

CHAPTER 1:

Maternal, Infant
and Child Health

INTRODUCTION

The health and well-being of mothers, infants, and children are important indicators of community and state health, and are critical for our nation's future health, well-being, and prosperity. Although residents of Connecticut report good health status overall relative to the U.S. as a whole, large health disparities exist between non-Hispanic White and the non-Hispanic Black/African American and Hispanic populations. Disparities among the indicators presented in this chapter are significant and persistent. Addressing racial and ethnic disparities in the state is a priority. Reducing disparities in maternal and child health indicators remains one of the major challenges facing the public health community, requiring coordinated and simultaneously executed multi-ecological strategies.

The data described below indicate that major improvements in the health of mothers, infants, and children in Connecticut have been made; most notably, declines in infant mortality and teen birth rates. However, much remains to be done to achieve optimal outcomes for all Connecticut mothers, infants, and children. The lifelong effects of race, racism, social class, poverty, stress, environmental influences, health policy, and other social determinants of health are reflected in the elevated rates of adverse outcomes and persistent disparities. The continuation of evidenced-based programs, coupled with efforts to increase health equity and address social determinants of health, is essential to achieving improved birth outcomes and reducing/eliminating disparities. While we continue to strive to reduce health inequities, these challenges also are apparent at the national level and are not unique to Connecticut.

PRECONCEPTION AND PREGNANCY

Health begins in the womb, and the health of a woman before and throughout her pregnancy can profoundly influence the lifelong health of her fetus.¹ The conditions and exposures that babies encounter in utero and resulting health outcomes can be optimized through family planning efforts that improve pregnancy intention, planning, and prenatal care that prevents adverse birth outcomes.

Pregnancy Intention and Planning

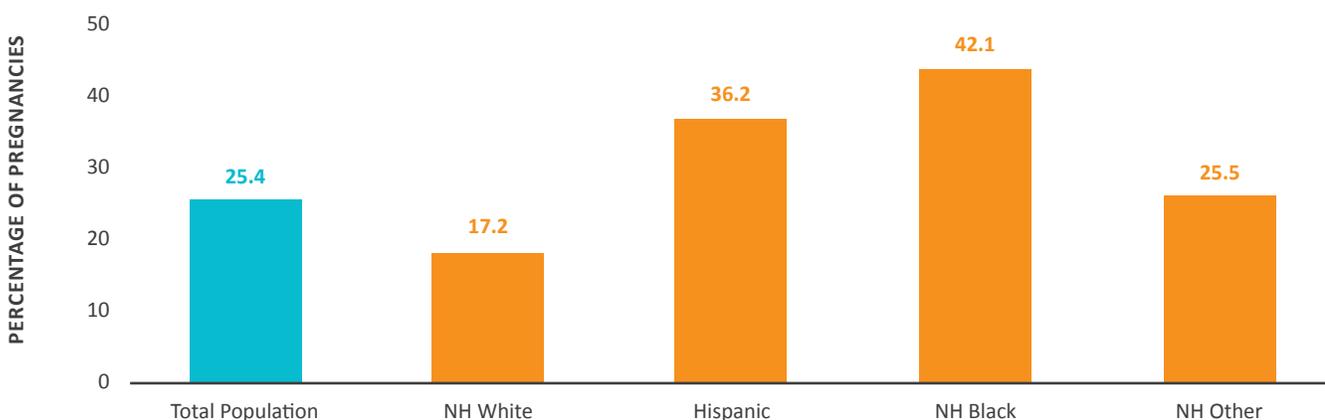
Pregnancy intention refers to whether a pregnancy is wanted or expected. Circumstances that might make a pregnancy unintended include desire (i.e., did not desire pregnancy then or at any time in the future) or timing (i.e., the pregnancy occurred earlier than desired). Unintended pregnancy can lead to increased health risks for both the woman and baby; if the pregnancy is unintended, a woman's health status might not be optimal for childbearing and prenatal care might be delayed.² Unintended pregnancy also can limit a woman's opportunities for higher education, employment, and income stability.³ Additionally, unintended pregnancy can be costly to federal and state governments due to expenditures related to births, abortions, and miscarriages. In 2010, it was estimated that public spending for unintended pregnancies in Connecticut totaled \$209 million, with \$80.1 million paid for by the state.

Strategies to reduce unintended pregnancies include, increasing access to contraception (specifically more effective and longer acting reversible forms of contraception) and increasing correct and consistent use of contraceptive methods overall.² Data on unintended pregnancies can be used to help assess the unmet need for contraception and family planning services.

UNINTENDED PREGNANCIES

Data on unintended pregnancies can be used to help assess the unmet need for contraception and family planning services.² Among women who gave birth to a live born infant in Connecticut (i.e. excludes abortions and fetal loss), approximately 25% of deliveries were reportedly unintended pregnancies, meeting the state's goal of no more than 25.7% of pregnancies being unintended. The percent of unintended pregnancies in Connecticut has declined over the past five years. Although unintended pregnancies have decreased overall, women of color were more likely to have an unintended pregnancy than non-Hispanic White women (**Figure 1.1**).

FIGURE 1.1: Percentage of unintended pregnancies among women having a live birth by maternal race/ethnicity, CT, 2016



Source: Pregnancy Risk Assessment Monitoring System.

TEEN PREGNANCY AND BIRTHS

Teens (defined as ages 15–19) from families of low socioeconomic status (i.e. low educational attainment or low income) or teens in the child welfare system (i.e. in foster care) are at higher risk of teen pregnancy and birth than other teens.⁴

Teens who become pregnant or give birth have lower educational attainment and income. Compared to their peers, teen parents are less likely to graduate from high school or college or be fully employed as adults. Also, they are more likely to experience



CONNECTICUT RANKS 3RD LOWEST FOR TEEN BIRTH RATE IN THE US

Across all 50 states, teen pregnancy and childbearing are at historic lows. In our state:

- The teen birth rate has declined across all racial/ethnic groups, however disparities are still present.
- Most teen births are to older teens (ages 18–19).
- The teen birth rate decline in 2015 resulted in public savings of \$39 million.

Source: Power to Decide. Connecticut Data. <https://powertodecide.org/what-we-do/information/national-state-data/connecticut>

an intergenerational cycle of teen parenting. Children of teen mothers are more likely to experience adverse outcomes that increase public sector costs, such as higher rates of dependence on public healthcare and welfare. As adolescents, children of teen mothers have higher incarceration rates and lower earnings.^{4;5;6;7}

In our state over the last decade, teen births declined three-fold overall and declined among teens of all races/ethnicities. These declines mirror national trends. In 2017, the national teen birth rate was 7.9 births per 1,000 for females aged 15–17 and 35.1 births per 1,000 for females aged 18–19, lower than the national Healthy People 2020 targets of 36.2 births per 1,000 for females aged 15–17 and 104.6 births per 1,000 for females aged 18–19.^{8;9}

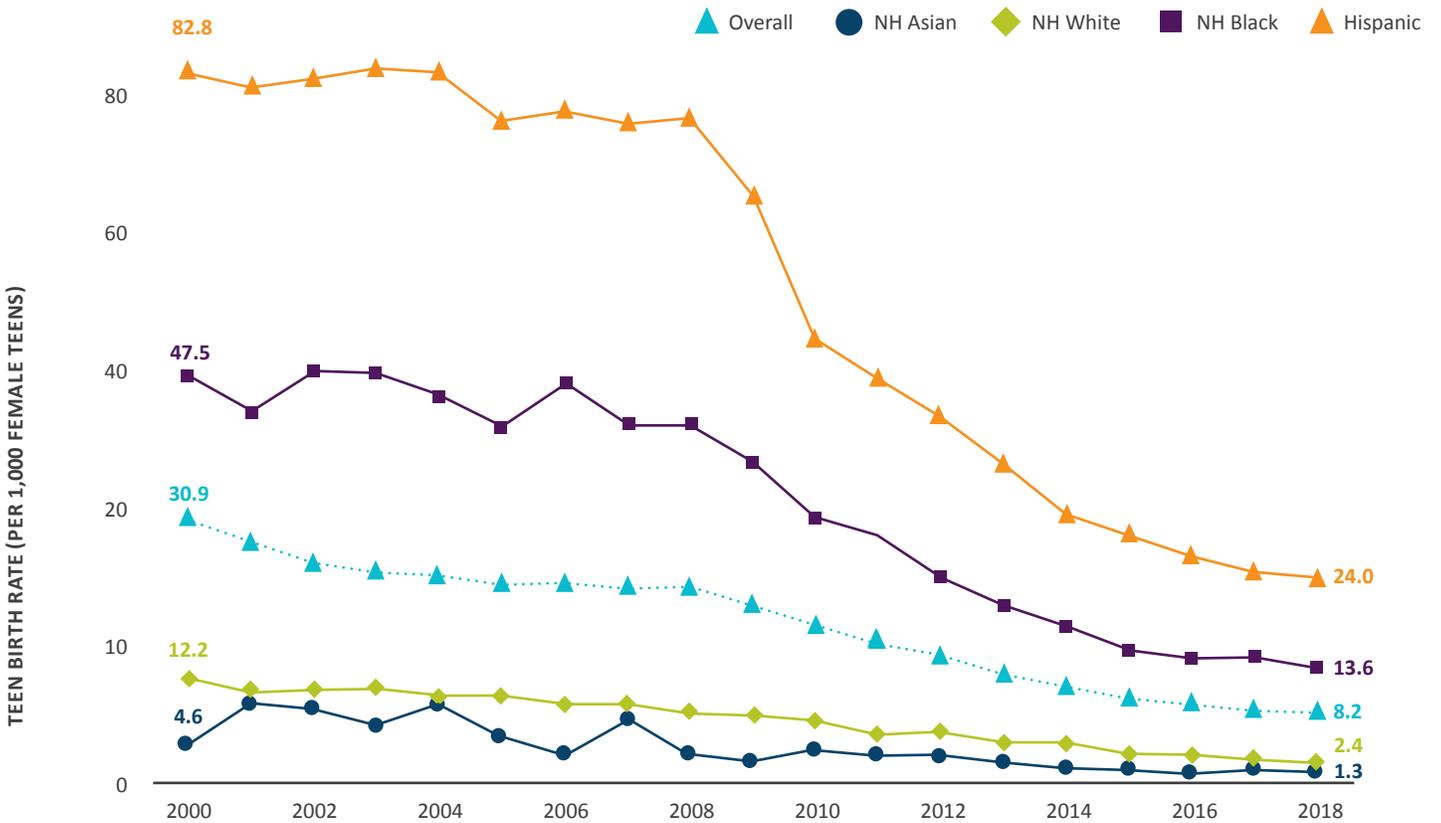
Despite the decrease in rates, disparities between racial/ethnic groups remain stable, with Hispanic teens 10 times more likely and Black teens 5.6 times more likely than White teens to have a teen birth in 2018 (**Figure 1.2**).

Short Interpregnancy Intervals

For women experiencing multiple pregnancies throughout her lifetime, sufficient spacing between pregnancies is important for a healthy birth outcome. The infants of women who have short interpregnancy intervals, defined here as pregnancies resulting in live births conceived within 18 months of a previous live birth, are at an increased risk of adverse outcomes such as preterm birth, low birthweight, and small for gestational age, and infant death.¹⁰ The Healthy People 2020 goal for the percentage of all pregnancies with short interpregnancy intervals is 29.8% for all pregnancies, including those that result in pregnancy loss.¹¹

Among Connecticut mothers who delivered a live birth in 2016, 26.6% of mothers conceived that child (singletons only) within 18 months of a previous live birth. This percentage was lower than national percentage of 29.3% for that same year. When comparing subgroups of women, different patterns emerge. Non-Hispanic White residents in Connecticut are most likely to have a short interpregnancy interval among all racial/ethnic groups, regardless of age group (**Figure 1.3**). Women ages 15–19 years are the most likely age group to have a short interpregnancy interval consistently across all race/ethnicity groups — with three out of five women (61.5%) conceiving again within 18 months. The likelihood of a short interpregnancy interval declines with increasing maternal age in Connecticut (**Figure 1.3**). Among all deliveries between 2016 and 2018, the percentage of women with private insurance who had short interpregnancy intervals (28.8%) was higher than that for women with Medicaid (23.2%). However, for non-Hispanic Black, Hispanic, and teen populations, the percentages with short pregnancy intervals do not differ between private insurance and Medicaid.

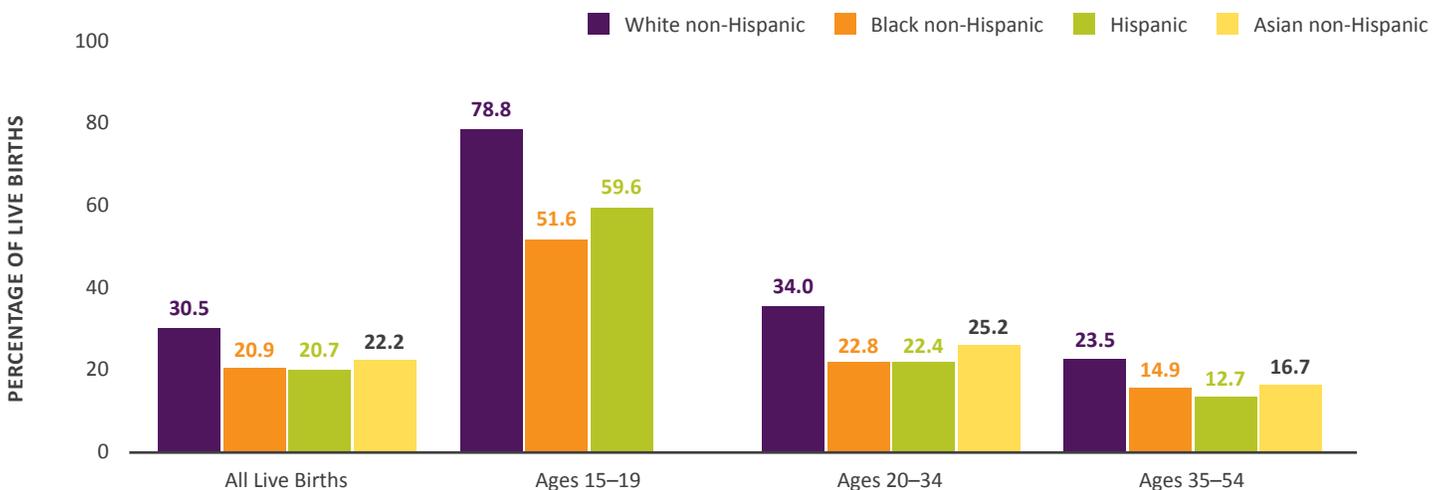
FIGURE 1.2: Birth rate among teens ages 15–19 by race/ethnicity, CT, 2000–2017



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry. 2000–2017 and provisional 2018 data.

FIGURE 1.3: Percentage of live births with short interpregnancy interval by maternal age group and race/ethnicity, CT, 2016–2018

Births Registry, Connecticut Department of Public Health Office of Vital Records and Surveillance Analysis and Reporting Unit, 2016–2017 and provisional 2018 data.



*Data not shown for non-Hispanic Asian 15–19 due to low numbers

Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry. 2016–2017 and provisional 2018 data.



PARTNERSHIP SPOTLIGHT: EVERY WOMAN CONNECTICUT LEARNING COLLABORATIVE

- **Goal:** Increase the expertise and self-efficacy of health care workers to implement routine pregnancy intention screening and appropriate care, education, and services to ultimately improve birth spacing and increase pregnancy intentionality and discussions around health before and between conceptions.
- **326 providers from 39 cities/towns and 9 statewide programs** have been involved.
- Collaborative members receive access to implement **One Key Question screening** in their respective sites and programs, by asking women, **“Would you like to become pregnant in the next year?”**
- The screening tool is used by community-based teams of clinicians and partners in communities with **high volume/burden of poor birth outcomes** who **demonstrate readiness** for this program.
- Connecticut Department of Public Health is incorporating One Key Question screening into several Department of Mental Health and Addiction Services sponsored programs that provide “whole person care” to **women and men of childbearing ages who are suffering from mental health illness, substance use disorders, and other chronic comorbidities** within a behavioral health medical home framework.

