

Infant Mortality in the United States, 2021: Data From the Period Linked Birth/Infant Death File

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Abstract

Objectives—This report presents 2021 infant mortality statistics by age at death, maternal race and Hispanic origin, maternal age, gestational age, leading causes of death, and maternal state of residence. Trends in infant mortality are also examined.

Methods—Descriptive tabulations of data are presented and interpreted for infant deaths and infant mortality rates using the 2021 period linked birth/infant death file. The linked birth/infant death file is based on birth and death certificates registered in all 50 states and the District of Columbia.

Results—A total of 19,928 infant deaths were reported in the United States in 2021, up 2% from 2020. The U.S. infant mortality rate was 5.44 infant deaths per 1,000 live births, essentially unchanged from the rate of 5.42 in 2020. The neonatal mortality rate was essentially unchanged from 3.56 in 2020 to 3.49 in 2021, but the postneonatal mortality rate increased from 1.86 to 1.95. The overall infant mortality rate increased for infants of Asian non-Hispanic women and declined for infants of Dominican women in 2021 compared with 2020; changes in rates for the other race and Hispanic-origin groups were not significant. Infants of Black non-Hispanic women had the highest mortality rate (10.55) in 2021, followed by infants of Native Hawaiian or Pacific Islander non-Hispanic and American Indian or Alaska Native non-Hispanic (7.76 and 7.46, respectively), Hispanic (4.79), White non-Hispanic (4.36), and Asian non-Hispanic (3.69) women. By gestational age, infants born very preterm (less than 28 weeks of gestation) had the highest mortality rate (353.76), 170 times as high as that for infants born at term (37–41 weeks of gestation) (2.08). The five leading causes of infant death in 2021 were the same as in 2020. Infant mortality rates by state for 2021 ranged from a low of 2.77 in North Dakota to a high of 9.39 in Mississippi.

Keywords: maternal and infant characteristics • vital statistics • National Vital Statistics System

Introduction

This report presents infant mortality statistics based on data from the 2021 period linked birth/infant death file. Infant mortality and mortality rates are described by age at death, maternal race and Hispanic origin, maternal age, gestational age, leading causes of death, and maternal state of residence. Infant mortality trends are also presented by selected characteristics. In the linked file, information from the death certificate is linked to information from the birth certificate for each infant under age 1 year who died in the 50 states, District of Columbia, Puerto Rico, or Guam during 2021 (1). The purpose of the linkage is to use variables available from the birth certificate to conduct more detailed analyses of infant mortality patterns (2,3). 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.

For 2021, linked birth/infant death data are not available for American Samoa, Commonwealth of the Northern Marianas, and U.S. Virgin Islands. Some rates calculated from the mortality file differ from those published using the linked file. More details can be found elsewhere (1).

Methods

Data shown in this report are based on birth and infant death certificates registered in all states, the District of Columbia, Puerto Rico, and Guam. As part of the Vital Statistics Cooperative Program, each state provides matching birth and death certificate numbers for each infant under age 1 year who died during 2021 to the National Center for Health Statistics. Further discussion of the process of linking births and deaths occurring in different states and file production can be found in the Methodology section of the “User Guide to the 2021 Period/2020 Cohort Linked Birth/Infant Death Public Use File” (1).



The period linked file for 2017 marked the first data year for which the linked birth data for infant deaths for all 50 states and the District of Columbia were based on the 2003 revision of the U.S. Standard Certificate of Live Birth (4) and, accordingly, the first year for which national data on race and Hispanic-origin categories based on 1997 Office of Management and Budget standards became available (5).

In 2021, 98.9% of all infant death records were successfully linked to their corresponding birth records. These records were weighted to adjust for the 1.1% of infant death records that were not linked to their corresponding birth certificates (1) (Technical Notes).

Information for age and race of mother is imputed if it is not reported on the birth certificate. In 2021, race of mother was imputed for 7.0% of births; mother's age was imputed for 0.01% of births (2,3).

All race and Hispanic-origin data are based on single-race reporting and are consistent with the 1997 Office of Management and Budget standards and differ from the bridged-race categories shown in previous reports (5). Maternal race and Hispanic-origin categories presented are American Indian or Alaska Native non-Hispanic (subsequently, American Indian or 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. Race and Hispanic origin are reported separately on the birth certificate. Data are shown in most cases for five specified Hispanic groups: Central and South American, Cuban, Dominican, Mexican, and Puerto Rican. Additional details on Hispanic origin are available elsewhere (3). Comparisons between 2021 and 2020 by race and Hispanic origin are made in this report. The 2003 revision of the U.S. Standard Certificate of Live Birth allows the reporting of five race categories for each parent (6)—either alone, as in single race, or in combination, as in more than one race or multiple races—in accordance with the 1997 revised Office of Management and Budget standards (5). Further details on race reporting are available elsewhere (3).

Cause-of-death statistics are classified in accordance with the *International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10)* (7) (Technical Notes).

Data by maternal and infant characteristics

This report presents descriptive tabulations of infant mortality data by a variety of maternal and infant characteristics. These tabulations are useful for understanding the basic relationships between risk factors and infant mortality, unadjusted for the possible effects of other variables. However, women with one risk factor often have other risk factors. For example, teen mothers are more likely to be unmarried and of a low-income status, while mothers who do not receive prenatal care are more likely to be of a low-income status and uninsured. The preferred method for disentangling the multiple interrelationships among risk factors is multivariate analysis; however, an understanding of the basic relationships between risk factors and infant mortality is the first step before more sophisticated types of analyses and may help identify high-risk subgroups for prevention efforts.

This report presents several key risk factors for infant mortality: age at death, maternal race and Hispanic origin, maternal age, gestational age, leading causes of infant death, and maternal state of residence. For brevity, additional selected risk factors (sex, birthweight, plurality, and nativity [mother's place of birth]) are presented in tables but not discussed in this report.

