PRETERM BIRTH RATE

Preterm birth is a birth with less than 37 weeks gestation based on the obstetric estimate of gestational age. Data used in this report card came from the National Center for Health Statistics (NCHS) natality files, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program.[1] This national data source was used so that data are comparable for each state and jurisdiction-specific report card. Data provided on the report card may differ from data obtained directly from state or local health departments and vital statistics agencies due to timing of data submission and handling of missing data. The preterm birth rates shown at the top of report card was calculated from the NCHS 2022 final natality data for all U.S. States and Washington D.C. Preterm birth rates in the trend graph are from the NCHS 2012-2022 final natality data. County and city preterm birth rates are from the NCHS 2022 final natality data for U.S. states and Washington D.C. Preterm birth rates for bridged racial and ethnic categories were calculated from NCHS 2020-2022 final natality data. All provided measures for Puerto Rico are obtained from the Puerto Rico Department of Health for 2022 or the U.S. territorial natality file, 2012-2021. Preterm birth rates were calculated as the number of premature births divided by the number of live births with known gestational age multiplied by 100. Joinpoint Trend Analysis Software[2] was utilized to assess significant trends in preterm birth.

PRETERM BIRTH GRADING METHODOLOGY

Preterm birth grades range from an F to an A. Expanded grade ranges were introduced in 2019. Each score within a grade was divided into thirds to create +/- intervals. The resulting scores were rounded to one decimal place and assigned a grade. Grade ranges remain based on standard deviations of final 2014 state and District of Columbia preterm birth rates away from the March of Dimes goal of 8.1 percent. Grades were determined using the following scoring formula: (preterm birth rate of each jurisdiction – 8.1 percent) / standard deviation of final 2014 state and District of Columbia preterm birth rates.

PRETERM BIRTH BY CITY

The U.S. report card displays cities with the greatest number of live births. Cities are shown if they ranked in the top 100 for total number of live births in 2022 among all cities in the U.S., District of Columbia and Puerto Rico with populations greater than 100,000. City grading followed the methodology described above. For example, Birmingham Alabama ranked as the top city for live births and received a city preterm birth grade of F (calculated as: the city preterm birth rate – 8.1 percent)/standard deviation of all final 2014 preterm birth rates.

PRETERM BIRTH BY RACE/ETHNICITY OF MOTHER

Mother's race and Hispanic ethnicity are reported separately on the birth certificate. Rates for Hispanic women include all bridged racial categories (White, Black, American Indian/Alaska Native and Asian/Pacific Islander). Rates for non-Hispanic women are classified according to race. The Asian/Pacific Islander category includes Native Hawaiian. To provide stable rates, racial and ethnic groups are shown on the report card if the group had 10 or more

GRADE	PRETERM BIRTH RATE RANGE SCORING CRITERIA
A	Preterm birth rate less than or equal to 7.7%.
A-	Preterm birth rate of 7.8 to 8.1%.
B+	Preterm birth rate of 8.2 to 8.5%.
B	Preterm birth rate of 8.6 to 8.9%.
B-	Preterm birth rate of 9.0 to 9.2%.
C+	Preterm birth rate of 9.3 to 9.6%.
C	Preterm birth rate of 9.7 to 10.0%.
C-	Preterm birth rate of 10.1 to 10.3%.
D+	Preterm birth rate of 10.4 to 10.7%.
D	Preterm birth rate of 10.8 to 11.1%.
D-	Preterm birth rate of 11.2 to 11.4%.
F	Preterm birth rate greater than or equal to 11.5%.

