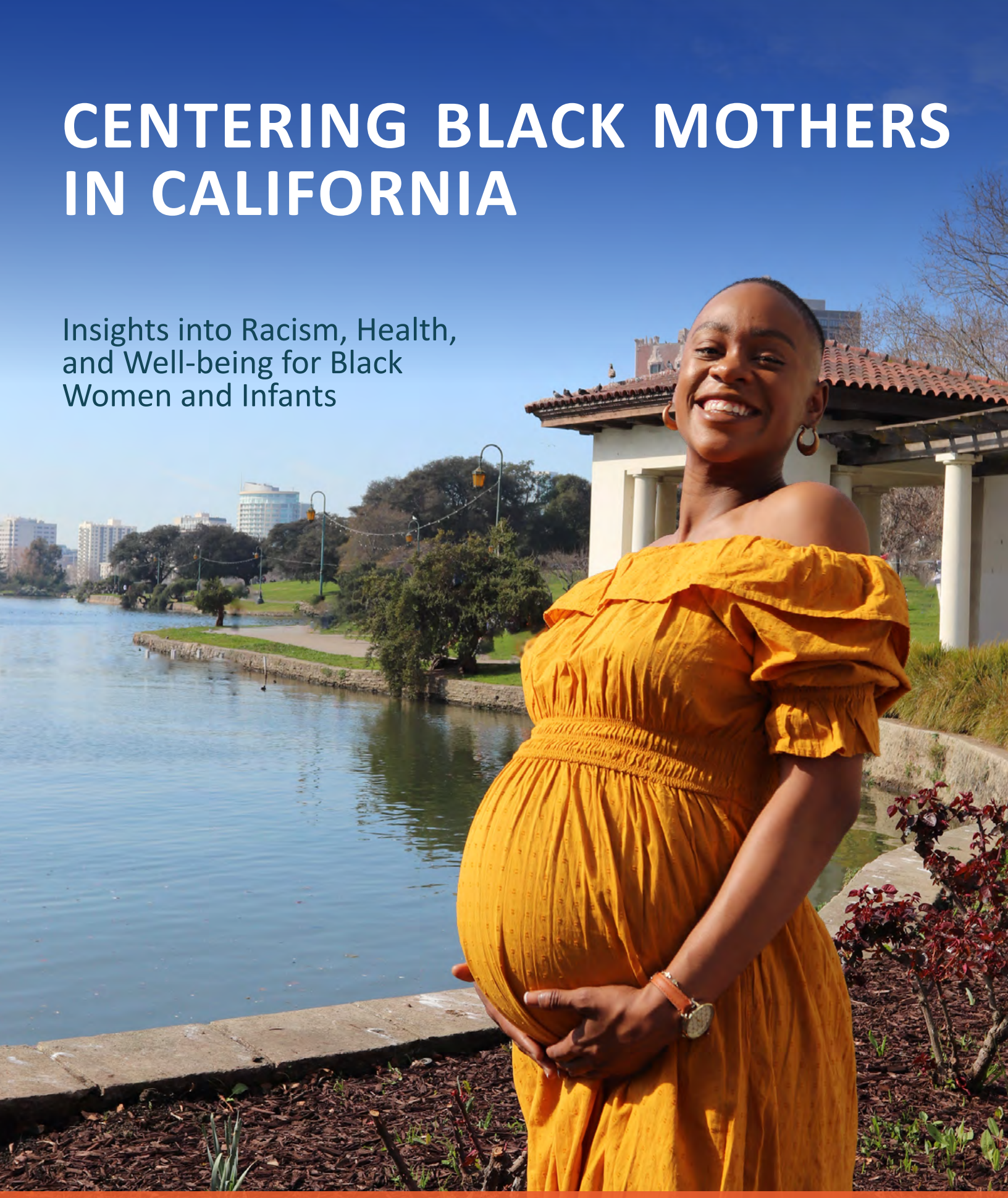
CENTERING BLACK MOTHERS IN CALIFORNIA

Insights into Racism, Health, and Well-being for Black Women and Infants



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Centering Black Mothers in California Report Advisory Group

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Black Mothers Across California

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EXECUTIVE SUMMARY

Black mothers and infants have been dying at alarmingly high levels for far too long. Inequities in preterm birth, infant mortality, severe maternal morbidity, and pregnancy-associated mortality for Black people have persisted both in California and nationally.[1-4] Too often, interventions to improve Black maternal and infant health have focused on individual level risk factors such as health behaviors; however, much research has shown that structural racism is the driver of these inequities.[5-8] The Maternal, Child, and Adolescent Health Division (MCAH) of the California Department of Public Health (CDPH) is committed to reducing inequities in maternal and infant health. In collaboration with the UCSF Center for Health Equity, Black Women for Wellness, and a statewide group of Black women leaders and academics, CDPH guided this report to inform efforts, in California and beyond, to advise policy and program development, community action, and health care access and quality that will promote racial equity and bolster opportunities to be healthy among Black women, other Black birthing people, and their families.

Structural racism refers to the "totality of ways in which societies foster racial discrimination through mutually reinforcing systems of housing, education, employment, earnings, benefits, credit, media, health care, and criminal justice."[5 (p 1453)] Structural racism shapes Black maternal and infant health at the societal, neighborhood, family, and individual levels through several pathways.

1. **Discriminatory policies at the societal level that influence current neighborhood conditions.** [9-11] These policies restrict access to resources that enhance economic stability and overall health and well-being.[5,12,13]

2. **Chronic stress created by racism and racist policies.** [5,14,15] Chronic stress contributes to allostatic load, or biological changes that negatively impact the body.[16] These changes can increase the risk of developing chronic health conditions, such as high blood pressure,[17] and lead to "weathering" or health deterioration at younger ages than expected due to the accumulation of stress.[18-20]

3. **Lack of access to high quality, respectful health care.**[7,21,22] The quality of health care before, during, and after pregnancy has a demonstrable impact on maternal health, particularly on severe health outcomes during the perinatal period,[23] and has been shown to strongly affect infant health as well.[24]

This report, Centering Black Mothers in California, presents a wide range of evidence from a variety of sources, including analyses of California data from vital statistics, administrative and survey datasets, and peer-reviewed scientific literature. The report uses the word "centering" to indicate a focus on Black mothers with a framing that incorporates their views and perspectives. Expertise from the report's Centering Black Mothers in California Advisory Group, led by the Los Angeles-based statewide organization Black Women for Wellness, and perspectives from focus groups with Black women across California informed decisions about what data to highlight and how to describe certain inequities. Additional guidance on report content was provided by Black women co-authors who are experts in the field. By recognizing the powerful role of societal forces and neighborhood conditions, Centering Black Mothers in California provides an expansive view of the health of Black mothers and infants in California and demonstrates the connection between structural racism and health.

RESULTS

Factors at the societal, neighborhood, family, and individual levels have worked in concert over many generations to affect many Black birthing people's abilities to achieve optimal health across the life course and to have healthy pregnancies, births, and babies.

Neighborhood conditions

- The resources in a neighborhood have an impact on the health of its residents. In California, high percentages of Black birthing people continue to reside in neighborhoods that are racially and economically segregated (59.9%), have high concentrations of poverty (40.2%), and have unhealthy community conditions (43.1%). These neighborhood conditions are strongly correlated with one another.

Pre-pregnancy and pregnancy health

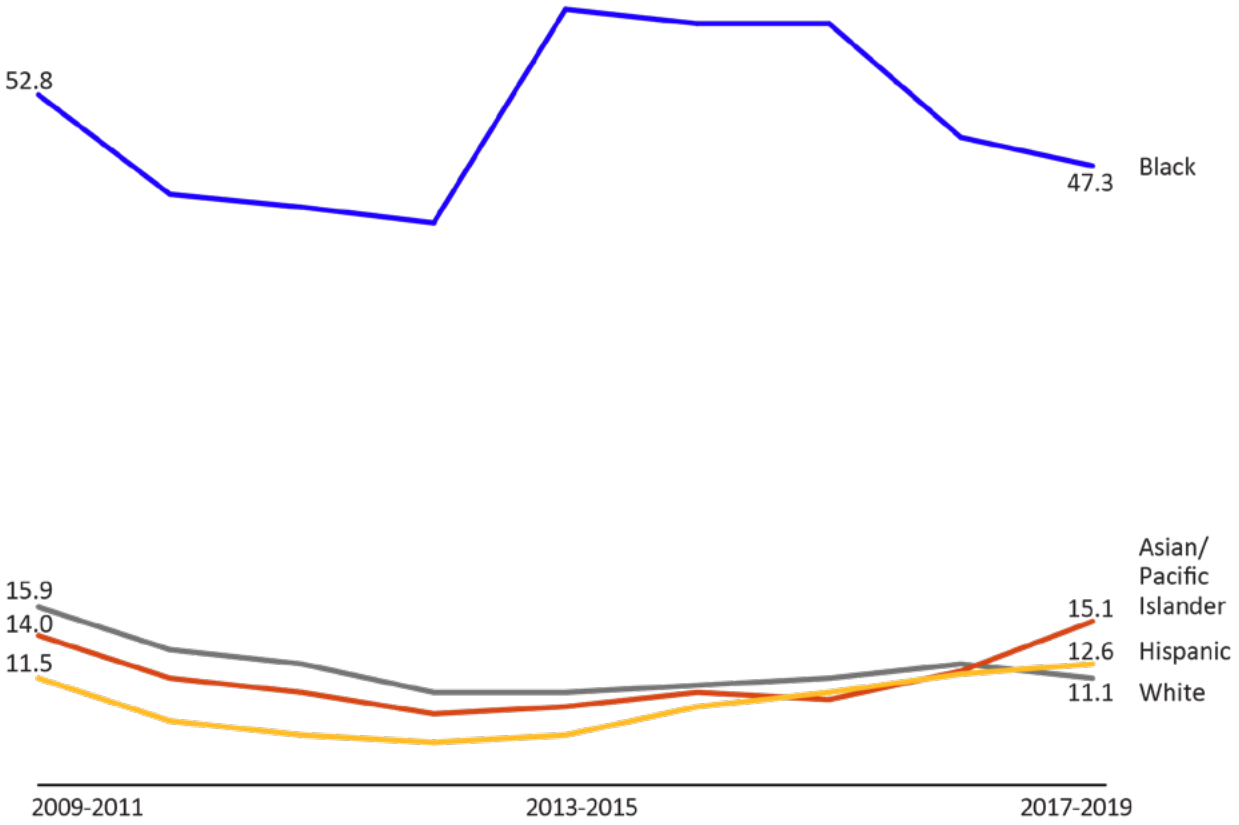
- Black women in California were diagnosed with hypertension prior to pregnancy at twice the rate of their Hispanic, White, and Asian/Pacific Islander counterparts.
- Among Black women, hypertension at delivery increases substantially with age.
- Approximately one in four Black birthing people experience symptoms of depression during pregnancy, which is higher than the rates for other racial and ethnic groups.
- In 2016, Black women were more likely than White women to report that when they were in the hospital giving birth, they were treated unfairly or disrespectfully because of their race or ethnicity.
- Severe maternal morbidity (SMM) refers to serious and potentially life-threatening complications of pregnancy and childbirth. Almost half of all SMMs are preventable. While SMM increased between 2011 and 2019 for all racial and ethnic groups, the rate among Black people remained substantially higher than the rates among Hispanic, White, and Asian/Pacific Islander people.

Pregnancy-related mortality

- Pregnancy-related mortality refers to the death of a woman while pregnant or within one year after a birth from a cause related to or aggravated by the pregnancy. Black women's rate of pregnancy-related mortality (measured in three-year groupings) declined between 2013–2015 and 2017–2019. Despite these improvements, Black birthing people continue to experience pregnancy-related deaths at three to four times higher rates than those of other racial and ethnic groups.
- Pregnancy-related mortality increases with age for all women, but inequities in pregnancy-related mortality between Black women and those of other racial and ethnic groups are largest among those ages 35 years and older, where Black women are 4.6 times as likely as California women as a whole to die of pregnancy-related causes.

While rates of pregnancy-related mortality among Black birthing people declined between 2013-2015 and 2017–2019, they remained much higher than those of other groups

Pregnancy-related deaths per 100,000 live births in California, by race and ethnicity, three year moving averages, 2009–2019



Source: California Pregnancy Mortality Surveillance System, 2009–2019; California Birth Statistical Master File, 2009–2017, California Comprehensive Master Birth File, 2018–2019. See Technical Notes for definition of pregnancy-related deaths.

Preterm birth

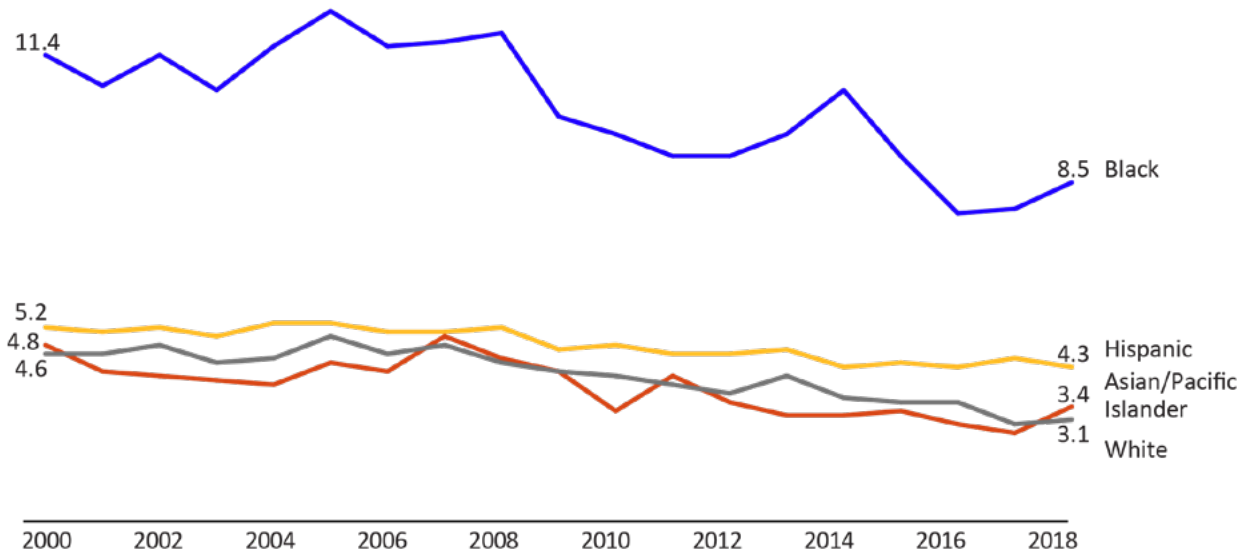
- The preterm birth rate among Black infants has not improved since 2011. Black women under 30 years of age experience preterm birth less frequently than older Black women. While all California birthing people experience higher rates of preterm birth in older maternal age groups, Black people's preterm birth rates start to increase at younger ages compared to others.

Infant mortality

- The mortality rate among Black infants in California has declined over the past decade, dropping 25% since 2000. Yet, in 2018, Black infants were still twice as likely as other infants to die before their first birthdays.
- In California, infant mortality among Black infants declines as resources in the neighborhood improve. In the most privileged neighborhoods in California, Black infants are about half as likely to die before their first birthdays as those living in the most deprived neighborhoods.

Infant mortality declined among births to Black birthing people over the past 10 years, but rates remained inequitably high

Number of infant deaths per 1,000 live births in California, by race and ethnicity, 2000–2018



Source: California Birth Cohort File, 2000–2018.

Health behaviors and opportunities to be healthy

- Food insecurity, or limited or uncertain access to food within a household,[25] negatively impacts diet quality and is linked to overweight and obesity. Black birthing people experience food insecurity at rates more than 2.5 times higher than White and Asian/Pacific Islander birthing people in California.
- Breastfeeding (exclusive and any breastfeeding at one and three months postpartum) increased among Black women in California between 2011 and 2017, but progress stalled between 2017 and 2019.
- Black birthing people are less likely to benefit from key practices and policies in the hospital and in the workplace that are shown to support breastfeeding duration.

While trends for outcomes such as pregnancy-related mortality, infant mortality, and preterm birth have improved over the past decade, inequities between Black birthing people and other groups have persisted or grown. Similar trends are evident for other health measures, including breastfeeding, hypertensive disorders of pregnancy, and severe maternal morbidity. This report provides a broad description of the health of Black birthing people and infants in California and demonstrates the connection between structural racism and health. The results shared in this report, together with a well-established body of literature, point to logical pathways through which structural racism functions as an underlying cause of poor outcomes for this population.

DISCUSSION

Several pathways connect structural racism to the results presented in this report, including unhealthy and/or under-resourced neighborhood conditions, chronic stress, and lack of respectful care. While most Black women and their infants are healthy, the data in this report show important and persistent racial inequities in poor health outcomes. A comprehensive discussion of potential strategies to remediate structural racism and its health impacts is beyond the scope of this report, yet public health has an important role to play in addressing structural racism and buffering its impact on Black maternal and infant health. Additionally, because structural racism operates at multiple levels to influence the health of Black families, strategies to ameliorate poor health conditions among Black families cannot be handled within the health care and public health systems alone. Rather, a broader set of strategies is likely needed to advance health equity for Black birthing people and their infants. Examples of strategies to consider are listed below:

- Name structural racism as a key driver of health inequities.
- Collect and provide high-quality, timely data to demonstrate the scope of health inequities, promote equitable solutions, and monitor the progress of existing initiatives.
- Involve the Black community in authentic community engagement that centers their voices and fosters ongoing bi-directional power-sharing relationships.
- Partner with those outside of public health to improve neighborhood conditions for Black families and ensure quality education and economic opportunities that promote financial stability.
- Offer resources and supports to buffer or reduce stress.
- Implement methods to monitor for and address racism and implicit bias among health care personnel and public health professionals.
- Improve the educational pipeline and provide support to increase the number of Black providers and healthcare professionals.

Racism influences health status and outcomes by impacting who is ignored and who is treated, who is put at risk and who is not, which communities are polluted and which are clean, whose voices are heard and whose are not. Collaborators in public health and other fields can support and build upon the efforts of Black leaders and their organizations in order to collectively continue the hard work of dismantling structural racism and improving health and health equity. Health equity for Black women and other Black birthing people, and their infants, is part of the California Department of Public Health's vision for a healthier state. This report is one step among many to center Black mothers and infants within this broader vision. Progress will not be achieved by doing the same work with the same voices at the table in the same way. We must collectively confront racism and make broad systemic changes in order to make a difference for Black families and their children and to create a healthier California.

BACKGROUND

For decades, scientific publications have reported that Black mothers and infants have been dying at alarmingly high rates. Inequities, or unjust racial disparities, in preterm birth, infant mortality, severe maternal morbidity, and pregnancy-associated death for Black people have persisted in California and nationally.[1-4] Black women advocates, Black-led organizations, and their allies have drawn attention to these unjust outcomes and have advanced solutions for addressing inequities.[26-33] Black women play a central role in protecting and upholding Black communities. Their health is integral to their own well-being and that of their communities. Too often, however, public health and medical interventions aimed at improving Black maternal and infant health have excluded Black women's voices. They have focused on individual level risk factors and on the race of the individual, rather than on "racism," which invariably blames Black women for their adverse health outcomes.[34,35] In addition to critical public health data, this report includes the voices of Black women in the analysis to help avoid an individualistic or mother-blaming approach. This report presents a socioecological framework that considers how societal factors, such as social policy, structural racism, and community and neighborhood factors, impact the health of Black families across the life course.

> "Racism is a system of structuring opportunity and assigning value based on the social interpretation of how one looks (which is what we call 'race'), that unfairly disadvantages some individuals and communities, unfairly advantages other individuals and communities, and saps the strength of the whole society through the waste of human resources."
>
> *—American Public Health Association Past-President, Camara Phyllis Jones, M.D., M.P.H, Ph.D.*[36]

Anti-Black Racism and Health

Anti-Black racism is a potent form of racism that has systemically endangered the health of Black people throughout United States' history. For nearly 250 years, the United States system of chattel enslavement of Black people denied Black women not only legal rights, but also good health as a result of inadequate diet, extreme physical work, disease, sexual assault, and other traumas.[37] They had limited access to health care and many White physicians used enslaved women as the subjects of medical experiments, operating on them without consent or acknowledgement, sometimes purely to achieve advancements in the obstetrics and gynecology field.[37-40] During this period, enslaved Black women were also expected to bear children to benefit the plantations. Women were often raped by the slaveowner or forced into unions with other slaves, and any children born to enslaved women, whether through rape or marriage, were considered property of the woman's slaveholder.[37,41] Women were expected to continue hard physical labor well into their pregnancies.[41] An estimated half of all infants died,[38] inflicting yet more trauma on Black women. This history of slavery and the subsequent continuation of racist policies and practices in the United States over the next 150 years is the fundamental context that shapes Black women's access to health-promoting goods, services, resources, and opportunities today, as well as their exposures to stressors and intergenerational trauma that negatively impact health.

The connection between racism and health inequities, long recognized by Black people themselves, is becoming increasingly better understood in the United States.[42]

> "I work in the maternal and infant health world, specifically serving [Black] women. I am aware of the rates for Black maternal health and Black maternal mortality... It makes me feel like it's an extension of the history that we've had to live through…the history that I've not only lived and seen, but of our ancestors. Just an extension of Black extermination—not to put it lightly."
>
> *—Focus group participant, Central Valley*

Racism Frameworks

Racism has been described as a tiered system of oppression based on racial inequities in social power (control or influence over resources or members of a society). Anti-Black racism is a particularly insidious form of racism directed at people of African descent that stems from their unique history and experience of chattel enslavement and systematically denies them their full humanity. Physician, epidemiologist, and anti-racism activist Dr. Camara Jones has described racism as encompassing three domains in this country: institutional, interpersonal, and individual.[43] The institutional or structural domain includes racist policies, systems, and practices of organizations or governments that operate either overtly or subtly. The interpersonal domain includes both intentional and unintentional racist actions, such as overt racist statements and actions, microaggressions, implicit bias, and lack of action in the face of racism. The individual domain is the internalization of racism, in which those whose racial identity is Black believe that negative racial stereotypes are true or that they somehow deserve a lack of respect or other dehumanizing treatment.

Importantly, racism can overlap with other forms of oppression based on other aspects of an individual's social identity, such as immigration status, sexual orientation, or gender identity.[44] Therefore, Black birthing people, depending on other aspects of their social identities, uniquely experience racism compounded by sexism and, sometimes, xenophobia and homophobia.[44] These intersecting identities and oppressions cannot be disentangled and are important influences on health.[44-47] A reproductive justice[a] perspective takes these intersecting identities into account and strives to address structural barriers and multiple oppressions, including racism, that are inextricably linked to the reproductive and parenting experiences of Black women and other Black birthing people.[48-50]

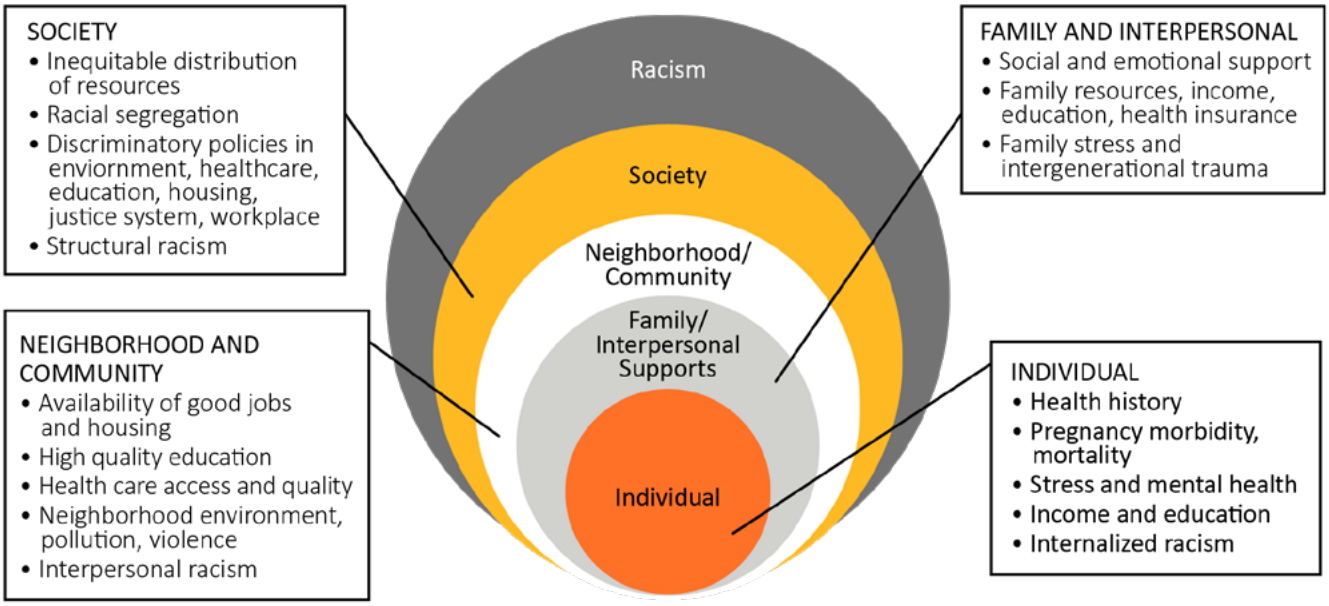
Racism and oppression impact health across the life course. The socioecological framework[51,52] in the model below (Figure 1) illustrates the influences of societal, neighborhood and community, family and interpersonal, and individual factors on a person's health.

