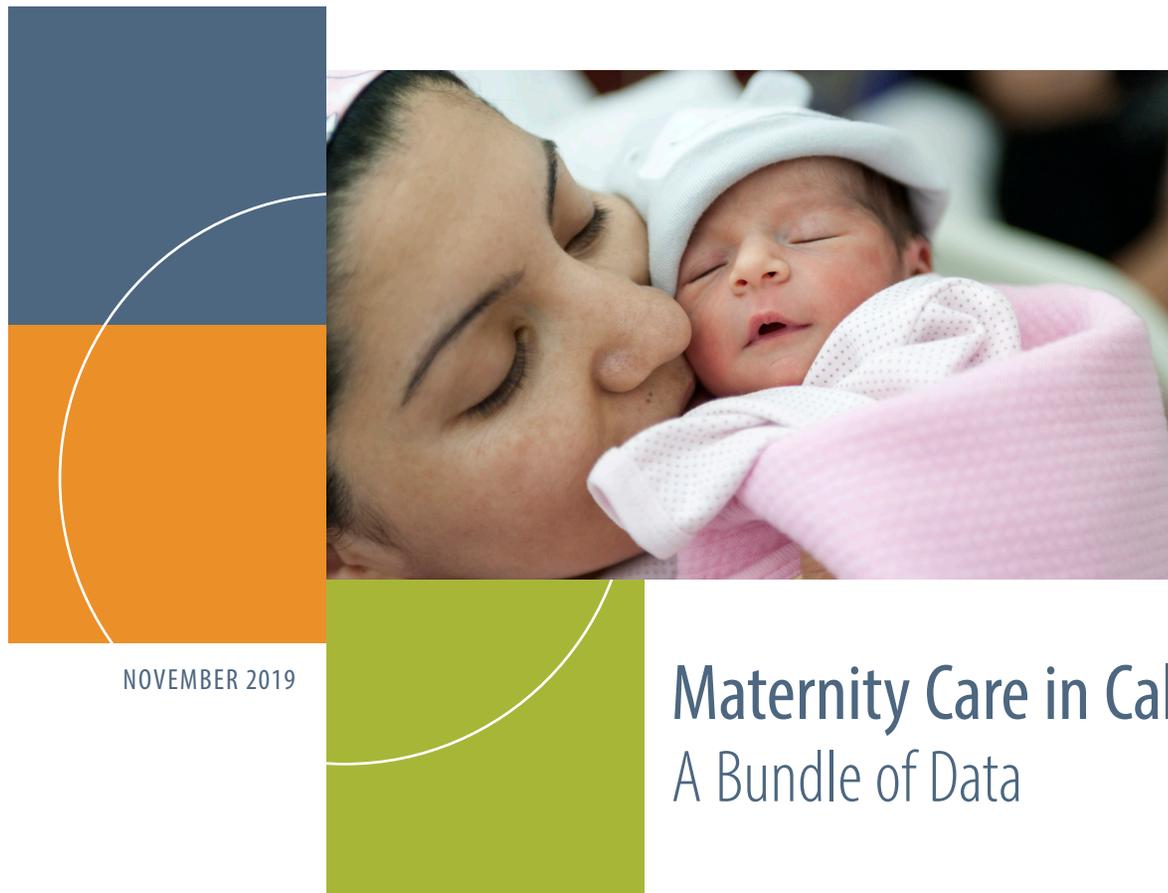


CALIFORNIA Health Care Almanac



NOVEMBER 2019

Maternity Care in California A Bundle of Data

Executive Summary

Nearly half a million babies were born in California in 2018, representing one in eight of all births in the US. While the number of births has declined since 2000, childbirth remains the number one reason for hospitalization in California. *Maternity Care in California: A Bundle of Data* provides an overview of the delivery of maternity care in California, using the most recent available metrics, and compares the state’s performance on these metrics by demographic groups, over time, and provides a comparison to national numbers.

KEY FINDINGS INCLUDE:

- The majority of California births occurred in a hospital and were delivered by a physician. Over the past decade, the percentage of births attended by midwives has increased.
- Medi-Cal covered 45% of all in-hospital births in California in 2017. Nearly 60% of Medi-Cal births occurred in nonprofit hospitals.
- One in four in-hospital births in California were low-risk, first-birth cesareans (c-sections). Rates for Black women were six percentage points higher than the Healthy People 2020 goal (23.9%) while rates for Latina and white women met this goal. While critical in some circumstances, c-sections can pose serious risks for baby and mother.
- While the national maternal mortality rate has increased, California has made significant progress in reducing maternal mortality rates overall, and for all race/ethnicity and age groups. However, Black women continued to have significantly higher maternal mortality rates than other groups.
- Significant racial/ethnic disparities existed across a variety of maternal quality measures in California, including prenatal visits, preterm births, and maternal and infant mortality rates. For many of these measures, Black women and infants fared worse than their peers in other racial/ethnic groups.
- In a recent survey, more than one in five California women who gave birth in 2016 or 2017 reported symptoms of prenatal or postpartum depression.

CONTENTS

Births and Demographics3

Workforce and Supply 12

Quality18

Risk Factors37

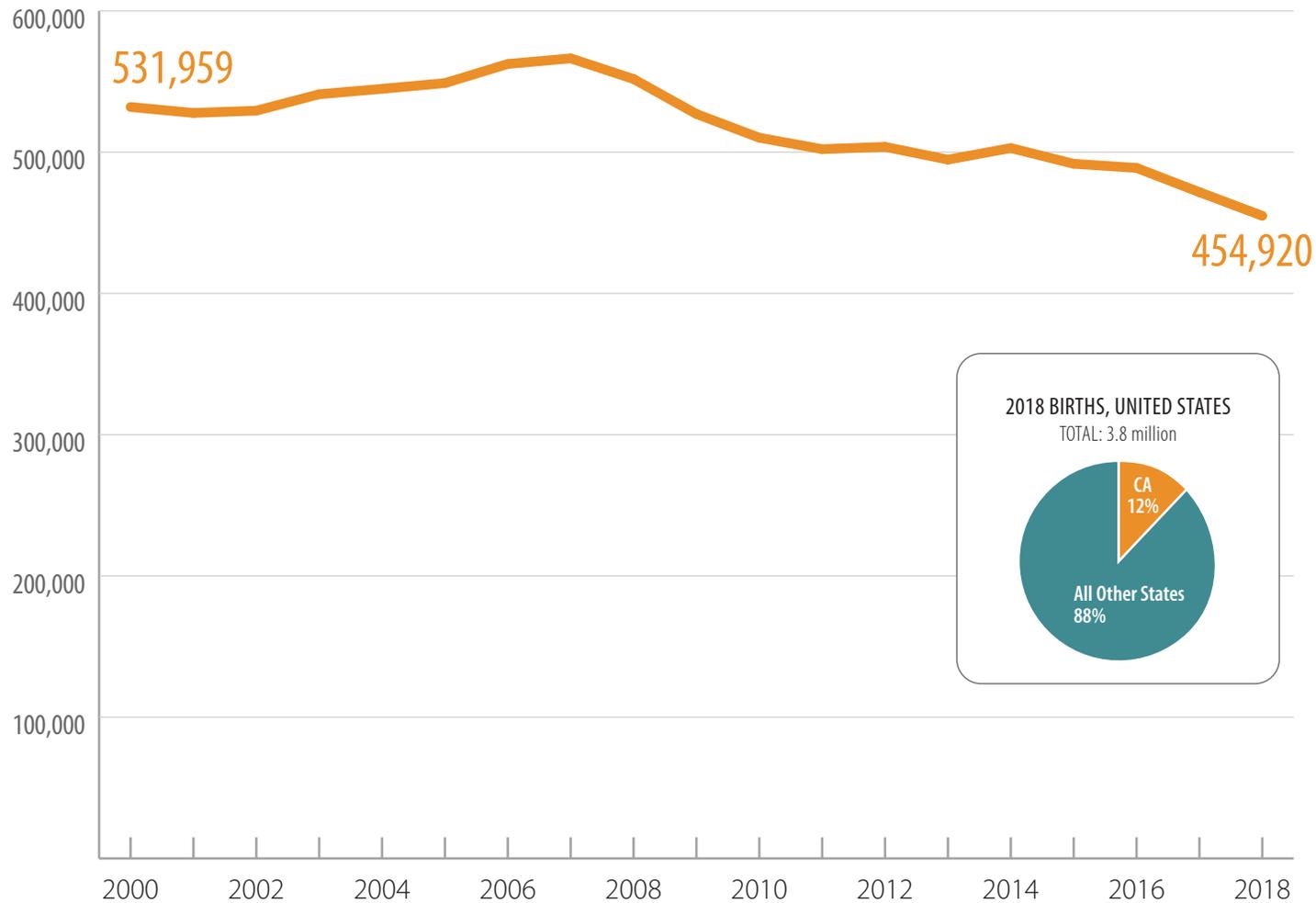
Mental Health and Substance Use.....39

Appendix A44

Appendix B45

Births

California, 2000 to 2018



Maternity Care in California

Births and Demographics

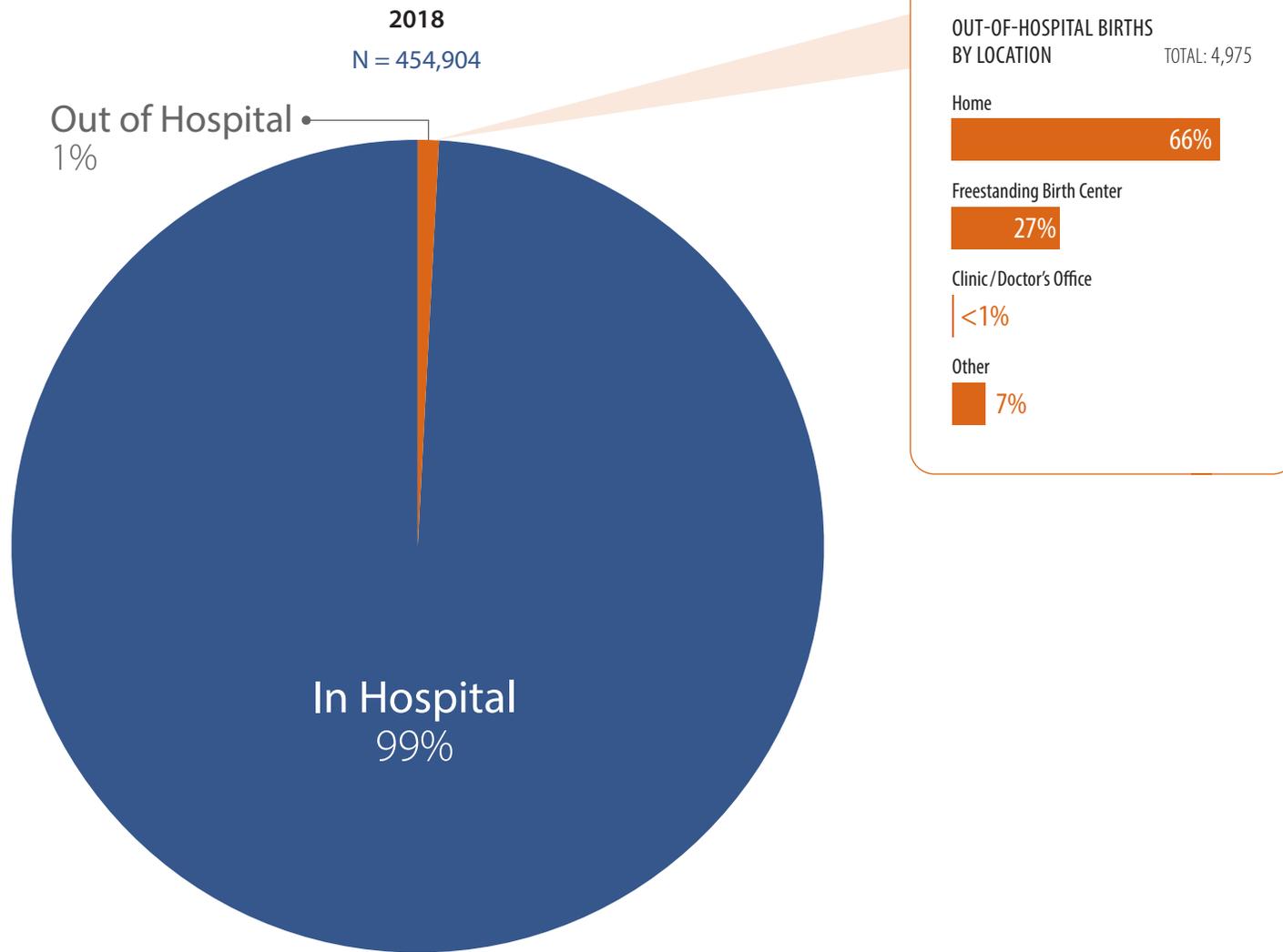
Although California has the most births of any state in the nation — at nearly half a million per year, the number of total births in California has been on a downward trend since 2007. California’s share of the nation’s births has remained stable at around 1 in 8 births.

Note: Births by mother’s place of residence at the time of birth.

Source: “Natality Information: Live Births” (1995-2002, 2003-2006, and 2007-2018), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

Births by Location

California, 2018



Maternity Care in California

Births and Demographics

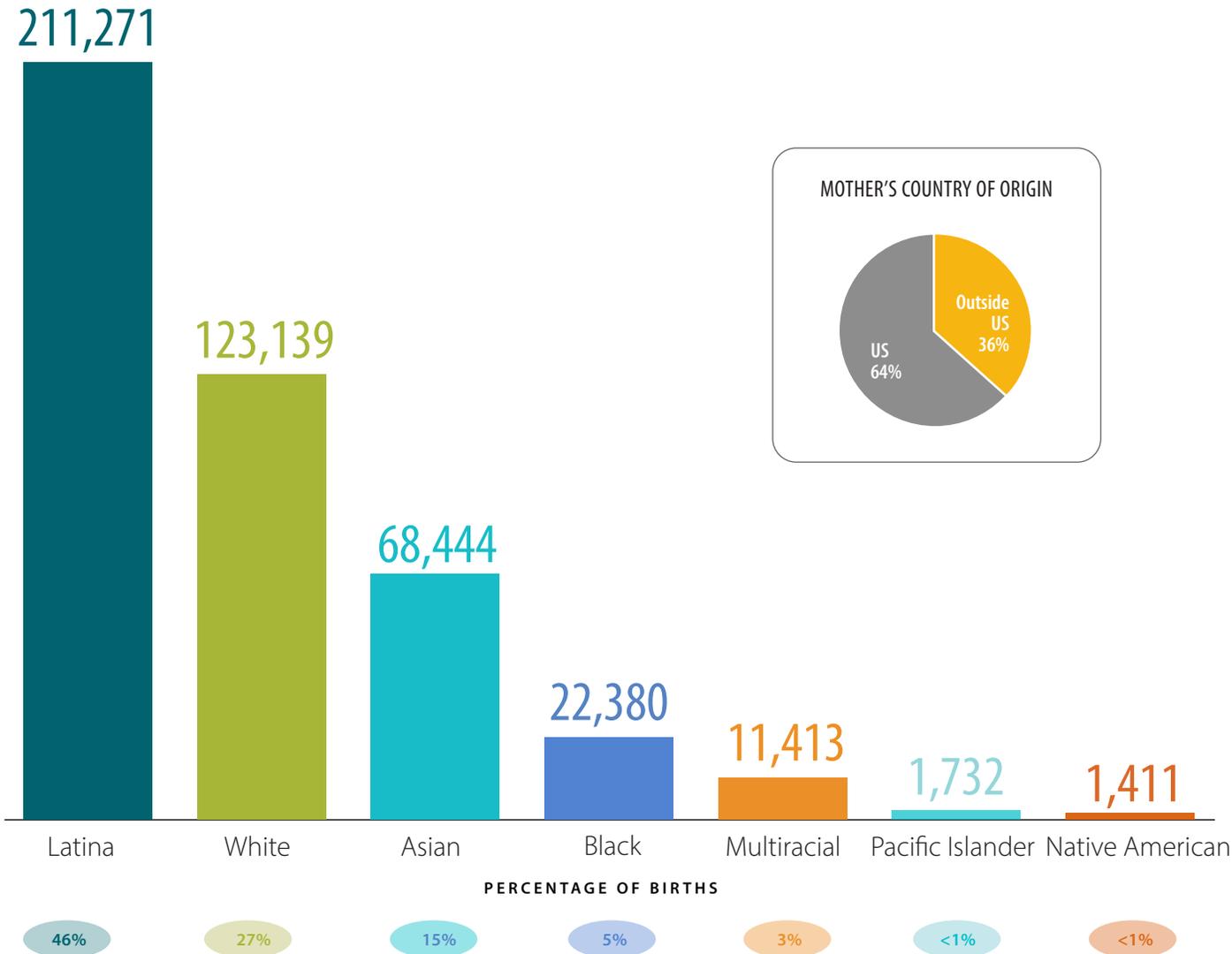
Nearly all births in 2018 occurred in a hospital. Of births that did not occur in a hospital, two-thirds occurred in the home.

Note: Location of birth was unknown for 16 births.

Source: "Natality Information: Live Births" (2007-2018), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

Births, by Mother's Race/Ethnicity

California, 2018



Maternity Care in California

Births and Demographics

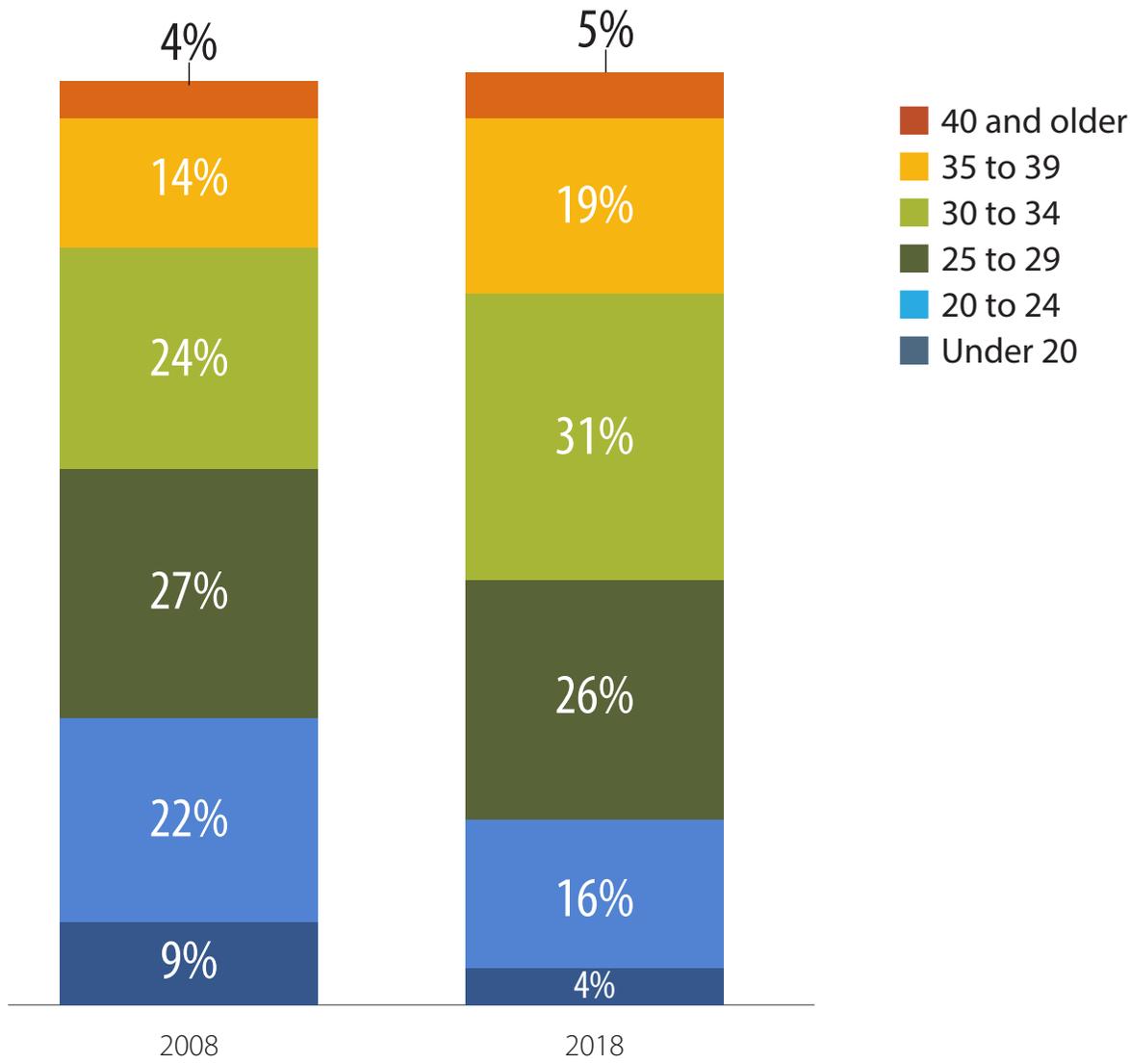
In 2018, there were 211,000 births to Latina women, making up nearly half of all births in California. Twenty-seven percent of the state's births were to white women. More than one in three births in California were to women who were born outside the United States.

Notes: Latina origin is determined first and includes any race group. *Unknown* and *Other Races* are not shown. Source uses *Hispanic or Latino*, *Black or African American*, *Native Hawaiian or Other Pacific Islander*, *American Indian or Alaska Native*, and *More than one race*.

Source: "Natality Information: Live Births" (2007-2018 and 2016-2018 expanded), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

Births, by Mother's Age

California, 2008 and 2018



Maternity Care in California

Births and Demographics

The age of mothers in California has shifted over the last decade. The share of births for mothers age 24 and under decreased, while those for mothers age 30 and older increased.

