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Infant Mortality in the United States: Provisional Data From the 2024 Period Linked Birth/Infant Death Files

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Abstract

Objective—This report presents provisional 2024 data on infant mortality rates using the U.S. linked birth/infant death files. Infant mortality rates are shown by infant age at death, maternal race and Hispanic origin, maternal age, gestational age, infant sex, maternal state of residence, and 10 leading causes of infant death.

Methods—Data are from the period linked birth/infant death files, which link infant deaths with the corresponding birth certificates. Comparisons are made between provisional 2024 and final 2023 data. The linked birth/infant files are based on 100% of birth certificates and 98%–99% of infant death certificates registered in all states and the District of Columbia. For 2024, 1.2% of infant deaths remained unlinked. Infant deaths in states with less than 100% of infant death records linked to their respective birth records are weighted.

Results—In 2024, the U.S. provisional infant mortality rate was 5.52 infant deaths per 1,000 live births, not significantly different from the rate in 2023 (5.61). From 2023 to 2024, the neonatal mortality rate was essentially unchanged (from 3.65 to 3.66), while the postneonatal mortality rate declined 5% (from 1.96 to 1.87). The infant mortality rate declined 5% for infants of mothers ages 20–24 (from 7.23 to 6.89), 5% for infants born full-term (39–40 weeks of gestation) (1.64 to 1.55), 3% for male infants (6.04 to 5.88), and 8% for sudden infant death syndrome (from 40.2 deaths per 100,000 live births to 37.0). Changes in infant mortality rates by maternal race and Hispanic origin were not significant. By state, the infant mortality rate increased in West Virginia and declined in North Carolina.

Keywords: infant mortality rates • infant health • National Vital Statistics System (NVSS)

Introduction

This report presents provisional 2024 data on infant mortality rates based on the period linked birth/infant death file. This file uses variables from the birth certificate to conduct more detailed analyses of infant mortality patterns. The linked birth/infant death data set also is the preferred source for examining infant mortality by race and Hispanic origin. Infant mortality rates by race and Hispanic origin are more accurately measured from the birth certificate compared with the death certificate. This report expands on items presented in the Quarterly Provisional Estimates of Infant Mortality, which present provisional estimates by age at death and cause of death, based on infant deaths from provisional and final mortality and birth files (1). This report describes changes in infant mortality rates from 2023 to 2024 by infant age at death, maternal race and Hispanic origin, maternal age, infant sex, gestational age of the infant, maternal state of residence, and 10 leading causes of infant death. Provisional data for 2024 are compared with final data for 2023 (2).

Methods

The linked period birth/infant death data are collected via the National Vital Statistics System. Findings are based on all linked birth/infant death records received and processed by the National Center for Health Statistics for the calendar year 2024 as of July 25, 2025. These records represent nearly 100% of linked period file birth/infant death records reported for 2024. In 2024 provisional linked birth/infant death data, 98.8% of infant death records were linked to the corresponding birth certificates. The number of infant deaths in the linked file for the 50 states and the District of Columbia was weighted to equal the sum of the linked plus unlinked infant deaths by state of occurrence of birth and age at death (less than 7 days, 7–27 days, and 28 days to less than 1 year). The provisional data file differs from the final file in that it may not include the total final number of infant deaths linked to their corresponding birth certificates (for example, the 2022 provisional file included 20,295 unweighted, linked infant deaths, while the final file included 20,334), nor does it undergo the more comprehensive data quality review conducted for final data, which focuses on consistency between cause of death and variables such as age

at death and infant sex. Accordingly, infant mortality rates presented in this report may differ slightly from those based on final data.

Hispanic origin and race are reported separately on the birth certificate (3). Data shown by Hispanic origin include all people of Hispanic origin of any race. Data for non-Hispanic people are shown separately for each single-race group. Data by race are based on the revised standards issued by the Office of Management and Budget in 1997 (4). The race and Hispanic-origin groups shown are: single-race American Indian and Alaska Native non-Hispanic (subsequently, American Indian and Alaska Native), single-race Asian non-Hispanic (subsequently, Asian), single-race Black non-Hispanic (subsequently, Black), single-race Native Hawaiian or Other Pacific Islander non-Hispanic (subsequently, Native Hawaiian or Other Pacific Islander), single-race White non-Hispanic (subsequently, White), and Hispanic.