- Societal factors: Policies, practices, and cultural norms across various sectors have shaped the resources and conditions that influence health. Structural racism embedded in these policies, practices, and norms has both created and maintained inequities.
- Neighborhood and community factors: Societal factors in turn shape the communities where Black women are born, grow, learn, live, and work. In addition to conditions shaped by structural racism, Black women experience interpersonal racism in all community settings.
- Family and interpersonal factors: At the interpersonal level, relationships within family and social networks provide practical support and resources. Essential emotional support at this level buffers racism experienced at the societal and community levels and provides a strong sense of self and culture that promotes health.
- Individual factors: Societal, neighborhood, and family factors shape a Black woman's own experiences of interpersonal and internalized racism.

a Reproductive Justice is the belief that all women have the right to have children, the right to not have children, and the right to nurture the children they have in a safe and healthy environment.

Figure 1. Socioecological model of the influences of racism on Black maternal and infant health

Adapted from: Prather C, Fuller TR, Marshall KJ, Jeffries WL. The Impact of Racism on the Sexual and Reproductive Health of African American Women. J Womens Health (Larchmt).2016;25(7):664-671.



An increasingly large body of scientific research explains how structural racism in particular impacts the health outcomes of Black women and their infants.[5-8,53-58] Prime examples of the major structural forces that have constrained opportunity, wealth, and health for Black Americans at the societal level are the racially discriminatory housing and lending policies and practices that continue to influence residential patterns in California today. The federal Home Owner's Lending Corporation (HOLC) established a mechanism in the 1930s to "grade" neighborhoods on their perceived level of lending risk, from A (the best neighborhoods marked with green on a map) to D (the worst neighborhoods marked with red on a map). Neighborhoods with Black people were automatically coded red, even if they were middle-class.[9] Called "redlining," this HOLC practice lasted until 1977 and explicitly denied Black people access to favorable loans, thus limiting Black homeownership and wealth.[9] Federal policies, inequitable local government planning decisions, and practices in the real estate industry, such as discriminatory housing covenants, barred Black people from obtaining favorable loans and buying homes in primarily White neighborhoods with higher grades, while discouraging investment of resources and increasing the cost of loans in Black neighborhoods.[13,59,60] Discriminatory housing policies such as redlining have been repealed, but these policies continue to shape neighborhoods today.[10,11] Most neighborhoods that were previously redlined have higher concentrations of Black and other non-White residents than do higher-graded neighborhoods, and remain low-to-moderate, versus middle-to-upper, income areas today.[10] Poor, racially segregated neighborhoods are more likely to face exposure to environmental toxins and pollution[61-64] and police violence,[65] all of which negatively impact maternal and infant health.[66,67] Neighborhood conditions also shape the availability of financial, educational, and other resources,[12] which profoundly influence health at the family and individual levels.[12,68] Due to many factors shaped by structural racism, such as disparities in income, education, intergenerational transfers of wealth, and home ownership,[69] Black people hold only about one-seventh the wealth that White people do.[70] Home ownership is an important source of household wealth in the United States.[70] The gap between Black and White home ownership has increased and, in 2017, was the highest it had been in 50 years.[71]

"The legacy of a hierarchy of human value based on the color of our skin continues to cause differences in health outcomes..."

— Joia Crear-Perry, M.D. in her testimony before the U.S. House of Representatives Committee on Energy and Commerce, Subcommittee on Health, September 2018[72]

Racism, Chronic Stress, and Health Across the Life Course

Widespread erroneous assumptions of genetic or behavioral causes of poor health have often placed the responsibility for adverse birth outcomes on Black women. However, research does not support an underlying genetic basis for these outcomes among Black women,[8,15,73-76] and health behaviors and medical factors alone cannot account for these disparities.[8,76-81] In fact, in some cases, Black women who practice healthy behaviors during pregnancy have worse perinatal outcomes than White women who do not.[82,83]

A woman's health when she becomes pregnant depends not only on her familial and social relationships, community contexts, and societal factors at the time of her pregnancy but also on those experiences throughout her life course up to the point of her pregnancy.[84] When health risks outweigh health protections for prolonged periods of time, especially during key developmental periods such as early childhood and adolescence, health may be compromised well before someone ever conceives.[85] Chronic health conditions increase the risk of pregnancy complications, adverse birth outcomes, and pregnancy-related mortality because the physical demands that pregnancy places on the body's systems can exacerbate existing health conditions.[86]

The impacts of racism are felt throughout the life course, and the stress of experiencing discrimination because of race or other factors may play out in nuanced ways for Black women.[87,88] Importantly, a wide range of psychological responses to specific incidents or to the general awareness of racism (e.g., worry, anger, and self-doubt) may occur.[14,89-91] Chronic stress is one of the mechanisms through which racism "gets under the skin" to harm health. Black women have a higher allostatic load — a measure of the cumulative burden of chronic stress which causes changes in the endocrine, neural, and immune systems[16]—than other women in America.[92] Racism is a potent chronic stressor associated with complex biological processes that exact a physical toll on a Black woman's health over her lifetime.[6,8,89] This phenomenon is called "weathering," or early health deterioration due to cumulative stress-related wear and tear on the body.[18-20,92] Stress is associated with several maternal health conditions, such as hypertension, diabetes, and obesity, that could increase the chances of having a preterm birth or severe maternal health outcomes.[8,23]

Racism in Health Care

For many years, efforts to address disparities in Black maternal and infant health outcomes focused on increasing Black women's utilization of prenatal care,[93] but inequities in outcomes have persisted despite increasing rates of prenatal care usage among Black women.[8] This could be, in part, due to lack of respectful care.

The racist beliefs about Black people that White people and others used to rationalize redlining, segregation, and other historical injustices continue to affect how Black people access care and are treated by health care providers today. Studies show that, compared to how they treat White patients, providers are less likely to recognize pain in, and to prescribe pain medication to, Black patients.[94,95] A 2016 study

showed that half of White medical students and trainees surveyed endorsed false beliefs about biological differences between Black and White people (e.g., that that the skin of Black people was thicker than that of White people).[96] Black women regularly report mistreatment during medical care, especially care related to pregnancy and birth.[32,97-99] In qualitative studies, Black women in California have described their maternity care as largely disrespectful and stressful[99] and report experiencing mistreatment from maternity care providers because of their race, age, socioeconomic class, sexuality, and assumed or actual marital status.[32] They also report experiencing mistreatment for exhibiting self-advocacy during their maternity care.[32] Compared with pregnant White women, pregnant Black women receive less advice—such as standard-of-care information about recommended weight gain and breastfeeding—from their prenatal care providers.[100,101] Delivery hospitals that serve large proportions of Black patients have worse delivery-related outcomes (such as infections and transfusions),[102-104] and poorer outcomes for preterm infants of any race.[105] However, a recent study of California births found that differences in delivery hospitals did not account for racial disparities in maternal mortality.[106] Another recent study found that Black infants who were treated by Black providers at birth were less likely to die than those who were treated by White providers.[24]

Purpose of This Report

This report, Centering Black Mothers in California: Insights into Racism, Health, and Well-being for Black Women and Infants, presents data on a range of health outcomes from before pregnancy to the time just after pregnancy and provides an evidence base to link structural racism and other societal and community factors with Black maternal and infant health inequities. In collaboration with the UCSF Center for Health Equity, Black Women for Wellness, and a statewide group of Black women leaders and academics, the MCAH Division of the California Department of Public Health guided this report as part of an overall commitment to improving health and health equity in California by addressing racism and its impacts on the health of our population. The data and evidence presented in this report are important as all Californians take action to reverse the tragic health burden of adverse birth and maternal outcomes that Black families bear in California.

METHODOLOGY

Data Sources and Methods

This report synthesizes both quantitative and qualitative information to describe the health of Black birthing people and their infants in California. Data are presented on demographic characteristics, experience of structural racism, and health outcomes. Quantitative data sources include the: 1) California Birth Statistical Master File and California Comprehensive Master Birth File, which provide both demographic and health information about births; 2) California Birth Cohort File, which provides information on infant mortality; 3) California Patient Discharge Data File, which provides information on the health conditions of the birthing parent at the time of the delivery hospitalization; 4) California Maternal and Infant Health Assessment, a survey providing information on maternal attitudes, behaviors, and experiences before, during, and shortly after pregnancy; 5) Listening to Mothers in California, a survey of health care experiences during pregnancy, labor, and birth; and 6) California Pregnancy Mortality Surveillance System, for data on pregnancy-related mortality. All analyses of quantitative data were conducted and validated with SAS software, using descriptive analytic methods (numbers and percentages, unweighted for birth, patient discharge, and mortality data and weighted for survey data).

The voices and experiences of Black women inform and shape this report. Three of the report authors are Black women. One report author and Black Women for Wellness staff held three focus groups in 2021 with Black women in Northern California, Southern California, and the Central Valley to collect real-life stories from the lives of Black mothers; their quotes are incorporated into the text. Report authors reviewed focus group transcripts and collectively made decisions about information to include. The report was also informed by the input of the Centering Black Mothers Report Advisory Group (AG) convened by Black Women for Wellness and the UCSF Center for Health Equity. This group of Black women leaders met with the authors regularly for over a year to provide input on methods, review report drafts, and discuss how racism impacts their health and the health of their communities.

Not everyone who experiences pregnancy and gives birth identifies as a woman or a mother. Accordingly, throughout the report, we use the words “woman/women” and “mothers,” as well as “pregnant individuals/people,” “birthing individuals/people,” and “parents/families” to describe the population experiencing pregnancy, birth, and parenthood. All participants in focus groups for this report self-identified as women. We do not know the gender of each birthing person represented in the quantitative data sources for this report, as gender of the birthing parent was not asked on the birth certificate during this time frame. However, birth certificate data include all births to California residents, including births to transgender, intersex, and nonbinary individuals.

Defining the Black Birthing Population in California

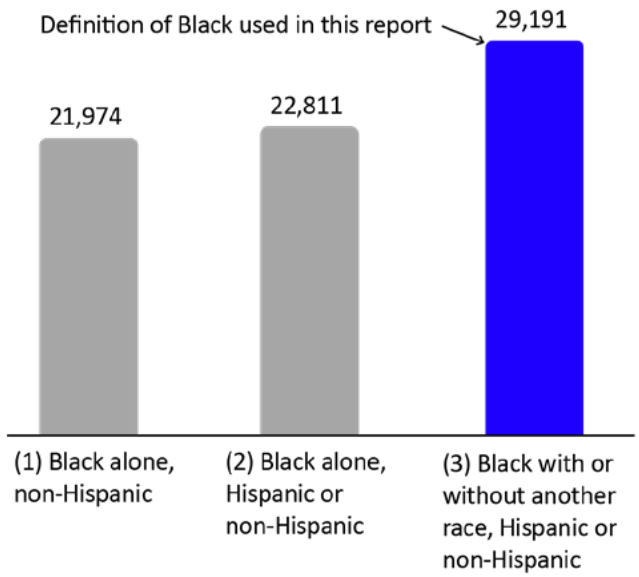
Race is a social construct that was developed largely based on nationality, ethnic or religious group, skin color, language spoken, and other social factors that were used to differentiate between those who had power, who were typically considered White, and those who did not.[107] The first global power to construct race was Portugal and a royal chronicler in 1444 grouped enslaved people from Africa into a single race to create a hierarchy to justify the slave trade.[108] In the United States, the concept of race was perpetuated by White colonizers who created a racial system to maintain their economic and political power over Indigenous and Black people.[109]

> "Melanin is an incomparable beauty. From the lightest to the darkest skin tone. Black women and girls are exquisite beauty in every shade. Yes, Black females have that special something that just can't be ignored. We are Melanin Queens, beautifully created! Respect the complexion."
>
> *—Stephanie Lahart, Author, 2018[110]*

Racial identity, especially for Black Americans, is complex,[107,111] and racial categories used in governmental sources like the census and birth certificate are limited in their ability to describe lived experience.[112] Nonetheless, these racial categories powerfully predict health outcomes and can reflect unjust differences in opportunities and treatment due to racism.[113] In order to describe the health of Black women and other birthing people in this report, we first had to decide whose data should be included—in other words, how to define the Black birthing population in California using the racial information available in the quantitative data sources used.

Figure 2. This report uses the most inclusive definition of Black race (3) to identify Black birthing people

Number of births to Black birthing people in California in 2019 using three different Black race definitions



Source: California Comprehensive Master Birth File, 2019.

For this report, Black race was defined based on a literature review of race classifications, a comprehensive assessment of California data, consultation with scientific colleagues within MCAH, and input from the report's Advisory Group (AG). The possible ways of someone self-identifying as Black for this report were as follows: (1) birthing people who self-reported only Black race and did not report Hispanic ethnicity (the definition MCAH typically uses for data reporting), (2) birthing people who self-reported Black race and either Hispanic or non-Hispanic ethnicity, and (3) birthing people who self-reported Black race, either as their only reported race or with one or more other races, and either Hispanic or non-Hispanic ethnicity. The three options are shown in Figure 2. AG members felt that there was an acceptable rationale for using any of the three options. Because the health outcomes of the most inclusive group, definition three, were very similar to the outcomes of those identifying as Black race only, and because many AG members felt it was important to include all women and other birthing

people who identified as Black in this report, the most inclusive categorization was selected. See the technical appendix for a description of other racial groups (American Indian/Alaska Native, Asian/Pacific Islander, and White) and Hispanic ethnicity used for comparisons in the report. For data on infant health, race is defined by the race of the birthing parent. This definition is used for birth certificate, infant mortality, and Maternal and Infant Health Assessment data. Due to data limitations, for hospital discharge, pregnancy-related mortality, and Listening to Mothers in California data, the Black category includes single-race, Black, non-Hispanic individuals.

Measuring Health and Well-being

This report presents several indicators across a range of topics to provide a picture of Black maternal and infant health in California. The report presents data on:

- Characteristics of people giving birth in California, including race and ethnicity, age, number of births, and health insurance coverage;
- Structural and interpersonal racism including measures of structural racism in the neighborhoods in which birthing people live and their experiences with racism;
- Maternal chronic health conditions such as hypertension, self-rated health, mental health, severe maternal morbidity, and pregnancy-related mortality;
- Maternity care including disrespectful treatment by health care providers and Cesarean section;
- Infant health including gestational age, preterm birth, infant birthweight, and infant mortality; and
- Health behaviors including prenatal care initiation, substance use, reproductive health, food insecurity and maternal weight, and breastfeeding.
- Several indicators present data by maternal characteristics, such as education or neighborhood factors; however, this was not possible for all data sets, as available data on these characteristics varied across data sources.

Measuring Structural Racism

Structural racism impacts the neighborhood conditions in which people are born, grow, learn, live, and work. In this report, we used one explicit measure of structural racism (racial and economic segregation) and two additional measures of neighborhood conditions by race and ethnicity (neighborhood poverty and neighborhood health), which, in the context of this report, are proxies of structural racism. Specifically, the measures were (1) racial and economic segregation, using the Index of Concentration at the Extremes (ICE), a measure of the degree to which neighborhoods reflect a larger proportion of White and higher-income residents, or Black and lower-income residents, using the Census Bureau's American Community Survey (ACS) data by census tract, presented in quartiles; (2) neighborhood poverty, measuring the percentage of residents in the neighborhood with incomes below federal poverty thresholds, also using ACS data by census tract and race and ethnicity (<5%, 5-9%, 10-19%, ≥20%); and (3) neighborhood health, as measured by the Healthy Places Index (HPI) 2.0, a summary measure of 25 indicators of community and environmental health and well-being for California census tracts developed by the Public Health Alliance of Southern California, presented in quartiles by race and ethnicity. The four categories used for each measure are described as least privileged, less privileged, more privileged, and most privileged.

RESULTS

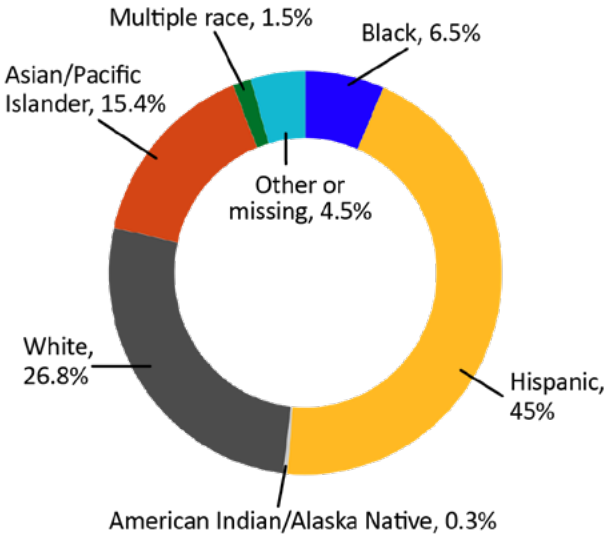
Factors at the societal, neighborhood, family, and individual levels have worked in concert over generations to affect many Black birthing people's abilities to achieve optimal health across the life course and to have healthy pregnancies, births, and babies.[8,57,85,114] To contextualize the health outcomes that are the main focus of this chapter, we first describe demographic measures for the Black birthing population in California. Then, we present key measures of structural racism and their associations with individual factors and the neighborhood conditions in which Black birthing people and their infants are born, grow, learn, live, and work. Next, we present data describing maternal and infant health status and outcomes, access to respectful health care, and health behaviors and associations with measures of structural racism, where available. Throughout this chapter, quotes from California Black women complement the quantitative data and provide perspectives on their unique lived experiences.

Black People Giving Birth in California

The Black population in California is diverse. Its members include descendants of enslaved people, as well as recent immigrants and descendants of those who previously immigrated to the United States. Racial and ethnic identification in the Black population reflects not only these varied histories but also an evolving sense of self-identity in recent decades.[111,115] This report includes birthing people who reported Black race alone or with other races and either Hispanic or non-Hispanic ethnicity. Using this definition, about 6.5% of infants in California in 2019 were born to Black birthing people (Figure 3). Three-quarters of Black birthing people identified their race as Black only and their ethnicity as non-Hispanic. Approximately 24.7% reported other races or Hispanic ethnicity in addition to Black, a dramatic increase since 2000, when only 9.3% reported other races or Hispanic ethnicity (data not shown), which highlights the importance of including all women who self-reported Black race regardless of the ethnicity or other races they also reported. About 10.2% of Black people giving birth in 2019 were born outside of the United States. A growing body of research indicates that health outcomes and life course experiences, including exposure to racism, may differ between recent Black immigrants and Black people born in the United States.[73,116]

Figure 3. Approximately 6.5% of births in California were to Black birthing people in 2019

Percent of births in California by maternal race and ethnicity, 2019



Source: California Comprehensive Master Birth File, 2019.

The number of births to Black individuals has been declining in California for several years (Figure 4), a pattern consistent with most other races and ethnicities in California and the U.S. overall.[117]

Maternal age

Maternal age is relevant to maternal and infant health status, with increased risks at both younger and older maternal ages.[19,118-120] Adolescent mothers and their infants have been shown to experience higher rates of obstetric complications, preterm birth, low birthweight, and infant mortality.[121-123] Their increased risk of poor birth outcomes is attributed only in part to their age; also contributing are social conditions, such as poverty, in the communities where they reside.[124,125] Risks to older birthing people include higher rates of hypertension, other chronic conditions, and preterm birth.[126] Relative to women of other racial and ethnic groups, Black women tend to experience increasingly greater health risks at younger ages.[18,20]

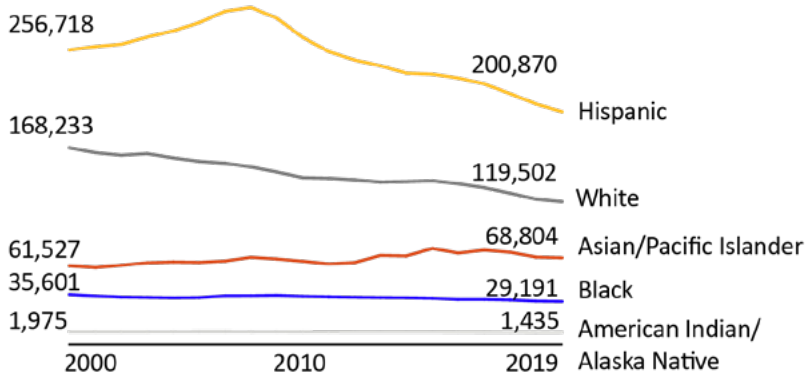
Births to Black adolescents and to young adults (ages 20–24 years) have dropped dramatically over the past ten years (Figure 5) following a decades-long trend.[127-129] Conversely, births among those 25 years and older have increased slightly.

Number of live births

In addition to age, the number of previous live births a person has experienced can impact the likelihood of a healthy pregnancy.[130-133] Women delivering a first child may be at higher risk of having a low birthweight infant,[132] and women with greater than five births may be at increased risk of certain medical complications such as diabetes.[133] Black women have reported encountering judgmental assumptions and negative attitudes about the number of children they have, due to racist, classist, and sexist stereotypes around Black motherhood.[134] In 2019, about 38% of Black people giving birth in California were experiencing a first birth, 46% were having a second or third, and about 16% were having a fourth or later birth. These rates are similar to those of Hispanic birthing people. White and Asian Pacific Islander birthing people had higher rates of first-time births and lower rates of fourth or later births (data not shown).

Figure 4. Births to Black individuals have seen a slow but steady decline for more than 15 years

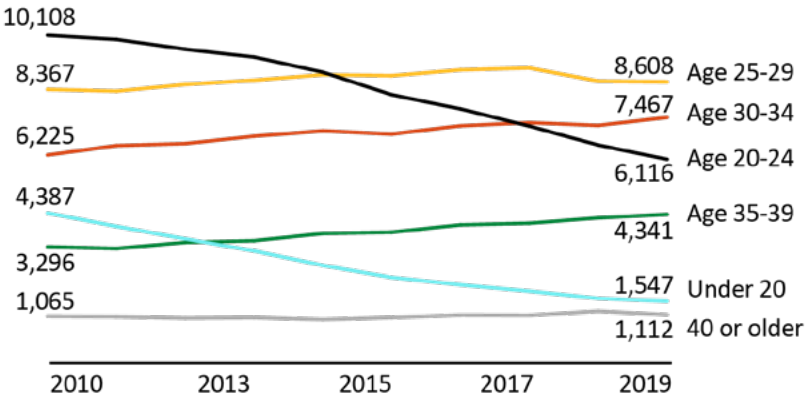
Number of births in California, by race and ethnicity, 2000–2019



Source: California Birth Statistical Master File, 2000–2017, and California Comprehensive Master Birth File, 2018–2019

Figure 5. Births among younger Black birthing people have declined in California in the past 10 years, while births to older Black birthing people increased

Number of births to Black birthing people in California, by maternal age, 2010–2019



Source: California Birth Statistical Master File, 2000–2017, and California Comprehensive Master Birth File, 2018–2019.

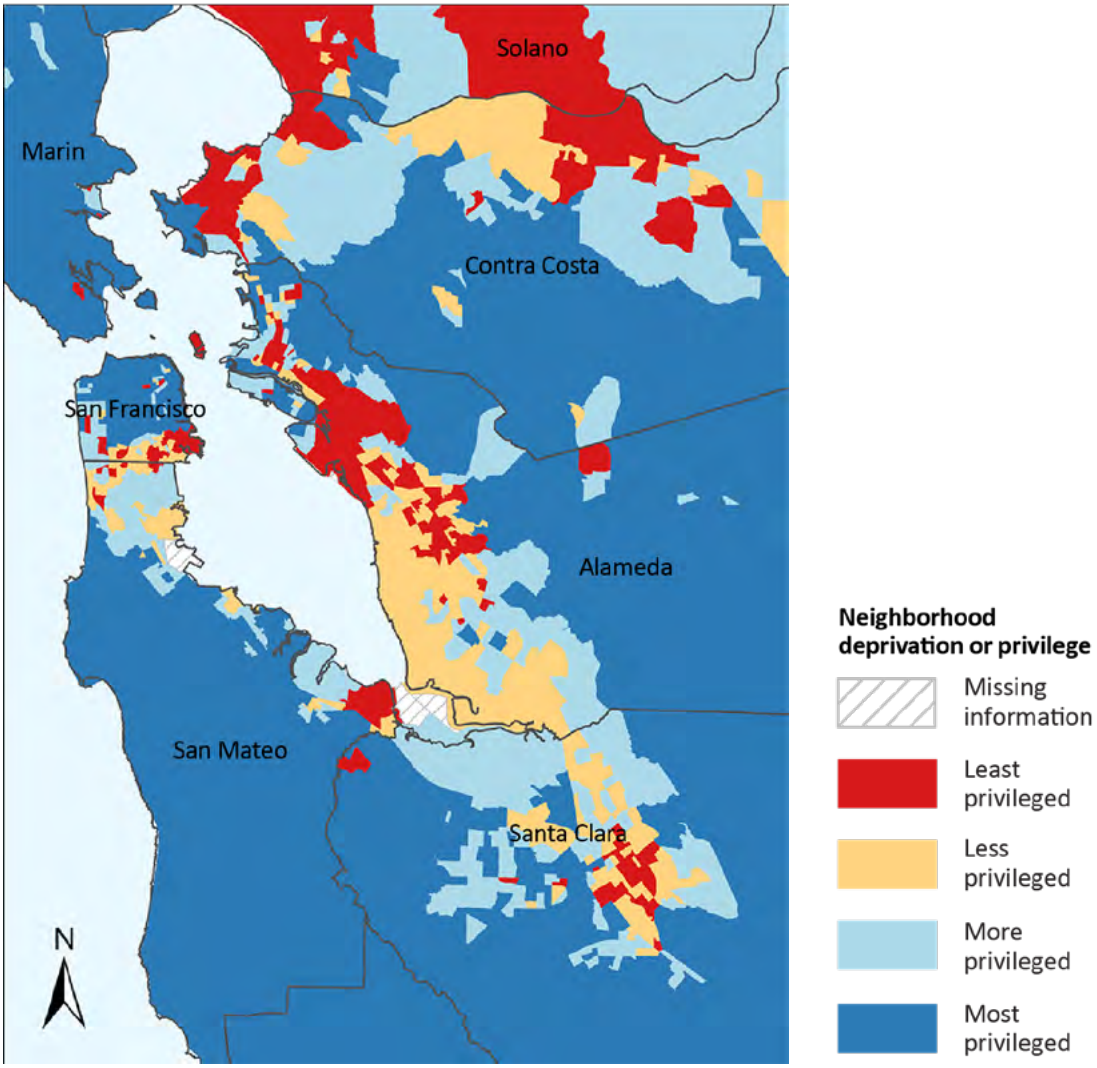
Structural Racism, Neighborhood Conditions, and Individual Factors that Shape Health

Racial and economic segregation

Place is a powerful determinant of health. Current measures of racial and economic segregation demonstrate the lasting impacts that discriminatory housing policies have had in California. The maps in Figure 6 and Figure 7 depict the level of racial and economic segregation across census tracts in the San Francisco Bay Area and Los Angeles County in 2013–2017, using the Index of Concentration at the Extremes based on data on race and income by census tract, as described in the Methodology section (see section on "Measuring Structural Racism"). The least privileged neighborhoods, shown in red, had the highest concentration of low-income Black residents, while the most privileged neighborhoods, in dark blue, had the highest concentration of high-income White residents. If there were no segregation, the maps would be more uniform in color.