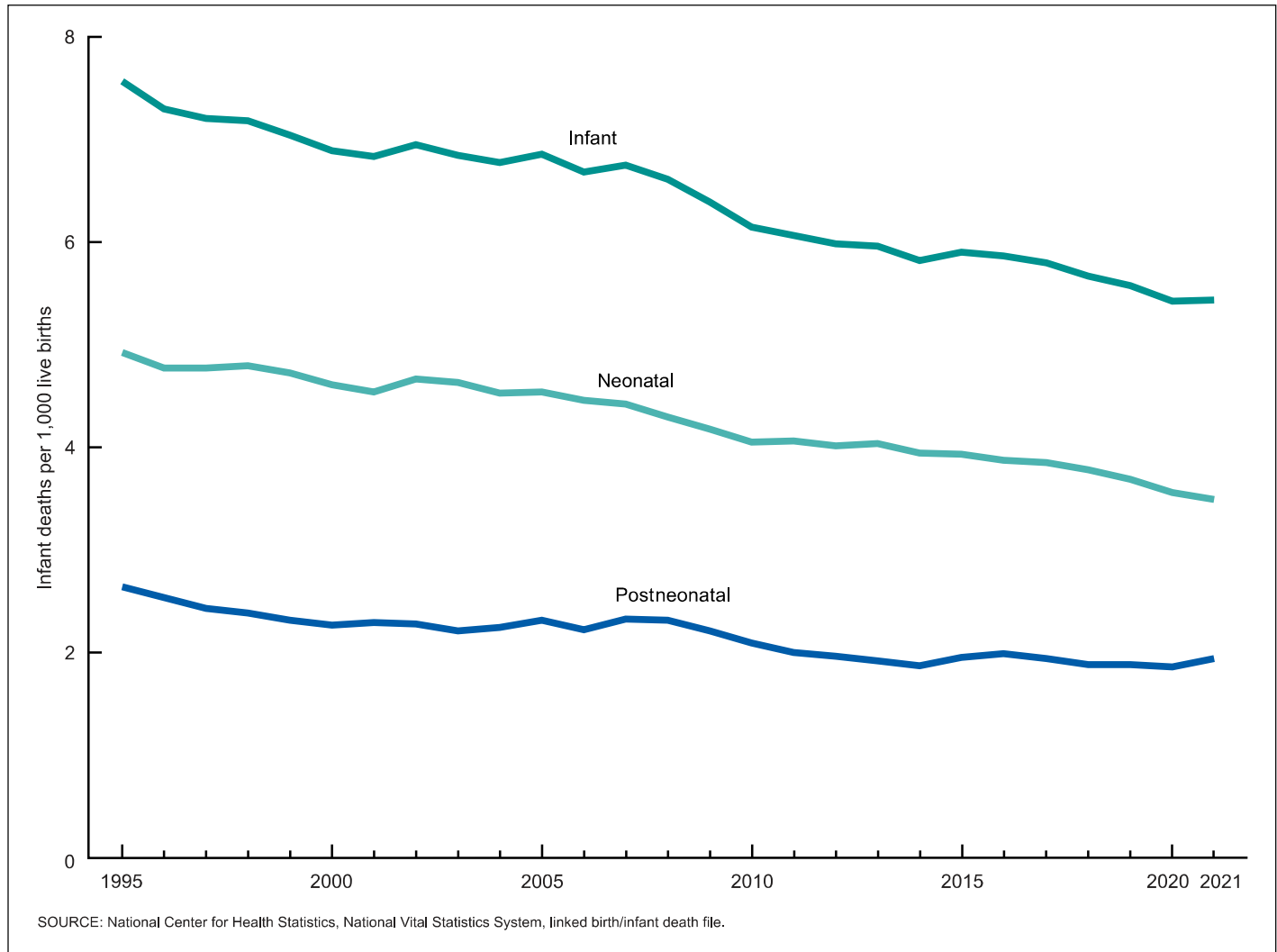
Race and Hispanic origin—Infant mortality rates are presented by race and Hispanic origin of the mother. The linked file is useful for computing accurate infant mortality rates by these characteristics because the race and Hispanic origin of the mother from the birth certificate are used in both the numerator and denominator of the infant mortality rate. In contrast, for rates based on the vital statistics mortality file, race information for the denominator is the race of the mother as reported on the birth certificate, while race information for the numerator is the race of the decedent as reported on the death certificate (2,3,8). More detail on the reliability of race and Hispanic-origin data from the linked file compared with the mortality file is available elsewhere (8).

Statistical significance—Statements in the text have been tested for statistical significance, and a statement that a given infant mortality rate is higher or lower than another rate indicates that the rates are significantly different using a two-tailed *z* test at the alpha level of 0.05. Comparisons between state rates and the U.S. rate take into account each state's contribution to the U.S. rate. As a result, each state rate is compared with a unique U.S. rate independent of the state's contribution to the total U.S. rate. Information on the methods used to test for statistical significance, as well as information on differences between period and cohort data, the weighting of the linked file, maternal age, period of gestation, birthweight, and cause-of-death classification, is also available (1) (Technical Notes).

Results

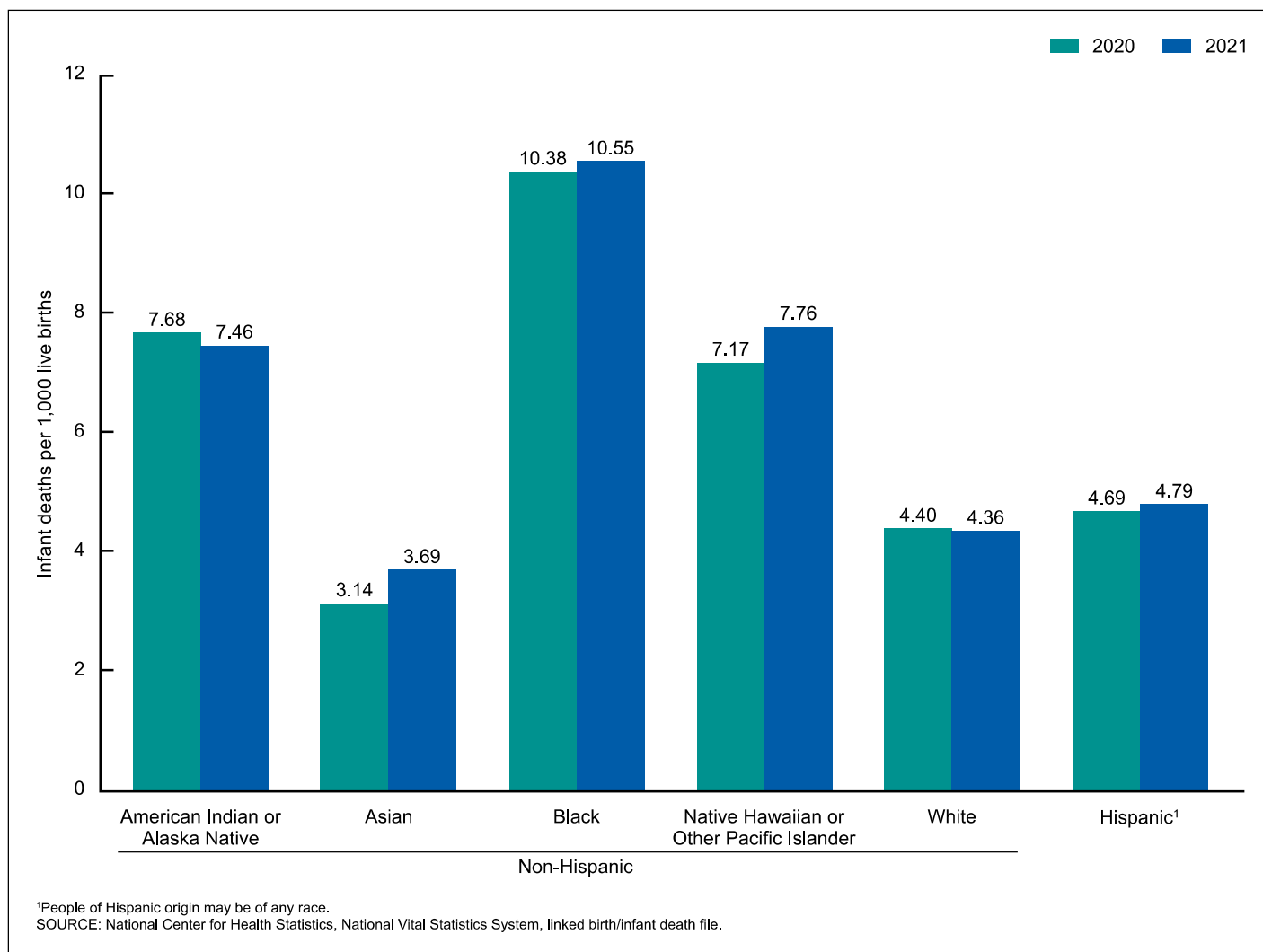
Trends in infant mortality and infant age at death

- In 2021, 19,928 infant deaths were reported in the United States, an increase of 2% from 2020 (19,578). The infant mortality rate was 5.44 deaths per 1,000 live births in 2021, essentially unchanged from the 2020 rate of 5.42 (Figure 1, Table 1).
- The U.S. infant mortality rate has generally trended downward since 1995 (the first year that the period linked birth/infant death file was available) and has declined 21% since 2005, the most recent high (6.86).
- The 2021 neonatal mortality rate (infant deaths at less than 28 days) of 3.49 was essentially unchanged from 2020 (3.56). The neonatal mortality rate has generally declined since 1995 and is down 23% since 2005 (4.54).
- The 2021 postneonatal mortality rate (infant deaths at 28 days or more) increased 5% to 1.95 from 1.86 in 2020. The postneonatal mortality rate has also generally declined since 1995 and is down 16% since 2005 (2.32).

