

Maternal and Infant Health Assessment (MIHA) Survey

Technical Notes



California Department of Public Health
Maternal, Child and Adolescent Health Division
Epidemiology, Surveillance and Federal Reporting Section

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Acknowledgement

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Table of Contents

About MIHA	4
Methods	4
Subgroup Definitions	5
Indicator Definitions	18
Prior Poor Birth Outcomes	18
Health Status Before Pregnancy	19
Nutrition and Weight.....	20
Intimate Partner Violence (IPV).....	26
Mental Health	28
Hardships and Support During Pregnancy.....	30
Substance Use.....	33
Pregnancy Intention and Family Planning.....	36
Infant Sleep	37
Breastfeeding Intention and Duration.....	38
Health Care Utilization	42
Public/Nutrition Program Participation.....	45
Health Insurance Coverage	46
Demographics	49
MIHA County-Level Data Availability	51
MIHA Regions of California.....	52
Data Annotation and Suppression Criteria	53
Weighting Methods.....	54
Calculation of the State Weight.....	55
Adjustments to Create the Final Weight.....	56

About MIHA

The Maternal Infant Health Assessment (MIHA) survey is an annual statewide representative survey of individuals with a recent live birth in California. MIHA collects self-reported information about maternal and infant experiences before, during, and shortly after pregnancy.

MIHA respondents are a stratified random sample of English- or Spanish-speaking individuals aged 15 years or older who had a live birth and who resided in California at the time of delivery. MIHA data are weighted to be representative of all individuals with a live birth in California, excluding those who were nonresidents, were younger than 15 years old at delivery, had a multiple birth greater than triplets, or had a missing address on the birth certificate. The population represented by MIHA is defined using the annual birth file, which is the final compilation of California birth data released annually by the CDPH Center for Health Statistics and Informatics. CDPH is aware that not everyone who gives birth refers to themselves as a mother. To accommodate this, the terms “birthing individual/person/people” and “pregnant person/people” are used in MIHA data products and definitions.

Methods

Data Analysis

The percentage and estimated number of pregnant or birthing people in the population with a given health indicator or characteristic are best estimates of the actual prevalence in the population. The 95% confidence interval (95% CI), comprised of the lower 95% confidence limit (Lower 95% CL) and upper 95% confidence limit (Upper 95% CL), indicates that there is a 95% chance that the range contains the actual prevalence in the population. The state, county, and regional data included in the dashboards use three-year aggregated data for the percent and 95% CI, and the annual estimate shown is a three-year average.

Annotation and Suppression

The relative standard error (RSE) is used to measure the statistical reliability of survey estimates. Estimates that should be interpreted with caution due to low statistical reliability (RSE between 30% and 50%) are noted with an asterisk (*) in the MIHA Data Snapshots or in tooltips in the MCAH Data Dashboards, and with a “1” or “Yes” in the Annotated column of the downloadable data table.

The percent, 95% CI, and annual population estimate are suppressed when the RSE is greater than 50% or could not be calculated, sample numerator is less than five, or the weight population denominator is less than 100. Suppression is noted with a double dash (--).

For more details see Data Annotation and Suppression Criteria and Weighting Methods.

Subgroup Definitions

Subgroups are based on self-reported data from the MIHA survey or the birth file, and refer to the most recent birth, or pregnancy for the most recent birth, unless otherwise indicated. Any change to a subgroup or subgroup category is noted in the Change in Definition and/or Comparability column(s). Subgroups and subgroup categories listed here are those that have been used in MIHA data publications since 2010.

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
Age	Age of birthing person at time of delivery, reported on the birth certificate.	15–19 years; 20–34 years; 35+ years	2010–2021	---	---
Education	Highest level of education attained by birthing person at time of survey completion. Less than high school includes those who completed no school, 8th grade or less, or some high school (but did not graduate); high school graduate includes GED; some college includes community college; and college graduate includes graduation from a four-	Less than high school; High school graduate; Some college; College graduate	2010–2021	---	---

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	year college or university or more.				
Household Income	<p>Reported as income as a percentage of the Federal Poverty Guideline (FPG). Income is calculated from monthly family income, before taxes from all sources, including jobs, welfare, disability, unemployment, child support, interest, dividends, and support from family members, and the number of people living on that income.</p> <p>See the annual Poverty Guidelines published by the U.S. Department of Health and Human Services for more details.</p>	<p>0–100% of poverty; 101–200% of poverty; 200%+ of poverty</p> <p>WIC Products: 0–50% of poverty; 51–100% of poverty; 100%+ of poverty</p>	2010–2021	<p>Subgroup category labels included “FPG” as the suffix in PDF releases of previous Snapshots for 2013–2015 and 2016–2018.</p> <p>In 2019, a new deep poverty category was added for WIC products, and the categories changed to 0–50% of poverty, 51–100% of poverty, and 100%+ of poverty.</p>	For WIC products only: Starting in 2019, 0–50% of poverty and 51–100% of poverty are not comparable to 2016–2018 WIC Snapshots.

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
Neighborhood Poverty	The percentage of residents living below the federal poverty threshold in a given neighborhood, as defined by census tract of the residence, reported on the birth certificate. The estimated percentage of residents below poverty by census tract is obtained from American Community Survey 5-year estimates from the most recent year. Birth certificate and American Community Survey data are linked.	<10%; 10–19%; 20–29%; 30%+	2016–2021 for current definition; 2013–2015 for previous definition.	Prior to 2016, categories for level of neighborhood poverty were defined as: 0–4.9%, 5–9.9%, 10–19.9% and \geq 20%.	Starting in 2016, subgroups are not comparable to prior years.
Population Density	Population density designations are based on the population size or densities of Medical Service Study Areas (MSSAs). MSSAs are sub-county geographic units	Rural/frontier; Urban	2013–2021	This subgroup was titled “Geographical Area” in PDF releases of previous Snapshots for 2013–	---

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	<p>composed of one or more census tracts. Birthing individuals are classified as living in an urban area if their MSSA ranges in population from 75,000 to 125,000; a rural area if their MSSA has a population density of less than 250 persons per square mile and a frontier area if their MSSA has a population density of less than 11 persons per square mile. Birthing individual's MSSA is based on the residence reported on the birth certificate.</p> <p>See the California Department of Health Care Access and Information (HCAI) for more detail on MSSAs.</p>			2015 and 2016–2018.	