Figure 6. Most neighborhoods in the San Francisco Bay Area were racially and economically segregated

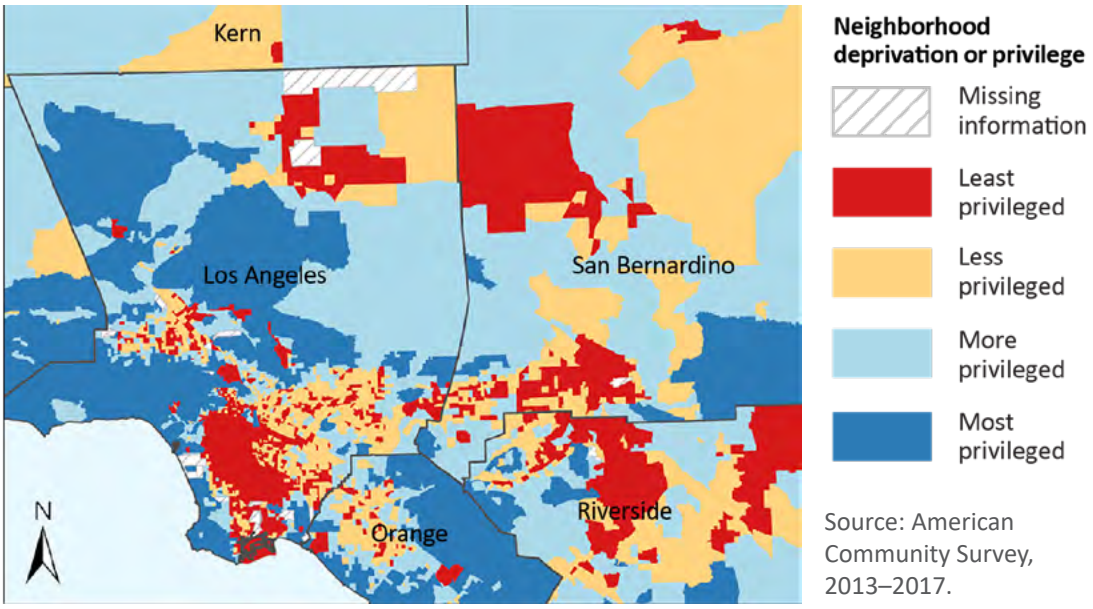
Level of neighborhood privilege in the San Francisco Bay Area according to the concentration of Black residents with low incomes and White residents with high incomes in each census tract, 2013–2017



Source: American Community Survey, 2013–2017.

Figure 7. Low-income Black residents were concentrated in selected neighborhoods in Los Angeles, San Bernardino, and Riverside Counties

Level of neighborhood privilege in the greater Los Angeles area according to the concentration of Black residents with low incomes and White residents with high incomes in each census tract, 2013–2017

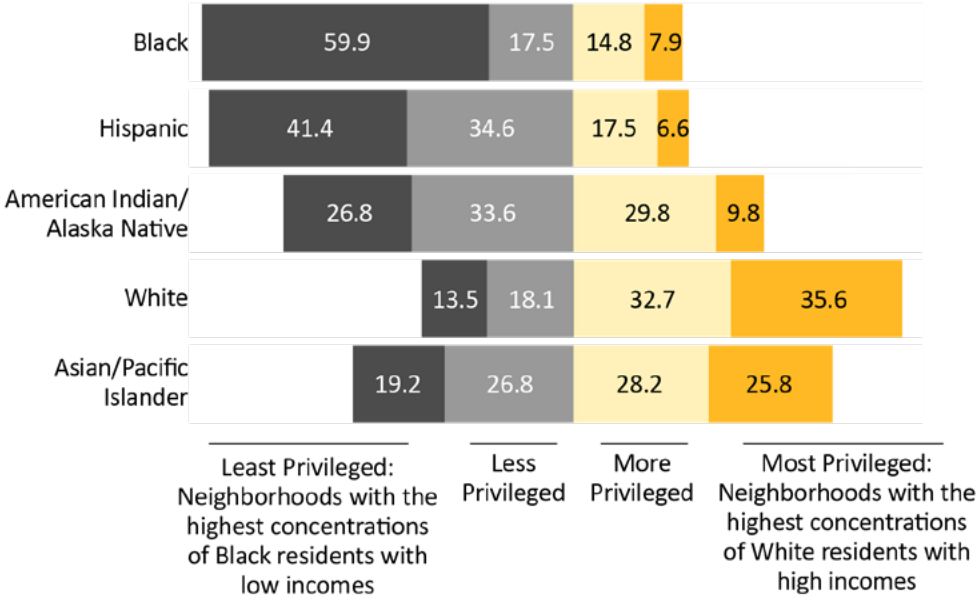


Source: American Community Survey, 2013–2017.

Approximately 77% of Black women and families lived in the less privileged neighborhoods as depicted in red and orange in Figure 6 and Figure 7, while only 7.9% of Black women and families lived in the most privileged areas, shown in dark blue. Among White women, 31.6% lived in the less privileged areas, and 35.6% lived in the most privileged areas (Figure 8).

Figure 8. Most Black birthing people lived in neighborhoods that were less privileged based on racial and economic segregation

Percent of birthing people in California by race and ethnicity and the concentration of Black residents with low incomes and White residents with high incomes in their census tracts, 2017–2018



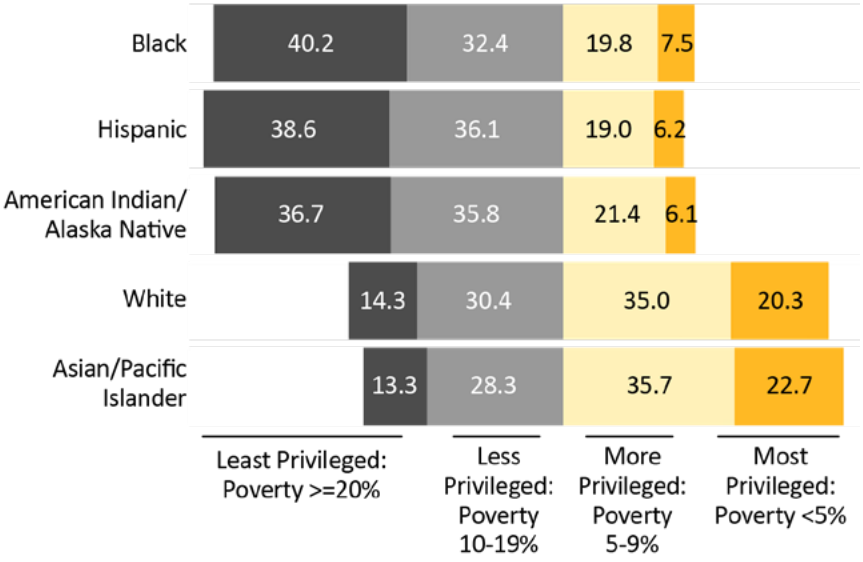
Source: California Comprehensive Master Birth File, 2017–2018, and American Community Survey, 2013–2017.

Concentration of neighborhood poverty

Figure 9 shows the percentage of women with a recent birth according to their neighborhoods' concentration of poverty. Forty percent of Black birthing people lived in high-poverty neighborhoods, shown in dark gray, while fewer than 15% of White or Asian/Pacific Islander birthing people lived in high-poverty neighborhoods.

Figure 9. Black, Hispanic, and American Indian/Alaska Native birthing people were more likely to live in high-poverty neighborhoods

Percent of birthing people in California by race and ethnicity and the percent of residents in their census tracts with incomes below poverty, 2018–2019



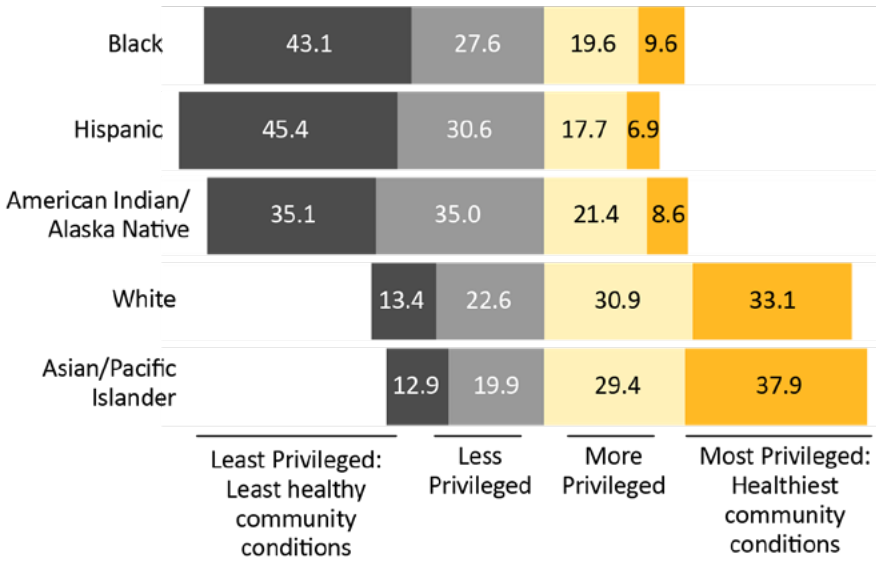
Source: California Comprehensive Master Birth File, 2018–2019, and American Community Survey 2018–2019.

Healthy Places Index: access to positive neighborhood conditions

Optimal health and well-being require access to fundamental resources in the communities where people live, such as transportation, employment, and healthy environmental conditions. About 43.1% of Black women giving birth in California lived in neighborhoods with the least health-promoting conditions, according to the Healthy Places Index,[135] and another 27.6% experienced the second least healthy neighborhood conditions (Figure 10). In total, nearly 3 in 4 Black birthing persons lived in areas with substantial structural barriers to health according to the Healthy Places Index, such as crowded and unaffordable housing, environmental hazards, and inadequate greenspace. Not surprisingly, neighborhood conditions

Figure 10. Black and Hispanic birthing people were less likely to live in neighborhoods with healthy community conditions

Percent of birthing people in California by race and ethnicity and the Healthy Places Index in their census tracts, 2018–2019



Source: California Comprehensive Master Birth File, 2018–2019, and Healthy Places Index, 2017.

are strongly correlated with racial and economic segregation. About two-thirds of the neighborhoods with the highest proportions of Black, low-income residents also had the least health-promoting conditions according to the Healthy Places Index. Only about 9% of the most segregated neighborhoods with the highest proportions of Black, low-income residents had healthy neighborhood conditions. In contrast, about 77% of the most privileged neighborhoods (with the highest proportions of White, high-income residents) had the healthiest conditions and less than 1% of the most privileged neighborhoods had the least healthy conditions (data not shown).

"My husband [and I are from] the inner city of two Midwest cities, and it was rough. We talk all the time about how we can set our children up for success in terms of making the best decisions for them, so that they don't have to struggle in the ways that we did. How can we create some generational wealth…? Those roadblocks of racism, they're going to be there, but what can we do to put them in the best position so that they can see [racism], be aware of it, and know how to maneuver around it."

—Focus group participant, Southern California

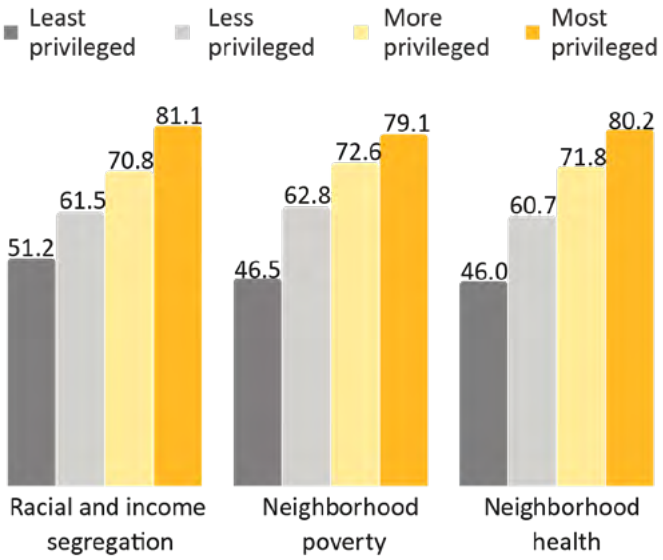
Impacts of structural racism on individual factors

Structural racism's effects on racial and economic segregation, neighborhood poverty, and healthy neighborhood conditions impact individual health and resources across the lifespan. The racial and economic segregation in neighborhoods where most Black people live results in a reduced property and parcel tax base, which can result in less adequate funding for local schools.[136] In general, students in racially and economically segregated communities attend less effective schools[137] and face higher barriers to college admission than students in less segregated districts.[138] As shown in Figure 11, Black women with a recent live birth who resided in more privileged neighborhoods had higher education levels than did those living in less privileged neighborhoods.

In addition to impacts on education, structural racism influences family income and health insurance coverage. Black women living in less privileged neighborhoods were more likely to have lower family incomes (data not shown), which impacted their health insurance coverage, as the type of coverage a person has in the U.S. is largely determined by employment and income.[139]

Figure 11. Black birthing people in more privileged neighborhoods had higher levels of education

Percent of Black birthing people in California who had some college or were college graduates, by level of neighborhood privilege, 2017–2018

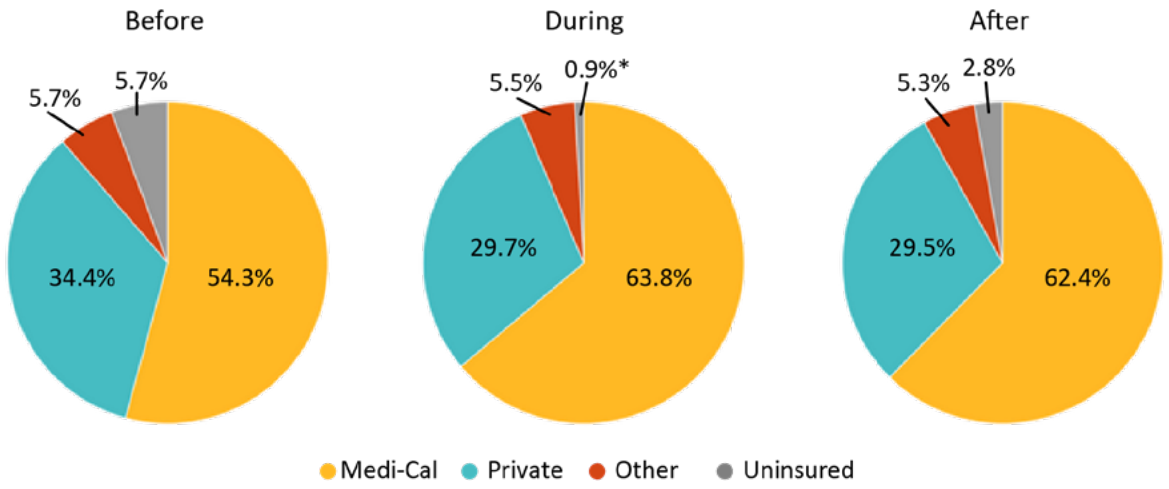


Source: California Birth Statistical Master File, 2017, California Comprehensive Master Birth File, 2018; American Community Survey, 2013–2018; Healthy Places Index, 2017. See figures 8-10 for information on measures of neighborhood privilege.

As shown in Figure 12, before, during, and after pregnancy, more than half of Black women were covered by Medi-Cal (54.3%, 63.8%, and 62.4%, respectively), and relatively few Black women were uninsured (5.7%, 0.9%, and 2.8%, respectively). Uninsurance rates are lower among pregnant people due to higher Medi-Cal eligibility cutoffs during pregnancy that are designed to facilitate access to maternity care for low-income Californians. Relatively low uninsurance rates among Black women before and after pregnancy can be attributed to the large Medi-Cal expansion in California, implemented as part of the Affordable Care Act in 2014.[140]

Figure 12. Medi-Cal was the most common method of insurance for Black birthing people before, during and after pregnancy

Percent of Black birthing people in California with specified types of health insurance coverage in the month prior to pregnancy, during pregnancy, and at 2-10 months postpartum, 2017–2019



*Estimate should be interpreted with caution due to low statistical reliability (relative standard error, or RSE, is between 30% and 50%). Source: Maternal and Infant Health Assessment, 2017–2019. "Other" refers to military, Indian Health Service, or other insurance sources.

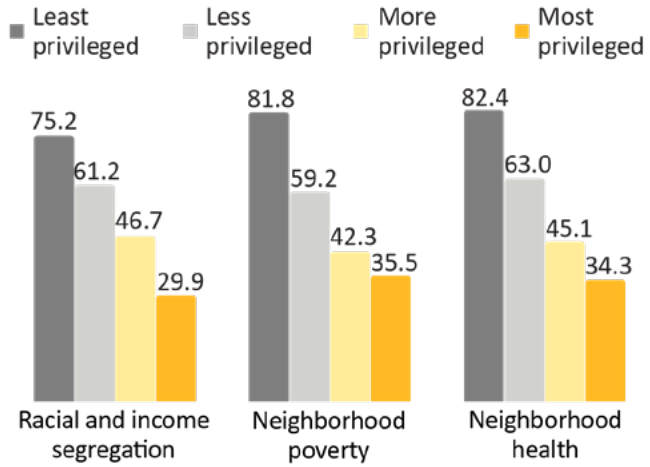
"With my first daughter I had my own private insurance through my employer... With my second daughter, I was on Medi-Cal and I tried to go to the same doctor, not knowing. Couldn't even go to her. 'No, we don't take that here.... Go to the website and go find another doctor for yourself.' So, I wound up getting a different doctor. She was pretty cool, but I had to really advocate for myself; it was night and day."

—Focus group participant, Southern California

Medi-Cal and private insurance are by far the two most common types of insurance coverage among Black birthing people, similar to the insurance statuses of the other racial and ethnic groups in California. As shown in Figure 13, Black women who lived in the least privileged neighborhoods were over twice as likely to have Medi-Cal as the Black women who lived in the most privileged neighborhoods.

Figure 13. Medi-Cal insurance coverage of Black birthing people was greater in less privileged neighborhoods

Percent of Black birthing people in California with Medi-Cal insurance for prenatal care, by neighborhood level of privilege, 2016–2018



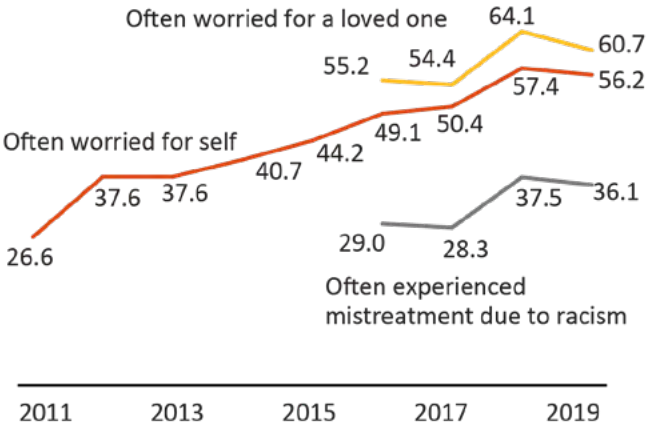
Source: Maternal and Infant Health Assessment, 2016–2018; American Community Survey, 2012–2018; Healthy Places Index, 2017. See figures 8-10 for information on measures of neighborhood privilege.

Interpersonal racism

In addition to structural racism, interpersonal racism is a stressor that impacts maternal and infant health.[89] While Black people living in the more privileged areas described above, which tend to be predominantly White, likely enjoy resource advantages, they also may experience increased exposure to interpersonal racism in these neighborhoods.[141-144] In California, the experience of interpersonal racism across one's lifetime has increased in recent years for Black women with a recent birth, as has chronic or persistent worry about interpersonal racism (Figure 14). In a 2009 qualitative study in California, reproductive-aged Black women put as much emphasis on their pervasive worry that they or their loved ones would experience interpersonal racism as they did on the actual experiences of interpersonal racism.[87] Worry about being treated unfairly due to racism has been associated with a higher rate of preterm birth among Black women in California.[145]

Figure 14. Worrying often about mistreatment due to racism more than doubled among Black birthing people between 2011 and 2019

Percent of Black birthing people in California who very often or somewhat often either worried for themselves or for a loved one about being treated unfairly due to racism or experienced mistreatment due to racism, over their lifetimes, 2011–2019



Source: Maternal and Infant Health Assessment, 2011–2019.

Pre-Pregnancy Health

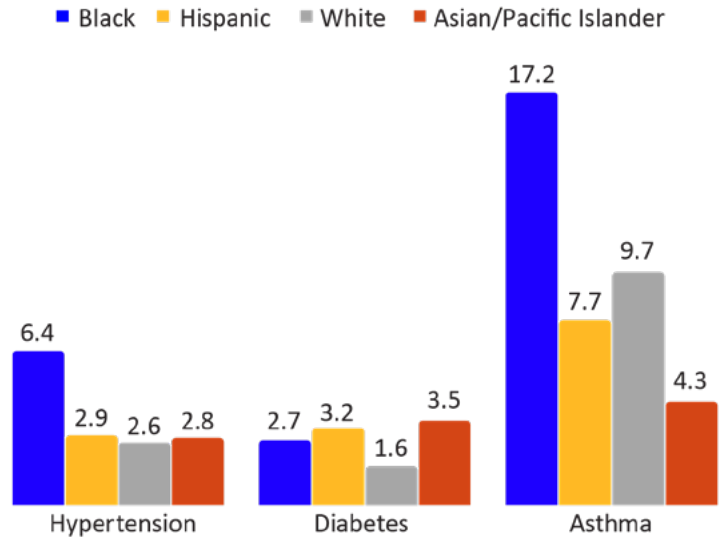
Ensuring a woman's health and wellbeing before pregnancy can have powerful impacts on maternal and infant outcomes. Unfortunately, restricted access to resources, harmful exposures in segregated neighborhoods, and experiences of (and worry about) interpersonal racism across the life course can negatively impact Black women's health long before pregnancy begins.

> "Sometimes I feel sad and hopeless at the situations that Black moms and babies are facing, but there are times where I feel joy and hope. I see the effort to do better and the work that's out there being done to put those links together. We're here, we're doing the work, and we want to be seen. We're helping ourselves."
>
> *—Focus group participant, Central Valley*

The presence of chronic health conditions like hypertension, diabetes, and asthma in the pre-pregnancy period can increase the risk of serious pregnancy complications,[146-151] particularly if the conditions are not well-managed. About 6.4% of Black women in California were diagnosed with hypertension prior to becoming pregnant (Figure 15), a proportion more than two times higher than those of Hispanic, White, or Asian/Pacific Islander women. Black women had a similar rate of diabetes as Hispanic and Asian/ Pacific Islander women, but a higher rate than Whites. One in six Black women was diagnosed with asthma prior to pregnancy, 1.7 to 4 times higher than the rates among Hispanic, White, or Asian/ Pacific Islander women. (For this figure and some later figures in this report, numbers were insufficient to report data for American Indians/Alaska Natives.).

Figure 15. Between 3 and 17 percent of Black birthing people were diagnosed with hypertension, diabetes, or asthma prior to pregnancy

Percent of birthing people in California reporting chronic conditions prior to pregnancy, by race and ethnicity, 2017–2019



Source: Maternal and Infant Health Assessment, 2017–2019.

Chronic hypertension, or high blood pressure, is of particular concern because of its link to pregnancy complications and adverse birth outcomes, including preeclampsia (a health condition involving persistent and severe high blood pressure that develops during or right after pregnancy and may result in organ damage and death), Cesarean section, preterm birth, low birthweight, and perinatal mortality.[152]

Black women living in less privileged neighborhoods were more likely than those in more privileged neighborhoods to have been diagnosed with hypertension prior to pregnancy (Figure 16).