For more information, see: www.everywomanct.org

Preconception care and family planning efforts — such as educational efforts around the potential risks of short interpregnancy interval — are essential to making sure that a woman is healthy and ready for pregnancy before she conceives.¹² Previous research has found approximately 55% of live births with short interpregnancy intervals were unintended.¹³ Increased access to and use of long-acting reversible contraceptives (LARCs) has been shown to reduce the rate of women with short interpregnancy intervals.¹⁴ Older women trying to conceive a second time may often have to consider the risk of adverse birth outcomes associated with advanced maternal age with those of short interpregnancy intervals when planning to get pregnant.¹⁵ Research supports lower rates of pregnancy unintention among pregnancies with short interpregnancy intervals for women that are older, college graduates, and using a primary payer other than Medicaid for delivery.¹³ Further understanding of the dynamics of pregnancy intention and family planning, race/ethnicity, and socioeconomic status as it relates to short interpregnancy intervals in Connecticut is needed, particularly among teenage mothers for whom the risk is highest.

Care during Pregnancy

To assure optimal health outcomes for a pregnant woman and her child, preventive care is critical. Early and continuous prenatal care, including oral health care, throughout a woman's pregnancy helps medical providers identify and treat health problems early. Doing so can support the health of the mother and provide unborn babies with as healthy of a start to life as possible.

PRENATAL CARE

Beginning prenatal care in the first trimester of pregnancy and following the prescribed visit schedule improves the likelihood of positive health outcomes for mother and baby.¹⁶ Infants whose mothers do not receive prenatal care are three times more likely to be born low birthweight and five times more likely to die compared to infants born to mothers who receive prenatal care.¹⁷ Early and regular prenatal care is protective against maternal and infant adverse outcomes, including infant mortality, low birthweight, and maternal complications. By receiving early and continuous care, early diagnosis, treatment, and prevention of health problems is more likely and doctors can also discuss topics such as breastfeeding, infant safe sleep environment, and depression to help promote health and well-being in the postpartum period.

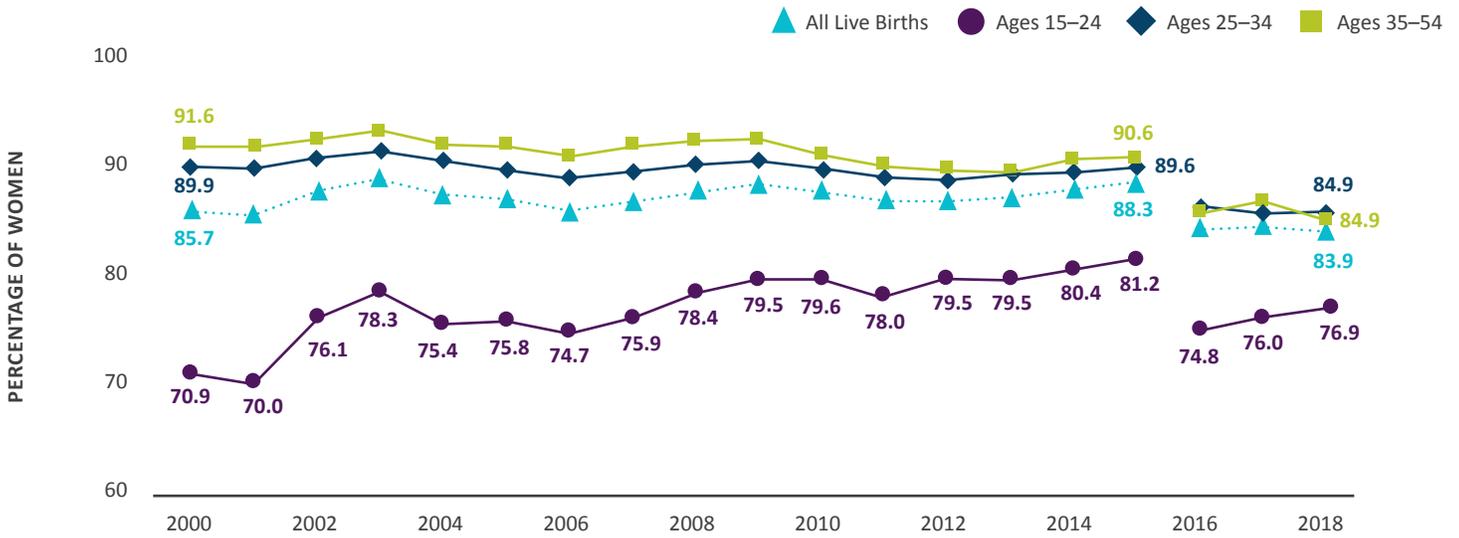
Healthy People aims for 77.9% of women to have early prenatal care. Connecticut has exceeded that goal for the past three

years (84% for 2016–2018) and fares better than the U.S. as well (77% in 2016 and 2017).^{18,8} Percentages of women receiving early prenatal care also appear to have been higher than the Healthy People 2020 goal of 77.9% for years before 2016, with the minimum percentage of 85.4% occurring in 2001. However, caution in comparing rates before and after 2016 is warranted due to changes in collection methods. Due to shifts in rates between 2015 and 2016, reporting of long term trends for timing of prenatal care initiation is limited to the years prior to 2016.¹⁹ In 2016, Connecticut adopted the 2003 Revision of the US Birth Certificate which included changes to how timing of prenatal care initiation was collected. Specifically, the 2003 Revision collects the date of the first prenatal care visit rather than the month of pregnancy during which prenatal care began. Due to these changes, rates based on prenatal care timing are not directly comparable between Revisions. Internal review by DPH suggests that reporting of date of prenatal care initiation, rather than month, yields more accurate estimates of timing of prenatal care initiation and thus rates for 2016 and later are considered to have slightly higher validity than those released prior to 2016.

Rates of early prenatal care utilization for the entire population of Connecticut were stable from 2000 to 2015. Many subgroups of women have shown no appreciable change in rates of early prenatal care. For the period 2000–2015, percentages of early prenatal care initiation were stable for non-Hispanic Asian (88.2%) women, mothers aged 25 years and older (**Figure 1.4**), and mothers with private insurance (92.6%). Among women with Medicaid as payer, rates declined between 2000 and 2006, but held stable (72.5%) between 2006 and 2015. Improvement did occur among women under 25 years of age (**Figure 1.4**) and among Hispanic women (76.5% to 83.1%). Improvement also occurred in non-Hispanic Black populations beginning in 2006 and through 2015 (74.7% to 81.8%). Non-Hispanic White women showed a modest decline from 93.5% to 91.0% between 2000 and 2013.

While the earlier data provides information on changes over time, analysis of newer data on rates of prenatal care for the period 2016–2018 reveals current disparities by race/ethnicity, maternal age group, and primary payer at delivery. Across all payer types, non-Hispanic Black and Hispanic women have the lowest rates of early prenatal care initiation with a rates that were 8–10 percentage points lower than non-Hispanic White women (**Figure 1.4**). When comparing age groups, the percentage of women aged 15–24 years with early prenatal care is 10 percentage points lower than mothers 25 years and older. The largest gaps in early prenatal care occurred between payer types. Across all races and ethnicities, women with Medicaid insurance were less likely to have early prenatal care compared with private insurance (**Figure 1.5**), a difference of 12 percentage points.

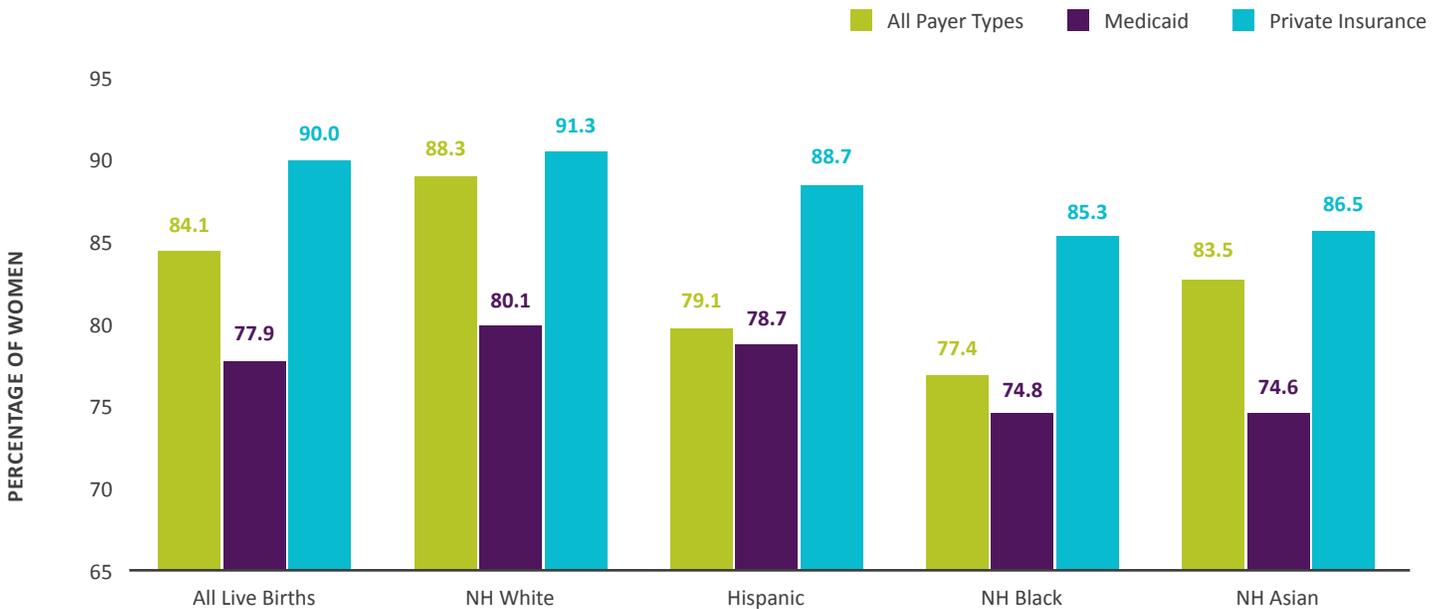
FIGURE 1.4: Percentage of pregnant women who received early prenatal care by maternal age group, CT, 2000–2018



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry. 2000–2017, and provisional 2018 data.

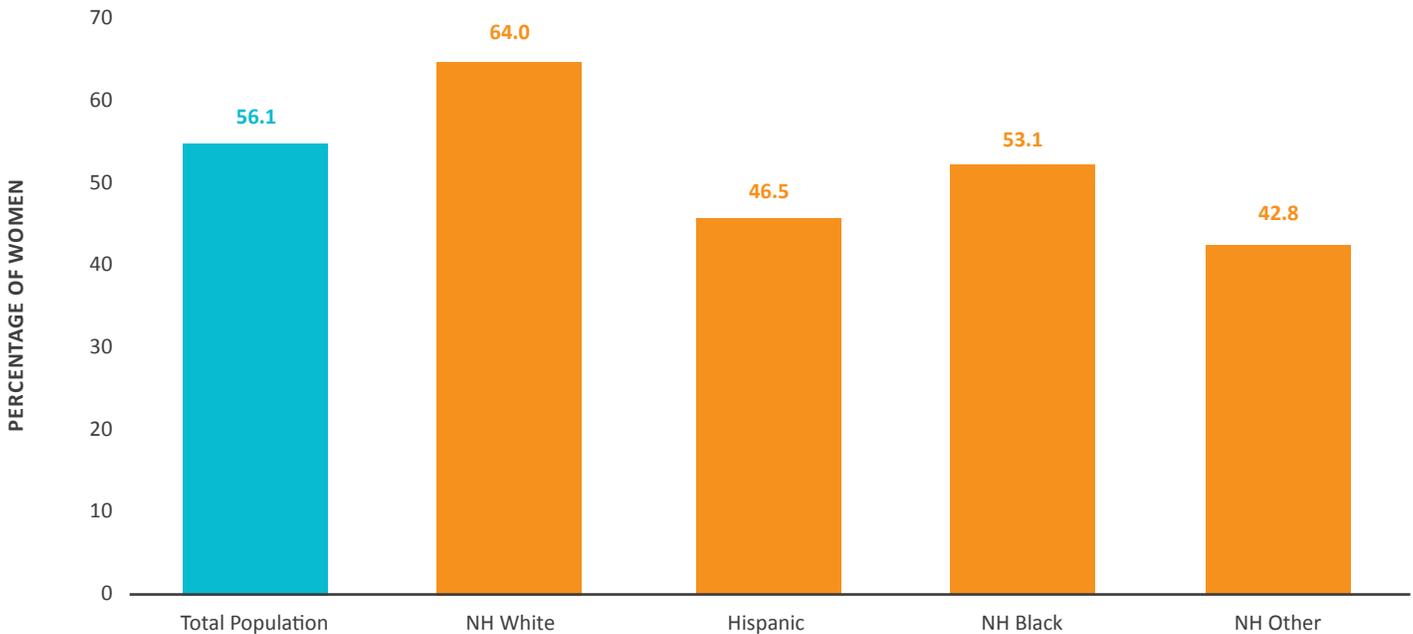
FIGURE 1.5: Percentage of pregnant women who received early prenatal care by race/ethnicity and delivery payer, CT, 2016–2018

Births Registry, Connecticut Department of Public Health Office of Vital Records and Surveillance Analysis and Reporting Unit, 2016–2017 and provisional 2018 data.



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry. 2016–2017 and provisional 2018 data.

FIGURE 1.6: Percentage of women who had a dental cleaning during their most recent pregnancy by maternal race/ethnicity, CT, 2017



Source: Pregnancy Risk Assessment Monitoring Systems.

DPH strives to improve access to prenatal care by supporting primary care sites and providing free pregnancy testing at family planning clinics. At these sites, patients are referred for early prenatal care, in keeping with established protocols. Outreach services in Hartford and New Britain through the federal Family Wellness Healthy Start program help encourage pregnant women to utilize early and regular prenatal care. Additionally, changes in 2015 in the state's public insurance policies, such as expanding eligibility for pregnant women with incomes up to 263% of the federal poverty level (FPL) and presumptive eligibility for pregnant women,²⁰ could continue to encourage early entry into prenatal care.

DENTAL VISITS DURING PREGNANCY

Maintaining oral health during pregnancy is critical to promote both the health of the mother and her unborn child or children. Gum disease in pregnant women is linked to preterm births, and mothers with high rates of tooth decay and without good preventive dental care are more likely to have children who develop cavities and are less likely to seek preventive dental care for their children.²¹

Just over half of Connecticut women delivering a live born infant reported having a dental cleaning during their most recent pregnancy (**Figure 1.6**). Compared to non-Hispanic White women, women of other racial and ethnic groups were less likely to report receiving a dental cleaning during their most recent pregnancy. Non-Hispanic women of races other than black or white were the least likely to report receiving a dental cleaning during pregnancy, followed by Hispanic and non-Hispanic Black women.

The likelihood of having a dental cleaning during pregnancy increased with maternal age. Women in their 20s were less likely to have a dental cleaning, whereas three out of five women ages 30 and over had a dental cleaning. Women with private insurance were most likely to receive a dental cleaning during their most recent pregnancy, compared to women on Medicaid and those who were uninsured.



PARTNERSHIP SPOTLIGHT: MATERNAL AND CHILD HEALTH (MCH) COALITION

- The MCH Coalition has over 100 members representing all aspects of maternal and child health.
- The Coalition examines state data related to preterm births, low birthweight, infant mortality, and associated racial/ethnic health disparities, and has deep understanding of related policies and programs in Connecticut and other states.
- A State Plan to Improve Birth Outcomes was developed to reduce perinatal health disparities and improve the health of women and infants across the life course.

For more information, see:
www.everywomanct.org/about-the-pibo

BIRTH OUTCOMES

The perinatal period refers to the period immediately before and after birth. The World Health Organization defines the perinatal period as beginning at 22 completed weeks of gestation and ending seven completed days after birth.²² The health of the mother and child during this period are closely intertwined and indicators during the perinatal period provide an indication of the quality of health care before, during, and after pregnancy.^{24;25} Specifically, perinatal health is linked to birth outcomes including preterm and low birthweight births and infant and maternal mortality.

