

## Change in the Primary Measure of Perinatal Mortality for Vital Statistics

by Elizabeth C.W. Gregory, M.P.H., Claudia P. Valenzuela, M.P.H., Donna L. Hoyert, Ph.D., and Joyce A. Martin, M.P.H

### Abstract

**Background and Objectives**—Beginning with the 2023 data year, the National Center for Health Statistics (NCHS) will use a different, expanded measure of perinatal mortality for standard publications. This measure, Definition III, includes fetal deaths at 20 weeks of gestation or more and infant deaths younger than 7 days. Definition III replaces Definition I (fetal deaths at 28 weeks of gestation or more and infant deaths younger than 7 days), which has been used in NCHS reports since the 1980s. This change is being made due to the implementation of national reporting of all fetal deaths at 20 weeks of gestation or more as of 2014, allowing for the use of Definition III, which more fully represents the perinatal events most likely to be affected by similar factors. This report describes the reason for this change and compares trends in perinatal mortality rates based on Definition I and Definition III from 2014 to 2022 and differences in the two measures by maternal race and Hispanic origin, age, and state of residence for 2022.

**Methods**—Data for perinatal mortality are derived from NCHS's National Vital Statistics System's fetal death, birth, and period linked birth/infant death files. Perinatal mortality rates for Definition III are compared with those for Definition I.

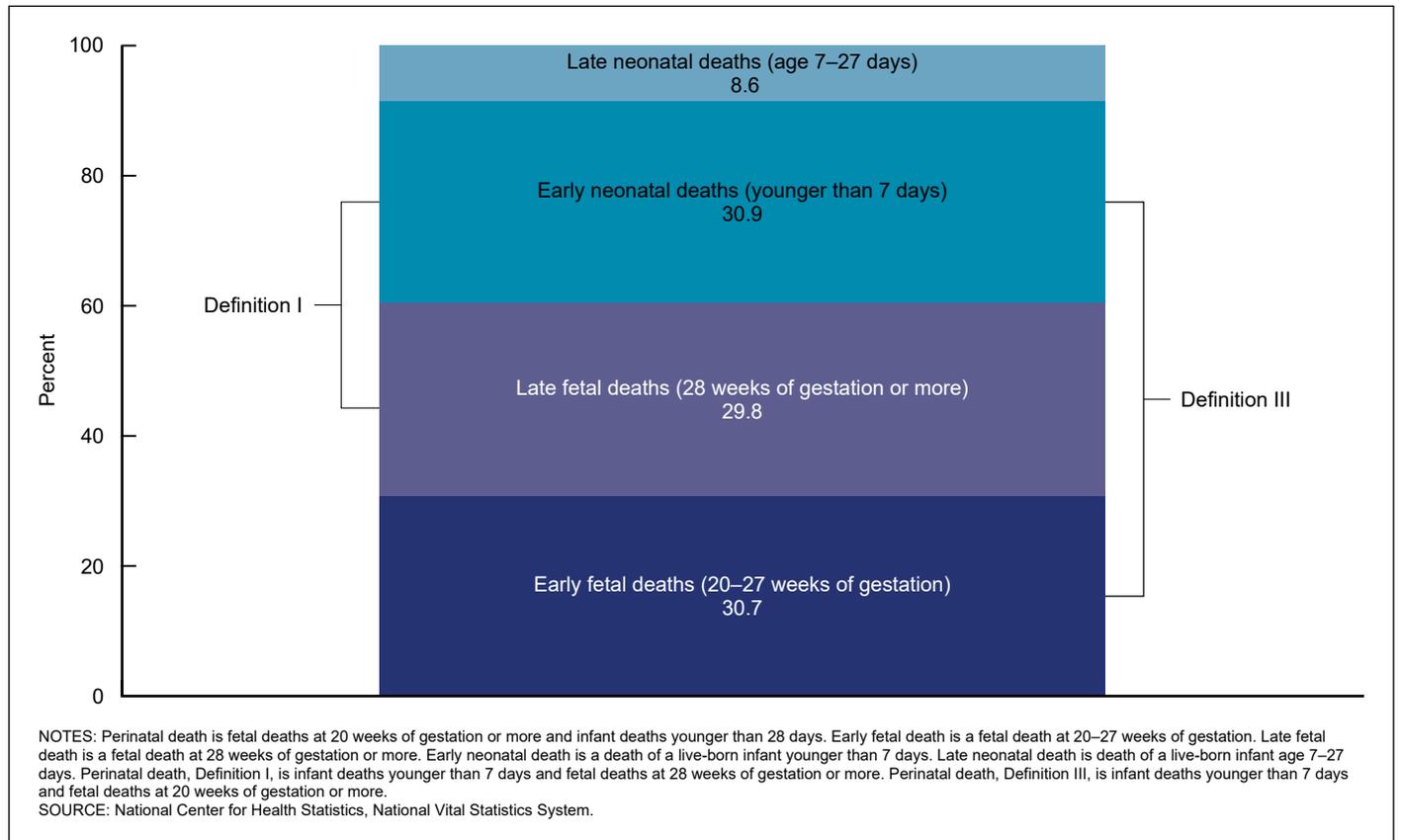
**Results**—In 2022, Definition III comprised 91.4% of perinatal deaths (fetal deaths at 20 weeks of gestation or more and infant deaths younger than 28 days) compared with 60.7% of perinatal deaths captured by Definition I. The perinatal mortality rate for Definition III was about 50% higher than that for Definition I (8.27 and 5.51, respectively, in 2022). Trends in perinatal mortality were similar for both measures during 2014–2022; rates were stable from 2014 through 2016 and then declined from 2016 through 2022. For 2022, patterns by maternal race and Hispanic origin and age were also similar, but more variation in patterns was observed by state.

