figure 30). In addition to pre-pregnancy obesity rate differences observed between Texas counties, it is likely that within-county differences could also exist, since neighborhood environments (walkability, access to parks/sidewalks, access to healthy food choices) can vary widely even within the same county [33, 34].

Figure 30



Hypertension & Diabetes

According to 2017 birth certificate data, 8.1 percent of all live births were to mothers with some form of hypertension, and 6.1 percent of all live births were to mothers who had diabetes (these mothers either had diabetes or hypertension pre-pregnancy, or developed the condition over the course of the pregnancy). Rates of both hypertension and diabetes among mothers are slowly rising in Texas (see Figure 31 & Figure 32). In 2016, the rates of maternal diabetes and hypertension in Texas (5.7 percent and 7.5 percent, respectively) were slightly lower than the national rates (6.9 percent and 8.0 percent) [12]. As with many health outcomes, both hypertension and diabetes rates differ by race/ethnicity. Of all race/ethnic groups, Black women and White women have the highest percentages of maternal hypertension (see Figure 31), while women in the 'Other' race/ethnicity category and Hispanic women have the highest percentages of maternal diabetes (see Figure 32).

Figure 31

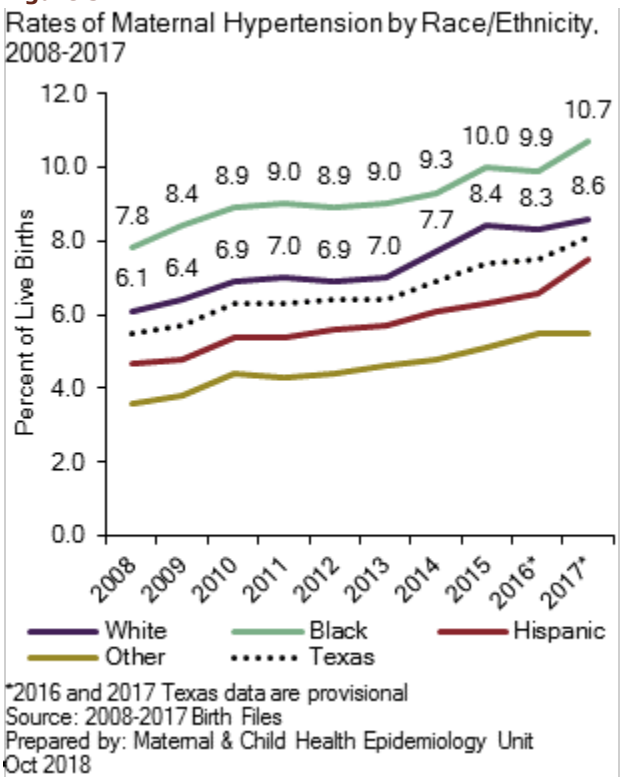
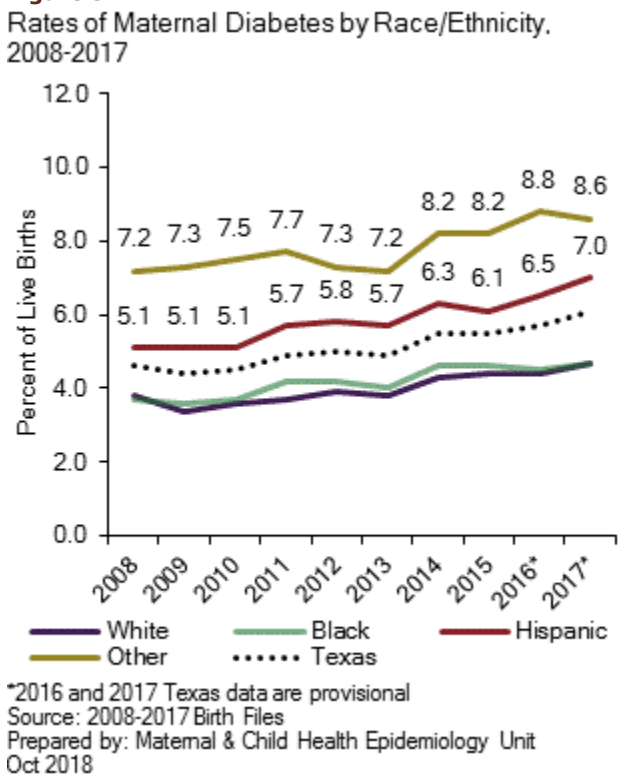


Figure 32



Pre-pregnancy obesity is associated with both hypertension and diabetes in the Texas data, as is seen in the literature [27, 28]. In 2016, 21.5 percent of all mothers with pre-pregnancy obesity also had hypertension, diabetes, or both conditions. In contrast, only 8.6 percent of mothers with normal pre-pregnancy BMI were hypertensive, diabetic, or had both conditions.

Women with diabetes and their infants are at increased risk for a variety of complications, including infant or fetal death. While a relatively small proportion (fewer than eight percent) of women who deliver in Texas each year have some form of hypertension, these women experience about 10 percent of all fetal and infant deaths. Additionally, these women experience a high rate of severe maternal morbidity. Hypertension/eclampsia is both a leading diagnosis of severe maternal morbidity and a leading cause of maternal death for Black women [35].