Preterm and Low Birthweight Births

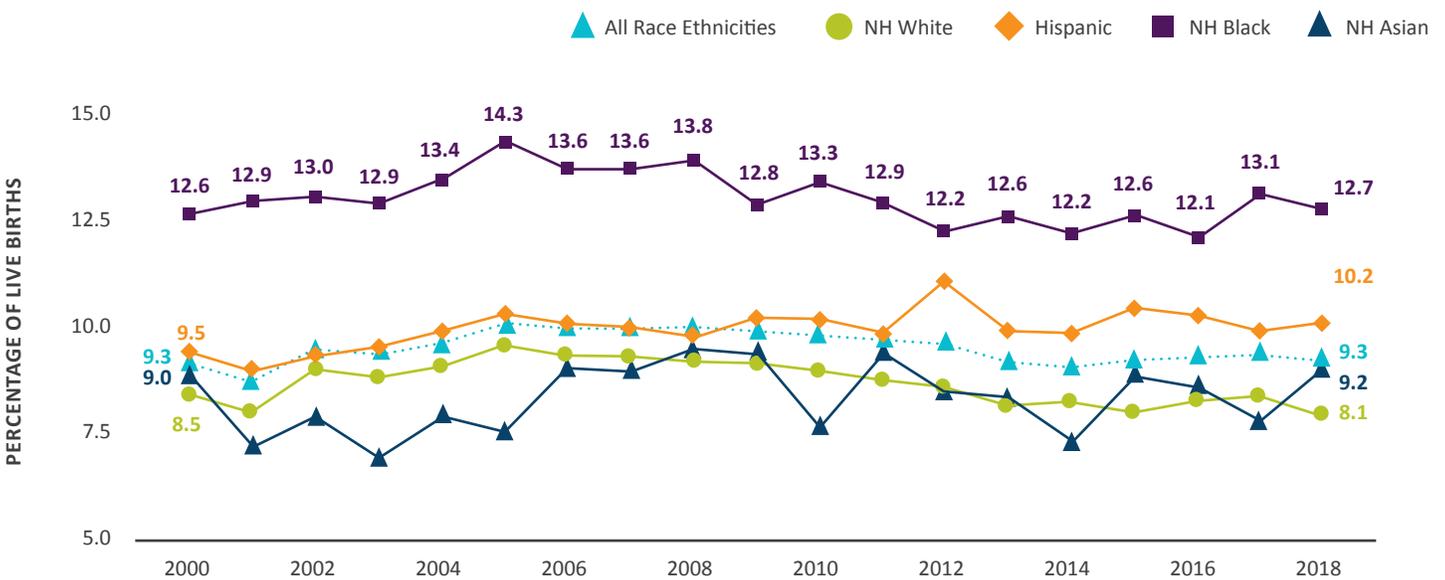
Preterm and low birthweight births, referring to infants born before 37 completed weeks gestation and infants weighing less than 5 lbs. 8 oz., respectively, are standard measures of perinatal health globally. Both indicators are important for predicting infant survival, child development, and well-being.²⁶ They also frequently occur together as the majority of births that are preterm are also low birthweight. Preterm birth and low birthweight are among the leading causes of infant deaths in Connecticut as well as nationally.^{27;28} Infants born

preterm and/or low birthweight are at risk for serious health consequences, such as respiratory problems, intellectual and developmental disabilities, vision and hearing loss, and cerebral palsy.^{29;30} It is estimated that preterm birth costs the US at least \$26.2 billion annually.³¹

PRETERM BIRTH

Major risk factors for preterm birth include pre-eclampsia or eclampsia, previous preterm birth, periodontal disease, low body-mass index of the mother, and the experience of being a black woman in the United States. Mothers carrying multiples are also at an increased risk for preterm birth.³² Since preterm

FIGURE 1.7: Trends in preterm birth (all pluralities) by race/ethnicity, CT, 2007–2018



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry. 2000–2017 and provisional 2018 data.

delivery is more common among multiples, rates of preterm birth are often reported separately for all births and for single infant births (singletons). Rates of multiple births also vary between population subgroups. Providing rates for singletons only removes the influence that varying rates of multiple births may have on overall preterm rates.

The national rate of preterm births among all multiples rose over the period 1980–2006. Major drivers behind the upward trend were increases in non-medically indicated inductions, cesarean deliveries, and use of assisted reproductive technology, such as in vitro fertilization which often results in multiple births.³³ Since 2007, national rates of preterm birth declined. This decline has primarily been attributed to reductions in the number of births to women <25 who are more likely to have preterm births as well as reduced rates of preterm birth across all maternal age groups.³⁴ These reduced rates across all maternal age groups have been attributed to fewer multiple births, state-level smoking bans, and interventions including use of hormonal interventions in women at high risk for preterm birth.³⁵ However, declining preterm birth rates hit a low of 9.6% in 2014 have increased annually through 2017.^{36,37}

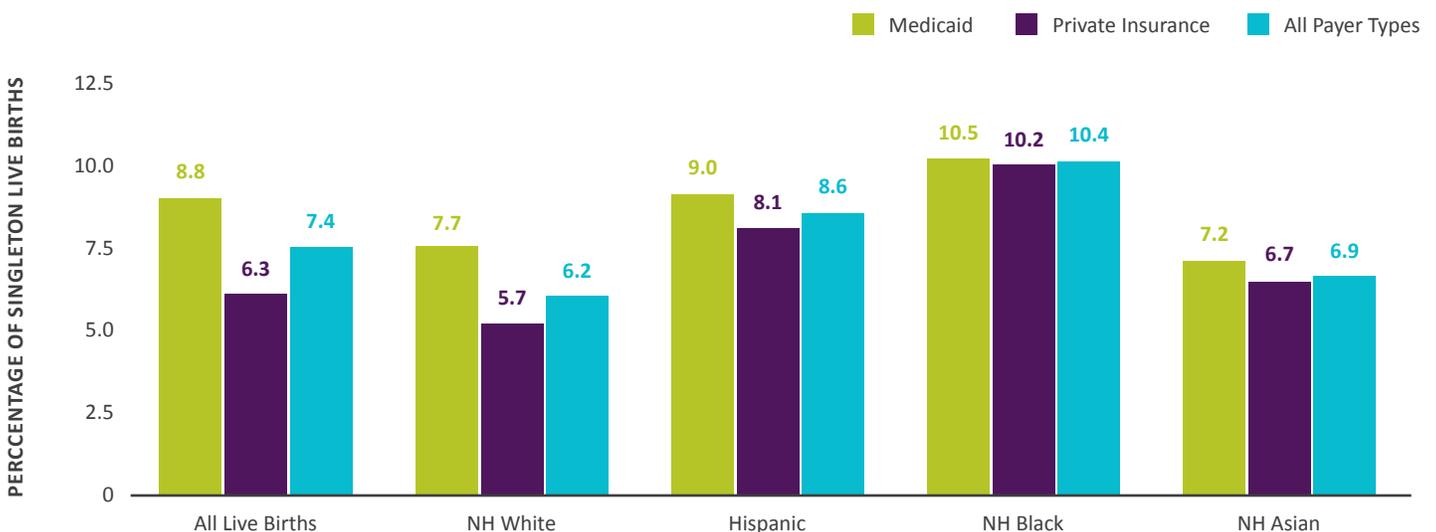
Connecticut had a lower rate of preterm birth in 2017 compared to U.S. as a whole (9.5% versus 9.9%, respectively).²³ The Healthy People 2020 target aims to reduce preterm birth to no more than 9.4% of all live births. Connecticut reached the Healthy People 2020 preterm birth rate goal of 9.4% in 2013 after declining from a peak in preterm birth rates of 10.4% in 2005 (Figure 1.7). However, the preterm birth rate has not consistently

stayed below the HP2020 goal since 2013. In 2016 and 2017, the state rate for preterm birth among all pluralities was 9.4% and 9.5%, respectively. Preliminary data for 2018 suggest that rates were similar to those in 2017. In Connecticut, the long-term declines in preterm birth rates appear to have slowed or possibly ceased altogether during the period of 2014–2018. These rate changes are similar to trend changes at the national level.^{36,37}

Within Connecticut, disparities by race/ethnicity, primary payer, and age persist. As with many adverse birth outcomes, non-Hispanic Black women consistently have the highest percentage of preterm births but their rates have shown continual, yet modest, improvement since 2006. Rates among non-Hispanic White mothers are trending lower as well. In contrast, rates of preterm births among Hispanic women, which are higher than the rates among non-Hispanic white women, have slightly worsened since 2000. Preterm births among non-Hispanic Asian women are more variable from year to year and have not shown evidence of rate changes over time.

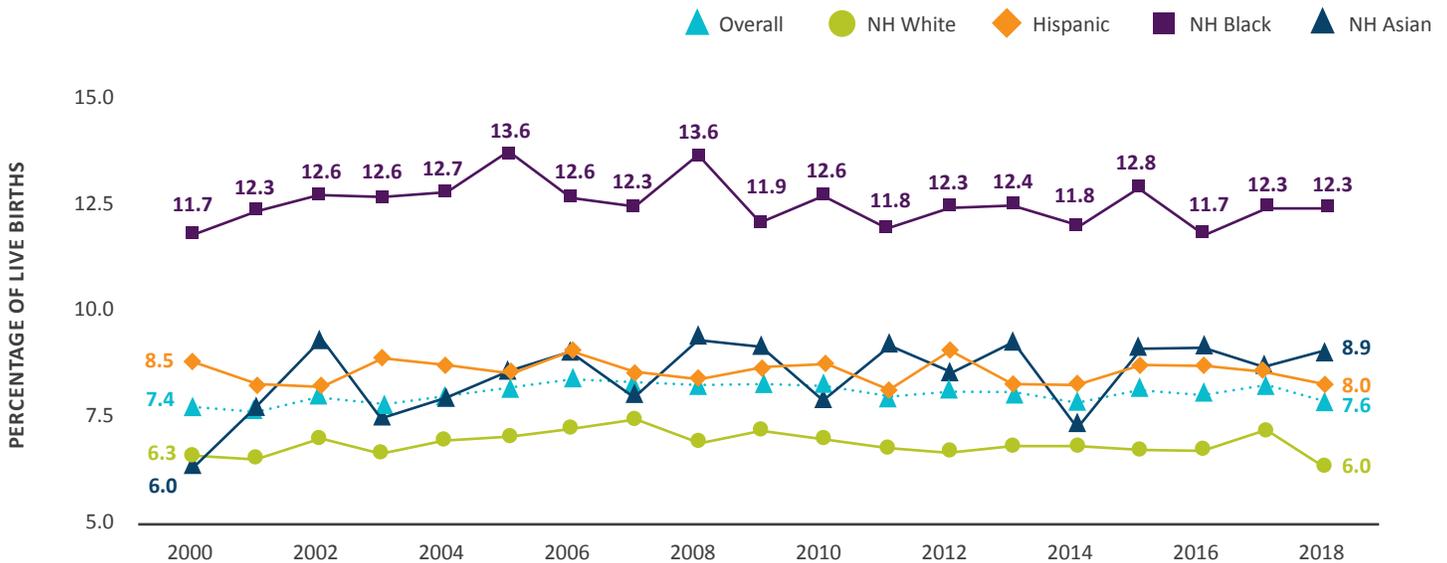
While race and ethnicity are key to understanding differences in risk of preterm birth in Connecticut mothers, insurance status is also a strong predictor of risk. For both Hispanic and non-Hispanic White women, the rate of singleton preterm birth is significantly lower for women with private insurance versus Medicaid as the delivery payer (Figure 1.8). However, both Hispanic and non-Hispanic White women on Medicaid have lower rates of singleton preterm birth than non-Hispanic Black women with private insurance in Connecticut.

FIGURE 1.8: Singleton preterm birth rate by race/ethnicity and delivery payer, CT, 2014–2018



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry 2014–2017 and provisional 2018 data.

FIGURE 1.9: Trends in low birthweight (all pluralities) by race/ethnicity, CT, 2000–2018



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry, 2000–2017 and provisional 2018 data.

Singleton preterm birth rates in Connecticut differ among maternal age groups. When comparing women across 5-year age groups, singleton preterm births were highest among women ages 40 years and older (9.7%), higher among teens aged 15–19 years (9.3%) and lowest among women for 30–34 years of age (6.9%) for the combined years of 2014–2018. Thus, women at both ends of the age spectrum are at highest risk for preterm birth in Connecticut which is consistent with national data. While teenage and older mothers often share risk factors for preterm birth, such as low socioeconomic status, smoking, and body mass extremes, physiological immaturity is a primary risk factor specific to teenage mothers and preexisting chronic disease conditions is a primary risk factor specific to mothers over 40 years of age.³⁴

LOW BIRTHWEIGHT

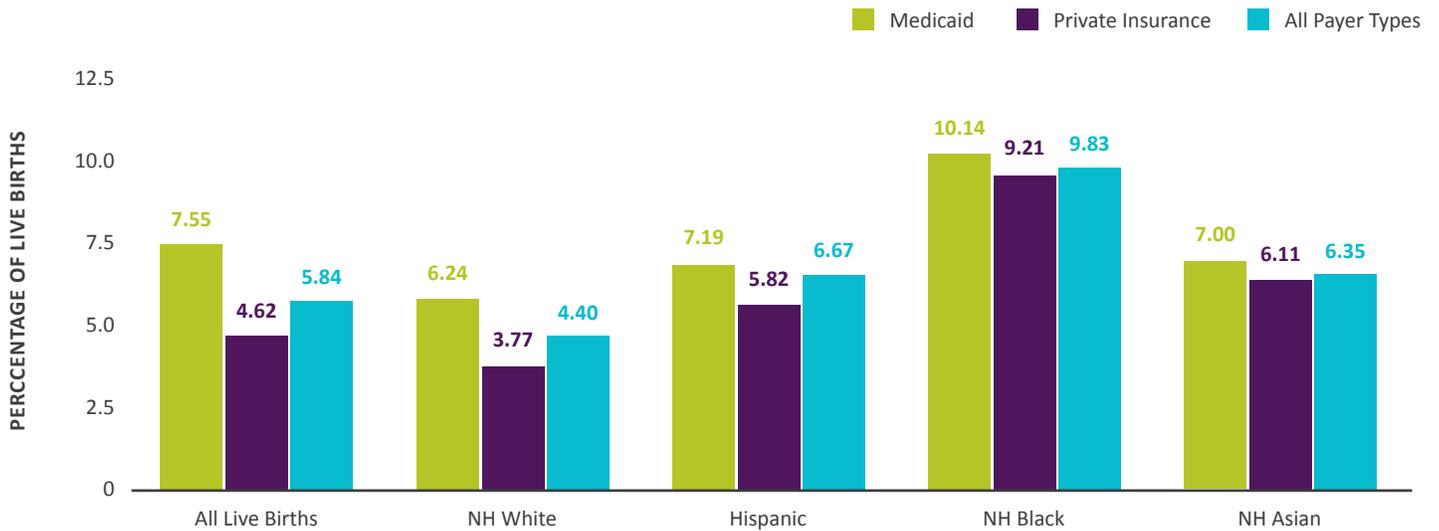
The risk factors involved in preterm birth are multiple and complex. Low birth weight in an infant is associated with two underlying risks: a preterm delivery in which case the infant had less time to grow or a full-term delivery in which case the infant did not grow as large as expected based on population rates (a condition known as small-for-gestational-age). Infants who are born with low birthweight are often preterm and therefore share many of the same risk factors and outcomes discussed in the Preterm Births section. Infants who are born small for their gestational age (SGA) have been associated with maternal

pre-pregnancy underweight or inadequate gestational weight gain, substance use during pregnancy, hypertensive conditions, short stature, and multiple births.³⁸

Rates of low birthweight in Connecticut (8.1%) were not different than the national rate (8.2%) in 2017.²³ Healthy People 2020 aims for low birthweight rates to be reduced to 7.8%. Connecticut surpassed that goal in 2014 as part of a declining trend in the rate of in low birthweight between 2006 and 2014 (**Figure 1.9**) but recent years have ticked back up with the rates of low birthweight in 2015, 2016, 2017, and 2018 (preliminary data) being 7.9%, 7.8%, 8.1%, and 7.6%, respectively. These recent shifts in rates are consistent with the trend changes for preterm births described in the previous section and are similar to national trends.³⁷ Reasons for lack of continued decline in both preterm and low birthweight births since 2015 warrants further research (**Figure 1.9**).