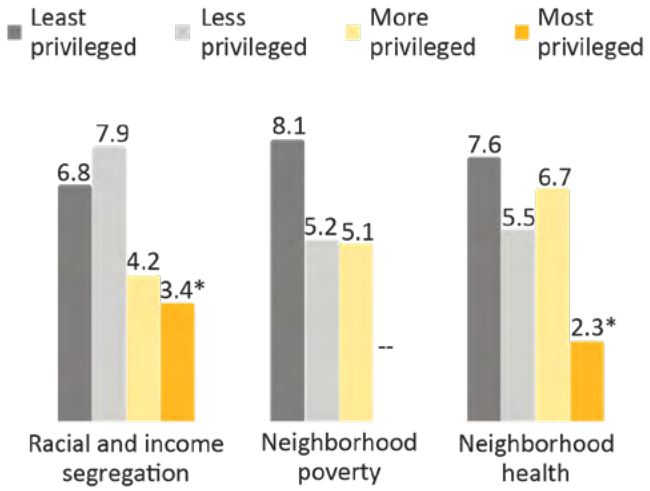
> "A video I showed my students spoke of the struggle to be an African American, in terms of where you're born, where you live, your mother's education, your father's education, how much money they make, how many children they have. Do they have access to health care, do they have access to food, do they have access to all these different things?... There is racism, institutionalized racism, and it's very deep rooted. You're running your own race, but everybody is running at a different pace."
>
> *—Focus group participant, Southern California*

Self-rated health is a widely used measure of overall health status that correlates with more objective indicators of health. Societal factors impact self-rated health.[153] While a disproportionate percentage of Black women were impacted by chronic conditions before pregnancy, a majority reported being in good to excellent health before pregnancy (Figure 17).

Black women with incomes above the federal poverty line, those with a high school education or more, and those who lived in more health-promoting neighborhoods reported better health than their counterparts (data not shown).

Figure 16. Pre-pregnancy hypertension rates for Black birthing people were lower in more privileged neighborhoods

Percent of Black birthing people in California with a diagnosis of hypertension prior to pregnancy, by neighborhood level of privilege, 2016–2018



-- Estimate not shown because the RSE is greater than 50% or fewer than 5 women reported. *Estimate should be interpreted with caution due to low statistical reliability (RSE is between 30% and 50%). Source: Maternal and Infant Health Assessment, 2016–2018; American Community Survey, 2012–2018; Healthy Places Index, 2017. See figures 8-10 for information on measures of neighborhood privilege.

Figure 17. Over 90% of Black birthing people report being in good to excellent health before pregnancy

Percent of Black birthing people in California by self-reported health before pregnancy, 2017–2019

Source: Maternal and Infant Health Assessment, 2017–2019.

Pregnancy Health

Pregnancy can be a time of hope and possibility when birthing people prepare to welcome new lives into their families. It is also a sensitive period, when a birthing person and the developing fetus are particularly vulnerable to the impacts of negative exposures and health conditions that occur during this time. Pregnancy places additional demands on the body, which can exacerbate pre-existing health conditions, lead to the development of new conditions, and amplify the effects of low quality, disrespectful care.

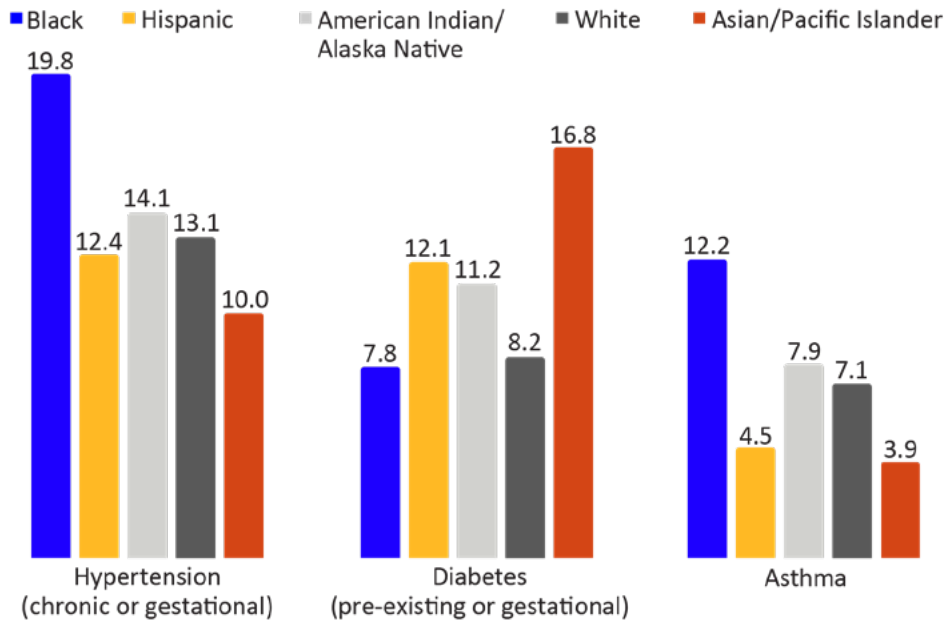
Maternal health conditions at delivery

As with the pre-pregnancy health conditions shown in Figure 15, Black women had higher rates of hypertension and asthma at delivery than did other women (Figure 18). By the end of pregnancy, 19.8% of Black women were diagnosed with hypertension, 7.8% with diabetes, and 12.2% with asthma.

> "I was very, very sick and I knew something was wrong on both pregnancies, and no one took me seriously, even though I had very serious issues…In the second pregnancy I wasn't able to walk, and I felt like this is not normal, it's excruciatingly painful when I walk, and I can't seem to get help."
>
> *—Focus group participant, Central Valley*

Figure 18. By the time of delivery, about one in five Black birthing people was diagnosed with hypertension

Percent of birthing people in California with hypertension, diabetes, or asthma diagnosis at delivery, by race and ethnicity, 2018–2019



Source: California Patient Discharge Data, 2018–2019. Health conditions may have developed before or during pregnancy. See Technical Notes for health condition definitions.

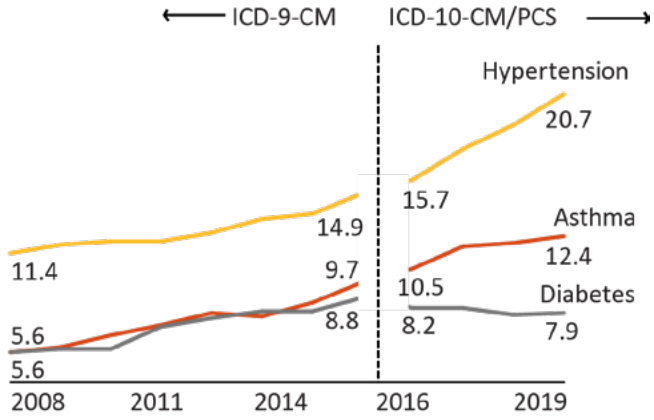
> "I ended up delivering her five weeks early. They come rushing in asking, 'Did you take your medicine today?' I'm looking at my husband, 'Medicine? No.' 'We're going to do one more test, but we're pretty sure that you have preeclampsia, and you need to deliver this baby now.' 'Okay, what's preeclampsia? What test are you running?' I will advocate for myself, but there was never follow-up…No one can give me answers as to what happened, but after I delivered my baby, my blood pressure has never regulated and it's getting worse."
>
> *—Focus group participant, Central Valley*

Between 2008 and 2019, both hypertension and asthma showed steep increases for Black women. Hypertension among Black women at delivery increased by 30% from 2008 to 2015 and by 32% from 2016 to 2019 (Figure 19). Asthma among Black women at delivery increased by over 70% from 2008 to 2015 and continued a steady increase from 2016 to 2019. In contrast, diabetes did not show a similar increase among Black birthing people in recent years. Hypertension and asthma also increased among other racial and ethnic groups over the same time period.

Hypertensive disorders of pregnancy, which include chronic and gestational hypertension and preeclampsia and eclampsia, are particularly worrisome due to their association with severe adverse outcomes, including preterm birth, severe maternal morbidity, and maternal mortality.[154-156] Among Black women, symptom severity and likelihood of adverse outcomes are higher than they are for women of other races and ethnicities.[157-160]

Figure 19. Hypertension and asthma rates at delivery increased over the past decade among Black birthing people

Percent of Black birthing people in California with hypertension, diabetes, or asthma diagnosis at delivery, 2008–2019

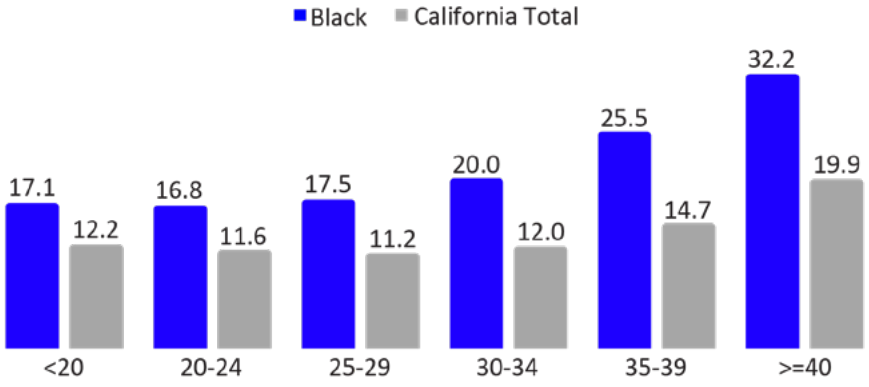


Source: California Patient Discharge Data, 2008–2019. Health conditions may have developed before or during pregnancy. Break in 2015 is due to change in ICD coding; see Technical Notes for health condition definitions.

Hypertension at delivery increased substantially with age for Black women, from just 17.1% among those under age 20 to 32.2% at ages 40 and older in 2018–2019 (Figure 20). The increase was not as steep among California women overall, resulting in a greater disparity at older ages. Among younger pregnant women of any race, uterine immaturity may result in hypertension.[161,162] At older ages, blood vessels lose elasticity and become more rigid, resulting in higher blood pressure.[163]

Figure 20. Hypertension was highest among birthing people ages 35 and older

Percentage of birthing people in California with hypertension at delivery, among Black birthing people and California as a whole, by maternal age, 2018–2019



Source: California Patient Discharge Data, 2018–2019. Hypertension may have developed before or during pregnancy. See Technical Notes for definition of hypertension.

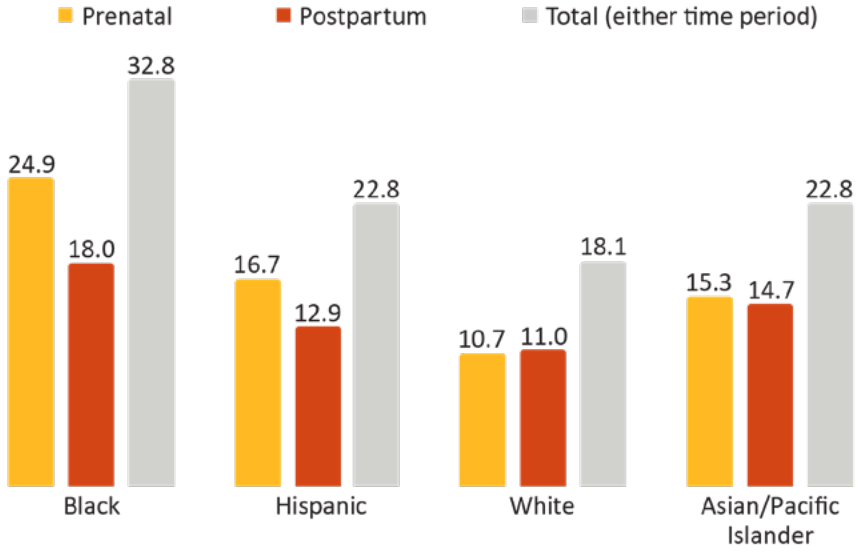
Mental health

Emotional well-being and mental health during and after pregnancy are central to a woman's health and can impact her infant's development. Increasingly, factors that occur at the societal, neighborhood, family, and individual levels— such as structural and interpersonal racism, adverse childhood experiences, neighborhood conditions, employment opportunities, and economic stability—are recognized for their role in contributing to mental health.[5,164,165] Depression is one of several mood and anxiety disorders that commonly affect people during or after pregnancy.

Approximately 1 in 4 Black women experienced clinically relevant symptoms of depression during pregnancy, and 18% experienced them postpartum (Figure 21). Black women were more likely than other racial and ethnic groups to have depressive symptoms during pregnancy.

Figure 21. One in three Black birthing people experienced clinically relevant symptoms of depression during pregnancy or postpartum

Percent of birthing people in California with depressive symptoms prenatally, postpartum, or in either period, by race and ethnicity, 2017–2019



Source: Maternal and Infant Health Assessment, 2017–2019.

> "Doctors don't really tend to listen to Black women. They take it upon themselves to do what they think is best. [They do] not understand where we're coming from. I just feel that's important, to listen more."
>
> *—Focus group participant, Southern California*

Health care quality and respectful maternity care

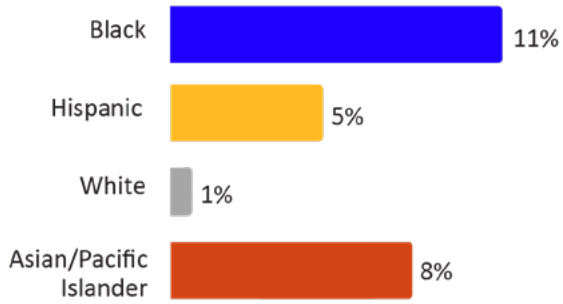
The quality of health care during pregnancy, labor, and delivery has a demonstrable impact on maternal health, particularly on severe health outcomes during the perinatal period.[166] Respect by health care providers is an important component of health care quality. Respectful maternity care is person-centered, empathic, collaborative, and competent, and it respects women's values, beliefs, and autonomy.[22,99,167,168] For Black women in particular, respectful care affirms their inherent value and dignity in the face of

societal and medical attitudes that have exploited and abused them. In 2016, 11% of California Black women, compared with almost no White women, reported that they were treated unfairly because of their race or ethnicity during a hospital stay for childbirth[169] (Figure 22).

About one in ten Black women reported that they were handled roughly or experienced rude or threatening language from a provider; Black women were more likely than White or Hispanic women to report both forms of poor care. Support from labor and delivery staff for maternal autonomy during labor is an important component of respectful care; 12% of Black mothers (compared to 9% of White mothers) reported that they did not feel the delivery room staff encouraged them to make decisions about their birth progression.

Figure 22. Black women were more likely than other women to report experiencing unfair treatment due to race during a hospital stay for delivery

Percent of women in California reporting that they were treated unfairly due to race during their hospital stay, 2016



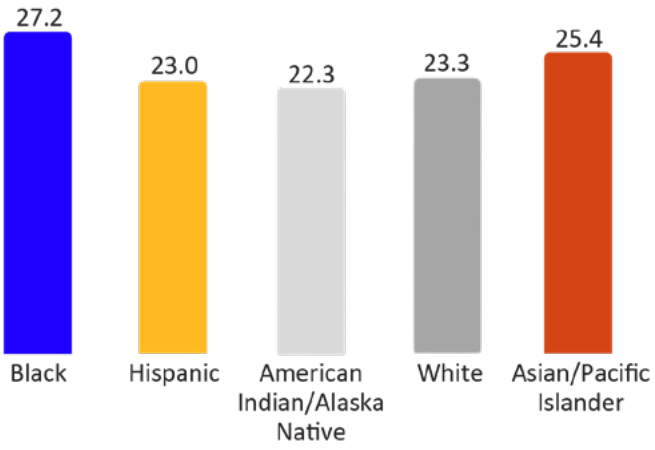
Source: Listening to Mothers in California study, National Partnership for Women & Families, 2016 data.

> "Because I knew about the data, I was very careful about which pediatrician I chose for [my baby] and which doctor I chose to be my delivery doctor. I made sure I had a doula and a midwife, just to make sure I was getting properly taken care of and that I was respected when it came to my birthing plan."
>
> *—Focus group participant, Southern California*

Cesarean sections can prevent injury and death in both the mother and fetus in high-risk pregnancies, but Cesarean sections increase the risk of maternal morbidity and death compared to vaginal delivery.[170] An excessively high percentage of Cesarean section in lower risk women is an indicator of poor quality of care.[171] Among women at low risk for Cesarean delivery, according to clinical criteria applied to birth certificate data, Cesarean section was more common for Black women than for women in other racial and ethnic groups (Figure 23). Studies have shown that disparities in low-risk Cesarean deliveries experienced by Black women persist even after taking into account differences in risk factors between the groups.[172,173] Black women are more likely than others to receive Cesarean sections for fetal distress and failure to progress.[174]

Figure 23. Black birthing people were more likely than others to have a Cesarean delivery, which was not explained by clinical risk factors

Percent of birthing people in California with a low-risk delivery (first birth, full term, singleton, vertex) who had a Cesarean section, by race and ethnicity, 2018–2019



Source: California Comprehensive Master Birth File, 2018–2019.

"I'm not really a depressed person…but after I had my baby, I just felt a letdown, because I was thinking, 'How come I just couldn't have my baby the regular way?' I had a good pregnancy, everything was fine. My husband was good. My mom and my husband are my support system. My whole family is very supportive. When we found out we were expecting a baby, it was a big thing. So then for me to get all the way to the end and all that stuff happened, it bothered me a little bit. I didn't really tell anybody, but it made me feel inadequate as a mom that I just couldn't birth my baby the regular way…It had to be so traumatic."

—Focus group participant, Northern California

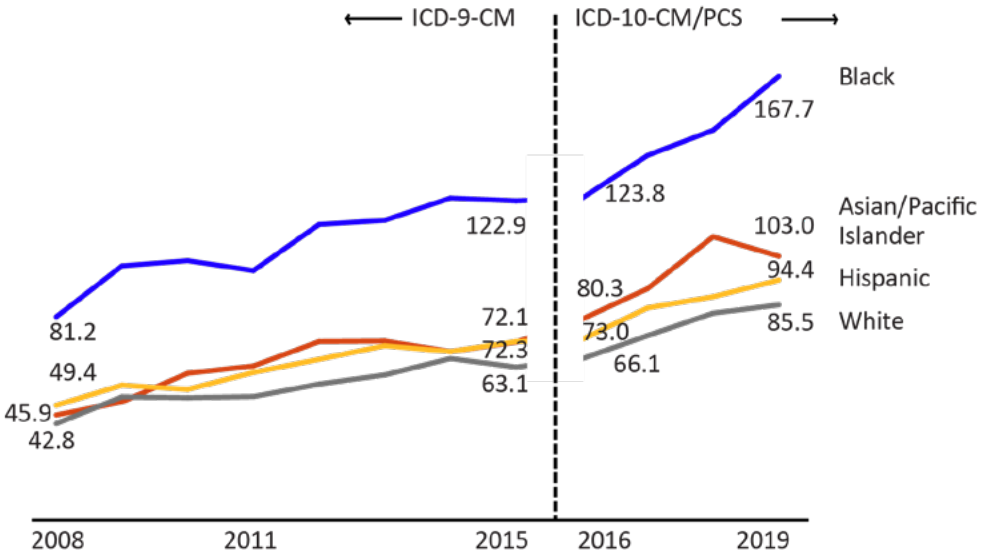
Severe Maternal Morbidity

Severe maternal morbidity (SMM) has been well defined[175] and includes potentially life-threatening complications from labor and delivery, such as hemorrhage, infection, or heart failure, that result in serious short- or long-term health consequences for the birthing person, including the possibility of maternal death. Known risk factors include pre-pregnancy health conditions, pregnancy complications, older maternal age, and inadequate prenatal care. Almost half of all SMM events and maternal deaths are preventable, underscoring the importance of the quality of care before, during, and after pregnancy as a critical factor in reducing the potentially severe impacts of SMM.[23] In the United States, of all racial and ethnic groups, Black women suffer with the highest rates of SMM of all racial and ethnic groups, develop SMM at younger ages, experience more SMM conditions, receive less adequate care in response to SMM, and are more likely to die as a result of SMM.[23] (While blood transfusion was originally considered as part of SMM, transfusion may not reflect severe morbidity in the absence of other complications, so SMM rates shown in this report exclude blood transfusions.)

The rate of SMM among Black women increased dramatically in recent years, by 51% from 2008 to 2015 and by 35% from 2016 to 2019 (Figure 24). While SMM increased for all racial and ethnic groups, the rate among Black women remained substantially higher than the rates for Hispanics, Whites, and Asians/ Pacific Islanders.

Figure 24. Severe maternal morbidity increased between 2011 and 2019 for all racial and ethnic groups, and Black birthing people's rates remained inequitably high

Rate of severe maternal morbidity per 10,000 deliveries in California, by race and ethnicity, 2008–2019



Source: California Patient Discharge Data, 2008–2019. Break in 2015 is due to change in ICD coding; see Technical Notes for definition of severe maternal morbidity.

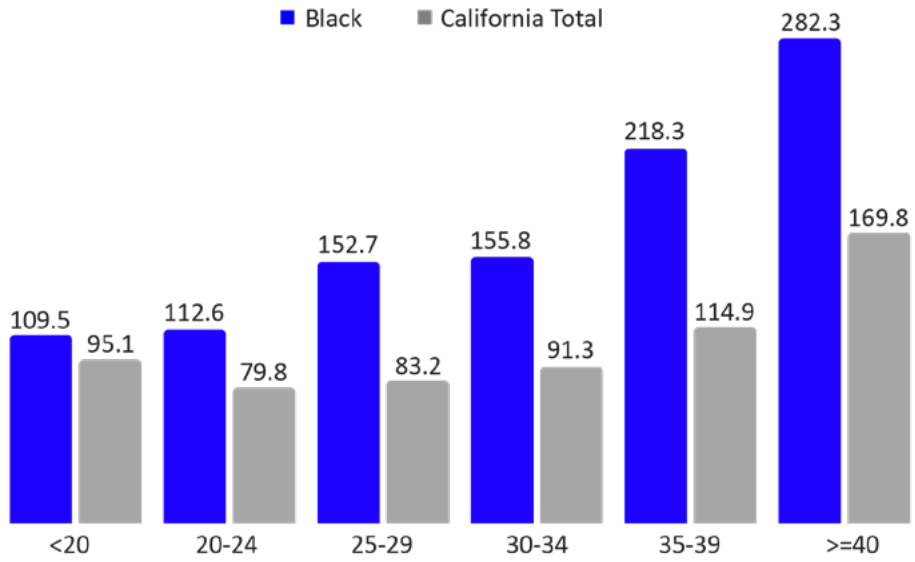
"My care was good up until the point that they told me, 'We want you to come back on Wednesday, to induce your labor.' But they never told me that I was at risk at that time.... They had to do an emergency C-section because my blood pressure hit 250 and her heart rate dropped. I slipped into a coma. I didn't really want a C-section, but they [told me], 'You're going to die and she's going to die,' because her heart rate dropped. When I came out of the coma, they put me on magnesium. It was so overwhelming. They separated me from her after birth because I was still considered high risk, so my husband went down to the nursery with her."

—Focus group participant, Northern California

Some of the most common conditions that make up SMM among Black women in California include infection (sepsis); acute kidney failure; and blood clots throughout the body (disseminated intravascular coagulation) (data not shown). Some of these severe maternal health conditions can be a result of preeclampsia, hemorrhage during delivery, or other obstetric complications. Black women experienced inequitably high rates of SMM beginning at age 20; by their mid-20s, Black women's rates of SMM were about 1.8 times that of Californians as a whole (Figure 25). Rates of SMM were higher among older age groups, but the pattern varied between Black women and California women overall. In the population as a whole, the rate of SMM remained fairly steady through age 30-34, after which SMM rates were greater. Among Black women, rates of SMM began to climb at 25–29 years of age.

Figure 25. Severe maternal morbidity was highest among those ages 35 and older

Rate of severe maternal morbidity per 10,000 deliveries in California, among Black birthing people and California as a whole, by maternal age, 2018–2019



Source: California Patient Discharge Data, 2018–2019. See Technical Notes for definition of severe maternal morbidity.

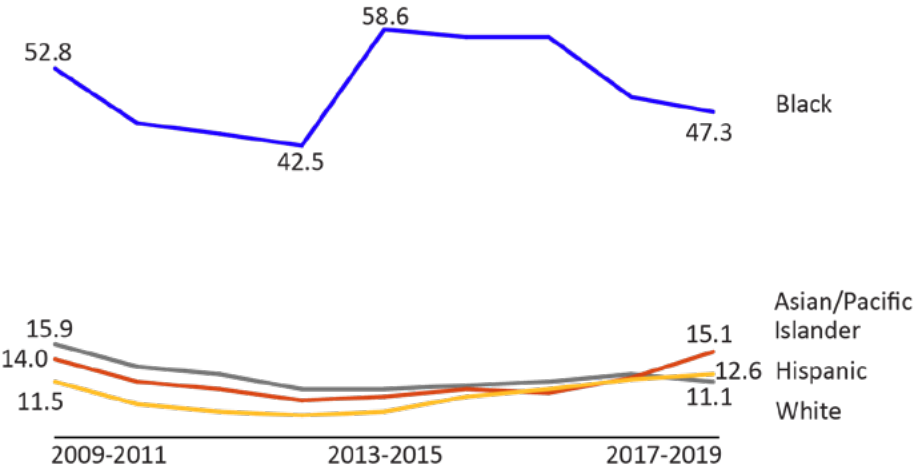
Pregnancy-Related Mortality

In some but not all cases, severe maternal morbidity can lead to pregnancy-related death, which is the death of a person during or within one year of the end of a pregnancy due to a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic events of pregnancy.[176] Though relatively rare, a pregnancy-related death is a tragic event that impacts not just families, but communities and society as well. Mortality rates may be influenced by health conditions and community-level factors, as well as access to and quality of health care, which research shows, is informed by structural racism.[7] Pregnancy-related mortality has increased in the United States in recent years, but the rate is lower in California and has remained relatively stable over the past decade.[1] In California, a formal mortality review found that close to half of all pregnancy-related deaths in 2002–2007 had a good-to-strong chance of preventability.[177] Despite advances in maternal health care over the past several decades, Black women in the United States have long had rates of pregnancy-related mortality that are three to four times higher than those of White women.[178]

The pregnancy-related mortality ratio (PRMR), a key indicator of population health, measures the number of pregnancy-related deaths for every 100,000 live births. As shown in Figure 26, during 2009–2019, the pregnancy-related mortality ratio among Black women and other birthing people in California varied from 42.5 to 58.6 deaths per 100,000 live births. During this time-period, Black women were about three to seven times more likely to die from pregnancy-related causes as Hispanic, White, or Asian/Pacific Islander women. Fortunately, Black women's rate of pregnancy-related mortality declined between 2013–2015 and 2017–2019. Despite this improvement, the stark disparities in risk of pregnancy-related deaths experienced by Black birthing people compared to other racial and ethnic groups have shown little change.