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
Prenatal Care Payment Source	<p>During pregnancy had one of the following to pay for prenatal care: Medi-Cal or a health plan paid for by Medi-Cal; private insurance through employment of birthing person, or their spouse/partner, or their parents, or purchased directly; or was uninsured. Individuals with both Medi-Cal and private insurance are categorized as Medi-Cal.</p>	<p>Medi-Cal; Private; Uninsured</p> <p>WIC products only: Medi-Cal; Private</p>	<p>2011–2021 for current definition; 2010 for previous definition.</p>	<p>Starting in 2011, birthing people with “Other” insurance, such as military, Indian Health Service, Medicare or international, are not shown; the 2010 indicator combined the “Other” and “Private” insurance categories; and the prenatal insurance question changed in order to distinguish between Medi-Cal and a plan paid for by Medi-Cal, as well as to identify how birthing people obtained private insurance. Participants also were asked to</p>	<p>Starting in 2011, the indicator is not comparable with prior years.</p>

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
				<p>provide the name of their health insurance plan, which was used to categorize insurance with greater precision.</p> <p>Starting in 2019, the subgroup category of Uninsured is available in statewide Snapshots only.</p> <p>This subgroup was titled “Prenatal Health Insurance” in PDF releases of previous Snapshots for 2013–2015 and 2016–2018.</p>	

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
Race/Ethnicity	Hispanic includes all persons of Hispanic origin of any race, including Other and Unknown race, reported on birth certificate. The remaining groups are of non-Hispanic origin who reported a single race: American Indian/Alaska Native, Asian, Native Hawaiian or Other Pacific Islander (Asian/Pacific Islander), Black or White.	American Indian/Alaska Native; Asian/Pacific Islander; Black; Hispanic; White	2010–2021	Starting in 2019, the subgroup category of American Indian/Alaska Native is available in statewide Snapshots only.	---
Total Live Births	The number of live births the birthing person delivered as reported on the birth certificate. If the most recent delivery was twins or triplets, only the first baby born is included in the count and is considered one birth. For prior multiple births each	First birth; Second birth or more	2010–2021	---	---

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	baby is counted separately.				
Breastfeeding Intention (WIC products only)	Before delivery, plan for infant feeding. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	Intended to breastfeed, before birth; Not sure or did not intend to breastfeed before birth	2010–2021	---	---
CalFresh Participation (WIC products only)	CalFresh, formerly known as food stamps, is the California Supplemental Nutrition Assistance Program.	CalFresh during pregnancy; No CalFresh during pregnancy	2011–2021	Prior to 2011, the question did not include the phrase “(also called CalFresh benefits)”.	Starting in 2011, the indicator is not comparable with prior years.
WIC status during pregnancy Statewide Snapshots subgroup (WIC products only)	WIC is the Special Supplemental Nutrition Program for Women, Infants and Children. WIC status during pregnancy was categorized as prenatal WIC participant,	WIC participant; Eligible nonparticipant; Ineligible	2013–2014, 2016–2021	---	---

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	<p>eligible nonparticipant or ineligible for WIC. Prenatal WIC participants were women who self-reported in MIHA that they were on WIC at any time during their most recent pregnancy. Eligibility for WIC nonparticipants is based on insurance for prenatal care or delivery on the birth certificate and self-reported income in MIHA. Those not on WIC during pregnancy were categorized as WIC eligible nonparticipants if the birth certificate indicated they had Medi-Cal for prenatal care or delivery, or if they self-reported income at or below 185% of the Federal Poverty Guidelines (FPG). Respondents were</p>				

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	<p>categorized as ineligible for WIC if the birth certificate indicated another source or no insurance for prenatal care or delivery, and self-reported income above 185% FPG.</p>				
<p>Geography – County</p>	<p>Birthing person’s residence at time of delivery, based on county residence reported on birth certificate.</p> <p>MIHA county-level data are available for the 35 California counties with the greatest numbers of births. Due to their smaller birth populations and sample sizes, county-level estimates are not provided for the remaining 23 counties. Thirty-five</p>		<p>2013–2021 for current definition;</p> <p>2010–2012 for previous definition.</p>	<p>Prior to 2013, county-level data were available for the 20 California counties with the greatest numbers of births: Alameda, Contra Costa, Fresno, Kern, Los Angeles, Monterey, Orange, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Joaquin, San Mateo, Santa</p>	<p>---</p>

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	<p>counties with the greatest number of births: Alameda, Butte, Contra Costa, El Dorado, Fresno, Humboldt, Imperial, Kern, Kings, Los Angeles, Madera, Marin, Merced, Monterey, Napa, Orange, Placer, Riverside, Sacramento, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Solano, Sonoma, Stanislaus, Tulare, Ventura, and Yolo.</p>			<p>Barbara, Santa Clara, Sonoma, Stanislaus, Tulare, and Ventura.</p>	
Geography – Region	<p>Birthing person’s residence at time of delivery, based on county residence reported on birth certificate. MIHA regions include births</p>		2010–2021	---	---

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	<p>from all counties within the geographical region. The nine MIHA regions are defined as: Central Coast Region (Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, and Ventura counties); Greater Sacramento Region (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties); Los Angeles County Region (Los Angeles County); North/Mountain Region (Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, Glenn, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity, and Tuolumne counties);</p>				

Subgroup	Definition	Subgroup Categories	Years Available	Change in Definition or Categories	Comparability
	Orange County Region (Orange County); San Diego County Region (San Diego County); San Francisco Bay Area Region (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties); San Joaquin Valley Region (Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties); Southeastern California Region (Imperial, Riverside, and San Bernardino counties)				

Indicator Definitions

Indicators are based on self-reported data from the MIHA survey and refer to the most recent birth, or pregnancy for the most recent birth, unless otherwise indicated. Unless noted, the denominator for each indicator includes all individuals with a live birth. Any change to a survey question or indicator, compared to how it was in a prior year, is noted in the Change in Definition and/or Comparability column(s). Indicators listed here are those that have been used in MIHA data publications since 2010.