Source: "Nativity Information: Live Births" (2007 –2018), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

Female Population and Births, by Household Income

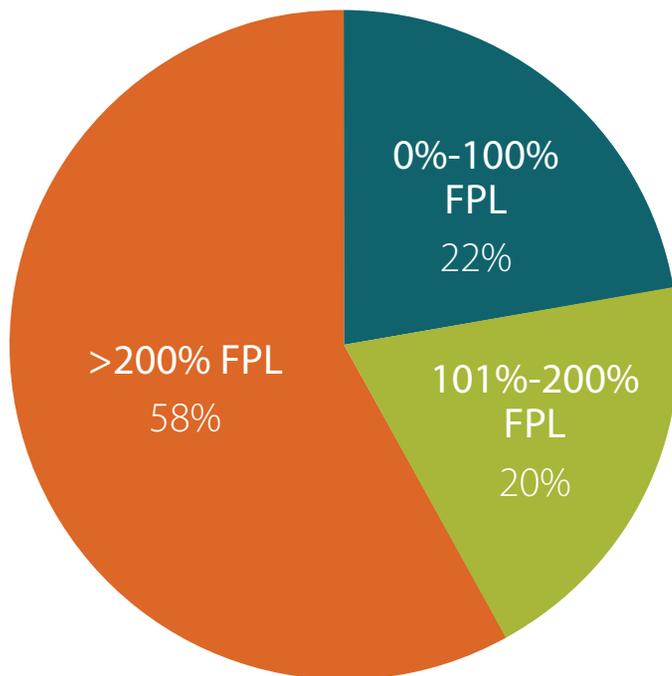
California, 2016 and 2017

Maternity Care in California

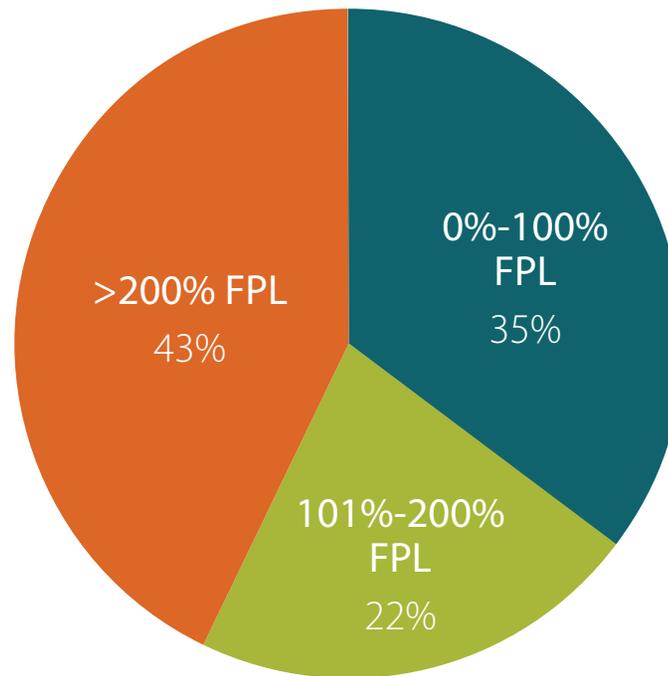
Births and Demographics

In California, there was a larger percentage of births among women at or below the poverty level relative to the size of the population they represent. 35% of births were to mothers whose household income was below the FPL, while 22% of females age 15 to 45 lived in households with incomes below the FPL. Similarly, 43% of births were to women with household incomes above 200% FPL, while 58% of the female population lived in households with incomes above 200% FPL.

**Female Population
(Age 15 to 45)**



Births

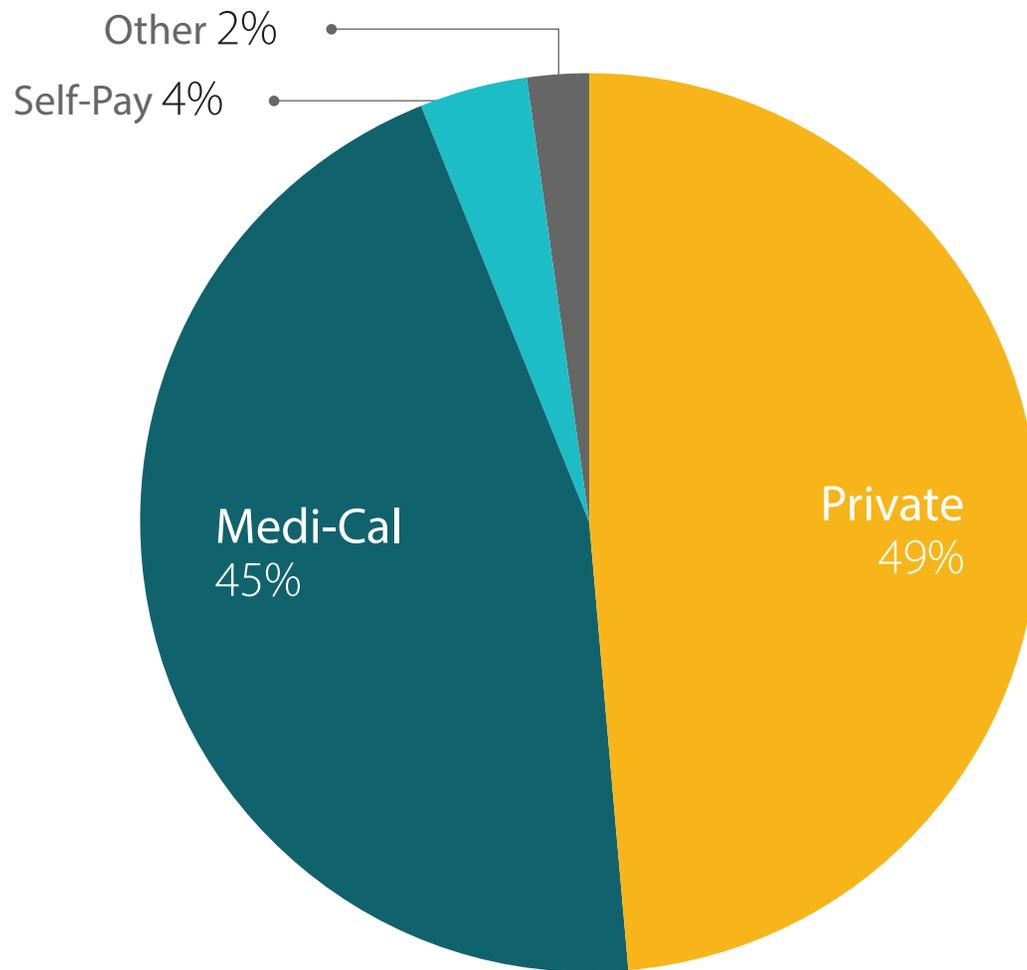


Notes: Births data are for women age 15 and older and are from a population-based survey of 13,062 California resident women with a live birth. The federal poverty level (FPL) for a family of four in 2017 was \$24,600. 2016 and 2017 data were combined.

Sources: Custom data request, Maternal and Infant Health Assessment survey data, California Dept. of Public Health, received June 19, 2019; and "askCHIS" (2016 and 2017 combined data), University of California, Los Angeles.

Births, by Mother's Insurance

California, 2017



Maternity Care in California

Births and Demographics

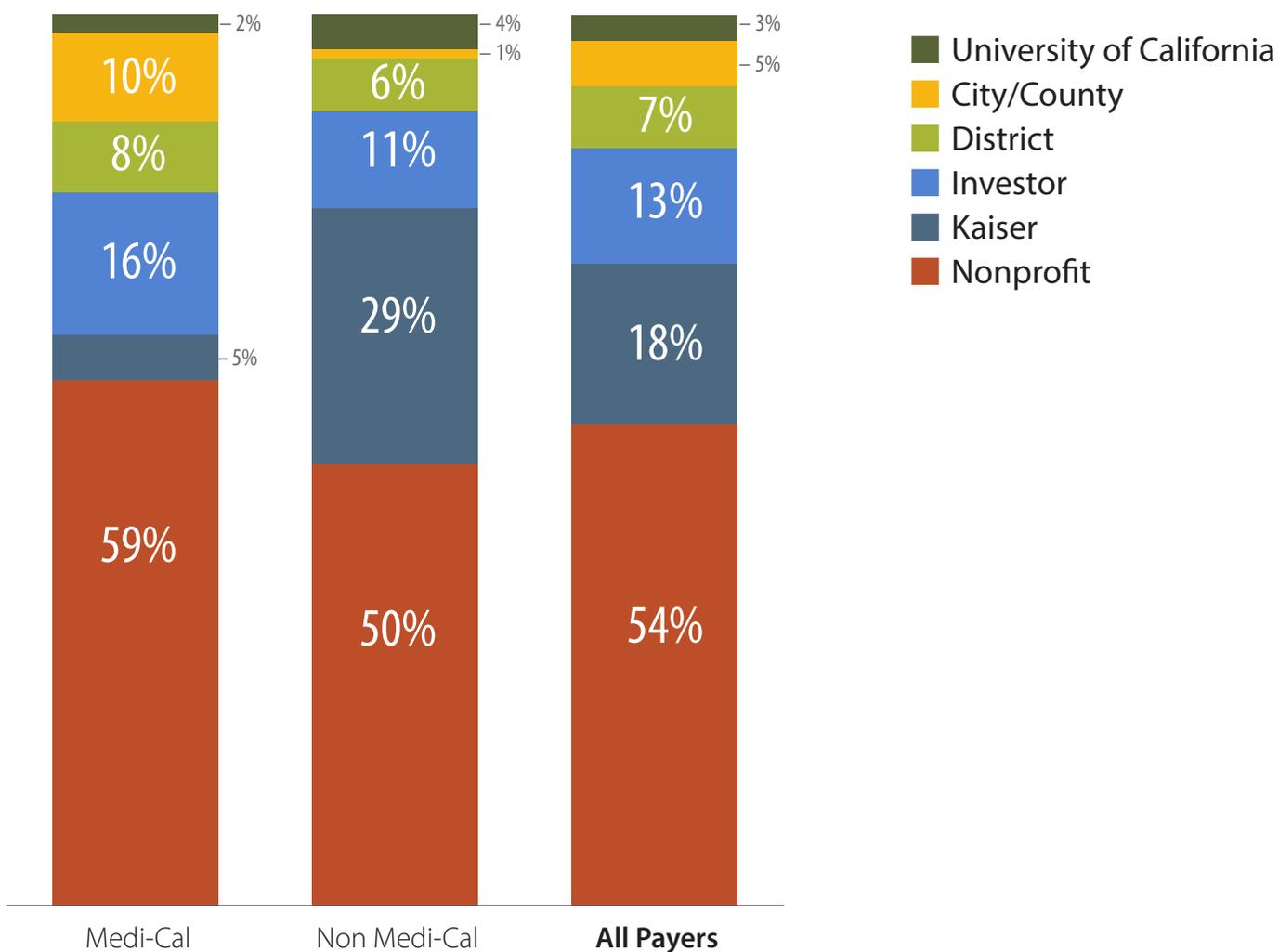
In 2017, 45% of in-hospital births were to mothers on Medi-Cal, compared to 49% to mothers with private insurance. The distribution of births by mother's insurance has not changed significantly since 2011 (not shown).

Notes: In-hospital births at 237 hospitals that offer maternity services.

Source: Custom data request, California Maternal Quality Care Collaborative, received June 14, 2019.

Births, Medi-Cal vs. Non-Medi-Cal, by Hospital Type

California, 2017



Maternity Care in California

Births and Demographics

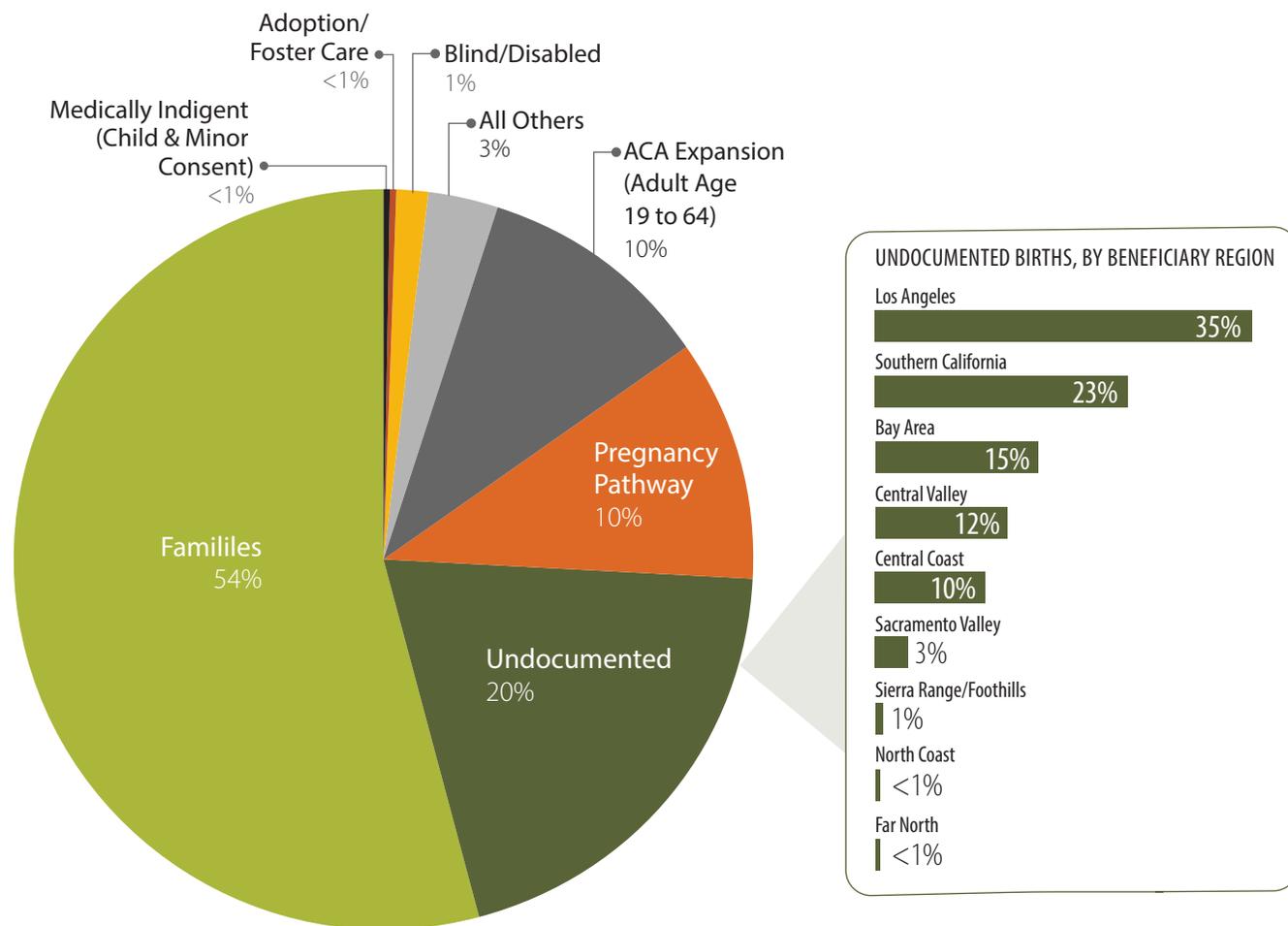
In California, the majority of Medi-Cal and non-Medi-Cal births occurred in nonprofit hospitals. Investor hospitals and public hospitals (district and city/county) accounted for similar portions of Medi-Cal births, 16% and 18%, respectively. Kaiser delivered 29% of all non-Medi-Cal births but only 5% of Medi-Cal births.

Notes: In-hospital births at 237 hospitals that offer maternity services. Nonprofit hospitals include church-related hospitals. Investor hospitals are for-profit. Kaiser Permanente hospitals are nonprofit. *Non Medi-Cal* includes uninsured patients. Segments may not total 100% due to rounding.

Source: Custom data request, California Maternal Quality Care Collaborative, received June 14, 2019.

Medi-Cal Births, by Aid Category

California, 2016



Maternity Care in California

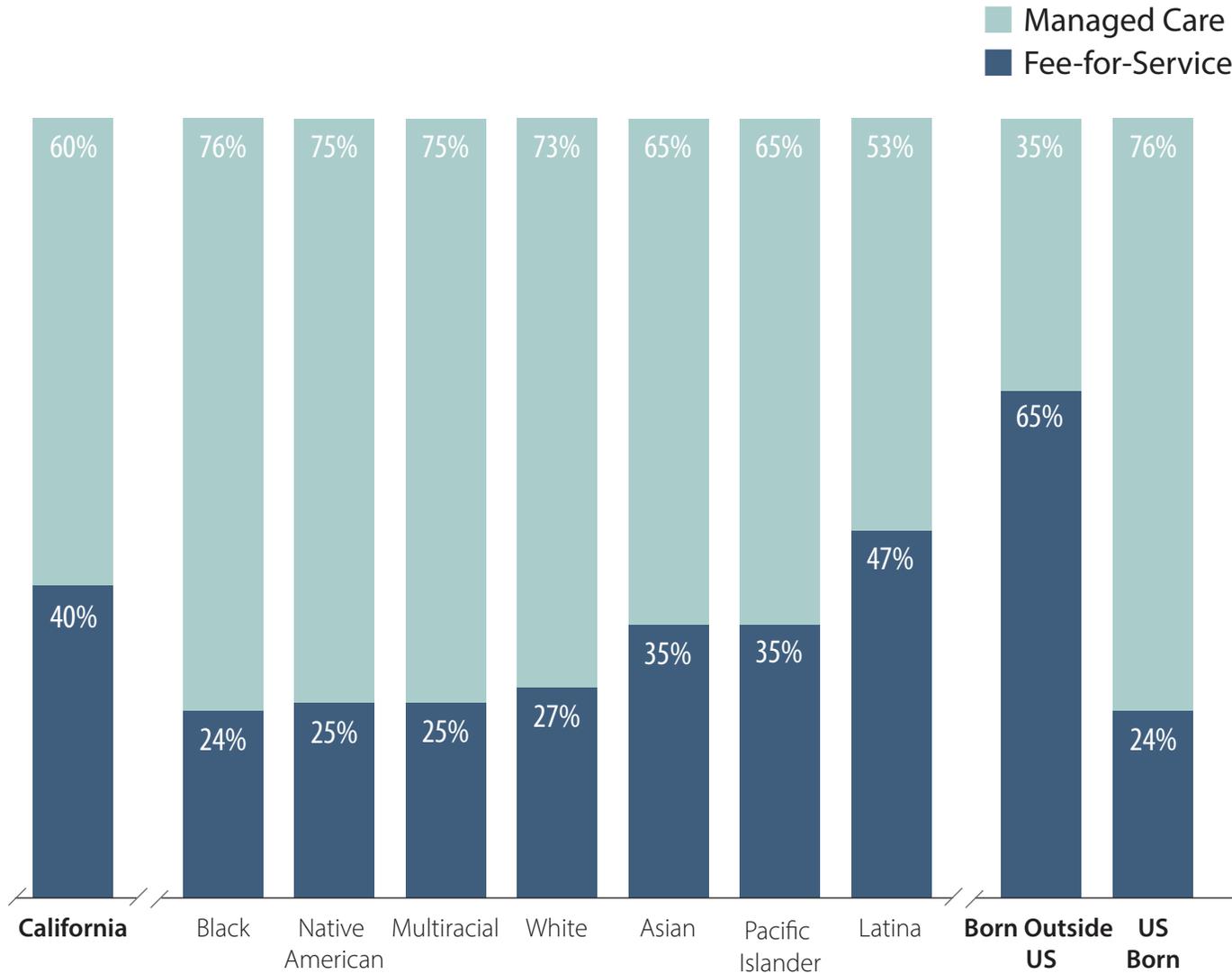
Births and Demographics

In 2016, one in five Medi-Cal births were to undocumented mothers. More than one in three of all births to undocumented mothers were in Los Angeles.

Notes: In-hospital births only, where 99% of births occur in California. Pregnancy Pathway is restricted scope — that is, limited to pregnancy-related and postpartum services for women who are not undocumented and whose family income is 200% FPL or below. Families refers to Section 1931(b) of the Social Security Act which ensures that families with children, who are in financial need will get access to Medi-Cal. This eligibility category combines the eligibility criteria from several other programs including food stamps, AFDC, and CalWORKs. Percentages may not sum to 100% due to rounding.

Source: Custom data request, California Department of Health Care Services, received September 5, 2019.

Medi-Cal Births, Fee-for-Service vs. Managed Care, by Race/Ethnicity and Country of Origin, California, 2016



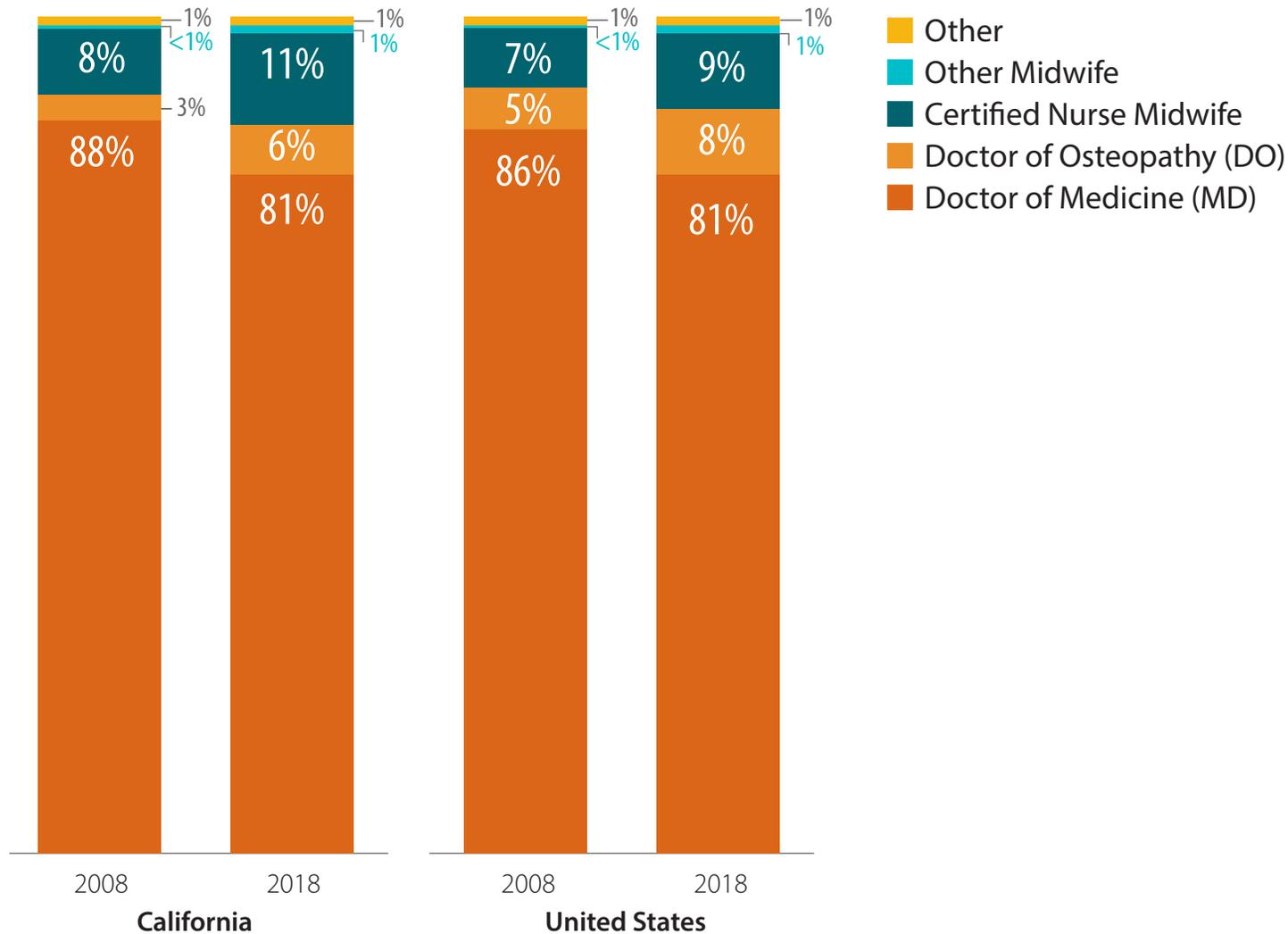
In 2016, four in ten Medi-Cal births were covered through the fee-for-service system. Fewer than one in two Latina mothers and nearly two in three mothers born outside the United States in Medi-Cal participated in the fee-for service system.