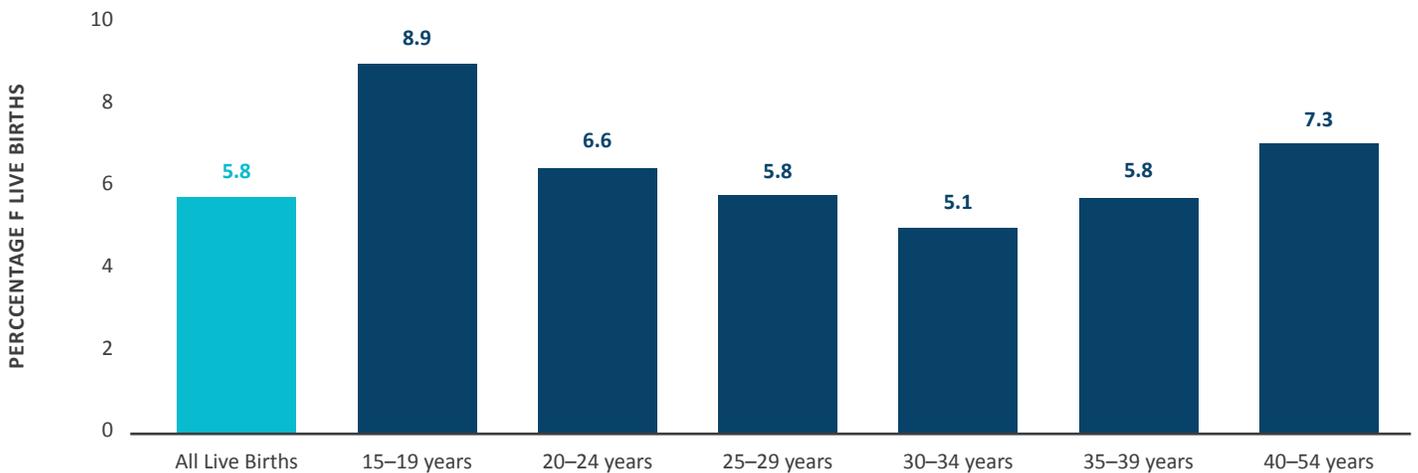
Disparities by race/ethnicity and trends over time by race/ethnicity of low birth weight rate are also similar to those for preterm birth rate. Non-Hispanic Black women have the highest rate of low birth weight over the period 2000–2018 but show a decline from 2006 to 2018 (**Figure 1.9**). Rates in non-Hispanic White women are lowest compared to other race/ethnicities and have also been declining since 2006. Low birthweight rates for Hispanic and non-Hispanic Asian women have remained steady between 2000–2018.

FIGURE 1.10: Singleton low birthweight by race/ethnicity and delivery payer, CT, 2014–2018



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry.

FIGURE 1.11: Singleton low birthweight by maternal age group, CT, 2014–2018



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry. 2014–2017 and provisional 2018 data.

Non-Hispanic White and Hispanic women on Medicaid were more likely to have a low birthweight singleton baby when compared to women with private insurance coverage, but there was no evidence to suggest such a difference for non-Hispanic Black and non-Hispanic Asian women, a pattern similar to those for rates of preterm birth (Figure 1.10). Trends in singleton low birthweight for women on Medicaid have improved from 10.0% to 7.9% between 2001 and 2014 but have since stabilized at an average of 7.7% in recent years. Rates of singleton low birthweight for women with private insurance remained stable around an average of 4.6% for the period 2001–2018.

Much like preterm birth, the likelihood of low birthweight increases toward both the younger and older ends of the maternal age spectrum. Similar to preterm birth rates, women ages 30–34 are the least likely to have a low birthweight baby in Connecticut (Figure 1.11).

While preterm and low birthweight rates have similar patterns overall and among subgroups of women, differences between the two outcomes exist when comparing maternal age groups over time. Singleton preterm birth rates across maternal age groups (teenagers, 20–34 year olds, and 35–54 year olds) have shown steady declines over the period 2000–2018. In contrast, overall rates of singleton low birthweight have remained steady over that same period and have increased among both the lowest risk age group (20–34 year olds) and the intermediate risk age group (35 years and older, Figure 1.12). Reasons behind an apparent rise in the rate of singleton low birthweight in mothers outside of the teenage age group warrants further investigation and monitoring in Connecticut.

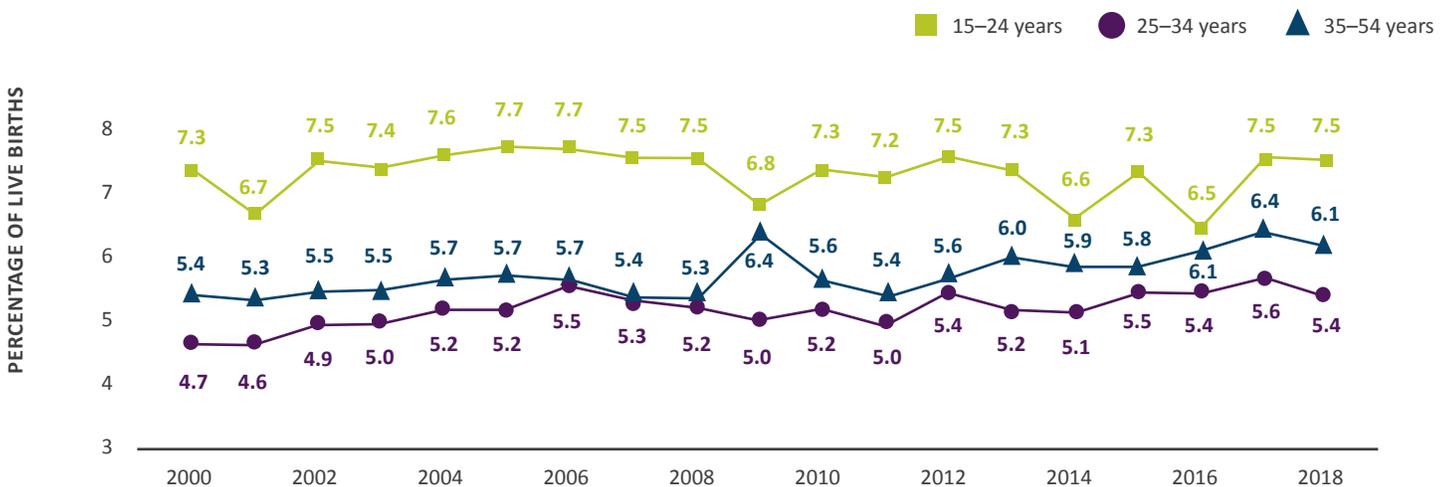
Infant Mortality

Infant mortality rate (IMR), which is the number of infant deaths within the first year of life per 1,000 live births, is an indicator of the overall health and well-being of a population.²⁸ The IMR in the United States is higher than that of other developed nations.³⁹ The leading cause of infant mortality in the United States is congenital malformations, followed by short gestation and low birthweight, Sudden Infant Death Syndrome (SIDS), maternal complications, and unintentional injuries.⁴⁰

Over the past decade the overall IMR for the U.S. as a whole has declined to 5.8 deaths per 1,000 live births in 2017 from a 6.8 deaths per 1,000 live births in 2007.^{41;28} Declines in the national IMR have been attributed to declining counts of infants born at younger gestational ages and improved survival of infants regardless of gestational age at birth.⁴² Connecticut’s infant mortality rate was 4.6 deaths per 1,000 live births in 2017 down from 5.9 deaths per 1,000 live births in 2005 — a decrease of about 2.4% each year (Figure 1.13). Our IMR has consistently remained well below both the US rate and the Healthy People 2020 target of 6 deaths per 1,000 live births since 2010.⁴³

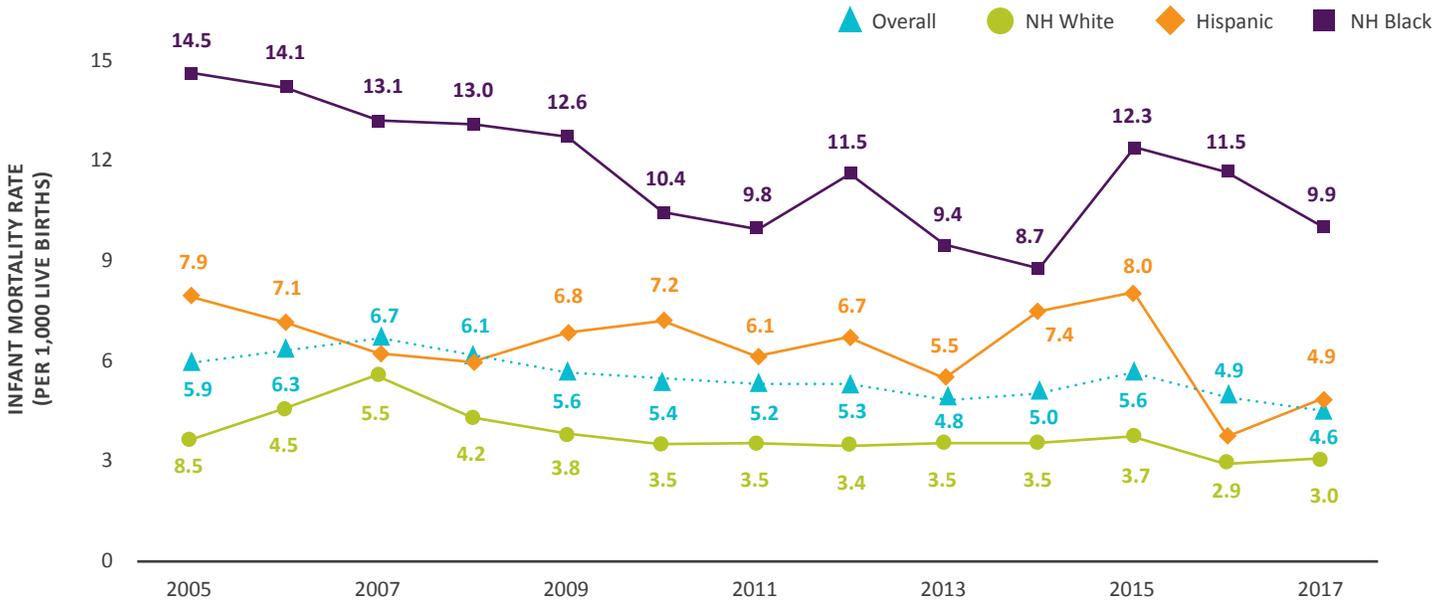
Reductions in the state IMR are driven by declines across many subgroups. Declines were observed among all race and ethnicity subgroups (except non-Hispanic Asian infants for which counts were too small for analysis) and were strongest among our highest risk group, non-Hispanic Black residents, who showed an average decrease of 2.8% annually (Figure 1.13). Since 2005, IMRs among infants to mothers with private insurance have declined at about 3.5% each year (Figure 1.14). IMRs for babies

FIGURE 1.12: Singleton low birthweight by maternal age group, CT, 2000–2018



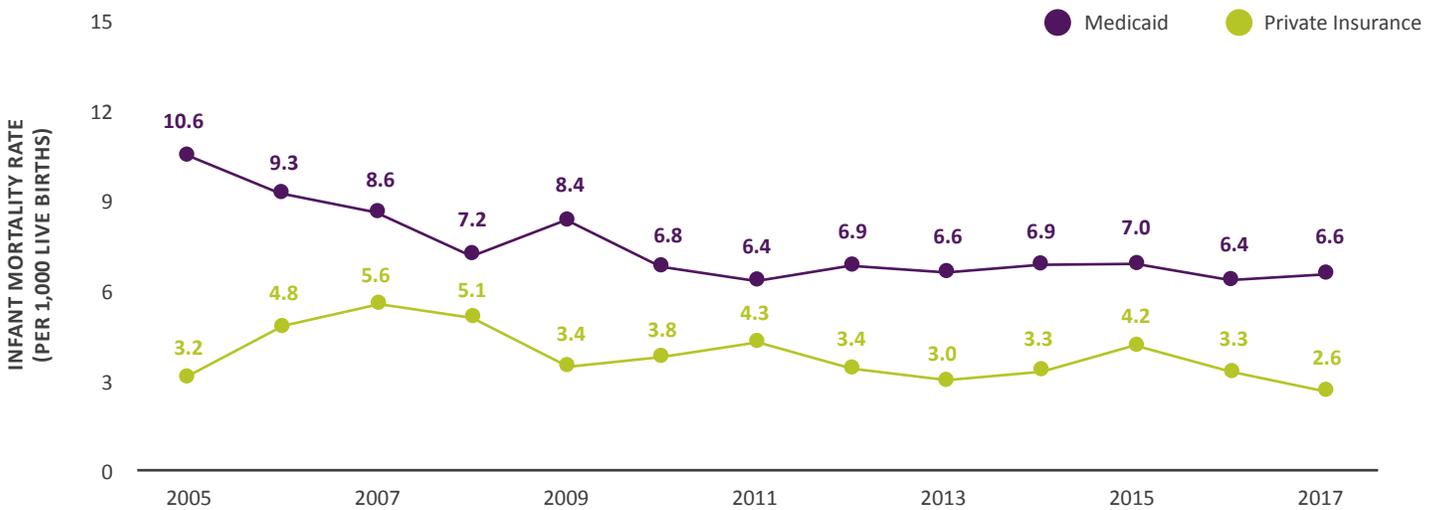
Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Birth Registry. 2000–2017 and provisional 2018 data.

FIGURE 1.13: Infant mortality rate by race/ethnicity, CT, 2005–2017



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Births and Deaths Registries.

FIGURE 1.14: Infant mortality rate by delivery payer, CT, 2005–2017



Source: CT DPH Office of Vital Records and Surveillance Analysis and Reporting Unit, Births and Deaths Registries.

with mothers on Medicaid declined quite markedly from 2005–2011 at about 6.8% annually but then plateaued from 2011–2017 (**Figure 1.14**). Among infants born to mothers aged 25–39 years, IMRs declined from 2005–2017 while infants born to women under 25 years and over 40 years did not have any long-term trend changes during those years.

Progress is being made in reducing Connecticut’s IMR and in reducing the disparity between black and white infants. Our state was recently cited as ranking eighth among all states for reducing the black-white infant mortality gap over the period 1999–2013.⁴⁴ Nonetheless, there is still work to be done. Non-Hispanic Black infants were more than three times as likely to die and Hispanic infants were 1.5 times more likely to die than non-Hispanic White infants in Connecticut in 2017 (**Figure 1.13**). Infants born to mothers under 25 years of age were almost twice as likely to die as babies born to mothers 35–39 years old (2013–2017 births).

Maternal Mortality

Many chronic conditions and diseases are associated with pregnancy complications. Rising rates of chronic disease such as obesity, hypertension and cardiovascular disease have contributed to the rise in maternal deaths.^{45,46} Research shows that 40% of deaths from pregnancy-related complications are potentially preventable through improvements to health before pregnancy and improved quality of medical care.⁴⁷ To prevent maternal mortality, the following are important to promote:

- **Preconception health.** A healthy pregnancy begins before conception. Improving women’s health across the lifespan and preventing chronic disease results in healthier pregnancies with fewer complications.^{48,49} Treatment of cardiovascular disease prior to conception may help prevent maternal deaths caused by cardiovascular complications.⁴⁵
- **Prenatal care.** Having prenatal care is associated with healthy pregnancy outcomes, especially during the first trimester.⁵⁰ Management of chronic conditions during pregnancy is key to preventing complications throughout pregnancy and delivery.⁴⁸ To promote access to prenatal care, the 2010 Affordable Care Act requires insurance plans to cover antenatal and maternal care.
- **Medical care improvement.** Improvements to hospital protocol and patient safety tools have been found to be effective strategies to reduce maternal mortality. In one study, severe maternal morbidity from hemorrhage was reduced

by 20 percent through a collaborative quality improvement program.⁵¹ Systems to detect early warning signs can prevent delays in diagnosing and treating conditions that lead to maternal death.⁵² Quality improvement toolkits, maternal early warning systems and other resources are available to support and guide quality improvement efforts in health facilities.