**Keywords:** perinatal death • National Vital Statistics System

### Introduction

The concept of perinatal mortality was developed in the late 1940s, with the growing awareness that neonatal deaths and stillbirths (fetal deaths at 20 weeks or more) have many common causes and determinants (1,2). Perinatal mortality has been traditionally measured as a combination of fetal deaths of at least 20 weeks of gestation and infant deaths younger than 28 days of age. It is an important metric, as it provides a broader understanding of reproductive loss and can be an indicator of the quality of health care before, during, and after delivery (2–4). Definitions of perinatal mortality recommended by the Public Health Conference on Records and Statistics in the United States in 1956 and the World Health Organization in 1965 serve as the basis for the three perinatal measures generally used in the United States and implemented by NCHS beginning in 1979 (1,5,6).

Perinatal Definition I is the most commonly used measure and the most restrictive definition—it refers only to fetal deaths at 28 weeks of gestation or more and infant deaths younger than 7 days of age (Figure 1). Perinatal Definition II is the most inclusive definition—it includes all perinatal deaths; that is, fetal deaths at 20 weeks of gestation or more and infant deaths younger than 28 days of age. Definition II will not be discussed in further detail in this report because it includes late neonatal deaths, which are more removed in time from pregnancy and labor, and, as a result, tend to have different causes of death (7,8). Perinatal Definition III includes fetal deaths at 20 weeks of gestation or more and infant deaths younger than 7 days of age. Definition I has been the primary measure used for official statistics in the United States because it restricts fetal deaths to 28 weeks of gestation or more, those for which national data have been available, and infant deaths to those occurring within 7 days of birth, the period in which prenatal conditions and circumstances surrounding the delivery have more effect on mortality than do postnatal factors (9). Further, Definition I is generally used for

**Figure 1. Percent distribution of components of perinatal deaths: United States, 2022**

international comparisons, as reporting requirements can vary across countries (10).

The use of Definition I was also preferred because, although the Model State Vital Statistics Act and Regulations has recommended reporting of all fetal deaths with a birthweight of 350 grams or more, or if birthweight is unavailable, a gestational age of 20 completed weeks or more (11), since 1992, it was not until 2023 that NCHS became aware that all jurisdictions had implemented reporting requirements that are fundamentally consistent with this recommendation as of 2014. That is, before 2014, some jurisdictions required reporting at later than 20 weeks or at more than 350 grams.

This availability of national data on early fetal deaths led to a reevaluation of the most useful primary measure of perinatal mortality and a change from Definition I, which excludes fetal deaths at 20–27 weeks, to Definition III, which more fully represents the conditions and circumstances surrounding the delivery because it includes all fetal deaths at 20 weeks or more (both measures include early neonatal deaths). This report examines perinatal mortality rates for Definitions I and III, including overall trends from 2014 through 2022, and by maternal race and Hispanic origin, age, and state of residence for 2022 to provide comparisons of the definitions and better understand the implications of this change.

## Methods

### Data sources

Data for perinatal mortality rates are derived from three types of vital events—fetal deaths (at 20 weeks of gestation or more), infant deaths, and live births. Data for these events come from reports of fetal death and certificates of birth and death, which are collected by all 50 states, the District of Columbia, American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands and reported to NCHS via the National Vital Statistics System (NVSS).

Fetal mortality is defined as death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy, and which is not an induced termination of pregnancy (11). Data are collected on the report of fetal death and are drawn from the national fetal death file (12). Although most pregnancy losses occur early in pregnancy (13), most U.S. states only report fetal deaths at 20 weeks of gestation or more (12), and, accordingly, fetal mortality data from NVSS are typically presented for fetal deaths at 20 weeks of gestation or more. These fetal deaths are typically divided into two periods: early (20–27 weeks of gestation) and late (28 weeks of gestation or more). Infant death is defined as the death of a liveborn infant younger than 1 year of age. Data are collected from both the birth and death certificates and are drawn from the NVSS period linked birth/infant death file, which links the information from these two records (14). Infant

deaths are typically classified as neonatal (younger than 28 days of age) and postneonatal (age 28 days to less than 12 months) deaths. Neonatal deaths can be subdivided into early (younger than 7 days of age) and late (age 7–27 days) components. Data on live births are collected from birth certificates and are drawn from the NVSS birth file (15).