Notes: In-hospital births only, where 99% of births occur in California. The Source uses *African American*, *American Indian/Alaska Native*, *Hawaiian/Pacific Islanders*, and *Hispanic*. *Born Outside US* does not pertain to citizenship or documentation status.

Source: Custom data request, California Department of Health Care Services, received September 5, 2019.

Births, by Attendant

California vs. United States, 2008 and 2018



Maternity Care in California

Workforce and Supply

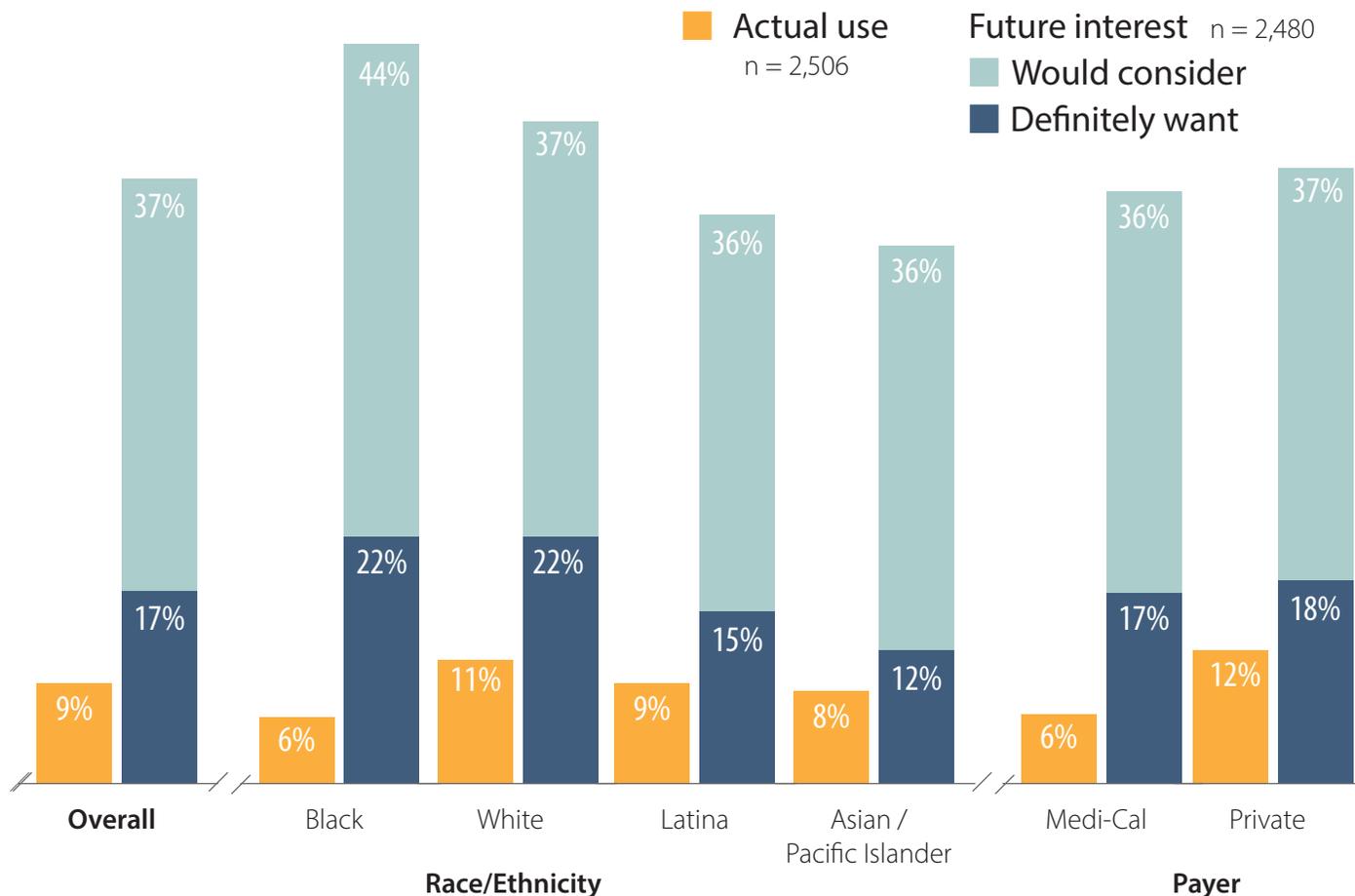
From 2008 to 2018, the percentage of births attended by midwives or by DOs in California and in the United States increased, while births attended by MDs decreased. Midwives, the vast majority of whom were certified nurse midwives, attended about 1 in 8 California births in 2018.

Notes: Attendant is whoever is present and responsible for the delivery. For example, if a certified nurse midwife (CNM) delivers an infant under the supervision of an obstetrician who is present in the delivery room, the obstetrician should be reported as the attendant; however, if the obstetrician is not present, the CNM is the attendant. Evidence suggests that the number of live births attended by CNMs is understated, largely due to difficulty in correctly identifying the birth attendant when more than one provider is present at the birth. Segments may not add to 100% due to rounding. Excludes *unknown or not stated*. See Appendix B for an overview of the maternity care workforce.

Source: "Natality Information: Live Births" (2007–2018), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d., access October 16, 2019.

Midwife Use: Actual and Future Interest

by Race/Ethnicity and Payer, California, 2016



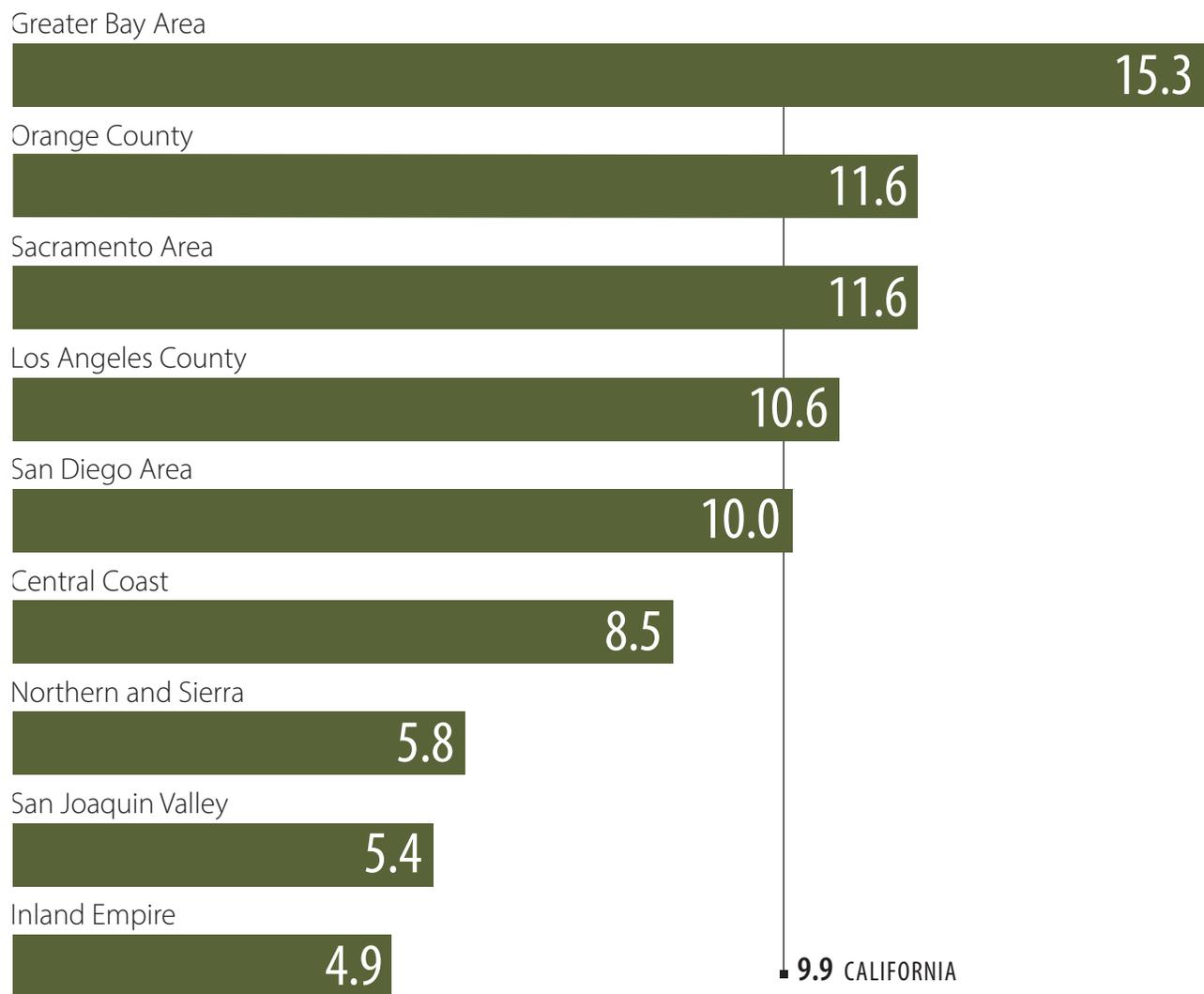
In a recent survey, California women indicated interest in using a midwife for a future birth — 17% said they would definitely want a midwife for a future birth and 37% said they would consider it. Black and white women expressed the greatest interest in future midwifery care among racial/ethnic groups. Researchers have found that midwives provide high-quality and cost-effective care.*

Notes: Based on a statewide survey of 2,539 women who gave birth in California hospitals in 2016. Data shown for use of midwife as birth provider. Midwives were the main prenatal care providers for 7% of survey participants (not shown). Not shown: "Would definitely not want this" and "not sure." Not all eligible respondents answered each item. Medi-Cal respondents were identified based upon a Medi-Cal record of a paid 2016 childbirth claim. Privately insured respondents self-identified in the survey. Differences within groups were not significant.

Sources: *Listening to Mothers in California*, National Partnership for Women & Families, 2018; California Department of Health Care Services MIS/DSS Data Warehouse.

* M. Johantgen et al., "Comparison of Labor and Delivery Care Provided by Certified Nurse-Midwives and Physicians: A Systematic Review, 1990 to 2008," *Women's Health Issues* 22, no. 1 (Jan.-Feb. 2012): e73-81, doi:10.1016/j.whi.2011.06.005.

Obstetrician/Gynecologists per 1,000 Live Births, by Region California, 2019



Maternity Care in California

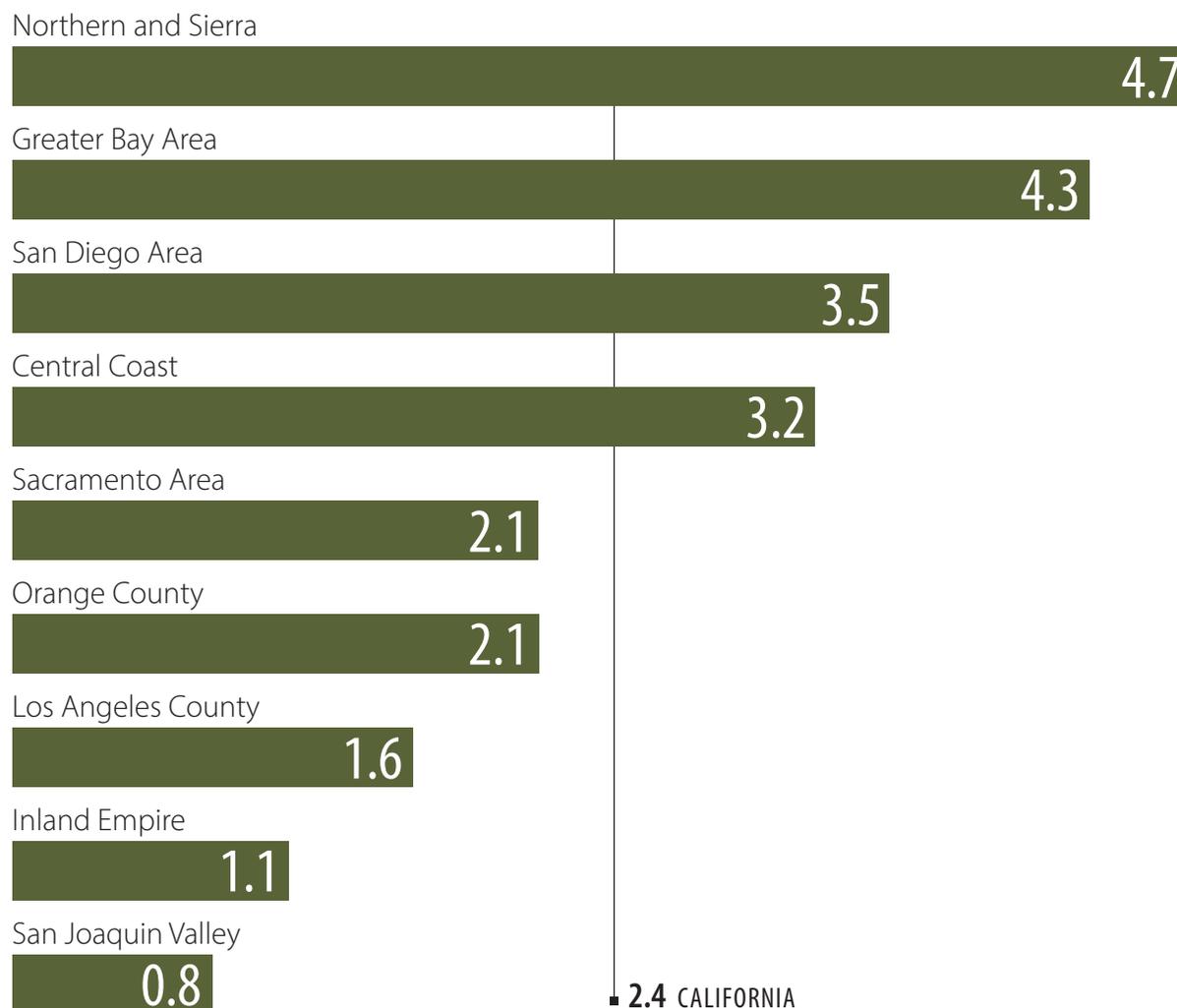
Workforce and Supply

In 2019, about 4,600 obstetrician/gynecologists (ob/gyns) were licensed in California, not all of whom were active in patient care. The supply of licensed ob/gyns varied across the state.

Notes: Supply of ob/gyns based on licensed doctors of medicine (MDs) with a self-reported primary practice area of obstetrics and gynecology as of June 11, 2019; region is based on physician's address of record with the Medical Board of California. Physicians with an out-of-state address are excluded. Births are based on 2017 data. See Appendix A for a regional county map.

Sources: Custom data request, Medical Board of California, received June 17, 2019; custom data request, California Dept. of Public Health, June 24, 2019.

Certified Nurse Midwives per 1,000 Births, by Region California, 2016



Notes: Certified nurse midwives (CNMs) are advanced practice nurses trained to provide midwifery care, including perinatal, well-woman, and newborn care. See Appendix A for a regional county map.

Sources: Special data request, University of California San Francisco; and "California Open Data," California Dept. of Public Health.

Maternity Care in California

Workforce and Supply

In 2016, 1,149 certified nurse midwives (CNMs) practiced in California. Many CNMs are also nurse practitioners and practice in that capacity rather than as midwives.* The supply of CNMs varied across California, from less than one CNM per 1,000 births in San Joaquin Valley to nearly five CNMs per 1,000 births in the Northern and Sierra region.

*Joanne Spetz et al., *2017 Survey of Nurse Practitioners and Certified Nurse Midwives (PDF)*, California Board of Registered Nursing, April 11, 2018.

Licensed Midwives

California, 2007 and 2017

	2007	2017	% CHANGE
Licensed Midwives	179	418	133.5%
Clients served			
• As primary caregiver at onset of care	2,277	5,932	160.5%
• With collaborative care available by licensed physician and surgeon	704	2,665	278.6%
• Under supervision of licensed physician and surgeon	159	228	43.4%
Planned out-of-hospital births			
• At onset of labor	1,687	3,981	136.0%
• Completed in out-of-hospital setting	1,438	3,297	129.3%

Maternity Care in California

Workforce and Supply

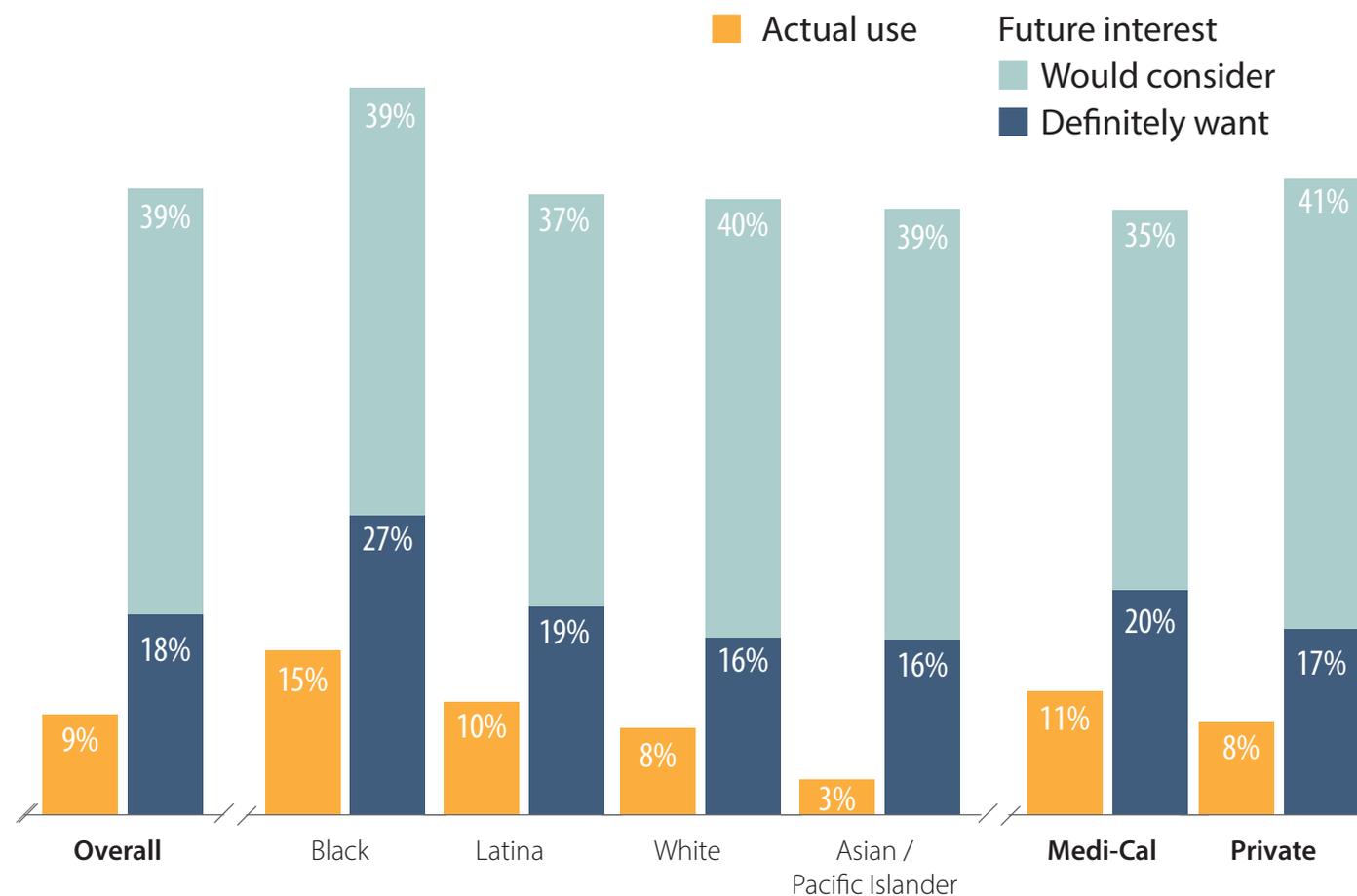
In California, the supply of licensed midwives, the clients they served, and the births they attended doubled from 2007 to 2017. Despite this significant growth, out-of-hospital births attended by licensed midwives represented a very small portion of total births in the state (not shown).

Notes: Data are self-reported. Births attended by licensed midwife as the primary caregiver. *Licensed midwives* are health professionals authorized to attend cases of normal childbirth and to provide prenatal, delivery, and postpartum care for the mother and immediate care for the newborn.

Source: [Annual Report \(2007–2008 and 2017–2018\)](#), Medical Board of California.

Labor Doula Use: Actual and Future Interest

by Race/Ethnicity and Payer, California, 2016



Maternity Care in California

Workforce and Supply

Among California women surveyed who spoke English at home, many expressed interest in having the support of a labor doula during birth. Eighteen percent said that they would definitely want doula support for a future birth, and 39% would consider it. Medi-Cal and many private payers do not currently cover doula support.