In the US, maternal mortality has been on the rise, increasing 26.6% from 2000 to 2014.⁵³ Compared with other high-income countries in North America and Western Europe, the United States has the highest rate of maternal mortality despite a global trend of decreasing maternal deaths.⁵⁴

There are substantial and persistent disparities in maternal deaths by race and ethnicity. Specifically:

- For Black women, the rate of maternal mortality has been three to four times that of White women for over a century.⁴⁹
- 47.2 maternal deaths per 100,000 live births occurred up to 42 days postpartum among non-Hispanic Black women, 2.6 times the maternal death rate of non-Hispanic White women (18.1 deaths per 100,000 live births), and 4 times higher than the rate among Asian/Pacific Islander women (11.6 deaths per 100,000 live births) and Hispanic women (12.2 deaths per 100,000 live births).⁵⁵

In addition, women at greater risk of maternal mortality include:

- Women aged 40 or older, with 31.9 percent of maternal deaths from 2013–2014 occurring in this population.⁵⁶
- Women who are obese.⁵⁷
- Uninsured women, who are three to four times more likely to die of pregnancy-related complications than their insured counterparts.⁵⁰

In 2018, Connecticut passed legislation establishing a maternal mortality review program to review medical records and data related to each maternal death case in the state. The legislation also established a maternal mortality review committee within CT DPH to conduct a comprehensive, multidisciplinary review of cases in order to identify factors associated with maternal mortality and make recommendations to reduce the incidence of maternal deaths. Through the work of this committee, CT identifies and characterizes these maternal deaths as Pregnancy-Related or Pregnancy-Associated maternal deaths, which are approximately 8–10 maternal deaths per year.

EARLY LIFE

The health of a baby can be maximized during the first year of life through breastfeeding promotion and a healthy and safe home environment.

Breastfeeding

Breastfeeding has been shown to promote the health and development of infants, as well as their immunity to disease. It also confers a number of maternal health benefits, such as a decreased risk of breast and ovarian cancers and other chronic conditions, including cardiovascular disease.

National trends demonstrate that while breastfeeding rates are rising, 87.6% of women who gave birth to a live born infant in 2017 reported initiating breastfeeding,⁵⁸ infants born to households living in poverty, or to parents who are younger, unmarried, receiving WIC benefits, or with low educational attainment are less likely to be breastfed.⁵⁹ While overall most infants in Connecticut are breastfed, babies of non-Hispanic Black women were the least likely to be breastfed, however this is not statistically significant (**Figure 1.15**).

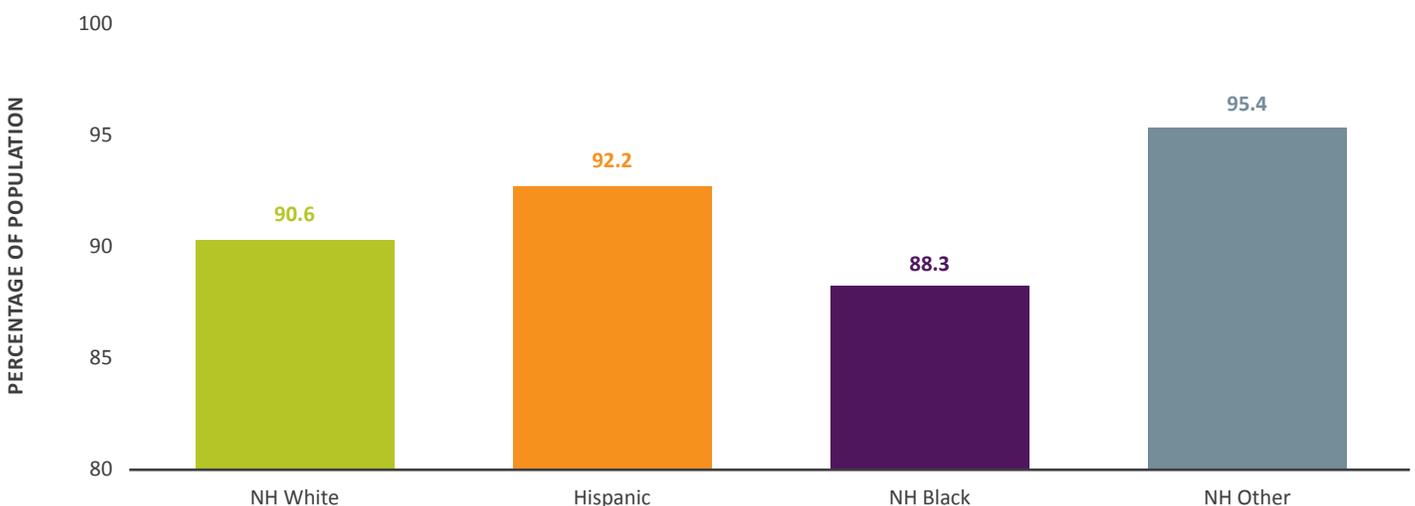
Ways to support a woman's decision to breastfeed include: ensuring access to lactation support, including breast pumps, consistent with the Women's Health Provisions of the Affordable Care Act; increase employee and employer awareness and

understanding of their 'rights and responsibilities' under State and Federal breastfeeding laws; provide targeted technical assistance and support to breastfeeding friendly work places, schools, hospitals, and medical offices to ensure compliance with State and Federal workplace lactation accommodation laws; and engage and plan with established community support networks to promote health equity in breastfeeding initiation, exclusivity and duration.

Neonatal Abstinence Syndrome

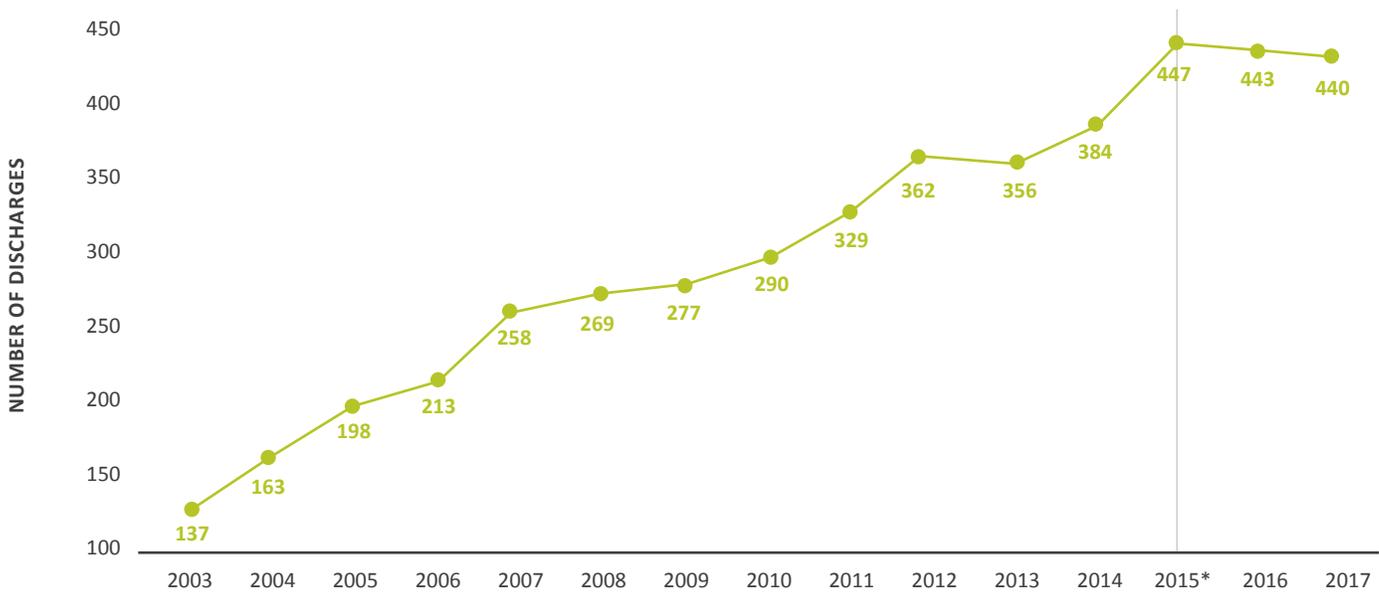
Neonatal Abstinence Syndrome (NAS) refers to a group of conditions caused when a neonate (i.e., a newborn less than 28 days of age) withdraws from certain drugs to which the infant was exposed in the womb before birth.⁶⁰ Most commonly, NAS is caused by maternal chronic opioid exposure. All opioids can cause withdrawal symptoms, including methadone and buprenorphine which can be used for opioid treatment, as well as short-acting agents such as oxycodone, heroin and fentanyl. NAS is characterized by behavioral dysregulation that occurs within 2–3 days of birth. Signs and symptoms include altered

FIGURE 1.15: Percentage of infants who are ever breastfed by maternal race/ethnicity, CT, 2017



Source: Pregnancy Risk Assessment Monitoring System.

FIGURE 1.16: Number of hospital discharges for infants born with Neonatal Abstinence Syndrome (NAS), CT, 2003–2017



Source: Connecticut Inpatient Hospitalization and Emergency Department Visit Dataset.

***Note:** The vertical line is the break line where the diagnosis codes were converted from ICD9- to ICD10-CM (as of Oct. 1, 2015).

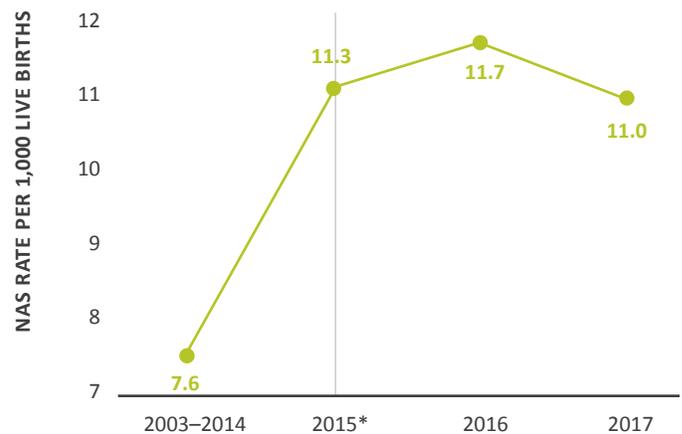
sleep, high muscle tone (muscles feel tight or rigid), tremors, irritability, poor feeding, vomiting and diarrhea, sweating, abnormally rapid breathing, fevers and other autonomic nervous system disturbances. Several studies indicate that NAS has long-term effects on children which include neurodevelopmental problems, learning disabilities and behavioral problems.^{61;62}

Nationally, one baby is born with signs of NAS every 15 minutes.⁶³ From 2004 to 2014, the incidence of NAS in the United States increased 433%, from 1.5 to 8.0 per 1,000 hospital births.

In our state, the number of hospital discharges for infants born with NAS in 2017 was three times higher than the number in 2003 (**Figure 1.16**). This increase in infants born with NAS follows the increasing prevalence of opioid use in pregnancy in our state. As a note, the number of discharges before 2015 cannot be directly compared to discharges from 2016 onwards due to a change in data classification that started in October 2015. While we do not have multiple years of trend data following this data classification transition, we do see a slight decrease in the number of hospital discharges for infants born with NAS from 2016 to 2017. As we gather additional years of data, we will be able to see if this trend continues.

The rate of Connecticut infants born with NAS also increased between 2003 and 2017, though again rates before 2015 cannot be directly compared to rates after 2016 due to the data classification changes (**Figure 1.17**).

FIGURE 1.17: Rate of infants born with Neonatal Abstinence Syndrome (NAS), CT, 2003–2017



Source: Connecticut Inpatient Hospitalization and Emergency Department Visit Dataset, 2003–2017

***Note:** The vertical line is the break line where the diagnosis codes were converted from ICD9- to ICD10-CM (as of Oct. 1, 2015).

PROGRAM SPOTLIGHT: COLLABORATING TO ADDRESS NEONATAL ABSTINENCE SYNDROME

Understanding prenatal substance exposure and its effects and educating communities about teratogenic (i.e. causing malformation of an embryo) effects of drugs during pregnancy will help reduce NAS incidence in our state. Populations of focus for these efforts include: young women, medical providers, social services and treatment providers, schools, higher education programs, child welfare staff, and foster/adoptive parents. A universal protocol that defines screening procedures for maternal substance misuse and substance use disorder needs to be developed and executed to implement comprehensive treatment for infants at risk or showing withdrawal symptoms.

To achieve this aim, collaborative partnerships have formed in our state between non-governmental professional organizations, multiple state agencies, and public/private professional organizations.

Partners include:

- Connecticut Department of Public Health (DPH),
- Connecticut Special Supplemental Nutrition Program for Women, Infants, and Children
- Connecticut Perinatal Quality Collaborative (CPQC),
- Neonatal Abstinence Syndrome: Comprehensive Education and Needs Training (NASCENT) Project,
- Connecticut Substance Exposed Infants-Fetal Alcohol Syndrome Disorder (SEI-FASD) Collaborative,
- The Connecticut Alcohol and Drug Policy Council,
- The Women's Services Practice Improvement Collaborative (WSPIC).

Connecticut Department of Public Health efforts specifically include:

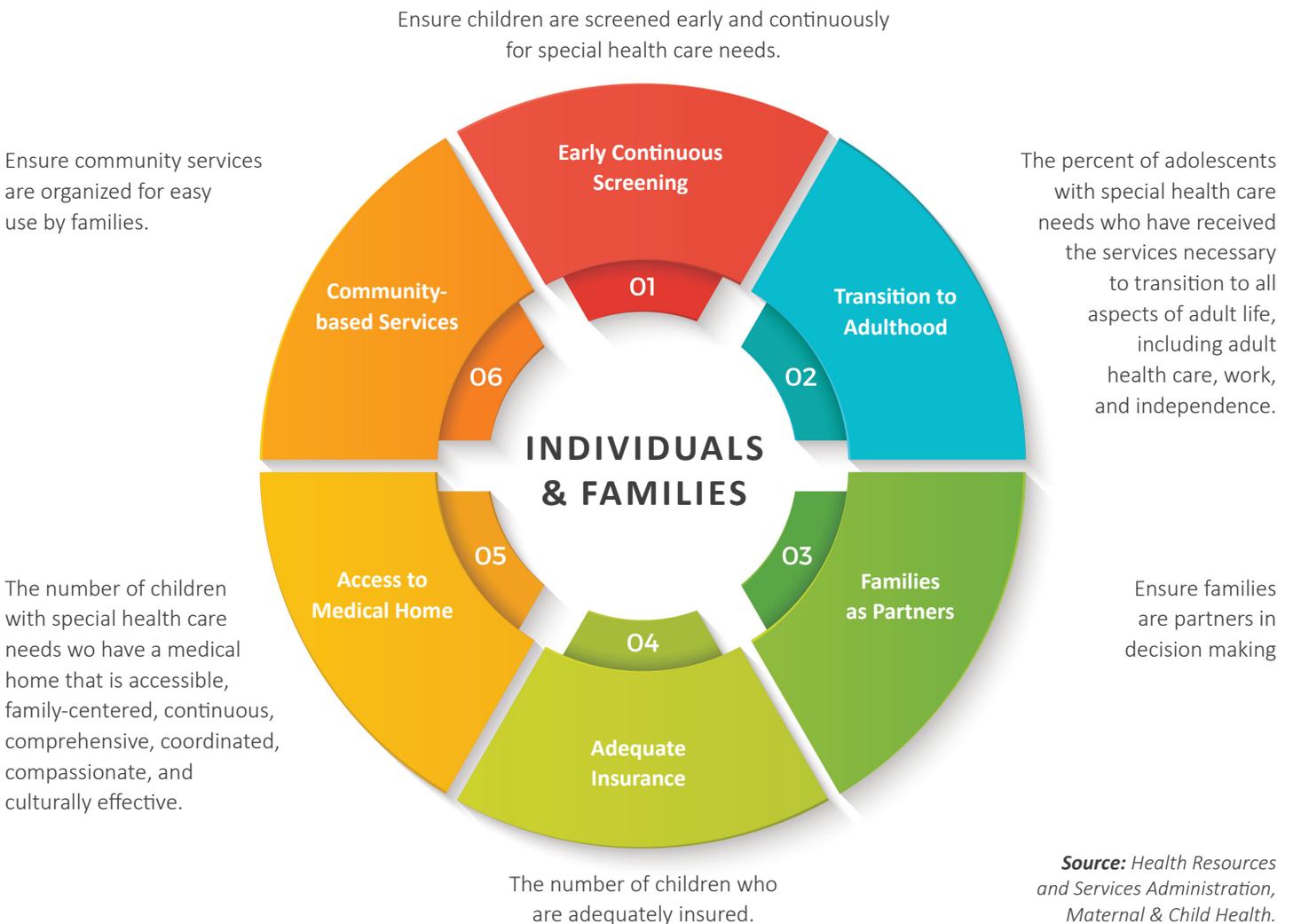
- Participating in the statewide NAS collaborative: Connecticut Perinatal Quality Collaborative;
- Analyzing hospital discharge datasets to identify the number of infants with NAS and sharing data with partners proactively;
- Tracking Fetal Alcohol Syndrome, starting in early 2019.
- Strengthening bio-surveillance by conducting ongoing surveillance of the opioid crisis statewide.
- Adding substance use and withdrawal symptom fields to the Connecticut Newborn Screening System and prompting a new set of questions when NAS is present.
- Improving near real-time surveillance of the incidence of NAS statewide in order to inform prevention, treatment, and recovery services and resources across the state.
- Planning to implement the opioid supplement in the Pregnancy Risk Assessment Monitoring (PRAMS) Questionnaire starting in April 2019.