Figure 1. Infant, neonatal, and postneonatal mortality rates: United States, 1995–2021

Race and Hispanic origin

- The mortality rate for infants of Asian women increased 17% from 2020 to 2021 (from 3.14 to 3.69 infant deaths per 1,000 births). Increases in rates for infants born to Black (10.38 to 10.55), Hispanic (4.69 to 4.79), and Native Hawaiian or Other Pacific Islander (7.17 to 7.76) women were not significant. Declines in rates for infants born to American Indian or Alaska Native (7.68 to 7.46) and White (4.40 to 4.36) women were not significant (Tables 1 and 2, Figure 2).
- Among Hispanic-origin subgroups, the mortality rate for infants of Dominican women decreased 28% from 2020 to 2021 (4.53 to 3.27); declines in mortality rates for infants of Cuban (4.23 to 3.56) and Puerto Rican (6.26 to 6.05) women were not significant. Increases in the mortality rates for infants of Central and South American (3.88 to 4.20) and Mexican (4.71 to 4.91) women from 2020 to 2021 were not significant.
- In 2021, infant mortality continued to vary by race: Infants of Black women had the highest mortality rate (10.55), followed by infants of Native Hawaiian or Other Pacific Islander and American Indian or Alaska Native (7.76 and 7.46, respectively), Hispanic (4.79), White (4.36), and Asian (3.69) women.
- Infants of Black women also had the highest neonatal mortality rate in 2021 (6.35) compared with infants of the other race and Hispanic-origin groups; the lowest mortality rate was for infants of Asian and White women (both 2.78).
- In 2021, postneonatal mortality rates were higher for infants of Black (4.19), American Indian or Alaska Native (3.67), and Native Hawaiian or Other Pacific Islander (3.36) women than for infants of White (1.58), Hispanic (1.52), and Asian (0.90) women.
- Among Hispanic-origin subgroups in 2021, the mortality rate for infants of Puerto Rican women (6.05) was higher than that for infants of Mexican (4.91), Central and South American (4.20), Cuban (3.56), and Dominican (3.27) women.

Figure 2. Infant mortality rate, by maternal race and Hispanic origin: United States, 2020 and 2021

Maternal age

- Changes in infant mortality rates from 2020 to 2021 in each of the maternal age groups were not significant. Rates declined from 15.30 to 14.92 for infants of females under age 15, 5.29 to 5.15 for infants of women aged 25–29, and 4.50 to 4.48 for infants of women aged 30–34. Rates increased for infants of females aged 15–19 (8.57 to 9.15), women aged 20–24 (6.62 to 6.87), women aged 35–39 (4.79 to 4.92), and women aged 40 and over (6.65 to 6.74) (Figure 3, Table 2).
- In 2021, mortality rates were highest for infants of females under age 15 (14.92 infant deaths per 1,000 births), decreased to a low of 4.48 for infants of women aged 30–34, and then increased to 6.74 for infants of women aged 40 and over.

Gestational age

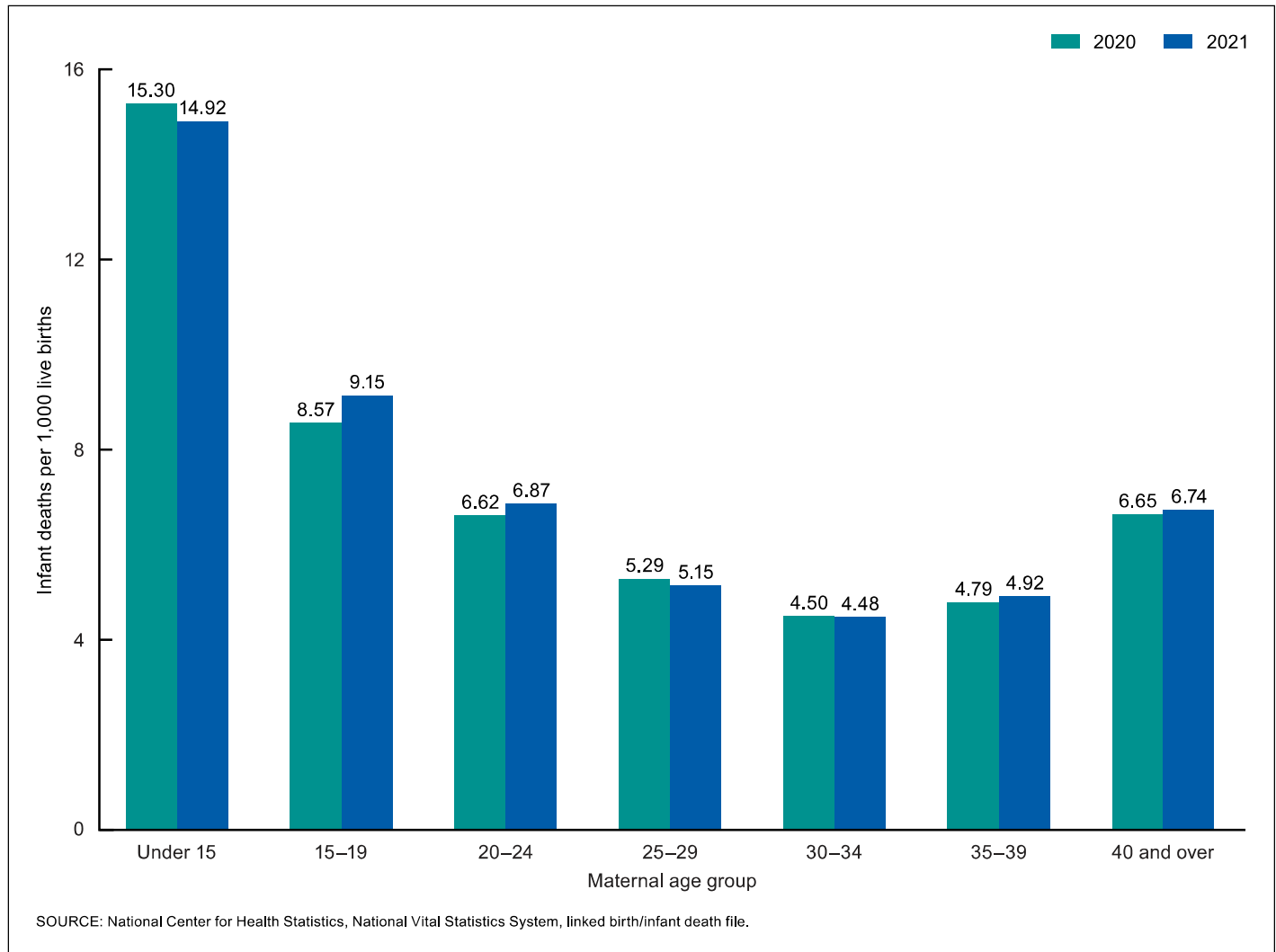
- The infant mortality rate for infants born at less than 32 weeks of gestation declined from 175.88 in 2020 to 167.39 in 2021. From 2020 to 2021, nonsignificant declines in

the mortality rate for infants born at 32–33 weeks (20.11 to 19.35) and 42 weeks or more (4.17 to 3.79) were seen. Nonsignificant increases in the mortality rate for infants born at 34–36 weeks (7.92 to 8.11) and 37–41 weeks (2.04 to 2.08) were observed (Table, Table 2) (4).

- In 2021, 65% of infant deaths occurred among infants born preterm (less than 37 weeks of gestation), essentially unchanged from the 2020 level of 66%.