PRETERM BIRTH BY FACTORS

Multiple new factors were introduced in the 2023 report card to show additional circumstances that may impact preterm birth. This year's report card includes smoking, hypertension, unhealthy weight, diabetes, previous preterm birth, and carry multiples (see definitions on page 2). All risk factors presented are not mutually exclusive, meaning more than one can occur at the same time. For instance, a pregnant person could have both diabetes prior to pregnancy and have an unhealthy weight prior to pregnancy. Rates by factors are calculated as: the total number of preterm births among the selected factor divided by the total number of all live births for the selected factor, multiplied by 100 to get the rate of preterm birth among each factor. To make comparisons we include the percentage of each factor for all live births in parenthesis below each rate. A few ways to interpret the new preterm birth factors are:

- In the U.S., the preterm birth rate among those who had pre pregnancy hypertension was 23.4 percent whereas pre pregnancy hypertension accounts for 2.9 percent of all live births.
- The preterm birth rate in Mississippi is 14.8 percent however the preterm birth rate among smokers is 17.4 percent.

PRETERM BIRTH BY FACTORS CONTINUED

All factors were assessed using data from NCHS 2022 natality data and Puerto Rico Department of Health and were selected based on their association with preterm birth and availability within natality data.

SMOKING
Smoking status was ascertained when the birthing person reported having any cigarettes in the 3 months prior to pregnancy regardless of the number of cigarettes consumed. Smoking before pregnancy is a self-reported measure and data did not include those that smoked during their pregnancy.

HYPERTENSION
Pre- pregnancy hypertension was defined as the elevation of blood pressure above normal for the birthing persons age, sex, and physiological condition prior to onset of the current pregnancy. Data presented for preterm birth by hypertension does not include gestational hypertension and pregnancy induced hypertension (or preeclampsia).

DIABETES
Diabetes was defined as pre-pregnancy diabetes (type 1 or type 2) and does not include gestational diabetes (diabetes during pregnancy).

UNHEALTHY WEIGHT BEFORE PREGNANCY
Body mass index (BMI) is a measure of body fat based on height and weight that applies to adult men and women. The percent of women with an unhealthy weight before pregnancy was calculated as the number of women with a BMI that is categorized as either underweight (BMI <18.5) or obese (30 or higher) divided by the number of women who had a live birth multiplied by 100.

PREVIOUS PRETERM BIRTH
A previous preterm birth was defined as having a prior birth where the baby was born before 37 weeks' gestation.

CARRYING MULTIPLES
Carrying multiples was defined as any pregnancy with more than one baby. Multiples can include twins, triples, quadruplets or more.

INFANT MORTALITY RATE
Infant mortality rates were calculated using the NCHS 2021 period linked infant birth and infant death data. Infant mortality rates were calculated as the number of infant deaths divided by the number of live births multiplied by 1,000. Infant mortality rate in the trend graph are from the NCHS 2011-2021 period linked infant birth and infant death files. Joinpoint Trend Analysis Software[2] was utilized to assess significant trends in infant mortality. Weights were applied to account for deaths in which linking was not possible.

INFANT MORALITY BY RACE/ETHNICITY OF THE MOTHER
Mother's race and Hispanic ethnicity are reported separately on the birth certificate. Rates for Hispanic women include all bridged racial categories (White, Black, American Indian/Alaska Native and Asian/Pacific Islander). Rates for non-Hispanic women are classified according to race. The Asian/Pacific Islander category includes Native Hawaiian. To provide stable rates, racial and ethnic groups are shown on the report card if the group had 10 or more infant deaths. To calculate infant mortality rates by maternal race/ethnicity on the report card, three years of data were aggregated (2019-2021). Infant mortality rates for not stated/unknown race are not shown on the report card. Weights were applied to account for deaths in which linking was not possible.

LEADING CAUSES OF INFANT DEATH
NCHS period linked birth/infant death files (2019-2021) were used for cause of death analyses. See Appendix A for a detailed list of cause of death codes and their groupings. The top four cause of death categories by percent of total deaths per state were selected for chart inclusion. The percent of deaths attributed to causes outside of the categories selected were combined in an "other" category. Please see "Tenth Revision 130 Selected Causes of Infant Death Adapted' for full code list and labels.[3] Weights were applied to account for deaths in which linking was not possible.