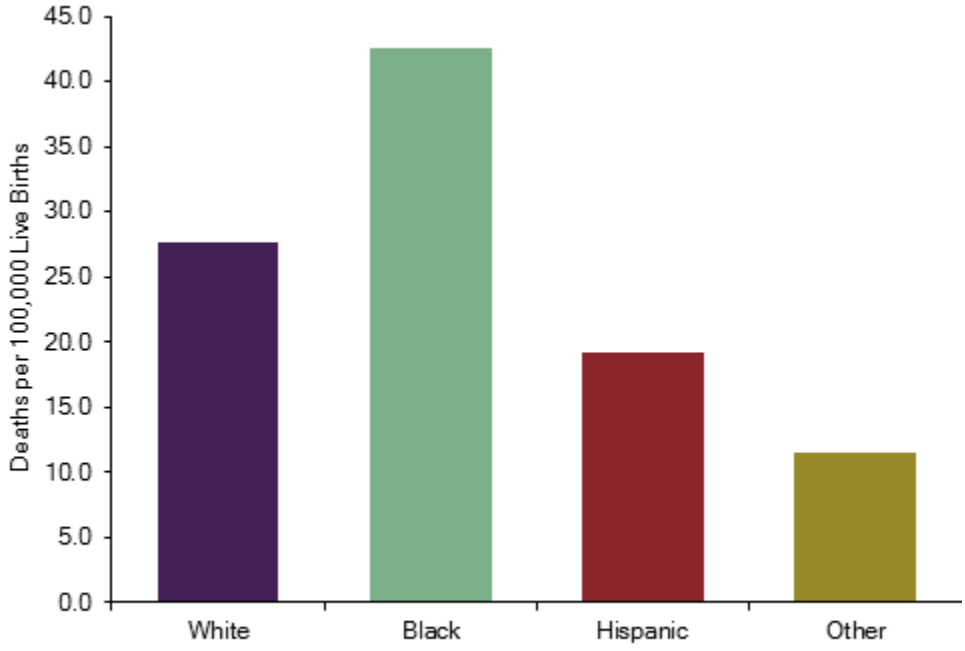
Maternal Mortality

The death of a mother is an immeasurable loss for her children and family. In this report, maternal death is defined as the death of a woman while pregnant or within 365 days of the end of a pregnancy.

Maternal death statistics shown in this report focus on numbers and corresponding rates of confirmed maternal death while pregnant or within 365 days of the end of pregnancy. A maternal death was considered confirmed if a woman's death record matched either a live birth or fetal death event that occurred within 365 days of the woman's death. In Texas, there were 382 confirmed maternal deaths in the four-year period from 2012 to 2015. For the combined years 2012-2015, the rate of confirmed maternal death among Black mothers (42.6 per 100,000 live births) was 1.5 times as high as the rate among White mothers (27.6 per 100,000 live births) and 2.2 times as high as the rate among Hispanic mothers (19.2 per 100,000 live births) (see Figure 33).

Figure 33

Rate of Confirmed Maternal Death in Texas by Race/Ethnicity, 2012-2015



Source: 2012-2015 Linked Birth, Fetal Death, and Maternal Death Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Mothers aged 40 years and older had the highest rate of confirmed maternal death of all age groups, at 55.0 maternal deaths per 100,000 live births. Higher rates of confirmed maternal death were also observed among women

with diabetes (39.9 per 100,000 live births), hypertension (56.3 per 100,000 live births), and pre-pregnancy obesity (29.2 per 100,000 live births), as well as among women who smoked during pregnancy (86.0 per 100,000 live births).

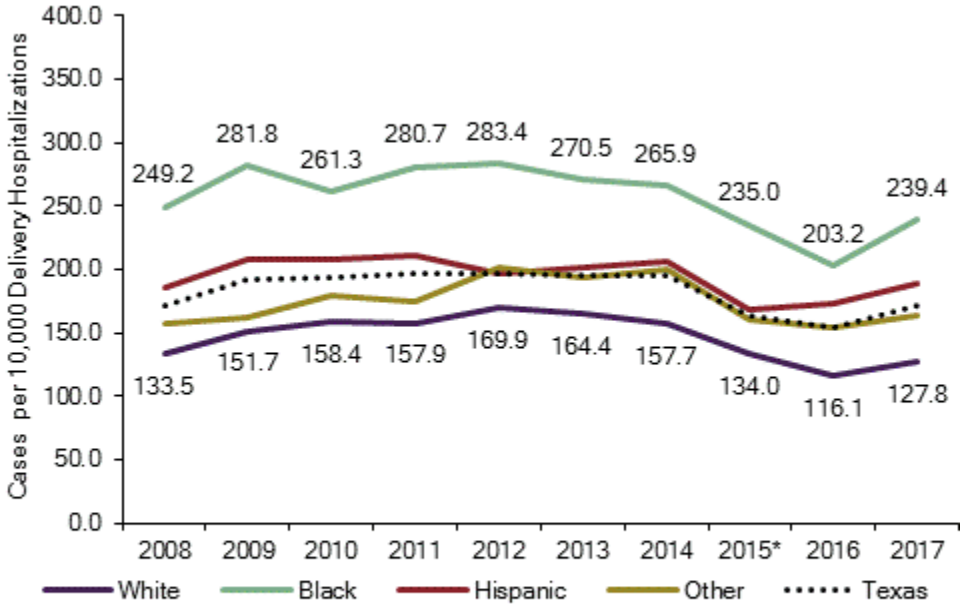
Between 2012 and 2015, the most common specific causes of death for mothers during pregnancy or within 365 days postpartum were drug overdose (16.8 percent), cardiac event (14.4 percent), homicide (11.0 percent), suicide (8.6 percent), and infection/sepsis (8.4 percent). The top causes of maternal death during pregnancy or within 7 days postpartum were hemorrhage (19.0 percent), cardiac event (17.7 percent), and amniotic embolism (12.7 percent).

The relatively large proportion of maternal deaths in Texas due to drug overdose is particularly concerning in light of the current opioid epidemic and recent increases in maternal opioid use during pregnancy [36]. The risk of maternal death due to drug overdose was higher for White mothers and for mothers aged 40 years or older. Opioids were involved in 58 percent of maternal deaths from drug overdose, and almost 80 percent of drug overdose deaths occurred after 60 days postpartum.

Severe Maternal Morbidity

Severe maternal morbidity (SMM) is closely related to maternal mortality, because it involves conditions that, if left untreated, could result in maternal death. SMM rates in the United States have been rising in the past decade [10]. According to data from Texas Hospital Inpatient Discharge Public Use Data Files, the SMM rate in Texas remained relatively stable from 2009 to 2014, and then appears to have decreased between 2014 and 2016, from 194.7 cases per 10,000 delivery hospitalizations to 154.4 cases per 10,000 delivery hospitalizations (see Figure 34). This decrease may be partially attributable to a coding change in the fourth quarter of 2015. The rate of SMM increased in 2017, to 169.7 cases per 10,000 delivery hospitalizations.