Leading causes of infant death

- In 2021, the five leading causes of all infant deaths were the same as those in 2020: congenital malformations (20% of infant deaths), disorders related to short gestation and low birth weight (15%), sudden infant death syndrome (SIDS) (7%), unintentional injuries (7%), and maternal complications (6%) (Table 3).
- From 2020 to 2021, the infant mortality rate declined for disorders related to short gestation and low birth weight (87.2 to 80.7). Declines in rates for congenital malformations (112.0 to 108.9) and maternal complications (30.9 to 30.4)

Figure 3. Infant mortality rate, by maternal age: United States, 2020 and 2021**Table. Infant mortality rate, by gestational age: United States, 2015–2021**

Year	Less than 32 weeks	32–33 weeks	34–36 weeks	37–41 weeks	42 weeks or more
Deaths per 1,000 live births					
2021.....	167.39	19.35	8.11	2.08	3.79
2020.....	175.88	20.11	7.92	2.04	4.17
2019.....	180.40	19.21	8.21	2.03	5.72
2018.....	185.79	21.95	8.21	2.05	5.39
2017.....	187.56	20.50	8.50	2.10	3.98
2016.....	190.15	20.12	8.65	2.19	4.31
2015.....	193.54	20.79	8.76	2.17	4.20

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

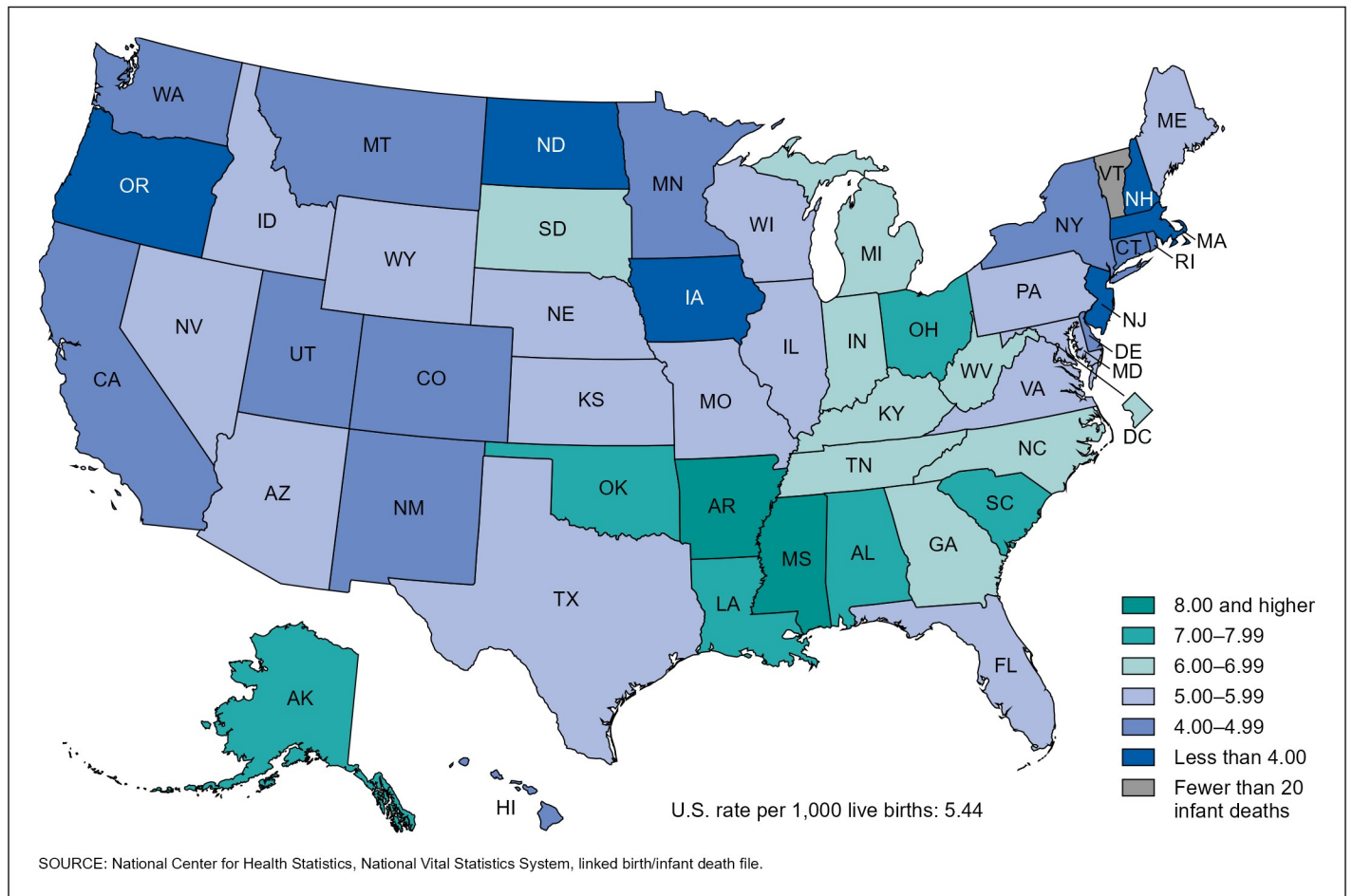
and increases for SIDS (38.4 to 39.8) and unintentional injuries (33.0 to 35.5) were not significant (Table 4).

- Congenital malformations was the leading cause of death for infants born to American Indian or Alaska Native (134.0) and White (102.2) women in 2021 (Table 4).

- In 2021, disorders related to short gestation and low birth weight was the leading cause of death for infants of Asian (69.7) and Black (196.4) women.

Infant mortality by state

- By state, infant mortality ranged from a low of 2.77 infant deaths per 1,000 births in North Dakota to a high of 9.39 in Mississippi (Figure 4, Table 5).
- Twelve states had infant mortality rates significantly lower than the national infant mortality rate: California, Connecticut, Iowa, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, North Dakota, Oregon, Utah, and Washington.
- Seventeen states had infant mortality rates significantly higher than the U.S. infant mortality rate: Alabama, Alaska, Arkansas, Florida, Georgia, Indiana, Kentucky, Louisiana, Michigan, Mississippi, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Virginia, and West Virginia.

Figure 4. Infant mortality rate, by state: United States, 2021

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Table 1. Live births, infant, neonatal, and postneonatal deaths, and mortality rates: United States, 1995–2021, and by maternal race and Hispanic origin, 2017–2021