THE 2023 MARCH OF DIMES REPORT CARD:
THE STATE OF MATERNAL AND INFANT HEALTH FOR AMERICAN FAMILIES
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MATERNAL MORTALITY

Maternal mortality refers to the death of a birthing person from complications of pregnancy or childbirth that occur during the pregnancy or within 6 weeks after the pregnancy ends.[4] Maternal deaths are ascertained using the NCHS 2018-2021 mortality data. The number of maternal deaths does not include all deaths occurring to pregnant or recently pregnant women, but only deaths with the underlying cause of death assigned to *International Statistical Classification of Diseases, 10th Revision* code numbers A34, O00–O95, and O98–O99. Rates are calculated by dividing the number of maternal deaths by the number of births in the same geographic region during the same data year(s) and multiplying by 100,000.[5]

Maternal mortality rates fluctuate from year to year because of the relatively small number of these events and possibly due to issues with the reporting of maternal deaths on death certificates.[6] One-year national rates can only be shown overall and for the three largest race and Hispanic-origin groups for which statistically reliable rates can be calculated (Non-Hispanic Black, Non-Hispanic White and Hispanic). Four-year aggregate rates are presented for all other race groups and by state, still some states do not have enough deaths to provide reliable estimates and are therefore suppressed.

MATERNAL VULNERABILITY INDEX

March of Dimes recognizes the importance of certain risk factors that are associated with maternal and infant health outcomes. March of Dimes, in partnership with Surgo Health, is offering the opportunity to examine determinants of maternal health at the county level using the Maternal Vulnerability Index (MVI)[7]. The MVI is the first county-level, national-scale, open-source tool to identify where and why mothers in the United States are vulnerable to poor pregnancy outcomes and pregnancy-related deaths. The MVI includes not only widely known clinical risk factors, but also key social, contextual, and environmental factors that are also essential influencers of outcomes. This report displays data from the 2023 updated MVI.

Differences in counties are measured using numerous factors broken into six themes: reproductive healthcare, physical health, mental health and substance abuse, general healthcare, socioeconomic determinants and physical environment. The MVI assigns a score of 0-100 to each geography, where a higher score indicates greater vulnerability to adverse maternal outcomes. Learn more about the MVI methodology by visiting Surgo Health website. (Surgo Ventures - The US Maternal Vulnerability Index (MVI)).

ADDITIONAL MATERNAL HEALTH INDICATORS

LOW-RISK CESAREAN BIRTH RATES

A low-risk Cesarean birth occurs when a woman undergoes the surgical procedure if the baby is a single infant, is positioned head-first, the mother is full-term (at least 37 weeks), and has not given birth prior.[8] This is also referred to as a NTSV Cesarean birth. NTSV abbreviated to mean Nulliparous (or first-time mother), Term, Singleton, Vertex (head-first position).

Low-risk Cesarean birth rates were calculated using the NCHS 2022 final natality data for the US states and District of Columbia and the data from the Puerto Rico Health Department.[1] Low-risk Cesarean birth rates were calculated as the number of Cesarean births that occurred to first-time mothers of a single infant, positioned headfirst with a gestational age of at least 37 weeks (NTSV) divided by the number of first-time mothers of a single infant, positioned headfirst with a gestational age of at least 37 weeks (NTSV) multiplied by 100.

INADEQUATE PRENATAL CARE

Adequacy of prenatal care is measured using the Adequacy of Prenatal Care Utilization Index, which classifies prenatal care received into 1 of 4 categories (inadequate, intermediate, adequate and adequate plus) by combining information about the timing of prenatal care, the number of visits and the infant's gestational age.[9] Inadequate prenatal care is defined as a woman who received less than 50% of her expected visits. Inadequate prenatal care is calculated using the NCHS 2022 final natality data and data from the Puerto Rico Health Department.[1]

CALCULATIONS

All natality calculations were conducted by March of Dimes Perinatal Data Center.