Prior Poor Birth Outcomes

Indicator	Definition	Years Available	Change in Definition	Comparability
Prior low birth weight or preterm delivery	Prior to the most recent birth, ever had a baby weighing <2,500 grams at birth or born at <37 weeks gestation.	2010–2012	---	---
Prior delivery by c-section	Ever had a cesarean section prior to the most recent birth, reported on the birth certificate.	2010–2012	---	---

Health Status Before Pregnancy

Indicator	Definition	Years Available	Change in Definition	Comparability
In good to excellent health	Self-rated health before pregnancy	2011–2021 for current definition; 2010 for previous definition.	Prior to 2011, definition included self-rated <i>physical</i> health. In 2011, the survey question was changed from two separate questions on physical health and mental health to one question on “health.” Additional response of “Very good” was added between response categories “Excellent” and “Good.”	Starting in 2011, the indicator is not comparable with prior years.
Diabetes	Before pregnancy, told by a health care worker that they had diabetes (high blood sugar).	2013–2021 for current definition; 2010–2012 for previous definition.	Prior to 2013, definition also included diagnosis <i>during this pregnancy</i> with diabetes or with gestational diabetes.	Starting in 2013, the indicator is not comparable with prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
Hypertension	Before pregnancy, told by a health care worker that they had hypertension (high blood pressure).	2013–2021 for current definition; 2010–2012 for previous definition.	Prior to 2013, definition also included diagnosis <i>during this pregnancy</i> with hypertension, preeclampsia, eclampsia or toxemia.	Starting in 2013, the indicator is not comparable with prior years.
Asthma	Before pregnancy, told by a health care worker that they had asthma.	2013–2021 for current definition; 2010–2012 for previous definition.	Prior to 2013, definition also included diagnosis of asthma <i>during this pregnancy</i> .	Starting in 2013, the indicator is not comparable with prior years.

Nutrition and Weight

Indicator	Definition	Years Available	Change in Definition	Comparability
Daily folic acid use, month before pregnancy	During the month before pregnancy, took a multivitamin, prenatal vitamin or folic acid vitamin every day of the week.	2010–2018	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
Overweight before pregnancy	<p>Body Mass Index (BMI) was calculated from weight and height reported on the birth certificate. BMI of 25–29.9 is classified as overweight. BMI was calculated only for birthing people reporting height within 48–83 inches and weight within 75–399 pounds. BMI values outside of 13–69.99 are excluded.</p> <p><i>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.</i></p>	<p>2016–2018 for current definition;</p> <p>2010–2015 for previous definition.</p>	<p>Prior to 2016, BMI was calculated with the same method using <i>self-reported</i> weight and height from the MIHA survey.</p>	<p>Starting in 2016, the indicator is not comparable with prior years.</p>

Indicator	Definition	Years Available	Change in Definition	Comparability
Obese before pregnancy	<p>Body Mass Index (BMI) was calculated from weight and height reported on the birth certificate. BMI of 30 or greater is classified as obese. BMI was calculated only for birthing people reporting height within 48–83 inches and weight within 75–399 pounds. BMI values outside of 13–69.99 are excluded.</p> <p><i>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.</i></p>	<p>2016–2018 for current definition;</p> <p>2010–2015 for previous definition.</p>	<p>Prior to 2016, BMI was calculated with the same method using <i>self-reported</i> weight and height from the MIHA survey.</p>	<p>Starting in 2016, the indicator is not comparable with prior years.</p>

Indicator	Definition	Years Available	Change in Definition	Comparability
<p>Inadequate weight gain during pregnancy</p>	<p>Adequacy of total weight gained during pregnancy, using pre-pregnancy BMI based on the birth certificate, was based on the National Academies of Science, Engineering and Medicine guidelines and restricted to birthing people who delivered at 37–42 weeks gestation, singletons and twins, prenatal weight gain within 0–97 pounds, height within 48–83 inches, pre-pregnancy weight within 75–399 pounds and BMI values within 13–69.99. See National Academies of Science, Engineering guidelines for more detail.</p> <p><i>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</i></p>	<p>2016–2018 for current definition; 2010–2015 for previous definition.</p>	<p>Prior to 2016, pre-pregnancy BMI was calculated with the same method using <i>self-reported</i> weight and height from the MIHA survey.</p>	<p>Starting in 2016, the indicator is not comparable with prior years.</p>

Indicator	Definition	Years Available	Change in Definition	Comparability
	<p><i>BMI has not been validated in some subpopulations; therefore, BMI should not be used as the sole criteria for making health recommendations.</i></p>			
<p>Excessive weight gain during pregnancy</p>	<p>Adequacy of total weight gained during pregnancy, using pre-pregnancy BMI based on the birth certificate, was based on the National Academies of Science, Engineering and Medicine guidelines and restricted to birthing people who delivered at 37–42 weeks gestation, singletons and twins, prenatal weight gain within 0–97 pounds, height within 48–83 inches, pre-pregnancy weight within 75–399 pounds and BMI values within 13–69.99. See National Academies of Science, Engineering guidelines for more detail.</p>	<p>2016–2018 for current definition; 2010–2015 for previous definition.</p>	<p>Prior to 2016, pre-pregnancy BMI was calculated with the same method using <i>self-reported</i> weight and height from the MIHA survey.</p>	<p>Starting in 2016, the indicator is not comparable with prior years.</p>

Indicator	Definition	Years Available	Change in Definition	Comparability
	<p><i>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.</i></p>			
<p>Food insecurity during pregnancy (previous)</p>	<p>Calculated from the modified U.S. Department of Agriculture (USDA) Food Security Module Six-Item Short Form and categorized as food secure (0–1) or food insecure (2–6). Responses with one or two missing values were imputed.</p> <p>See USDA guidelines (PDF) for more detail.</p>	<p>2010–2018</p>	<p>---</p>	<p>---</p>

Indicator	Definition	Years Available	Change in Definition	Comparability
Food insecurity during pregnancy	During pregnancy, sometimes or often: worried whether food run out before they got money to buy more <i>or</i> the food bought didn't last and they didn't have money to get more.	2019–2021	Prior to 2019, food insecurity was calculated from the USDA Food Security Module.	Starting in 2019, the indicator is not comparable with prior years.

