2015
HEALTHY TEXAS BABIES: DATA BOOK

Prepared by: Department of State Health Services, Office of Program Decision Support

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CONTENTS

PURPOSE & OVERVIEW

The purpose of this data book is to provide an in-depth analysis of infant and maternal health in Texas. The data book is not meant to repeat data found in other places; rather, it is meant to bring these sources together to be analyzed in a way that creates a more nuanced view of the state of maternal and infant health in Texas. The data that are presented in this report are from vital records including the Birth, Death, and linked Birth-Death Files. The findings from the vital records are also supported with results from the Pregnancy Risk Assessment Monitoring System (PRAMS).

It is important to understand that there are limitations to the data presented here, as there are with all public health data sources. The vital records files are a rich source of data; however, the quality of that data is inherently reliant on the procedures in the hospital for completing the birth record or file. Several efforts in other states have shown reporting and quality variations in how the birth file is completed among hospitals; especially in regard to maternal health information[5]. These studies suggest that the birth file underreports the prevalence of many maternal health indicators. Data from the birth and death file become available before they are finalized. These data are preliminary since they have not been thoroughly "cleaned", and as such, there are limitations on the data elements that can be presented. In this report, geographic information is not analyzed for any preliminary data. Additionally, race/ethnicity is not presented for preliminary death data. In this Data Book, 2014 data are preliminary, but all other data are final.

The PRAMS survey is administered by Texas A&M University as a subcontract with the Office of Program Decision Support (OPDS). OPDS receives a grant from the Centers for Disease Control and Prevention (CDC) to oversee the administration of the national survey questions, as well as certain state specific questions. The full methodology of PRAMS can be found in the PRAMS annual report. Because PRAMS is a survey that includes approximately 1,500 mothers, it can only approximate the prevalence of health indicators in the population; it is not a true measure of the population. Additionally, PRAMS is self-reported data; therefore, the quality of the data is affected by the mother's understanding of the health question she is being asked and her willingness to truthfully report that behavior or condition. As with the vital statistics data, there may be systematic under- or over-reporting of some of the health indicators in PRAMS[1]. 2012 is the most recent PRAMS data, but is used sparingly.

Despite these limitations, it is important to point out that the vital records and PRAMS are considered invaluable sources of data on the status of maternal risk and health pre-pregnancy, during pregnancy, and post-pregnancy. These sources provide a rich understanding of maternal and infant health and can provide a starting point for understanding the scope of several risk factors in the state, and identify possible avenues for intervention to improve the health of mothers and infants in Texas.

DATA TERMS

Communities: In this report the term "communities" refers to core base statistical areas (CBSA) as defined by the Census Bureau. CBSAs are micropolitan and metropolitan areas. CBSAs are multi-county communities that are defined by a high degree of social and economic integration between the counties. To be consistent with *2014 Health Texas Babies: Databook* & *2013 Health Texas Babies: Databook*, this report uses the CBSA definitions released in 2013, with two exceptions. First, the traditional metropolitan area of Dallas-Fort Worth was divided into three areas: Fort Worth-Arlington, Dallas-Plano, and the remaining outlying counties of the metropolitan area. Second, the county of Galveston was removed from the Houston-The Woodlands CBSA so that county could be analyzed separately.

Gestational Age: Gestational age is used in the calculation of preterm births, as well as calculations of when the mother received prenatal care. However, gestational age is inherently unknown and must be estimated. Beginning with final 2014 data, the National Center for Health Statistics will change the variable that they use to estimate gestation[7]. In 2014, that standard will be using the obstetric estimation of gestation on the birth certificate, not a combination of last menstrual period and this estimate, as had been done in the past. This modification has resulted in significant changes in the rates of birth across all gestational categories. Through this 2015 report, these changes in rates are highlighted.

Infant Mortality: Infant mortality rate (IMR) is 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 women who listed Texas as their state of residence.

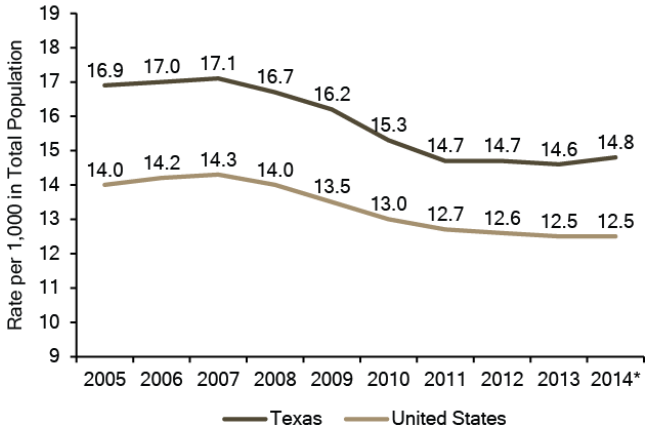
Causes of Infant Death: The cause of death categories are taken from the National Center for Health Statistics handbook for ranking causes of death. These ranked causes are not exhaustive of all infant deaths. Additionally, these causes hold different definitions than other definitions of infant death, notably: preterm causes of death, unknown causes of death, and sleep related deaths have different definitions, depending on the report. All causes of infant death are reported as the number of deaths per 10,000 live births.

Race/Ethnicity: The race/ethnicity reported throughout this report refers to the mother, not the infant. White and Black women are those women who identified themselves as only White or Black and indicated that they were not Hispanic. Hispanic women are those women who identified as Hispanic regardless of the race designation. Women who were classified in the "other" category were all other races including multiracial women 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 the women who are in this category. The shifts within this group need to be studied more closely, but it is clear that since 2004, there has been a decrease in the number of Vietnamese women in this category and an increase in the number of women identified as multiracial.

BIRTH DEMOGRAPHICS

The birth rate in Texas rose in 2014 for the first time since 2007 (see Figure 1). Texas has the fourth highest birth rate in the United States. In 2014, more than 400,000 babies were born in the state and there were more than 390,000 births to mothers that live in Texas.

Figure 1
Birth Rate in Texas and The United States, 2005-2014

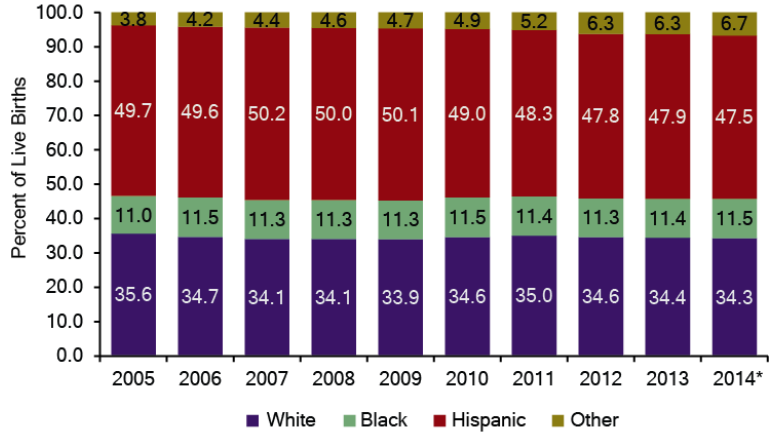


*2014 Texas and United States data are preliminary
Source: 2005-2014 Texas Birth Files,
National Center for Health Statistics
Prepared by: Office of Program Decision Support
Sept 2015

MATERNAL RACE/ETHNICITY

Hispanic women are the largest race/ethnic group giving birth among all Texas residents. However, there has been a consistent shift in the demographics of women giving birth (see Figure 2).

Figure 2
Distribution of Race/Ethnic Groups Among All Live Births, 2005-2014



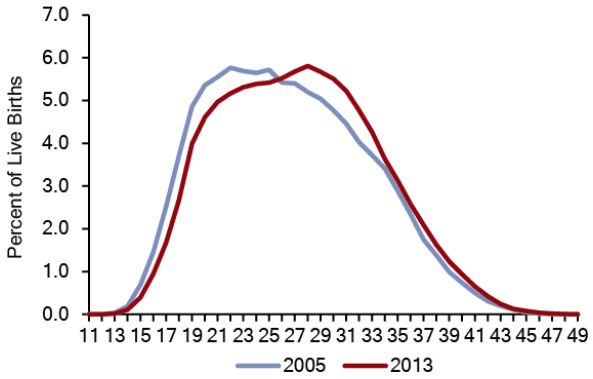
*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Women that are classified in the "other" race/ethnic group are the fastest growing demographic group giving birth in the state. This group is small in comparison to other groups in the state, but represents a substantial number of births. Over 24,000 births in 2013 were to mothers who classified themselves as Asian, Middle Eastern, mixed race and other race/ethnic designations. The diversity and heterogeneity of this group is high and should be kept in mind when viewing data from this group.

MATERNAL AGE

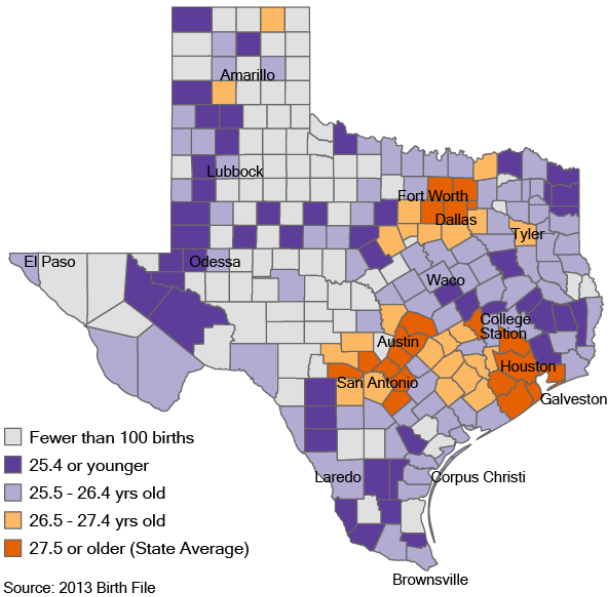
Texas has also seen a significant shift in the average maternal age of women with a live birth. In 2013, the average age of women in the birth cohort was 27.3 years old, a significant increase from 26.3 years old in 2005 (see Figure 3).