STATE LEVEL POLICIES

MEDICAID EXTENSION

The adoption of this policy allows women to qualify for pregnancy-related Medicaid coverage for more than the standard 60 days after pregnancy for up to one year. Extending this coverage option can be done through a State Plan Amendment (SPA) or Section 1115 Waiver. Medicaid extension status is provided by Kaiser Family Foundation as adopted, progressing, or not adopted.[10]

MEDICAID EXPANSION

Medicaid expansion allows more people to be eligible for Medicaid coverage—it expands the cut-off for eligibility. Medicaid expansion status is provided by the Kaiser Family Foundation as adopted, progressing, or not adopted.[11] Medicaid expansion has reduced the rates of uninsured. Increased access and utilization of health care are significantly associated with Medicaid expansion.[12]

PAID FAMILY LEAVE

Paid family and medical leave refers to policies that enable workers to receive compensation when they take extended time off work for qualifying reasons, such as bonding with a new child, recovering from one's own serious illness or caring for a seriously ill loved one.[13] The measure is reported as: state has an active policy that provides an option for pay while out on extended leave, state is progressing/has pending legislation that is not yet in effect or it does not have an active policy in place. Data is provided by Onpay.[14]

DOULA POLICY ON MEDICAID COVERAGE

Doulas are non-clinical professionals that emotionally and physically support birthing persons during the perinatal period, including birth and postpartum.[15] Doula policy status show states that have enacted bills relating to Medicaid coverage of doula care, or not. The measure is reported as: state Medicaid agency is actively reimbursing doula care, state has progress on passing Medicaid reimbursement legislation or state Medicaid agency does not reimburse doula care. An additional measure includes identifying states that reimburse up to $1,500 for doula services. Data is provided by the National Health Law Program under the Doula Medicaid Project. [16]

MATERNAL MORTALITY REVIEW COMMITTEE (MMRC)

These committees investigate deaths related to pregnancy to determine underlying causes of death and respond to improve conditions and practices. The committees can be made up of representatives from public health, nursing, maternal-fetal medicine, obstetrics and gynecology, midwifery, patient advocacy groups and community-based organizations.[17] The measure is provided by the Centers for Disease Control (CDC) and is categorized as: state has an MMRC that is receiving federal funding or state does not have an MMRC that is receiving federal funding.[18]

FETAL AND INFANT MORTALITY REVIEW (FIMR)

Fetal and Infant Mortality Review is the community-based, action-oriented process of reviewing fetal and infant death cases to improve maternal and infant health outcomes.[19] The measure is reported as: state has a Fetal and Infant Mortality Review team or teams or state does not have any teams. Data was provided by the National Center for Fatality Review and Prevention.[20]

PERINATAL QUALITY COLLABORATIVE (PQC)

The PQC involves partnerships with families, key state agencies and organizations to identify and initiate programs or procedures that increase the quality of care in clinical settings. PQC's work focuses on collaborative learning among health care providers and the PQC. Data is provided by the Centers for Disease Control and Health Resources and Services Administration, and the measure is reported as: state has a PQC with federal funding or state does not have a PQC with federal funding.[21]

REFERENCES

1 National Center for Health Statistics, final natality data 2010-2022.

2 Joinpoint Trend [computer software]. Version 5.0.2. Retrieved from https://surveillance.cancer.gov/joinpoint/.

3 Centers for Disease Control and Prevention. Tenth Revision 130 Selected Causes of Infant Death Adapted for Use by DVS. Accessed October 5, 2023. https://wonder.cdc.gov/wonder/sci_data/natal/linked/type_txt/cohort99/130Cause99.pdf.

4 National Institue of Child Health and Human Development (NICHD). Maternal Morbidity and Mortality. Accessed October 5th, 2023. https://www.nichd.nih.gov/health/topics/factsheets/maternal-morbidity-mortality.

5 Hoyert DL. Maternal Mortality Rates in the United States, 2021. NCHS Health E-Stats. 2023. DOI: https://dx.doi.org/10.15620/cdc:124678.