Year and race and Hispanic origin	Number				Deaths per 1,000 live births		
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal
All race and Hispanic-origin groups							
2021.....	3,664,292	19,928	12,797	7,131	5.44	3.49	1.95
2020.....	3,613,647	19,578	12,866	6,712	5.42	3.56	1.86
2019.....	3,747,540	20,927	13,834	7,093	5.58	3.69	1.89
2018.....	3,791,712	21,498	14,329	7,169	5.67	3.78	1.89
2017.....	3,855,500	22,341	14,844	7,497	5.79	3.85	1.94
2016.....	3,945,875	23,157	15,303	7,854	5.87	3.88	1.99
2015.....	3,978,497	23,458	15,672	7,786	5.90	3.94	1.96
2014.....	3,988,076	23,211	15,737	7,474	5.82	3.95	1.87
2013.....	3,932,181	23,446	15,893	7,553	5.96	4.04	1.92
2012.....	3,952,841	23,654	15,887	7,767	5.98	4.02	1.96
2011.....	3,953,590	24,001	16,065	7,936	6.07	4.06	2.01
2010.....	3,999,386	24,572	16,193	8,379	6.14	4.05	2.10
2009.....	4,130,665	26,408	17,261	9,148	6.39	4.18	2.21
2008.....	4,247,726	28,075	18,238	9,837	6.61	4.29	2.32
2007.....	4,316,233	29,153	19,094	10,059	6.75	4.42	2.33
2006.....	4,265,593	28,509	19,041	9,468	6.68	4.46	2.22
2005.....	4,138,573	28,384	18,782	9,602	6.86	4.54	2.32
2004.....	4,112,055	27,860	18,602	9,258	6.78	4.52	2.25
2003.....	4,090,007	27,995	18,935	9,060	6.84	4.63	2.22
2002.....	4,021,825	27,970	18,791	9,179	6.95	4.67	2.28
2001.....	4,026,036	27,523	18,275	9,248	6.84	4.54	2.30
2000.....	4,058,882	27,961	18,733	9,227	6.89	4.62	2.27
1999.....	3,959,417	27,865	18,701	9,164	7.04	4.72	2.31
1998.....	3,941,553	28,325	18,915	9,410	7.19	4.80	2.39
1997.....	3,880,894	27,968	18,507	9,461	7.21	4.77	2.44
1996.....	3,891,494	28,419	18,556	9,863	7.30	4.77	2.53
1995.....	3,899,589	29,505	19,186	10,319	7.57	4.92	2.65
Non-Hispanic, single race							
American Indian or Alaska Native:							
2021.....	26,124	195	100	96	7.46	3.83	3.67
2020.....	26,813	206	102	104	7.68	3.80	3.88
2019.....	28,450	224	114	110	7.87	4.01	3.87
2018.....	29,092	237	120	117	8.15	4.12	4.02
2017.....	29,957	276	143	132	9.21	4.77	4.41
Asian:							
2021.....	213,813	788	594	193	3.69	2.78	0.90
2020.....	219,068	688	503	185	3.14	2.30	0.84
2019.....	238,769	806	602	204	3.38	2.52	0.85
2018.....	240,798	874	643	231	3.63	2.67	0.96
2017.....	249,250	943	675	268	3.78	2.71	1.08
Black:							
2021.....	517,889	5,463	3,291	2,172	10.55	6.35	4.19
2020.....	529,811	5,501	3,472	2,028	10.38	6.55	3.83
2019.....	548,075	5,821	3,754	2,067	10.62	6.85	3.77
2018.....	552,029	5,933	3,897	2,037	10.75	7.06	3.69
2017.....	560,715	6,152	4,012	2,140	10.97	7.16	3.82
Native Hawaiian or Other Pacific Islander:							
2021.....	9,531	74	41	32	7.76	4.30	3.36
2020.....	9,626	69	41	27	7.17	4.26	2.80
2019.....	9,770	80	49	31	8.19	5.02	3.17
2018.....	9,476	89	51	38	9.39	5.38	4.01
2017.....	9,426	72	36	36	7.64	3.82	3.82
White:							
2021.....	1,887,656	8,236	5,251	2,984	4.36	2.78	1.58
2020.....	1,843,432	8,115	5,290	2,825	4.40	2.87	1.53
2019.....	1,915,912	8,603	5,589	3,014	4.49	2.92	1.57
2018.....	1,956,413	9,059	5,873	3,186	4.63	3.00	1.63
2017.....	1,992,461	9,306	6,061	3,246	4.67	3.04	1.63

See footnotes at end of table.

Table 1. Live births, infant, neonatal, and postneonatal deaths, and mortality rates: United States, 1995–2021, and by maternal race and Hispanic origin, 2017–2021—Con.

Year and race and Hispanic origin	Number				Deaths per 1,000 live births		
	Live births	Infant deaths	Neonatal deaths	Postneonatal deaths	Infant	Neonatal	Postneonatal
Hispanic ¹							
2021.....	885,916	4,246	2,899	1,347	4.79	3.27	1.52
2020.....	866,713	4,063	2,828	1,235	4.69	3.26	1.42
2019.....	886,467	4,462	3,091	1,371	5.03	3.49	1.55
2018.....	886,210	4,303	3,036	1,267	4.86	3.43	1.43
2017.....	898,764	4,583	3,198	1,383	5.10	3.56	1.54
Central and South American:							
2021.....	178,067	748	521	227	4.20	2.93	1.27
2020.....	169,811	659	470	189	3.88	2.77	1.11
2019.....	165,229	749	535	214	4.53	3.24	1.30
2018.....	147,430	592	438	154	4.02	2.97	1.04
2017.....	145,614	653	465	188	4.48	3.19	1.29
Cuban:							
2021.....	24,437	87	68	19	3.56	2.78	*
2020.....	23,188	98	63	34	4.23	2.72	1.47
2019.....	23,668	98	65	33	4.14	2.75	1.39
2018.....	23,471	90	64	26	3.83	2.73	1.11
2017.....	23,362	93	69	24	3.98	2.95	1.03
Dominican:							
2021.....	33,373	109	68	41	3.27	2.04	1.23
2020.....	31,596	143	101	42	4.53	3.20	1.33
2019.....	32,483	153	111	42	4.71	3.42	1.29
Mexican:							
2021.....	485,127	2,380	1,633	747	4.91	3.37	1.54
2020.....	480,531	2,264	1,586	678	4.71	3.30	1.41
2019.....	496,716	2,462	1,693	769	4.96	3.41	1.55
2018.....	495,831	2,426	1,690	736	4.89	3.41	1.48
2017.....	512,126	2,588	1,795	792	5.05	3.50	1.55
Puerto Rican:							
2021.....	70,729	428	278	151	6.05	3.93	2.13
2020.....	69,763	437	308	129	6.26	4.41	1.85
2019.....	70,950	438	294	144	6.17	4.14	2.03
2018.....	71,614	402	290	112	5.61	4.05	1.56
2017.....	70,813	459	307	151	6.48	4.34	2.13

* Estimate does not meet National Center for Health Statistics standards of reliability.

¹People of Hispanic origin may be of any race.

NOTES: Infant deaths are weighted to adjust for the 1.1% of infant death records that were not linked to their corresponding birth certificates; the neonatal and postneonatal mortality rates combined may not exactly add to totals due to rounding. Data for infants of Dominican women are available starting with the 2019 period linked birth/infant death data files.

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

Table 2. Infant mortality rates, live births, and infant deaths, by selected characteristics and by maternal race and Hispanic origin: United States, 2021