Figure 3
Maternal Age Distribution in 2005 and 2013



Source: 2005 & 2013 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Figure 4
Average Age of Women with a Live Birth, 2013

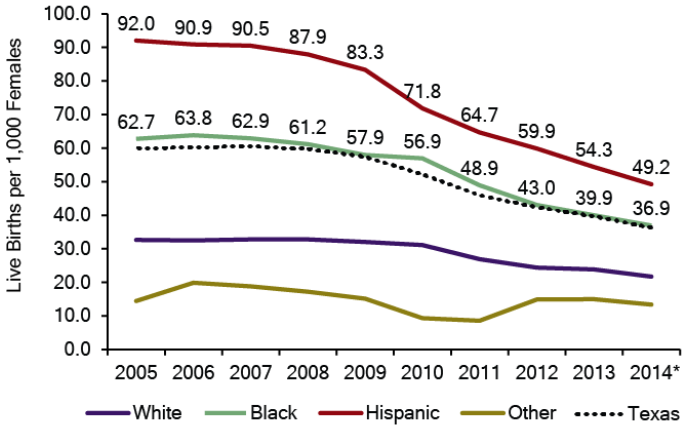


Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

The average age of women with a live birth shows regional differences (see Figure 4). Generally, the interior counties with major urban centers have the oldest average maternal ages, whereas, border and rural regions have younger average maternal ages.

Part of the driving force behind this significant change in the average maternal age is a marked decrease in the teen birth rate. Texas, like the rest of the country, has seen marked and dramatic decreases in the teen birth rate, especially since 2007. This drop has been particularly steep for Hispanic and Black youth (see Figure 5). The teen birth rate among Hispanic youth has declined by 46.5 percent in the past 10 years. This rate has declined 41.1 percent among Black youth.

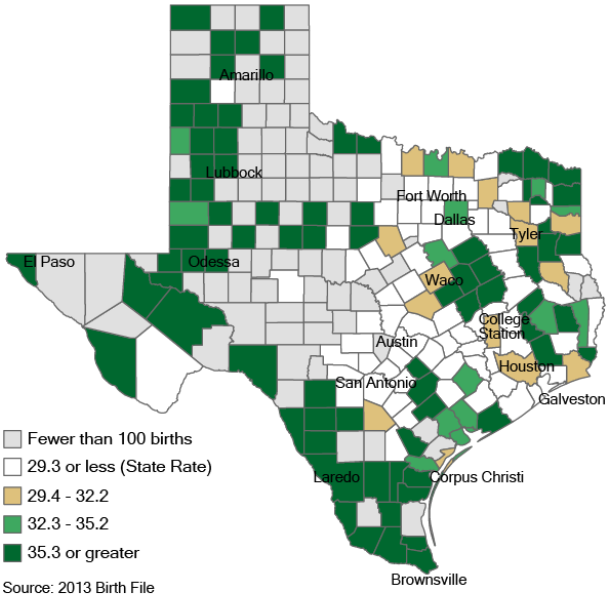
Figure 5
Teen (15 - 19 year old) Birth Rate per 1,000 Females by Race/Ethnicity, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
2005-2012 population estimates
2013, 2014 population projections
Prepared by: Office of Program Decision Support
Sept 2015

While Texas has seen large reductions in the teen birth rate, as of 2012, the state still had the third highest rate in the United States among youth 15-17 years old. Additionally, there are areas of the state where the teen birth rate is still high in comparison to the rest of the state (see Figure 6). As would be expected, border regions of the state, where there is a large concentration of Hispanic residents, have the highest teen birth rates.

Figure 6
Teen Birth Rate per 1,000 Females Age 15 - 18 Years Old, 2013



Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

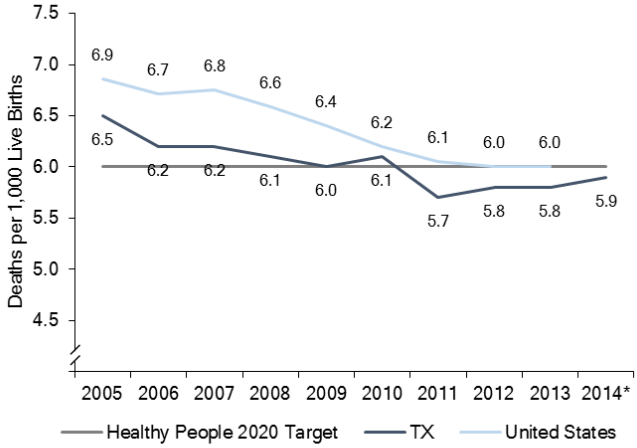
INFANT MORTALITY & MORBIDITY

INFANT MORTALITY RATE

The infant mortality rate (IMR) in Texas has been below the national rate for the past ten years (see Figure 7). However, it has only been since 2008 that the state has approached or met the Healthy People 2020 (HP2020) target of 6.0 deaths per 1,000 live births. While preliminary 2014 data suggest that the IMR has remained below 6.0 per 1,000 births, there is evidence that the rate is increasing.

Figure 7

Infant Mortality Rate in Texas and the United States, 2005-2014

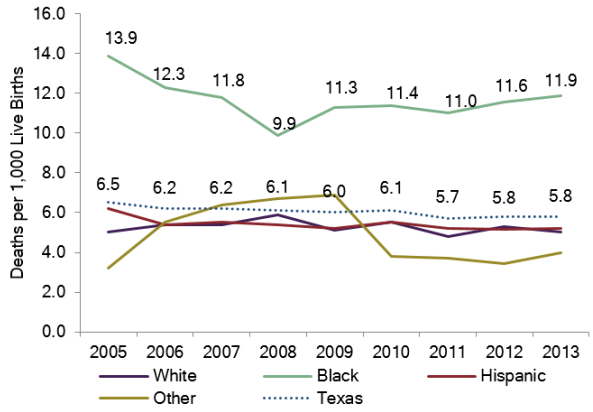


*2014 Texas and United States data are preliminary
Source: 2005-2014 Texas Birth and Death Files, National Center for Health Statistics
Prepared by: Office of Program Decision Support
May 2016

The race/ethnic disparity in IMR has persisted and it is clear that the decrease in IMR over the past five years for the state was not distributed across all race/ethnic groups (see Figure 8). The IMR for Black mothers is more than two times higher than the rates for White and Hispanic mothers.

Figure 8

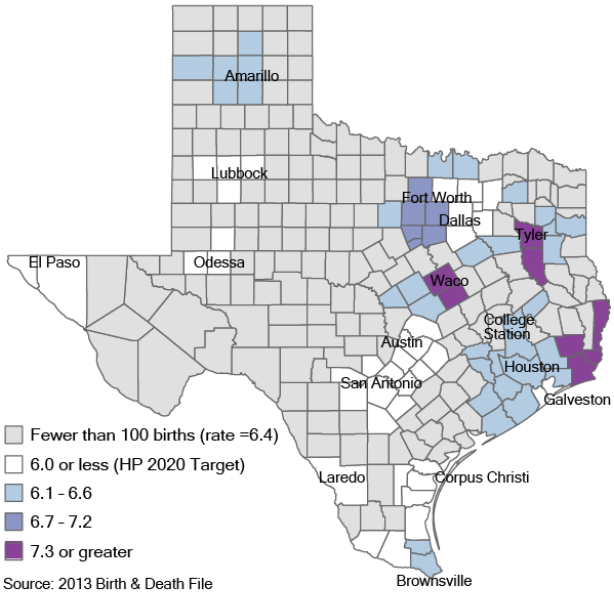
Infant Mortality Rate in Texas by Race/Ethnicity, 2005-2013



Source: 2005-2013 Birth & Death Files
Prepared by: Office of Program Decision Support
February 2016

In addition to the race/ethnic disparities, substantial regional differences in IMR persist within the state. In 2013, ten of the twenty largest communities in the state with a calculated IMR were meeting the HP2020 target (see Figure 9).

Figure 9
Infant Mortality Rate per 1,000 Live Births by Select Communities, 2013

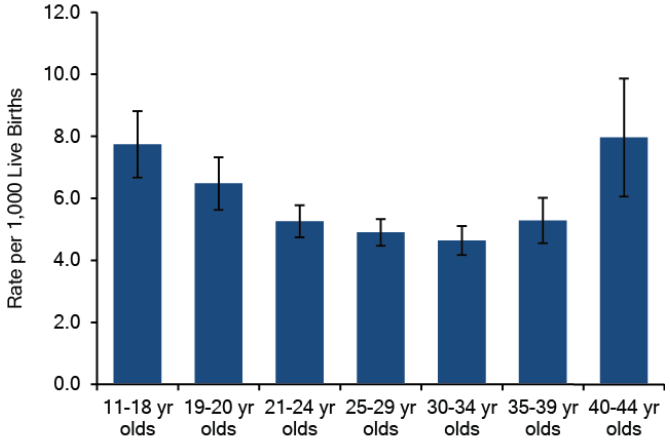


Source: 2013 Birth & Death File
Prepared by the Office of Program Decision Support
Sept 2015

The Austin-Round Rock, Odessa-Midland, and Laredo regions had the lowest IMRs, with these communities all having fewer than 3.9 deaths per 1,000 live births. In contrast, four communities had IMRs above 6.7 infants per 1,000 live births in 2013.

In addition to the race/ethnic and regional disparities, there are also infant mortality disparities based on the age of the mother. Women who are 20 years old or younger and 40 or older have the highest infant mortality rates in Texas (see Figure 10). Mothers in these age groups had 18.8 percent of resident births in 2011; therefore, this group represents a substantial number of births in the state.