Figure 26. While rates of pregnancy-related mortality among Black birthing people declined between 2013–2015 and 2017–2019, they remained much higher than other groups

Pregnancy-related deaths per 100,000 live births in California, by race and ethnicity, three year moving averages, 2009–2019

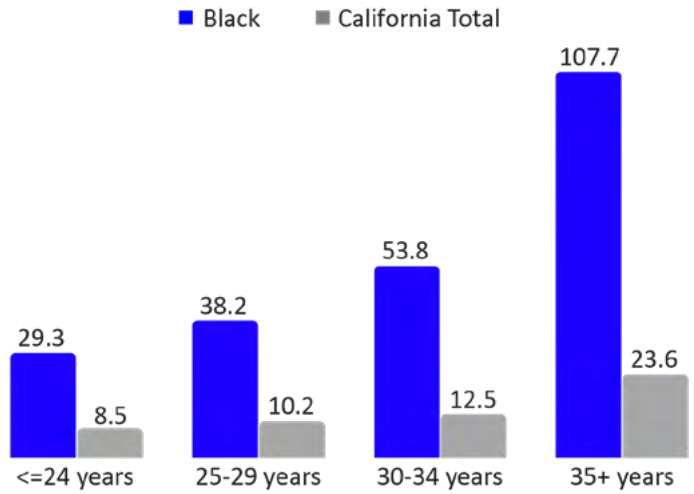


Source: California Pregnancy Mortality Surveillance System, 2009–2019; California Birth Statistical Master File, 2009–2017, California Comprehensive Master Birth File, 2018–2019. See Technical Notes for definition of pregnancy-related deaths.

As shown in Figure 27, the pregnancy-related mortality rate increased with age for Black women. Black women ages 35 or older were about 3.7 times more likely to die from pregnancy-related conditions than those 24 or younger. In addition, within each age group, Black women had higher rates of pregnancy-related mortality than other women in California, and this gap increased with age. Inequities in pregnancy-related mortality between Black women and other racial and ethnic groups were largest among those ages 35 years and older, when Black women were 4.6 times more likely than California women as a whole to die of pregnancy-related causes.

Figure 27. Pregnancy-related mortality was highest among Black birthing people ages 35 and older

Rate of pregnancy-related mortality per 100,000 live births in California, among Black birthing people and California as a whole, by maternal age, 2009–2019

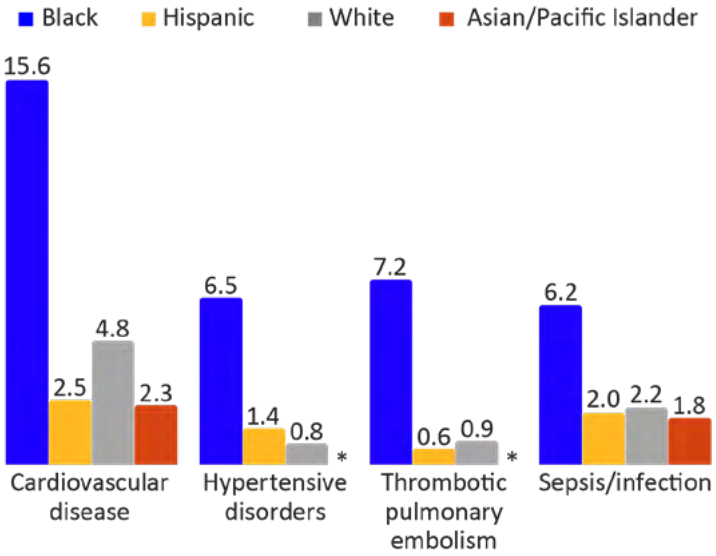


Source: California Pregnancy Mortality Surveillance System, 2009–2019; California Birth Statistical Master File, 2009–2017, California Comprehensive Master Birth File, 2018–2019. See Technical Notes for definition of pregnancy-related deaths.

The leading causes of pregnancy-related mortality for Black women in California were disease of the heart and blood vessels (cardiovascular disease), high blood pressure and preeclampsia (hypertensive disorders), blood clots in the lungs (thrombotic pulmonary embolism), and infection (sepsis) (Figure 28). The disparities in rates are striking. Black women were eight times more likely to die of hypertensive disorders or blood clots than White women. Most deaths from blood clots occurred in early pregnancy, while most deaths from hypertensive disorders and infections occurred after the pregnancy ended. Late deaths (deaths occurring more than 42 days after the end of pregnancy) from cardiovascular disease were disproportionately high among Black women (data not shown).

Figure 28. Cardiovascular disease was the leading cause of pregnancy-related mortality

Pregnancy-related deaths per 100,000 live births in California, by cause of death and race and ethnicity, 2009–2019



Source: California Pregnancy Mortality Surveillance System, 2009–2019; California Birth Statistical Master File, 2009–2017, California Comprehensive Master Birth File, 2018–2019. See Technical Notes for definition of pregnancy-related deaths. *Fewer than 10 deaths.

The highest rates of pregnancy-related mortality among Black birthing people were among those living in the least privileged neighborhoods (Figure 29). Black women were disproportionately likely to live in these communities (see Figure 8, Figure 9, and Figure 10 above).

Birth Outcomes

The well-being of infants at birth is inextricably linked to the well-being of their mothers and is influenced by the same societal, neighborhood, family, and individual factors that shape maternal health. Black infants have among the highest rates of adverse health outcomes, such as preterm delivery and low birthweight.

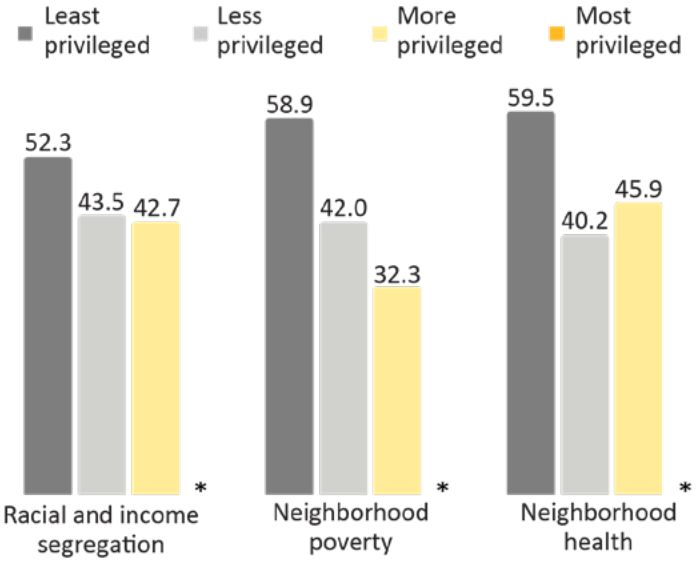
> "They did the C-section in an hour and ten minutes. She came out, and it was just a whole new world, just in the snap of a finger. Mommy instincts: 'Is she okay, what does she look like?' My husband started crying. He said, 'She's so beautiful. She has so much hair.' He doesn't like blood, he doesn't like needles, but he watched the whole process, and he came back around the drape just holding her, and I was just like, 'Wow, thank you Jesus. We made it.'"
>
> *—Focus group member, Northern California*

Gestational age

Gestational age, the number of weeks between the first day of the last normal menstrual period and the date of delivery, is closely related to infant health and development. Just as most Black women are healthy before and throughout pregnancy, many Black infants also are born full term and healthy. In 2018–2019, 61.5% of Black infants in California were born at full term (39 or more weeks) and 26.3% were born early term (37-38 weeks). During the same period, 9.4% of Black infants were born between 32 and 36 weeks and 2.5% of Black infants were born very early (before 32 weeks), which confers additional risks to the infant's health (Figure 30).

Figure 29. Pregnancy-related mortality rates were highest among Black women living in the least privileged neighborhoods

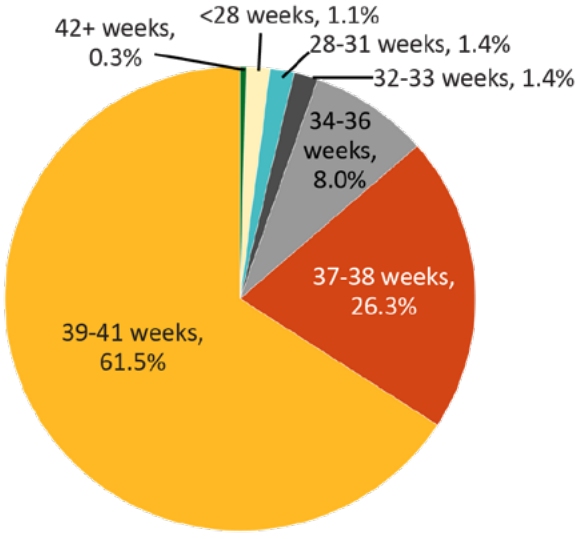
Pregnancy-related deaths per 100,000 live births in California among Black birthing people, by level of neighborhood privilege, 2009–2019



Source: California Pregnancy Mortality Surveillance System, 2009–2019; California Birth Statistical Master File, 2009–2017, California Comprehensive Master Birth File, 2018–2019; American Community Survey, 2008–2019; Healthy Places Index, 2017. See Technical Notes for definition of pregnancy-related deaths. *Fewer than 10 deaths.

Figure 30. Most Black infants were born at full term; 11.9% were born preterm, before 37 weeks, in 2018–2019

Percent of births to Black birthing individuals in California, by gestational age, 2018–2019



Source: California Comprehensive Master Birth File, 2018–2019.

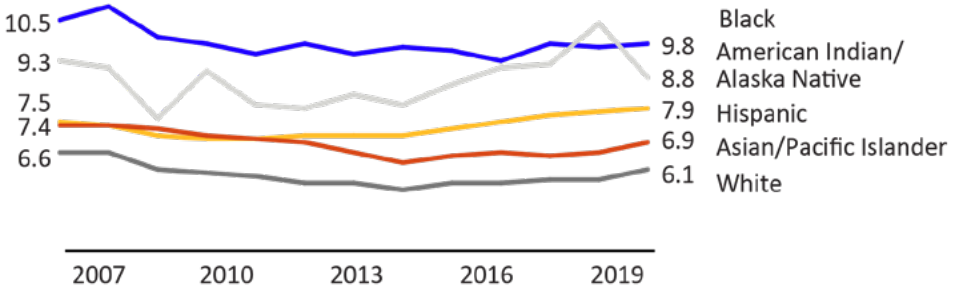
Preterm birth

Infants born preterm (earlier than 37 weeks gestation) are at higher risk of dying before their first birthdays, and those who survive may face medical and developmental challenges,[179,180] such as lengthier hospital stays and higher rates of serious negative health outcomes.[181] Preterm delivery occurs more frequently among birthing people who experience higher levels of exposure to social and environmental stressors, including racism.[8,54,114,182] About one-third of infant deaths in the United States are attributable to preterm delivery,[183] and preterm birth is the leading cause of infant mortality among births to Black women.[184]

In contrast to the worsening trends observed for many of the maternal conditions described in this report, the preterm birth rate among Black singletons (i.e., excluding twin, triplet, or other multiple births) declined in California between 2007 and 2011, though improvements stalled thereafter. Despite the lower preterm birth rate for Black infants in 2019 compared to 2007, disparities compared to White, Asian/Pacific Islander, and Hispanic preterm births remained (Figure 31). (This report focuses on singleton births because singleton births are more amenable to preterm delivery prevention efforts.)

Figure 31. Singleton preterm birth prevalence declined slightly over the past 12 years for Black birthing people, yet racial and ethnic disparities remain

Percent of singleton births in California that were preterm, before 37 weeks gestation, by race and ethnicity, 2007–2019



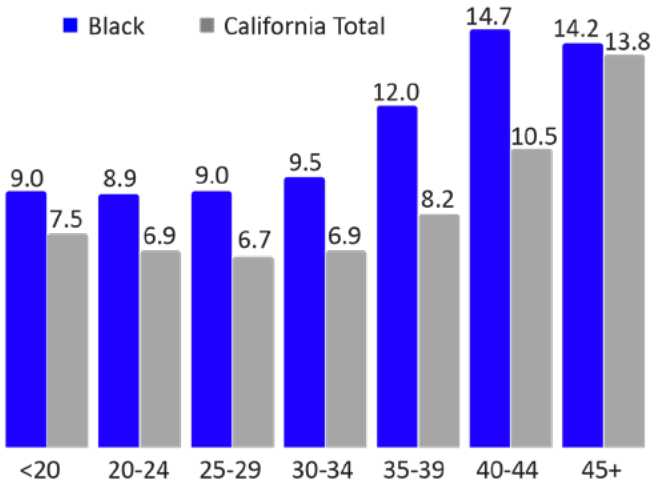
Source: California Birth Statistical Master File, 2007–2017, and California Comprehensive Master Birth File, 2018–2019.

Black women under 30 years of age experienced preterm birth less frequently than older women (Figure 32). Among Black birthing people, the preterm birth rate was stable through ages 25–29, then began a stepwise increase through ages 40-44. In contrast, for California birthing people overall, preterm birth rates did not show a stepwise increase until ages 35-39. The general increase in preterm birth associated with older maternal age may be attributable to higher rates of chronic disease and other risk factors in older women.[126,185]

Preterm birth rates also vary by health insurance coverage and education. The preterm birth rate was highest for Black birthing persons with Medi-Cal (10.7%), followed by private insurance (8.7%), and military insurance (8.1%) (data not shown). Education provides greater access to assets including income,

Figure 32. Singleton preterm birth rates were higher among older Black birthing people

Percent of singleton births in California that were preterm, before 37 weeks' gestation, among Black birthing people and California as a whole, by maternal age, 2018–2019



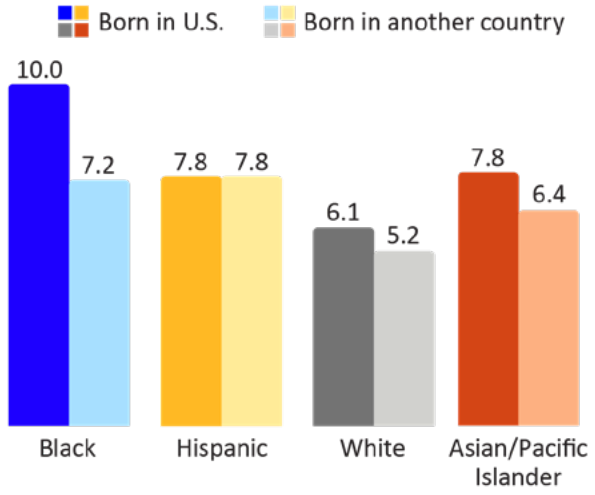
Source: California Comprehensive Master Birth File, 2018–2019.

health care, and neighborhood resources that may help improve health across the life course.[186] Among Black women who had less than a high school diploma, 11.9% delivered a singleton birth preterm, in contrast, 7.9% of Black college graduates delivered a singleton birth preterm (data not shown). Black birthing people born outside of the U.S. have lower preterm birth rates than their U.S.-born counterparts (Figure 33), with rates comparable to U.S.-born Hispanic and Asian or Pacific Islander women. These findings are similar to those of previous researchers,[74] who found that African-born, U.S.-resident Black women's birth outcomes are almost identical to those of U.S.-born White women.

In California, Black birthing people living in more privileged neighborhoods with lower racial and economic segregation, lower poverty, and more health-promoting conditions had lower rates of preterm birth (Figure 34).

Figure 33. Singleton preterm birth rates were higher among U.S.-born Black birthing people than among than those born in other countries

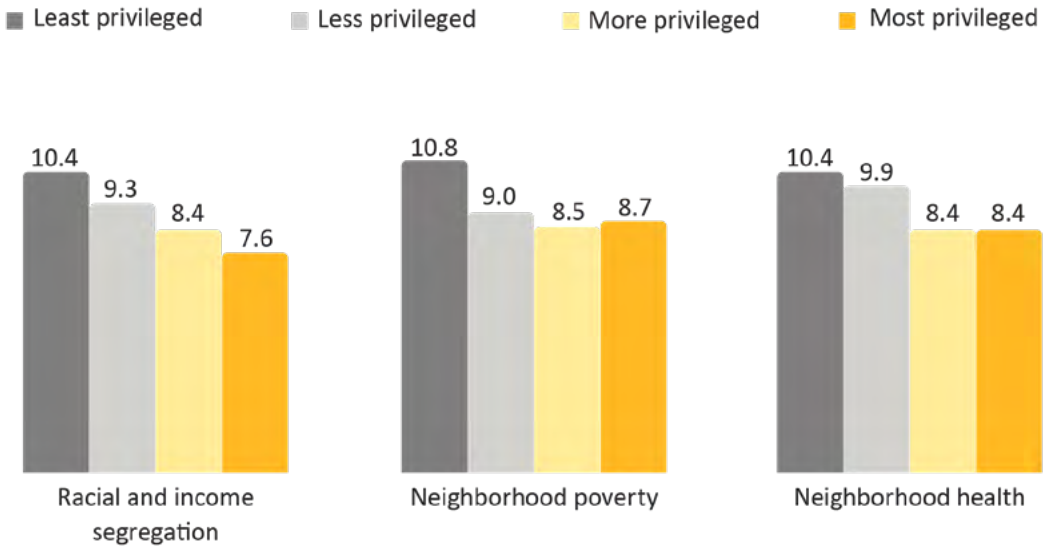
Percent of singleton births in California that were preterm, before 37 weeks' gestation, by maternal country of birth and race and ethnicity, 2018–2019



Source: California Comprehensive Master Birth File, 2018–2019.

Figure 34. Singleton preterm birth rates among Black birthing people were lower in more privileged neighborhoods

Percent of singleton births to Black birthing people in California that were preterm, before 37 weeks' gestation, by level of neighborhood privilege, 2017–2018



Source: California Comprehensive Master Birth File, 2017–2018; American Community Survey, 2013–2018; Healthy Places Index, 2017. See figures 8-10 for information on measures of neighborhood privilege.

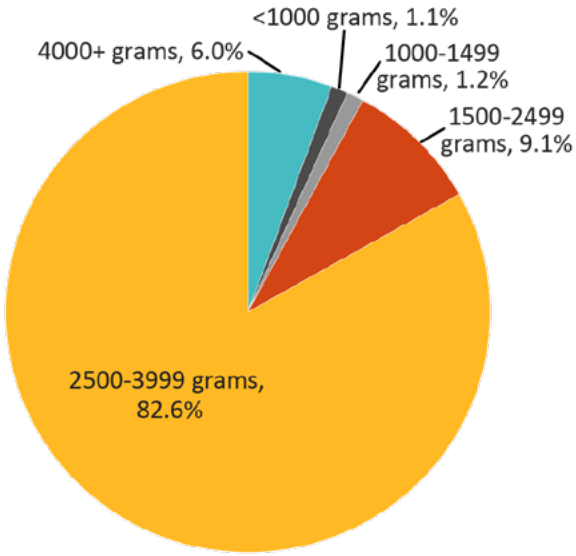
Birthweight

Low birthweight, or weight of less than 2,500 grams (5.5 pounds) at birth, occurs commonly among infants delivered preterm. But even in the absence of preterm birth, growth in utero may be slower than expected, resulting in infants being born smaller than expected for their gestational age. Infants born at low birthweights are at higher risk of negative outcomes, including infant mortality.[187] Maternal prenatal or chronic health conditions, such as hypertension, severe nausea, vomiting and weight loss (hyperemesis), kidney disease, and problems with the placenta may contribute to low birthweight.[188]

High infant birthweight, or weight of more than 4,000 grams (about 8 pounds, 13 ounces), is associated with increased risks of labor abnormalities and maternal and infant birth injuries.[189] Maternal risk factors for high infant birthweight include obesity, preexisting or gestational diabetes, and excess gestational weight gain.[189]

Figure 35. Most Black infants were born at normal birthweight (2500-3999 grams, about 5.5-8.8 pounds)

Percent of births to Black birthing people in California, by birthweight, 2018–2019



Source: California Comprehensive Master Birth File, 2018–2019.

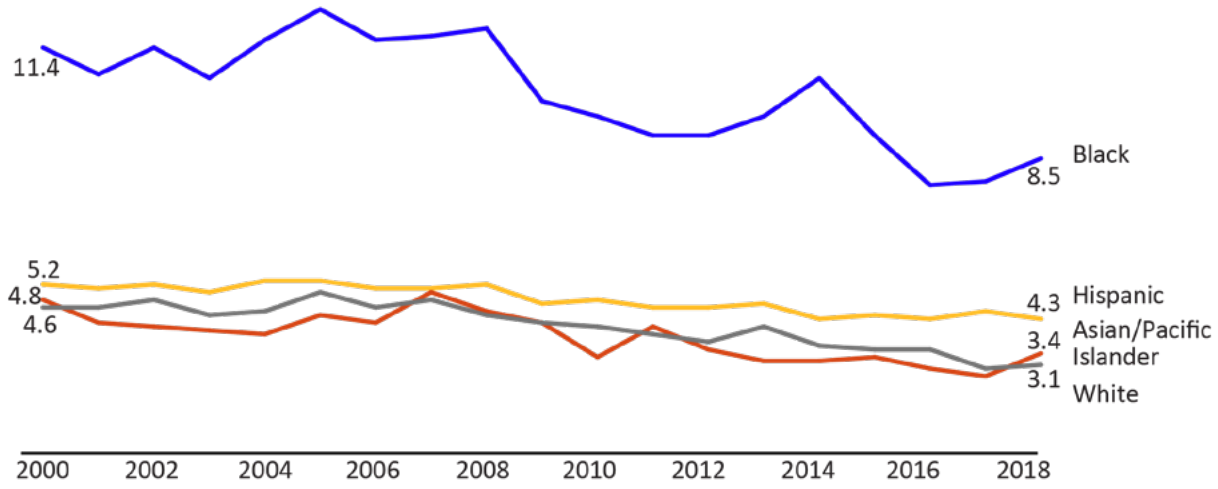
In 2018–2019, 82.6% of infants born to Black birthing people were delivered at a healthy birthweight of 2,500–3,999 grams (Figure 35). About 2.2% of Black infants were born at very low or extremely low birthweights, while 9.1% were born at a moderately low birthweight, 1,500–2,499 grams. Additionally, 6.0% of Black infants were born at high birthweights, 4,000 grams or more (Figure 35), slightly below the rate of 8.0% among all births in California (data not shown). Rates of low birthweight among singleton births remain higher among Black birthing people than other among other racial and ethnic groups (data not shown).

Infant Mortality

The infant mortality rate (IMR) is an indicator of overall population health because the many factors that contribute to infant deaths also affect the health of the general population.[190] IMR is defined as the number of infant deaths in the first year after birth for every 1,000 live births. Vital statistics data collected for over a century show that Black infants persistently have had disproportionately high rates of mortality before their first birthdays;[191] these deaths have burdened Black families and communities with incalculable loss and grief.

Figure 36. Infant mortality declined among births to Black birthing people over the past 10 years, but rates remained inequitably high

Number of infant deaths per 1,000 live births in California, by race and ethnicity, 2000–2018

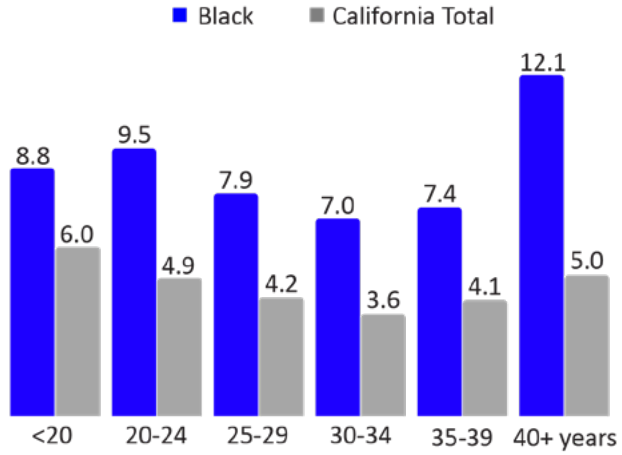


Source: California Birth Cohort File, 2000–2018.

The mortality rate among Black infants in California has declined over the past decade, dropping 25% since 2000 (Figure 36). Despite these improvements, profound inequities in infant death rates have persisted. In 2018, Black infants were at least twice as likely as Hispanic, White, and Asian/Pacific Islander infants to die before reaching their first birthdays. As seen in preterm birth, infant mortality rates in California were higher among Black mothers who were U.S.-born (8.3 deaths per 1,000 live births) than among Black mothers who were born in another country (6.8 per 1,000 live births) (data not shown). As with most other racial and ethnic groups, infant mortality for Black infants varied by maternal age, with the highest rates seen at younger and older maternal ages (Figure 37). Though all racial and ethnic groups show this general pattern, the steep increase in the infant mortality rate among Black women 40 years of age and older is unique.