Characteristic	Non-Hispanic					Hispanic ¹						
	American Indian or Alaska Native ²	Asian	Black	Native Hawaiian or Other Pacific Islander	White	Total ³	Central and South American	Cuban	Dominican	Mexican	Puerto Rican	
Total.....	5.44	7.46	3.69	10.55	7.76	4.36	4.79	4.20	3.56	3.27	4.91	6.05
Age at death												
Total neonatal.....	3.49	3.83	2.78	6.35	4.30	2.78	3.27	2.93	2.78	2.04	3.37	3.93
Early neonatal (under 7 days).....	2.75	2.56	2.17	4.99	3.36	2.18	2.60	2.34	1.84	1.68	2.69	3.12
Late neonatal (7–27 days).....	0.74	1.22	0.61	1.37	*	0.60	0.67	0.59	0.90	*	0.67	0.81
Postneonatal.....	1.95	3.67	0.90	4.19	3.36	1.58	1.52	1.27	*	1.23	1.54	2.13
Sex												
Male.....	5.83	7.57	4.02	11.55	8.83	4.66	5.11	4.68	3.95	3.40	5.06	6.78
Female.....	5.02	7.43	3.33	9.51	6.44	4.05	4.47	3.71	3.07	3.07	4.75	5.32
Period of gestation (weeks)												
Less than 34.....	103.08	81.05	101.99	124.37	106.51	89.69	100.93	91.25	83.58	65.64	105.21	106.20
Less than 28.....	353.76	290.12	394.17	349.23	341.77	352.55	342.97	335.53	268.57	231.09	352.74	341.89
28–31.....	41.14	*	33.06	43.17	*	43.21	38.40	34.53	*	*	40.28	32.59
32–33.....	19.35	*	14.59	22.60	*	18.52	17.69	17.93	*	*	20.30	*
34–36.....	8.11	13.78	4.41	10.99	*	7.77	7.18	7.09	*	*	7.69	6.54
37–41.....	2.08	4.12	1.06	3.74	3.50	1.87	1.70	1.59	1.05	0.97	1.73	2.23
37–38.....	3.14	5.83	1.50	4.98	*	3.00	2.47	2.15	*	*	2.52	3.01
39–40.....	1.59	2.95	0.85	3.00	4.20	1.40	1.31	1.30	*	*	1.31	1.83
41.....	1.51	*	*	2.88	—	1.28	1.49	*	*	*	1.70	*
42 or more.....	3.79	*	*	*	*	*	*	*	—	—	*	—
Birthweight (grams)												
Less than 2,500.....	41.78	39.60	29.80	50.60	44.99	37.39	41.91	38.16	35.28	26.76	44.26	44.19
Less than 1,500.....	187.90	168.67	189.55	193.98	182.93	178.07	189.75	177.82	155.62	113.50	201.35	183.46
1,500–2,499.....	12.97	15.09	6.03	14.35	*	13.23	12.39	12.97	*	*	13.00	13.04
2,500 or more.....	2.00	4.67	0.99	3.53	3.70	1.84	1.61	1.47	0.97	1.05	1.66	1.88
2,500–4,499.....	2.00	4.66	0.99	3.52	3.67	1.84	1.59	1.46	0.94	1.06	1.65	1.85
4,500 or more.....	2.61	*	*	*	*	1.89	3.09	*	*	—	*	*
Plurality												
Single births.....	4.92	6.93	3.32	9.54	6.78	3.94	4.37	3.87	3.29	2.94	4.50	5.42
Twin births.....	20.64	*	18.25	33.31	*	16.20	20.47	18.06	*	*	20.75	21.94
Triplet and higher-order births.....	45.01	—	*	66.04	—	32.92	61.37	*	—	—	*	*
Age of mother												
Under 15.....	14.92	—	—	*	—	*	*	*	—	—	*	—
15–19.....	9.15	*	*	12.97	*	9.30	6.70	5.86	*	*	6.66	10.91
20–24.....	6.87	5.76	4.92	11.86	10.70	5.98	5.01	4.59	*	3.61	4.96	6.21
25–29.....	5.15	7.83	3.45	10.12	*	4.25	4.08	3.16	3.77	3.45	4.07	5.60
30–34.....	4.48	8.52	3.38	9.46	10.49	3.53	4.24	3.70	2.35	*	4.58	5.09
35–39.....	4.92	8.21	3.91	9.89	*	3.83	5.17	4.67	6.06	*	5.36	5.39
40–54.....	6.74	*	4.37	11.41	*	5.03	8.18	7.09	*	*	9.11	10.18

See footnotes at end of table.

Table 2. Infant mortality rates, live births, and infant deaths, by selected characteristics and by maternal race and Hispanic origin: United States, 2021—Con.

Characteristic	Non-Hispanic					Hispanic ¹					
	American Indian or Alaska Native ²	Asian	Black	Native Hawaiian or Other Pacific Islander	White	Total ³	Central and South American	Cuban	Dominican	Mexican	Puerto Rican
Mother's place of birth											
Born in the 50 states or District of Columbia.....	7.54	3.74	11.16	6.10	4.43	4.94	4.16	2.97	3.46	4.88	5.91
Born elsewhere	4.47	3.63	7.03	8.40	3.04	4.57	4.21	3.95	3.19	4.89	6.46
Total	3,664,292	213,813	517,889	9,531	1,887,656	885,916	178,067	24,437	33,373	485,127	70,729
Sex											
Male.....	13,343	110,083	262,679	4,872	968,370	450,807	90,458	12,392	17,073	246,881	35,973
Female.....	12,781	103,730	255,210	4,659	919,286	435,109	87,609	12,045	16,300	238,246	34,756
Period of gestation (weeks)											
Less than 34	802	4,981	25,641	338	43,671	23,620	4,285	670	975	12,660	2,354
Less than 28.....	162	1,063	7,445	79	8,223	5,534	912	175	238	2,971	623
28–31.....	249	1,724	8,640	111	14,603	8,021	1,477	211	288	4,369	767
32–33.....	391	2,194	9,556	148	20,845	10,065	1,896	284	449	5,320	964
34–36.....	2,394	14,738	50,693	869	135,452	66,993	13,119	1,756	2,455	36,156	5,812
37–41.....	22,813	193,854	440,079	8,275	1,701,379	793,509	160,233	21,984	29,895	435,400	62,423
37–38.....	8,230	66,074	167,006	2,863	510,021	264,132	52,485	6,784	9,487	145,058	21,233
39–40.....	13,581	120,653	255,016	4,995	1,092,775	492,466	99,882	14,352	18,944	270,299	38,226
41.....	1,002	7,127	18,057	417	98,583	36,911	7,866	848	1,464	20,043	2,964
42 or more.....	65	174	1,085	28	5,939	1,298	297	22	35	712	94
Not stated	50	66	391	21	1,215	496	133	5	13	199	46
Birthweight (grams)											
Less than 2,500	2,121	19,798	76,202	889	132,995	69,511	13,103	1,814	2,877	36,712	6,947
Less than 1,500	332	2,564	15,378	164	19,492	11,568	2,002	347	511	6,094	1,270
1,500–2,499.....	1,789	17,234	60,824	725	113,503	57,943	11,101	1,467	2,366	30,618	5,677
2,500 or more	23,999	193,983	441,561	8,640	1,754,370	816,228	164,901	22,622	30,489	448,384	63,767
2,500–4,499.....	23,598	193,049	438,687	8,453	1,732,099	808,466	163,527	22,404	30,203	443,751	63,297
4,500 or more	401	934	2,874	187	22,271	7,762	1,374	218	286	4,633	470
Not stated	4	32	126	2	291	177	63	1	7	31	15
Plurality											
Single births	25,408	208,738	496,418	9,293	1,824,456	863,961	174,117	23,703	32,344	473,586	68,492
Twin births.....	713	4,985	21,047	238	61,438	21,401	3,877	707	990	11,230	2,188
Triplet and higher-order births	3	90	424	–	1,762	554	73	27	39	311	49

See footnotes at end of table.

Table 2. Infant mortality rates, live births, and infant deaths, by selected characteristics and by maternal race and Hispanic origin: United States, 2021—Con.