Figure 34
Rate of Severe Maternal Morbidity (SMM) in Texas, 2008-2017



*Data transitioned to ICD-10-CM in the last quarter of 2015.
Source: 2008-2017 Texas Hospital Inpatient Public Use Data Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

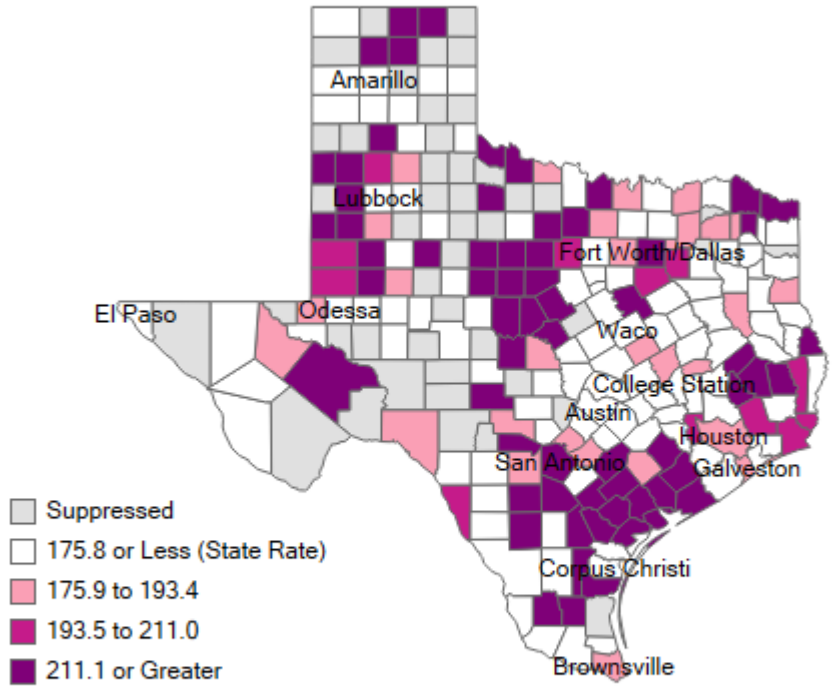
Mirroring the trends observed for maternal deaths, there are substantial racial/ethnic disparities in the rates of mothers with serious pregnancy complications (see Figure 34). Over the past ten years, Black mothers had higher rates of SMM than mothers of any other race/ethnic group. Although White mothers had higher maternal death rates than did Hispanic mothers, the opposite was true for SMM – higher SMM rates were observed among Hispanic mothers than among White mothers.

Blood transfusions were the most common SMM condition during 2008-2017. Other common SMM conditions observed in Texas included cardiac event, disseminated intravascular coagulation (DIC), hysterectomy, and eclampsia.

When looking at combined 2013-2017 SMM data, there are clear geographic differences in the rate of SMM. Many counties in southeast Texas and north Texas had a higher SMM rate than the state average.

Figure 35

Rate of Severe Maternal Morbidity per 10,000 Deliveries, 2013-2017



Data transitioned to ICD-10-CM in the last quarter of 2015
Source: 2013-2017 Texas Hospital Inpatient Public Use Data Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

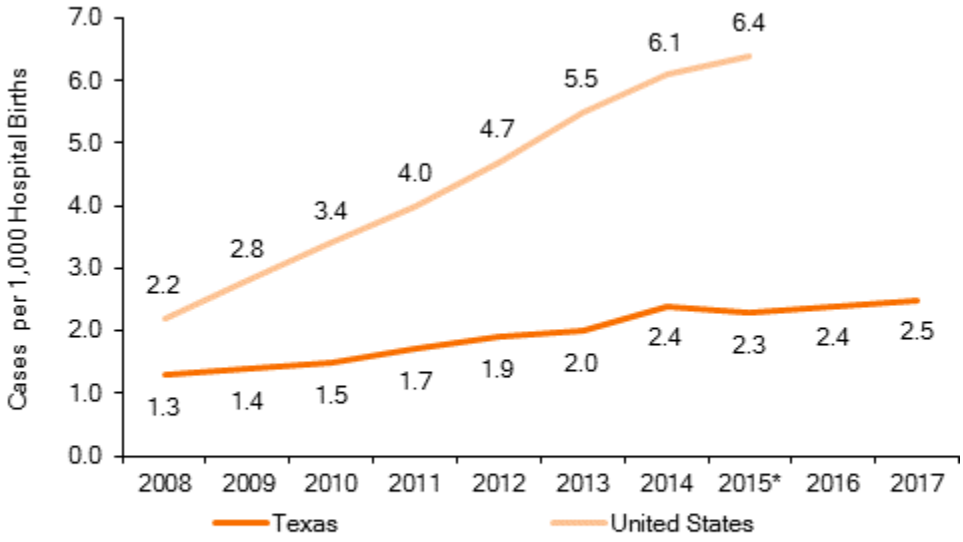
Maternal Drug Use and Neonatal Abstinence Syndrome

The use of opioids or certain other drugs during pregnancy can result in a drug withdrawal syndrome in newborns called neonatal abstinence syndrome (NAS). Newborns with NAS are more likely than other infants to have low birthweight, respiratory and feeding problems, and other complications [36]. Similarly, mothers who use drugs such as opioids during pregnancy are more likely to have complications, such as prolonged hospital stay and death before hospital discharge [37]. Since drug overdose is a frequent cause of maternal death in Texas, it is important to monitor the rate of maternal drug use during pregnancy. NAS data can be used as an indicator of trends of drug use in pregnant mothers, but because not all newborns whose mothers use drugs will develop NAS, the true incidence of drug use during pregnancy can be expected to be higher than the observed rate of NAS [36].

Data from the Texas Hospital Inpatient Discharge Public Use Data File indicate that the rate of infants born each year experiencing NAS has almost doubled since 2008 (see Figure 36). This was less than the increase observed in the rest of the United States, in which NAS rates increased almost threefold from 2008 to 2015. Texas has had lower rates of NAS than the national average over the past decade [38].