Figure 37. Infant mortality rates were highest among infants born to mothers ages 40 and older

Number of infant deaths per 1,000 live births in California among Black birthing people and California as a whole, by maternal age, 2017–2018



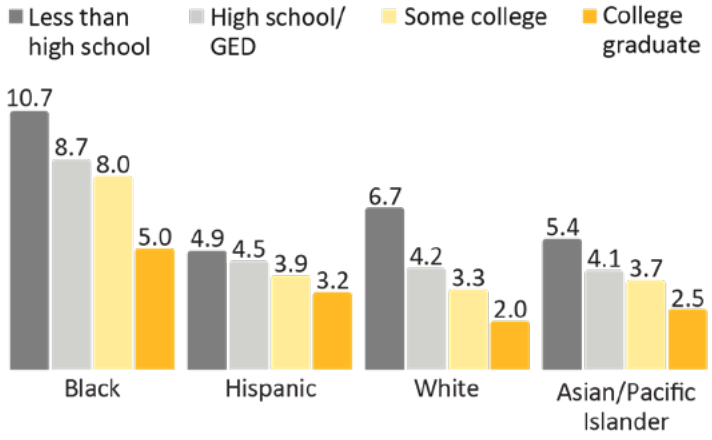
Source: California Birth Cohort File, 2017–2018.

For all racial and ethnic groups, infant mortality rates were lower among infants born to mothers with higher levels of education (Figure 38).

While the infant mortality rate among infants born to college-educated Black women is half that of infants born to Black women with less than a high school education, the disparities are greater between college-educated women. Black women with college degrees had infant mortality rates similar to those of women of other races and ethnicities with a high school education or less. The infant mortality rate for Black infants born to mothers with less than a high school education was about 1.6 times higher than that of White infants of mothers with equivalent education. Among infants born to college educated mothers, Black infant mortality was about 2.5 times higher than that of their White counterparts. These findings are similar to those of previous research demonstrating that the improvements in health associated with greater education levels are experienced less by Black mothers.[192] Recent research has also shown similar results by income level, with Black infants at the highest income levels dying at lower rates than Black infants at the lowest income levels, yet, the rate of Black infant mortality at the highest income levels is still higher than the rates of infant mortality of other races in lower income levels.[193] In California, infant mortality among Black infants declines as resources in the neighborhood improve. In the most privileged neighborhoods in California, infants born to Black women were about half as likely to die before their first birthdays as those living in the least privileged neighborhoods (Figure 39). If all Black infants were to have access to the same resources available to Black families living in the most privileged (least economically and racially segregated) neighborhoods, 90 deaths among Black infants in California could be prevented annually.

Figure 38. Infants born to women with higher education levels had lower mortality rates

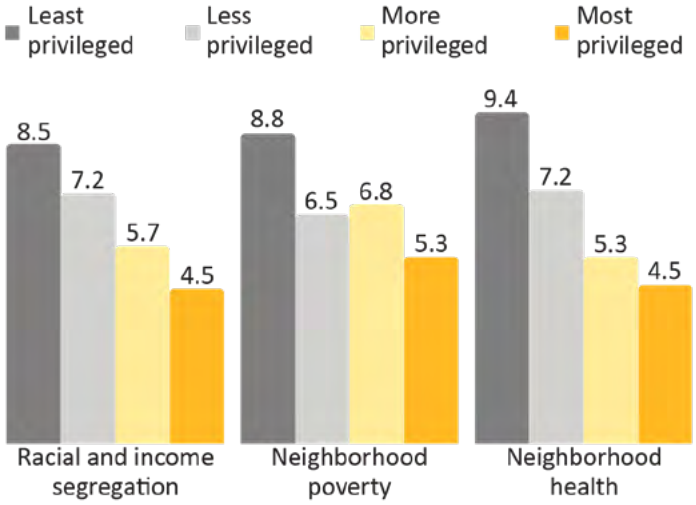
Number of infant deaths per 1,000 live births in California, by maternal education and race and ethnicity, 2017–2018



Source: California Birth Cohort File, 2017–2018.

Figure 39. Infant mortality rates among Black infants were lower in more privileged neighborhoods

Infant deaths per 1,000 live births to Black birthing people in California, by level of neighborhood privilege, 2016–2017



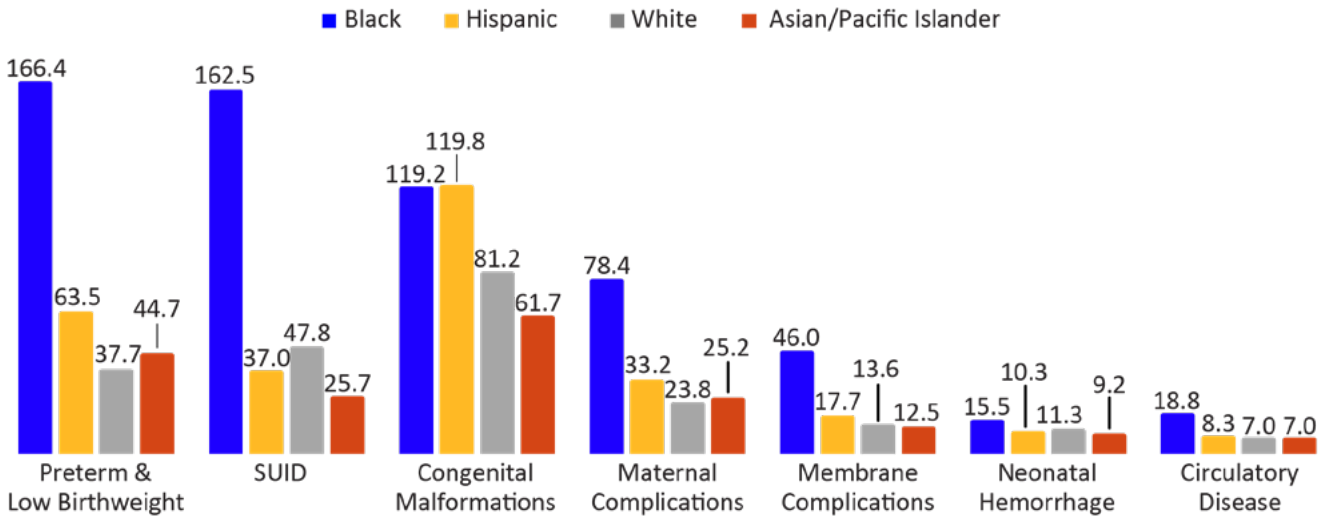
Source: California Birth Cohort File, 2016–2017; American Community Survey 2012–2017; Healthy Places Index, 2017. See figures 8-10 for information on measures of neighborhood privilege.

Leading causes of Black infant death

Figure 40 illustrates the large mortality disparities experienced by Black infants across most causes of death. The three most common causes of death for Black infants are (1) preterm birth and low birthweight; (2) sudden unexpected infant death (SUID), which includes sudden infant death syndrome (SIDS); and (3) congenital malformations, or birth defects. If the rate of Black infant deaths due to preterm birth/low birthweight and SUID were the same as that of California infants overall, nearly 70 Black infants' lives in California would be saved annually.

Figure 40. Preterm birth, low birthweight, and SUID were among the leading causes of death for Black infants

Number of infant deaths per 1,000 live births, by cause of death and race and ethnicity, 2014–2018



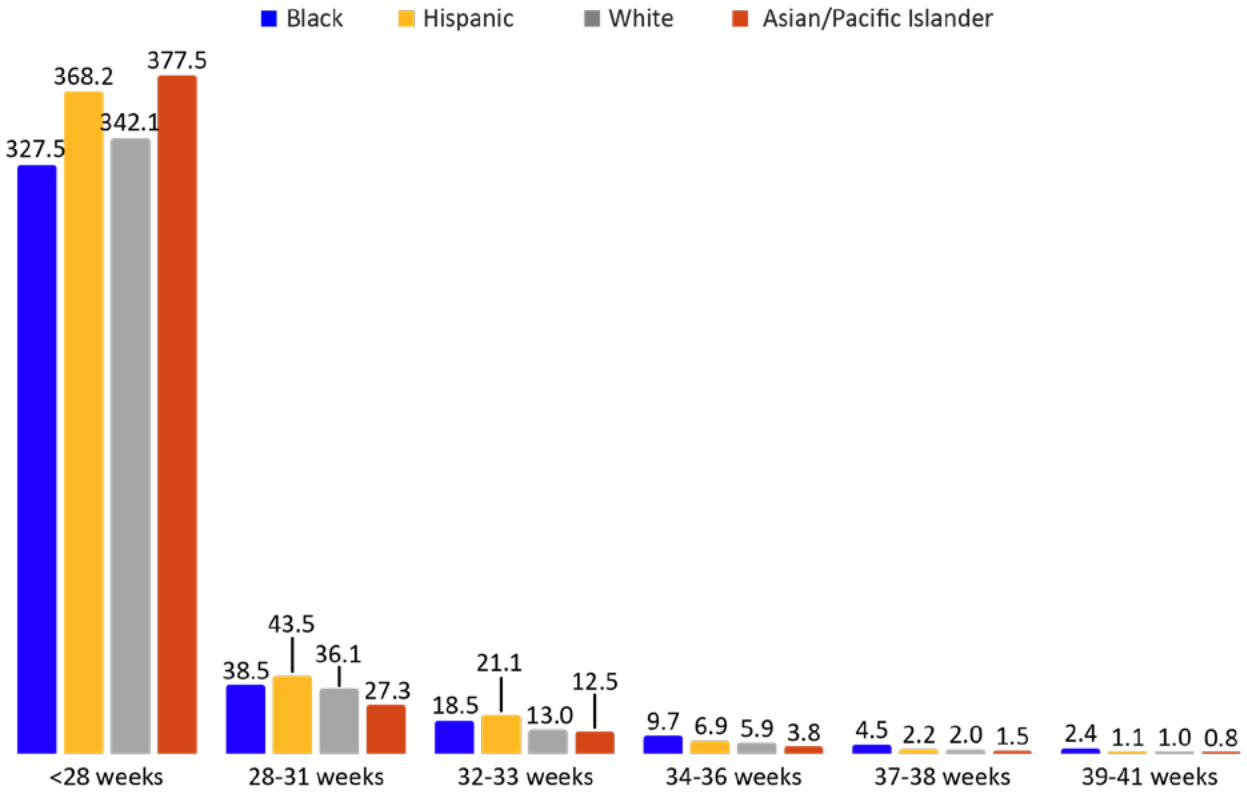
Source: California Birth Cohort File, 2014–2018. See Technical Notes for definitions of causes of death.

Leading causes of Black infant death: Preterm birth

Infants born prematurely die at higher rates from several causes, including both maternal complications of pregnancy and medical causes specific to the infant.[183] The former includes preterm rupture of the amniotic sac (premature rupture of membranes) and placenta or umbilical cord complications (e.g., placenta previa), while the latter includes respiratory distress, bacterial infection (sepsis), and other causes.[183] Since 2007, Black infant mortality due to prematurity, or preterm birth, has declined. However, the elevated rate when compared to most other racial and ethnic groups remains unchanged (data not shown).

Figure 41. Infant mortality rates were greatest among infants born at fewer than 28 weeks of gestational age

Number of infant deaths per 1,000 live births in California, by gestational age and race and ethnicity, 2017–2018



Source: California Birth Cohort File, 2017–2018.

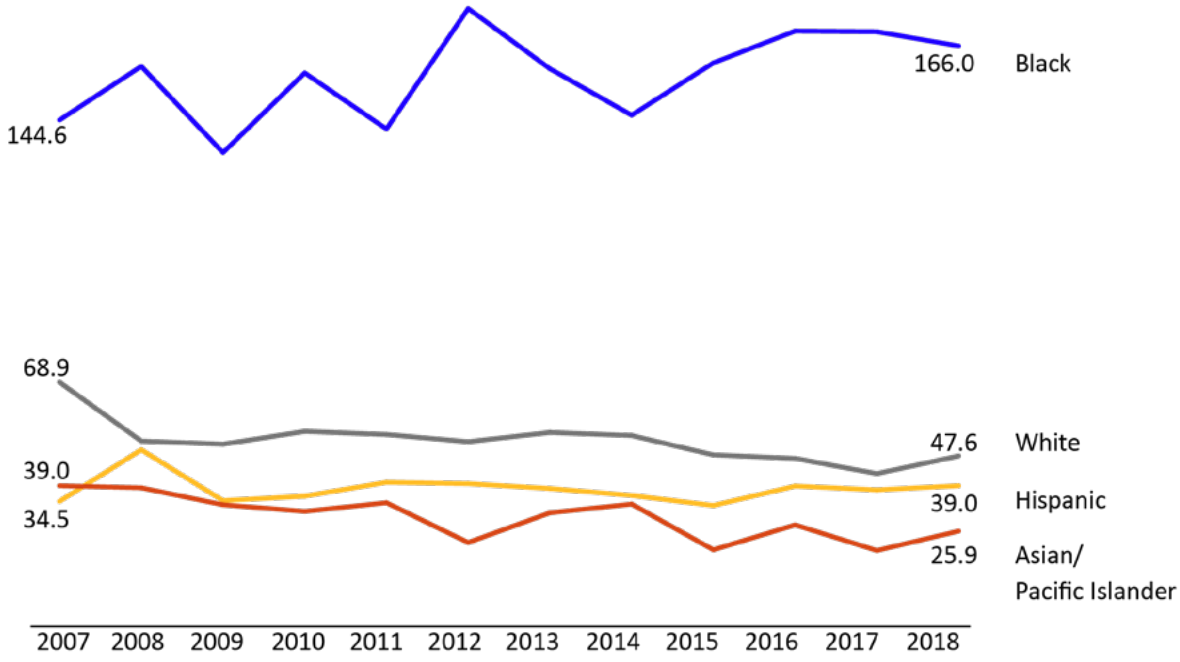
Infants born prior to 28 weeks gestation are especially vulnerable to mortality because their lungs, other bodily organs, and immune systems are not fully developed at the time of birth. As shown in Figure 41, infant mortality rates were highest among infants born before 28 weeks and declined among those born at later gestational ages. Within gestational age categories, particularly among the youngest gestational ages, racial and ethnic groups tended to have similar infant mortality rates. This suggests that inequities in infant mortality are not due to differences in mortality rates among similarly aged infants. Rather, inequities in infant mortality due to preterm birth among Black infants are more likely due to higher rates of preterm birth, particularly those born extremely preterm (<28 weeks).

Leading causes of Black infant death: Sudden unexpected infant death

Sudden unexpected infant deaths (SUID) are deaths before one year of age that are sudden and unexpected, whether explained or unexplained. After investigation, infant deaths due to SUID were most often attributed to sudden infant death syndrome (SIDS) (about 61% among Black infants, 2014–2018), accidental suffocation and strangulation in bed (about 9%), and deaths of unknown cause (about 29%). The SUID rate for Black infants did not improve in California over the past decade (Figure 42).

Figure 42. The rate of sudden unexpected infant death (SUID) has not improved over the past decade among Black infants and is much higher than those of racial and ethnic groups

Number of infant deaths due to SUID per 100,000 live births in California, by race and ethnicity, 2007–2018



Source: California Birth Cohort File, 2007–2018.

While the exact cause of SIDS is not known, risk factors for SIDS and SUID, especially those related to the conditions of the sleep environment, are similar. Side or stomach sleep position, non-firm non-flat sleep surface, bedsharing, soft objects in the sleep environment, overheating, and sleeping on a couch, sofa, or chair are shown to increase the risks of SIDS and SUID. Additional risk factors include preterm birth, low birthweight, prenatal and postpartum cigarette exposure, and parental alcohol and illicit drug use.

Regular prenatal care, breastfeeding, regular immunizations, and pacifier use while sleeping have been shown to reduce the risks of SIDS and SUID.[194] In the past ten years, among Black birthing individuals, there have been reductions in many of the known risks associated with SIDS and SUID: the percentage of Black infants who slept on their backs and who were breastfed increased, and the preterm birth rate and prevalence of maternal cigarette smoking declined. There is no clear explanation for why the SUID rate has not also shown improvement.

Health Behaviors and Opportunities to Be Healthy

Health behaviors are actions taken by individuals that affect health and well-being. Societal and community factors which influence resources, opportunities, and stressors can greatly impact individual health behaviors. For many decades, health behaviors were considered a primary target for public health interventions designed to improve maternal and infant health. Today, it is clear that health behaviors make up only part of the complex system that shapes maternal and infant health across the life course. Health behaviors do not fully explain disparities in health outcomes.[34,76,77,195]

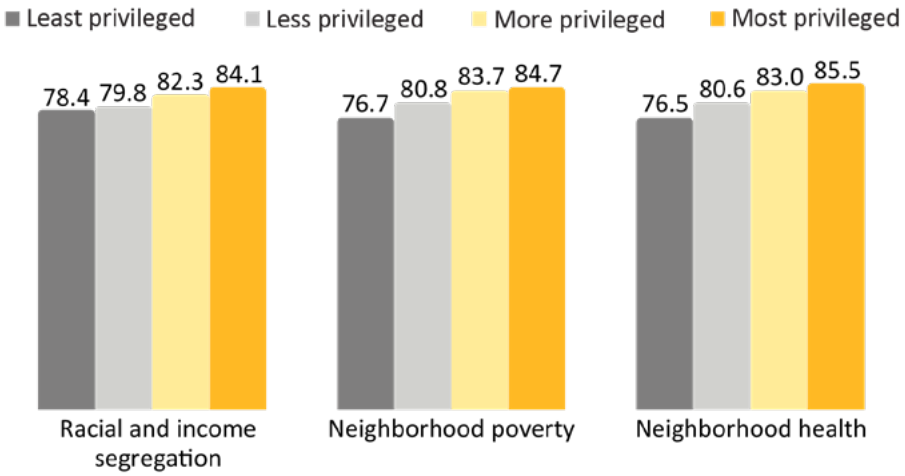
Health care utilization

Prenatal care should begin during the first trimester of pregnancy to permit early detection of potential risks, determine the best interventions, and begin health promotion measures. Pregnant people may also receive screening for possible birth defects. In California, 71.3% of Black birthing people had a test for birth defects during their pregnancies, as did 66.9% of Hispanic birthing people, 74.5% of White birthing people, and 80.8% of Asian/Pacific Islander birthing people (MIHA 2016-2018 data not shown). While prenatal care and testing alone cannot ameliorate the harms that structural factors cause during pregnancy,[8] high-quality, respectful prenatal care is essential for Black women and their infants. More than four in five Black women in California received prenatal care during the first trimester. This percentage is lower than those of other racial and ethnic groups, but the differences are relatively small.

First trimester prenatal care was higher among Black birthing people living in the most privileged neighborhoods than it was among those living in the least privileged neighborhoods (Figure 43), demonstrating the relationships between neighborhood conditions, health behaviors, and receipt of health care services.

Figure 43. Black birthing people who lived in more privileged neighborhoods were more likely to receive prenatal care in the first trimester of pregnancy

Percent of Black birthing people in California receiving prenatal care in first trimester, by level of neighborhood privilege, 2017–2018



Source: California Birth Statistical Master File, 2017; California Comprehensive Master Birth File, 2018; American Community Survey, 2013–2018; Healthy Places Index, 2017. See figures 8-10 for information on measures of neighborhood privilege.

The weeks following delivery are critical in setting the foundation for the health and well-being of a woman and her infant. In the postpartum period, women may experience common health concerns, including fatigue and pain associated with recovery from childbirth; poor mental health; difficulty breastfeeding; and life-threatening conditions, such as cardiovascular disease, which disproportionately impacts Black women.[196] To identify and respond to health concerns after birth, leading health organizations recommend that women receive ongoing postpartum care, as needed, to include a comprehensive medical checkup no later than 12 weeks after delivery.[197] In 2017–2019, 86.3% of Black women received a postpartum checkup, a lower rate than among Asian/Pacific Islander and White women (data not shown).

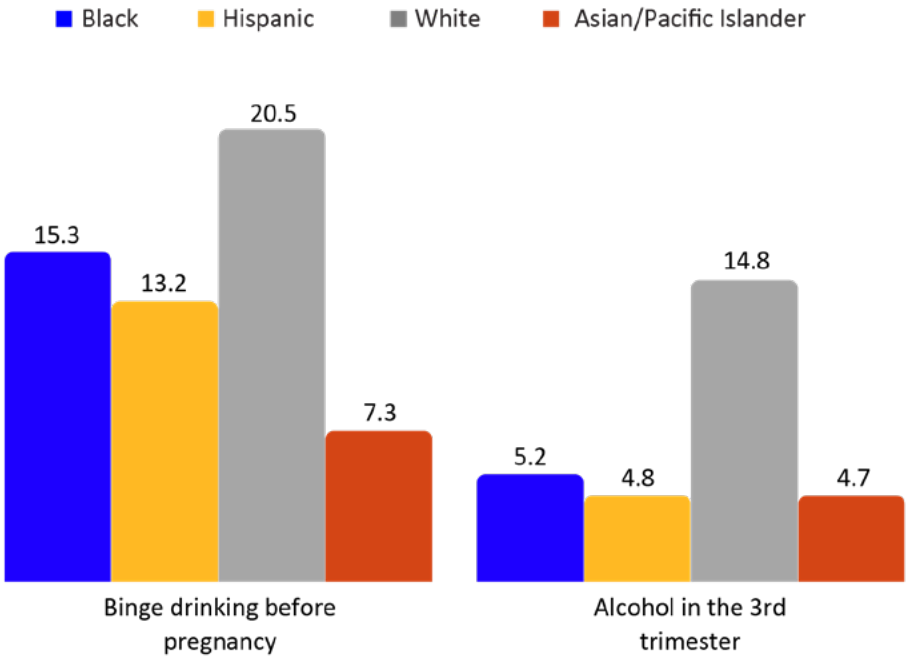
Perinatal Substance Use

Alcohol Use

Prenatal alcohol use can cause birth defects,[198] physical, behavioral, and neurodevelopmental delays,[198,199] miscarriages, stillbirths, and fetal alcohol spectrum disorders.[200] Black women in California were less likely to report binge drinking (four or more drinks in one sitting) prior to pregnancy than were White women. Compared to White women, fewer Black women reported third trimester alcohol consumption (Figure 44).

Figure 44. Black birthing people used alcohol before and during pregnancy at rates lower than White birthing people

Percent of birthing people in California who binge drank (had at least 4 drinks in one sitting) during the 3 months before pregnancy or used alcohol in the third trimester of pregnancy, by race and ethnicity, 2017–2019



Source: Maternal and Infant Health Assessment, 2017–2019.

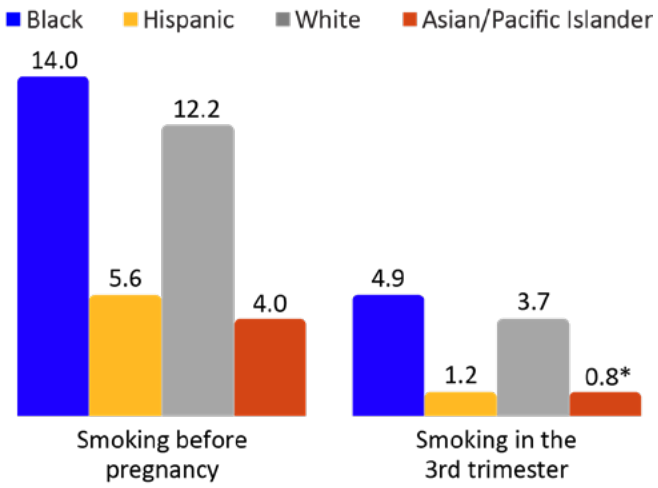
Tobacco Use

Prenatal smoking increases the risk of preterm birth, low birthweight, and birth defects,[201-203] and infant exposure to tobacco smoke increases the risk of sudden infant death syndrome (SIDS).[204] Black communities have been targeted with aggressive marketing by the tobacco industry,[205] and Black people are more likely to live in areas with more tobacco retailers;[205,206] these conditions are associated with increased tobacco use among adults[207] and youth.[208,209] Research shows that most Black adult smokers want to quit smoking but are less successful doing so than are White or Hispanic adult smokers,[205] possibly because of lack of access to culturally competent cessation treatment and resources.[210] The pregnancy and postpartum period is an opportunity for intervention and cessation for tobacco users.

Black (14%) and White (12.2%) birthing people reported the highest percentage of smoking tobacco before pregnancy; the percentage of Black tobacco users declined substantially to 4.9% by the third trimester (Figure 45). After pregnancy, tobacco use increased again, with 9.6% of Black birthing people reporting smoking tobacco postpartum (data not shown).

Figure 45. Rates of tobacco use around the time of pregnancy were similar for Black and White birthing people

Percent of birthing people in California who smoked cigarettes during the 3 months before pregnancy or the third trimester, by race and ethnicity, 2017–2019



Source: Maternal and Infant Health Assessment, 2017–2019.
*Estimate should be interpreted with caution due to low statistical reliability (RSE is between 30% and 50%).

Cannabis Use

Research on the impact of prenatal cannabis use on health and development is evolving but continues to suggest that using cannabis during pregnancy is linked to lower birth weight of the baby and may impact the baby's neurodevelopment, as well as learning and behavioral problems later in the child's life.[211,212] Tetrahydrocannabinol (THC), the main psychoactive ingredient in cannabis, can travel through the bloodstream and into the placenta, the organ that feeds oxygen and nutrients to the baby.[211] THC can also be passed to the baby through breastmilk and can be present in high concentrations.[211] In California, about 13.6% of Black women reported cannabis use during pregnancy, and 14.7% used it postpartum in 2017–2019 (MIHA 2017–2019, data not shown). These rates were higher than the rates reported by Hispanic, White, and Asian/Pacific Islander women. Among California birthing people overall, reported postpartum cannabis use has increased in recent years.

Sexual and Reproductive Health Behaviors

In order to promote optimal maternal and infant health, Black birthing people need the economic, social, educational, and political resources to self-determine if, when, and under what circumstances they become pregnant.[213-215]

High quality reproductive and sexual health care for Black women includes full access to the range of contraceptive options and care that is respectful, acknowledges a history of exploitation, is free from coercion, and honors all people's bodily autonomy.[30,216] In California, 73.2% of Black birthing

people used postpartum contraception in 2017–2019 (data not shown). About 48.7% used highly effective (e.g., intrauterine devices) or moderately effective (e.g., birth control pills) contraceptive methods postpartum, while about 24.5% used less effective methods (e.g., condoms). Postpartum contraceptive use is a key strategy for achieving adequate birth spacing (the time from a prior birth until the next pregnancy),[217] which is known to reduce the risk of poor infant health outcomes.[218-220] About 72.3% of Black birthing people in California had birth spacing of at least 18 months, slightly below the California total of 73.9% (data not shown).