Gestational age is based on the obstetric estimate of gestation and is shown for seven categories: less than 28 weeks of gestation, less than 34 weeks of gestation, less than 37 weeks of gestation, 34–36 weeks of gestation, 37–38 weeks of gestation, 39–40 weeks of gestation, and 41 weeks of gestation or more.

Infant mortality rates by state are based on the mother's state of residence. The small number of infant deaths in some states by year can limit the ability to detect statistically significant changes between years and between states.

Provisional data for 2024 are compared with final data for 2023 (2). Differences between rates reported in the text are statistically significant at the 0.05 level unless otherwise noted. For information on the methods used to test for statistical significance, see the 2023 user guide (5).

Results

Total infant mortality rate and infant mortality rate by age at death

- In 2024, the provisional number of linked birth/infant deaths in the United States was 20,048, compared with 20,162 in 2023; the number of births was 3,628,934 in 2024 compared with 3,596,017 in 2023 (Table 1).
- The provisional infant mortality rate for 2024 was 5.52 infant deaths per 1,000 live births, not significantly different from the rate in 2023 (5.61) (Figure 1).
- The neonatal infant mortality rate (infant deaths at less than 28 days) was essentially unchanged (3.65 in 2023 compared with 3.66 in 2024). The provisional postneonatal mortality rate (infant deaths from 28 days through 364 days) declined 5% from 1.96 in 2023 to 1.87 in 2024.

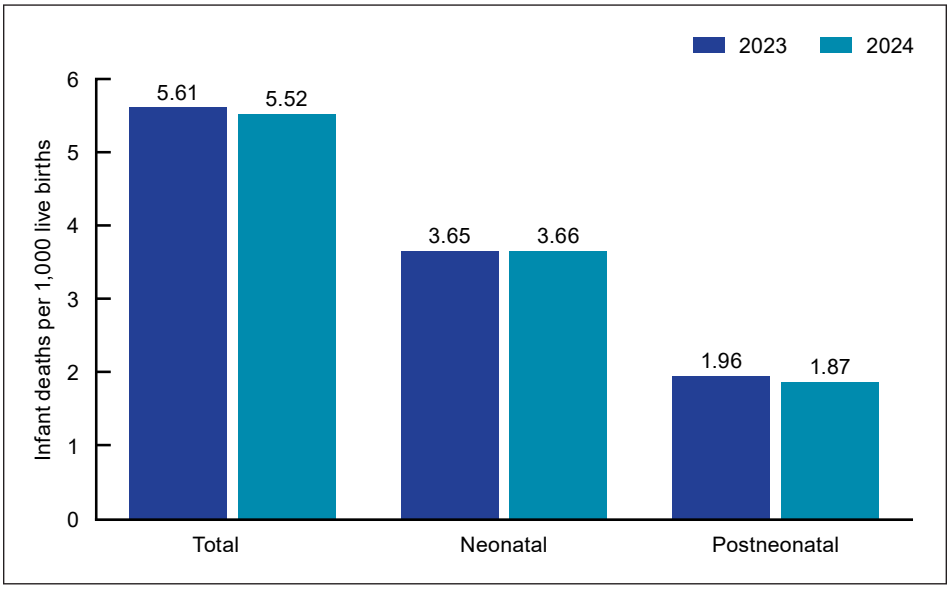
Maternal race and Hispanic origin

- Infant mortality rates did not change significantly among race and Hispanic-origin groups. The infant mortality rate for infants of American Indian and Alaska Native women was 9.20 infant deaths per 1,000 live births in both 2024 and 2023; for infants of Asian women, the rate was 3.72 compared with 3.44; for infants of Black women, the rate was 10.98 compared with 10.93; for infants of Native Hawaiian or Other Pacific Islander women, the rate was 7.90 compared with 8.21; for infants of White women, the rate was 4.41 compared with 4.48; and for infants of Hispanic women, the rate was 4.88 compared with 5.03 (Table 1, Figure 2).