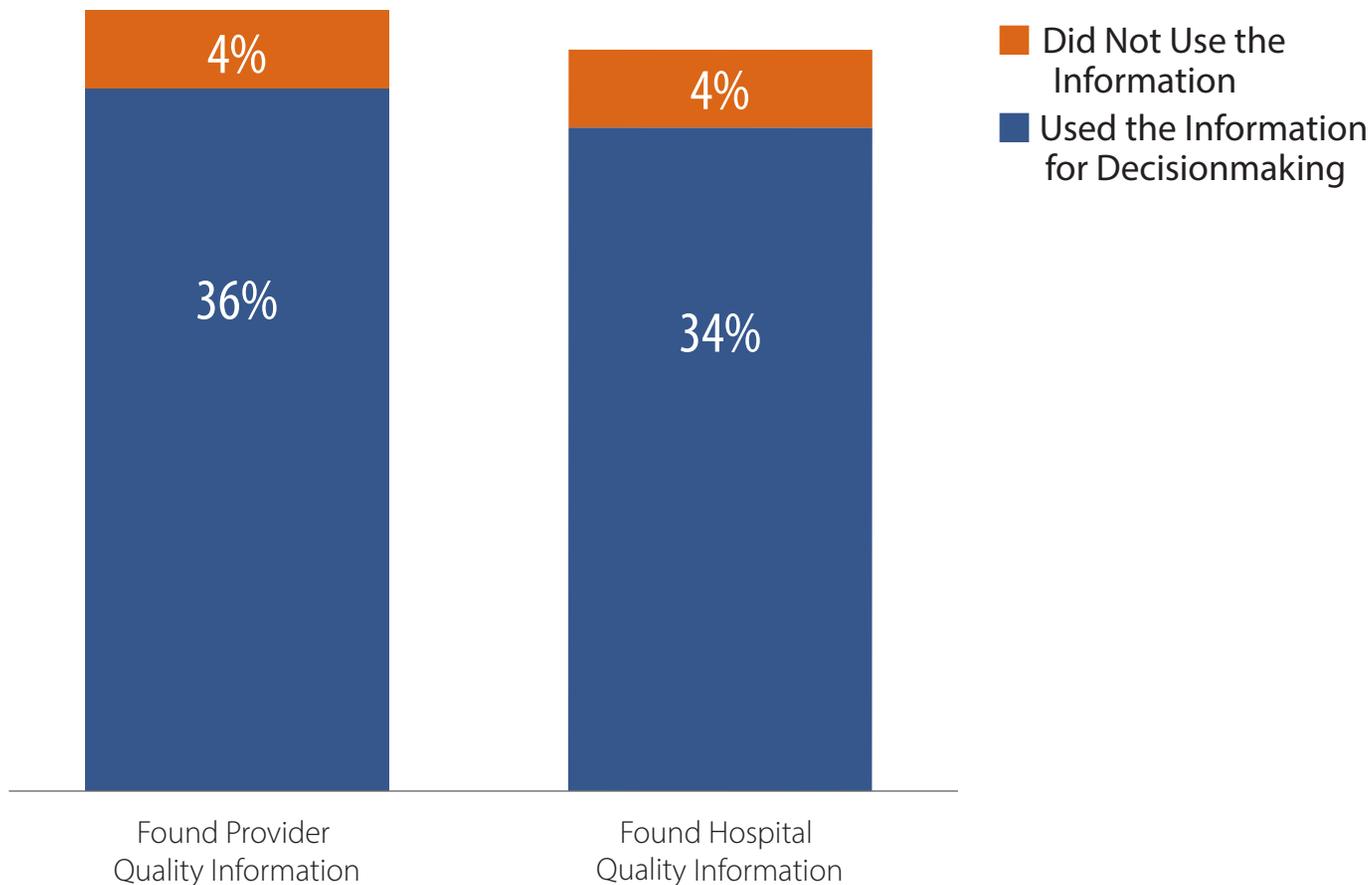
Notes: Based on a statewide survey of 2,539 women who gave birth in California hospitals in 2016. A labor doula is a nonclinician health worker who offers continuous physical, emotional, and informational support to women around the time of birth. Due to evidence of overcounting the doula role among some non-English speakers, we limited our analyses of doula support to women who primarily speak English at home. "Would definitely not want this" and "not sure" not shown. Medi-Cal respondents were identified based upon a Medi-Cal record of a paid 2016 childbirth claim. Privately insured respondents self-identified in the survey. Not all eligible respondents answered each item; 1,309 women answered these questions. $p < .01$ for differences by race/ethnicity and by payer.

Sources: *Listening to Mothers in California*, National Partnership for Women & Families, 2018; California Department of Health Care Services MIS/DSS Data Warehouse.

Finding and Using Information About Maternal Care Quality California, 2016

Maternity Care in California Quality

In a statewide survey, many expectant women reported seeking and finding information about the quality of prospective maternity care providers (40%) and prospective hospitals for giving birth (38%). Nearly all women who found this information reported using it to decide which providers and hospitals to use.



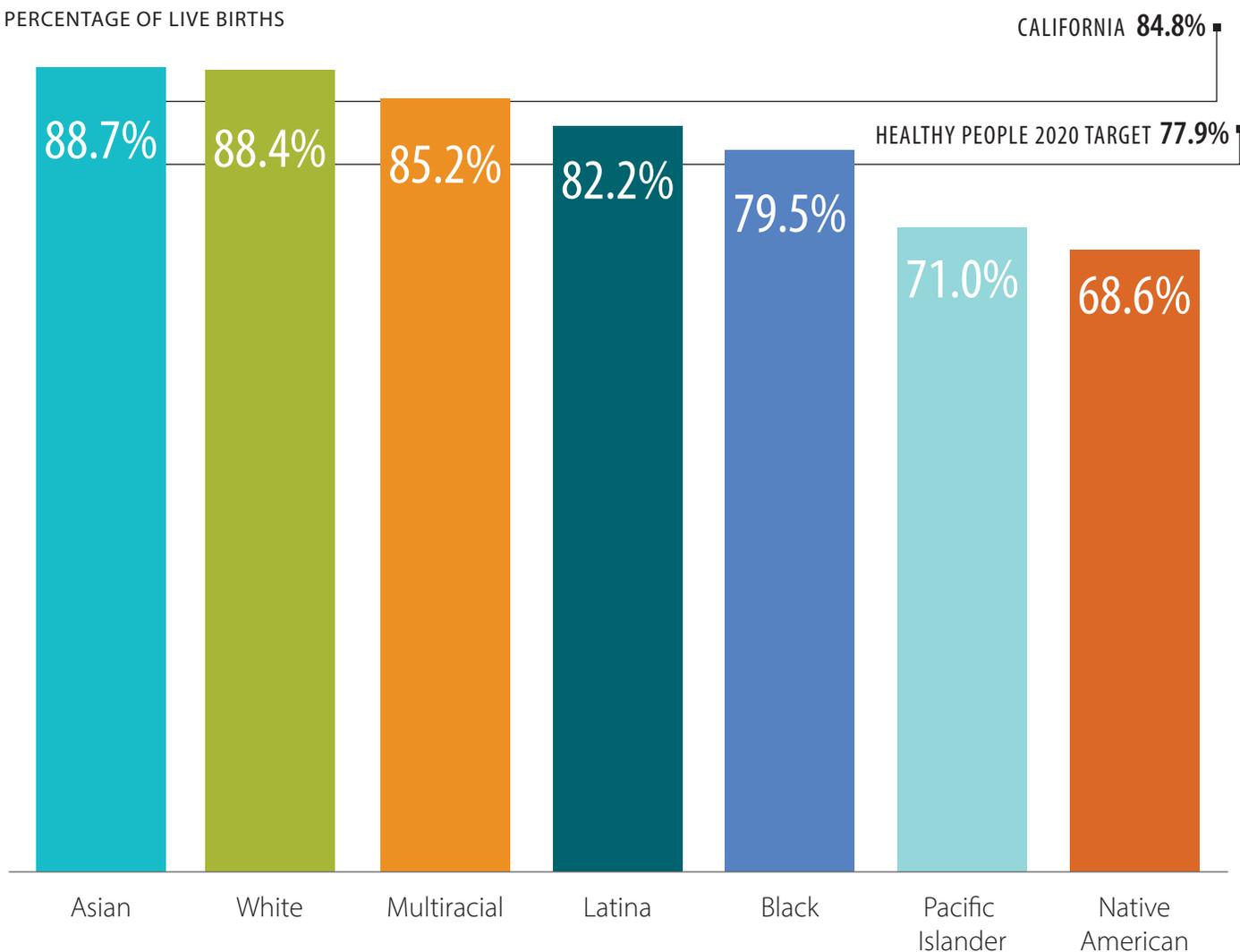
Notes: Based on a statewide survey of 2,539 women who gave birth in California hospitals in 2016. "Not sure" and "Did not find any information" not shown. Not all eligible respondents answered each item; 1,309 women answered these questions.

Source: *Listening to Mothers in California*, National Partnership for Women & Families, 2018.

Initiated Prenatal Care in First Trimester, by Race/Ethnicity

California, 2018

PERCENTAGE OF LIVE BIRTHS



Notes: Data source uses *Hispanic or Latino*, *Black or African American*, *Native Hawaiian or Other Pacific Islander*, *American Indian or Alaska Native*, and *More than one race*. The US government's Healthy People 2020 initiative establishes science-based 10-year national objectives for improving the health of all Americans (see www.healthypeople.gov). Source: "Nativity Information: Live Births" (2007 –2018), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

Maternity Care in California

Quality

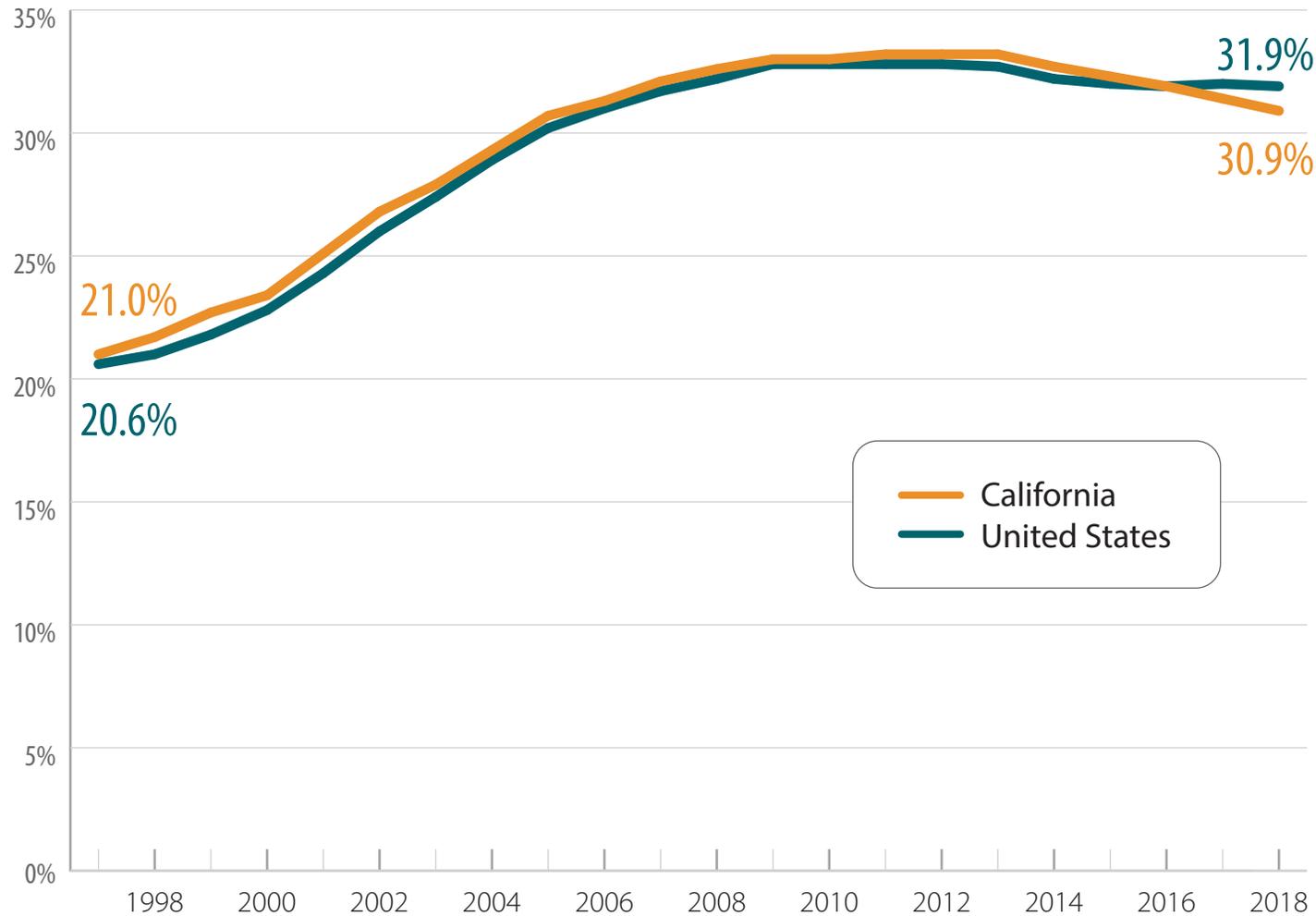
Prenatal care has been shown to improve pregnancy outcomes, such as improved birth rate and decreased risk of preterm delivery.* Initiating prenatal care in the first trimester is considered a marker of high-quality care. In California, pregnant women initiating prenatal care in the first trimester varied by race/ethnicity, from 69% for Native American women to 89% for Asian women.

*Prenatal — First Trimester Care Access (PDF), Health Resources and Services Administration, April 2011.

Total Cesarean Deliveries

California vs. United States, 1997 to 2018

PERCENTAGE OF LIVE BIRTHS



Maternity Care in California

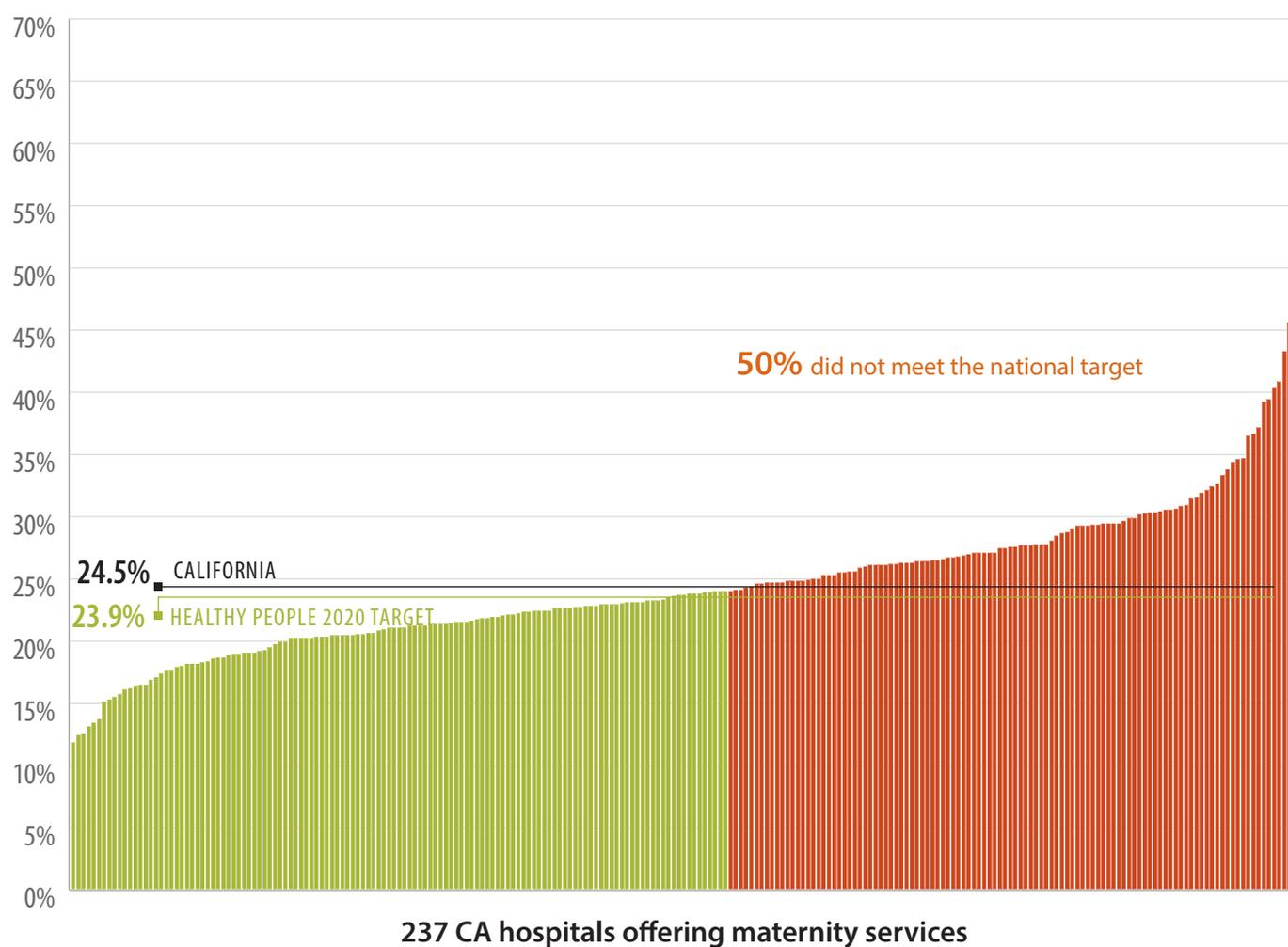
Quality

In 1997, only one in five births was delivered by cesarean section in California and the United States. The total rate of cesarean delivery increased by over 50% by 2009 to represent one in three births. Cesarean deliveries are associated with higher rates of maternal complications, longer recovery times, and higher admission rates to neonatal intensive care units.*

Source: "Nativity Information: Live Births" (1995 - 2002, 2003 - 2006, and 2007 - 2018), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

**"Promoting Vaginal Birth," California Maternal Quality Care Collaborative.

Low-Risk, First-Birth Cesarean Rate, by Hospital California, 2017



Notes: Each line represents one of California's 237 hospitals that offer maternity services. *Low-risk, first-birth cesarean birth rate* represents the percentage of cesarean deliveries among first-time mothers delivering a single baby in a head-down position after 37 weeks gestational age. The technical term for this measure is the nulliparous, term, singleton, vertex (NTSV) cesarean birth rate. The US government's Healthy People 2020 initiative establishes science-based 10-year national objectives for improving the health of all Americans (see www.healthypeople.gov).

Source: Custom data request, California Maternal Quality Care Collaborative, received June 14, 2019.

Maternity Care in California

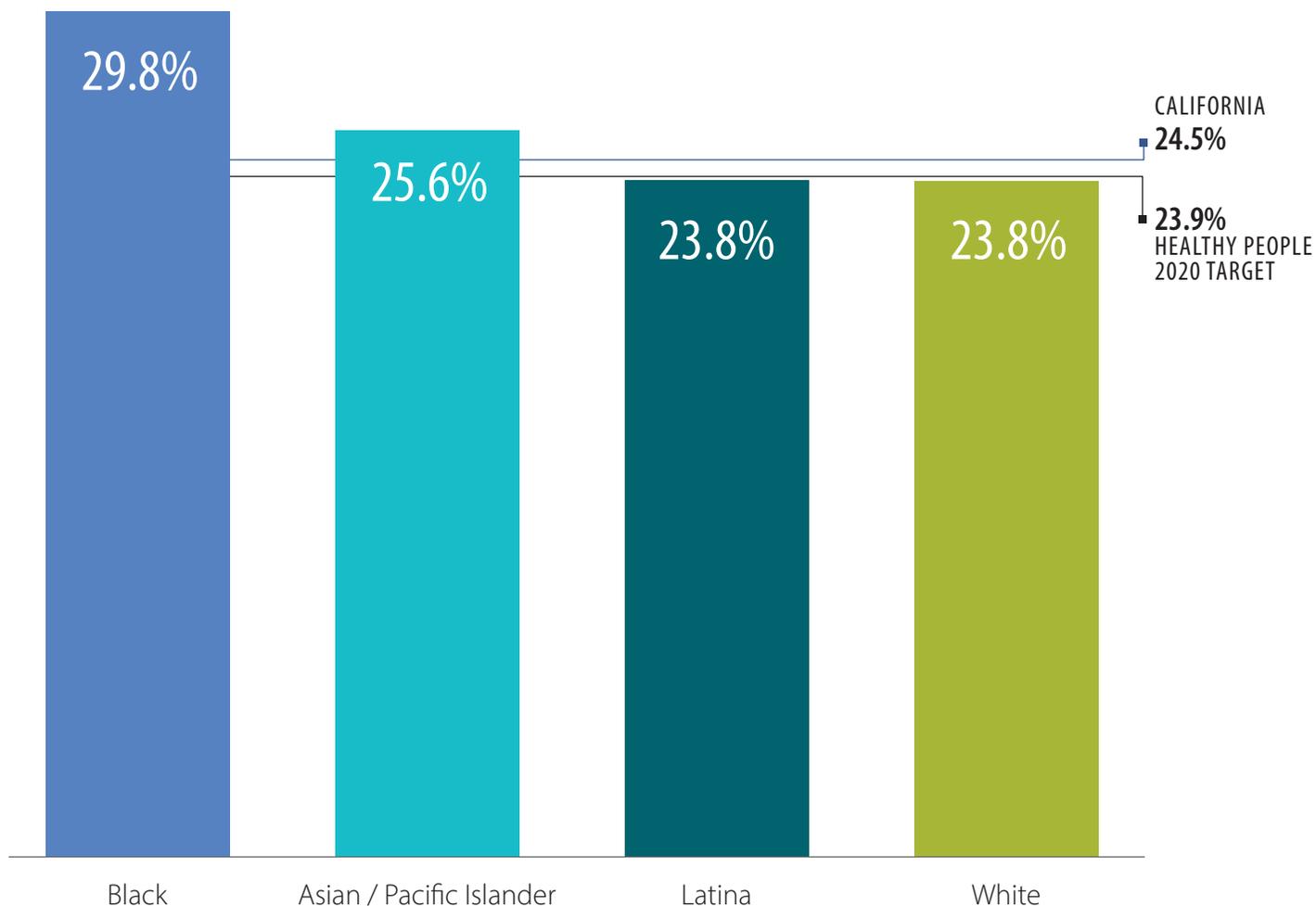
Quality

In 2017, 24.5% (37,000) of in-hospital births were low-risk, first-birth cesareans (c-sections), a decline from 27.3% in 2013 (not shown). Hospital rates ranged from 12% to 71% of low-risk births delivered by c-section. Half of California hospitals have rates below the Healthy People 2020 goal of 23.9%. Women with low-risk pregnancies should avoid c-sections when possible to reduce post-surgical complications and to improve overall health outcomes for the mother and baby.*

* "Promoting Vaginal Birth," California Maternal Quality Care Collaborative, www.cmqcc.org/qi-initiatives/promoting-vaginal-birth.