## Perinatal mortality rates

Perinatal mortality rates based on Definitions I and III comprise a combination of fetal deaths and early neonatal deaths in the numerator and live births plus fetal deaths in the specified gestational age group in the denominator:

$$\text{Perinatal mortality rate, Definition I} = \frac{\text{Fetal deaths at 28 weeks or more and infant deaths younger than 7 days}}{\text{Live births and fetal deaths at 28 weeks or more}} \cdot 1,000$$

$$\text{Perinatal mortality rate, Definition III} = \frac{\text{Fetal deaths at 20 weeks or more and infant deaths younger than 7 days}}{\text{Live births and fetal deaths at 20 weeks or more}} \cdot 1,000$$

## Race and Hispanic origin

Race and Hispanic origin are reported separately on the birth certificate and report of fetal death and are self-reported by the mother. For infant deaths, race and Hispanic-origin information is taken from the birth certificate. Race and Hispanic-origin data are based on single-race reporting and are consistent with the 1997 Office of Management and Budget standards (16). The maternal race and Hispanic-origin categories presented are American Indian and Alaska Native non-Hispanic (subsequently, American Indian and Alaska Native), Asian non-Hispanic (subsequently, Asian), Black non-Hispanic (subsequently, Black), Native Hawaiian or Other Pacific Islander non-Hispanic (subsequently, Native Hawaiian or Other Pacific Islander), White non-Hispanic (subsequently, White), and Hispanic.

## Statistical significance

Trends in the perinatal mortality rates for Definitions I and III for 2014–2022 were evaluated using the Joinpoint Regression Program (17). Differences between rates noted in the text are statistically significant at the 0.05 level unless otherwise noted and are based on a pairwise comparison using a two-tailed z test.

## Results

### Components, rates, and overall trends

- In 2022, Definition III comprised a larger percentage of perinatal deaths (91.4% or 30,506 deaths) than Definition I (60.7% or 20,260 deaths) (Table 1 and Figure 1).

- Due to the inclusion of early fetal deaths, the overall perinatal mortality rate based on Definition III was about 50% higher than Definition I for each year during 2014–2022 (8.27 fetal deaths at 20 weeks or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 20 weeks or more compared with 5.51 fetal deaths at 28 weeks or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 28 weeks or more in 2022).
- During 2014–2022, trends in the perinatal mortality rates for both measures followed similar patterns. Perinatal mortality rates based on Definition III and Definition I were stable from 2014 through 2016 and then declined by 9% and 8%, respectively, from 2016 through 2022 (Table 1 and Figure 2).

## Race and Hispanic origin

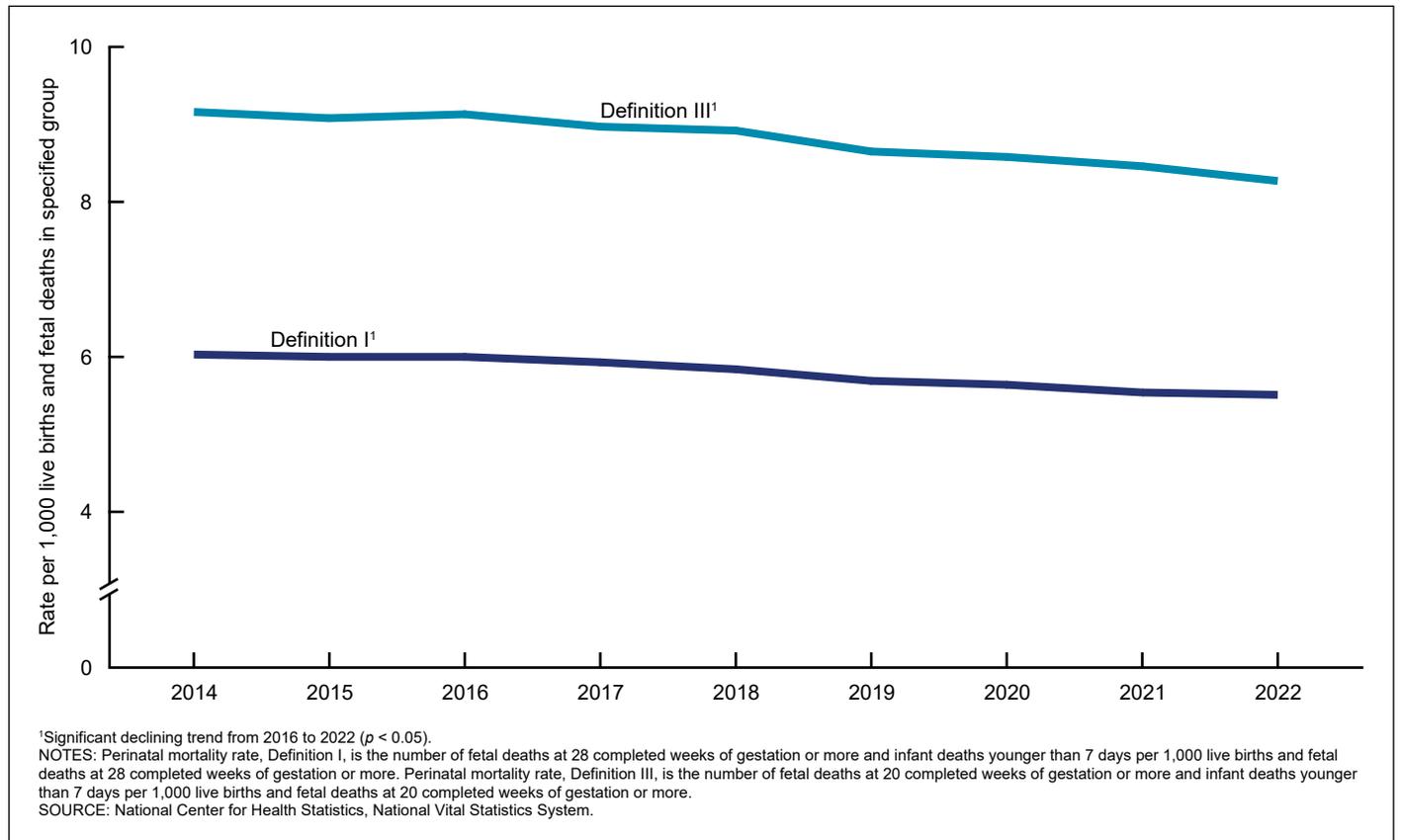
- During 2022, patterns in rates by race and Hispanic origin based on Definition III and Definition I were the same. Rates were highest for Black (15.05 and 9.57, respectively) and Native Hawaiian or Other Pacific Islander (13.69 and 9.04) women, followed by American Indian and Alaska Native women (10.92 and 7.78). Rates were lowest for Asian women (5.71 and 3.73), followed by White (6.70 and 4.56) and Hispanic (7.26 and 4.94) women (Table 2).