Maternal age

- The mortality rate for infants of women ages 20–24 declined 5% from 7.23 infant deaths per 1,000 live births in 2023 to 6.89 in 2024; changes among all other maternal age groups

Figure 1. Infant mortality rate, by age at death: United States, 2023 final and 2024 provisional data



NOTES: Total rate is the number of infant deaths per 1,000 live births. Neonatal rate is the number of deaths before 28 days per 1,000 live births. Postneonatal rate is the number of deaths from 28 to 364 days per 1,000 live births. Changes in rates for total infant and neonatal mortality from 2023 to 2024 were not significant. The decrease in the postneonatal mortality rate from 2023 to 2024 was significant ($p < 0.05$).
SOURCE: National Center for Health Statistics, National Vital Statistics System, linked birth/infant death file.

were not significant. The mortality rate was 9.89 in 2024 compared with 10.57 in 2023 for infants of females younger than age 20, 5.22 compared with 5.24 for ages 25–29, 4.65 compared with 4.59 for ages 30–34, 4.90 compared with 4.94 for ages 35–39, and 6.96 compared with 6.77 for age 40 and older (Table 1).

Gestational age

- Mortality rates declined 5% for full-term infants (39–40 weeks) from 1.64 deaths per 1,000 live births in 2023 to 1.55 in 2024; the rates for all other gestational age categories did not change significantly (Table 1).
- The rate for preterm infants (less than 37 weeks of gestation) was 34.49 in 2024 compared with 34.74 in 2023. The 2024 mortality rate was 368.75 compared with 362.14 in 2023 for infants born extremely preterm (less than 28 weeks); 108.14 compared with 107.87 for early preterm infants (less than 34 weeks); and 8.41 compared with 8.31 for late preterm infants (34–36 weeks).
- Among infants born at term and later (37 or more weeks), the rate for infants born early term (37–38 weeks) was 3.13 in 2024 compared with 3.22 in 2023; for late-term infants (41 or more weeks), the rate was 1.82 compared with 1.58