Figure 36

Rate of Neonatal Abstinence Syndrome (NAS) in Texas and the United States, 2008-2017

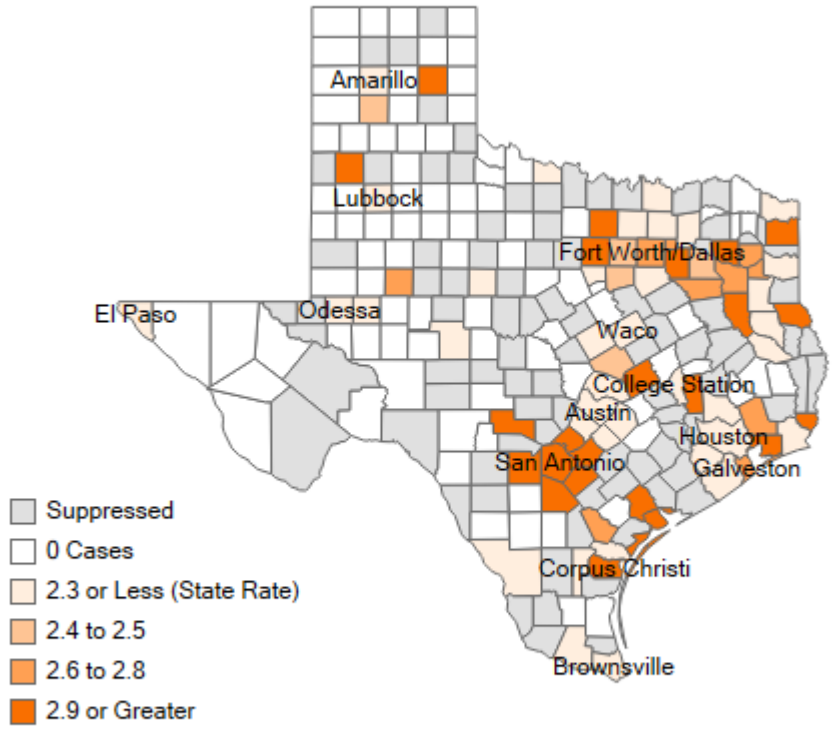


*Data transitioned to ICD-10-CM in the last quarter of 2015. United States data for 2015 represents only three quarters of the year (January through September)
Sources: 2008-2017 Texas Hospital Inpatient Public Use Data Files
2008-2015 Health Care Utilization Project - State Inpatient Database
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Based on combined data from 2013 to 2017, the county with the highest NAS rate in the state was Bexar County (9.9 per 1,000). Bexar County has reported the highest annual number of NAS cases since 2008, accounting for almost 30 percent of Texas' total NAS cases during 2013-2017.

Figure 37

Neonatal Abstinence Syndrome Rate per 1,000 Hospital Births, 2013-2017

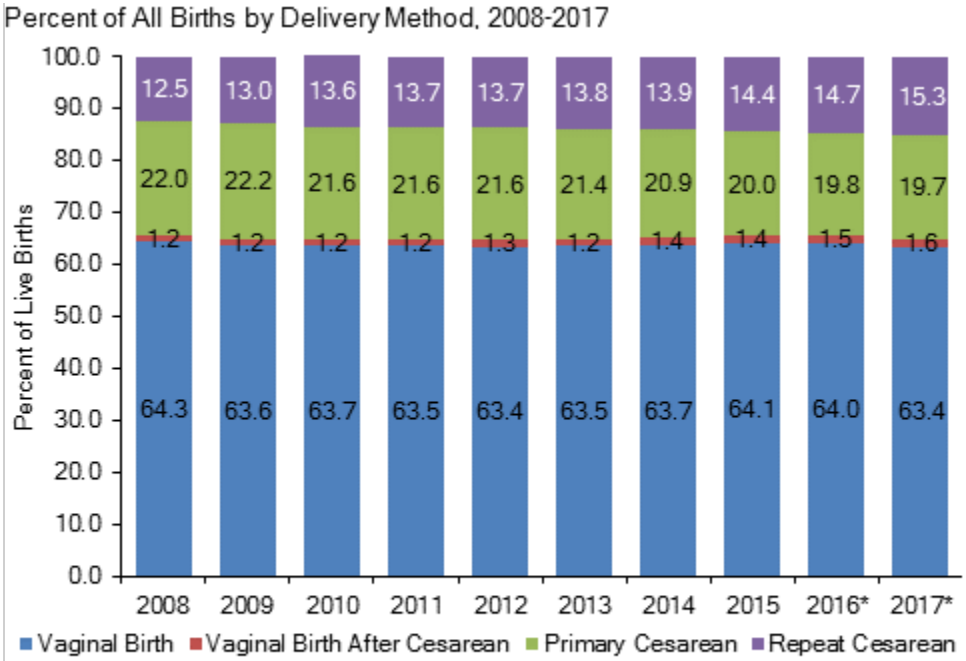


Data transitioned to ICD-10-CM in the last quarter of 2015
Source: 2013-2017 Texas Hospital Inpatient Public Use Data Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Delivery

The method of delivery for live births in Texas has remained relatively stable from 2007 to 2016 (see Figure 38). In 2017, 65.0 percent of all Texas deliveries were vaginal births, and 35.0 percent of deliveries were by cesarean section. The percent of infants born via primary cesarean section (cesarean section in a woman who has not previously had a cesarean section) has decreased since 2009; however, the proportion of infants born via repeat cesarean has increased. In 2016, the cesarean delivery rate in Texas (34.4 percent) was higher than the national rate (31.9 percent). The vaginal birth after cesarean rate (i.e., the number of vaginal births after cesarean per 100 births to women with a prior cesarean delivery) in Texas (9.4 percent) was also lower than the national rate (12.4 percent) in 2016.