Intimate Partner Violence (IPV)

Indicator	Definition	Years Available	Change in Definition	Comparability
Physical IPV in the year before pregnancy	During the 12 months before pregnancy, respondent was pushed, hit, slapped, kicked, choked or physically hurt in any way by current or former partner.	2010–2011	---	---
Physical or psychological IPV during pregnancy	During pregnancy, experienced any of the following: pushed, hit, slapped, kicked, choked or physically hurt in any way by current or former partner; frightened for safety of self, family or friends because of	2012–2016; 2019–2021	Prior to 2012, IPV indicator measured physical IPV in the year before pregnancy; starting in 2017,	The physical or psychological IPV during pregnancy indicator is not comparable to the physical IPV before pregnancy nor the

Indicator	Definition	Years Available	Change in Definition	Comparability
	current or former partner's anger/threats; current or former partner tried to control most/all daily activities.		psychological IPV was added.	physical, psychological, or sexual IPV during pregnancy indicators.
Physical, psychological, or sexual IPV during pregnancy	During pregnancy, experienced any of the following: pushed, hit, slapped, kicked, choked or physically hurt in any way by current or former partner; frightened for safety of self, family or friends because of current or former partner's anger/threats; current or former partner tried to control most/all daily activities; forced into any type of unwanted sexual activity by current or former partner.	2017–2021	Prior to 2017, IPV indicator measured physical or psychological IPV during pregnancy; starting in 2017, sexual IPV was added.	In 2017, replaced previous <i>Physical or psychological IPV during pregnancy</i> indicator and is not comparable with prior indicators.

Mental Health

Indicator	Definition	Years Available	Change in Definition	Comparability
Depression before pregnancy	Before pregnancy, told by a health care worker that they had depression.	2019–2021	---	---
Prenatal depression symptoms (previous)	During pregnancy, experienced both of the following for two weeks or longer: felt sad, empty or depressed for most of the day; lost interest in most things she usually enjoyed.	2010–2015	---	---
Prenatal depression symptoms	During pregnancy, always or often: felt down, depressed or hopeless, <i>or</i> had little interest or pleasure in doing things usually enjoyed.	2016–2021	Prior to 2016, the indicator was based on a different set of questions and defined as during pregnancy, experienced both of the following for two weeks or longer: felt sad, empty or depressed for most of the day; lost interest in most things she usually enjoyed.	In 2016, replaced the previous prenatal depression symptoms indicator and is not comparable with prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
Postpartum depression symptoms (previous)	Since most recent birth, experienced both of the following for two weeks or longer: felt sad, empty or depressed for most of the day; lost interest in most things she usually enjoyed.	2010–2015	---	---
Postpartum depression symptoms	Since most recent birth, always or often: felt down, depressed or hopeless, <i>or</i> had little interest or pleasure in doing things usually enjoyed.	2016–2021	Prior to 2016, the indicator was based on a different set of questions and defined as since most recent birth, experienced both of the following for two weeks or longer: felt sad, empty or depressed for most of the day; lost interest in most things she usually enjoyed.	In 2016, replaced previous postpartum depression symptoms indicator and is not comparable with prior years.

Hardships and Support During Pregnancy

Indicator	Definition	Years Available	Change in Definition	Comparability
Experienced two or more hardships during childhood	Composite indicator measuring two or more hardships experienced during the woman’s childhood (from birth through age 13). Hardships included: a parent or guardian she lived with got divorced or separated; she moved because of problems paying the rent or mortgage; someone in her family went hungry because family could not afford enough food; her parent or guardian got in trouble with the law or went to jail; a parent or guardian she lived with had a serious drinking or drug problem; she was in foster care (removed from her home by the court or child welfare agency), and very often or somewhat often her family experienced difficulty paying	2011–2015	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
	for basic needs like food or housing.			
Had a lot of unpaid bills	During pregnancy, had a lot of bills couldn't pay.	2010	---	---
Homeless or did not have a regular place to sleep	During pregnancy, did not have a regular place to sleep at night (moved from house to house) or was homeless (had to sleep outside, in a car or in a shelter).	2011–2021	---	---
Moved	During pregnancy, moved to a new address for any reason.	2010	---	---
Moved due to problems paying rent or mortgage	During pregnancy, had to move because of problems paying the rent or mortgage.	2011–2021	Prior to 2011, indicator measured whether a woman moved to a new address for any reason.	In 2011, replaced previous <i>Moved</i> indicator and is not comparable with prior years.
Woman/Pregnant person or partner lost job	During pregnancy, lost job even though wanted to go on working, or partner lost their job.	2010–2021	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
Woman/Pregnant person or partner had pay or hours cut back	During pregnancy, had pay or hours cut back, or partner had pay or hours cut back.	2011–2021	---	---
Became separated or divorced	During pregnancy, became separated or divorced from partner.	2010–2021	---	---
Had no practical or emotional support	During pregnancy, had neither someone to turn to for practical help, like getting a ride somewhere, or help with shopping or cooking a meal; nor someone to turn to if needed someone to comfort or listen to them.	2010–2021	---	---
Often experienced racism over her/their lifetime	During lifetime, very or somewhat often has been discriminated against, prevented from doing something or hassled or made to feel inferior because of race, ethnicity or color.	2016–2021	---	---