Figure 10
Infant Mortality Rate by Age Group, 2011

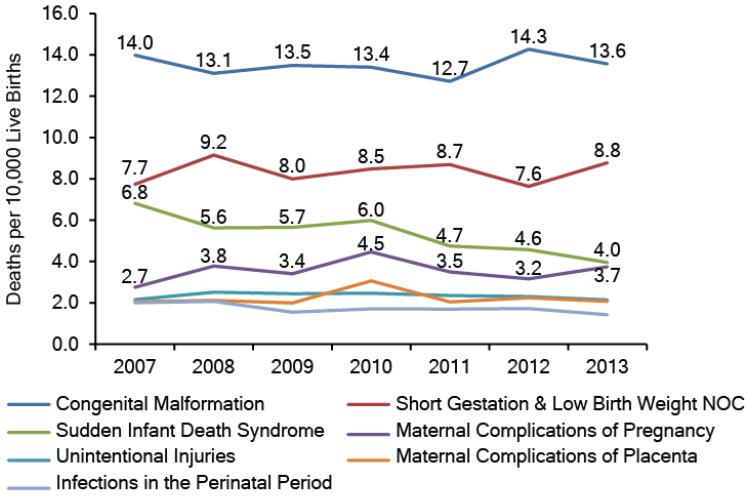


Error bars represent 95% confidence intervals
Source: 2011 Linked Birth-Death Files
Prepared by: Office of Program Decision Support
Sept 2015

CAUSES OF INFANT DEATH

The leading cause of infant death in Texas is congenital abnormalities (see Figure 11). For infants older than 28 days, the leading cause of death is Sudden Infant Death Syndrome.

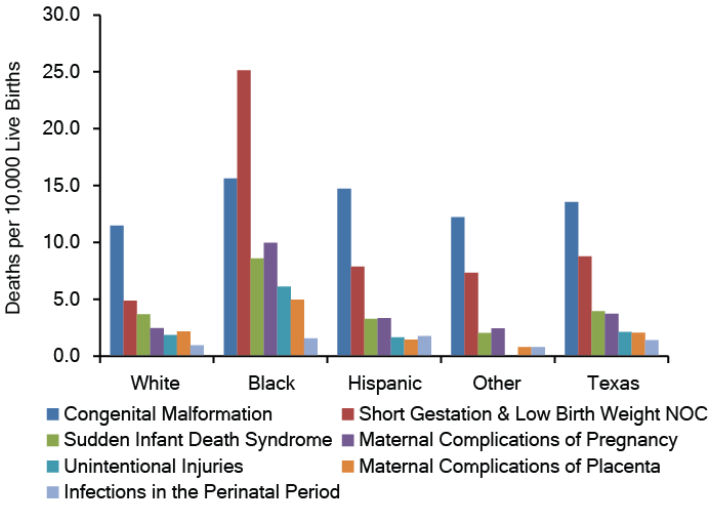
Figure 11
Leading Causes of Infant Death, 2007 - 2013



NOC: Not otherwise classified
Source: 2007-2013 Death & Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

The leading cause of death for infants does differ based on the infant's race/ethnicity. In 2013, the leading cause of death for Black infants was short gestation and low birth weight. The third leading cause of death for these infants was maternal complications of pregnancy (see Figure 12).

Figure 12
Leading Causes of Infant Death by Race/Ethnicity, 2013



NOC: Not otherwise classified
Source: 2013 Death & Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Each leading cause category has specific codes that are primarily driving the rate (see Table 1). For example, among congenital malformations, 50 percent of these deaths received six death codes, with two of these codes being chromosomal disorders (Edward's and Patau's Syndromes) and the remaining being structural birth defects. Among preterm related deaths, the most prevalent death code was extreme immaturity for an infant born less than 28 weeks gestation. In the 2011 birth cohort, 72.5 percent of these deaths were to infants born between 20 and 23 weeks gestation.

Table 1.

Most Prevalent ICD-10 Codes for Select Leading Causes of Infant Death

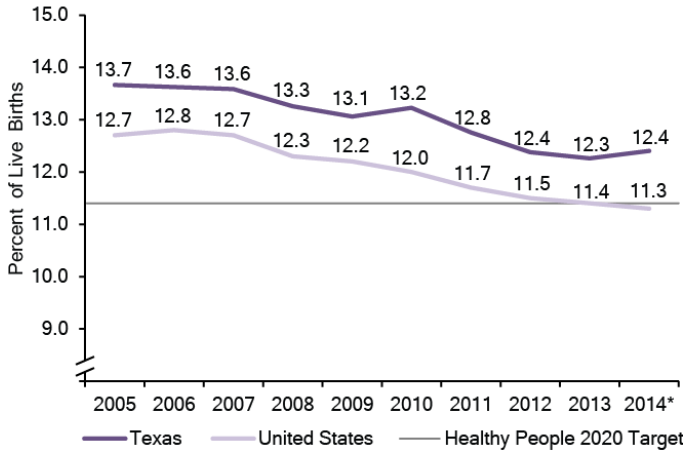
Classified Cause	Most Prevalent ICD-10 Code
Congenital & Chromosomal Malformations	
50% of congenital deaths	Congenital Malformation of Heart, NOC Edward's Syndrome Hypoplasia and dysplasia of lung Anencephaly Patau's Syndrome Hypoplastic left heart syndrome Congenital diaphragmatic hernia
Short Gestation & Low Birth Weight NOC	
72.4% of preterm deaths	Extreme immaturity (< 28 weeks completed gestation)
Maternal Complications of Pregnancy	
85% of maternal complication deaths	Premature rupture of membranes Incompetent cervix
Maternal Complications of Placenta	
83% of placenta complication deaths	Chorioamnionitis Placental separation and hemorrhage

Percent of death for ICD-10 aggregated from 2007-2013
NOC: not otherwise classified
Source: 2007-2013 Death File
Prepared by; Office of Program Decision Support
Sept, 2015

PRETERM BIRTH

As stated in the *Data Terms* section of this report, the standard for computing gestational age in vital records data has changed. This section will present the previous computation and the new standard for computing gestational age side by side, in order to show how this computational adjustment has changed the rates of preterm birth.

Figure 13
Percent of Live Births Born Preterm (less than 37 weeks) in Texas and United States Using Combined Estimate of Gestation, 2005-2014

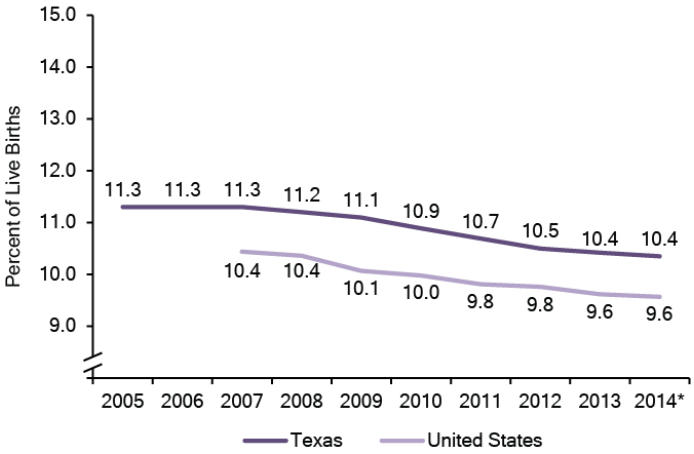


*2014 Texas and United States data are preliminary
Source: 2005-2014 Texas Birth Files,
National Center for Health Statistics
Prepared by: Office of Program Decision Support
Sept 2015

Preterm births are those that occur prior to 37 weeks of gestation. The preterm birth rate in Texas has consistently been higher than the national average over the past ten years using the previous standard for computing gestational age (see Figure 13).

While the new computational method lowers the preterm rate in Texas by more than 2 percentage points (see Figure 14), the overall trend in preterm birth shows the same pattern as the previous method. From 2005 to 2014, the preterm birth rate has decreased by 9.5 percent using the previous method of estimating gestational age (combined estimate), and by 8.0 percent using the obstetric estimate. Through the remainder of this report, the obstetric estimate of gestation will be used.

Figure 14
Percent of Live Births Born Preterm (less than 37 weeks) in Texas and United States Using Obstetric Estimate of Gestation, 2005-2014

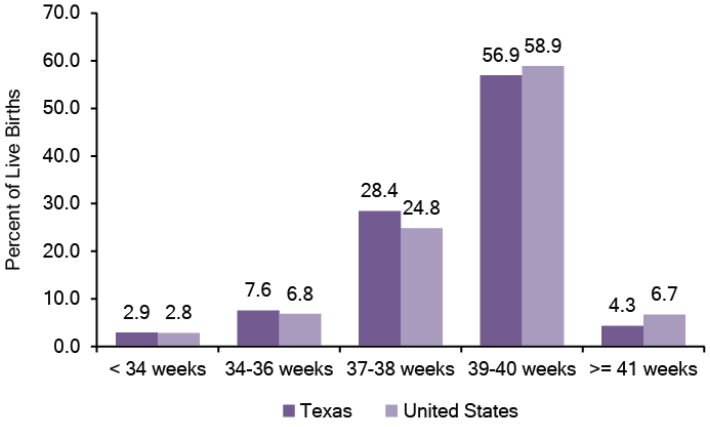


*2014 Texas and United States data are preliminary
Source: 2005-2014 Texas Birth Files,
National Center for Health Statistics
Prepared by: Office of Program Decision Support
Sept 2015

Texas has a higher preterm rate than the United States, collectively. When gestational ages are further divided into categories that cover the entire range of gestational ages (see Figure 15), it is clear that Texas is higher than the country with infants born late preterm (34-36 weeks) and also with those born early term (37-38 weeks).