Characteristic	Non-Hispanic					Hispanic ¹						
	American Indian or Alaska Native ²	Asian	Black	Native Hawaiian or Other Pacific Islander	White	Total ³	Central and South American	Cuban	Dominican	Mexican	Puerto Rican	
Age of mother												
Under 15	1,877	26	12	506	5	449	770	239	6	9	373	44
15–19	146,973	2,117	971	31,231	447	50,203	55,263	11,264	565	1,351	31,391	4,218
20–24	648,484	6,939	10,166	117,698	2,337	286,140	199,773	33,801	3,653	6,378	115,837	17,871
25–29	1,023,989	7,537	42,848	148,309	2,810	532,001	256,844	46,490	6,623	9,855	145,546	21,081
30–34	1,115,055	5,987	88,988	130,788	2,383	633,212	220,530	47,794	8,495	9,479	114,584	17,285
35–39	592,179	2,925	57,569	70,073	1,218	321,036	120,329	29,736	4,290	4,925	61,159	8,168
40–54	135,735	593	13,259	19,284	331	64,615	32,407	8,743	805	1,376	16,237	2,062
Mother's place of birth												
Born in the 50 states or District of Columbia	2,876,302	25,732	51,007	431,805	3,444	1,764,989	493,747	37,716	10,758	10,692	312,594	50,799
Born elsewhere	780,007	362	162,126	84,213	5,953	119,903	390,938	140,176	13,668	22,599	172,082	19,653
Not stated	7,983	30	680	1,871	134	2,764	1,231	175	11	82	451	277
Total	19,928	195	788	5,463	74	8,236	4,246	748	87	109	2,380	428
Age at death												
Total neonatal	12,797	100	594	3,291	41	5,251	2,899	521	68	68	1,633	278
Early neonatal (under 7 days)	10,082	67	463	2,583	32	4,111	2,303	416	45	56	1,305	221
Late neonatal (7–27 days)	2,715	32	131	708	9	1,140	596	105	22	12	327	57
Postneonatal	7,131	96	193	2,172	32	2,984	1,347	227	19	41	747	151
Sex												
Male	10,930	101	443	3,035	43	4,514	2,303	423	49	58	1,248	244
Female	8,998	95	345	2,428	30	3,722	1,943	325	37	50	1,132	185
Period of gestation (weeks)												
Less than 34	10,618	65	508	3,189	36	3,917	2,384	391	56	64	1,332	250
Less than 28	8,323	47	419	2,600	27	2,899	1,898	306	47	55	1,048	213
28–31	1,429	10	57	373	4	631	308	51	8	3	176	25
32–33	866	8	32	216	5	386	178	34	1	6	108	12
34–36	2,278	33	65	557	4	1,052	481	93	6	16	278	38
37–41	6,812	94	205	1,648	29	3,189	1,352	254	23	29	754	139
37–38	3,310	48	99	831	8	1,531	652	113	12	15	365	64
39–40	3,248	40	103	764	21	1,533	645	130	10	12	355	70
41	254	5	3	52	—	126	55	11	1	2	34	4
42 or more	34	2	2	4	1	18	3	1	—	—	2	—
Not stated	186	1	8	64	3	60	25	8	1	—	13	1

See footnotes at end of table.

Table 2. Infant mortality rates, live births, and infant deaths, by selected characteristics and by maternal race and Hispanic origin: United States, 2021—Con.

Characteristic	Non-Hispanic					Hispanic ¹						
	Total	American Indian or Alaska Native ²	Asian	Black	Native Hawaiian or Other Pacific Islander	White	Total ³	Central and South American	Cuban	Dominican	Mexican	Puerto Rican
Birthweight (grams)												
Less than 2,500	13,084	84	590	3,856	40	4,973	2,913	500	64	77	1,625	307
Less than 1,500	9,691	56	486	2,983	30	3,471	2,195	356	54	58	1,227	233
1,500–2,499	3,393	27	104	873	10	1,502	718	144	9	19	398	74
2,500 or more	6,710	112	192	1,558	32	3,226	1,312	242	22	32	744	120
2,500–4,499	6,617	110	191	1,542	31	3,184	1,288	238	21	32	732	117
4,500 or more	93	2	1	16	1	42	24	4	1	—	12	3
Not stated	134	—	6	49	1	36	21	6	1	—	10	2
Plurality												
Single births	17,439	176	694	4,734	63	7,182	3,774	674	78	95	2,129	371
Twin births	2,356	19	91	701	10	995	438	70	8	14	233	48
Triplet and higher-order births	132	—	3	28	—	58	34	4	—	—	18	9
Age of mother												
Under 15	28	—	—	10	—	7	8	3	—	—	4	—
15–19	1,345	13	6	405	2	467	370	66	2	9	209	46
20–24	4,455	40	50	1,396	25	1,711	1,000	155	10	23	574	111
25–29	5,275	59	148	1,501	12	2,263	1,047	147	25	34	592	118
30–34	4,999	51	301	1,237	25	2,235	934	177	20	19	525	88
35–39	2,911	24	225	693	7	1,228	622	139	26	16	328	44
40–54	915	7	58	220	2	325	265	62	3	7	148	21
Mother's place of birth												
Born in the 50 states or District of Columbia	16,223	194	191	4,820	21	7,818	2,438	157	32	37	1,527	300
Born elsewhere	3,484	1	588	592	50	364	1,787	590	54	72	841	127
Not stated	222	—	9	50	2	53	21	1	—	—	11	1

* Figure does not meet National Center for Health Statistics standards of reliability or precision; based on fewer than 20 deaths in the numerator.

— Quantity zero.

¹People of Hispanic origin may be of any race.²Includes Aleut and Eskimo infants.³Includes other and unknown Hispanic origin not stated and not shown separately.

NOTES: Infant deaths are weighted so numbers may not add to totals due to rounding. Not-stated responses were included in totals but not distributed among groups for rate computations. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1997 Office of Management and Budget standards. People of Hispanic origin may be of any race.

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

Table 3. Infant deaths, percentage of deaths, and infant mortality rates, by five leading causes of infant death: United States, 2010–2021

Year	Congenital malformations (Q00–Q99)			Short gestation and low birth weight, not elsewhere classified (P07)			Sudden infant death syndrome (R95)			Accidents (unintentional injuries) (V01–X59)			Maternal complications of pregnancy (P01)		
	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate	Number	Percent	Rate
2021.....	3,990	20.0	108.9	2,957	14.8	80.7	1,458	7.3	39.8	1,300	6.5	35.5	1,113	5.6	30.4
2020.....	4,047	20.7	112.0	3,152	16.1	87.2	1,386	7.1	38.4	1,192	6.1	33.0	1,115	5.7	30.9
2019.....	4,313	20.6	115.1	3,460	16.5	92.3	1,251	6.0	33.4	1,264	6.0	33.7	1,250	6.0	33.4
2018.....	4,501	20.9	118.7	3,683	17.1	97.1	1,331	6.2	35.1	1,169	5.4	30.8	1,371	6.4	36.2
2017.....	4,596	20.6	119.2	3,757	16.8	97.4	1,360	6.1	35.3	1,313	5.9	34.1	1,436	6.4	37.2
2016.....	4,823	20.8	122.2	3,926	17.0	99.5	1,498	6.5	38.0	1,217	5.3	30.8	1,407	6.1	35.7
2015.....	4,847	20.7	121.8	4,087	17.4	102.7	1,567	6.7	39.4	1,289	5.5	32.4	1,527	6.5	38.4
2014.....	4,754	20.5	119.2	4,172	18.0	104.6	1,541	6.6	38.6	1,163	5.0	29.2	1,580	6.8	39.6
2013.....	4,778	20.4	121.5	4,213	18.0	107.1	1,561	6.7	39.7	1,150	4.9	29.2	1,597	6.8	40.6
2012.....	4,967	21.0	125.7	4,214	17.8	106.6	1,676	7.1	42.4	1,163	4.9	29.4	1,518	6.4	38.4
2011.....	5,016	20.9	126.9	4,115	17.1	104.1	1,905	7.9	48.2	1,167	4.9	29.5	1,598	6.7	40.4
2010.....	5,115	20.8	127.9	4,151	16.9	103.8	2,058	8.4	51.5	1,107	4.5	27.7	1,563	6.4	39.1

NOTES: The five leading causes of death were the same from 2010–2020, but ranking changed in 2020 compared with previous years. Rate is defined as infant deaths per 100,000 live births.