CHILDREN WITH SPECIAL HEALTH CARE NEEDS

Children with special health care needs have or are at increased risk for chronic, physical, developmental, behavioral, or emotional conditions. In addition, they often require more health-related services beyond what is required by children generally.⁶⁴ To support their complex health needs and achieve optimal health outcomes, it is essential to create an effective system of care that focuses on:

- Community-based services,
- Access to a medical home,
- Adequate insurance,
- Early continuous screening,
- Transition to adulthood, and
- Families as partners.

FIGURE 18: Systems of Care for Children with Special Health Care Needs



Health Insurance Coverage for Children

There is a well-documented benefit for children in having health insurance. Research has shown that children who acquire health insurance are more likely to have access to a usual source of care, receive well child care and immunizations, to have developmental milestones monitored, and receive prescriptions drugs, appropriate care for asthma, and basic dental services. Serious childhood problems are more likely to be identified early in children with insurance, and insured children with special health care needs are more likely to have access to specialists. Insured children not only receive more timely diagnoses of serious health care conditions, but they also experience fewer avoidable hospitalizations, improved asthma outcomes and fewer missed school days.⁶⁵

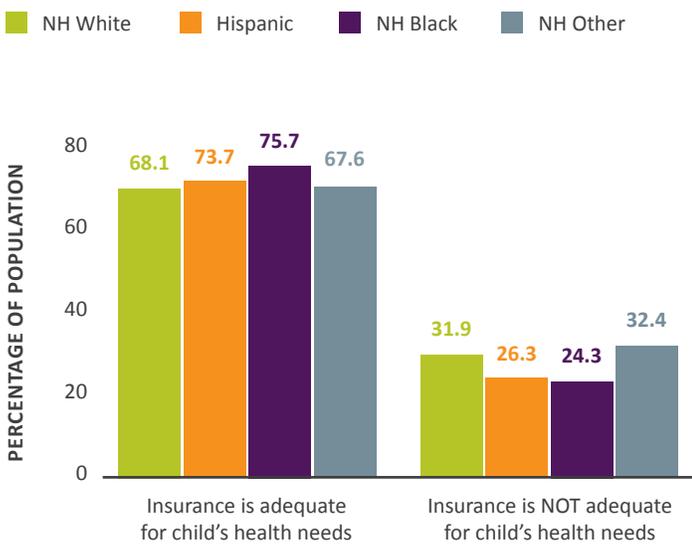
Children and youth with special needs and their families face additional challenges in navigating complex healthcare systems. Although children and youth with special health care needs are more likely to be insured compared to the general population of children and youth, nearly 4% did not have health insurance in 2016. Similar to all children and youth, this group has seen a shift toward public insurance coverage and away from private

insurance over the last 15 years. In 2001, nearly three-quarters of children and youth with special health care needs had private insurance (73%) and less than one-third had public insurance (30%). However, in 2016, the proportion of children and youth with special health care needs who had either private or public insurance was split relatively evenly (54% and 48%, respectively).

Almost one in four American children with continuous insurance coverage are not adequately insured. Inadequately insured children are more likely to have delayed or forgone care, lack a medical home, be less likely to receive needed referrals and care coordination, and receive family-centered care. The major problems cited were cost-sharing requirements that are too high, benefit limitations, and inadequate coverage of needed services.⁶⁶ (Figure 1.19).

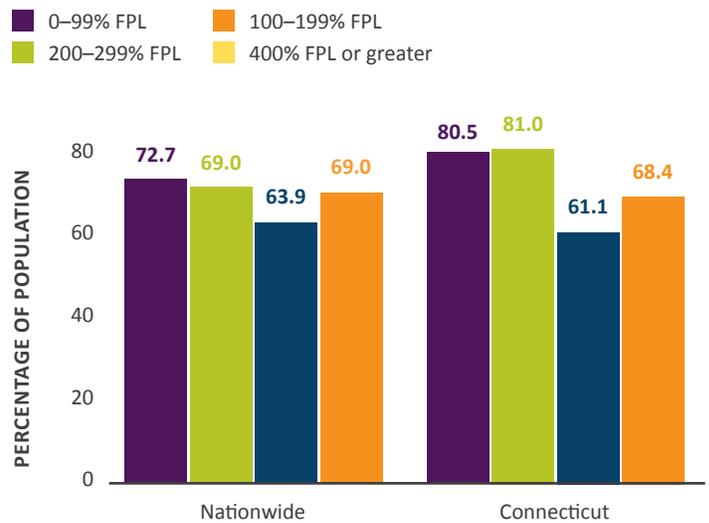
Health insurance access that is both continuous and adequate is important to the health of children, especially children with special health care needs. While Connecticut children age birth to 17 overall have better insurance coverage than their national counterparts, there are still barriers to receiving adequate and continuous coverage (Figure 1.20).

FIGURE 1.19: Percentage of children ages 0–17 who are continuously and adequately insured by race/ethnicity, CT, 2016–2017



Source: National Survey of Children's Health.

FIGURE 1.20: Percentage of Children ages 0–17 who are continuously and adequately insured by Federal Poverty Level (FPL), US and CT, 2016–2017



Source: National Survey of Children's Health.

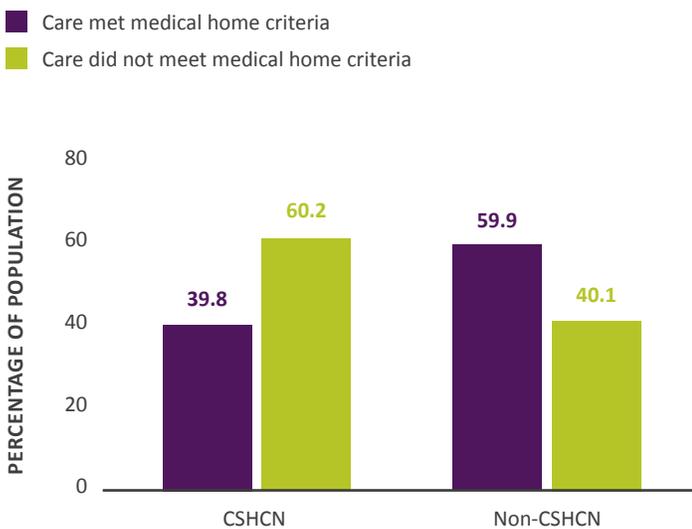
Supporting Children with Special Health Care Needs through the Medical Home

The American Academy of Pediatrics (AAP) believes that the medical care of infants, children, and adolescents ideally should:

- Be accessible, continuous, comprehensive, family centered, coordinated, compassionate, and culturally effective;
- Be delivered or directed by well-trained providers who provide primary care;
- Help to manage and facilitate essentially all aspects of pediatric care;
- Be supported by a provider who is known to the child and family and who can develop a partnership of mutual responsibility and trust with them.⁶⁷

These characteristics define the patient-centered medical home, from which all children and adolescents can benefit. In particular, children and youth with special health care needs (CSHCN) benefit from having a medical home, as they and their families often need services from multiple systems — healthcare, public health, education, mental health, and social services. CSHCN

FIGURE 1.21: Percentage of children with Special Health Care Needs (CSHCN) ages 0–17 by quality of care, CT, 2017–2018



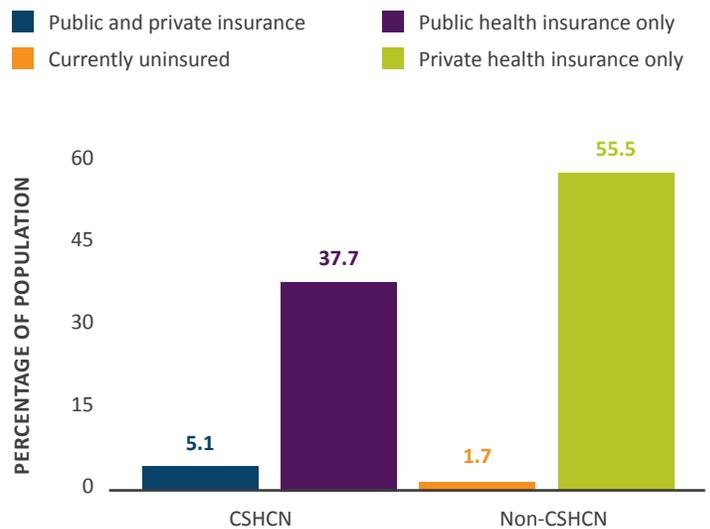
Source: National Survey of Children’s Health.

are young people who “have or are at increased risk for chronic physical, developmental, behavioral or emotional conditions and who also require health and related services of a type or amount beyond that required by children generally.”⁶⁸

Medical home implementation for CSHCN is supported by a national resource center, the National Center for Medical Home Implementation. The center focuses on improving access to a regular, ongoing source of health care in the community with appropriate sources of routine and specialty health care and integrated with the requisite community services for all children and youth, particularly for those with special health care needs. This center is supported through a cooperative agreement between the Maternal Child Health Bureau and the American Academy of Pediatrics.

In our state, children without special health care needs were more likely to receive care that met medical home criteria, compared to CSHCN (Figure 1.21). Specifically, among CSHCN ages 0 through 17, two in five received care that met medical home criteria, compared to three in five non-CSHCN. Some barriers to comprehensive care and care coordination include access to physical and behavioral health services, transportation, availability of care 24 hours per day and seven days a week, culturally-competent care provided in the language of choice, sufficient personnel, and a pediatrician’s belief that the medical home model encourages preventive service use.^{69,70}

FIGURE 1.22: Percentage of children with Special Health Care Needs (CSHCN) ages 0–17 by insurance type, CT, 2016–2017



Source: National Survey of Children’s Health.

When looking at the CSHCN population, only approximately two percent are uninsured (**Figure 1.22**). Insurance access is essential to access to a medical home.

To advance medical home utilization in our state, DPH is:

- Conducting outreach to educate consumers about the benefits and availability of patient-centered medical homes;
- Partnering with community organizations and stakeholders engaged through the Medical Home Advisory Council to promote the benefits of medical homes to consumers and providers; and
- Partnering with the Department of Social Services Person Centered Medical Home program, Community Health Network, and others to support providers in pursuing NCQA recognition or Joint Commission Accreditation as patient centered medical homes.⁷¹

“Have to fight tooth and nail to get services. Lived in [another state] don’t get a quarter of services I had [there]. Try this, try that, doesn’t work. Looking for things on your own but no information, don’t have services, don’t know where to access.”

**— STATE HEALTH ASSESSMENT FOCUS GROUP,
FAMILIES OF CHILDREN WITH SPECIAL HEALTHCARE NEEDS**

Autism

Individuals with autism spectrum disorder (ASD) experience increased morbidity and decreased life expectancy compared to the general population, and these disparities are likely exacerbated for those individuals who are otherwise disadvantaged.

Nationally, one in 59 children were diagnosed with ASD by age eight, a 15% increase over diagnoses in 2012. Boys overall are diagnosed with ASD more frequently than girls, however, the gender gap is narrowing. Boys were four times more frequently diagnosed with ASD compared to girls in 2014, while boys were 4.5 times more frequently diagnosed compared to girls in 2012. This appears to reflect improved identification of autism in girls — many of whom do not fit the stereotypical picture of autism seen in boys.

White children are also still more likely to be diagnosed with autism than non-White children. However, like the gender gap, the racial/ethnic gap had narrowed since 2012, particularly between Black and White children. This appears to reflect increased awareness and screening in non-White communities. However, the diagnosis of autism among Hispanic children still lags significantly behind that of non-Hispanic children.

Reliable estimates of autism’s prevalence among adults are not available. Each year, an estimated 50,000 teens with autism age out of school-based services.

Autism services cost the nation \$236–262 billion, with costs over the lifespan estimated to be about \$2.4 million for a person with an intellectual disability or \$1.4 million for a person without an intellectual disability. A majority of these costs are in adult services (estimated at \$175–196 billion), compared to \$66 billion for children. The cost of lifelong care can be reduced by two thirds with early diagnosis and intervention.⁷²

Increasing awareness and the frequency and accuracy of ASD screening across gender, race/ethnicity, and ages are essential to advance health equity and reduce avoidable healthcare costs. Accurate data will allow for better planning related to the needs and services of residents with ASD — such as employment, housing, and social inclusion.

In our state, the percent of children diagnosed with ASD is almost double the national percentage. This may speak to more awareness and screening of ASD among Connecticut residents when compared to the US overall.

“A big issue is discrepancy between what town you live in and what quantity and quality of services you get in the schools. We happen to be in a pretty good town but it’s all about money, so a lot of these families probably need services outside of school and insurance doesn’t cover a lot of things.”

**— STATE HEALTH ASSESSMENT FOCUS GROUP,
FAMILIES AFFECTED BY AUTISM**

PREVENTIVE CARE AND WELLNESS PROMOTION

From birth and throughout adulthood, a person should have regularly scheduled checkups with a primary care provider. For children, these visits are known as well child care and for adults, these visits are part of preventive care. These regular visits allow for a doctor to observe and assess a person's general health, development, and behavior, administer immunizations, screen for the early detection of diseases, and refer out to other specialists as needed.

Well Child Care

During well child care visits, a medical provider examines a child and talks to the caregiver about their child's development and behavior. Especially before the age of three, well child care visits take place multiple times a year.

DEVELOPMENTAL SCREENING

In the United States, about one in six children ages 3 to 17 years have one or more developmental or behavioral disabilities, such as autism, a learning disability, or attention-deficit/hyperactivity disorder. In addition, many children have delays in language or other areas that can affect how well they do in school. However, many children with developmental disabilities are not identified until they are in school, by which time significant delays might have occurred and opportunities for treatment might have been missed.

The American Academy of Pediatrics recommends that all children be screened for developmental delays during their regular well-check visits at 9, 18, and 24 or 30 months. To do

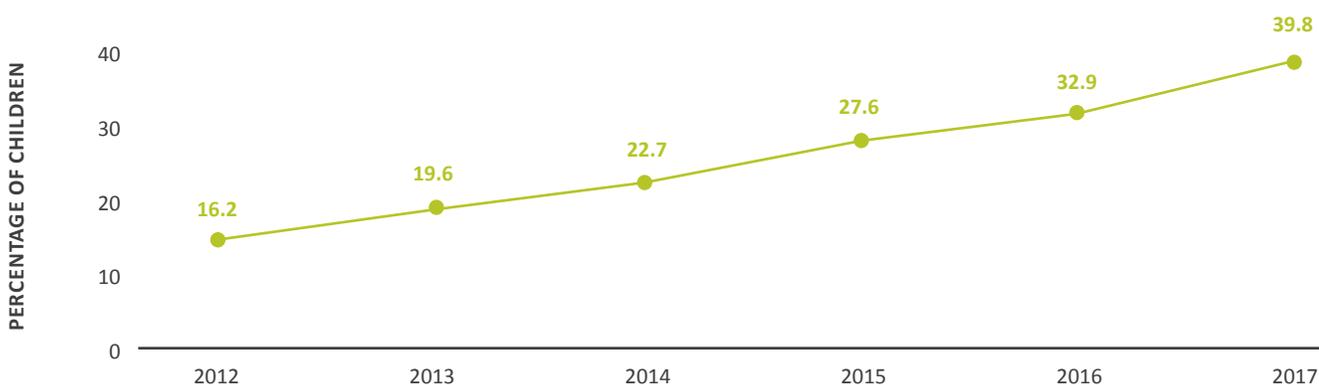
this, healthcare providers ask parents to complete a screening tool or instrument that covers a child's development, communication, or social behaviors.

In our state, the percentage of children less than 3 years old who received a developmental screening (obtained from the CT Medicaid CPT code for developmental screening 96110) more than doubled, steadily increasing from 16% to 40% in recent years (**Figure 1.23**).