Figure 15

Percent of Births Across Gestation Categories in Texas and United States Using Obstetric Estimate of Gestation, 2013

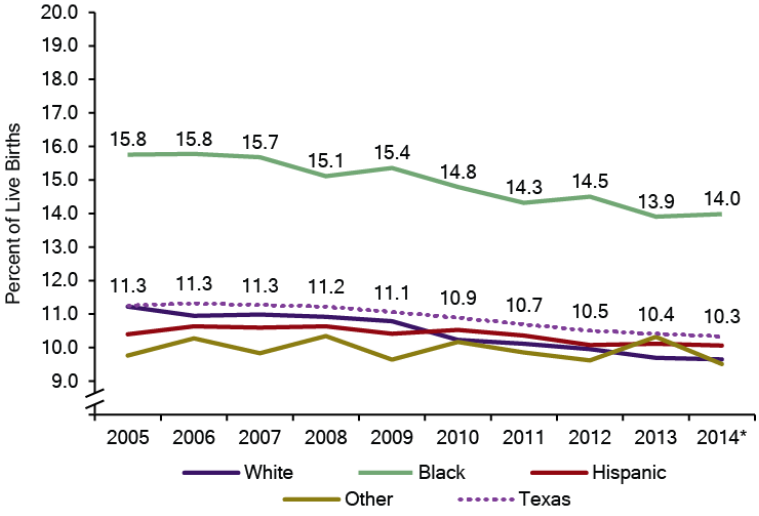


Source: 2013 Texas Birth File,
National Center for Health Statistics
Prepared by: Office of Program Decision Support
Sept 2015

As with the IMR, there are substantial racial/ethnic disparities in the preterm birth rate, (see Figure 16). The rate has decreased among all racial/ethnic groups, with the largest rate decreases being made among infants born to Black mothers.

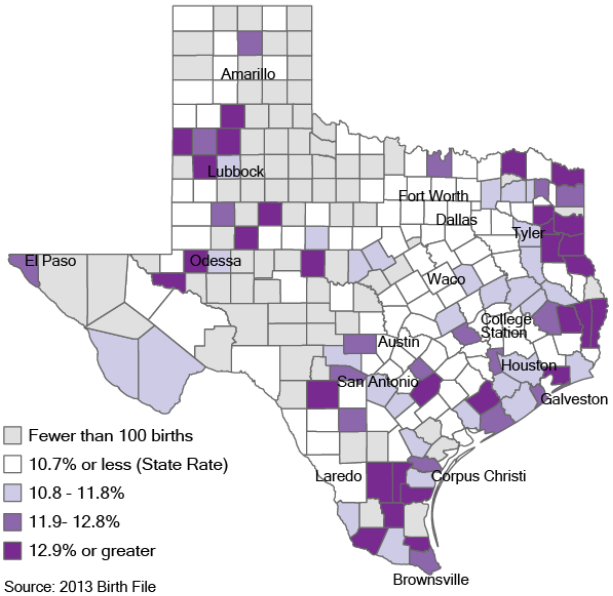
Figure 16

Percent of Live Births Born Preterm (less than 37 weeks) in Texas by Race/Ethnicity Using Obstetric Estimate of Gestation, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Texas Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Figure 17
Percent of Live Births that Were Preterm (less than 37 weeks) Using Obstetric Estimate of Gestation, 2013



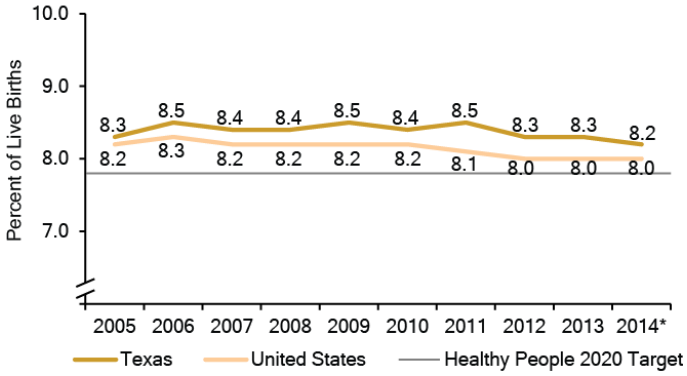
Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

As with the overall preterm birth rate, the change in the way gestation age is calculated has significantly changed the rates for individual counties. Figure 17 shows the distribution of preterm using the obstetric estimate in relation to the state average. However, the regional differences that were seen using the previous methods have remained, with the south coastal and east Texas areas having the highest rates of preterm birth.

LOW BIRTH WEIGHT

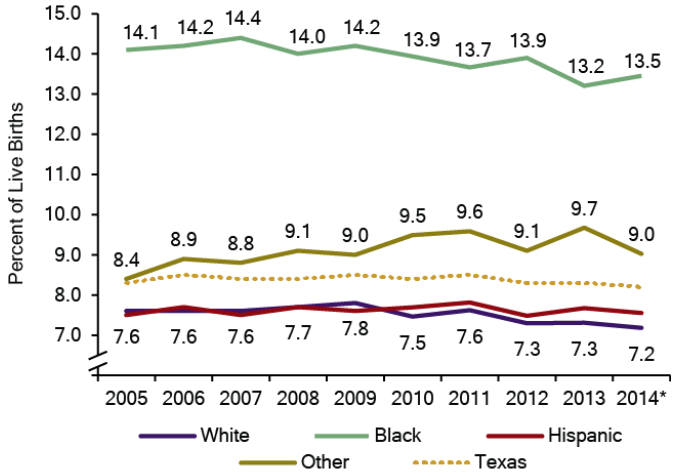
The percentage of babies born weighing less than 2500 grams has not meaningfully changed since 2006. Texas is above the national rate and is not meeting the HP2020 target of less than 7.8 percent of live births weighing less than 2500 grams (see Figure 18).

Figure 18
Percent of Births that are Low Birth Weight (less than 2500 g) in Texas and the United States, 2005-2014



*2014 Texas and United States data are preliminary
Source: 2005-2014 Texas Birth & Death Files,
National Center for Health Statistics
Prepared by: Office of Program Decision Support
Sept 2015

Figure 19
Percent of Births that are Low Birth Weight (less than 2500 g) in Texas by Race/Ethnicity, 2005-2014

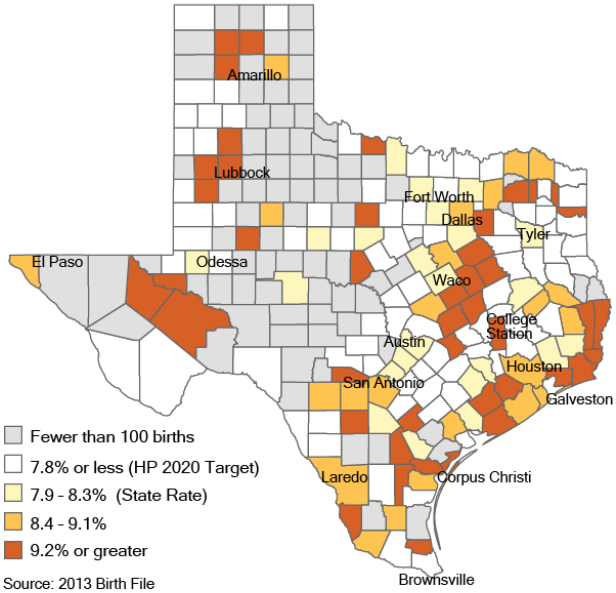


*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

As with IMR and preterm births, Black mothers have a disproportionately high percentage of low birth weight infants (see Figure 19). Additionally, the low birth weight rate is high among mothers in the "other" race/ethnic category. Demographic shifts in the makeup of this group may be contributing to the slow, but steady increase in the rate for this group since 2005.

Throughout the state, there are individual counties that are meeting the HP2020 target, but they are not clustered (see Figure 20). There are also no clear patterns for how the low birth weight rate is distributed across regions in the state.

Figure 20
Percent of Infants Born Low Birth Weight (less than 2500g), 2013



Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

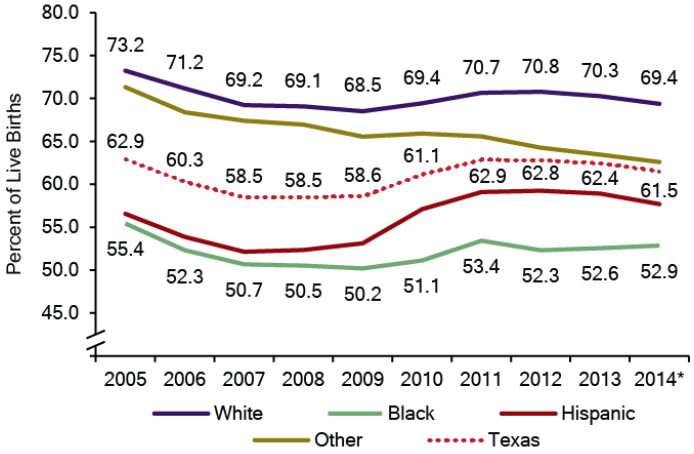
PRENATAL CARE

While the gestational age calculation change has affected the preterm birth rate, this change has done little to affect the rate of women receiving prenatal care within the first trimester. Throughout this section, timing of prenatal care access is calculated using the obstetric estimate of gestation.

The HP2020 target for prenatal care entry is to have 77.9 percent of women to begin prenatal care in the first trimester of pregnancy. Texas, as a whole, is not meeting the HP2020 target for the percent of mothers who enter prenatal care within the first trimester of pregnancy (see Figure 21).

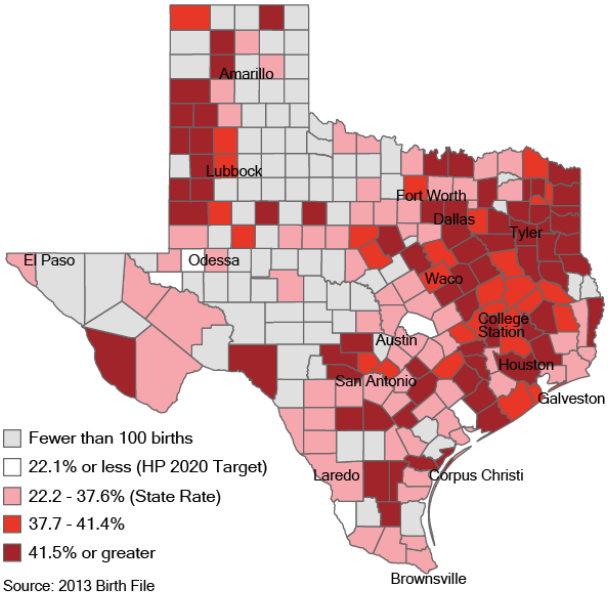
On time prenatal care access has increased in Texas since 2008, but rates within the state are far below the HP2020 target, with only 61.5 percent of women having their first visits within the first trimester (see Figure 21). The rates are also disparate between race/ethnic groups. White women have the highest rate of receiving care on time, and Black women have the lowest rate. Only a little more than half of Black women begin prenatal care in the first trimester.