6 Hoyert DL, Miniño AM. Maternal Mortality in the United States: Changes in Coding, Publication, and Data Release, 2018. National Vital Statistics Reports; vol 69 no 2. Hyattsville, MD: National Center for Health Statistics. 2020.

7 Surgo. Maternal Vulnerability Index. Accessed October 5, 2023. https://mvi.surgoventures.org.

8 Martin JA, Hamilton BE, Osterman MJK, Driscoll AK. Births: Final Data for 2018. Natl Vital Stat Rep 2019;68(13):1- Retrieved from: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf.

9 Kotelchuck M. An evaluation of the Kessner Adequacy of Prenatal Care Index and a Proposed Adequacy of Prenatal Care Utilization Index. Am J Public Health 1994;84(9):1414-1420.

10 Kaiser Family Foundation. Medicaid Postpartum Coverage Extension Tracker. Published September 28, 2023. https://www.kff.org/medicaid/issue-brief/medicaid-postpartum-coverage-extension-tracker/.

11 Kaiser Family Foundation. Status of State Medicaid Expansion Decisions: Interactive Map. Accessed September 22, 2023. https://www.kff.org/medicaid/issue-brief/status-of-state-medicaid-expansion-decisions-interactive-map/.

12 Kaiser Family Foundation. Status of State Action on the Medicaid Expansion Decision. Accessed September 29, 2023. https://www.kff.org/health-reform/state-indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/.

13. U.S. Department of Labor- Women's Bureau. Paid family and medical leave fact sheet. Accessed October 4, 2023. https://www.dol.gov/sites/dolgov/files/WB/paid-leave/PaidLeavefactsheet.pdf.

14. Paid Family Leave Laws: A State-by-State Guide. OnPay. Updated: September 7, 2023. Accessed September 22, 2023. https://onpay.com/hr/basics/paid-family-leave-by-state#which-states-have-proposed-paid-and-family-medical-leave-legislation.

15 DONA International. What is a Doula? Accessed October 4, 2023. https://www.dona.org/what-is-a-doula/.

16 National Health Law Program. Doula Medicaid Project. Accessed September 22, 2022. https://healthlaw.org/doulamedicaidproject/.

17 Guttmacher Institute. Maternal Mortality Review Committees. Accessed September 29, 2023. https://www.guttmacher.org/state-policy/explore/maternal-mortality-review-committees.

18 Centers for Disease Control and Prevention. Maternal mortality. Accessed September 22, 2023. https://www.cdc.gov/reproductivehealth/maternal-mortality/erase-mm/index.html.

19 The National Center for Fatality Review and Prevention. Fetal & Infant Mortality Review. Accessed October 4, 2023. https://ncfrp.org/fimr/.

20 The National Center for Fatality Review and Prevention. FIMR map. Accessed September 22, 2023. https://ncfrp.org/fimr-map/.

21 Centers for Disease Control and Prevention. State Perinatal Quality Collaboratives. Published August 22, 2023. Accessed September 22, 2023. https://www.cdc.gov/reproductivehealth/maternalinfanthealth/pqc-states.html.

22 Health Resources and Services Administration, FY 2023 Alliance for Innovation (AIM) on Maternal Health Awards, Published September 2023, FY 2023 Alliance for Innovation (AIM) on Maternal Health Awards | MCHB (hrsa.gov)

2023 MARCH OF DIMES REPORT CARD
TECHNICAL NOTES

APPENDIX A: CAUSE OF DEATH CATEGORIES AND CORRESPONDING CODES

Cause of death category	Cause of death codes included
Birth defects	119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133
Preterm birth/low birth weight	089, 090
SUIDS	135
Maternal complications	075, 076, 077, 078
Respiratory distress syndrome	096
Complications of the placenta, cord, or membranes	080, 081, 082, 083
Accidents (unintentional injury)	141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151
Bacterial sepsis of newborn	106
Diseases of the circulatory system	047, 048, 049, 050, 051, 052
Intrauterine hypoxia and birth asphyxia	094, 095