Figure 38



*2016 and 2017 Texas data are provisional
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
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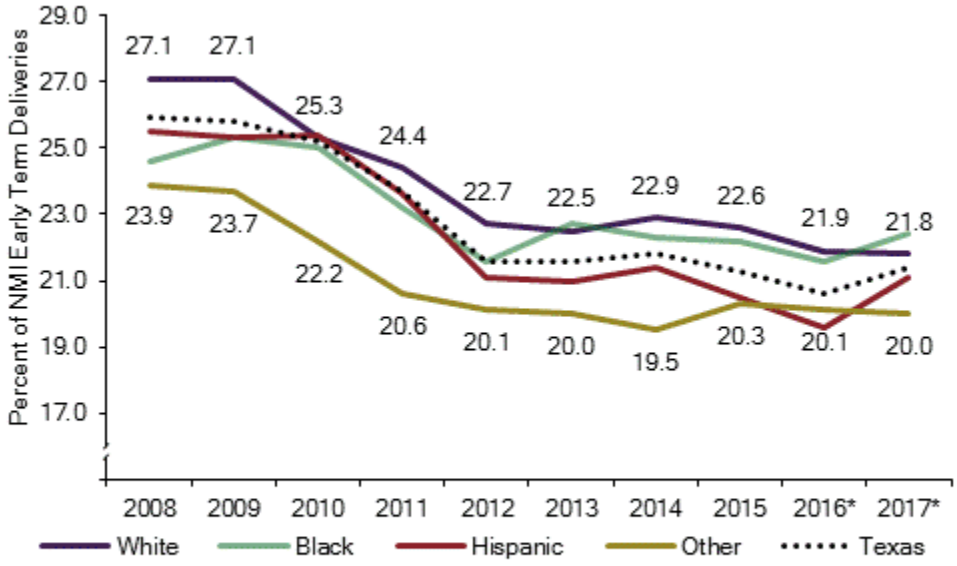
Early Non-medically Indicated Elective Cesarean Delivery Rates

The cesarean section rates mentioned above are overall rates that reflect both medically necessary and elective cesarean deliveries. Whether or not a cesarean section is elective is difficult to assess using the Texas birth file. Criteria that would identify a cesarean delivery as medically necessary are not well documented on the birth certificate [1, 2]. However, early non-medically indicated (NMI) elective cesarean delivery rates were estimated, based on a method developed for The Collaborative Improvement and Innovation Network to Reduce Infant Mortality (IM CoIIN) using data available from the birth certificate [39].

Approximately 21.4 percent of all NMI early term deliveries in Texas occurred via elective cesarean section in 2017. Overall, the percent of NMI early term deliveries by elective cesarean section in Texas has declined since 2009. Notably, among White mothers, the early NMI elective cesarean section rate has decreased 19.6 percent from 2008 to 2017. Hispanic mothers and mothers in the 'Other' race/ethnicity category had lower early NMI elective cesarean section rates in 2017 than the state average, while White mothers and Black mothers have higher early NMI elective cesarean section rates than the state average (see Figure 39).

Figure 39

Early Non-medically Indicated (NMI) Elective Cesarean Delivery Rate by Race/Ethnicity, 2008-2017

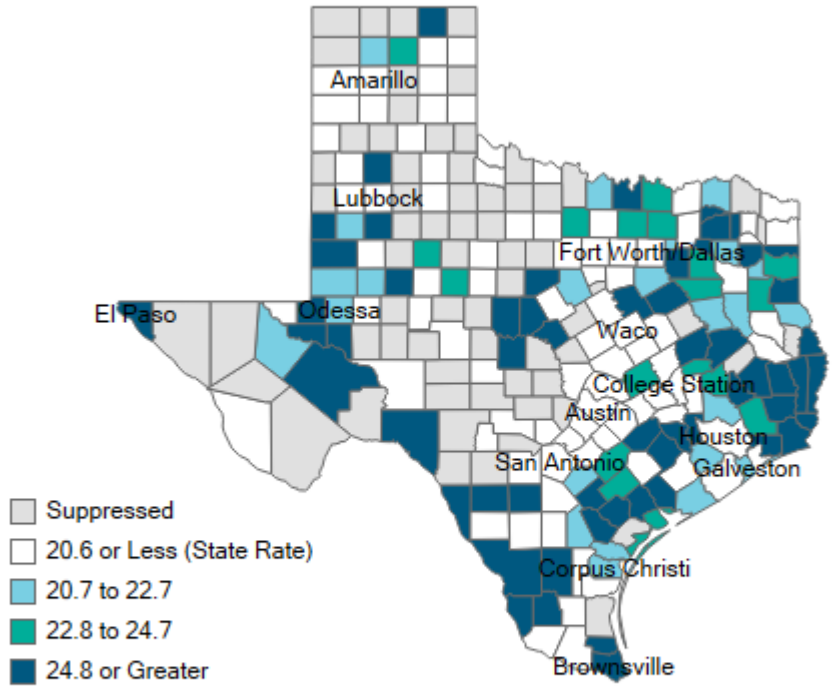


*2016 and 2017 Texas data are provisional
The IM CoIIN method was used to identify early NMI elective cesarean deliveries.
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Regional differences in early NMI elective cesarean section rates are also observed in Texas. The majority of counties with high early NMI elective cesarean section rates (compared to the state rate) are located in south and southeast Texas (see Figure 40).

Figure 40

Early Non-medically Indicated Elective Cesarean Section Rate, 2016



2016 Texas data are provisional
Source: 2016 Birth File
Prepared by: Maternal & Child Health Epidemiology Unit
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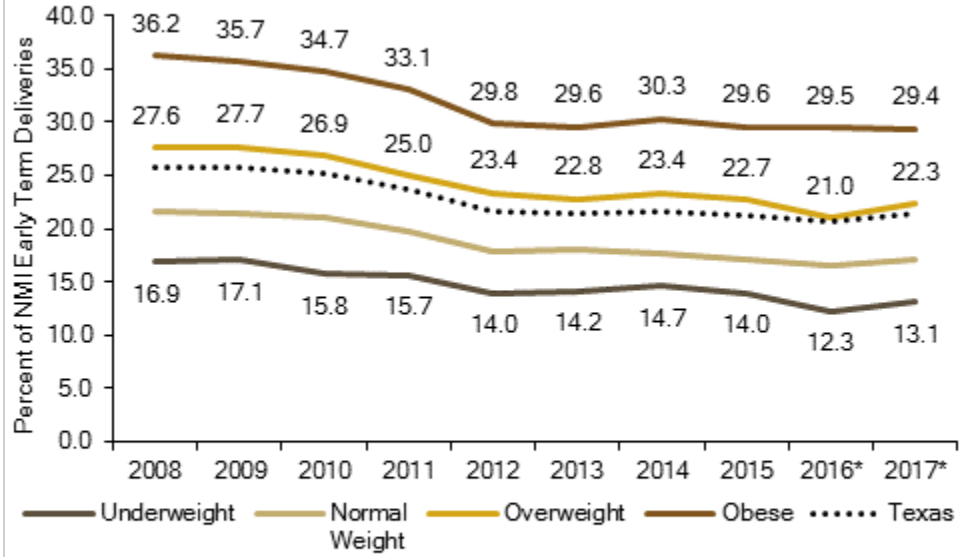
Early NMI elective cesarean section rates also differ by mothers' weight category (based on pre-pregnancy BMI). Mothers with pre-pregnancy obesity have a higher early NMI elective cesarean section rate than mothers of all other pre-pregnancy weight categories (see Figure 41).