Low-Risk, First-Birth Cesarean Birth Rate, by Race/Ethnicity California, 2017

PERCENTAGE OF LIVE BIRTHS



Maternity Care in California

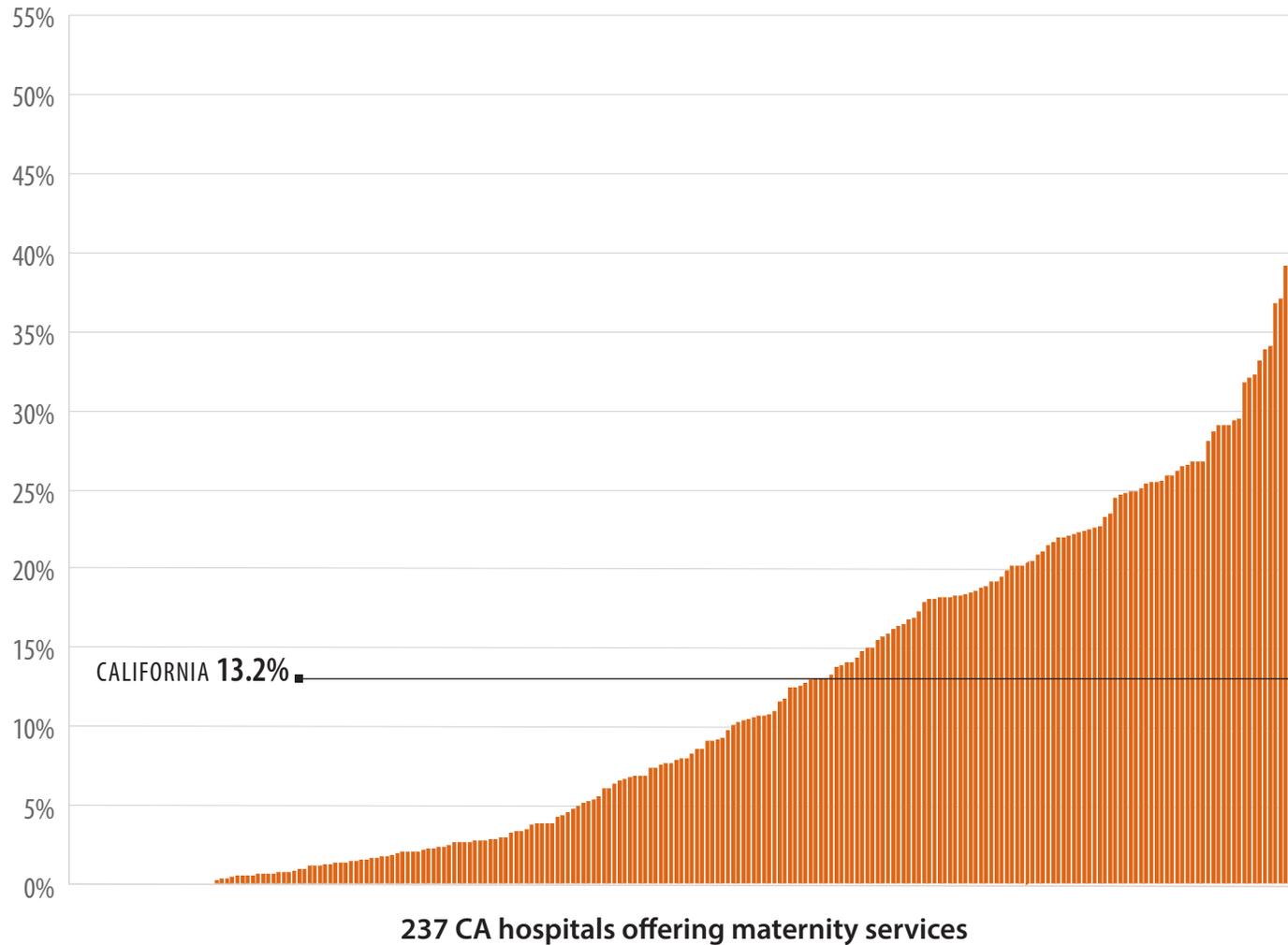
Quality

Low-risk, first-birth cesarean rates vary by race/ethnicity, with Black women experiencing the highest rate of 29.8%, six percentage points higher than the national Healthy People 2020 goal of 23.9%. California has successfully achieved this goal for Latina and white women.

Notes: Low-risk, first birth cesarean birth rate represents the percentage of cesarean deliveries among first-time mothers delivering a single baby in a head-down position after 37 weeks gestational age. The technical term for this measure is the nulliparous, term, singleton, vertex (NTSV) cesarean birth rate. The US government's Healthy People 2020 initiative establishes science-based 10-year national objectives for improving the health of all Americans (see www.healthypeople.gov).

Source: Custom data request, California Maternal Quality Care Collaborative, received November 18, 2018.

Vaginal Birth After Cesarean Delivery Rate, by Hospital California, 2017



Maternity Care in California Quality

For many women, vaginal births after cesarean deliveries (VBACs) are safe and often preferable to repeat cesarean sections (c-sections). The risk of serious complications increases with each subsequent c-section.* In 2017, only 10,600 women, or 13%, who had previously had a cesarean delivery gave birth vaginally. This rate improved from 11% in 2014 (not shown).

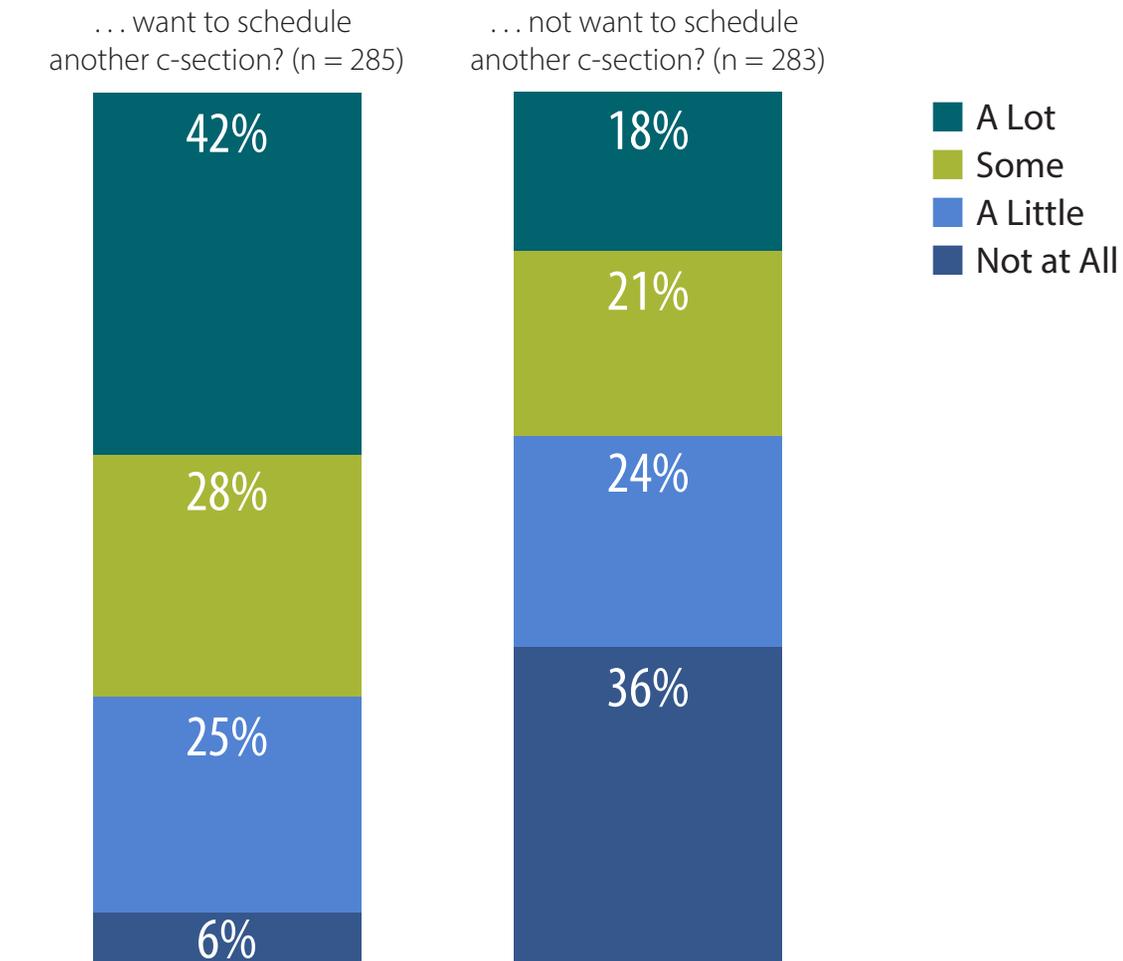
Notes: Each line represents one of California's 237 hospitals that offer maternity services. The vaginal birth after cesarean (VBAC) rate measures the number of women achieving a vaginal delivery among all women with a prior cesarean section. There were 27 hospitals that had zero VBACs.

Source: Custom data request, California Maternal Quality Care Collaborative, received June 14, 2019.

*"Research and Evidence," Childbirth Connection.

Discussion with Provider About Repeat Cesarean California, 2016

How much did you and your maternity care provider talk about the reasons you might...



Notes: Based on a statewide survey of 2,539 women who gave birth in California hospitals in 2016. Not all eligible respondents answered each item. Segments may not add to 100% due to rounding. For differences across groups in patterns of discussion “for” versus “against” a repeat cesarean, $p < .01$.

Source: *Listening to Mothers in California*, National Partnership for Women & Families, 2018.

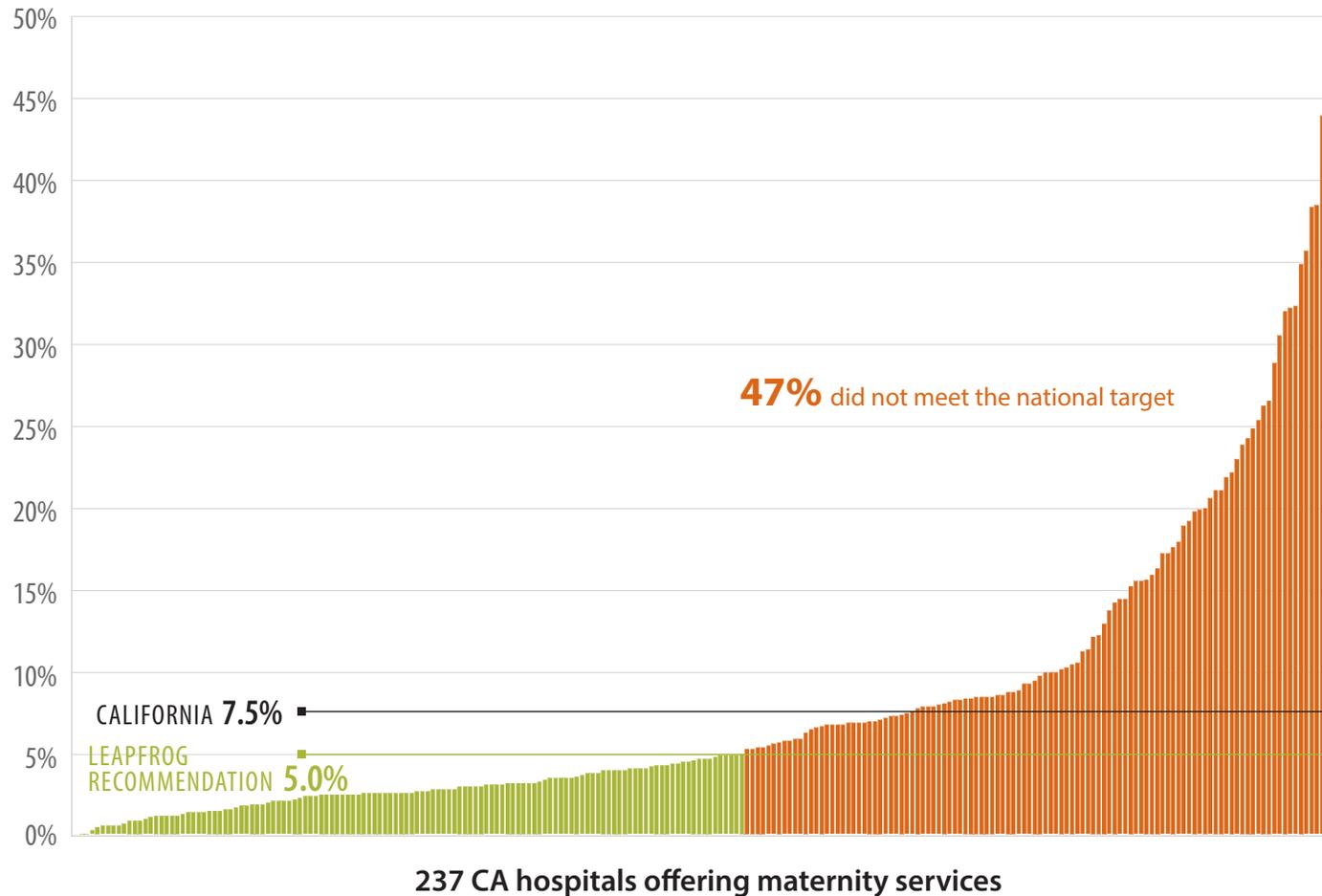
Maternity Care in California

Quality

Due to increased risks of complications for both mothers and babies from repeat cesarean deliveries, the American College of Gynecologists and Obstetricians supports offering a vaginal birth after cesarean (VBAC) to nearly all pregnant women who have had one or two past cesareans.* Despite this guidance, surveyed women reported that discussions with providers were more likely to focus on reasons to schedule another c-section.

*Practice Bulletin No. 184: Vaginal Birth After Cesarean Delivery, *Obstetrics and Gynecology* 130, no. 5 (Nov. 2017): e217–33, doi:10.1097/AOG.0000000000002398.

Episiotomy Rate, by Hospital California, 2017



Maternity Care in California

Quality

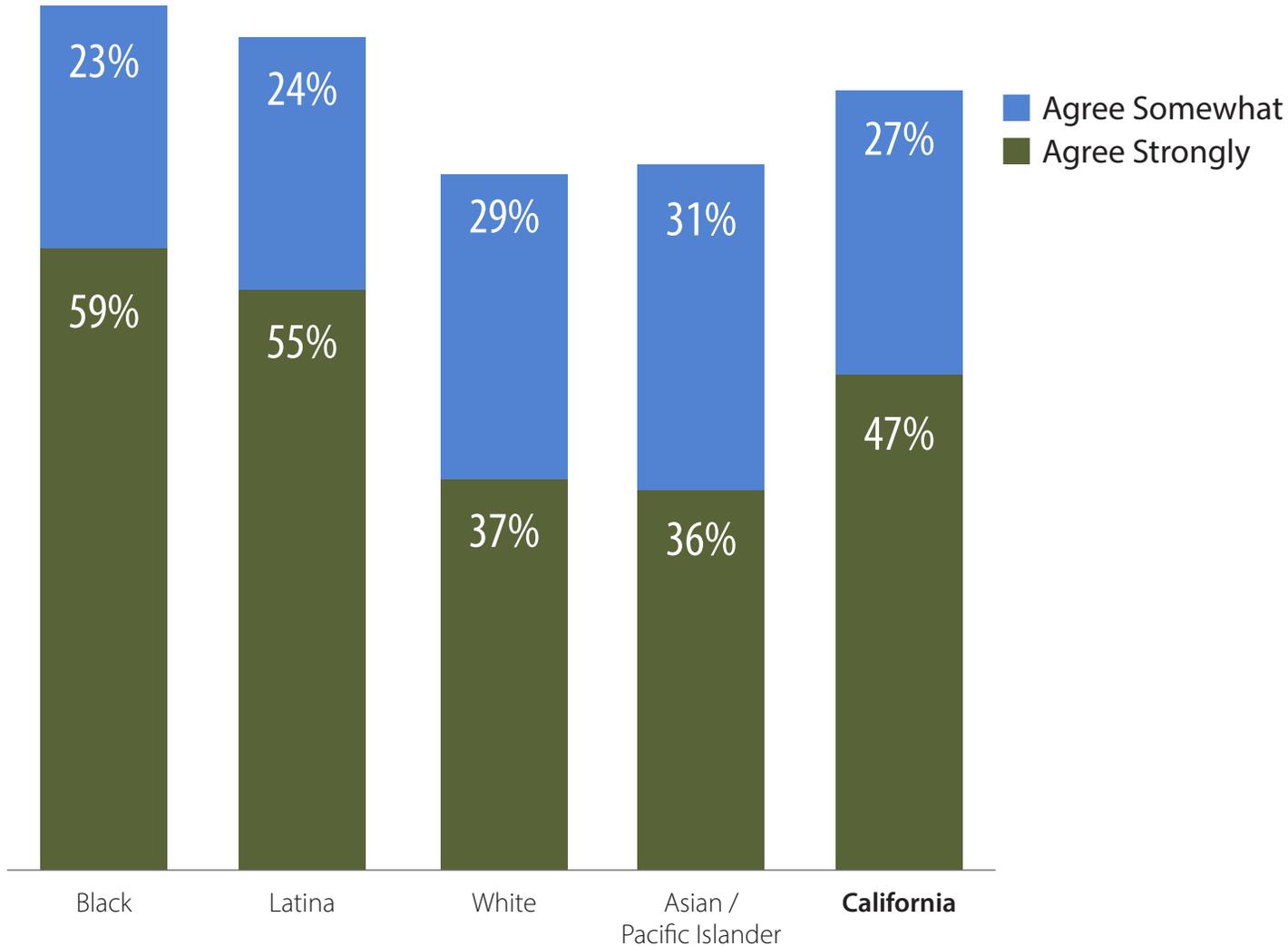
Despite recommendations from the American Congress of Obstetricians and Gynecologists to limit the use of episiotomies, in which a surgical cut is made in the vaginal opening to make more space for birth, 7.5% of women giving birth had an episiotomy in 2017, down from 11.7% in 2014 (not shown). About half (47%) of hospitals had rates higher than the Leapfrog recommendation of 5%.

Note: Each line represents one of California's 237 hospitals that offer maternity services.

Sources: Custom data request, California Maternal Quality Care Collaborative, received June 14, 2019; and *Factsheet: Maternity Care*, Leapfrog Hospital Survey, April 1, 2019.

Beliefs About Childbirth and Medical Interference by Race/Ethnicity, California, 2016

How much do you agree or disagree with this statement: *Childbirth is a process that should not be interfered with unless medical necessary.*



Notes: Based on a statewide survey of 2,539 women who gave birth in California hospitals in 2016. Not all eligible respondents answered each item; 2,451 women answered this question.

Source: *Listening to Mothers in California*, National Partnership for Women & Families, 2018.

Maternity Care in California

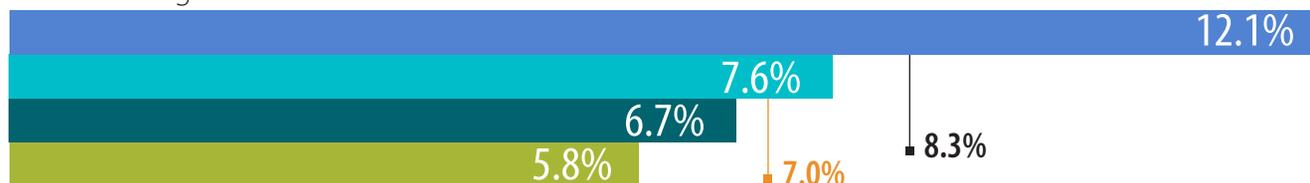
Quality

Nearly half of California women surveyed agreed strongly that childbirth is a process that should not be interfered with unless medically necessary, and an additional 27% agreed somewhat with this idea. Black and Latina women were more likely than Asian / Pacific Islander and white women to agree that birth is a process that should not be interfered with unless medically necessary.

Childbirth-Related Quality Measures, by Race/Ethnicity

California, 2018

Low Birthweight Births



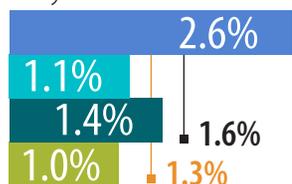
Very Low Birthweight Births



Preterm Birth Rates



Very Preterm Birth Rates



Note: *Low birthweight* is less than 2,500 grams; *very low birthweight* is less than 1,500 grams; *preterm* is less than 37 completed weeks of gestation; *very preterm* is less than 32 completed weeks of gestation. Source uses *Black or African American* and *Hispanic or Latino*.