Substance Use

Indicator	Definition	Years Available	Change in Definition	Comparability
Any smoking, 3 months before pregnancy	During the three months before pregnancy, smoked any cigarettes on an average day.	2010–2021	---	---
Any smoking, 1st or 3rd trimester	During the first or last three months of pregnancy, smoked any cigarettes on an average day.	2011–2012 for current definition; 2010 for previous definition.	In 2011, the following phrase in italics was added to the question on smoking during the first trimester of pregnancy: “During the first 3 months of your pregnancy (<i>including before you knew you were pregnant for sure</i>), how many cigarettes or packs of cigarettes did you smoke on an average day? (A pack has 20 cigarettes.)”	Starting in 2011, the indicator is not comparable with prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
Any smoking, 3rd trimester	During the last three months of pregnancy, smoked any cigarettes on an average day.	2013–2021	Prior to 2013, this indicator was combined with any smoking during the first trimester.	In 2013, this indicator replaced previous <i>Any smoking, 1st or 3rd trimester</i> indicator and is not comparable to prior years.
Any smoking, postpartum	At the time of the survey, smoked any cigarettes.	2011–2021	---	---
Any binge drinking, 3 months before pregnancy	During the three months before pregnancy, drank four or more alcoholic drinks in one sitting (within about two hours) at least one time.	2010–2021	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
Any alcohol use, 1st or 3rd trimester	During the first or last three months of pregnancy, drank any alcoholic drinks in an average week.	2011–2012 for current definition; 2010 for previous definition.	In 2011, the phrase in italics was added to the question on drinking during the first trimester of pregnancy: “During the first 3 months of your pregnancy (<i>including before you knew you were pregnant for sure</i>), about how many drinks with alcohol did you have in an average week?”	Starting in 2011, the indicator is not comparable with prior years.
Any alcohol use, 3rd trimester	During the last three months of pregnancy, drank any alcoholic drinks in an average week.	2013–2021	Prior to 2013, this indicator was combined with any alcohol use during the first trimester.	In 2013, replaced previous <i>Any alcohol use, 1st or 3rd trimester</i> indicator and is not comparable to prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
Any cannabis use during pregnancy	During most recent pregnancy, used marijuana or weed in any way (like smoking, eating or vaping).	2016–2021	---	---

Pregnancy Intention and Family Planning

Indicator	Definition	Years Available	Change in Definition	Comparability
Mistimed or unwanted pregnancy	Just before pregnancy, felt that they did not want to get pregnant then or in the future, or wanted to get pregnant later.	2011–2018	---	Starting in 2011, the indicator is not comparable with the unintended pregnancy indicator from prior years.
Unsure of pregnancy intentions	Just before pregnancy, felt that they were not sure if they wanted to get pregnant.	2011–2018	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
Postpartum birth control use	At the time of the survey, birthing person or partner was doing something to keep from getting pregnant. Birthing people who were currently pregnant or had a hysterectomy/oophorectomy are excluded from the denominator.	2013–2021 for current definition; 2011–2012 for previous definition.	Prior to 2013, definition excluded from the denominator those who were currently pregnant and who were not having sex at the time of the survey.	Starting in 2013, the indicator is not comparable with prior years.

Infant Sleep

Indicator	Definition	Years Available	Change in Definition	Comparability
Placed infant on back to sleep	Put baby down to sleep on his or her back most of the time. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	2010–2021	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
Infant always or often shared bed	Baby always or often slept in the same bed with her or someone else. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	2010–2011, 2013–2021	---	Question was not on the survey in 2012.

Breastfeeding Intention and Duration

Indicator	Definition	Years Available	Change in Definition	Comparability
Intended to breastfeed, before birth	Before delivery, planned to breastfeed only or to breastfeed and use formula. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	2010–2021	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
Intended to breastfeed exclusively, before birth	Before delivery, planned to breastfeed only. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	2010–2021	---	---
Ever breastfed	Any breastfeeding or feeding of breast milk by the birthing person, since birth. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	2019–2021	---	---
Any breastfeeding, 1 month after delivery	Fed infant breast milk for at least one month after delivery with or without formula, other liquids or food. Infant age is calculated from date of birth on the birth certificate. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	2011–2021	The infant feeding questions changed in 2011.	Starting in 2011, the indicator is not comparable with prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
Exclusive breastfeeding, 1 month after delivery	Fed infant only breast milk (no supplementation with formula, other liquids or food) for at least one month after delivery. Infant age is calculated from date of birth on the birth certificate. Birthing people whose infant did not reside with them at the time of the survey are excluded from the denominator.	2011–2021	The infant feeding questions changed in 2011.	Starting in 2011, the indicator is not comparable with prior years.
Any breastfeeding, 3 months after delivery	Fed infant breast milk for at least three months after delivery with or without supplementing with formula, other liquids or food. Infant age is calculated from date of birth on the birth certificate. Birthing people whose infant did not reside with them or whose infant was not yet three months old at the time the respondent completed the	2011–2021	The infant feeding questions changed in 2011.	Starting in 2011, the indicator is not comparable with prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
	survey are excluded from the denominator.			
Exclusive breastfeeding, 3 months after delivery	Fed infant only breast milk (no supplementation with formula, other liquids or food) for at least three months after delivery. Infant age is calculated from date of birth on the birth certificate. Birthing people whose infant did not reside with them or whose infant was not yet three months old at the time of the survey are excluded from the denominator.	2011–2021	The infant feeding questions changed in 2011.	Starting in 2011, the indicator is not comparable with prior years.

Health Care Utilization

Indicator	Definition	Years Available	Change in Definition	Comparability
Had a usual source of pre-pregnancy care	Just before pregnancy, had a particular doctor, nurse or clinic they usually went to for health care.	2011–2018	Prior to 2011, the question included the phrase in italics: “Just before you got pregnant <i>for your most recent birth.</i> ”	Starting in 2011, the indicator is not comparable with prior years.
Initiated prenatal care in 1st trimester	Had first prenatal care visit in the first three months or 13 weeks of pregnancy, not counting a visit for just a pregnancy test or a WIC visit.	2012–2021	In 2011, the phrases in italics were added to the questions: “Did you get any prenatal care during your most recent pregnancy? (Please do not count a visit just for a pregnancy test <i>or only for WIC, the Women, Infants and Children supplemental nutrition program.</i>)” and “How many weeks or months pregnant were you when you had your first prenatal care visit? (Please do not count a	Starting in 2012, the indicator is not comparable with prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
			visit just for a pregnancy test <i>or only for WIC.</i>)” In 2012, the filter question, “Did you get any prenatal care during your most recent pregnancy?” was dropped.	
Received dental care during pregnancy	During pregnancy, visited a dentist, dental clinic or got dental care at a health clinic.	2012, 2015–2021	---	This indicator was reported as “had a dental visit during pregnancy” in 2009 and 2012 and is comparable to this indicator. Question was not on the survey 2013–2014.
Received a Tdap vaccine during pregnancy	During most recent pregnancy, received a Tdap vaccination or shot.	2016–2021	---	---