Figure 41

Early Non-medically Indicated (NMI) Elective Cesarean Delivery Rate by BMI Category, 2008-2017



*2016 and 2017 Texas data are provisional
The IM CoIIN method was used to identify early NMI elective cesarean deliveries.
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

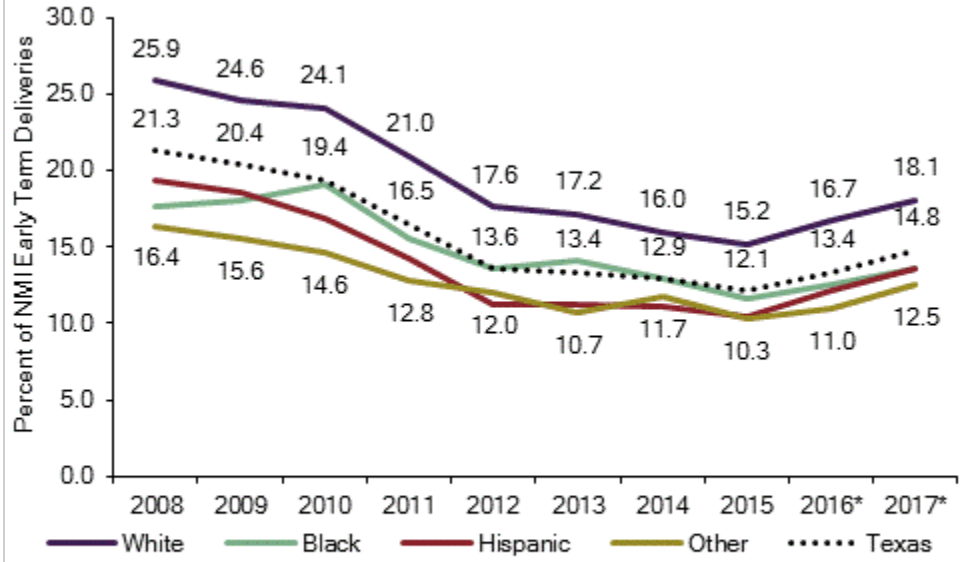
Early Non-medically Indicated Elective Labor Induction Rates

In this subsection, elective labor induction rates and patterns are examined among early term deliveries without medical conditions that could possibly justify an early term delivery. Again, the IM CoIIN method was used to identify early NMI elective labor inductions.

The early NMI elective labor induction rate increased slightly for the second year in a row in 2017, after decreasing from 2008 to 2015. Among NMI early term deliveries, White mothers had the highest prevalence of elective labor induction (see Figure 44).

Figure 42

Early Non-medically Indicated (NMI) Elective Labor Induction Rate by Race/Ethnicity, 2008-2017

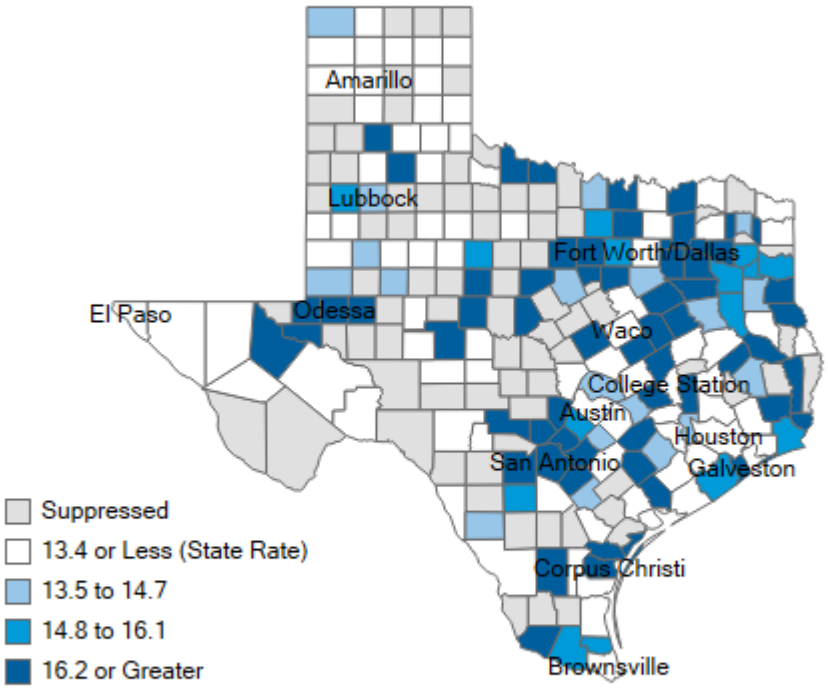


*2016 and 2017 Texas data are provisional
The IM CoIIN method was used to identify early NMI elective labor inductions.
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Many counties in north, northeast, and south central Texas have higher percentages of NMI early term deliveries occurring via elective labor induction than the state rate (see Figure 43).