Source: "Natality Information: Live Births" (2007–2018), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

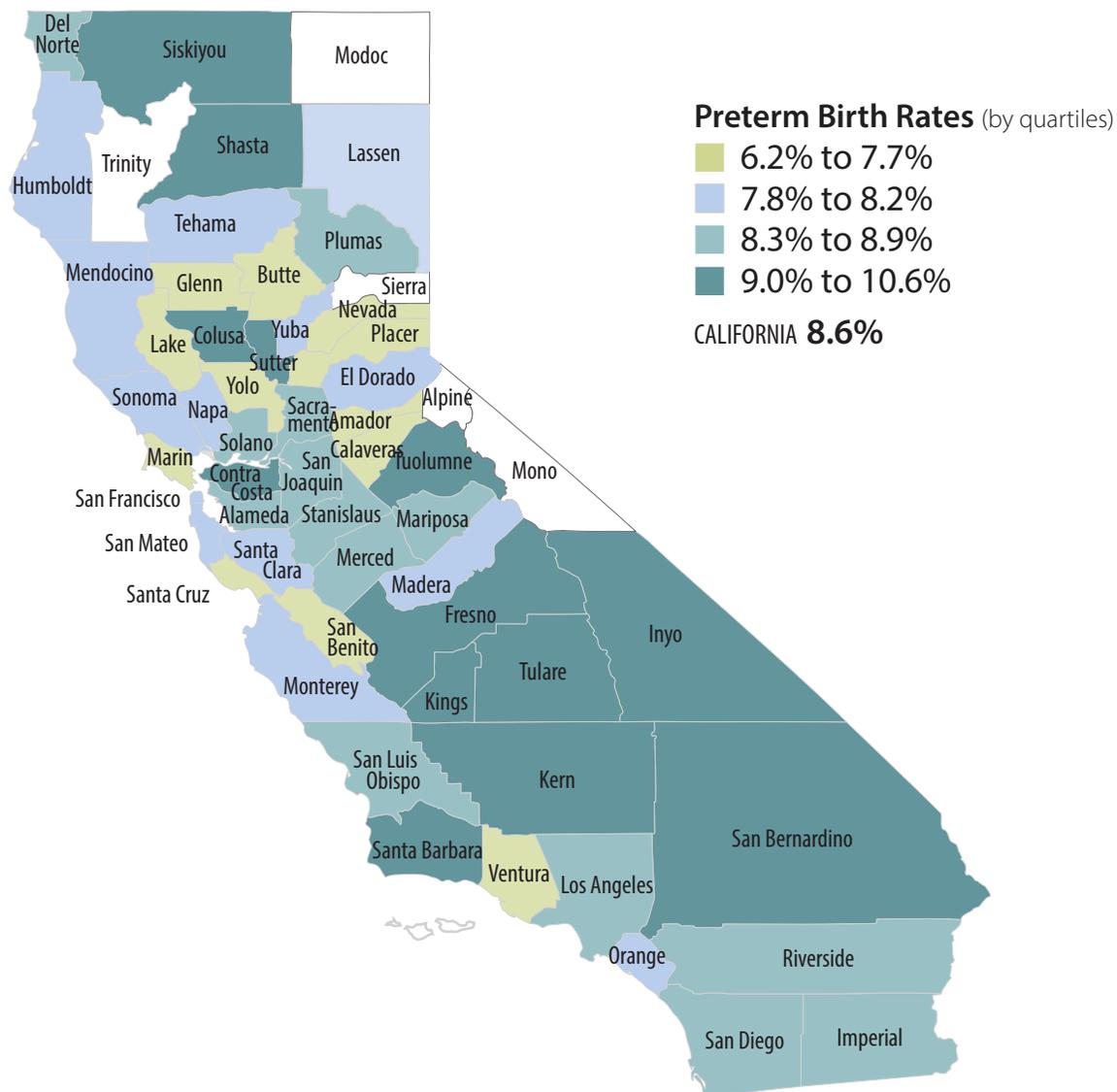
Maternity Care in California

Quality

Low birthweight babies and those born preterm are at increased risk for lifelong health problems or dying before they reach one year. California's rates of low birthweight births and preterm births were lower than the US rates. In both cases, Black infants fared the worst: They had significantly higher rates of being born at a low birthweight or preterm than other racial/ethnic groups.

Preterm Birth Rates, by County

California, 2016



Maternity Care in California

Quality

Babies born preterm have a higher risk of death and serious disability. Those who survive may have lifelong health problems, including breathing problems, vision problems, cerebral palsy, and intellectual delays.* Preterm birth rates varied widely across California counties from a low of 6% in Calaveras County to a high of almost 11% in Kings County.

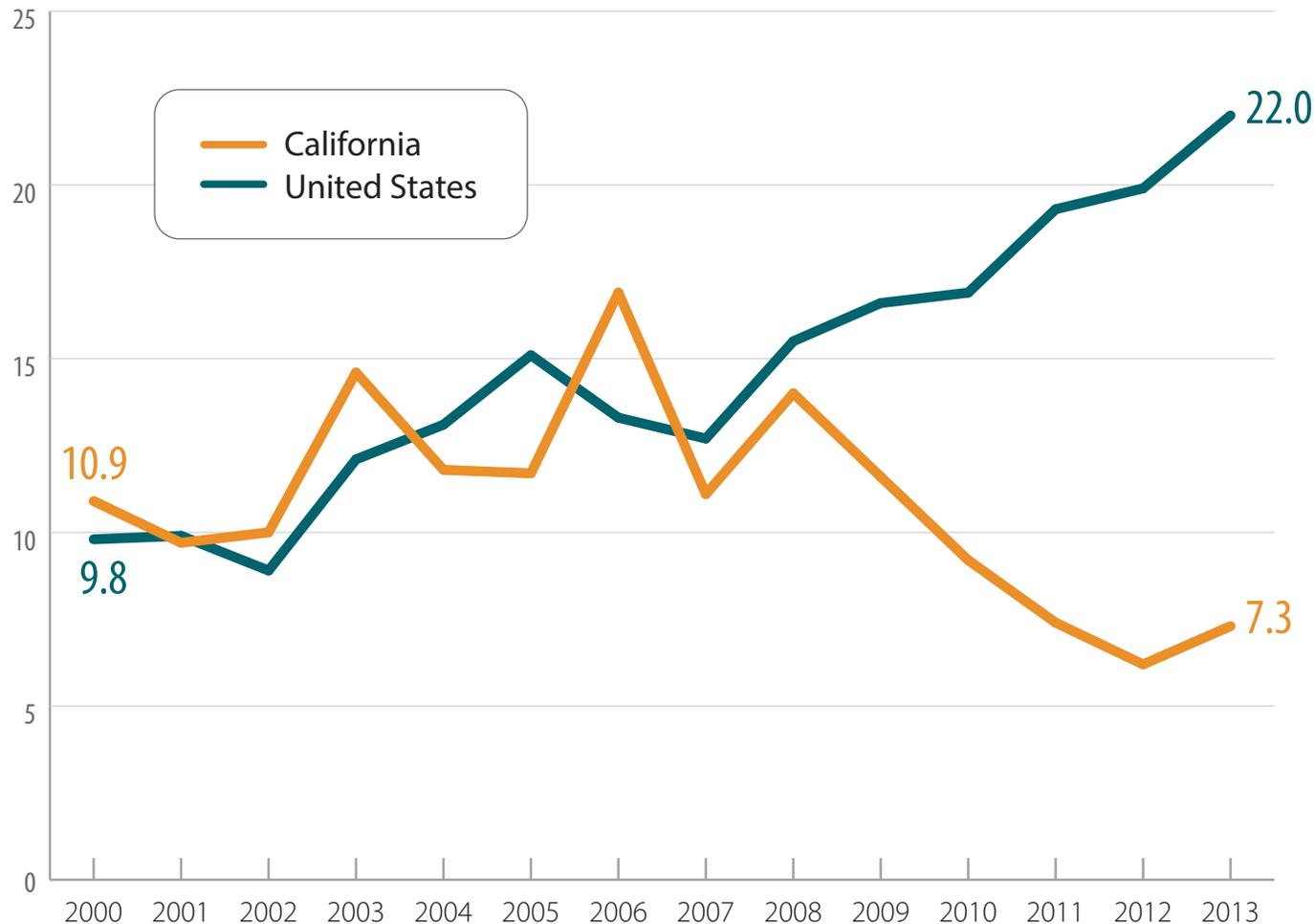
Notes: Maternal county of residence. *Preterm* is less than 37 completed weeks of gestation. Data include births with gestational age of 17 to 47 weeks. Rates are not shown for counties with fewer than 10 preterm births.

Source: "California Open Data Portal," California Dept. of Public Health, n.d.

*"Preterm Birth," Centers for Disease Control and Prevention, last reviewed July 23, 2019.

Maternal Mortality Rate

California vs. United States, 2000 to 2013



Notes: *Maternal mortality* refers to deaths 42 days or less postpartum. The National Center for Health Statistics has not published official US maternal mortality rates since 2007; the 2008–13 rates were calculated by the California Dept. of Public Health through the CDC WONDER online database. The US government’s Healthy People 2020 initiative establishes science-based 10-year national objectives for improving the health of all Americans (see www.healthypeople.gov).

Source: *The California Pregnancy-Associated Mortality Review: Report from 2002 to 2007 Maternal Death Reviews (PDF)*, California Dept. of Public Health, Spring 2018.

Maternity Care in California

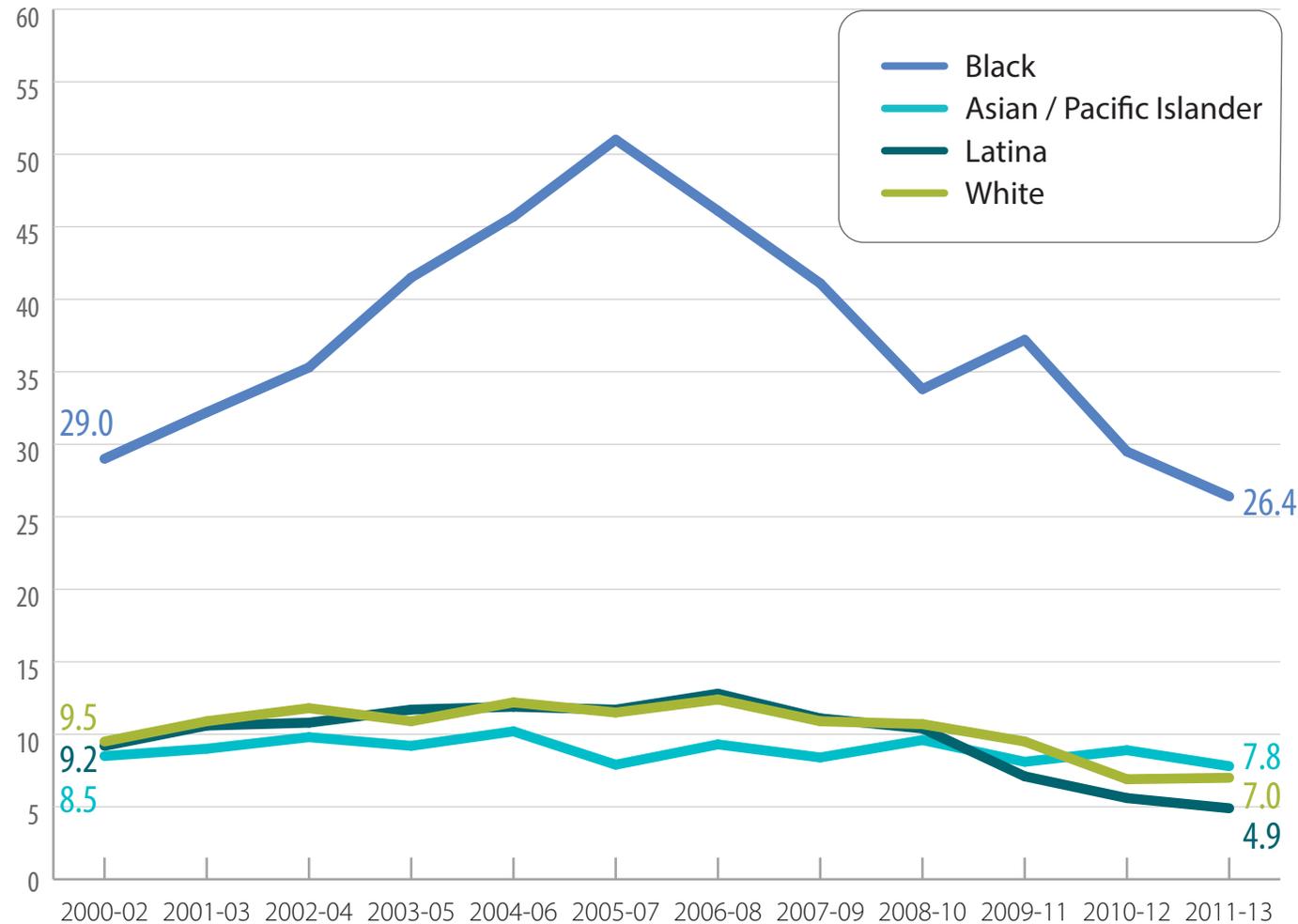
Quality

California’s maternal mortality rate (MMR) has declined since 2008, while the national rate has increased. Since 2010, California’s MMR has been below the Healthy People 2020 target of 11.4.

Maternal Mortality, by Race/Ethnicity

California, 2000 to 2013

MATERNAL DEATHS PER 100,000 LIVE BIRTHS



Note: *Maternal mortality* refers to deaths 42 days or less postpartum. Three-year moving average is used. Source uses *African American and Hispanic*.
 Sources: *The California Pregnancy-Associated Mortality Review: Report from 2002 to 2007 Maternal Death Reviews* (PDF). California Dept. of Public Health, Spring 2018.

Maternity Care in California

Quality

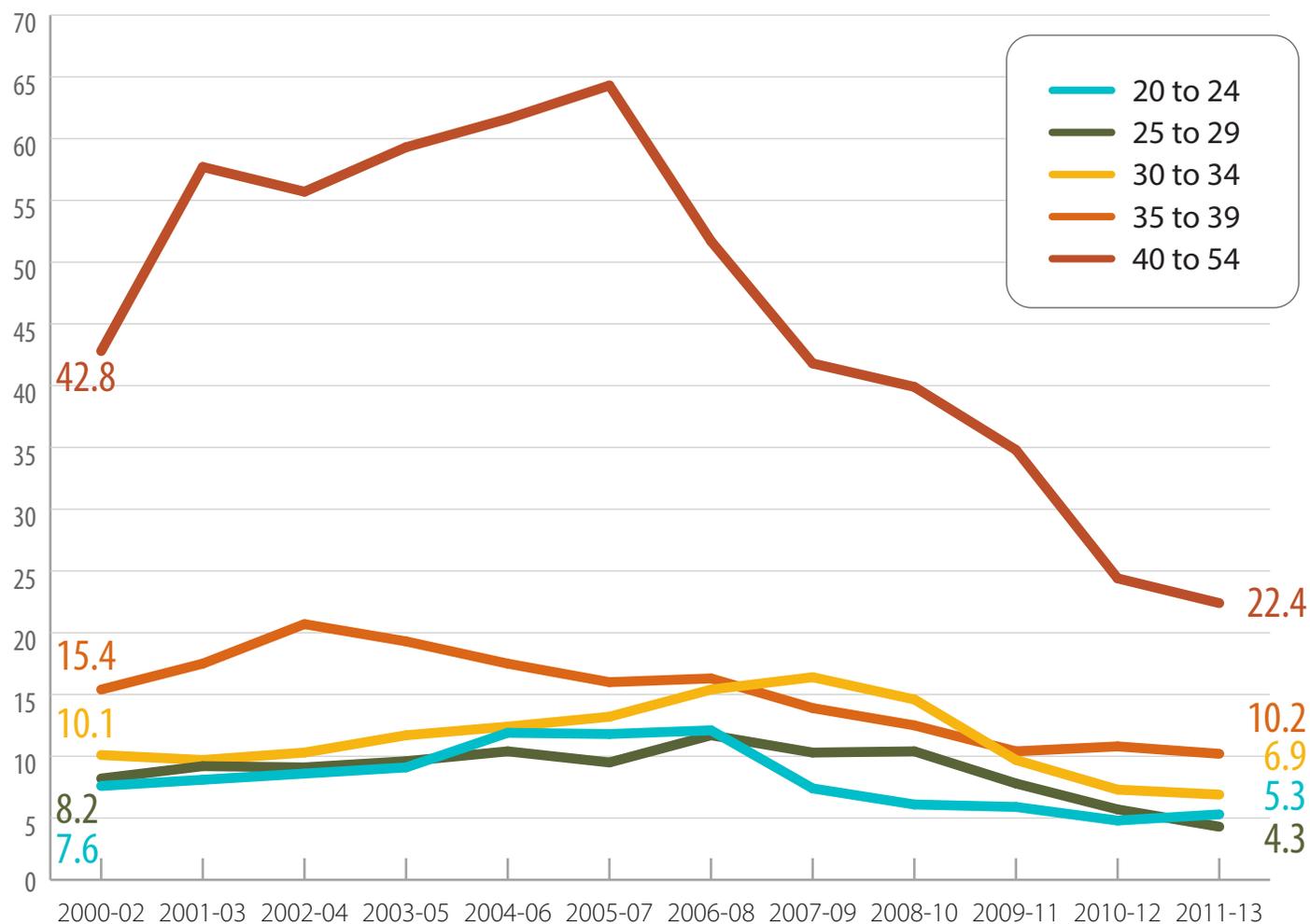
Throughout the 21st century, there have been significant racial disparities in the maternal mortality rate in California. During this period, Black women's maternal mortality rates have been as much as four times higher than for white women. Recent studies have shown that Black women continue to have significantly higher maternal mortality rates even when age, education, and insurance coverage are considered.*

*"Birth Equity," California Maternal Quality Care Collaborative, accessed July 15, 2019. www.cmqcc.org.

Maternal Mortality, by Age

California, 2000 to 2013

MATERNAL DEATHS PER 100,000 LIVE BIRTHS



Notes: Maternal mortality refers to deaths 42 days or less postpartum. Three-year moving average is used.

Source: *The California Pregnancy-Associated Mortality Review: Report from 2002 to 2007 Maternal Death Reviews (PDF)*, California Dept. of Public Health, Spring 2018.

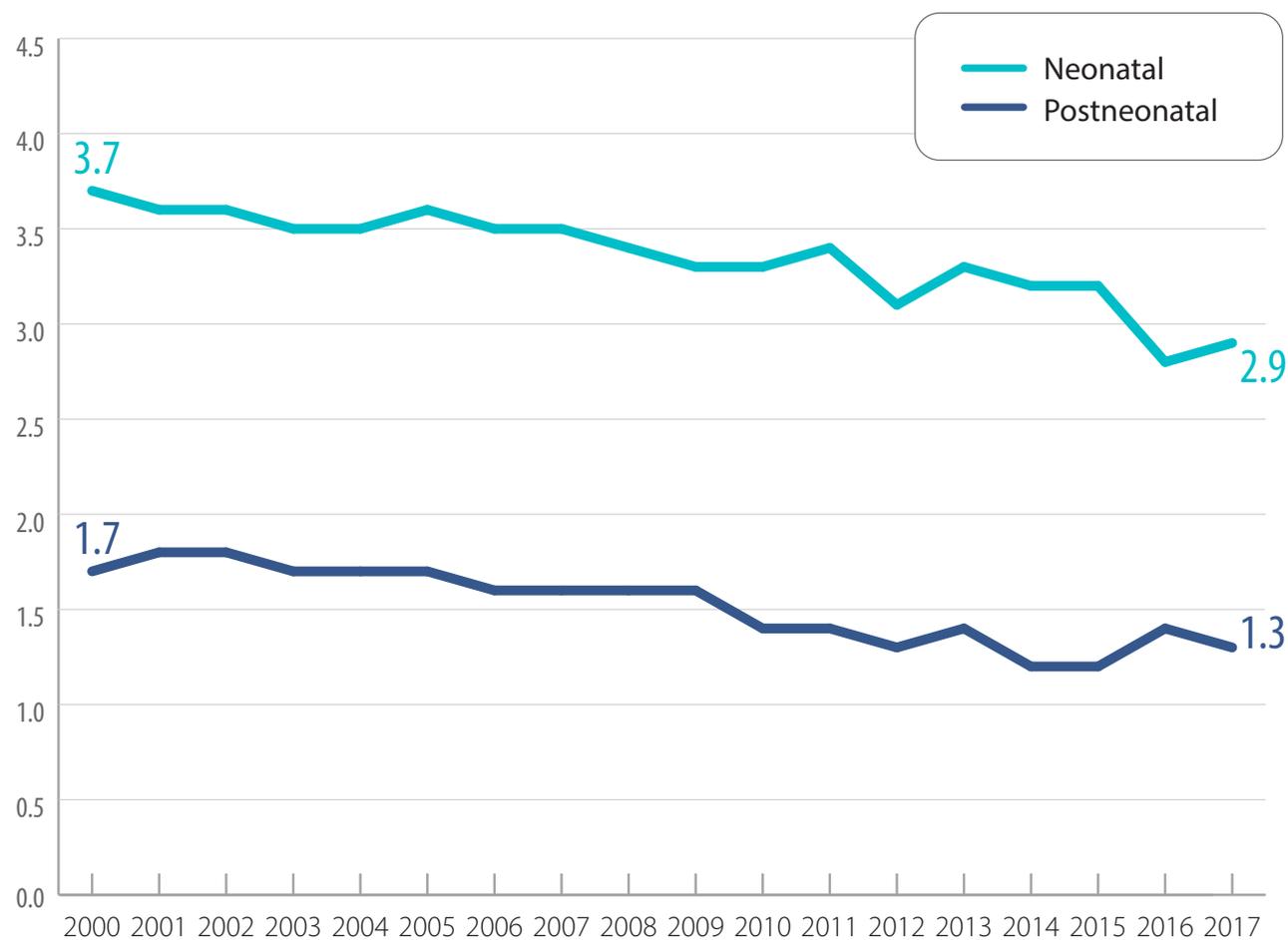
Maternity Care in California

Quality

From 2000 to 2013, California's maternal mortality rate (MMR) declined for all groups. The drop was greatest for mothers age 40 to 54, whose mortality rate peaked at 64.3 deaths per 100,000 live births in the 2005–07 period, and dropped to 22.4 in 2011–13. Mothers in this age group, who represented only 4% of mothers, still had an MMR that is twice that of any other age group.

Infant Mortality Trend, Neonatal and Postneonatal California, 2000 to 2017

INFANT DEATHS PER 1,000 LIVE BIRTHS



Notes: Neonatal mortality is deaths less than 28 days from birth. Postneonatal mortality is deaths 28 days to 1 year.

Source: "Linked Birth/Infant Death Records" (1999-2002, 2003-2006, and 2007-2017), CDC WONDER Database, Centers for Disease Control and Prevention (CDC), n.d.

Maternity Care in California

Quality

California's overall infant mortality rate of 4.2 in 2017 was lower than the US rate of 5.8 (not shown). From 2000 to 2017, California's overall infant mortality rate declined 23%. Over this period, the neonatal mortality rate, which is deaths less than 28 days from birth, declined 21%, while deaths from 28 days until one year (postneonatal deaths) declined 26%.

Infant Mortality, by Race/Ethnicity

California, 2016

INFANT DEATHS PER 1,000 LIVE BIRTHS



Notes: *Infant* is under one year. Data source uses *African American*, *Hispanic*, and *Multi-race*. In 2016, there were fewer than 10 Native American infant deaths, and 150 infant deaths where race/ethnicity was unstated or unknown.

Source: Custom data request, California Dept. of Public Health, received June 24, 2019.