Indicator	Definition	Years Available	Change in Definition	Comparability
Received a flu shot during pregnancy	During most recent pregnancy, had a flu shot.	2016–2021	---	---
Had a postpartum medical visit	Had a postpartum check-up for themselves (the medical check-up 4–6 weeks after a giving birth).	2011–2021	---	---
Mom or infant needed but couldn't afford care postpartum	Since her most recent birth, there was a time when she needed to see a doctor or nurse for her own medical care or for her infant but did not go because she could not afford to pay for it.	2010–2015	---	---

Public/Nutrition Program Participation

Indicator	Definition	Years Available	Change in Definition	Comparability
Participated in WIC during pregnancy	WIC is the Special Supplemental Nutrition Program for Women, Infants and Children. Participation in WIC during pregnancy is based on self-report on the MIHA survey.	2010, 2013–2021 for current definition; 2012 for previous definition.	In 2012, participation in WIC during pregnancy was based on WIC client records obtained from WIC Management Information System (WIC MIS) and linked to the MIHA survey.	This indicator was not published for 2011.
Received CalFresh (food stamps) during pregnancy	CalFresh, formerly known as food stamps, is the California Supplemental Nutrition Assistance Program.	2011–2021	Prior to 2011, the question did not include the phrase “(also called CalFresh benefits)”.	Starting in 2011, the indicator is not comparable with prior years.

Health Insurance Coverage

Indicator	Definition	Years Available	Change in Definition	Comparability
Pre-pregnancy/postpartum insurance	During the month before pregnancy/at the time of the survey, had Medi-Cal or a health plan paid for by Medi-Cal; private insurance through their or their husband's/partner's job, their parents or purchased directly; or was uninsured. Those with both Medi-Cal and private insurance were categorized as Medi-Cal.	2011–2021 for current definition; 2010 for previous definition.	Starting in 2011, women with “Other” insurance, such as military, Indian Health Service, Medicare or international, are not shown; the 2010 indicator combined the “Other” and “Private” insurance categories; and women were asked to provide the name of their health insurance plan, which was used to categorize insurance with greater precision.	Starting in 2011, the indicator is not comparable with prior years.
Prenatal insurance	During pregnancy had one of the following to pay for prenatal care: Medi-Cal or a health plan paid for by Medi-Cal; private insurance through their or their husband's/partner's job, their	2011–2021 for current definition; 2010 for previous definition.	Starting in 2011, women with “Other” insurance, such as military, Indian Health Service, Medicare or international, are not shown; the 2010	Starting in 2011, the indicator is not comparable with prior years.

Indicator	Definition	Years Available	Change in Definition	Comparability
	<p>parents or purchased directly; or was uninsured. Those with both Medi-Cal and private insurance are categorized as Medi-Cal.</p>		<p>indicator combined the “Other” and “Private” insurance categories; and the prenatal insurance question changed in order to distinguish between Medi-Cal and a plan paid for by Medi-Cal, as well as to identify how women obtained private insurance. Women also were asked to provide the name of their health insurance plan, which was used to categorize insurance with greater precision.</p>	
<p>Had any gaps in insurance during pregnancy</p>	<p>During pregnancy, had no health insurance plan at all to pay for prenatal care or had one or more periods without health insurance coverage.</p>	<p>2016–2021</p>	<p>---</p>	<p>---</p>

Indicator	Definition	Years Available	Change in Definition	Comparability
Infant health insurance	Infant had Medi-Cal or a health plan paid for by Medi-Cal; private insurance through parent’s job or purchased directly; or was uninsured.	2011–2021 for current definition; 2010 for previous definition.	Starting in 2011, infants with “Other” insurance, such as military, California Children’s Services, Indian Health Service or Medicare, are not shown; the 2010 indicator combined the “Other” and “Private” insurance categories; and women were asked to provide the name of their infant’s health insurance plan, which was used to categorize insurance with greater precision. Women whose infant did not reside with them at the time of the survey are excluded from the denominator.	Starting in 2011, the indicator is not comparable with prior years.

Demographics

Indicator	Definition	Years Available	Change in Definition	Comparability
Age	<i>See Age subgroup definition.</i>	2010–2021	---	---
Education	<i>See Education subgroup definition.</i>	2010–2021	---	---
Household income	<i>See Household Income subgroup definition.</i>	2010–2021	---	---
Language spoken at home	Usually speaks English or English and Spanish equally; Spanish; an Asian; or other language at home. (If more than one language spoken, the one used most often).	2010–2021	---	---
Marital status	At the time of birth, birthing person was married or living together as married (married or living with someone like they were married, but not legally married); or unmarried (single [never married], separated, divorced, or widowed)	2019–2021 for current definition; 2010–2018 for previous definition	Prior to 2019, unmarried category included those who were living with someone like they were married, but not legally married.	Starting in 2019, the indicator ‘Unmarried’ is not comparable with prior years.