Figure 43

Early Non-medically Indicated Elective Labor Induction Rate, 2016

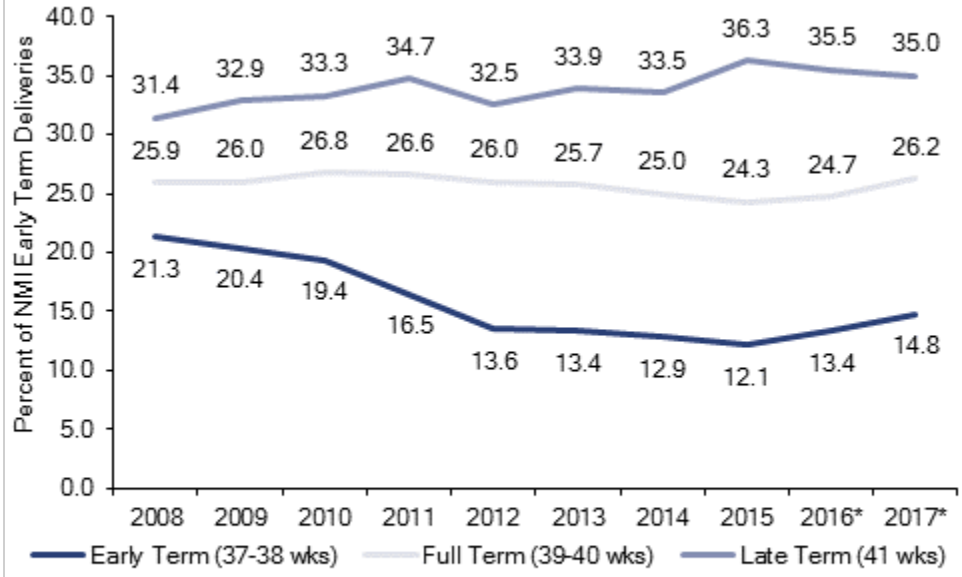


2016 Texas data are provisional
Source: 2016 Birth File
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Elective induction rates were also analyzed by gestational age category for all births without medical conditions, potentially justifying delivery prior to 39 weeks of gestation. In 2017, the NMI elective induction rate was 35.0 percent among late-term births (41 weeks of gestation and later) in Texas, compared with 26.2 percent among full-term births (39-40 weeks of gestation) and 14.8 percent among early term births (37-38 weeks of gestation) (see Figure 44). The proportion of NMI early term deliveries occurring via elective labor induction has decreased substantially since 2010, likely due, in part, to Medicaid policy changes in October 2011 (Texas House Bill 1983), which denies payment by Medicaid for elective deliveries (either via induction of labor or by cesarean section) that take place prior to 39 weeks of gestation [40].

Figure 44

Non-medically Indicated (NMI) Elective Induction Rate by Gestational Age Category, 2008-2017



*2016 and 2017 Texas data are provisional
The IM CoIIN method was used to identify early NMI elective labor inductions.
Source: 2008-2017 Birth Files
Prepared by: Maternal & Child Health Epidemiology Unit
Oct 2018

Conclusion

This report provides an overview of a variety of infant health indicators, as well as several indicators of maternal health during pregnancy. Over the past decade, Texas has seen a reduction in the teen birth rate, the percentage of women who smoke during pregnancy, and the early non-medically indicated elective cesarean section and labor induction rates. However, during this same time period, the state has experienced an increase in maternal diabetes, maternal hypertension, and neonatal abstinence syndrome.

Provisional 2016 and 2017 birth and death certificate data are presented in this report before they have been finalized by the DSHS Center for Health Statistics. After remaining relatively stable for several years, the Texas birth rate decreased in 2017 for the second year in a row. Also in 2017, the percent of births born preterm in Texas increased for the second consecutive year, reversing some of the steady decline seen from 2008 to 2015.

Substantial race/ethnic disparities exist for infant and maternal health indicators, including rates of infant mortality, preterm birth, maternal mortality, and severe maternal morbidity. Black mothers and infants have significantly higher rates of each of these adverse health outcomes than do other race/ethnic groups. Infant health practices and maternal health indicators also differ by race/ethnicity in Texas. In addition, geographic and regional differences were observed throughout Texas, especially for teen birth rates, prevalence of smoking during pregnancy, and neonatal abstinence syndrome rates.

In 2016, national vital statistics data and state rankings were available for several new health indicators. Compared with other states, Texas has one of the lowest rates of maternal smoking during pregnancy. However, Texas's teen birth rate and preterm birth rate continue to be higher than national rates, and the percent of mothers receiving early prenatal care in Texas was the lowest in the nation during 2016.

It is hoped that the information presented in this report can help public health workers, researchers, and policymakers identify trends and disparities in infant and maternal health outcomes in Texas, so that they are better able to make data-driven decisions on where best to allocate resources and efforts to improve these outcomes.

More Information on Infant & Maternal Health in Texas

Gestational Diabetes in Medicaid: Prevalence, Outcomes, and Costs

Report released in 2014 focusing on the rates and costs of gestational diabetes in the Texas Medicaid population. This study shows that the rate of diabetes among pregnant women enrolled in Medicaid is underestimated on the birth certificate and provides a clearer estimate of the impact of gestational diabetes on this population.

Center for Health Statistics: Direct links to health-related data

Contains vital statistics tables and reports providing basic health-related data at the state and county level.

Texas Health Data

This online query tool from DSHS allows you to create tables of basic birth statistics at the state or county level. The tool can be used to compare race/ethnicities, education level, marital status, and a variety of other demographics across major birth outcome indicators.

Maternal & Child Health

Contains the PRAMS annual reports as well as links to other information about maternal and child health and community-based initiatives.

March of Dimes PeriStats

Online query tool from the March of Dimes that covers a variety of infant health indicators that can be compared across different states in the country or across years for single regions/states.

Maternal Mortality and Morbidity in Texas

Contains information about the Maternal Mortality and Morbidity Task Force, as well as a number of reports and presentations on maternal mortality and morbidity in Texas.