Figure 21
Percent of Live Births Where Mother Received Prenatal Care in the First Trimester Using Obstetric Estimate of Gestation, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Figure 22
Percent of Live Births Not Receiving Prenatal Care in the First Trimester (Obstetric Estimate), 2013

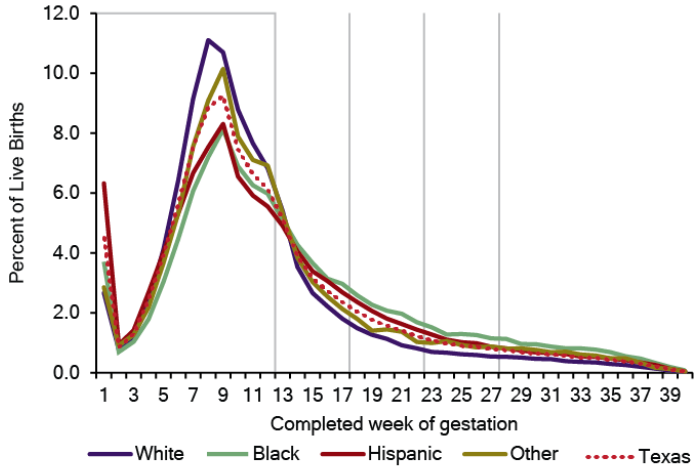


Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

Late entry into prenatal care is a state-wide problem. In 2013, only two urban Texas counties were meeting the HP2020 target for women entering prenatal care in the first trimester (see Figure 22).

A question that arises with late access to prenatal care is whether women are receiving care a few weeks late, or are their access patterns extended over the course of their pregnancy. This question can be assessed by looking at the distribution of when women receive prenatal care for the first time (see Figure 23).

Figure 23
Percent of Live Births Recieving Prenatal Care for the First Time at Each Week of Gestation, 2013

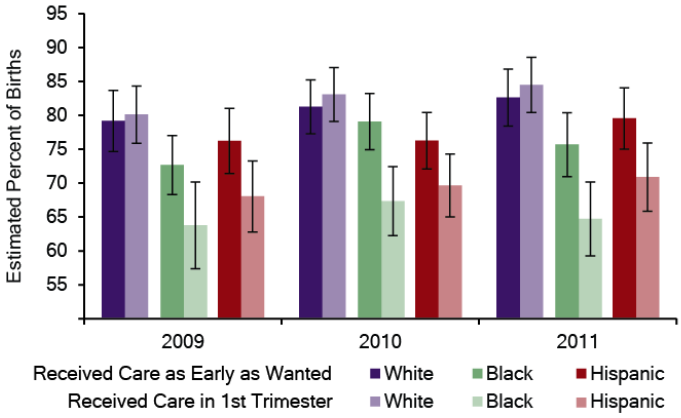


Source: 2013 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

White women and women in the "other" race/ethnic categories show an access pattern that suggests that they are receiving care a few weeks past the end of their first trimester. This pattern is shown by the sharp decline in access rates between 13 and 17 weeks gestation. However, Hispanic and Black women show a more extended access pattern. It is not until 23 weeks gestation that Hispanic and Black women reach the prenatal care access rate that White women and women in the "other" race/ethnic group reached at 17 weeks.

One of the challenges with increasing prenatal care access is the need to differentiate women who are not receiving care because they do not seek it from those that do not have access to it. While access is a barrier, PRAMS data indicate that the mother's desire to seek care in the first trimester may also be a factor in the low on-time access rates. There is a gap for Hispanics and Black women between the percent who received care on-time and the percent that received care as early as they wanted (see Figure 24). In the 2011 Texas PRAMS data, 65.2 percent of Black mothers received care in the first trimester; however, 75.5 percent said they received care as early as they wanted. This significant discrepancy suggests that many women were not seeking or wanting care in the first trimester.

Figure 24
Comparing Percent of Women Receiving Prenatal Care in First Trimester and Early as Wanted by Race/Ethnicity, PRAMS 2009-2011



Note: Prenatal care timing is self-reported in PRAMS and is not comparable to data from the birth file
Source: 2009-2011 Texas PRAMS
Prepared by: Office of Program Decision Support
Sept 2015

MATERNAL HEALTH

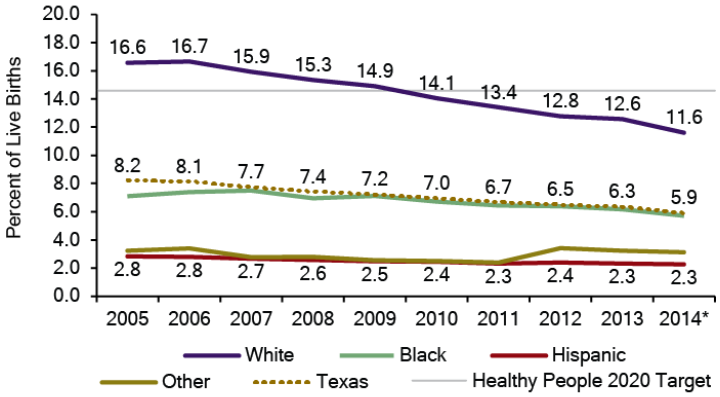
For information on maternal mortality and morbidity in Texas, please see:

- *Scientific Analysis of the Current State and Needs of the Maternal and Child Population in Texas* (http://www.dshs.texas.gov/opds/OPDS-Reports.aspx);
- Maternal Mortality and Morbidity Task Force and DSHS *2014* (http://www.dshs.texas.gov/Legislative/Reports-2014.aspx) *Joint Biennial Report for the Legislature*;
- Maternal Mortality and Morbidity Task Force and DSHS *2016* (https://www.dshs.texas.gov/Legislative/Reports-2016.aspx) *Joint Biennial Report for the Legislature; and*
- The Maternal Mortality Rate (MMR) in Texas as computed by the DSHS Center for Health Statistics (https://www.dshs.texas.gov/chs/vstat/vs14/t05.aspx).

SMOKING

Texas is one of the better performing states when it comes to smoking during pregnancy. Part of the reason for the low smoking rate in the state is because of the large number of births to Hispanic women. Even before becoming pregnant, Hispanic women have the lowest smoking rates among all demographic groups (see Figure 25).

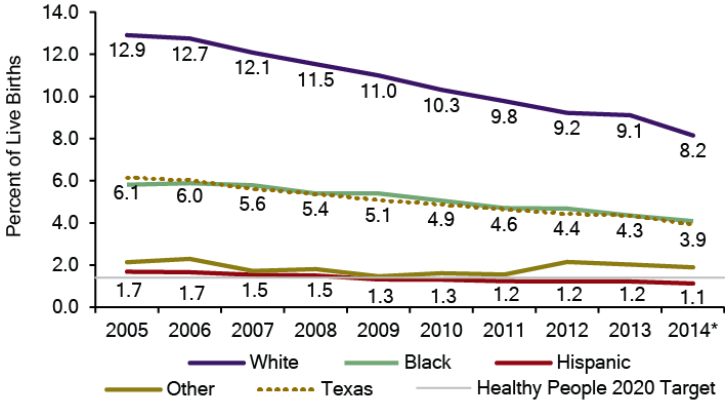
Figure 25
Percent of Live Births Where Mother Smoked Cigarettes 3 Months Before Pregnancy, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Consequently, Hispanic women also have the lowest rates of smoking during pregnancy nationally and within Texas. However, Texas still has room for improvement when it comes to smoking during pregnancy (see Figure 26).

Figure 26
Percent of Live Births Where Mother Smoked Cigarettes During Pregnancy, 2005-2014

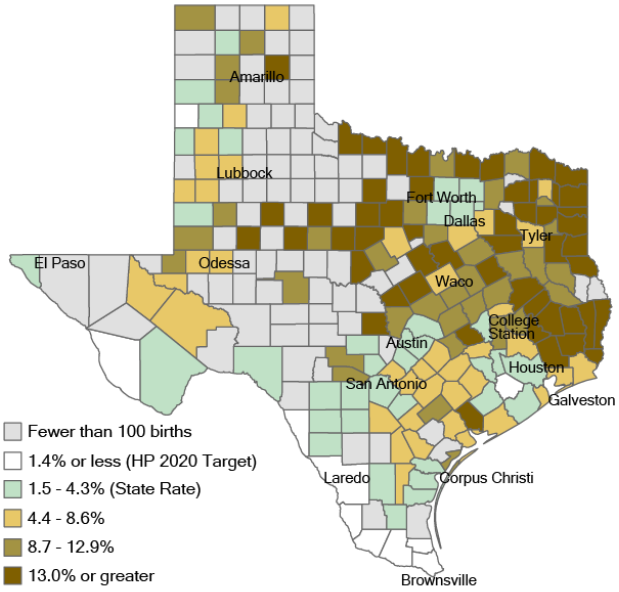


*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

In 2009, 29.7 percent of women who smoked 3 months prior to pregnancy did not smoke at all once becoming pregnant. In 2013, this rate of total abstinence from smoking among previous smokers had risen to 33.5 percent.

There are stark regional differences in the smoking rates among pregnant women (see Figure 27). As would be expected, the border regions of the state have the lowest rate of smoking during pregnancy. The north and eastern regions of the state have the highest rates of smoking. In the regions with high smoking rates, the rates are high for both White and Black women, suggesting that regional differences have a greater influence on smoking rates than do race/ethnic differences. Most of the major cities in the state have low rates of women smoking during pregnancy.