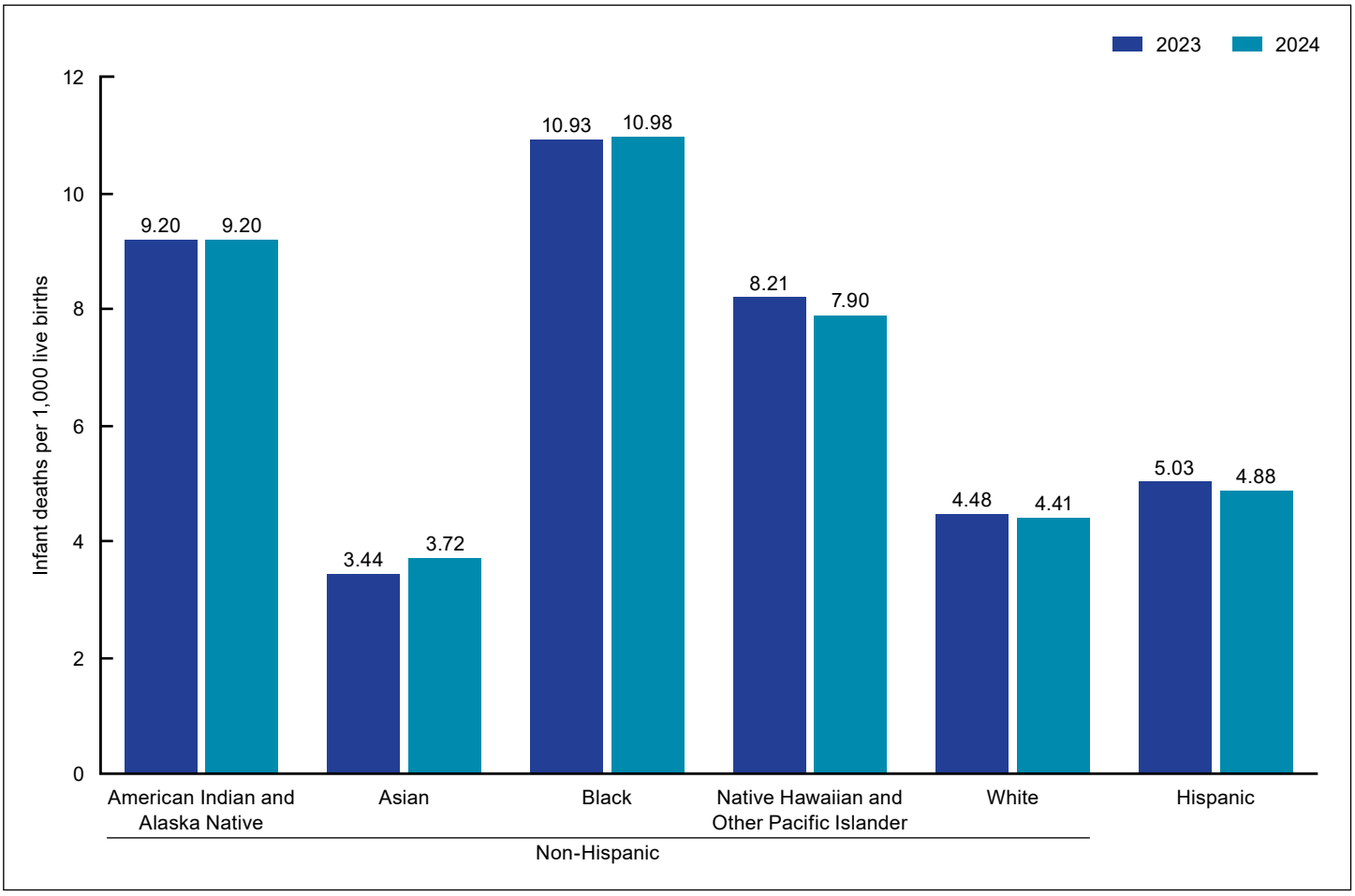
Infant sex

- Infant mortality rates declined 3% for male infants from 6.04 infant deaths per 1,000 live births in 2023 to 5.88 in 2024. The infant mortality rate for female infants was 5.15 in both 2023 and 2024 (Table 1).

State of residence

- Compared with 2023, the infant mortality rate in 2024 increased in West Virginia and declined in North Carolina. Changes in the remaining states and the District of Columbia were not significant (Table 2).

Figure 2. Infant mortality rate, by maternal race and Hispanic origin: United States, 2023 final and 2024 provisional data



NOTES: People of Hispanic origin may be of any race. Changes in rates from 2023 to 2024 were not significant.
SOURCE: National Center for Health Statistics, National Vital Statistics System, linked birth/infant death file.

Leading causes of death

- From 2023 to 2024, infant deaths due to sudden infant death syndrome declined 8% from 40.2 infant deaths per 100,000 live births in 2023 to 37.0 in 2024 (Table 3). No significant changes were observed in the other nine leading causes of infant death: congenital malformations (112.7 in 2024 compared with 112.1 in 2023); disorders related to short gestation and low birth weight (81.2 compared with 81.4); unintentional injuries (34.0 compared with 35.8); maternal complications (33.1 compared with 31.9); bacterial sepsis (16.7 compared with 17.4); complications of placenta, cord and membranes (16.0 compared with 15.6); and diseases of the circulatory system (10.1 compared with 9.9). From 2023 to 2024, the infant mortality rate for respiratory distress of newborn was unchanged (12.6), as was the rate for intrauterine hypoxia and birth asphyxia (10.1).

Summary

The U.S. provisional infant mortality rate was 5.52 per 1,000 live births in 2024, not significantly different from 2023 (5.61). The infant mortality rate increased 3% from 2021 (5.44) to 2022 (5.61) (2) and was unchanged from 2022 to 2023; the rate had declined 22% from 2002 to 2021 (6). From 2023 to 2024, the postneonatal mortality rate declined, as did the rate for male infants, the rate for infants born to women ages 20–24, and for full-term (39–40 weeks) infants. Infant mortality rates declined in North Carolina and increased in West Virginia. Among the leading causes of infant death, the rate for sudden infant death syndrome declined from 2023 to 2024; no other changes by cause of death were significant.

This report provides more timely information than reports based on final linked birth/infant death file data and provides details by maternal and infant characteristics, such as maternal race and Hispanic origin and gestational age, which are unavailable in mortality data releases.