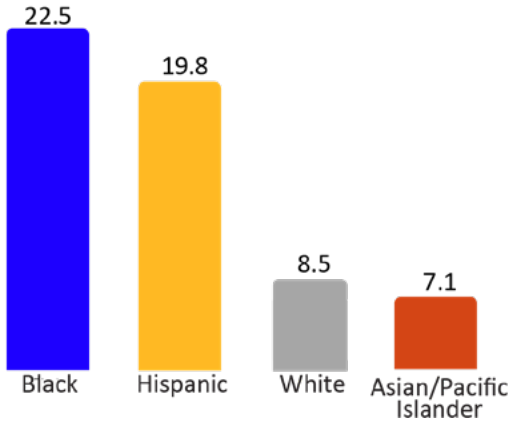
> "When I got pregnant, it never crossed my mind to not have my baby. So, you know, in a way it was a decision, it was my choice, even though I didn't plan for it to happen. But because of the situation that I was in, in my heart I felt it would be selfish of me not to have him when, you know, a lot of women have experiences where they try, and they can't have children. And I felt like I had the necessary tools, even though I don't know why I did it at the time I did it."
>
> *—Focus group participant, Central Valley*

Food insecurity and maternal weight

Healthy eating patterns play an essential role in appropriate fetal growth and positive birth outcomes. Malnutrition (undernutrition and overnutrition) leads to adverse outcomes for the birthing individual and infant that may extend across the life course. Maternal undernutrition and insufficient pregnancy weight gain can lead to underweight and are associated with negative outcomes including preterm birth, fetal growth restrictions, and hypertensive disorders in the pregnant individual.[221] Many factors contribute to obesity. During pregnancy, obesity is associated with preeclampsia, gestational diabetes, birth defects and increased chronic health conditions among infants.[222,223] In California, 35.3% of Black birthing women were at a healthy weight prior to pregnancy (according to CDC guidelines[b]), 26.9% were overweight, 34.3% were obese, and 3.4% were underweight. Those living in more privileged areas were more likely to be at a healthy weight (data not shown).

Figure 46. About one in five Black or Hispanic birthing people experienced food insecurity during pregnancy

Percent of birthing people in California who were food insecure during pregnancy, by race and ethnicity, 2017–2019



Source: Maternal and Infant Health Assessment, 2017–2019.

Food insecurity, or limited or uncertain access to food within a household,[25] negatively impacts diet quality and is linked to overweight and obesity.[224,225] Access to healthy and affordable foods is shaped by both individual factors, such as income, and neighborhood factors, such as the presence and types of grocery stores.

b Weight status categories presented in this report are based on body mass index (BMI). BMI may overestimate or underestimate body fatness in some individuals since it does not take into consideration an individual's muscle or bone mass. The clinical correlation of BMI has not been validated in some subpopulations; therefore, BMI should not be used as the sole criteria for making health recommendations.

Black birthing people experience inequitable access to healthy and affordable foods, which impacts the ability to achieve proper nutrition before, during, and after pregnancy.[226-229] Black birthing people reported food insecurity at higher rates than other racial and ethnic groups in California—more than 2.5 times higher than White and Asian/Pacific Islander birthing people (Figure 46).

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and the CalFresh Program improve food security and nutrition among eligible pregnant and postpartum individuals and their families. During pregnancy, about 58% of Black birthing people participated in WIC; among Black birthing people eligible for WIC, 74.1% participated in the program (data not shown). About 45% of Black birthing people participated in CalFresh during pregnancy (data not shown).

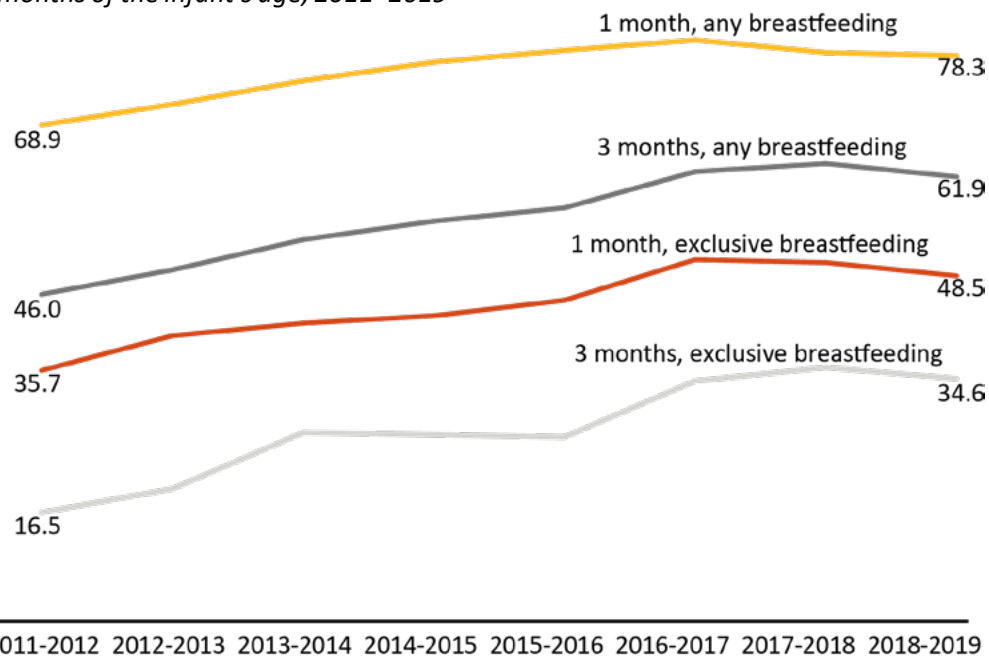
Breastfeeding and lactation

Human milk feeding (this includes breastfeeding, chestfeeding, and feeding pumped milk) is the best source of nutrition for most infants and is associated with reductions in ear infections,[230] gastrointestinal infections and disease,[230] obesity, diabetes, [230,231] and SIDS among breast fed infants. [230,232,233] Additionally, maternal benefits of breastfeeding include reduced risk of breast and ovarian cancer, high blood pressure, and type 2 diabetes.[234] The American Academy of Pediatrics recommends that infants be exclusively fed human milk for the first six months of life with continued human milk feeding for at least the next six months while gradually introducing complementary foods.[235] Breastfeeding increased among Black women in California between 2011 and 2017, but progress stalled between 2017 and 2019 (Figure 47).

Before their children's births, almost two-thirds of Black women intended to breastfeed exclusively (data not shown), but only 34.6% of Black women were exclusively breastfeeding at three months after birth. Breastfeeding initiation and continuation are influenced by a continuum of policies, environmental

Figure 47. Breastfeeding rates among Black birthing people increased between 2011 and 2019

Percent of Black birthing people in California who breastfed at all or exclusively at 1 and 3 months of the infant's age, 2011–2019



Source: Maternal and Infant Health Assessment, 2011–2019 (2 year moving averages).

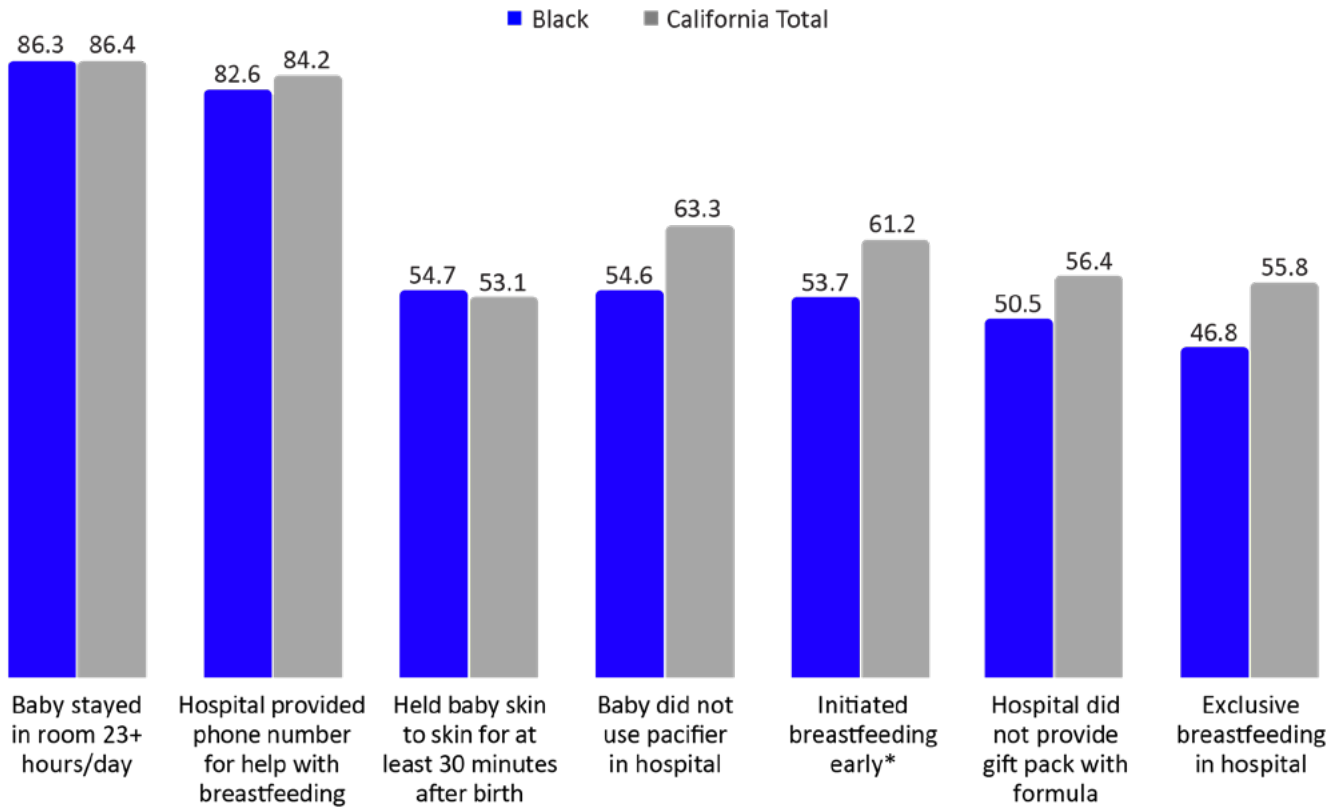
conditions, and support services, including paid family leave and hospital and workplace practices that support breastfeeding.[236] Examples of such practices include having infants stay in the hospital room with the mother following delivery and providing contact information for help with breastfeeding following hospital discharge.[237,238]

> "With all of my children, I breastfed for the first year. And with my last four children, I had the same doctor, she was a Black doctor. She was my prenatal doctor and my postpartum, she did everything. She was the one who recommended that I exclusively breastfeed. She said, 'They'll tell you that you're not giving the baby enough milk, but your body produces enough for the child.' I've had great experiences with all six of my children."
>
> *—Focus group participant, Southern California*

Figure 48 shows the percentage of Black birthing people and all California birthing people who reported that they experienced certain evidence-based practices shown to promote breastfeeding during their delivery hospitalization. Large majorities of Black women were able to room-in with their infant for 23 or more hours per day and received a phone number for help with breastfeeding at discharge. In contrast, a smaller percentage of Black women experienced the remaining five hospital practices supportive of breastfeeding, and Black women were less likely to experience these hospital practices than California women overall.

Figure 48. Many birthing people reported that their delivery hospitals lacked practices supportive of breastfeeding

Percent of birthing people in California reporting certain hospital practices, 2011, 2013, and 2015

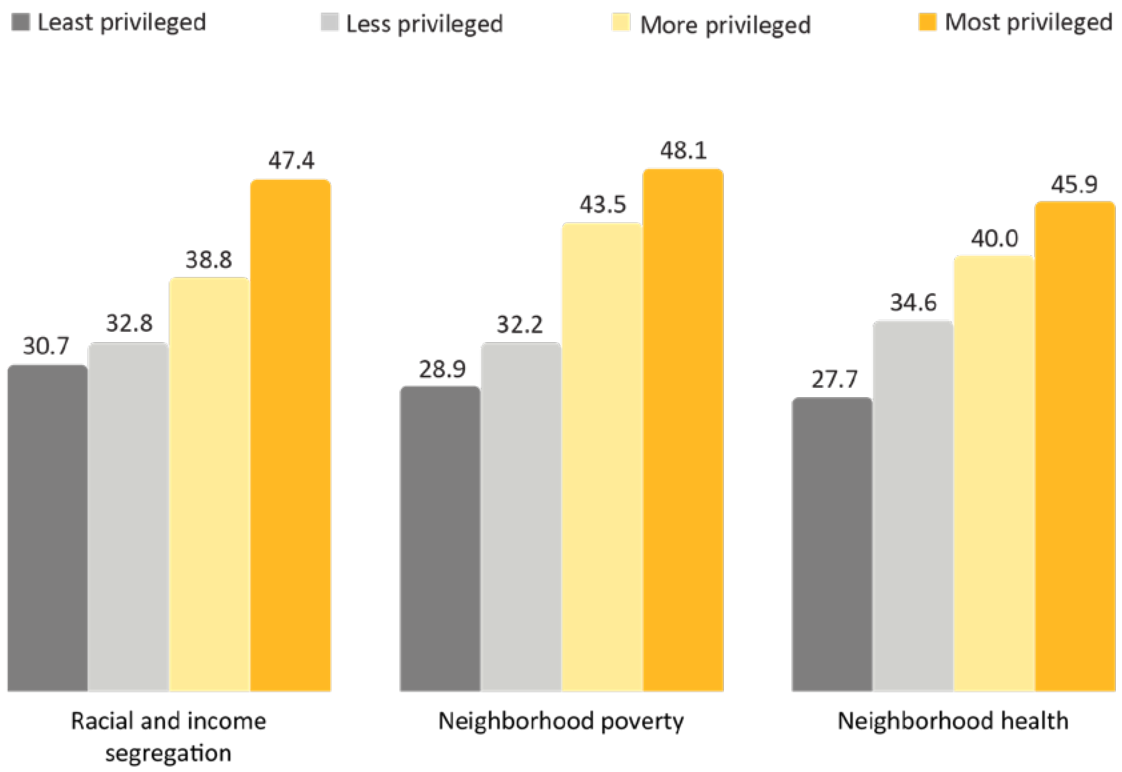


Source: Maternal and infant Health Assessment, 2011, 2013, 2015. *Early is within 1 hour of a vaginal birth or 2 hours of a Cesarean section.

In California, fewer than two-thirds of Black women took postpartum leave from work of three months or longer, similar to other racial and ethnic groups in the state (data not shown). After returning to work, fewer Black women than White and Asian/Pacific Islander women were provided with adequate time and space to pump human milk at the workplace (California Department of Public Health, 2018). Neighborhood resources, such as the presence of parks and community centers and a socially supportive neighborhood environment, also are associated with increases in breastfeeding rates.[239] The percentage of Black birthing people who exclusively breastfeed for three months is greater in more privileged areas (Figure 49).

Figure 49. The breastfeeding rate among Black birthing people was higher in more privileged neighborhoods

Percent of Black birthing people in California exclusively breastfeeding at 3 months of infant's age, by level of neighborhood privilege, 2016–2018



Source: Maternal and Infant Health Assessment, 2016–2018; American Community Survey, 2012–2018; Healthy Places Index, 2017. See figures 8-10 for information on measures of neighborhood privilege.

DISCUSSION

SUMMARY

California is well-recognized for efforts to improve maternal and infant health. In fact, overall maternal mortality and infant mortality rates in California are among the lowest in the country.[2,240] Innovations such as public health investigations on causes of maternal morbidity and mortality, high-quality group and individual interventions, regionalization of care, toolkits to improve maternal health care quality, and Medi-Cal coverage expansion have resulted in ongoing improvements for the overall health of maternal and infant populations in California.[241-243] Despite these efforts, the persistence of racial inequities in perinatal outcomes suggests that California's Black mothers and infants do not equally benefit from these advances. While this report demonstrates pregnancy-related mortality, infant mortality, and preterm birth rates have improved over the past decade, Black-White inequities in these outcomes have persisted or grown. Black birthing people and infants in California continue to experience poor pregnancy and birth outcomes at rates 1.5 to 4 times higher than their White counterparts. Other health measures show trends that have stalled in recent years or are worsening among Black birthing people and infants, including breastfeeding, hypertensive disorders of pregnancy, severe maternal morbidity, and sudden unexpected infant death. This report provides an expansive view of the health of Black birthing people and infants in California and demonstrates the connection between structural racism and health. The results shared in this report, together with a well-established body of literature, point to several pathways through which structural racism functions as an underlying cause of poor outcomes for this population.

Structural racism, neighborhood conditions, and health

One pathway through which structural racism shapes the health of Black women and infants is through policies at the societal level that influence neighborhood conditions.[5,68] Contemporary neighborhood conditions can be traced back to discriminatory policies such as redlining and community disinvestment[9,13,244] and have been reinforced by current housing practices, like exclusionary land-use zoning[13] and persistent discrimination in real estate[245] and lending.[246] As shown in this report, in California, high percentages of Black birthing individuals continue to reside in neighborhoods that are highly segregated, have high concentrations of poverty, and have the least health-promoting conditions. Residents in these neighborhoods experience restricted access to resources that enhance economic stability and overall well-being, such as high-quality education, well-paying jobs, and access to respectful, quality health care.[5,12,13] They also experience inequitable exposure to alcohol[247] and tobacco[205] marketing,

police violence,[65] and environmental toxins.[61] When compared to Black women and infants living in more privileged neighborhoods in California, the results of this report demonstrate that those living in the least privileged neighborhoods are more likely to suffer pre-pregnancy hypertension, pregnancy-related death, preterm birth, and infant mortality. These findings support other research that has found that residents of formerly redlined neighborhoods experience higher rates of hypertension,[248] preterm birth,[249-251] and other poor maternal and infant outcomes.[252]

The structural and environmental conditions within neighborhoods play important roles in shaping Black women's health behaviors.[252] For example, individuals living in poor or segregated neighborhoods have less access to nutritious foods, both because of increased financial stressors[253] and because of limited grocery stores and other healthy food outlets.[254] Food insecurity, or limited or uncertain access to food, is associated with higher rates of overweight and obesity.[255,256] In California, Black birthing people are much more likely to experience food insecurity in pregnancy than White birthing people. Neighborhood conditions can also impact human milk feeding behaviors. Resources and support for human milk feeding, along with supportive hospital practices, access to jobs with paid family leave, and workplace accommodations, affect the initiation and duration of breastfeeding.[257] Many Black women want to nurse their children but face barriers due to unsupportive hospital practices, as described in this report. Black women are also less likely to have jobs that provide adequate opportunities to pump breastmilk.

Structural racism and chronic stress

Racist beliefs in the inferiority of Black people have informed widespread assumptions about the impact of genetics on maternal and infant health. Research over the past two decades disproves a purely biological connection between Black race and birth outcomes. For example, studies show that the birth outcomes of Black immigrants from Africa are better than those of Black women born in the United States, who have presumably similar genetic backgrounds.[73,74] Research suggests that Black women born outside the U.S. may have experienced less exposure to racism,[258] which may partially explain these differences. These research findings point to a potential pathway between racism-related stress experienced in the U.S. and health outcomes.

California Black birthing people's persistent worry about interpersonal racism has increased significantly in recent years, from an initial assessment of 26.6% in 2011 to 56.2% in 2019; furthermore, these recent data indicated that more than one third report often experiencing interpersonal racism in their lifetime. Racism-related stress contributes to allostatic load and weathering which negatively impact the body over time.[16,17,20] Structural racism impacts individual level chronic stress through societal and neighborhood level factors such as unemployment, income inequality, police brutality, pollution, violence, and lack of access to adequate and nutritious food and well-paying jobs.[8,12,14,68] Chronic stress also impacts mental health outcomes. In California, Black women experience much higher rates of depression than White women, which can affect health behaviors and outcomes. Of particular concern to the health of Black pregnant individuals and infants is the impact of racism-related stress on hypertension.[259] As described in this report, hypertension during pregnancy is rising rapidly among Black women, and the burden of exposure to racism (and persistent worry about racism) may be one driver of these rates. Hypertensive disorders of pregnancy, including preeclampsia, chronic hypertension, and gestational hypertension, are important risk factors for severe maternal morbidity.[152,156] Hypertension also contributes to pregnancy-related mortality, preterm birth, and preterm birth-associated infant mortality.[154-156]

> "Premature aging is driven by the cumulative impact of repeated exposures to psychological, social, physical, and chemical stressors in [Black people's] residential, occupational, and other environments, and coping with these stressors."
>
> *—David R. Williams, M.P.H, Ph.D., quoted in Medical News Today, February 2021*[260]

Increases in allostatic load may result in "weathering," or increases in adverse health conditions and outcomes occurring at younger ages among Black women.[18-20] Severe maternal morbidity, preterm birth, and pregnancy-related death among California Black women demonstrate patterns consistent with weathering, as does infant mortality among their infants. For each of these measures, negative outcomes are seen at higher rates in younger age groups of California Black women than in women of other races and result in growing inequities at older ages, particularly when women are in their 30s and 40s.

Structural racism and respectful care

Another major pathway through which racism harms the health of Black birthing people and infants is the lack of access to high-quality, respectful health care, which is a result of racism at the structural and interpersonal levels.[5,261] Insurance coverage often determines financial access to services. Because of Medi-Cal expansion to a full year after childbirth and the Affordable Care Act, a very small percentage of women in California remain uninsured during pregnancy and few are uninsured after delivery. Despite having insurance, the quality of care Black women receive varies.

Potential contributors to inequities in obstetrical care include reimbursement rates[262] and oversight of quality of care issues.[263] Access to care also can be limited by distrust or fear of providers and treatments, including fear of exploitation (e.g., for research[57]) or being treated disrespectfully,[98,264,265] and by a lack of Black providers.[266] Structural racism and centuries of mistreatment contribute to Black people's distrust in the U.S. health care system.[40,267-271] While health care alone, and specifically health care during pregnancy alone, cannot reverse the stress, hardships, and harmful exposures of racism that Black people experience over a lifetime,[7,272] respectful, competent health care during pregnancy and childbirth is critical for improving outcomes for Black birthing people and their babies.

Black women have cause for mistrust. Data in this report and other studies have shown bias in the treatment of Black patients, including women and infants.[21,32,269-272] Several researchers have pointed to severe maternal morbidity as an indicator of quality of care.[23,273] Underlying chronic conditions, such as hypertension, in addition to sociodemographic and other obstetric characteristics, do not explain the persistent and substantial racial and ethnic disparities in severe maternal morbidity, and the variability in the quality of care is likely is a contributor to severe maternal morbidity inequities, as well as to infant mortality.[23,24] Advances in medical care over the past two decades have improved outcomes,[274] including preterm deliveries, yet quality of care given to low birthweight babies in neonatal intensive care units varies by race in California.[275]

IMPLICATIONS

Most Black women are healthy, deliver at term, and give birth to healthy babies with a normal birthweight. However, the evidence presented here shows that inequities in poor health outcomes remain. This report's findings point to the impact that structural racism has on the health of Black birthing people and their infants through pathways such as neighborhood conditions, chronic stress, and access to respectful care. Structural racism refers to the "totality of ways in which societies foster racial discrimination through mutually reinforcing systems of housing, education, employment, earnings, benefits, credit, media, health care, and criminal justice. These patterns and practices in turn reinforce discriminatory beliefs, values, and the distribution of resources."[5(p 1453)] While a comprehensive discussion of all mechanisms connecting structural racism to health and potential solutions is beyond the scope of this report, public health has an important role to play in addressing structural racism and buffering its impact on health. Because structural racism permeates all levels of society, a broad set of strategies that extend beyond public health and health care to advance health equity for Black birthing persons and their infants is needed. Below are some examples of activities, interventions, and initiatives currently underway, along with best practices.

Name structural racism as a key driver of health inequities

A fundamental first step toward eliminating inequities in health is to recognize the heavy toll structural racism continues to exact on Black birthing people today. The California Health and Human Services agency (CalHHS) and the California Department of Public Health (CDPH) have recognized the impact of racism on the lives of Californians of color. The guiding principles of CalHHS articulate a vision of California as "a leader in the fight for equity [in striving] to create programs that address persistent and systemic inequities."[276] Additionally, CDPH is currently undergoing a transformation to become an anti-racist, healing, learning organization that invests in its people. As part of this vision, CDPH, along with other California State entities, participated in the Government Alliance on Race and Equity (GARE) initiative to advance racial justice by developing, operationalizing, and beginning to implement racial equity action plans. Another strategy that recognizes structural racism in various institutional practices is the application of a racial equity lens (a focus on whether any given circumstance is equitable) to identify unintended consequences of new and existing policies and programs for Black communities and to increase the likelihood that such policies and programs will benefit those communities. Including Black leaders in creating and implementing this work is a key step to ensure the work is done equitably.