Figure 27
Percent of Live Births Where the Mother Smoked During Pregnancy, 2013

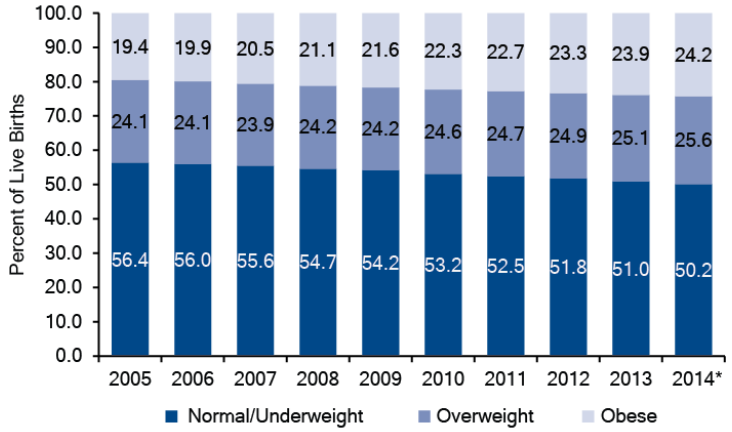


Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

PRE-PREGNANCY OBESITY

Obesity is a risk factor for developing hypertension, diabetes, and a variety of other medical problems during pregnancy[3, 6]. Additionally, Texas data also show that obese women are at higher risk than non-obese women for preterm birth or experiencing infant death. There has been a rise in the percent of women who are obese before becoming pregnant. The percent of women with a Body Mass Index (BMI) in the obese range has increased 22 percent since 2005 (see Figure 28).

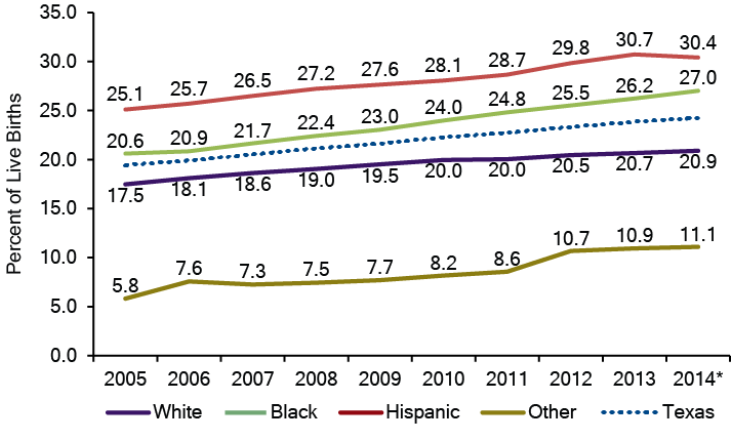
Figure 28
Maternal Pre-pregnancy Body Mass Index Distribution for All Live Births, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

The increase in the percent of pregnant women in the obese range has been large for Black and Hispanic women (see Figure 29). Each of these groups has seen more than a 22 percent increase in the rate of obesity since 2005 compared to a 17.2 percent increase for White mothers. It is also important to note that women classified in the "other" race/ethnic category have seen an 85 percent increase in the obesity rate since 2005.

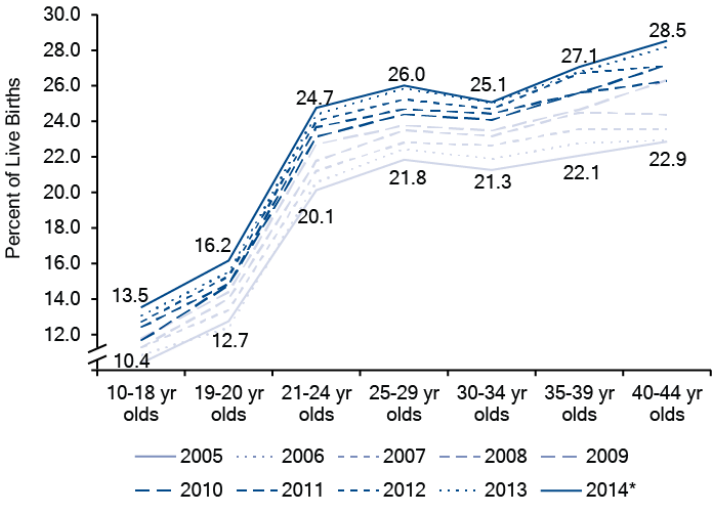
Figure 29
Maternal Pre-pregnancy Obesity by Race/Ethnicity, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

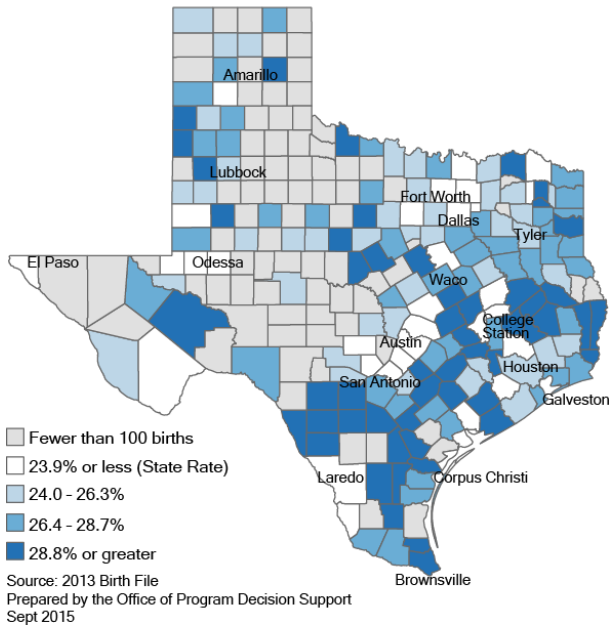
The rise in obesity rates have also been disproportionate based on the age of the mother. There has been a larger increase in the rate of obesity rates for women older than 35 years old than there has been for women younger than 35 (see Figure 30).

Figure 30
Maternal Pre-pregnancy Obesity by Age Group, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Figure 31
Percent of Births to an Obese Mother, 2013



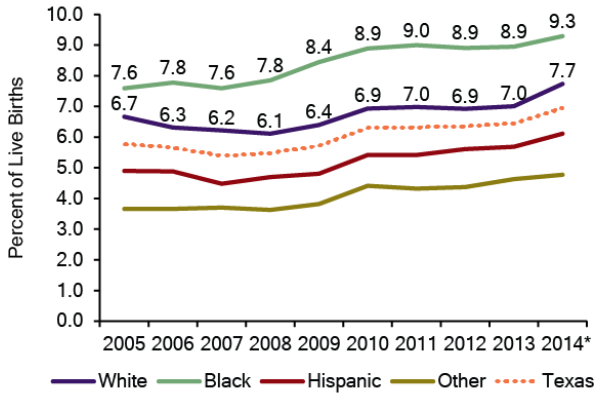
Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

With few exceptions, rural and suburban areas of Texas have higher concentrations of women entering her pregnancy obese than the state as a whole (see Figure 31). It is known that within-county variations can be rather large with issues of access to parks and sidewalks as well as to healthy food choices[8], suggesting that in addition to these county differences, there may be substantial neighborhood differences.

DIABETES & HYPERTENSION

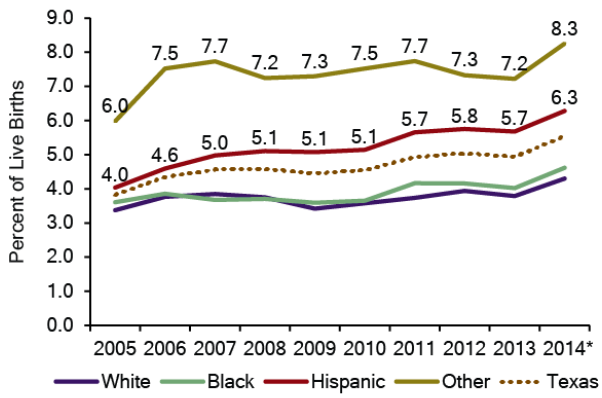
In 2013, 4.9 percent of live births were to a mother identified as having diabetes pre-pregnancy or as developing it over the course of the pregnancy. Much like diabetes, 6.4 percent of all live births were to mothers that were identified on the birth certificate as having some form of hypertension prior to pregnancy or as developing it over the course of the pregnancy. Rates of both hypertension and diabetes are slowly rising in Texas (see Figure 32 & 33). However, there are racial/ethnic differences between women who have diabetes, hypertension, or both. A high percentage of Hispanic women and women in the "other" category have a diabetes diagnosis. In contrast, a high percentage of White and Black women have a hypertension diagnosis.

Figure 32
Rates of Maternal Hypertension by Race/Ethnicity, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Figure 33
Rates of Maternal Diabetes by Race/Ethnicity, 2005-2014



*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

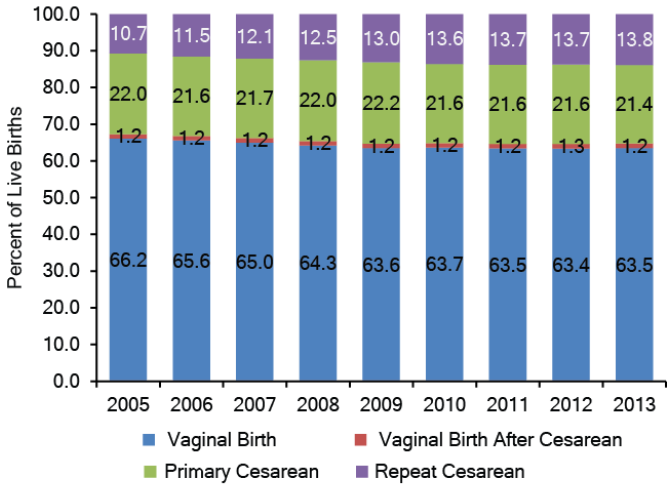
Despite these race/ethnic differences, pre-pregnancy obesity is associated with both in the Texas data, as is seen in the literature[2, 5]. In 2013, 18.4 percent of obese women in the birth cohort had either hypertension, diabetes, or both. This rate is in contrast to the 6.6 percent of women with normal pre-pregnancy BMI that were hypertensive, diabetic, or both.