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List of Detailed Tables

Report tables

Table 1. Number of infant deaths and infant mortality rate, by selected characteristics: United States, final 2023 and provisional 2024 data

Characteristic	2023			2024			Percent change
	Deaths	Births	Rate[1]	Deaths	Births	Rate[1]	
Total	20,162	3,596,017	5.61	20,048	3,628,934	5.52	-2
Age at death							
Neonatal	13,113	3,596,017	3.65	13,272	3,628,934	3.66	0
Postneonatal[2]	7,049	3,596,017	1.96	6,776	3,628,934	1.87	-5
Race and Hispanic origin							
Non-Hispanic, single-race:							
American Indian and Alaska Native	226	24,571	9.20	221	24,021	9.20	0
Asian	742	215,738	3.44	843	226,860	3.72	8
Black	5,374	491,494	10.93	5,199	473,377	10.98	0
Native Hawaiian and Other Pacific Islander	83	10,115	8.21	82	10,375	7.90	-4
White	8,008	1,787,051	4.48	7,870	1,783,156	4.41	-2
Hispanic	4,750	945,200	5.03	4,804	984,092	4.88	-3
Maternal age							
Younger than 20	1,509	142,743	10.57	1,375	139,000	9.89	-6
20–24[2]	4,459	616,970	7.23	4,216	611,800	6.89	-5
25–29	5,170	986,567	5.24	5,174	990,817	5.22	0
30–34	5,040	1,098,052	4.59	5,172	1,112,409	4.65	1
35–39	2,988	604,631	4.94	3,050	622,517	4.90	-1
40 and older	996	147,054	6.77	1,061	152,391	6.96	3
Period of gestation (weeks)							
Less than 37	12,990	373,902	34.74	13,009	377,204	34.49	-1
Less than 34	10,707	99,255	107.87	10,666	98,629	108.14	0
Less than 28	8,364	23,096	362.14	8,398	22,774	368.75	2
34–36	2,282	274,647	8.31	2,344	278,575	8.41	1
37 or more	6,966	3,219,473	2.16	6,819	3,247,273	2.10	-3
37–38	3,450	1,072,092	3.22	3,435	1,096,713	3.13	-3
39–40[2]	3,242	1,974,300	1.64	3,073	1,979,343	1.55	-5
41 or more	274	173,081	1.58	311	171,217	1.82	15
Infant sex							
Female	9,044	1,756,223	5.15	9,139	1,774,965	5.15	0
Male[2]	11,118	1,839,794	6.04	10,909	1,853,969	5.88	-3

[1]Deaths per 1,000 live births.
[2]Significant decrease in mortality rate from 2023 to 2024 ($p < 0.05$).

NOTE: Gestational age is based on the obstetric estimate.

SOURCE: National Center for Health Statistics, National Vital Statistics System, linked birth/infant death file.

Table 2. Number of infant deaths, births, and infant mortality rate, by state of residence: United States, final 2023 and provisional 2024 data