In addition, when compared to the nation, Connecticut children were more likely to have received a developmental screening using a parent-completed screening tool (**Figure 1.24**).

Common barriers to adopting new screening practices in pediatrics include a lack of time, long waits for children to be seen by mental health providers, and a lack of available mental health providers to refer children. Pediatricians have also raised concerns about the increasing number of mandates outlined in practice guidelines. Pediatricians and Family Care Practitioners need to balance the number of screenings and educational

FIGURE 1.23: Percentage of children less than 3 years old who received a developmental screening, CT, 2012–2017



Source: Department of Social Services Claims Data.



PARTNERSHIP SPOTLIGHT: DEVELOPMENTAL SCREENING WORKGROUP

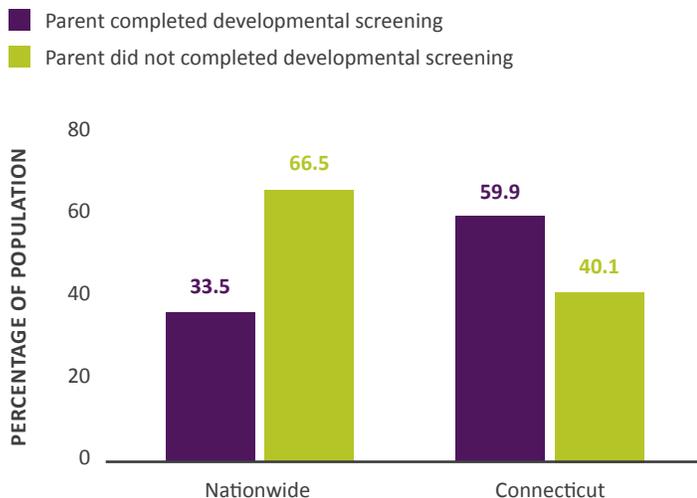
In our state, developmental screening is a priority area for the Connecticut DPH State Health Improvement Plan Advisory Council and the Maternal, Infant, and Child Health Workgroup.

The Developmental Screening Workgroup Action Agenda contains three strategies:

- **Project Launch media campaign.** This education and awareness campaign educates families and communities on the importance of developmental screening, while focusing on strengthening families and relationships and building the five Strengthening Families Protective Factors (i.e., parental resilience, social connections, knowledge of parenting and child development, concrete support in times of need, and social and emotional competence of children).
- **Training community and healthcare providers.** Trainings will focus on improving screening rates and coordinating referrals and linkages to services within the state.
- **Cross-system planning and coordination.** Members of the Workgroup will join state-level groups to support communication among and coordination of statewide efforts around developmental screening and the promotion of healthy development including Project Launch's State Level Young Child Wellness Council, the DPH State Level Care Coordination Collaborative, and the Help Me Grow Advisory Council.

Source: Center for the Study of Social Policy. Strengthening Families: Increasing positive outcomes for children and families. <https://cssp.org/our-work/project/strengthening-families/>

FIGURE 1.24: Percentage of children ages 9 through 35 months who received a developmental screening using a parent-completed screening tool in the past year, US and CT, 2017–2018



Source: National Survey of Children's Health.

messages with the amount of time they have to serve patients in their practice. Primary Care Providers (PCPs) face ever-shrinking time for health maintenance visits and must balance time versus reimbursement pressures. Pediatricians also report a lack of confidence in their training and ability to successfully manage children's behavioral and emotional problems. This is seen in the ability to refer and link children to the diagnostic provider and for some, direct service providers.⁷³

FACILITATOR:

“What are some of the biggest problems or concerns in your community?”

PARTICIPANTS:

“ED issues, the lack of services potentially.” “And dental special needs care. It's finding a doctor that will do the procedures that are needed.”

— **STATE HEALTH ASSESSMENT FOCUS GROUP,**
FAMILIES OF CHILDREN WITH SPECIAL HEALTHCARE NEEDS

SERVICES SPOTLIGHT: CHILD BEHAVIORAL HEALTH COUNSELING

The Centers for Disease Control and Prevention report that one in five American children ages 3 through 17 (about 15 million) have a diagnosable mental, emotional, or behavioral disorder in a given year. Only 20% of these children are ever diagnosed and receive treatment; 80%, or about 12 million, aren't receiving treatment.

The prevalence of mental/behavioral health conditions has been increasing among children and has been found to vary by geographic and sociodemographic factors. Further, the receipt of treatment is also generally dependent on socio-demographic and health-related factors. Adequate insurance and access to a patient-centered medical home may improve mental health treatment.

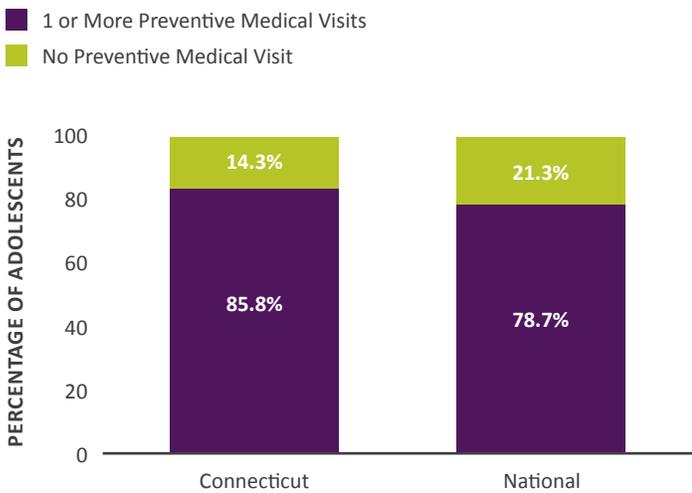
In our state, a slightly higher proportion of non-Hispanic White children with a mental/behavioral condition received treatment or counseling, compared to Hispanic children with a mental/behavioral condition (71% and 66%, respectively). Conversely, 29% of non-Hispanic White children and 34% of Hispanic children with a mental/behavioral condition did not receive treatment or counseling.

Source: www.cdc.gov/childrensmentalhealth/data.html, www.ncbi.nlm.nih.gov/pubmed/22218014 2016–2017 National Survey of Children's Health

Preventive Medical Visits

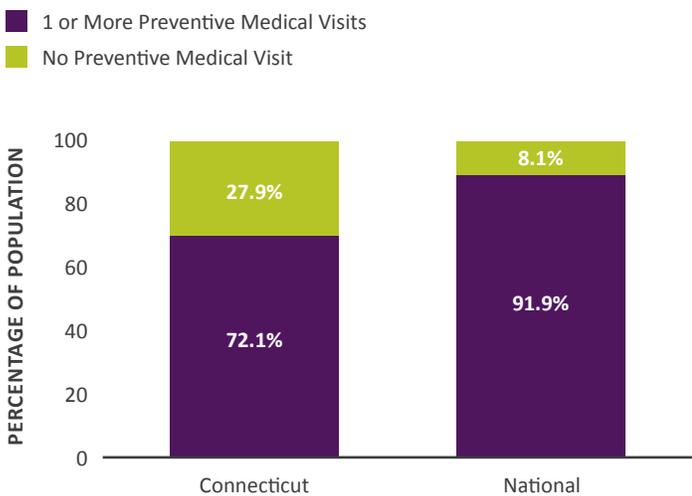
Preventive medical visits or check-ups occur when a child is not sick or injured. For teenagers, going to a preventative medical visit can be an important indicator of whether s/he is establishing good health practices at an early age.

FIGURE 1.25: Percentage of adolescents ages 12 through 17 years with a preventive medical visit in the past year, US and CT, 2016–2017



Source: National Survey of Children’s Health.

FIGURE 1.26: Percentage of adolescents ages 12 through 17 years with a preventive medical visit in the past year by insurance type, CT, 2016–2017



Source: National Survey of Children’s Health.

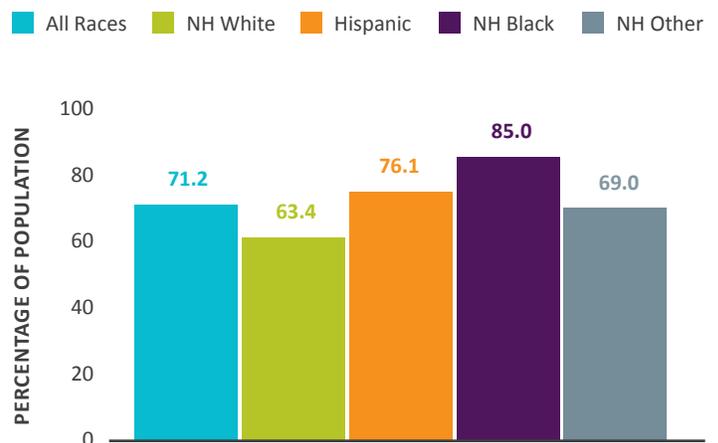
In our state, almost 86% of teenagers (ages 12–17) had a preventative medical visit, which is higher than the national rate of 79% (Figure 1.25). Within Connecticut, privately insured teens are more likely to get a preventative medical visit compared to their publicly insured counterparts, with a 20% difference between the two groups (Figure 1.26). This dynamic is consistent with national data, though the national gap is narrower between the two groups with only a 4.4% difference. Specifically, 82.7% of privately insured teens got a preventative medical visit, compared to 78.3% of their publicly insured counterparts.⁷⁴ As public insurance can be associated with lower socioeconomic status, the possibility of stigma associated with public insurance may make teens less likely to go in for a preventative visit.

Maternal and Women’s Preventive Care

The American College of Obstetrics and Gynecology recommends an annual well-woman exam to support the early diagnosis of diseases and promote positive health outcomes through prevention and screening.⁷⁵

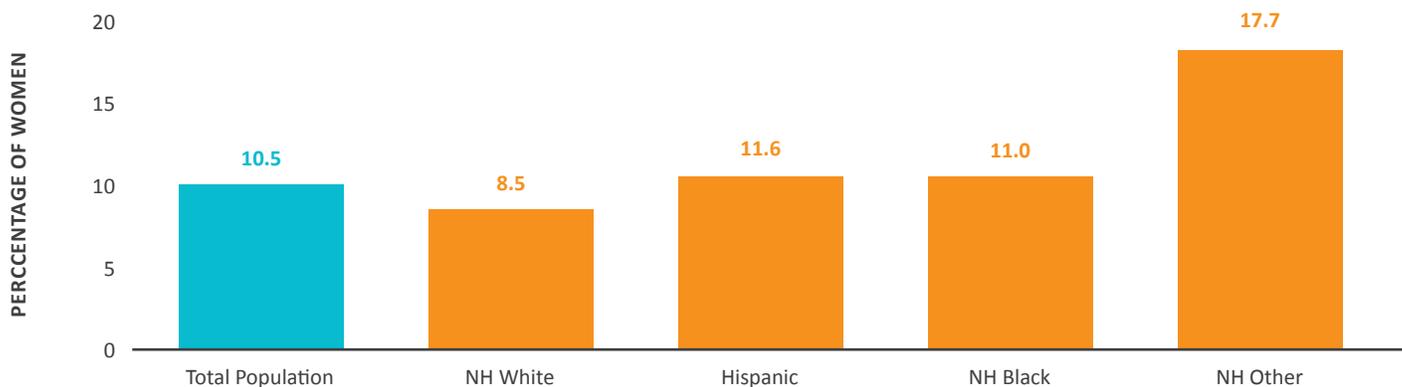
In Connecticut, 71% of women ages 18 through 44 received a preventive medical visit (Figure 1.27). This slightly surpassed our goal of having 70% of women ages 18–44 receiving preventative medical care by 2017. Non-Hispanic White women were the least likely among all races/ethnicities to receive a preventive medical visit, with non-Hispanic Black women being the most likely, followed by Hispanic women and non-Hispanic

FIGURE 1.27: Percentage of women ages 18–44 who received a preventive medical visit by race/ethnicity, CT, 2016–2017



Source: National Survey of Children’s Health.

FIGURE 1.28: Percentage of women who reported postpartum depressive symptoms in the nine months following delivery of a live birth by maternal race/ethnicity, CT, 2016



Source: Pregnancy Risk Assessment Monitoring System.

“other” women. One possible explanation for this difference could be that non-White women are more likely to have public medical insurance, which encourages annual exams.

Postpartum Depression

Depression affects approximately 10% of women of childbearing age (18–44) in the United States.⁷⁶ Symptoms can include sadness, loss of interest in activities once enjoyed, changes in weight (loss or gain) or sleeping (insomnia or oversleeping), feelings of worthlessness, loss of energy, and thoughts of death or suicide.⁷⁷ In addition to the negative effect of these symptoms on a woman’s health, they can also impact a new mother’s ability to care for her infant. Screening and treatment for depression and other mood disorders is critical to reducing adverse health outcomes across the life course.

In 2016, one in ten women reported postpartum depressive symptoms within the first nine months following delivery of a live birth. Other race, non-Hispanic women were the most likely to report having these symptoms, followed by Hispanic women, and then non-Hispanic Black women. Non-Hispanic White women were the least likely to report these symptoms (**Figure 1.28**).

To improve postpartum depression outcomes, the following is recommended:^{78;79;80;81;82}

- Screen women for depression in a variety of health care settings, including OB/GYN, primary care, and pediatric offices, at all points across the life course.
- Ensure close monitoring, evaluation, and assessment of pregnant women with current depression or anxiety, a history of perinatal mood disorders, or risk factors for perinatal mood disorders.
- Provide education and support to clinicians about screening, treatment, referral, and follow-up.
- Develop culturally and linguistically competent educational materials about the signs of depression and ways to seek medical advice and treatment.
- Advance efforts to achieve a culturally and linguistically competent mental health system that incorporates skills, attitudes, and policies to ensure that it is effectively addressing the needs of consumers and families with diverse values, beliefs, and sexual orientations, in addition to backgrounds that vary by race, ethnicity, religion, and language.
- Identify strategies to address social determinants of mental health, (adequate housing, safe neighborhoods, equitable jobs and wages, quality education, and equity in access to quality health care).