## Maternal age

- During 2022, patterns in rates by age based on Definition III and Definition I were generally similar. For Definition III, the rate was 10.62 for females younger than 20, declined to a low for women ages 25–29 (7.63) and 30–34 (7.48), and then increased among older women, reaching a high of 12.33 for those age 40 and older. For Definition I, the pattern was similar, with one exception—the rate was lowest for women ages 30–34 (4.93) (Table 2).

## State of residence

- Although the order often differed, 6 of the 10 jurisdictions with the highest perinatal mortality rates based on Definition III (Arizona, Oklahoma, Delaware, Arkansas, Georgia, and Mississippi) were also among the 10 highest based on Definition I.
- Two of the remaining 4 jurisdictions with the highest rates for Definition III (Florida and Hawaii) fell within the highest 18 jurisdictions, and the remaining 2 (Alabama and the District of Columbia) were the 29th and 30th highest, respectively, under Definition I (Table 3).
- Similarly, 7 of the 10 jurisdictions with the lowest perinatal mortality rates based on Definition III (Vermont, Massachusetts, New Hampshire, New Jersey, Iowa, North Dakota, and Connecticut) were also among the 10 lowest jurisdictions based on Definition I.
- Two of the remaining 3 jurisdictions with the lowest rates for Definition III (New Mexico and Texas) fell within the lowest 15, and Idaho was the 27th lowest under Definition I.

**Figure 2. Perinatal mortality rates for Definitions I and III: United States, 2014–2022**

## Discussion

Perinatal mortality Definition I, which excludes early fetal deaths, was the primary perinatal mortality measure used by NCHS over the last few decades because it 1) restricted infant deaths to those younger than 7 days (those for which prenatal conditions and circumstances surrounding the delivery have more effect on mortality than do postnatal factors [9]), and 2) restricted fetal deaths to those occurring at 28 weeks gestation or more (necessary because of the lack of national reporting of fetal deaths at 20–27 weeks). However, with the implementation of national reporting of all fetal deaths at 20 weeks or more as of 2014, beginning with the 2023 data year, NCHS will begin using Definition III for its standard publications.

Although rates are higher for Definition III than Definition I because of the inclusion of early fetal deaths, at the national level, trends in perinatal mortality over time and patterns by maternal race and Hispanic origin and age are similar. However, differences are observed in the rankings by state using the two measures. This may be due in part to underreporting of fetal deaths in the earlier part of the required reporting period (20–27 weeks) for some states; that is, some evidence shows that states that require reporting of fetal deaths at all gestational ages report a higher percentage of fetal deaths occurring at 20–27 weeks gestation compared with states that require reporting beginning at later gestational ages (18). Despite this difference, NCHS has historically presented fetal mortality data for fetal deaths at 20 weeks of gestation or more to include as much meaningful data

as possible (3), and the expanded measure of perinatal mortality of Definition III, which includes all components included in Definition I plus early fetal deaths, allows for a more complete picture of the perinatal events most likely to be affected by similar factors. The components needed to calculate rates for all of the perinatal mortality definitions will continue to be available in NCHS data files and publications (18–21).