Maternity Care in California

Quality

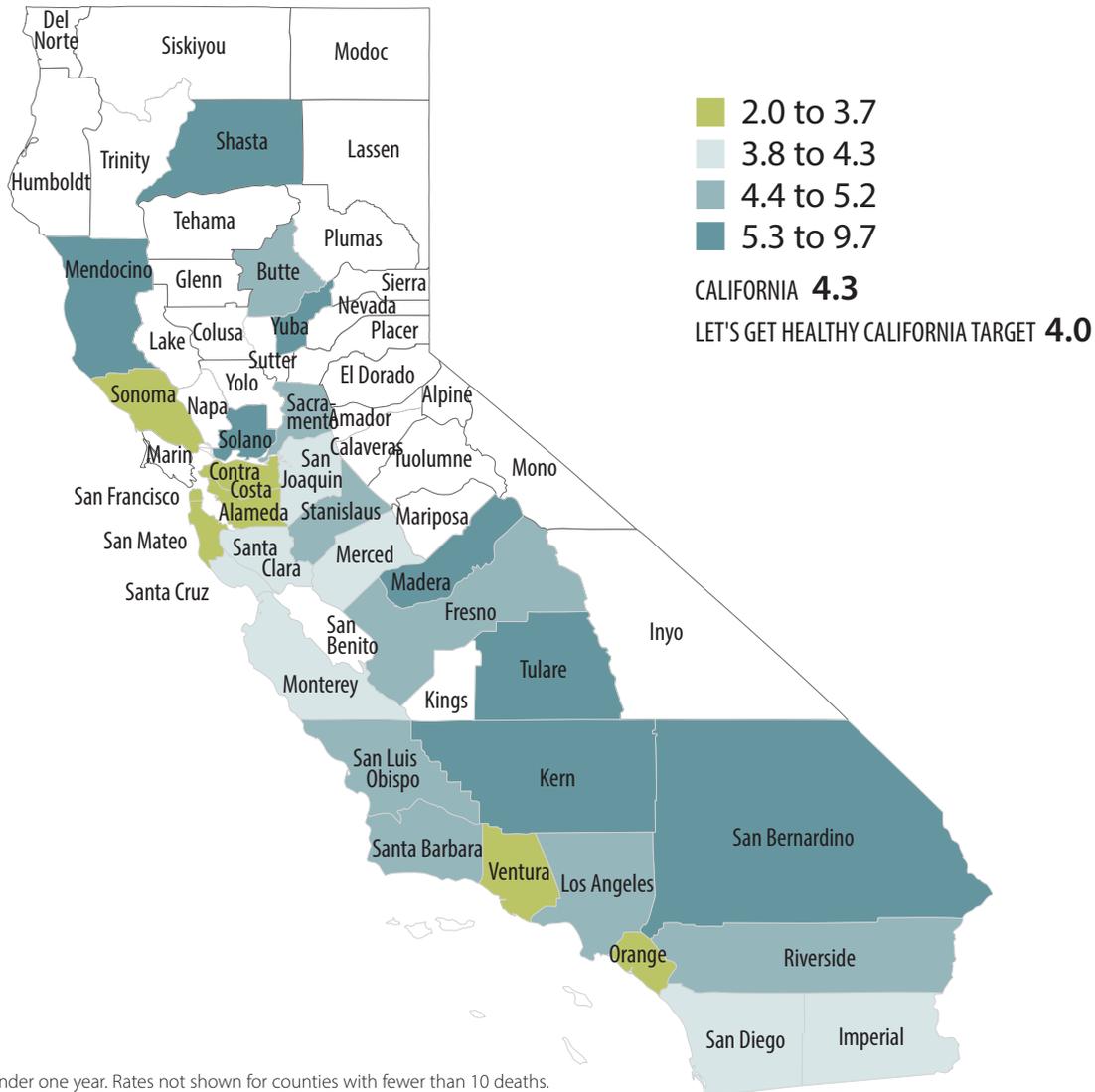
Significant racial and ethnic disparities persisted in California's infant mortality rate in 2016: Black infants died at rates that were double those of Asian, multiracial, and white infants. A Centers for Disease Control and Prevention analysis found that the elevated Black infant mortality rate compared to the white rate was due largely to the higher percentage of preterm births among Black infants.*

*Marian F. MacDorman and T. J. Mathews, "Understanding Racial and Ethnic Disparities in U.S. Infant Mortality Rates (PDF)," NCHS Data Brief, no 74., Centers for Disease Control and Prevention, September 2011.

Infant Mortality, by County

California, 2016

INFANT DEATHS PER 1,000 LIVE BIRTHS



Maternity Care in California

Quality

In 2016, California's infant mortality rate varied across the state, from a low of 2.0 infant deaths per 1,000 live births in San Francisco County to a high of 9.7 in Mendocino County.

Notes: *Infant* is under one year. Rates not shown for counties with fewer than 10 deaths.

Source: Custom data request, California Dept. of Public Health, received June 24, 2019.

Exclusive In-Hospital Breastfeeding, by Race/Ethnicity California, 2018

PERCENTAGE

White



Multiracial



Native American



Pacific Islander



Latina



Asian



Black



70.4%
CALIFORNIA

Notes: *Exclusive in-hospital breastfeeding* represents all feedings from birth to time of specimen collection, usually 24 to 48 hours since birth and represents infants fed "Only Human Milk." Excludes data for infants in NICU at time of specimen collection. Data source uses *African American, Hispanic, American Indian and Multiple Race*.

Source: *California In-Hospital Breastfeeding as Indicated on the Newborn Screening Test Form, Statewide and Maternal County of Residence by Race/Ethnicity: 2018*, California Dept. of Public Health, n.d.

Maternity Care in California

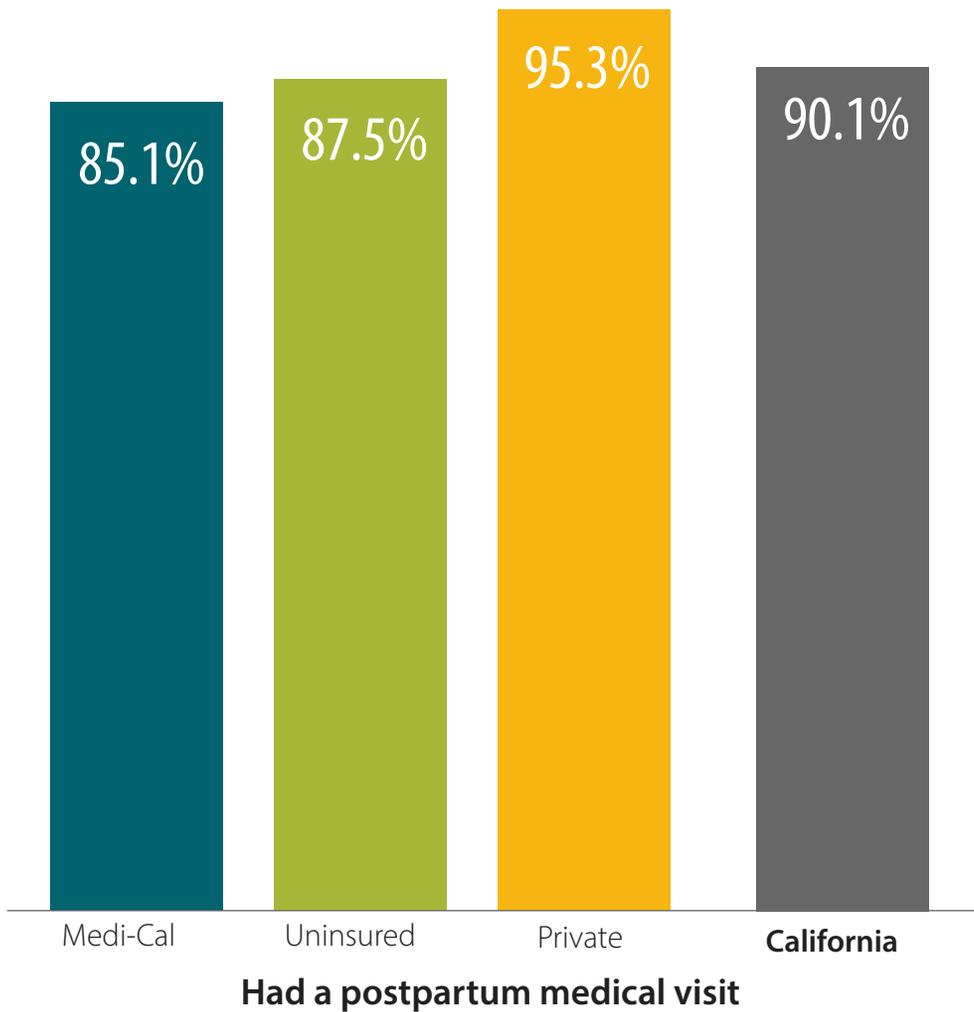
Quality

Breastfeeding is beneficial to both infants and mothers. Breastfed infants have reduced risks of diseases and infections, and mothers who breastfeed have lower risks of high blood pressure and ovarian and breast cancer.* In California, rates of breastfeeding varied among racial and ethnic groups, with 8 of 10 white infants exclusively breastfed in the hospital compared to 6 of 10 Black infants.

*"Breastfeeding: Why It Matters," Centers for Disease Control and Prevention, last reviewed August 1, 2019.

Postpartum Care, by Health Insurance

California, 2016 and 2017



Notes: Mother's self-reported prenatal health insurance. Data from population-based survey of 13,062 California resident women with a live birth; 2016 and 2017 data were combined.
Sources: Custom data request, Maternal and Infant Health Assessment (MIHA), California Dept. of Public Health (CDPH), received June 19, 2019.

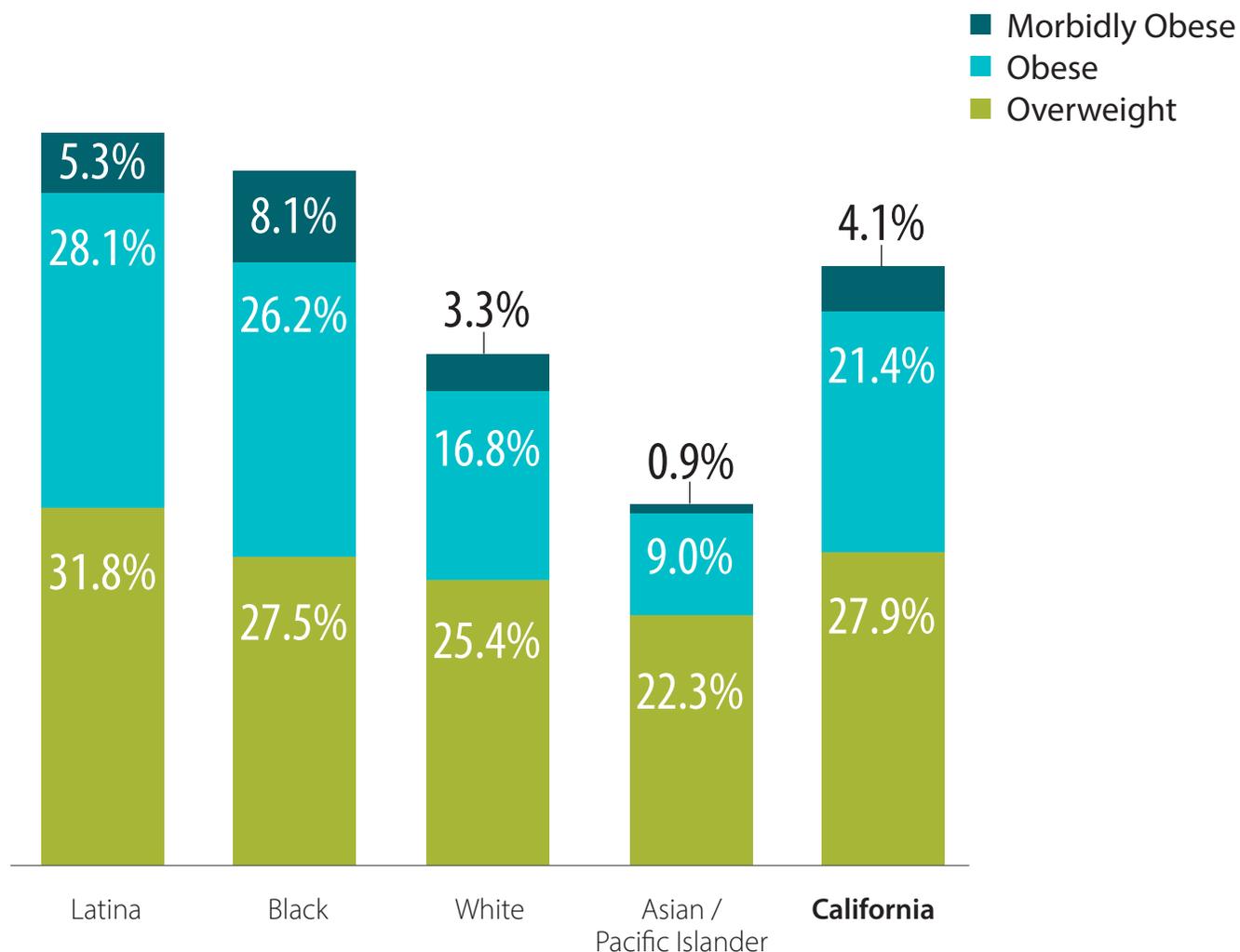
Maternity Care in California

Quality

Postpartum care can help providers identify medical complications, as well as maternal mental health conditions.* In the two-year period of 2016 and 2017, 90% of California mothers had a postpartum medical visit. Mothers with Medi-Cal were less likely to have a postpartum visit than mothers with private insurance.

*Maternal Child and Adolescent Health Statewide Directors' Meeting: "Maternal Mental Health in California," CDPH, October 7, 2015.

Maternal Prepregnancy Overweight and Obesity by Race/Ethnicity, California, 2017



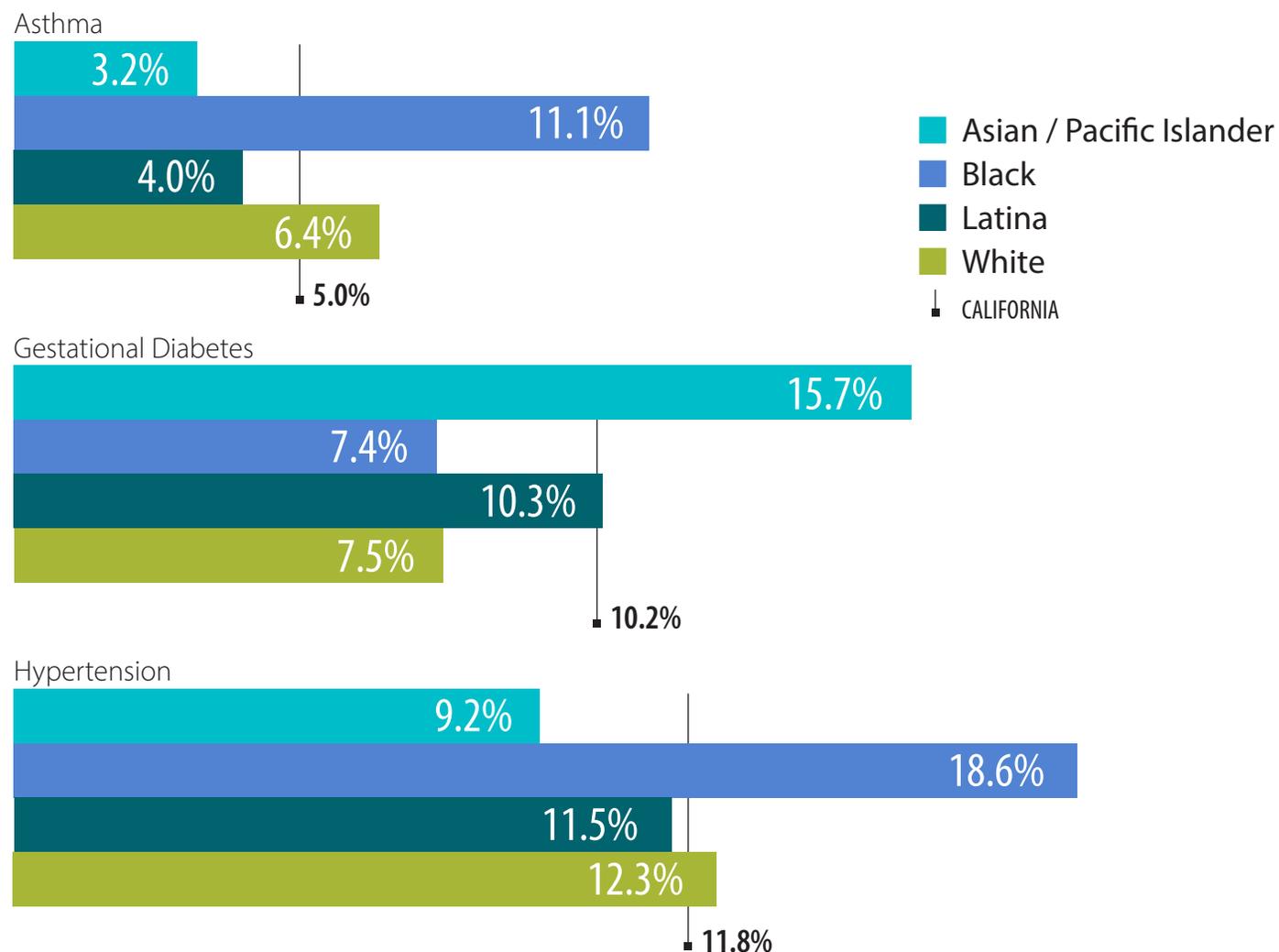
In 2017, over half of California women were overweight or obese prior to pregnancy. Latina and Black women were more likely to be obese or morbidly obese than white or Asian women. Being overweight or obese increases the risk of complications during pregnancy.

Notes: In-hospital births at 237 hospitals that offer maternity services. *Overweight, obese, and morbidly obese* are based on BMI, from weight information reported by the mother on the birth certificate. Women with a prepregnancy BMI of 25–29.9 are classified as overweight; those with a BMI of 30–39.9 are classified as obese; those with a BMI of 40 or higher are classified as morbidly obese.

Source: Custom data request, California Maternal Quality Care Collaborative, received June 24, 2019.

Maternal Medical Conditions, by Race/Ethnicity

California, 2017



Maternity Care in California

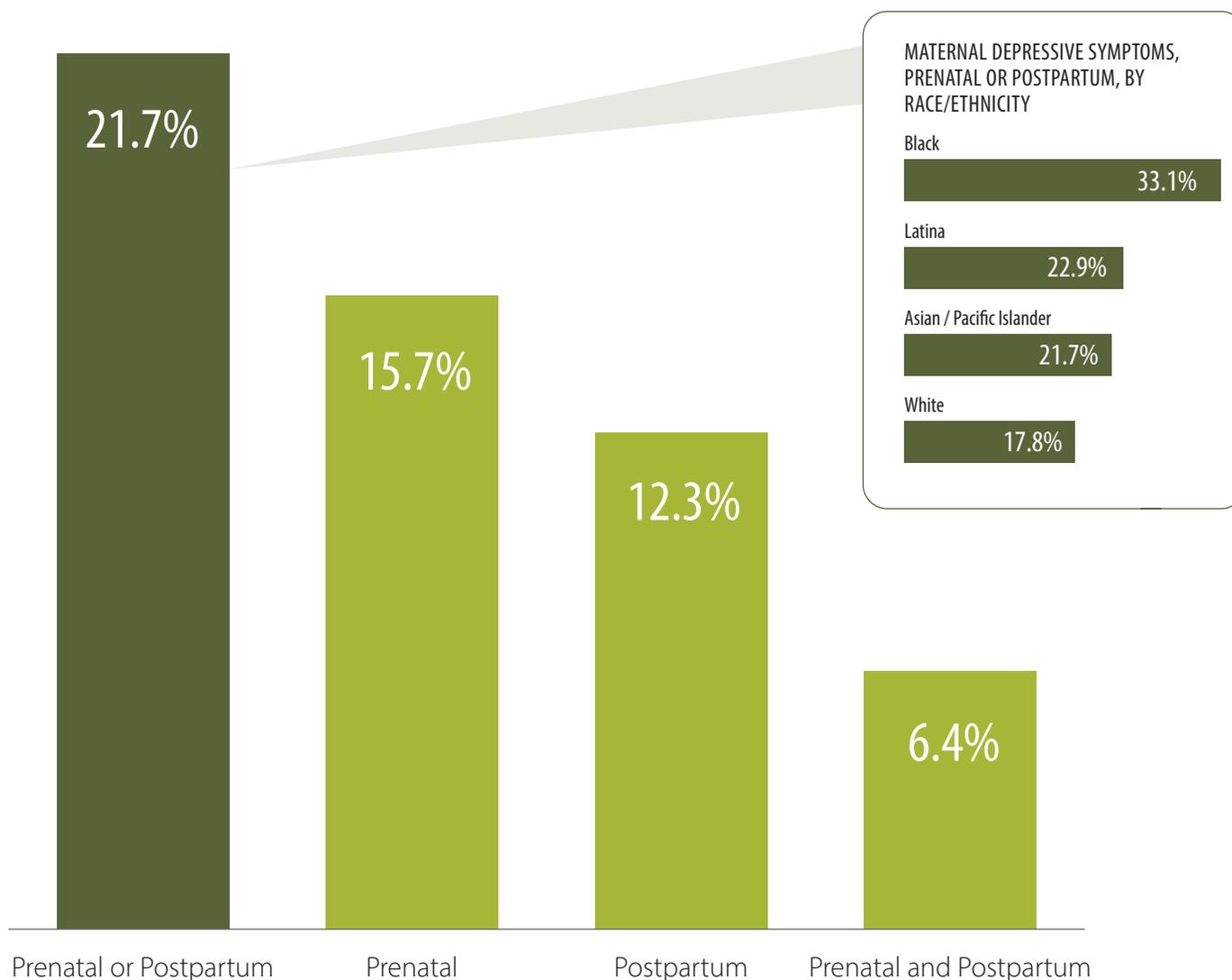
Risk Factors

Medical conditions during pregnancy or at childbirth increase the risk of maternal complications and poor birth outcomes. In 2017, nearly 12% of all mothers had high blood pressure, 10% had gestational diabetes, and 5% had asthma. Rates varied by race/ethnicity, with the highest rates of asthma and high blood pressure among Black women, and highest rates of gestational diabetes among Asian / Pacific Islander women.

Notes: In-hospital births at 237 hospitals that offer maternity services. *Hypertension* includes eclampsia, severe preeclampsia, mild preeclampsia, chronic, or gestational.

Source: Custom data request, California Maternal Quality Care Collaborative, received June 24, 2019.