Area	2023			2024			Percent change
	Deaths	Births	Rate[1]	Deaths	Births	Rate[1]	
Alabama	442	57,858	7.64	409	57,934	7.06	-8
Alaska	65	9,015	7.21	61	8,943	6.82	-5
Arizona	433	78,096	5.54	425	78,711	5.40	-3
Arkansas	290	35,264	8.22	293	35,395	8.28	1
California	1,642	400,108	4.10	1,682	402,075	4.18	2
Colorado	280	61,494	4.55	292	64,268	4.54	0
Connecticut	155	34,559	4.49	156	34,599	4.51	0
Delaware	64	10,427	6.14	82	10,550	7.77	27
District of Columbia	55	7,896	6.97	46	7,616	6.04	-13
Florida	1,351	221,410	6.10	1,287	224,389	5.74	-6
Georgia	874	125,120	6.99	809	126,437	6.40	-8
Hawaii	72	14,808	4.86	65	14,917	4.36	-10
Idaho	98	22,397	4.38	110	23,276	4.73	8
Illinois	738	124,820	5.91	720	125,731	5.73	-3
Indiana	514	79,000	6.51	508	80,257	6.33	-3
Iowa	184	36,052	5.10	164	36,436	4.50	-12
Kansas	178	34,065	5.23	199	33,984	5.86	12
Kentucky	342	51,984	6.58	311	52,913	5.88	-11
Louisiana	392	54,927	7.14	404	53,305	7.58	6
Maine	66	11,627	5.68	52	11,601	4.48	-21
Maryland	368	65,594	5.61	364	65,797	5.53	-1
Massachusetts	220	67,093	3.28	238	68,184	3.49	6
Michigan	604	99,124	6.09	630	99,525	6.33	4
Minnesota	292	61,715	4.73	286	62,110	4.60	-3
Mississippi	308	34,459	8.94	323	33,473	9.65	8
Missouri	411	67,123	6.12	438	67,998	6.44	5
Montana	61	11,078	5.51	70	11,331	6.18	12
Nebraska	154	24,111	6.39	162	24,785	6.54	2
Nevada	187	31,794	5.88	173	32,381	5.34	-9
New Hampshire	35	11,936	2.93	35	11,770	2.97	1
New Jersey	373	101,001	3.69	342	101,372	3.37	-9
New Mexico	92	20,951	4.39	110	21,328	5.16	18
New York	821	203,612	4.03	811	205,489	3.95	-2
North Carolina[2]	834	120,082	6.95	767	122,856	6.24	-10
North Dakota	47	9,647	4.87	57	9,634	5.92	22
Ohio	909	126,896	7.16	843	126,795	6.65	-7
Oklahoma	341	47,909	7.12	356	47,962	7.42	4
Oregon	177	38,298	4.62	192	38,963	4.93	7
Pennsylvania	707	126,951	5.57	723	127,299	5.68	2
Rhode Island	47	9,805	4.79	42	10,009	4.20	-12
South Carolina	402	57,729	6.96	440	58,768	7.49	8
South Dakota	71	11,201	6.34	84	11,451	7.34	16
Tennessee	538	83,021	6.48	537	83,833	6.41	-1
Texas	2,263	387,945	5.83	2,226	390,828	5.70	-2
Utah	235	45,019	5.22	241	46,664	5.16	-1
Vermont	16	5,065	3.16	28	5,023	5.57	76
Virginia	544	92,649	5.87	560	94,054	5.95	1
Washington	408	80,932	5.04	398	83,118	4.79	-5
West Virginia[2]	93	16,606	5.60	113	17,022	6.64	19
Wisconsin	345	59,754	5.77	353	59,686	5.91	2
Wyoming	23	5,990	3.84	28	6,089	4.60	20

[1]Deaths per 1,000 live births
[2]Significant change in rate from 2023 to 2024 ($p < 0.05$).

SOURCE: National Center for Health Statistics, National Vital Statistics System, linked birth/infant death file.

Table 3. Number of infant deaths and infant mortality rate, by 10 leading causes of infant death: United States, final 2023 and provisional 2024 data

Cause of death (ICD–10 code)	2023		2024		Percent change
	Deaths	Rate[1]	Deaths	Rate[1]	
Congenital malformations (Q00–Q99)	4,030	112.1	4,091	112.7	1
Short gestation and low birth weight, not elsewhere classified (P07)	2,927	81.4	2,945	81.2	0
Sudden infant death syndrome (R95)[2]	1,446	40.2	1,342	37.0	-8
Accidents (unintentional injures) (V01–X59)	1,288	35.8	1,234	34.0	-5
Maternal complications of pregnancy (P01)	1,146	31.9	1,200	33.1	4
Bacterial sepsis of newborn (P36)	626	17.4	607	16.7	-4
Complications of placenta, cord and membranes (P02)	562	15.6	581	16.0	3
Respiratory distress of newborn (P22)	453	12.6	458	12.6	0
Intrauterine hypoxia and birth asphyxia (P20–P21)	363	10.1	368	10.1	0
Diseases of the circulatory system (I00–I99)	356	9.9	367	10.1	2

[1]Deaths per 100,000 live births.
[2]Significant decrease in mortality rate from 2023 to 2024 ($p < 0.05$).

NOTE: ICD–10 codes are from the *International Classification of Diseases, 10th Revision*.

SOURCE: National Center for Health Statistics, National Vital Statistics System, linked birth/infant death file.

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