## References

- Hoyert DL. Perinatal mortality in the United States: 1985–91. *Vital Health Stat 20*. 1995 Aug;(26):1–26. PMID: 25314157.
- World Health Organization. Neonatal and perinatal mortality: Country, regional and global estimates. 2006. Available from: [https://iris.who.int/bitstream/handle/10665/43444/9241563206\\_eng.pdf?sequence=1&isAllowed=y](https://iris.who.int/bitstream/handle/10665/43444/9241563206_eng.pdf?sequence=1&isAllowed=y).
- MacDorman MF, Gregory ECW. Fetal and perinatal mortality: United States, 2013. *Natl Vital Stat Rep*. 2015 Jul 23;64(8):1–24. PMID: 26222771.
- Gregory ECW, Drake P, Martin JA. Lack of change in perinatal mortality in the United States, 2014–2016. *NCHS Data Brief*. 2018 Aug;(316):1–8. PMID: 30089086.
- United Nations. *Handbook of vital statistics methods*. New York: UN; 1955.
- Public Health Conference on Records and Statistics. Background statement on a perinatal mortality index.

- Document No. 398, attachment B, Washington: National Office of Vital Statistics. 1956.
7. Oza S, Lawn JE, Hogan DR, Mathers C, Cousens SN. Neonatal cause-of-death estimates for the early and late neonatal periods for 194 countries: 2000–2013. *Bull World Health Organ.* 2015 Jan 1;93(1):19–28. PMID: 25558104. DOI: <https://www.doi.org/10.2471/BLT.14.139790>.
  8. Centers for Disease Control and Prevention. CDC WONDER. Infant deaths: Linked birth/infant death records. Available from: <https://wonder.cdc.gov/lbd.html>.
  9. Shapiro S, Schlesinger E, Nesbitt, R Jr. *Infant, perinatal, maternal, and childhood mortality in the United States.* Cambridge, MA and London: Harvard University Press; 1968.
  10. World Health Organization. *International statistical classification of diseases and related health problems, 10th revision, Volume 2, Instruction Manual, 2010 Edition.* Geneva: World Health Organization; 2010.
  11. National Center for Health Statistics. *Model state vital statistics act and regulations, 1992 revision.* 1994. Available from: <https://www.cdc.gov/nchs/data/misc/mvsact92b.pdf>.
  12. National Center for Health Statistics. *User guide to the 2022 fetal death public use file.* 2024. Available from: [https://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Dataset\\_Documentation/DVS/fetaldeath/2022fetaluserguide.pdf](https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/fetaldeath/2022fetaluserguide.pdf).
  13. Rossen LM, Hamilton BE, Abma JC, Gregory ECW, Beresovsky V, Resendez A, et al. Updated methodology to estimate overall and unintended pregnancy rates in the United States. *Vital Health Stat 2.* 2023 April;(201):1–37. DOI: <https://dx.doi.org/10.15620/cdc:124395>.
  14. National Center for Health Statistics. *User guide to the 2022 period/2021 cohort linked birth/infant death public use file.* 2024. Available from: [https://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Dataset\\_Documentation/DVS/period-cohort-linked/22PE21CO\\_linkedUG.pdf](https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/period-cohort-linked/22PE21CO_linkedUG.pdf).
  15. National Center for Health Statistics. *User guide to the 2022 natality public use file.* 2023. Available from: [https://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Dataset\\_Documentation/DVS/natality/UserGuide2022.pdf](https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/natality/UserGuide2022.pdf).
  16. Office of Management and Budget. *Revisions to the standards for the classification of federal data on race and ethnicity.* *Fed Regist* 1997;62(210):58782–90.
  17. National Cancer Institute. *Joinpoint Regression Program. Version 4.9.0.0 [software].* 2023.
  18. Gregory ECW, Valenzuela CP, Hoyert DL. Fetal mortality: United States, 2022. *Natl Vital Stat Rep.* 2024 Sep 12;(9). PMID: 39412872. DOI: <https://www.doi.org/10.15620/cdc/158788>.
  19. Ely DM, Driscoll AK. Infant mortality in the United States, 2022: Data from the period linked birth/infant death file. *Natl Vital Stat Rep.* 2024 Jul 25;(5):1–18. PMID: 39412861. DOI: <https://www.doi.org/10.15620/cdc/157006>.
  20. Osterman MJK, Hamilton BE, Martin JA, Driscoll AK, Valenzuela CP. Births: Final data for 2022. *Natl Vital Stat Rep.* 2024 Apr;73(2):1–56. PMID: 38625869.

21. National Center for Health Statistics. *Vital statistics online data portal.* Available from: [https://www.cdc.gov/nchs/data\\_access/vitalstatsonline.htm](https://www.cdc.gov/nchs/data_access/vitalstatsonline.htm).