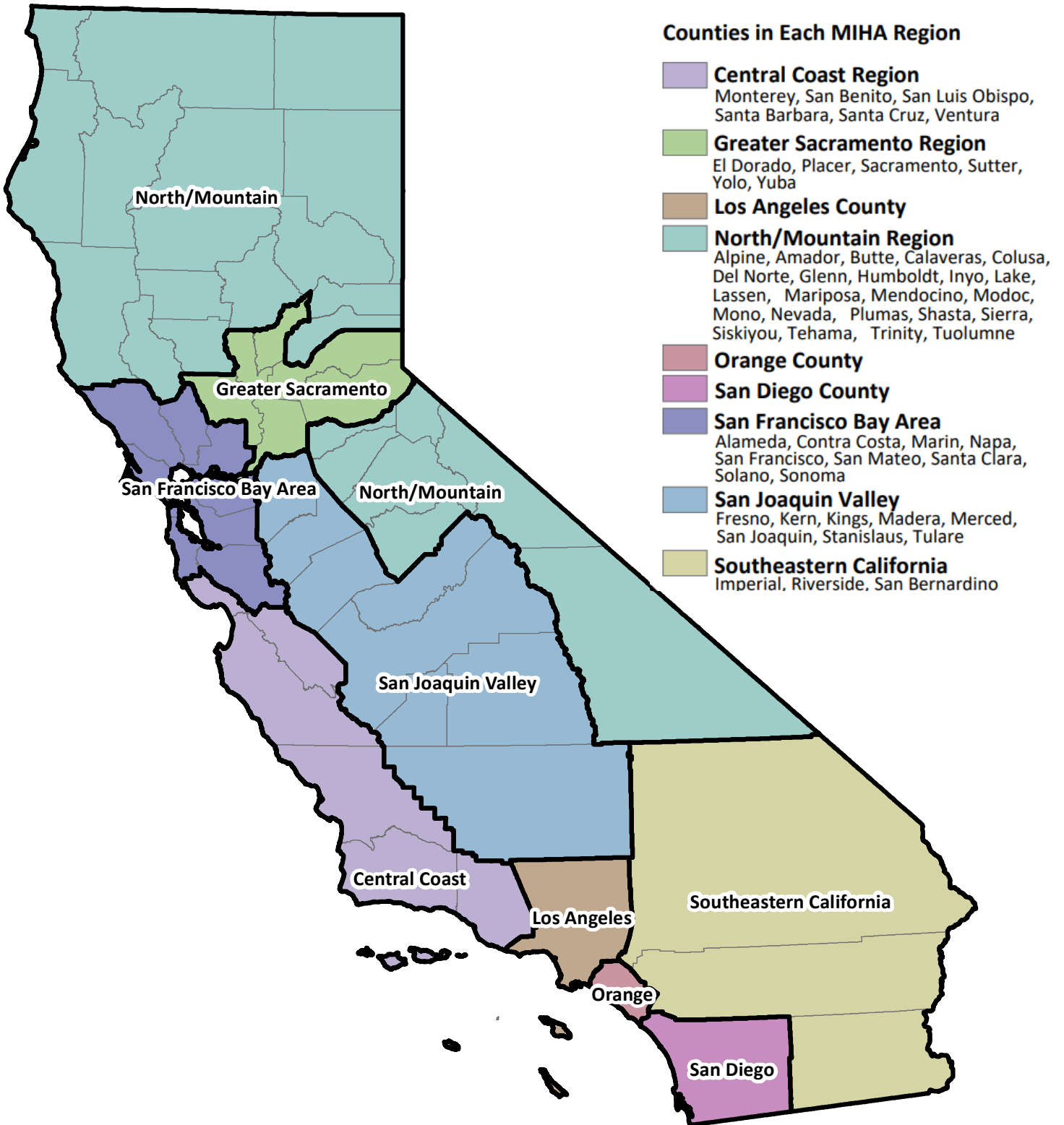
Born outside the U.S.	Birthing parent’s place of birth not in the U.S., reported on the birth certificate.	2010–2021	---	---
Neighborhood Poverty	<i>See Neighborhood Poverty subgroup definition.</i>	2019–2021	---	---
Lives in a high poverty neighborhood	Lives in a neighborhood, as defined by census tract of the residence reported on the birth certificate, in which 30% or more of residents are living below the federal poverty threshold. The estimated percentage of residents below poverty by census tract is obtained from American Community Survey 5-year estimates from the most recent year. Birth certificate and American Community Survey data are linked.	2016–2018 for current definition; 2013–2015 for previous definition.	Prior to 2016, high poverty neighborhood was defined as 20% or more of residents living below the federal poverty threshold.	Starting in 2016, indicator is not comparable to prior years.
Race/Ethnicity	<i>See Race/Ethnicity subgroup definition.</i>	2010–2021	---	---
Total Live Births	<i>See Total Live Births subgroup definition.</i>	2010–2021	---	---

MIHA County-Level Data Availability

For the data years 2013–2021, Maternal and Infant Health Assessment (MIHA) county-level data are available for the top 35 counties with the largest numbers of births.



MIHA Regions of California



Data Annotation and Suppression Criteria

The current MIHA data suppression criteria require estimates to be suppressed when:

- the sample numerator is less than 5,
- the number of women/birthing individuals in the population of interest (population denominator) is less than 100,
- the relative standard error (RSE) is greater than 50%, or
- a measure has been determined to address a sensitive topic and the prevalence is greater than 80% and the unweighted population divided by the weighted population 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:

For estimates with a prevalence $\leq 50\%$:

$$\text{Standard error} \div \text{estimate}$$

For estimates with a prevalence $> 50\%$:

$$\text{Standard error} \div (1 - \text{estimate})$$

Some MIHA publications using data from 2010–2012 used a previous set of suppression criteria in which estimates were suppressed when the number of events (sample numerator) was less than 10.

Weighting Methods

Sampling weights are created in MIHA to account for the stratified design, oversampling of specific groups, non-response among the birthing people sampled and non-coverage of women/birthing people who could not be sampled because their births were not in the sampling frame. When the final MIHA sample is weighted each year, it is designed to be representative of all individuals who delivered live-born infants in California during the calendar year in which the survey was conducted and who met other criteria, including those who were California residents, at least 15 years of age, and had a singleton, twin, or triplet birth. Although MIHA data are weighted to the entire birthing population, minus exclusions, the survey is only administered in English and Spanish, and results may not be generalizable to birthing people who speak other languages. The population represented by MIHA is referred to as the “target” population and is defined using the annual birth file, which is the final compilation of California birth data released annually by the Center for Health Statistics and Informatics (CHSI). From 1999 to 2017, this file was the Birth Statistical Master File (BSMF) and starting in 2018, it is the California Comprehensive Master Birth File (CCMBF).