Women with diabetes and their infants have an increased risk for a variety of complications, including infant or fetal death. While relatively small proportions (fewer than six percent) of the women who deliver each year have some form of hypertension, these women experience a disproportionately high percent of fetal and infant deaths (about 11 percent of all the fetal and infant deaths). Additionally, these women experience a high rate of severe morbidity. Hypertension/eclampsia is a leading diagnosis of severe maternal morbidity for Black women and a leading cause of maternal death for Black women.

DELIVERY

The delivery pattern for live births has shifted in Texas from 2005 to 2013 (see Figure 34). This shift has been a decrease in the percent of vaginal births and an increase in the percent of women having a repeat 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 shown modest decreases since 2009.

Figure 34
Percent of All Births by Delivery Method, 2005-2013

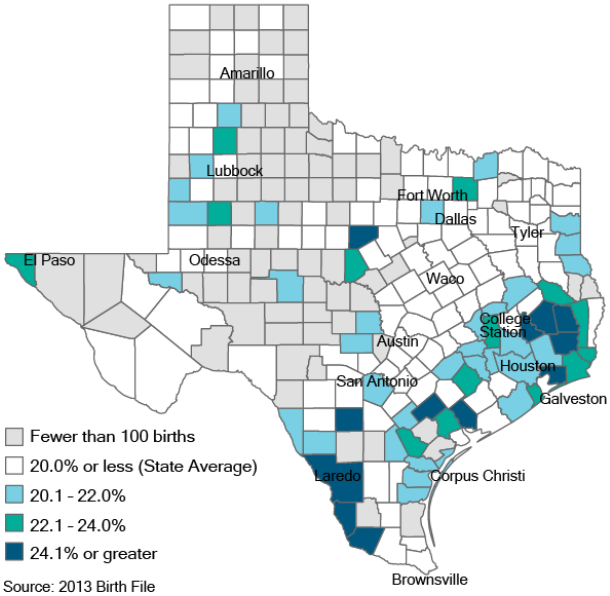


Source: 2005 - 2013 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

PRIMARY CESAREAN SECTION RATES

Primary cesarean section rates can further be restricted to only singleton births to eliminate a group of women that are high risk for a cesarean delivery. This restriction further lowers the rate in Texas to 20 percent of singleton births.

Figure 35
Percent of Singleton Live Births Delivered via Cesarean Section, 2013



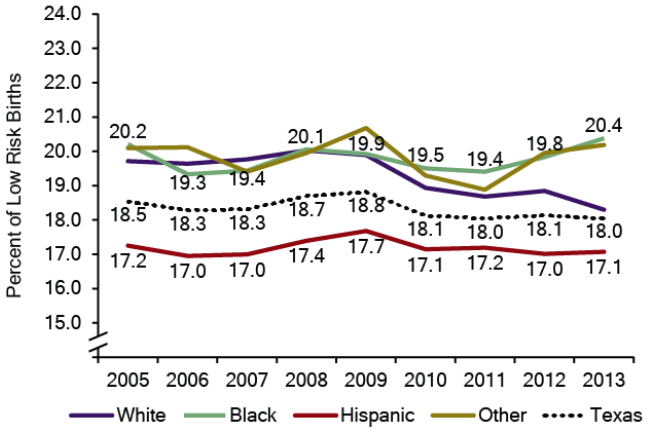
Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

The rate among singleton births shows stark regional differences. There is a high rate of these births in the urban centers along the border and through south east Texas (see Figure 35).

It must be pointed out that these rates do not reflect elective cesarean deliveries. The number of deliveries that are elective is difficult to assess in the Texas birth file. Many of the exclusionary criteria that identify a delivery as not elective are not documented on the birth certificate or are unreliable. Through the rest of the report, we will not be making distinctions between "elective" and "non-elective" deliveries, but will be making distinctions between "low-risk" and "not low-risk" deliveries. Low-risk deliveries in this report are defined as deliveries where the fetus is between 37 and 41 weeks gestation, vertex, and singleton. Additionally, the woman had no history of diabetes, no history of hypertension, and had no indication of premature rupture of membranes. Given the known reporting problems for some of these variables, the analyses done with this low-risk distinction should be viewed with caution.

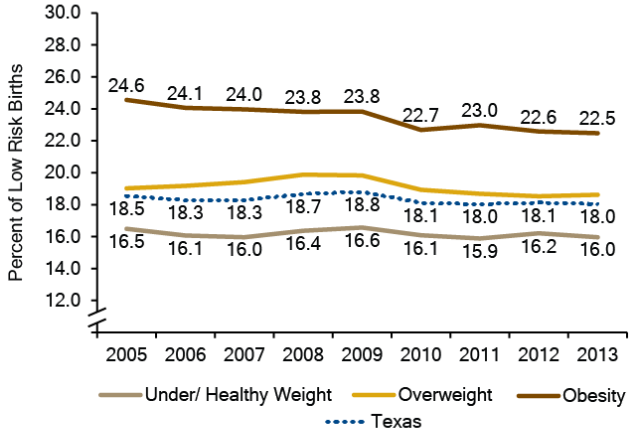
Adding these restrictions further lowered the primary cesarean section rates to 18 percent in 2013 (see Figure 36). The rate among low-risk deliveries declined between 2009 and 2010. White women have seen the largest decrease since 2009 with the rate for this group decreasing by 8 percent. Black women now have the highest rate of primary cesarean section among births defined as low-risk.

Figure 36
Primary Cesarean Section Rate Among Low Risk Live Births by Race/Ethnicity, 2005-2013



Low risk births are vertex, singletons where the mother had no indication of diabetes, hypertention,or premature rupture of membranes
Source: 2005-2013 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Figure 37
Primary Cesarean Section Rates for Low Risk Births Past 36 Weeks Gestation, 2005-2013



Low risk births are vertex, singletons where the mother had no indication of diabetes, hypertention,or premature rupture of membranes
Source: 2005-2013 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

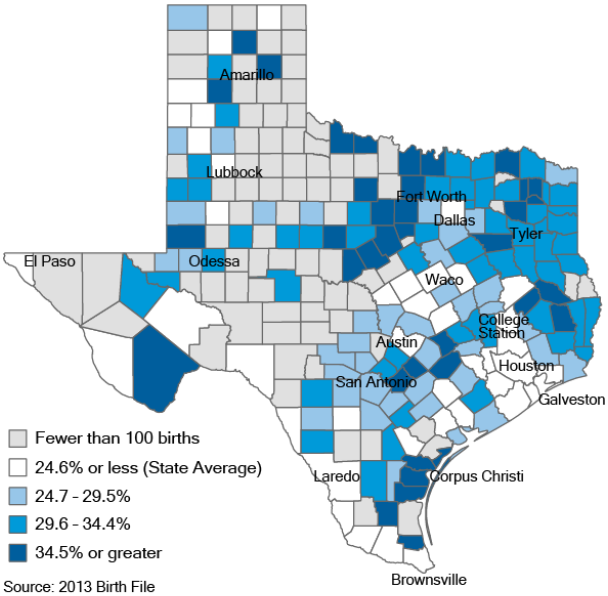
There are other disparities within this low-risk group that are also significant. In particular, the differences in cesarean section rate based on the mother's pre-pregnancy body mass index are large in the low-risk group (see Figure 37).

Obese women have the highest primary cesarean section rate among the low-risk group. From 2005 to 2013, there have been reductions in the primary cesarean section rate among low-risk obese women, while this rate has not meaningfully changed for women who had a healthy pre-pregnancy body mass index.

LABOR INDUCTION RATES

In Texas, the total rate of labor inductions has declined since 2008, with noteworthy drops in 2011 and 2012. It is important to make clear that not all of these births were elective or low-risk inductions.

Figure 38
Percent of Live Births That Were Induced, 2013

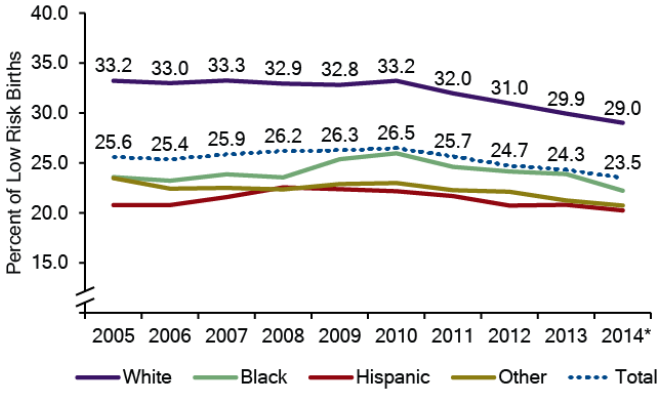


Source: 2013 Birth File
Prepared by the Office of Program Decision Support
Sept 2015

The distribution of labor inductions for singleton births across the state shows that women residing in rural counties have a significantly higher odds of having labor induced than those living in urban counties (see Figure 38). This finding is consistent with the idea that doctors may induce labor in women living far away from hospitals as a way to manage expectant mothers and the delivery.