## List of Detailed Tables

- |  |   |
|--|---|
| 1. Number and rate of perinatal deaths: United States, 2014–2022. . . . .  | 6 |
| 2. Number and rate of perinatal deaths, by maternal race and Hispanic origin and age: United States, 2022. . . . .           | 7 |
| 3. Number and rate of perinatal deaths and ranking of perinatal mortality rates: United States and each state, 2022. . . . . | 8 |

**Table 1. Number and rate of perinatal deaths: United States, 2014–2022**

Year	Perinatal deaths <sup>1</sup>						Live births	Perinatal mortality rates	
	Fetal deaths			Neonatal deaths				Definition I <sup>7</sup>	Definition III <sup>8</sup>
	Total <sup>2</sup>	20–27 weeks <sup>3</sup>	28 weeks or more <sup>3</sup>	Total <sup>4</sup>	Early neonatal <sup>5</sup>	Late neonatal <sup>6</sup>			
2022.....	20,202	10,246	9,956	13,158	10,304	2,854	3,667,758	5.51	8.27
2021.....	21,105	10,824	10,281	12,797	10,082	2,715	3,664,292	5.54	8.46
2020.....	20,854	10,764	10,090	12,866	10,348	2,518	3,613,647	5.64	8.58
2019.....	21,478	11,216	10,262	13,834	11,124	2,710	3,747,540	5.69	8.65
2018.....	22,459	11,844	10,615	14,329	11,578	2,751	3,791,712	5.84	8.92
2017.....	22,827	11,861	10,966	14,844	11,971	2,873	3,855,500	5.93	8.97
2016.....	23,880	12,486	11,394	15,303	12,354	2,949	3,945,875	6.00	9.13
2015.....	23,776	12,407	11,369	15,672	12,579	3,093	3,978,497	6.00	9.08
2014.....	23,980	12,652	11,328	15,737	12,772	2,965	3,988,076	6.03	9.16

<sup>1</sup>Fetal deaths at 20 weeks of gestation or more and infant deaths younger than 28 days.

<sup>2</sup>Fetal deaths with stated or presumed period of gestation of 20 weeks or more.

<sup>3</sup>Not-stated gestational age proportionally distributed.

<sup>4</sup>Infant deaths younger than 28 days.

<sup>5</sup>Infant deaths younger than 7 days.

<sup>6</sup>Infant deaths at 7–27 days.

<sup>7</sup>Fetal deaths at 28 weeks of gestation or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 28 weeks of gestation or more.

<sup>8</sup>Fetal deaths at 20 weeks of gestation or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 20 weeks of gestation or more.

SOURCE: National Center for Health Statistics, National Vital Statistics System.

**Table 2. Number and rate of perinatal deaths, by maternal race and Hispanic origin and age: United States, 2022**

Characteristic	Perinatal deaths <sup>1</sup>							Perinatal mortality rates	
	Fetal deaths			Neonatal deaths			Live births	Definition I <sup>7</sup>	Definition III <sup>8</sup>
	Total <sup>2</sup>	20–27 weeks <sup>3</sup>	28 weeks or more <sup>3</sup>	Total <sup>4</sup>	Early neonatal <sup>5</sup>	Late neonatal <sup>6</sup>			
Race and Hispanic origin of mother									
All races and origins <sup>9</sup> . . . . .	20,202	10,246	9,956	13,158	10,304	2,854	3,667,758	5.51	8.27
Non-Hispanic, single race <sup>10</sup> :									
American Indian or									
Alaska Native . . . . .	187	82	105	134	96	38	25,721	7.78	10.92
Asian . . . . .	813	435	378	543	441	102	218,994	3.73	5.71
Black . . . . .	5,194	2,857	2,337	3,296	2,582	714	511,439	9.57	15.05
Native Hawaiian or									
Other Pacific Islander . . . . .	106	48	58	48	34	14	10,122	9.04	13.69
White . . . . .	8,280	3,974	4,306	5,318	4,104	1,214	1,840,739	4.56	6.70
Hispanic <sup>11</sup> . . . . .	4,359	2,200	2,159	3,139	2,482	657	937,421	4.94	7.26
Age of mother									
Younger than 20 . . . . .	1,007	558	449	761	550	211	145,614	6.84	10.62
20–24 . . . . .	3,631	1,793	1,838	2,589	2,018	571	638,685	6.02	8.79
25–29 . . . . .	5,071	2,537	2,534	3,458	2,704	754	1,013,417	5.16	7.63
30–34 . . . . .	5,634	2,876	2,758	3,507	2,775	732	1,118,787	4.93	7.48
35–39 . . . . .	3,613	1,868	1,745	2,154	1,704	450	606,598	5.67	8.71
40 and older . . . . .	1,246	612	634	689	553	136	144,657	8.17	12.33

<sup>1</sup>Fetal deaths at 20 weeks of gestation or more and infant deaths younger than 28 days.<sup>2</sup>Fetal deaths with stated or presumed period of gestation of 20 weeks or more.<sup>3</sup>Not-stated gestational age proportionally distributed.<sup>4</sup>Infant deaths younger than 28 days.<sup>5</sup>Infant deaths younger than 7 days.<sup>6</sup>Infant deaths at 7–27 days.<sup>7</sup>Fetal deaths at 28 weeks of gestation or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 28 weeks of gestation or more.<sup>8</sup>Fetal deaths at 20 weeks of gestation or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 20 weeks of gestation or more.<sup>9</sup>Includes fetal deaths and births to race and origin groups not shown separately.<sup>10</sup>Race and Hispanic origin are reported separately on birth certificates and reports of fetal death; people of Hispanic origin may be of any race. In this table, non-Hispanic women are classified by race. Race categories are consistent with the 1997 Office of Management and Budget standards; see Technical Notes in this report. Single race is defined as only one race reported on the birth certificate or report of fetal death.<sup>11</sup>Includes all people of Hispanic origin of any race; see Technical Notes.