Collect and provide high-quality, timely data to demonstrate the scope of health inequities, promote equitable solutions, and monitor the progress of existing initiatives

Best practices for collecting data and using it to spur improvements in health equity[277] include developing reports that highlight health inequities; collecting and reporting data disaggregated by race, ethnicity, income, and neighborhood conditions; making data available to others; and using qualitative methods and community-based participatory research to bring quantitative data to life. The Maternal, Child and Adolescent Health Division (MCAH) collects, analyzes, and disseminates data on health inequities. In addition to analysis and dissemination activities such as the development of this

report, in 2022 we launched interactive data dashboards on our MCAH website to ensure the timely release of data on a wide variety of topics at the state- and county-levels, by multiple characteristics, including race and ethnicity. In addition, MCAH's Maternal and Infant Health Assessment (used in this report) collects data annually on health experiences, attitudes, and behaviors before, during and shortly after pregnancy among birthing people, including measures of worry about and experiences of racism. MIHA data allow MCAH to examine important issues, like the connection between worry about racism and preterm birth.[145]

Additional innovations include the California Pregnancy Mortality Surveillance System, launched in 2018, which improves upon the standard maternal mortality ratio by compiling data from multiple sources and conducting expert committee review to create a pregnancy-related mortality ratio. Finally, the Pregnancy-Associated Mortality Review (CA-PAMR), established in 2006, uses a health equity lens and formally deliberates the contributions of structural racism, interpersonal racism, discrimination, and other social determinants of health to pregnancy-related mortality that occurs up to one year after pregnancy. Approximately 40% of review committee members are non-clinical or community experts to ensure reviews reflect broad perspectives. CA-PAMR findings and recommendations have provided the rationale for maternal health care quality toolkits that have improved the quality of care for women who experience severe maternal morbidity.[241]

This report builds upon existing MCAH data use efforts by adding multiple best practices, including specific efforts to involve Black women from public health, academia, community organizations, and communities in guiding all aspects of this project, from conception to dissemination. Further, the inclusion of quotes from Black women participating in focus groups ensured that their voices were uplifted and provided a unique perspective that complemented the quantitative data.

Involve the Black community in authentic community engagement that centers their voices and fosters ongoing bi-directional power-sharing relationships

Solutions to health inequities are best informed by the people or communities most affected. Fostering partnerships between public health institutions and Black communities will help build authentic community involvement and rebuild trust among those harmed in the past. Community engagement is a strategy that has existed for decades and has taken on a new, equity-focused direction in recent years. One notable model of community engagement comes from the National Academy of Medicine and is grounded in trust, inclusive in nature, designed for bi-directional information flow between community and institutional partners, and premised on culturally centered approaches. Core principles include equitable financing, valuing multiple forms of expertise, shared governance, and enduring, authentic relationships. In this model, the importance of co-created engagement in which participants are considered coequal is emphasized.[278] Some examples of this type of collaboration are found in various counties across California, where local governments are partnering with community organizations to improve health outcomes.[279]

One MCAH program that has involved Black community members in its design is the Perinatal Equity Initiative (PEI).[280] PEI complements other MCAH programs in its aim to address the causes of persistent inequality and identify best practices to eliminate racial disparities in Black infant mortality by promoting specific interventions that are selected and implemented by communities themselves. Several counties are also producing public awareness campaigns to alert the Black community and others of the impacts of racism on Black birthing people's reproductive health. Each county should also establish a community advisory board to ensure the voice of the community is heard at each decision point of implementation.

Partner with those outside of public health to improve neighborhood conditions for Black families and ensure quality education and economic opportunities that promote financial stability

Improving the conditions in which people are born, grow, learn, live, and work is central to improving Black maternal and infant health outcomes and equity.[281] When implemented using the strategies identified above, including ensuring authentic community engagement and using a racial equity lens, place-based initiatives and Health in All Policies approaches are two examples of innovative approaches that can mitigate the impacts of structural racism and improve neighborhood conditions. Place-based initiatives involve efforts to revitalize housing, rebuild neighborhoods, increase access to good jobs and schools, reduce crime, and grow wealth.[5,282,283] Community organizations play a key role in place-based initiatives by facilitating community engagement, identifying community priorities, and implementing solutions in collaboration with their communities and other partners. Community leadership in decision-making ensures that place-based initiatives are community-focused and effective, with minimal if any unintended consequences. Health in All Policies addresses the social, physical, and environmental drivers of health and health inequities through collaboration between public health practitioners and nontraditional partners who have influence over these conditions.[284] In California, the Health in All Policies Task Force (which includes agencies like the Air Resources Board, the Department of Transportation, and the Department of Housing and Community Development) collaborates across sectors and policy areas and incorporates health considerations into all decision-making across the state.

Due to the connections between structural racism and income and between income and health, increasing Black families' financial stability is an important strategy for addressing maternal and infant health equity. Approaches to reduce the wealth gap, such as providing unconditional monthly payments for low-income Americans, tax credits, Baby Bonds, and reparations for Black Americans, can help alleviate financial instability. Some pilot programs are providing guaranteed basic income to pregnant people in California as a strategy to improve health equity and birth outcomes. Examples of these include the Abundant Birth Project in San Francisco which is included in the basic income statewide pilot prioritizing pregnant women funded through the California Momnibus Act. Evidence suggests that unconditional cash transfers (cash payments provided to financially disadvantaged people without requiring anything in return) given to pregnant people have numerous benefits, including better access to food and medical care, reduced stress, and lower risks for prematurity and low birthweight births.[285-287] California expanded its Earned Income Tax Credit (EITC) in 2020. States that have expanded their EITCs have had improved birth outcomes, particularly those states with higher EITCs.[288] The expanded Child Tax Credit implemented in 2021 reduced child poverty, income volatility and food insecurity, all of which – when reduced – are associated with better health.[289,290] Unfortunately, the expansion, which provided support to families without any income, has not been renewed by Congress. Innovative programs like Baby Bonds, a governmental savings program for minors, show great promise. Such programs can help reduce the wealth gap by supporting low-income Black children in their aspirations related to higher education, entrepreneurship, and homeownership.[291] Finally, reparations would provide compensation to Black Californians for the unjust policies of the past that have contributed to their inequitable lack of wealth. A statewide Reparations Task Force was signed into law in California in 2020, allowing for a formal process to provide recommendations throughout the state.[292]

Offer resources and supports to buffer or reduce stress

Community-based programs providing respectful wraparound services,[293,294] social support, and assistance with coping[295,296] can play a key role in helping to buffer the health impacts of stress on Black birthing people.

Within a culturally supportive environment, and honoring the unique history of Black women, the California Black Infant Health (BIH) program aims to help birthing people have healthy babies. BIH implements an evidence-informed intervention based on group-based prenatal and postpartum support, in which participants meet, interact, and build sisterhood with other Black women. The program requires both a public health nurse and a mental health professional to serve as consultants so that any medical or mental health issues can be assessed and addressed right away. Hiring staff that reflects the population served is another critical aspect of the program. Participants engage in group sessions that foster client-centered life planning and goal setting activities. Additionally, BIH clients and their families receive referrals to services designed to build life skills, reduce stress, and provide social support. One goal of the BIH program is to help mitigate the impacts of structural racism throughout the birthing experience and beyond. BIH leadership develops networks to improve connections between program participants and their communities and social services to meet their needs. While BIH continues to provide much needed services to Black birthing people and their families, all public health programs serving Black families should acknowledge the increased stress Black families face as a result of structural racism and provide care in a way that alleviates stress and its impact on health outcomes.

Implement methods to monitor for and address racism and implicit bias among health care personnel and public health professionals

Reducing bias among health care providers involves the health, health care, and education sectors. The medical community and medical schools, in particular, should play an essential role by proactively committing to undoing racism in medical education and practice.[24,31,297,298] In California, this has begun to happen. A new law now requires birth centers and hospitals in California that provide perinatal care to implement an evidence-based implicit bias training program for all health care providers in an effort to help providers recognize their own biases.[299] The California Attorney General is examining how certain hospitals use software to make patient care and billing decisions to ensure that their systems are not racially biased. Hospitals can also self-monitor patient satisfaction and perinatal outcomes by race and ethnicity and ensure inequities in quality of care are regularly assessed and addressed. Approaches to address anti-racism and implicit bias training within the field of public health and other sectors include the capacity development components of GARE and similar initiatives. The Centers for Disease Control and Prevention's Hear Her campaign encourages obstetric professionals to be conscious of implicit bias and structural racism and to provide attentive, respectful care to patients.[300]

Improve the educational pipeline and other supports to increase the number of Black providers and healthcare professionals

Finally, increasing the number of Black providers and healthcare professionals at all levels, but particularly in positions of leadership, should help ensure that more Black people will have access to respectful and high-quality health care. Racial concordance between patients and providers could improve outcomes.[24,301] Recent policy changes to improve Black maternal and infant health include systems-level efforts to bring more providers of color into the workforce. Doulas, professionals who support people during labor and delivery, miscarriage, and abortion, are covered under the Medi-Cal program starting in 2023.[302] Black doulas and midwives as traditional care providers have potential for improving perinatal care for Black birthing people.[303,304,305] Other recent California legislation will increase funding for training midwives—prioritizing underrepresented groups, and track the implementation of the new Medi-Cal doula benefit.[306] These measures may improve access to high quality, risk appropriate, culturally congruent perinatal care in regions that have large Black populations with limited access to care.

LOOKING FORWARD

Racism is a driver of health equity and influences who is ignored and who is treated; who is put at risk and who is not; which communities are polluted and which are clean; whose voices are silenced and whose are heard. As defined by Braveman, et al., "Health equity means that everyone has a fair and just opportunity to be as healthy as possible."[307] Black women, Black health leaders, and their allies have been elevating the impact of racism on health equity for many years. Health equity for Black birthing people and their infants is part of California Health and Human Service's overall vision for a healthier state.[277] The information provided in this report is one step among many toward the joint goal of centering health equity for Black mothers and infants. With such glaring disparities in health outcomes, progress will not be achieved by doing the same work with the same voices at the table. We need to step forward collectively and recognize deep, systemic changes are needed. As stated in the 2015 report from the CDPH Office of Health Equity, "It has taken hundreds of years of unjust social policies and practices to create the degree and magnitude of health inequities detailed in this report."[308] We cannot take hundreds of years more to dismantle them; the time is now.

> Stress is hemmed into our dresses, pressed into our hair, mixed into our perfume and painted on our fingers. Stress from the deferred dreams, the dreams not voiced; stress from the broken promises, the blatant lies; stress from always being at the bottom, from never being thought beautiful, from always being taken for granted, taken advantage of. Stress from being a black woman in white America. Much of this stress is caused by how the world outside us relates to us. We cannot control that world...but we can assert agency in our own lives so that the outside world cannot over-determine our responses.
>
> *— Opal Palmer Adisa, 1994*[309]

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APPENDIX

Data Sources

Birth data. The California Department of Public Health produces an annual file of birth certificates for births occurring in California as well as births occurring in other states to California residents, the California Birth Statistical Master Files (BSMF, through 2017) or California Comprehensive Master Birth Files (CCMBF, 2018 forward). For this report, births to California residents were selected. The birth data file is the source of information on the number of births, rates of preterm birth and low birthweight, and experiences and characteristics such as education, cesarean delivery, and trimester of prenatal care initiation.

Birth cohort data. Infant death certificates, linked to birth certificates, are compiled by the California Department of Public Health to produce the California Birth Cohort File (CBCF). Each cohort consists of data for all live births that occurred in a calendar year, and death information for those infants who were born in that year and subsequently died within 12 months of birth. These data are used for reporting of infant mortality.

Pregnancy-related mortality data. Pregnancy-related mortality data are drawn from the California Pregnancy Mortality Surveillance System, a statewide case review of deaths among California women who were pregnant within the prior year.

California Maternal and Infant Health Assessment (MIHA). MIHA is an annual survey of people giving birth in California, sampled from birth certificates. The survey asks about pre-pregnancy health status and health conditions, mental health, experience of racism, health insurance coverage, food insecurity, substance use, breastfeeding, and additional items. Survey data are linked to birth certificates and weighted to be representative of California births each year.

Patient Discharge Data (PDD). Data for each inpatient discharged from a California-licensed hospital are collected by the California Department of Health Care Access and Information (HCAI). Information on maternal health conditions at the time of hospitalization for delivery was drawn from this data set. Delivery hospitalizations were identified by diagnosis codes for an outcome of delivery, diagnosis-related group delivery codes, and procedure codes for selected delivery-related procedures.[310] (Note: Patient Discharge Data for 2015 represents only three quarters of the year (January through September) due to the transition from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to the Tenth Revision, Clinical Modification and Procedure Coding System (ICD-10-CM/PCS) in the last quarter of 2015; thus, these rates should be interpreted with caution as they do not represent a full year of change relative to 2014. Data for 2016 and onward are based on ICD-10-CM/PCS and may not be comparable to previous ICD-9-CM estimates. Patient Discharge Data do not contain certain measures, such as education or census tract, that are available in birth and MIHA data.

American Community Survey (ACS). The Census Bureau provides local area data on population and income that were used to calculate some of the measures included in this report, such as the level of poverty in a person's census tract of residence, and race and income data used in the calculation of neighborhood racial and economic segregation.

Definitions of indicators

Indicators included in this report are defined in this section. The denominator for data from MIHA is all California residents with a live birth in the years presented. For birth and death certificate data, the denominator is births to California residents. For PDD, the denominator is delivery hospitalizations among California residents.

Total births: Live births to California residents. (BSMF, CCMBF)

Population and maternal characteristics

Race and ethnicity:

> For analyses utilizing birth certificate, birth cohort, or MIHA survey data, race and ethnicity definitions were as follows: Black included all birthing people reporting Black in any field on the birth certificate, regardless of Hispanic ethnicity. Hispanic included all birthing people who reported Hispanic origin, of any race except Black race. All other birthing people who were not Black and who did not report Hispanic origin were defined according to their reported race(s): American Indian/Alaska Native, Asian and/or Pacific Islander, White, other, or multiple race (excluding Black). Data for smaller groups are shown where numbers are sufficient to calculate rates.
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> For pregnancy-related mortality, racial and ethnic groups were defined using death certificate data as follows: Hispanic includes all persons of Hispanic origin of any race(s). The remaining groups are of non-Hispanic origin. Data for Black, Asian or Pacific Islander, and White women are for single-race individuals. Numbers for women of other races, multiple races, or unknown race were small and are not shown.
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> For patient discharge data, racial and ethnic groups were defined as follows: Hispanic includes all persons of Hispanic origin, of any race. The remaining data presented are for people of non-Hispanic origin who reported Black, White, Asian/Pacific Islander, or American Indian/Alaska Native race. (PDD)

Maternal birthplace: Birthplace was based on report of either birth in the United States (including US jurisdictions outside the 50 states plus Washington, D.C.) or another country. (BSMF, CCMBF)

Measures of structural racism

Neighborhood racial and economic segregation: The Index of Concentration at the Extremes (ICE) index (race + income) is a measure of racial and economic geographic segregation. It subtracts the number of Black residents in an area who earn less than $25,000 from the number of White residents in that area who earn $100,000 or more, and divides by the total population of that area.[114] Data are drawn from the Census American Community Survey.

Neighborhood poverty: Percentage of residents of a census tract who were living below the Federal poverty threshold. Birth certificates were geocoded to residential census tracts within California. The estimated percent of people below poverty by census tract is obtained from American Community Survey 5-year estimates: https://www.census.gov/topics/income-poverty/poverty/data/tables.html (BSMF, CCMBF)

Healthy Places Index 2.0: The Healthy Places Index (HPI) combines a variety of data sources, such as Census, environmental, health insurance, health outcomes, retail, parks, and voting data, to provide information on well-being and community conditions at the census tract level in California. The HPI was developed by the Public Health Alliance of Southern California.

Health outcomes

Age: Age of mother at time of the birth. (BSMF, CCMBF)

Total live births (parity): The number of live births the mother has delivered. (BSMF, CCMBF)

Health insurance: During the month before pregnancy (pre-pregnancy), during pregnancy (prenatal), or at the time of the survey (postpartum) the birthing person had Medi-Cal or a health plan paid for by Medi-Cal; private insurance through her or her spouse's/partner's job, her parents, or purchased directly; had another form of insurance, such as military coverage or a county plan; or was uninsured. People with both Medi-Cal and private insurance were categorized as Medi-Cal. (MIHA)

Worried about or experienced racism: over the birthing person's lifetime, she somewhat often or very often worried about being treated unfairly due to race; worried about a loved one being treated unfairly due to race; or experienced unfair treatment due to race. (MIHA)

Good to excellent health: self-rated health just before pregnancy (excellent, very good, or good, vs. fair or poor). (MIHA)

Maternal health conditions at delivery, including hypertension, asthma, and diabetes: Maternal health conditions at delivery were calculated using Patient Discharge Data on hospitalizations for California residents delivering live births. Maternal health conditions were identified based on ICD-9-CM and ICD-10-CM diagnosis for the primary and up to 24 other diagnosis codes associated with each delivery record. Diabetes (pre-existing or gestational): Delivery record with a diagnosis of pre-existing diabetes (ICD-9-CM 250, 648.0; ICD-10-CM E10, E11, O24.0, O24.1, O24.3, O24.8, O24.9) or gestational diabetes (ICD-9-CM 648.8; ICD-10-CM O24.4); the recommendations for diagnosing gestational diabetes changed in 2011. Hypertension (chronic or gestational): Delivery record with a diagnosis of chronic hypertension (ICD-9-CM 642.0-642.2, 642.7, 401-405; ICD-10-CM I10-I13, I15, I16, O10, O11) or gestational hypertension (ICD-9-CM 642.3-642.6, 642.9; ICD-10-CM O13-O15, O16). Asthma: Delivery record with a diagnosis of asthma (ICD-9-CM 493; ICD-10-CM J45). (PDD) In 2017, the American College of Cardiology and the American Heart Association issued an updated definition of hypertension which results in a greater percentage of people categorized as having hypertension.[311,312]

Depressive symptoms: always or often felt down, depressed, or hopeless or had little interest or little pleasure in doing things they usually enjoyed, during or after pregnancy. (MIHA)

Treated unfairly due to race: In the hospital at delivery, reported being treated unfairly due to race. (Listening to Mothers in California)

Cesarean section, among low-risk women with a first birth: Delivery method at birth was cesarean section among first-time mothers delivering a single baby in a head-down position, at least 37 weeks' gestational age. Following NCHS guidelines, births with gestational age greater than 47 weeks were excluded. (BSMF, CCMBF)

Severe maternal morbidity: CDC-developed definition using hospital discharge procedure and diagnosis codes that represent unexpected labor and delivery outcomes resulting in serious short- or long-term health consequences for the birthing person. (PDD)[313,314]

Pregnancy-related mortality: Women and other birthing people who died during pregnancy or in the year following the birth, and whose death was caused by an obstetric-related condition. Pregnancy-relatedness determinations were made through a structured expert committee case review process.[1] (PMSS)

Gestational age, including preterm birth: Obstetric estimate of the infant's gestation in completed weeks based on the birth attendant's determination. Following National Center for Health Statistics (NCHS) guidelines, births with gestational age less than 17 weeks or greater than 47 weeks were excluded. Preterm birth is categorized as births occurring before 37 weeks, and term is categorized as 37 or more weeks. (BSMF, CCMBF)

Birthweight: The body weight of an infant at birth. Following NCHS guidelines, births with birthweight less than 227 grams or greater than 8,165 grams were excluded. Low birthweight is 227–2,499 grams; very low birthweight is 227–1,499 grams; and high birthweight is 4,000 grams or more. (BSMF, CCMBF)

Infant mortality: The number of deaths in live-born infants under one year of age per 1,000 live births. The infant mortality indicator computed from the birth cohort file comprises birth certificate information on all births that occur in a calendar year (denominator) plus death certificate information linked to the birth certificate for those infants who were born in that year and died within 12 months of birth (numerator). (CBCF)

Leading causes of infant death: The leading causes of infant death from the National Center for Health Statistics' (NCHS) List of 130 Selected Causes of Infant Death.[315] The following causes are shown in this report: Disorders related to short gestation and low birthweight, not elsewhere classified (Preterm-LBW) (ICD-10 P07); Sudden Unexpected Infant Death (SUID) (ICD-10 R95, R99, W75); Congenital malformations, deformations and chromosomal abnormalities (Congenital malformations) (ICD-10 Q00-Q99); Newborn affected by maternal complications of pregnancy (Maternal complications) (ICD-10 P01); Newborn affected by complications of placenta, cord and membranes (Membranes complications) (ICD-10 P02); Neonatal hemorrhage (ICD-10 P50-P52, P54); Diseases of the circulatory system (Circulatory disease) (ICD-10 I00-I99). (CBCF)

Sudden Unexpected Infant Death (SUID): A special cause-of-death category, defined as the death of an infant under one year of age that occurs suddenly and unexpectedly, the reason for which is not immediately known before the death is investigated.[316] SUID is closely related to the narrower cause of infant death, sudden infant death syndrome (SIDS), which is defined as the sudden death of an infant younger than 1 year of age that cannot be explained even after a full investigation that includes a complete autopsy, examination of the death scene, and review of the clinical history. (CBCF)

First trimester prenatal care initiation: Received prenatal care beginning in the 1st, 2nd, or 3rd month of pregnancy. (BSMF, CCMBF)

Alcohol use: Drank four or more alcoholic drinks in one sitting during the 3 months before pregnancy, or drank any alcohol during the last three months of pregnancy (third trimester). (MIHA)

Tobacco use: Smoked any cigarettes during the three months before pregnancy, or during the last three months of pregnancy (third trimester). (MIHA)

Cannabis: Used marijuana or weed in any way, such as smoking, eating, or vaping, during pregnancy or postpartum. (MIHA)

Contraceptive use postpartum:

> Highly effective contraceptive method: At the time of the survey, birthing person or their spouse/partner were using an intrauterine device (Mirena, ParaGard, Liletta, Sklya), implant (Implanon, Nexplanon), female sterilization, Essure, or vasectomy.
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> Moderately effective contraceptive method: At the time of the survey, birthing person was using birth control pills, patch, vaginal ring; or shots or injections (Depo-Provera).
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> Less effective contraceptive method: At the time of the survey, birthing person or spouse/partner were using condoms, natural family planning (rhythm, temperature), or withdrawal.
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> Did not use contraception: At the time of the survey, birthing person was abstinent or was not using a method of contraception. Excluded from the contraceptive denominator were those who were currently pregnant or had a hysterectomy/oophorectomy. (MIHA)

Birth spacing/interpregnancy interval: Among women having a second or later birth, length of time was at least 18 months between the previous delivery and the last menstrual period before the index delivery. (BSMF, CCMBF)

Participation in WIC or CalFresh: Birthing person participated in WIC or CalFresh during pregnancy. (MIHA)

Prepregnancy weight: Body Mass Index (BMI) calculated from self-reported weight and height, classified as underweight (<18.5), healthy weight (18-<25), overweight (25-29.99), or obese (30+). BMI calculated only for women reporting height within 48-83 inches and weight within 75-399 pounds. BMI values outside 13-69.99 were also excluded. BMI may overestimate or underestimate body fatness in some individuals since it does not take into consideration an individual's muscle or bone mass. The clinical correlation of BMI has not been validated in some subpopulations, therefore BMI should not be used as the sole criteria for making health recommendations. (BSMF, CCMBF)

Food insecurity: Calculated from the modified U.S. Department of Agriculture (USDA) Food Security Module Six Item Short Form and categorized as food insecure (based on reduced quality, variety or desirability of diet, disrupted eating patterns, and/or reduced food intake). Responses with one or two missing values were imputed. See USDA guidelines for more detail (https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/). (MIHA)

Any breastfeeding, 1 or 3 months after delivery: Fed infant breast milk for at least one or three months after delivery with or without supplementing with formula, other liquids or food; excluding from the denominator women whose infant did not reside with them. (MIHA)

Exclusive breastfeeding, 1 or 3 months after delivery: Fed infant only breast milk (no supplementation with formula, other liquids or food) for at least 1 or 3 months after delivery; excluding from the denominator women whose infant did not reside with them. (MIHA)

Hospital practices supportive of breastfeeding: Among women with a hospital birth, experienced recommended hospital practices supportive of breastfeeding in the hospital: breastfeeding initiated within one hour of a vaginal birth or two hours after a caesarean section; baby stayed in the same room as mother for at least 23 hours each day at the hospital; baby was not fed anything other than breast milk in the hospital; baby did not use a pacifier in the hospital; hospital gave woman telephone number to call for help with breastfeeding postpartum; hospital did not give gift pack with formula; baby was held skin-to-skin for at least 30 minutes within 2 hours after birth; excluding from the denominator women whose infant did not reside with them at the time of the survey. (MIHA 2011, 2013, 2015)

Data analysis

Percentages and rates presented in this report describe births and infant deaths, as well as maternal characteristics, health behaviors, risk and protective factors including neighborhood context, and health outcomes. The 95% confidence interval presented in tables indicates that there is a 95% chance that the range contains the true prevalence or rate in the population. The annual population estimates presented in this report are averages calculated by dividing the total number of events (e.g., births or deaths) by the number of years pooled to create that total, which for most measures was two or three years.

Comparisons between population groups were made by examining the 95% confidence intervals of the two estimates. Differences between rates were noted when the confidence intervals did not overlap.

Data from each of the data sources were analyzed using SAS software. Definitions for each indicator and a description of the annotation and suppression criteria for reporting results are in the Appendix. The MIHA survey sampling and weighting procedures are described in detail in the MIHA technical notes available on the MIHA website (www.cdph.ca.gov/MIHA).

Annotation and suppression

Indicators from the BSMF, CCMBF, CBCF, or PDD based on rates with fewer than 10 events in the numerator during the reporting period are suppressed.

Indicators from the MIHA survey are suppressed when:

1. the sample numerator is less than 5,
2. the number of women in the population of interest (population denominator) is less than 100, or
3. the relative standard error (RSE) is greater than 50%. Additionally, estimates are annotated, and users are warned to interpret with caution if the RSE is between 30% and 50%. The RSE is a commonly used measure of reliability, or precision, of survey estimates and is calculated using the following formulas:
    a. For estimates with a prevalence <= 50%: *Standard error / estimate*
    b. For estimates with a prevalence >50%: *Standard error / (1 – estimate)*