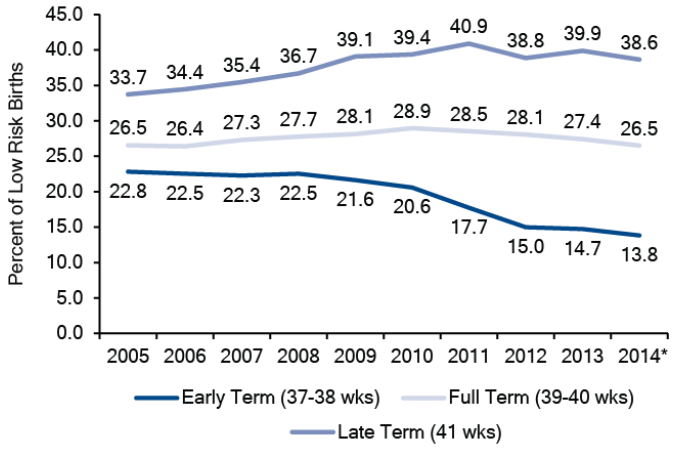
When inductions are limited to low-risk deliveries, the decrease since 2009 mirrors those seen with low-risk primary cesarean sections. The decrease in labor induction is mainly due to a 12.7 percent decrease among White women (see Figure 39).

Figure 39
Induction Rate Among Low Risk Deliveries by Race/Ethnicity, 2005-2014



Low risk births are vertex, singletons where the mother had no indication of diabetes, hypertention,or premature rupture of membranes
*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

Figure 40
Induction Rates for Low Risk Births by Gestational Age Category, 2005-2014



Low risk births are vertex, singletons where the mother had no indication of diabetes, hypertention,or premature rupture of membranes
*2014 Texas data are preliminary
Source: 2005-2014 Birth Files
Prepared by: Office of Program Decision Support
Sept 2015

When induction rates among low-risk women are divided by gestational age category, it is also clear that the largest rate decrease has been in the 37-38 week gestational category (see Figure 40). This gestational category has seen a 36.1 percent reduction in labor inductions since 2009.

CONCLUSION

This report is an overview of maternal and infant health in Texas. It is not an exhaustive presentation of all maternal health and infant risk factors, but focuses on a subset of birth outcomes and maternal risks that are often indicators of health in the community. It is through analyzing these factors that multi-year trends, points of intervention, and points of success can been seen.

MORE INFORMATION ON INFANT AND MATERNAL HEALTH IN TEXAS

www.hhsc.state.tx.us/reports/2014/SB1-Gestational-Diabetes.pdf

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.

www.dshs.state.tx.us/chs/datalist.shtm

Contains vital statistics reports providing basic health-related data at the state and county level. The online query tool allows you to look at multi-year trends and maps of different indicators.

http://healthdata.dshs.texas.gov/Home

This on-line 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.

www.dshs.state.tx.us/mch/

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

www.marchofdimes.com/peristats/Peristats.aspx

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

www.SomedayStartsNow.com

Website containing information for men and women of childbearing age, parents, providers and community stakeholders. There are toolkits for outreach, life and birth planning tools, social media tools and a page devoted to the Texas Collaborative for Healthy Mothers and Babies.

For information on maternal mortality and morbidity in Texas, please see:

- *Scientific Analysis of the Current State and Needs of the Maternal and Child Population in Texas* (http://www.dshs.texas.gov/opds/OPDS-Reports.aspx);
- Maternal Mortality and Morbidity Task Force and DSHS *2014* (http://www.dshs.texas.gov/Legislative/Reports-2014.aspx) *Joint Biennial Report for the Legislature*;
- Maternal Mortality and Morbidity Task Force and DSHS *2016* (https://www.dshs.texas.gov/Legislative/Reports-2016.aspx) *Joint Biennial Report for the Legislature; and*
- The Maternal Mortality Rate (MMR) in Texas as computed by the DSHS Center for Health Statistics (https://www.dshs.texas.gov/chs/vstat/vs14/t05.aspx).

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6. Kim, C., Kim, S. Y., Sappenfield, W., Wilson, H. G., Salihu, H. M., & Sharma, A. J. (2013). Are Gestational Diabetes Mellitus and Preconception Diabetes Mellitus Less Common in Non-Hispanic Black Women than in Non-Hispanic White Women? *Maternal and Child Health Journal*, 1-9.

7. Martin, J.A., Osterman, M.J.K., Kirmeyer, S.E., Gregory, E.C.W. (2015) Measuring gestational age in vital statistics data: Transitioning to the obstetric estimate. *National Vital Statistics Reports, 64*, 5.

8. *2014 State Indicator Report on Physical Activity*
http://www.cdc.gov/physicalactivity/downloads/pa_state_indicator_report_2014.pdf

APPENDIX A: TABLES FOR SELECT FIGURES

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

	White	Black	Hispanic	Other	Texas
2014	21.7	36.9	49.2	13.4	36.2
2013	23.9	39.9	54.3	15.0	39.7
2012	24.4	43.0	59.9	14.9	42.3
2011	26.9	48.9	64.7	8.5	45.9
2010	31.1	56.9	71.8	9.3	52.2
2009	32.0	57.9	83.3	15.1	57.4
2008	32.8	61.2	87.9	17.2	59.7
2007	32.8	62.9	90.5	18.8	60.6
2006	32.5	63.8	90.9	19.9	60.2
2005	32.6	62.7	92.0	14.4	59.9

Rate per 1,000 in the population
2005-2014 Texas Birth files; 2014 data are preliminary

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

Year	White	Black	Hispanic	Other	Texas
2005	5.0	13.9	6.2	3.2	6.5
2006	5.4	12.3	5.4	5.5	6.2
2007	5.4	11.8	5.5	6.4	6.2
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

Rate per 1,000 live births
2005-2013 Texas Birth and Death files

Figure 16. Percent of Live Births Born Preterm (less than 37 Weeks) by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2005	11.2	15.8	10.4	9.8	11.3
2006	11.0	15.8	10.6	10.3	11.3
2007	11.0	15.7	10.6	9.8	11.3
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	9.5	10.3

Computed using the obstetric estimate of gestation
2005-2014 Texas Birth and Death files; 2014 data are preliminary

Figure 19. Percent of Births that are Low Birth Weight by Race/Ethnicity

Year	White	Black	Hispanic	Other	Texas
2005	7.6	14.1	7.5	8.4	8.3
2006	7.6	14.2	7.7	8.9	8.5
2007	7.6	14.4	7.5	8.8	8.4
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	13.7	7.8	9.6	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	13.5	7.5	9.0	8.2

2005-2014 Texas Birth and Death files; 2014 data are preliminary

Figure 21. Percent of Live Births Where Mother Received Prenatal Care in the First Trimester

Year	White	Black	Hispanic	Other	Texas
2005	73.2	55.4	56.6	71.3	62.9
2006	71.2	52.3	53.9	68.4	60.3
2007	69.2	50.7	52.2	67.4	58.5
2008	69.1	50.5	52.3	67.0	58.5
2009	68.5	50.2	53.1	65.6	58.6
2010	69.4	51.1	57.1	65.9	61.1
2011	70.7	53.4	59.1	65.6	62.9
2012	70.8	52.3	59.3	64.3	62.8
2013	70.3	52.6	58.9	63.5	62.4
2014*	69.4	52.9	57.7	62.6	61.5

Computed using the obstetric estimate of gestation
2005-2014 Texas Birth files; 2014 data are preliminary

Figure 26. Percent of Live Births Where the Mothers Smoked During Pregnancy

	White	Black	Hispanic	Other	Texas
2005	12.9	5.8	1.7	2.1	6.1
2006	12.7	5.9	1.7	2.3	6.0
2007	12.1	5.8	1.5	1.7	5.6
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*	8.2	4.1	1.1	1.9	3.9

2005-2014 Texas Birth files; 2014 data are preliminary

Figure 32. Maternal Hypertension by Race/Ethnicity

	White	Black	Hispanic	Other	Texas
2005	6.7	7.6	4.9	3.7	5.8
2006	6.3	7.8	4.9	3.7	5.7
2007	6.2	7.6	4.5	3.7	5.4
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	8.9	5.7	4.6	6.4
2014*	7.7	9.3	6.1	4.8	6.9

2005-2014 Texas Birth files; 2014 data are preliminary

Figure 33. Maternal Diabetes by Race/Ethnicity

	White	Black	Hispanic	Other	Texas
2005	3.4	3.6	4.0	6.0	3.8
2006	3.8	3.9	4.6	7.5	4.3
2007	3.8	3.7	5.0	7.7	4.6
2008	3.7	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	8.3	5.5

2005-2014 Texas Birth files; 2014 data are preliminary

Figure 36. Primary Cesarean Deliveries among Low Risk Live Births by Race/Ethnicity

	White	Black	Hispanic	Other	Texas
2005	19.7	20.2	17.2	20.1	18.5
2006	19.6	19.3	17.0	20.1	18.3
2007	19.8	19.4	17.0	19.4	18.3
2008	20.0	20.1	17.4	19.9	18.7
2009	19.9	19.9	17.7	20.7	18.8
2010	18.9	19.5	17.1	19.3	18.1
2011	18.7	19.4	17.2	18.9	18.0
2012	18.8	19.8	17.0	19.9	18.1
2013	18.3	20.4	17.1	20.2	18.0

Low risk births are singleton births in a vertex position between 37-41 weeks gestation with no indication of diabetes, hypertension or preterm rupture of membranes.
2005-2013 Texas Birth files

Figure 39. Labor Induction Rate among Low Risk Live Births by Race/Ethnicity

	White	Black	Hispanic	Other	Total
2005	33.2	23.6	20.8	23.5	25.6
2006	33.0	23.2	20.8	22.4	25.4
2007	33.3	23.9	21.6	22.5	25.9
2008	32.9	23.6	22.6	22.3	26.2
2009	32.8	25.4	22.4	22.9	26.3
2010	33.2	26.0	22.2	23.0	26.5
2011	32.0	24.6	21.7	22.3	25.7
2012	31.0	24.2	20.7	22.1	24.7
2013	29.9	23.9	20.8	21.2	24.3
2014*	29.0	22.2	20.3	20.8	23.5

Low risk births are singleton births in a vertex position between 37-41 weeks gestation with no indication of diabetes, hypertension or preterm rupture of membranes.
2005-2014 Texas Birth files; 2014 data are preliminary