Maternal Depressive Symptoms, Prenatal and/or Postpartum California, 2016 and 2017



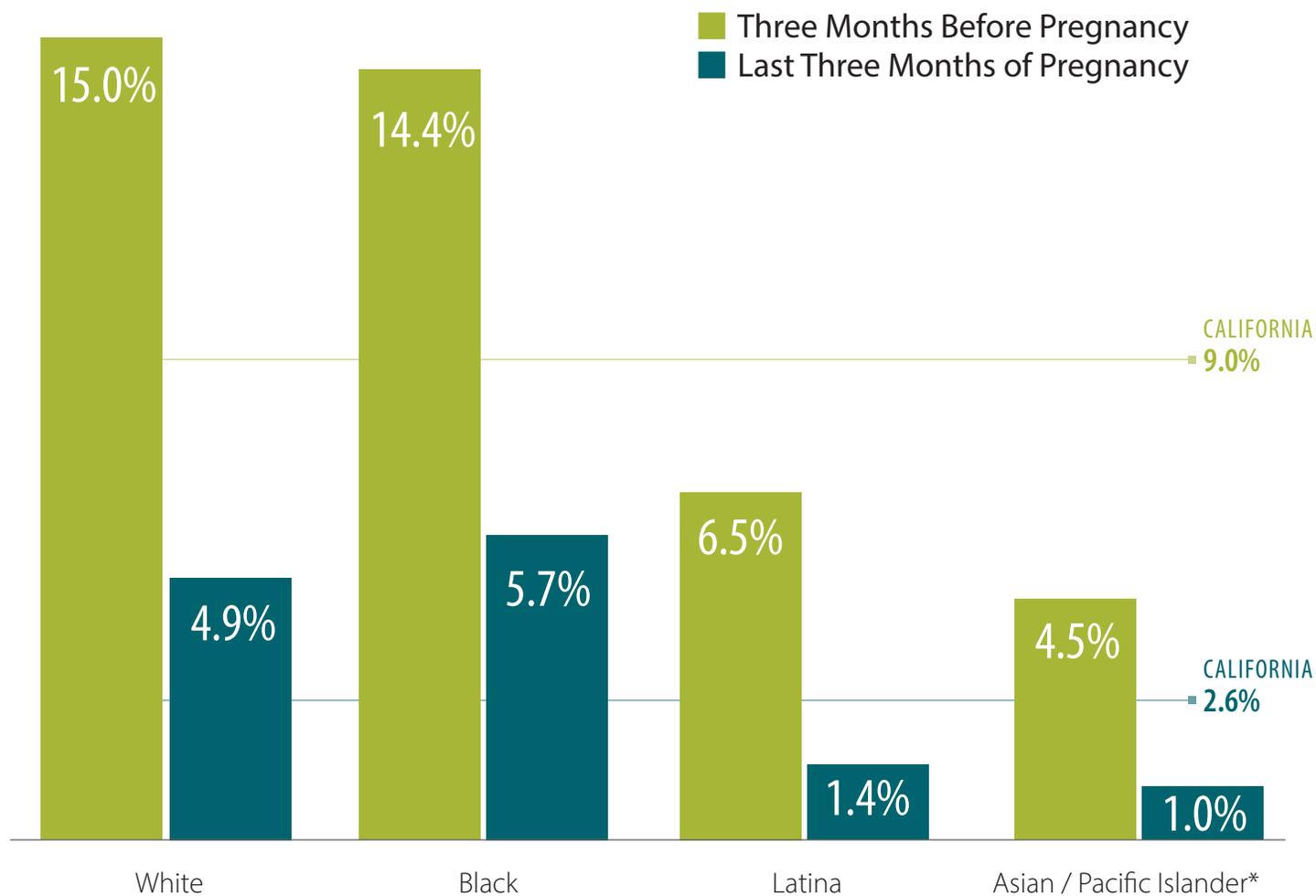
Many women in California suffer from mental health conditions while pregnant or after giving birth, negatively impacting the woman and child. Over one in five California women who gave birth in 2016 and 2017 had either prenatal or postpartum depressive symptoms. One in three Black women reported either prenatal or postpartum depressive symptoms.

Notes: Data from population-based survey of 13,062 California resident women with a live birth; 2016 and 2017 data were combined.

Source: Custom data request, Maternal and Infant Health Assessment (MIHA), California Dept. of Public Health, received June 19, 2019.

Maternal Smoking Habits, by Race/Ethnicity

California, 2016 and 2017

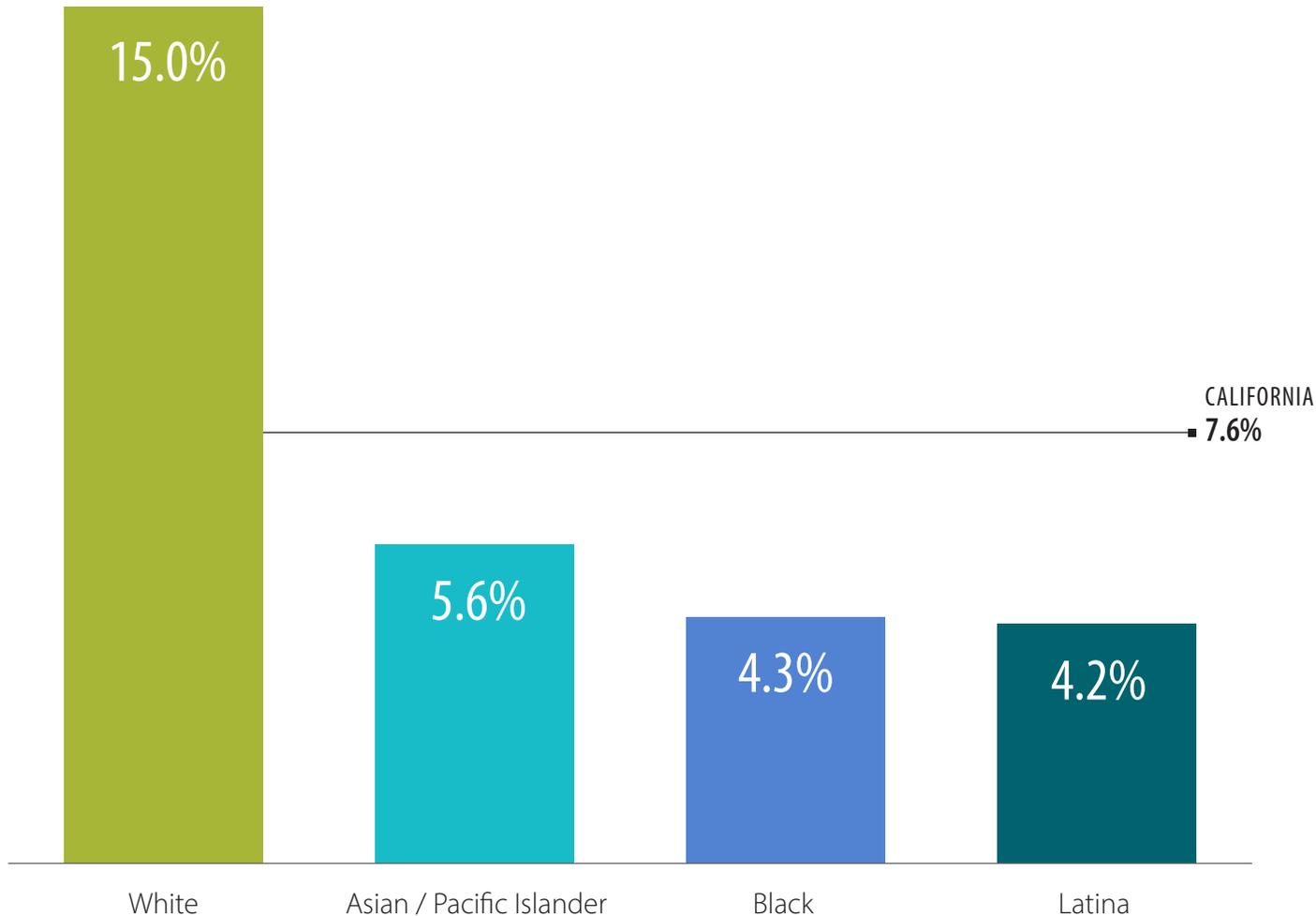


*Last three months of pregnancy estimate should be interpreted with caution due to low statistical reliability.
 Source: Custom data request, Maternal and Infant Health Assessment (MIHA), California Dept. of Public Health, received June 19, 2019.

Smoking during pregnancy increases the risk of pregnancy complications and harm to infants, such as preterm delivery, low birthweight, and sudden infant death syndrome.* Statewide, 2.6% of all women reported smoking in the last three months of pregnancy, with higher rates among Black women (5.7%) and white women (4.9%).

**Substance Use During Pregnancy: Tobacco,” Centers for Disease Control and Prevention, last reviewed July 24, 2019.

Alcohol Use During Last Three Months of Pregnancy, by Race/Ethnicity, California, 2016 and 2017



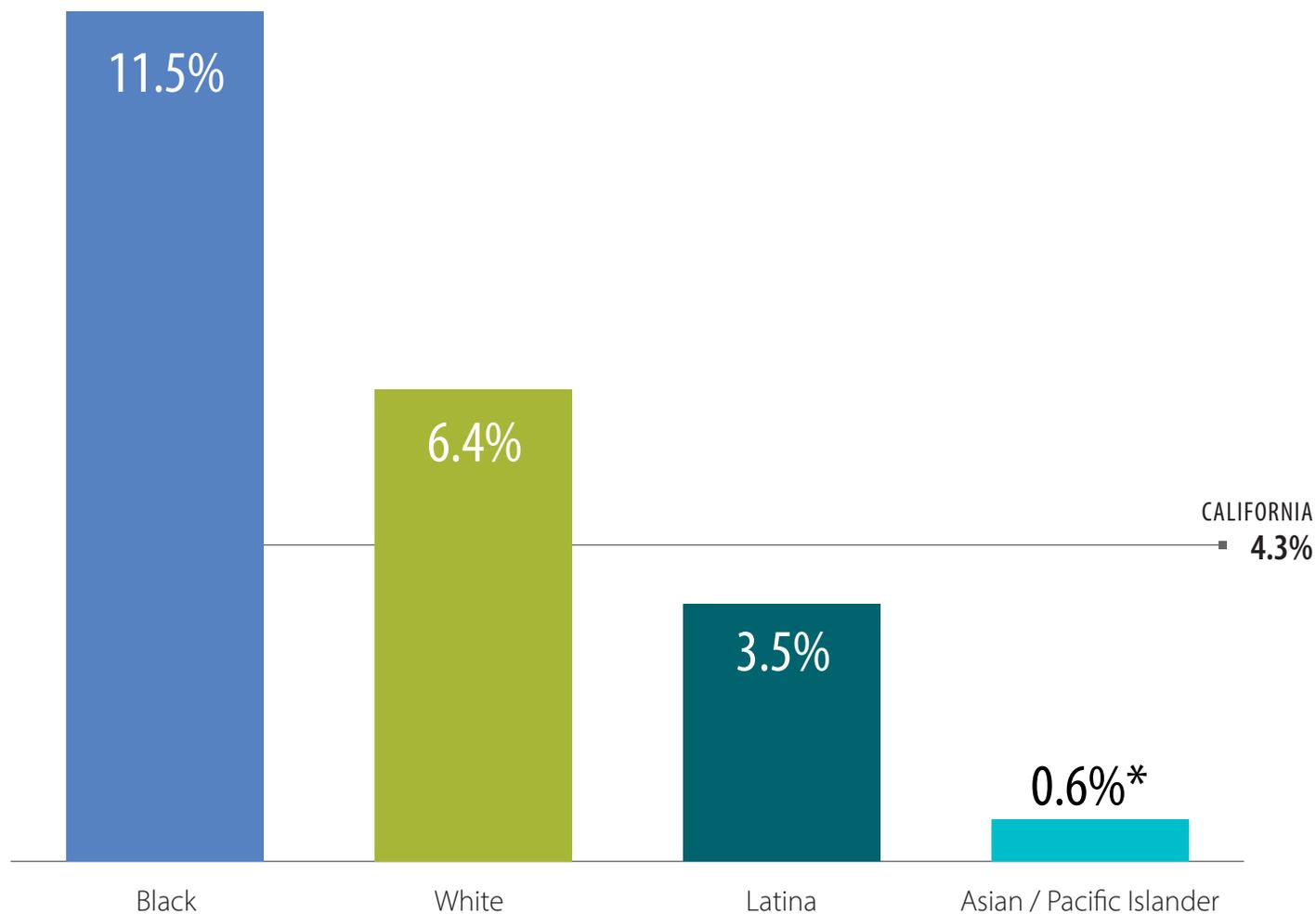
Note: Data from population-based survey of 13,062 California resident women with a live birth; 2016 and 2017 data were combined.
Source: Custom data request, Maternal and Infant Health Assessment (MIHA), California Dept. of Public Health, received June 19, 2019.

Drinking alcohol during pregnancy can cause miscarriage, stillbirth, and fetal alcohol spectrum disorder, which involves a range of physical, behavioral, and intellectual disabilities.* California women who reported drinking alcohol during the last three months of pregnancy varied by race/ethnicity, from a high of 15% of white women to a low of 4% of Black and Latina women.

*Fetal Alcohol Spectrum Disorders (FASDs): Alcohol Use in Pregnancy, Centers for Disease Control and Prevention, last reviewed March 27, 2018.

Marijuana Use During Pregnancy, by Race/Ethnicity

California, 2016 and 2017



*Estimate should be interpreted with caution due to low statistical reliability.

Note: Data from population-based survey of 13,062 California resident women with a live birth; 2016 and 2017 data were combined.

Source: Custom data request, Maternal and Infant Health Assessment (MIHA), California Dept. of Public Health, June 19, 2019.

Maternity Care in California

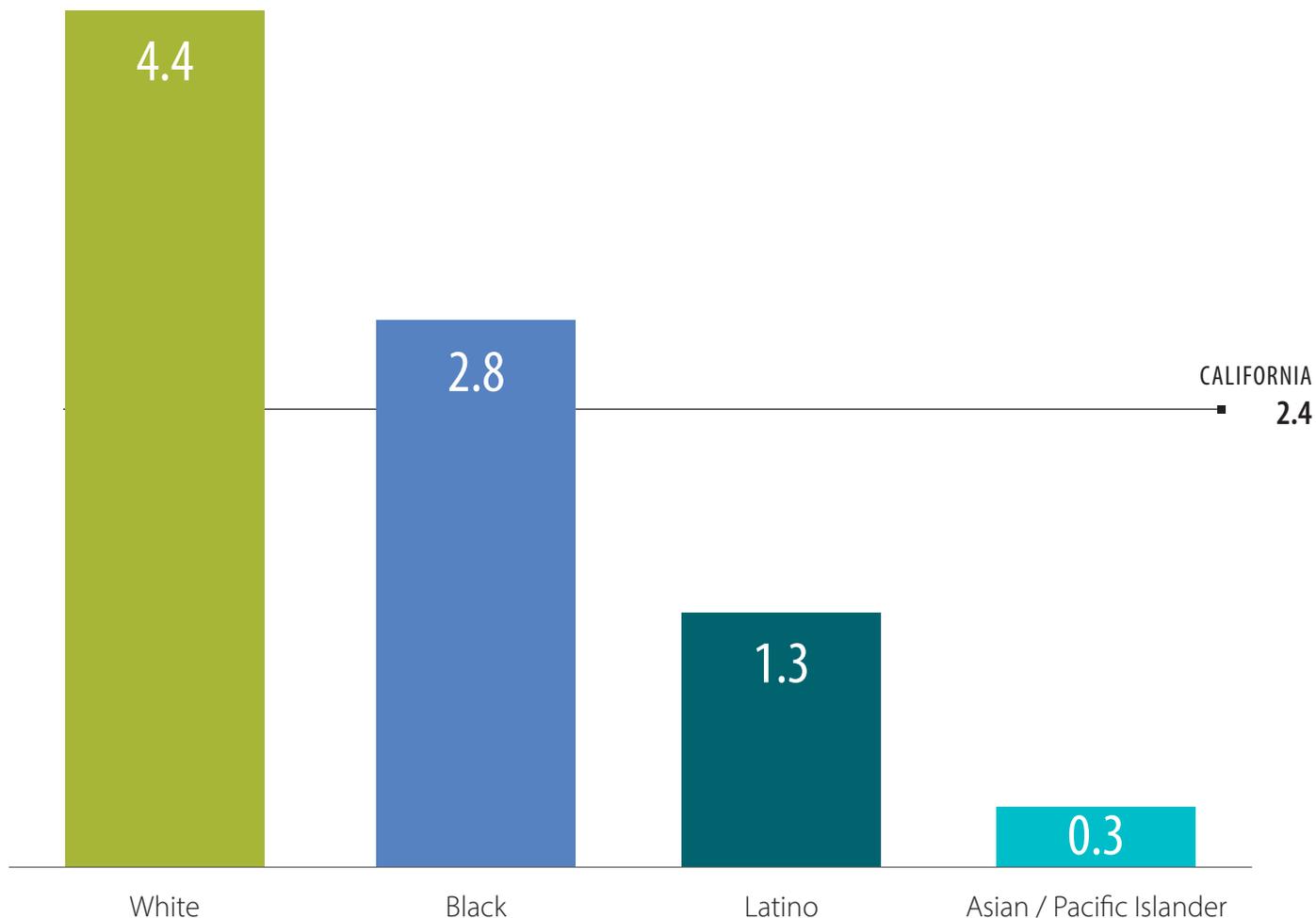
Mental Health and Substance Use

While research on the impact of marijuana use on birth outcomes is limited, the American College of Obstetricians and Gynecologists recommends that pregnant women discontinue marijuana use during pregnancy due to concerns about impaired infant neurodevelopment.* About 4% of all California women and 12% of Black women used marijuana during pregnancy. California legalized marijuana in 2018, and its use by pregnant women could increase as a result.

*"Marijuana Use During Pregnancy and Lactation," ACOG Committee Opinion, no. 722, American College of Obstetricians and Gynecologists, October 2017.

Infants Born with Neonatal Abstinence Syndrome, by Race/Ethnicity, California, 2017

RATE PER 1,000 DELIVERIES



Notes: In-hospital births at 237 hospitals that offer maternity services. Neonatal abstinence syndrome based on ICD-10 code P96.1, neonatal withdrawal symptoms from maternal use of drugs of addiction. Not shown: Other (rate: 6.5, n = 224).

Source: Custom data request, California Maternal Quality Care Collaborative, received June 26, 2019.

Maternity Care in California

Mental Health and Substance Use

The opioid crisis has drawn attention to infants born with neonatal abstinence syndrome (NAS), a condition that results from a baby's exposure to drugs, most often opioids, in the womb. Newborns with NAS can suffer from seizures and other complications and often require hospitalization. In 2017, white infants had higher NAS rates than those of other races/ethnicities.

Appendix A: California Counties Included in Regions



REGION	COUNTIES
Central Coast	Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Ventura
Greater Bay Area	Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma
Inland Empire	Riverside, San Bernardino
Los Angeles County	Los Angeles
Northern and Sierra	Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, Glenn, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Tuolumne, Yuba
Orange County	Orange
Sacramento Area	El Dorado, Placer, Sacramento, Yolo
San Diego Area	Imperial, San Diego
San Joaquin Valley	Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare

Appendix B: Maternity Care Workforce Overview

	BRIEF DESCRIPTION	EDUCATION REQUIRED	LICENSING ORGANIZATION
Certified Lactation Counselor*	Provider of education and counseling to support breastfeeding.	CLC training course completion and pass certification exam	None
Certified Nurse Midwife (CNM)	Advanced practice nurses educated to provide midwifery care, including perinatal, well-woman, and newborn care. CNMs primarily attend births in hospitals.	Master's degree in nursing with specialty in nurse-midwifery.	California Board of Registered Nursing
Clinical Psychologist	Clinician trained to diagnose and treat a range of mental health disorders and generally providing psychotherapy.	Ph.D. or Psy.D. in Psychology plus one year internship. Additional continuing education in perinatal mental health is available, but not required.	California Board of Psychology
Doula	Provider of physical, emotional, and informational labor support to mother before, during, and after birth.	No special requirements	None
International Board Certified Lactation Consultant*	Support specialist in the clinical management of human lactation and breastfeeding.	Must pass certification exam	None
Labor and Delivery Nurse	Registered nurse providing direct patient care in obstetrics and labor, and/or delivery and reproductive care.	Associate degree, bachelor of science in nursing, or entry-level master's program in nursing	California Board of Registered Nursing
Licensed Marriage Family Therapist / Licensed Professional Clinical Counselor / Licensed Clinical Social Worker	A clinician who provides counseling or therapy services to groups or individuals to address wellness, personal growth and pathology.	Master's degree. Additional continuing education in perinatal mental health is available, but not required.	California Board of Behavioral Sciences
Licensed Midwife[‡] (also designated as Certified Professional Midwife)	Health care professional authorized to attend cases of normal childbirth and provide prenatal, delivery, and postpartum care for the mother and immediate care for the newborn. Typically attend births out of hospital.	Three-year postsecondary education program in an accredited midwifery school [†]	Medical Board of California
Obstetrician/Gynecologist	Doctor of medicine or doctor of osteopathic medicine specially trained to provide medical and surgical care to women, including providing pregnancy care.	Medical school plus four-year residency in obstetrics and gynecology	Medical Board of California or Osteopathic Medical Board of California
Psychiatrist	Doctor of medicine specially trained to provide psychiatric care to adults using medications and/or psychotherapy.	Medical degree plus four years postdoctoral training in adult psychiatry. Additional fellowship training in reproductive psychiatry is available in some parts of the US, but is not required.	Medical Board of California

*Lactation Consultants and Counselors are certified by the International Board of Lactation Consultant Examiners and the Academy of Lactation Policy and Practice, respectively.

†Unlicensed midwives also likely practicing in California. Little information exists on their typical background.

‡School approved by the Medical Board of California (MBC). Prior to January 1, 2015, midwives could also be licensed through a challenge mechanism whereby an applicant obtains credit for previous midwifery education and clinical experience.

Notes: This list is based on CHCF correspondence with 2020 Mom, Maternal Mental Health NOW, and Emily C. Dossett, M.D. (Keck School of Medicine, LAC+USC), June 2016. It captures only the most common maternal mental health providers.

Sources: Medical Board of California; California Board of Registered Nurses; DONA International; International Board of Lactation Consultant Examiners; The Academy of Lactation Policy and Practice.

Maternity Care in California

ABOUT THIS SERIES

The California Health Care Almanac is an online clearinghouse for data and analysis examining the state's health care system. It focuses on issues of quality, affordability, insurance coverage and the uninsured, and the financial health of the system with the goal of supporting thoughtful planning and effective decisionmaking. Learn more at www.chcf.org/almanac.

AUTHOR

Jen Joynt, Independent Health Care Consultant

FOR MORE INFORMATION



California Health Care Foundation
1438 Webster Street, Suite 400
Oakland, CA 94612
510.238.1040
www.chcf.org