NOTE: Number of fetal deaths and infant deaths in subcategories may not add to totals due to rounding.

SOURCE: National Center for Health Statistics, National Vital Statistics System.

**Table 3. Number and rate of perinatal deaths and ranking of perinatal mortality rates: United States and each state, 2022**

Area	Perinatal deaths <sup>1</sup>						Live births	Perinatal mortality rates		Rank of perinatal mortality rates	
	Fetal deaths			Neonatal deaths				Definition I <sup>7</sup>	Definition III <sup>8</sup>	Definition I <sup>7</sup>	Definition III <sup>8</sup>
	Total <sup>2</sup>	20–27 weeks <sup>3</sup>	28 weeks or more <sup>3</sup>	Total <sup>4</sup>	Early neonatal <sup>5</sup>	Late neonatal <sup>6</sup>					
Total . . . . .	20,202	10,246	9,956	13,158	10,304	2,854	3,667,758	5.51	8.27	...	...
Alabama . . . . .	426	233	193	208	127	81	58,149	5.48	9.44	29	10
Alaska . . . . .	54	27	27	29	25	4	9,359	5.54	8.39	27	23
Arizona . . . . .	492	248	244	321	264	57	78,547	6.45	9.56	8	8
Arkansas . . . . .	265	149	116	157	123	34	35,471	6.72	10.86	5	3
California . . . . .	2,115	1,001	1,114	1,196	959	237	419,104	4.93	7.30	40	39
Colorado . . . . .	305	162	143	193	154	39	62,383	4.75	7.32	43	38
Connecticut . . . . .	175	83	92	100	71	29	35,332	4.60	6.93	45	44
Delaware . . . . .	56	26	30	66	49	17	10,816	7.28	9.66	2	6
District of Columbia . . . . .	65	43	22	27	22	5	8,075	5.43	10.69	30	4
Florida . . . . .	1,548	835	713	869	666	203	224,433	6.12	9.80	15	5
Georgia . . . . .	1,000	535	465	515	389	126	126,130	6.75	10.93	4	2
Hawaii . . . . .	97	57	40	63	52	11	15,535	5.91	9.53	18	9
Idaho . . . . .	91	33	58	86	68	18	22,391	5.61	7.07	25	42
Illinois . . . . .	737	445	292	498	403	95	128,350	5.40	8.83	33	20
Indiana . . . . .	439	209	230	374	284	90	79,649	6.43	9.03	9	15
Iowa . . . . .	163	76	87	119	88	31	36,506	4.78	6.85	42	46
Kansas . . . . .	205	99	106	124	105	19	34,401	6.11	8.96	16	16
Kentucky . . . . .	283	120	163	176	149	27	52,315	5.95	8.21	17	29
Louisiana . . . . .	300	141	159	220	165	55	56,479	5.72	8.19	24	30
Maine . . . . .	63	38	25	60	45	15	12,093	5.78	8.88	21	19
Maryland . . . . .	366	205	161	284	236	48	68,782	5.76	8.71	22	21
Massachusetts . . . . .	284	117	167	151	122	29	68,584	4.20	5.90	50	50
Michigan . . . . .	614	313	301	400	344	56	102,321	6.29	9.31	11	13
Minnesota . . . . .	351	183	168	184	157	27	64,015	5.06	7.89	37	33
Mississippi . . . . .	320	185	135	184	144	40	34,675	8.01	13.26	1	1
Missouri . . . . .	358	169	189	276	217	59	68,985	5.87	8.29	19	25
Montana . . . . .	54	26	28	37	26	11	11,175	4.82	7.12	41	40
Nebraska . . . . .	110	50	60	98	72	26	24,345	5.41	7.44	31	35
Nevada . . . . .	235	126	109	80	62	18	33,193	5.13	8.88	36	18
New Hampshire . . . . .	56	23	33	25	18	7	12,077	4.21	6.10	49	49
New Jersey . . . . .	498	269	229	236	183	53	102,893	4.00	6.59	51	47
New Mexico . . . . .	69	26	43	84	65	19	21,614	4.99	6.18	39	48
New York (including New York City) . . . . .	1,211	670	541	551	424	127	207,774	4.63	7.82	44	34
North Carolina . . . . .	696	348	348	534	418	116	121,562	6.28	9.11	13	14
North Dakota . . . . .	47	25	22	29	19	10	9,567	4.28	6.86	48	45
Ohio . . . . .	741	364	377	586	466	120	128,231	6.55	9.36	6	12
Oklahoma . . . . .	293	152	141	215	173	42	48,332	6.48	9.58	7	7
Oregon . . . . .	195	91	104	121	99	22	39,493	5.13	7.41	35	36
Pennsylvania . . . . .	663	345	318	502	408	94	130,252	5.56	8.18	26	31
Rhode Island . . . . .	52	22	30	31	24	7	10,269	5.24	7.36	34	37