The MIHA survey design allows for oversampling of certain groups, meaning their probabilities of selection were greater than the proportions of births they represented in the state. This ensures that enough respondents participate in the survey to allow for analysis. These oversamples have included American Indian/Alaska Native women (2012–2015), Black women (all years), WIC-eligible women not participating in the WIC program (2010–2012), those with a preterm birth (2016 and later), the 20 counties with the most births (2010–2012), and the 35 counties with the most births (2013 to 2021).

Every MIHA respondent is assigned a survey weight, which indicates the number of similar birthing people in California that they represent. Starting in 2010, this State Weight has consisted of 4 components (see below) calculated within strata. Additional steps have been added in subsequent years to create a Final Weight and improve the ability of the sample to represent the target population. Starting in 2011, raking (see details below) was added to the weighting process to adjust the State Weights to more accurately represent the annual birth file, particularly at the county level. Starting in 2013, trimming of weights (see details below) was implemented to reduce the influence of excessively large survey weights. These methods of raking and trimming continue to be used in all MIHA publications since 2013.

Calculation of the State Weight

The components of the State Weight are as follows:

Non-Coverage Weight

The non-coverage weight accounts for differences between the frame from which the sample is drawn and the target population to which generalizations are made. The MIHA sample is drawn from birth certificate data for births occurring from February through May of each year, which is referred to as the “sampling frame.” In 2020, due to the COVID-19 pandemic, the sampling frame was comprised of births occurring from March through June. Birth certificate data files from which the MIHA sample is drawn are provided in monthly batches by the CHSI. The non-coverage weight accounts for the difference between the number of births in the sampling frame and the number in the calendar year. The non-coverage weight also accounts for changes that might be made to the birth file after the sample is taken (e.g., births may not be in the frame files for sampling if they are reported late, but these late reported births are eventually included in the annual birth file). The non-coverage weight is defined, within stratum S , as:

$$\text{Number in the Target Population } S \div \text{Number in the Sampling Frame } S$$

Inverse of Sampling Fraction

The sampling fraction is the probability of selection, or the ratio of the number of birthing people sampled to the number of birthing people in the sampling frame. Therefore, the inverse of the sampling fraction within stratum S is:

$$\text{Number in the Sampling Frame } S \div \text{Number Sampled } S$$

Non-Response Weight

This weight adjusts for non-response to the survey by birthing people who were sampled. The non-response weight is calculated within stratum S as:

$$\text{Number Sampled } S \div \text{Number of Respondents } S$$

Post-stratification Weight for Non-response (Propensity Score Adjustment)

The non-response weight described above accounts for non-response on factors used to define the strata (e.g., Black race, term or preterm birth, and county/region of residence). Additional individual-level factors may also predict whether a birthing person is likely to respond to the MIHA survey. Therefore, another adjustment for non-response is calculated to make the MIHA survey more representative of the target population from which the sample is taken. The probability of responding (versus not responding) is calculated using a geographically stratified logistic regression model of all sampled individuals. Variables in the logistic regression model come from the annual birth file and include maternal race/ethnicity, US or foreign birthplace,

age, education, reported principal source of delivery payment, total children born alive, month prenatal care began, WIC participation, and term or preterm birth. A predicted probability (p) of being a respondent, or propensity score, is output for every individual sampled. The score is then rescaled, which means that p is multiplied by a constant factor for all respondents, so that the sum of p over all respondents now adds to the number of respondents. Starting in 2014, the post-stratification weight is capped at the 99th percentile of the post-stratification weight for each year.

Formula for State Weight

The State Weight is calculated using the four components defined above:

$$NON-COVERAGE * INVERSE SAMPLING FRACTION * NON-RESPONSE * POST-STRATIFICATION$$

Adjustments to Create the Final Weight

Raking Survey Weights (or Iterative Proportional Fitting)

The State Weight alone produces weighted data that are very close to the data from the annual birth file at the state level and for most counties/regions. However, there are some remaining discrepancies between the weighted MIHA data and the annual birth file within subgroups of birthing individuals and at the county and regional levels. Raking the State Weights produces estimates that are closer to those of the annual birth file for subgroups, and at the county and regional level.

Raking is a process by which the weighted prevalence of a selected variable is aligned with the known prevalence in a target population. In MIHA, the State Weights are raked so that weighted birth certificate variable estimates reflect those of the annual birth file as closely as possible at the level of the respondent's sampling region (county or group of counties).

Raking is conducted over a series of predetermined variables, one at a time, in an iterative process. Raking variables include maternal age, race/ethnicity, nativity, prior cesarean section (2010–2012), low birth weight, preterm birth, prior live births, delivery payer, delivery method, BMI before pregnancy (2013 forward), education (2013 forward), and WIC participation (2017 forward). The weight assigned to each birthing individual who falls in category C of raking variable V is multiplied by a factor of:

$$\text{Number in the Target Population } vc \div \text{Weighted Number of MIHA Respondents } vc$$

The first adjustment is made to the State Weight calculated in the previous section. This results in a different weight value, which is adjusted using the next raking variable and the process continues for each variable. After this is done for all desired variables, the data are checked to

ensure the percentages for each raking variable are as close as possible to those of the annual birth file within the sampling region or group. If results can be adjusted to be more similar to those of the annual birth file, the process starts again with the first raking variable, using the weight from the previous iteration. After the raking process is complete, the resulting weight is rescaled (i.e., multiplied by a constant factor), so that the sum of the raked weights over all respondents adds to the number of people in the annual birth file who meet MIHA's inclusion criteria in that county/region.

Trimming Survey Weights

The raked weights are trimmed to reduce the influence of excessively high individual weights. Weights within strata identified as having excessively large weights are trimmed at the third standard deviation (99.73rd percentile), and weights are constrained to a fixed range of the original State Weight. Raked and trimmed weights are rescaled so that totals reflect county birth totals in the annual birth file.

After raking and trimming, differences between county-level and regional-level MIHA data and the annual birth file are small. Very few of the estimates in the largest counties are greater than three percentage points different from those in the annual birth file after raking. Differences between MIHA and the target population are sometimes greater in smaller sampling regions than in counties that have more births.