REFERENCES

- ¹ Jacob CM, B. J., Barker M, Cooper C, Hanson M. (2017). The importance of a life-course approach to health: Chronic disease risk from preconception through adolescence and adulthood. Retrieved from www.who.int/life-course/publications/life-course-approach-to-health.pdf.
- ² Centers for Disease Control and Prevention. (2015). Unintended Pregnancy Prevention, 2019, from www.cdc.gov/reproductivehealth/unintendedpregnancy/index.htm.
- ³ U.S. Department of Health and Human Services; Office of Disease Prevention and Health Promotion. (2019). Family Planning Healthy People 2020. Retrieved from www.healthypeople.gov/2020/topics-objectives/topic/family-planning.
- ⁴ Centers for Disease Control and Prevention. (2019). About Teen Pregnancy, from www.cdc.gov/teenpregnancy/about/index.htm.
- ⁵ Hoffman SD. (2008). *Kids Having Kids: Economic Costs and Social Consequences of Teen Pregnancy*. Washington, DC.
- ⁶ Centers for Disease Control and Prevention. (2011). Health Disparities in Adolescent Pregnancy and Childbirth, from www.cdc.gov/minority-health/chdir/2011/factsheets/AdolescentPregnancy.pdf.
- ⁷ Covington R, P. H., Sabia JJ, Price JP,. (2011). *Teen Fatherhood and Educational Attainment: Evidence from Three Cohorts of Youth*. Ithaca, NY, Cornell University.
- ⁸ Martin, J. A., Hamilton, B. E., Osterman, M. J., Driscoll, A. K., & Drake, P. (2018). *Births: final data for 2017*. Hyattsville, MD: National Center for Health Statistics Retrieved from www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_08-508.pdf.
- ⁹ US Department of Health and Human Services; Office of Disease Prevention and Health Promotion. (2019). Maternal, Infant, and Child Health, Reduce pregnancies among adolescent females Healthy People 2020. Retrieved from www.healthypeople.gov/2020/topics-objectives/topic/family-planning/objectives.
- ¹⁰ Conde-Agudelo, A., Rosas-Bermúdez, A., & Kafury-Goeta, A. C. (2006). Birth spacing and risk of adverse perinatal outcomes: a meta-analysis. *Jama*, 295(15), 1809–1823.
- ¹¹ U.S. Department of Health and Human Services; Office of Disease Prevention and Health Promotion. (2019). Maternal, Infant, and Child Health, Reduce the proportion of pregnancies conceived within 18 months of a previous birth Healthy People 2020. Retrieved from www.healthypeople.gov/2020/topics-objectives/topic/family-planning/objectives.
- ¹² Centers for Disease Control and Prevention. (2018). Before Pregnancy, from www.cdc.gov/preconception/overview.html
- ¹³ Gemmill, A., & Lindberg, L. D. (2013). Short interpregnancy intervals in the United States. *Journal of Obstetrics and Gynecology*, 122(1), 64.
- ¹⁴ Wu, M., Eisenberg, R., Negassa, A., Levi, E. J. O., & Gynecology. (2019). Effects of Immediate Postpartum Long-Acting Reversible Contraception on Short Intergpregnancy Intervals [7H]. 133, 865.
- ¹⁵ Schummers, L., Hutcheon, J. A., Hernandez-Diaz, S., Williams, P. L., Hacker, M. R., VanderWeele, T. J., & Norman, W. V. J. J. i. m. (2018). Association of short interpregnancy interval with pregnancy outcomes according to maternal age. *178*(12), 1661–1670.
- ¹⁶ National Institutes of Health; Eunice Kennedy Shriver National Institute of Child Health and Development. (2017). Pregnancy: About, from www.nichd.nih.gov/health/topics/pregnancy/conditioninfo/prenatal-care
- ¹⁷ US Department of Health and Human Services; Office on Women’s Health. (2019). Prenatal Care, from www.womenshealth.gov/a-z-topics/prenatal-care
- ¹⁸ Martin, J. A., Hamilton, B. E., Osterman, M. J., Driscoll, A. K., & Drake, P. (2018). *Births: final data for 2016*. Hyattsville, MD: National Center for Health Statistics.
- ¹⁹ Martin, J. A., Hamilton, B. E., Sutton, P. D., Ventura, S. J., Menacker, F., & Munson, M. L. (2005). *Births: final data for 2003*. Hyattsville, MD: National Center for Health Statistics.
- ²⁰ Fitzpatrick, M. (2015). *OLR Backgrounder: Medicaid Eligibility*. (Research Report 2015-R-0238). Connecticut General Assembly Office of Legislative Research. Retrieved from www.cga.ct.gov/2015/rpt/pdf/2015-R-0238.pdf.
- ²¹ Reisine, S., & Douglass, J. (2013). Issue Brief: Promoting Oral Health in Pregnancy. In C. H. Foundation (Ed.).
- ²² World Health Organization. *Maternal and perinatal health. Maternal, newborn, child and adolescent health*. Retrieved October 14, 2019, from www.who.int/maternal_child_adolescent/topics/maternal/maternal_perinatal/en/
- ²³ World Health Organization. (2006). Neonatal and perinatal mortality: country, regional and global estimates. Geneva, Switzerland.
- ²⁴ Measure Evaluation. (2019). Perinatal mortality rate (PMR), from www.measureevaluation.org/prh/rh_indicators/womens-health/nb/perinatal-mortality-rate-pmr
- ²⁵ Gregory, E. C., Drake, P., & Martin, J. A. (2018). *Lack of change in perinatal mortality in the United States, 2014–2016*: US Department of Health & Human Services, Centers for Disease Control and
- ²⁶ Martin, J. A., Hamilton, B. E., Ventura, S. J., Osterman, M. J., Wilson, E. C., & Mathews, T. (2012). Births: final data for 2010.
- ²⁷ Jiang, Y, Mueller, I. M., & Backus, K. (2018). *Registration report for the year ended December 31, 2015*. Connecticut Dept. of Public Health Retrieved from www.ct.gov/dph/RegistrationReport.
- ²⁸ Centers for Disease Control and Prevention. Infant Mortality. *Reproductive Health*. Retrieved October 2, 2019, from www.cdc.gov/reproductivehealth/maternalinfanthealth/infantmortality.htm
- ²⁹ Office of Government Affairs; March of Dimes. (2016). *March of Dimes Foundation Data Book for Policy Makers: Maternal, Infant, and Child Health in the United States*. Washington, D.C.: Retrieved from www.marchofdimes.org/March-of-Dimes-2016-Databook.pdf.
- ³⁰ Centers for Disease Control and Prevention. Preterm Birth. *Reproductive Health, Maternal and Infant Health* Retrieved October 1, 2019, from www.cdc.gov/reproductivehealth/maternalinfanthealth/pretermbirth.htm

- ³¹ Institute of Medicine (US) Committee on Understanding Premature Birth and assuring Healthy Outcomes. (2007). Societal costs of preterm birth. In R. Behrman & A. Butler (Eds.), *Preterm birth: Causes, consequences, and prevention*. Washington, D.C.: National Academies Press.
- ³² Goldenberg, R. L., Culhane, J. F., Iams, J. D., & Romero, R. (2008). Epidemiology and causes of preterm birth. *The Lancet*, *371*(9606), 75–84.
- ³³ Chang, H. H., Larson, J., Blencowe, H., Spong, C. Y., Howson, C. P., Cairns-Smith, S., . . . Serazin, A. C. (2013). Preventing preterm births: analysis of trends and potential reductions with interventions in 39 countries with very high human development index. *The Lancet*, *381*(9862), 223–234.
- ³⁴ Ferré, C. (2016). Effects of maternal age and age-specific preterm birth rates on overall preterm birth rates — United States, 2007 and 2014. *Morbidity and Mortality Weekly*, *65*.
- ³⁵ Schoen, C. N., Tabbah, S., Iams, J. D., Caughey, A. B., & Berghella, V. (2015). Why the United States preterm birth rate is declining. *American Journal of Obstetrics & Gynecology*, *213*(2), 175–180.
- ³⁶ Martin, J. A., & Osterman, M. J. (2018). *Describing the increase in preterm births in the United States, 2014–2016*. Hyattsville, MD: National Center for Health Statistics. Retrieved from www.cdc.gov/nchs/data/databriefs/db312.pdf.
- ³⁷ Martin, J. A., Hamilton, B. E., & Osterman, M. J. (2019). *Births in the United States, 2018*. Hyattsville, MD: National Center for Health Statistics. Retrieved from www.cdc.gov/nchs/products/databriefs/db346.htm.
- ³⁸ Kramer, M. S. (1987). Intrauterine growth and gestational duration determinants. *Pediatrics*, *80*(4), 502–511.
- ³⁹ US Department of Health and Human Services; National Center for Health Statistics. (2010). *Health, United States, 2009: with Special Feature on Medical Technology*. Hyattsville, MD: Retrieved from [www.cdc.gov/nchs/data/09.pdf](http://www.cdc.gov/nchs/data/hus/09.pdf).
- ⁴⁰ Mathews, T., & Driscoll, A. K. (2017). Trends in infant mortality in the United States, 2005–2014.
- ⁴¹ Mathews, T., MacDorman, M. F., & Thoma, M. E. (2015). Infant mortality statistics from the 2013 period linked birth/infant death data set.
- ⁴² Callaghan, W. M., MacDorman, M. F., Shapiro-Mendoza, C. K., & Barfield, W. D. (2017). Explaining the recent decrease in US infant mortality rate, 2007–2013. *American Journal of Obstetrics Gynecology*, *216*(1), 73. e71–73. e78.
- ⁴³ U.S. Department of Health and Human Services Office of Disease Prevention and Health Promotion. (2018). Maternal, infant, and child healthHealthy People 2020. Retrieved from www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives.
- ⁴⁴ Brown Speights, J. S., Goldfarb, S. S., Wells, B. A., Beitsch, L., Levine, R. S., & Rust, G. (2017). State-level progress in reducing the Black–White infant mortality gap, United States, 1999–2013. *American Journal of Public Health*, *107*(5), 775–782.
- ⁴⁵ Creanga AA, S. C., Seed K, Callaghan WM. (2017). Pregnancy-Related Mortality in the United States, 2011–2013. *Obstet Gynecol* *130*(2), 366–373.
- ⁴⁶ B.Hameed, A., S.Lawton, E., L.McCain, C., H.Morton, C., ConnieMitchell, K.Main, E., & Foster, E. (2015). Pregnancy-related cardiovascular deaths in California: beyond peripartum cardiomyopathy. *American Journal of Obstetrics and Gynecology*, *213*(3), 379.e371–379.e310.
- ⁴⁷ Berg, C., Harper, M., Atkinson, S., Bell, E., Brown, H., Hage, M., . . . Callaghan, W. (2005). Preventability of pregnancy-related deaths: results of a state-wide review. *Obstet Gynecol*, *106*(6), 1228–1234.
- ⁴⁸ Lassi, Z. S., Imam, A. M., Dean, S. V., & Bhutta, Z. A. (2014). Preconception care: screening and management of chronic disease and promoting psychological health. *Reprod Health*, *11*(Suppl 3), S5.
- ⁴⁹ Lu, M., Highsmith, K., Cruz, D. d. I., & Atrash, H. (2015). Putting the “M” Back in the Maternal and Child Health Bureau: Reducing Maternal Mortality and Morbidity. *Maternal and Child Health Journal*, *19*(7), 1435–1439.
- ⁵⁰ Partridge, S., Balayla, J., Holcroft, C. A., & Abenhaim, H. A. (2012). Inadequate Prenatal Care Utilization and Risks of Infant Mortality and Poor Birth Outcome: A Retrospective Analysis of 28,729,765 U.S. Deliveries over 8 Years. *American Journal of Perinatology* *29*(10), 787–793.
- ⁵¹ Main, E., Cape, V., Abreo, A., Vasher, J., Woods, A., Carpenter, A., & Gould, J. (2017). Reduction of Severe Maternal Morbidity from Hemorrhage Using a State Perinatal Quality Collaborative. *American Journal of Obstetrics and Gynecology*, *216*(3), 298 e291–298 e211.
- ⁵² Mhyre, J. M., & et al. (2014). The Maternal Early Warning Criteria: A Proposal from the National Partnership for Maternal Safety. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *43*(6), 771–779.
- ⁵³ MacDorman, M., & et al. (2016). Recent Increases in the U.S. Maternal Mortality Rate: Disentangling Trends from Measurement Issues. *Obstetrics & Gynecology*, *128* (3), 447–455.
- ⁵⁴ GBD 2015 Maternal Mortality Collaborators. (2016). *Global, Regional, and National Levels of Maternal Mortality, 1990–2015: A Systematic Analysis for the Global Burden of Disease Study 2015*. *The Lancet* (388), 10053.
- ⁵⁵ United Health Foundation; America’s Health Rankings. Analysis of CDC WONDER Online Database. www.AmericasHealthRankings.org
- ⁵⁶ MacDorman, M. F., & et al. (2017). Trends in Maternal Mortality by Sociodemographic Characteristics and Cause of Death in 27 States and the District of Columbia. *Obstetrics & Gynecology*, *129*(5), 811–818.
- ⁵⁷ Dinatale, A., & et al. (2010). Obesity and Fetal-Maternal Outcomes. *Journal of Prenatal Medicine*, *4*(1), 5–8.
- ⁵⁸ Centers for Disease Control and Prevention; Division of Reproductive Health — National Center for Chronic Disease Prevention and Health Promotion. (2019). Prevalence of Selected Maternal and Child Health Indicators for all PRAMS sites, Pregnancy Risk Assessment Monitoring System (PRAMS), 2016–2017.
- ⁵⁹ Child Trends Databank. (2018). Breastfeeding, from www.childtrends.org/indicators/breastfeeding
- ⁶⁰ March of Dimes Foundation. (2019). Neonatal abstinence syndrome (NAS). *Birth defects & other health conditions* from [www.marchofdimes.org/complications/neonatal-abstinence-syndrome-\(nas\).aspx](http://www.marchofdimes.org/complications/neonatal-abstinence-syndrome-(nas).aspx)

- ⁶¹ Fill, M. M. A., Miller, A. M., Wilkinson, R. H., Warren, M. D., Dunn, J. R., Schaffner, W., & Jones, T. F. (2018). Educational disabilities among children born with neonatal abstinence syndrome. *Pediatrics*, *142*(3), e20180562.
- ⁶² Hunt, R. W., Tzioumi, D., Collins, E., & Jeffery, H. E.. (2008). Adverse neurodevelopmental outcome of infants exposed to opiate in-utero. *Early human development*, *84*(1), 29–35.
- ⁶³ Winkelman, T. N., Villapiano, N., Kozhimannil, K. B., Davis, M. M., & Patrick, S. W. (2018). Incidence and costs of neonatal abstinence syndrome among infants with Medicaid: 2004–2014. *Pediatrics*, *141*(4), e20173520.
- ⁶⁴ Health Resources and Services Administration. (2019). Maternal & Child Health. *Children with Special Healthcare Needs*, from <https://mchb.hrsa.gov/maternal-child-health-topics/children-and-youth-special-health-needs>
- ⁶⁵ Institute of Medicine (US) Committee on Health Insurance Status and Its Consequences. (2009). *America's Uninsured Crisis: Consequences for Health and Health Care*. Washington (DC): National Academies Press (US).
- ⁶⁶ National Center for Education in Maternal and Child Health at Georgetown University. (2014). Adequate Insurance Coverage for Children and Adolescents: Evidence Brief (Vol. 1).
- ⁶⁷ Nageswaran, S., Roth, M., Klutz-Hile, C., & Farel, A. (2006). Medical homes for children with special healthcare needs in North Carolina. *North Carolina Medical Journal*, *67*(2), 103–109.
- ⁶⁸ US Department of Health and Human Services. (2019). Maternal, Infant, and Child Health. *Children with Special Health Care Needs*, from <https://mchb.hrsa.gov/maternal-child-health-topics/children-and-youth-special-health-needs>
- ⁶⁹ Tschudy, M. M., Raphael, J. L., Nehal, U. S., O'Connor, K. G., Kowalkowski, M., & Stille, C. J. (2016). Barriers to Care Coordination and Medical Home Implementation. *Pediatrics*, *138*(3).
- ⁷⁰ Medical Home Initiatives for Children with Special Health Care Needs Project Advisory Committee. (2002). *Pediatrics*, *110*(1), 184–186.
- ⁷¹ Connecticut Maternal and Child Health Block Grant 2019 Application. (2017). 2017 Annual Report State Action Plan.
- ⁷² Autism Society. (2019). Autism Facts and Statistics, from www.autism-society.org/what-is/facts-and-statistics/
- ⁷³ Weitzman C & Wegner L. (2015). Promoting Optimal Development: Screening for Behavioral and Emotional Problems. *Pediatrics*, *135*, 384.
- ⁷⁴ Child and Adolescent Health Measurement Initiative. (2016–2017). National Survey of Children's Health (NSCH). Data Resource Center for Child and Adolescent Health supported by Cooperative Agreement U59MC27866 from the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau (MCHB) (Ed.).
- ⁷⁵ Women's Health Connecticut. (2018). 7 Reasons to Schedule a Well-Woman Visit, from www.womenshealthct.com/your-health/recent-health-topics/reasons-well-woman-visit.
- ⁷⁶ Centers for Disease Control and Prevention; Reproductive Health. (July 24, 2019). Depression Among Women, from www.cdc.gov/reproductivehealth/depression/activities.htm.
- ⁷⁷ U.S. Department of Health & Human Services. (08/22/2017). Depression, from www.mentalhealth.gov/what-to-look-for/mood-disorders/depression.
- ⁷⁸ Frost J, H. K., Carey MJ, Jones E, Cavacas M, & Morin, J, . (2015). *Connecticut Plan to Improve Birth Outcomes*. Retrieved from www.cfgnh.org/Portals/0/Uploads/Documents/Understanding%20GNH/Third%20Party%20Reports/The_CT_Plan_to_Improve_Birth_Outcomes_Final_Draft_Fall_2015_Watermark_Removed.pdf.
- ⁷⁹ American College of Obstetricians and Gynecologists. (2018). ACOG Committee Opinion Number 757 — Screening for Perinatal Depression. *132*(e208–12.). Retrieved from www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Screening-for-Perinatal-Depression
- ⁸⁰ Earles, M. (2010). Clinical Report — Incorporating Recognition and Management of Perinatal and Postpartum Depression Into Pediatric Practice. *Pediatrics*, *126*(5), 1032–1039.
- ⁸¹ Centers for Disease Control and Prevention. (January 26, 2018). Learn About Mental Health, from www.cdc.gov/mentalhealth/learn/
- ⁸² Mental Health America. (2019). *Cultural Competence*, from www.mentalhealthamerica.net/issues/cultural-competence