**Table 3. Number and rate of perinatal deaths and ranking of perinatal mortality rates: United States and each state, 2022—Con.**

Area	Perinatal deaths <sup>1</sup>						Live births	Perinatal mortality rates		Rank of perinatal mortality rates	
	Fetal deaths			Neonatal deaths				Definition I <sup>7</sup>	Definition III <sup>8</sup>	Definition I <sup>7</sup>	Definition III <sup>8</sup>
	Total <sup>2</sup>	20–27 weeks <sup>3</sup>	28 weeks or more <sup>3</sup>	Total <sup>4</sup>	Early neonatal <sup>5</sup>	Late neonatal <sup>6</sup>					
South Carolina . . . . .	288	114	174	257	190	67	57,820	6.28	8.23	12	27
South Dakota . . . . .	54	24	30	48	40	8	11,201	6.23	8.35	14	24
Tennessee . . . . .	538	264	274	290	203	87	82,265	5.78	8.95	20	17
Texas . . . . .	1,613	756	857	1,420	1,111	309	389,741	5.04	6.96	38	43
Utah . . . . .	252	124	128	170	135	35	45,768	5.73	8.41	23	22
Vermont . . . . .	21	7	14	11	9	2	5,316	4.32	5.62	47	51
Virginia . . . . .	497	261	236	395	293	102	95,630	5.52	8.22	28	28
Washington . . . . .	421	213	208	232	173	59	83,333	4.56	7.09	46	41
West Virginia . . . . .	70	26	44	82	65	17	16,929	6.42	7.94	10	32
Wisconsin . . . . .	320	172	148	217	177	40	60,049	5.40	8.23	32	26
Wyoming . . . . .	36	16	20	25	21	4	6,049	6.76	9.37	3	11

... Category not applicable.

<sup>1</sup>Fetal deaths at 20 weeks of gestation or more and infant deaths younger than 28 days.

<sup>2</sup>Fetal deaths with stated or presumed period of gestation of 20 weeks or more.

<sup>3</sup>Not-stated gestational age proportionally distributed.

<sup>4</sup>Infant deaths younger than 28 days.

<sup>5</sup>Infant deaths younger than 7 days.

<sup>6</sup>Infant deaths at 7–27 days.

<sup>7</sup>Fetal deaths at 28 weeks of gestation or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 28 weeks of gestation or more.

<sup>8</sup>Fetal deaths at 20 weeks of gestation or more and infant deaths younger than 7 days per 1,000 live births and fetal deaths at 20 weeks of gestation or more.

NOTE: Numbers of fetal deaths and infant deaths in subcategories may not add to totals due to rounding.

SOURCE: National Center for Health Statistics, National Vital Statistics System.

**U.S. DEPARTMENT OF  
HEALTH & HUMAN SERVICES**

Centers for Disease Control and Prevention  
National Center for Health Statistics  
3311 Toledo Road, Room 4551, MS P08  
Hyattsville, MD 20782–2064

FIRST CLASS MAIL  
POSTAGE & FEES PAID  
CDC/NCHS  
PERMIT NO. G-284

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

For more NCHS NVSRs, visit:  
<https://www.cdc.gov/nchs/products/nvsr.htm>.



---

National Vital Statistics Reports, Vol. 74, No. 5, May 20, 2025

---

**Contents**

Abstract ..... 1  
Introduction ..... 1  
Methods ..... 2  
    Data sources ..... 2  
    Perinatal mortality rates ..... 3  
    Race and Hispanic origin ..... 3  
    Statistical significance ..... 3  
Results ..... 3  
    Components, rates, and overall trends ..... 3  
    Race and Hispanic origin ..... 3  
    Maternal age ..... 3  
    State of residence ..... 3  
Discussion ..... 4  
References ..... 4  
List of Detailed Tables ..... 5

**Acknowledgments**

This report was prepared in the Division of Vital Statistics under the general direction of Paul Sutton, Director, Division of Vital Statistics; Robert Anderson, Branch Chief, Statistical Analysis and Surveillance Branch; and Joyce A. Martin, Team Lead, Perinatal Statistics and Research Team.

---

**Suggested citation**

Gregory ECW, Valenzuela CP, Hoyert DL, Martin JA. Change in the primary measure of perinatal mortality for vital statistics. *Natl Vital Stat Rep.* 2025 Jun;74(5):1–10. DOI: <https://dx.doi.org/10.15620/cdc/174590>.

---

**Copyright information**

All material appearing in this report is in the public domain and may be reproduced or copied without permission; citation as to source, however, is appreciated.

---

**National Center for Health Statistics**

Brian C. Moyer, Ph.D., *Director*  
Amy M. Branum, Ph.D., *Associate Director for Science*

**Division of Vital Statistics**

Paul D. Sutton, Ph.D., *Director*  
Andrés A. Berruti, Ph.D., M.A., *Associate Director for Science*