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Figure 5. Teen (15-19 years old) Birth Rate by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	32.8	61.2	87.9	17.2	59.7
2009	32.0	57.9	83.3	15.1	57.4
2010	30.7	56.0	73.8	9.6	52.2
2011	26.9	48.9	64.7	8.5	45.9
2012	24.4	43.0	59.9	14.9	42.3
2013	23.9	39.9	54.3	15.0	39.7
2014	21.8	36.9	49.4	13.4	36.3
2015	20.5	33.1	44.3	12.0	33.0
2016*	17.6	29.5	39.5	10.9	29.4
2017*	16.1	26.7	34.0	9.4	25.9

Rate per 1,000 in the population
2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 8. Infant Mortality Rate in Texas by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	5.9	9.9	5.4	6.7	6.1
2009	5.1	11.3	5.2	6.9	6.0
2010	5.5	11.4	5.5	3.8	6.1
2011	4.8	11.0	5.2	3.7	5.7
2012	5.3	11.6	5.2	3.4	5.8
2013	5.0	11.9	5.2	4.0	5.8
2014	4.9	11.1	5.4	4.2	5.8
2015	4.9	10.9	5.2	3.4	5.6
2016*	4.9	10.9	5.1	3.7	5.6

Rate per 1,000 live births
2008-2016 Texas Birth and Death files; 2016 data are provisional

Figure 14. Percent of Live Births Born Preterm (Obstetric Estimate) by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	10.9	15.1	10.6	10.3	11.2
2009	10.8	15.4	10.4	9.6	11.1
2010	10.2	14.8	10.5	10.2	10.9
2011	10.1	14.3	10.4	9.9	10.7
2012	10.0	14.5	10.1	9.6	10.5
2013	9.7	13.9	10.1	10.3	10.4
2014	9.7	14.0	10.1	9.6	10.3
2015	9.6	13.6	9.8	9.3	10.2
2016*	9.6	13.6	10.3	9.6	10.4
2017*	9.4	14.3	10.6	9.3	10.6

Computed using the obstetric estimate of gestation
2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 17. Percent of Births that are Low Birth Weight by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	7.7	14.0	7.7	9.1	8.4
2009	7.8	14.2	7.6	9.0	8.5
2010	7.5	13.9	7.7	9.5	8.4
2011	7.6	13.6	7.8	9.5	8.5
2012	7.3	13.9	7.5	9.1	8.3
2013	7.3	13.2	7.7	9.7	8.3
2014	7.2	13.4	7.5	9.1	8.2
2015	7.1	13.3	7.7	9.1	8.3
2016*	7.2	13.5	7.9	9.0	8.4
2017*	7.1	13.9	7.9	8.9	8.4

2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 22. Percent of Live Births Where Mother Received Prenatal Care in the First Trimester

Year	White	Black	Hispanic	Other	Texas
2008	73.0	53.6	54.4	70.6	61.5
2009	72.7	53.1	54.6	69.1	61.4
2010	73.5	54.2	58.6	69.9	63.9
2011	75.0	57.0	61.6	69.8	66.3
2012	75.2	55.6	61.6	68.7	66.2
2013	75.0	56.1	61.5	67.9	66.1
2014	74.2	56.0	60.2	67.2	65.2
2015	75.2	56.6	61.1	67.0	65.9
2016*	74.5	54.9	60.7	66.2	65.1
2017*	75.7	56.3	62.5	65.9	66.4

Computed using the obstetric estimate of gestation
2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 25. Percent of Live Births Where Mother Smoked During Pregnancy

Year	White	Black	Hispanic	Other	Texas
2008	11.5	5.4	1.5	1.8	5.4
2009	11.0	5.4	1.3	1.5	5.1
2010	10.3	5.1	1.3	1.6	4.9
2011	9.8	4.7	1.2	1.5	4.6
2012	9.2	4.7	1.2	2.1	4.4
2013	9.1	4.4	1.2	2.0	4.3
2014	8.1	4.1	1.1	1.9	3.9
2015	7.6	3.6	1.0	1.6	3.6
2016*	6.9	3.4	1.0	1.3	3.3
2017*	6.3	3.1	0.9	1.3	3.0

2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 31. Maternal Hypertension by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	6.1	7.8	4.7	3.6	5.5
2009	6.4	8.4	4.8	3.8	5.7
2010	6.9	8.9	5.4	4.4	6.3
2011	7.0	9.0	5.4	4.3	6.3
2012	6.9	8.9	5.6	4.4	6.4
2013	7.0	9.0	5.7	4.6	6.4
2014	7.7	9.3	6.1	4.8	6.9
2015	8.4	10.0	6.3	5.1	7.4
2016*	8.3	9.9	6.6	5.5	7.5
2017*	8.6	10.7	7.5	5.5	8.1

2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 32. Maternal Diabetes by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	3.8	3.7	5.1	7.2	4.6
2009	3.4	3.6	5.1	7.3	4.4
2010	3.6	3.7	5.1	7.5	4.5
2011	3.7	4.2	5.7	7.7	4.9
2012	3.9	4.2	5.8	7.3	5.0
2013	3.8	4.0	5.7	7.2	4.9
2014	4.3	4.6	6.3	8.2	5.5
2015	4.4	4.6	6.1	8.2	5.5
2016*	4.4	4.5	6.5	8.8	5.7
2017*	4.7	4.7	7.0	8.6	6.1

2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 39. Early Non-medically Indicated (NMI) Elective Cesarean Delivery Rate by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	27.1	24.6	25.5	23.9	25.9
2009	27.1	25.3	25.3	23.7	25.8
2010	25.3	25.0	25.4	22.2	25.2
2011	24.4	23.2	23.6	20.6	23.7
2012	22.7	21.6	21.1	20.1	21.6
2013	22.5	22.7	21.0	20.0	21.6
2014	22.9	22.3	21.4	19.5	21.8
2015	22.6	22.2	20.5	20.3	21.3
2016*	21.9	21.6	19.6	20.1	20.6
2017*	21.8	22.4	21.1	20.0	21.4

The IM CoIIN method was used to identify early NMI elective cesarean deliveries.
2008-2017 Texas Birth files; *2016 and 2017 data are provisional

Figure 42. Early Non-medically Indicated (NMI) Elective Labor Induction Rate by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2008	25.9	17.7	19.4	16.4	21.3
2009	24.6	18.0	18.6	15.6	20.4
2010	24.1	19.1	16.9	14.6	19.4
2011	21.0	15.5	14.3	12.8	16.5
2012	17.6	13.6	11.3	12.0	13.6
2013	17.2	14.1	11.2	10.7	13.4
2014	16.0	12.9	11.1	11.7	12.9
2015	15.2	11.6	10.5	10.3	12.1
2016*	16.7	12.5	12.1	11.0	13.4
2017*	18.1	13.6	13.6	12.5	14.8

The IM CoIIN method was used to identify early NMI elective labor inductions.
2008-2017 Texas Birth files; *2016 and 2017 data are provisional