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

Table 4. Infant deaths and mortality rates for the five leading causes of infant death, by maternal race and Hispanic origin: United States, 2021

[Rates are per 100,000 live births in specified group]

Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Non-Hispanic											
	All races			American Indian or Alaska Native ¹			Asian ²			Black		
	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate	Rank	Number	Rate
All causes.	...	19,928	543.8	...	195	746.4	...	788	368.5	...	5,463	1,054.9
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1	3,990	108.9	1	35	134.0	2	146	68.3	2	710	137.1
Disorders related to short gestation and low birth weight, not elsewhere classified. (P07)	2	2,957	80.7	4	12	*	1	149	69.7	1	1,017	196.4
Sudden infant death syndrome (R95)	3	1,458	39.8	2	28	107.2	7	20	9.4	3	475	91.7
Accidents (unintentional injuries). (V01–X59)	4	1,300	35.5	3	20	76.6	6	22	10.3	4	408	78.8
Newborn affected by maternal complications of pregnancy (P01)	5	1,113	30.4	7	4	*	3	57	26.7	5	346	66.8
Cause of death (based on <i>International Classification of Diseases, 10th Revision</i>)	Total Hispanic ³			Central and South American			Mexican			Puerto Rican		
All causes.	...	4,246	479.3	...	748	420.1	...	2,380	490.6	...	428	605.1
Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)	1	1,016	114.7	1	205	115.1	1	604	124.5	2	74	104.6
Disorders related to short gestation and low birth weight, not elsewhere classified. (P07)	2	637	71.9	2	107	60.1	2	352	72.6	1	77	108.9
Sudden infant death syndrome (R95)	4	211	23.8	4	36	20.2	5	106	21.8	3	38	53.7
Accidents (unintentional injuries). (V01–X59)	5	196	22.1	5	23	12.9	4	113	23.3	5	20	28.3
Newborn affected by maternal complications of pregnancy (P01)	3	255	28.8	3	41	23.0	3	141	29.1	4	27	38.2

... Category not applicable.

* Figure does not meet National Center for Health Statistics standards of reliability or precision; based on fewer than 20 deaths in the numerator.

¹For infants born to American Indian or Alaska Native non-Hispanic women, Newborn affected by complications of placenta, cord and membranes (P02) was the fifth leading cause of death, with seven deaths, and sepsis was the sixth leading cause of death, with six deaths.²For infants born to Asian non-Hispanic women, Newborn affected by complications of placenta, cord and membranes (P02) was the fourth leading cause of death, with 39 deaths and a rate of 18.2, and sepsis was the fifth leading cause of death, with 34 deaths and a rate of 15.9.³People of Hispanic origin may be of any race.

NOTES: Reliable cause-specific infant mortality rates cannot be computed for infants of Native Hawaiian or Other Pacific Islander non-Hispanic, Cuban, or Dominican women because of the small number of infant deaths. Race and Hispanic origin are reported separately on birth certificates. Race categories are consistent with the 1997 Office of Management and Budget standards. People of Hispanic origin may be of any race.

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

Table 5. Infant mortality rate: United States and each state, 2021

[By place of residence]

Area	Rate ¹	Infant deaths	Live births
United States ²	5.44	19,928	3,664,292
Alabama	7.56	439	58,054
Alaska	7.37	69	9,367
Arizona	5.47	426	77,916
Arkansas	8.59	309	35,965
California	4.07	1,713	420,608
Colorado	4.99	314	62,949
Connecticut	4.65	166	35,670
Delaware	4.77	50	10,482
District of Columbia	6.81	59	8,660
Florida	5.90	1,275	216,260
Georgia	6.25	776	124,073
Hawaii	4.67	73	15,620
Idaho	5.13	115	22,427
Illinois	5.62	743	132,189
Indiana	6.75	540	79,946
Iowa	3.99	147	36,835
Kansas	5.30	184	34,705
Kentucky	6.15	321	52,214
Louisiana	7.24	416	57,437
Maine	5.00	60	12,006
Maryland	5.99	409	68,285
Massachusetts	3.23	223	69,137
Michigan	6.22	653	104,980
Minnesota	4.83	311	64,425
Mississippi	9.39	330	35,156
Missouri	5.85	406	69,453
Montana	4.90	55	11,231
Nebraska	5.49	135	24,609
Nevada	5.76	194	33,686
New Hampshire	3.96	50	12,625
New Jersey	3.57	362	101,497
New Mexico	4.77	102	21,391
New York	4.16	876	210,742
North Carolina	6.72	809	120,466
North Dakota	2.77	28	10,112
Ohio	7.06	916	129,791
Oklahoma	7.13	345	48,410
Oregon	3.79	155	40,914
Pennsylvania	5.37	712	132,622
Rhode Island	4.30	45	10,464
South Carolina	7.26	415	57,185
South Dakota	6.07	69	11,369
Tennessee	6.18	505	81,717
Texas	5.29	1,977	373,594
Utah	4.58	214	46,712
Vermont	*	17	5,384
Virginia	5.96	571	95,825
Washington	4.36	366	83,911
West Virginia	6.80	117	17,198
Wisconsin	5.36	331	61,781
Wyoming	5.45	34	6,237
Puerto Rico	6.94	134	19,304
Guam	15.64	41	2,622

* Estimate does not meet National Center for Health Statistics standards of reliability.

¹Defined as infant deaths per 1,000 live births.²Does not include Puerto Rico or Guam.

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

Technical Notes

Data source and 2003 revision

Information on the data source for the linked birth/infant death file is available elsewhere (1). Additionally, further information on the 2003 revision of the birth certificate is available (3); see also the U.S. Standard Certificate of Live Birth (9).

Weighting

In 2021, a record weight was added to the U.S. linked file to compensate for the 1.1% of infant death records that could not be linked to their corresponding birth certificates. The percentage of records linked varied by registration area, ranging from 95.4% through 100.0% (Table). The number of infant deaths in the linked file for the 50 states and 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 (under 7 days, 7–27 days, and 28 days to under 1 year). The addition of the weight reduced the potential for bias in comparing infant mortality rates by maternal and infant characteristics.

The 2021 linked file initially included 19,944 infant death records. Of these records, 19,728 were linked; 216 were unlinked because corresponding birth certificates could not be identified. The 19,944 linked and unlinked records contained 16 records of infants whose mothers' usual place of residence was outside of the United States; these records were excluded from linked file analyses for a weighted total of 19,928 infant deaths by place of residence for 2021.

Comparison of infant mortality data between linked file and vital statistics mortality file

The overall infant mortality rate of 5.44 from the 2021 period linked file is the same as that from the 2021 vital statistics mortality file (5.44) (10). The number of infant deaths in the linked file (19,728) differs slightly from the number in the mortality file (19,920) (10). Differences in numbers of infant deaths between the two data sources are primarily due to geographic coverage differences. For the vital statistics mortality file, all deaths occurring in the 50 states and the District of Columbia are included regardless of the place of birth of the infant. In contrast, to be included in the U.S. linked file, both the birth and death must occur in the 50 states or the District of Columbia (the territory linked file is a separate file). Weighting of the linked file also may contribute to small differences in numbers and rates by specific variables between these two data sets.

Period of gestation

Beginning with the 2014 data year, the National Center for Health Statistics (NCHS) transitioned to a new standard for estimating the gestational age of the newborn. The new measure—the obstetric estimate of gestation at delivery—replaces the measure based on the date of the last normal menses (11). Accordingly, gestational age data shown in this report are based on the obstetric estimate of gestation at delivery. National

Table. Percentage of infant deaths linked to their corresponding birth records, by state of occurrence of death: United States and each state, 2021

Area	Percent linked by state of occurrence of death
United States ¹	98.9
Alabama	100.0
Alaska	100.0
Arizona	99.3
Arkansas	99.7
California	97.9
Colorado	99.4
Connecticut	100.0
Delaware	95.6
District of Columbia	98.4
Florida	99.9
Georgia	100.0
Hawaii	98.6
Idaho	100.0
Illinois	99.9
Indiana	98.0
Iowa	100.0
Kansas	100.0
Kentucky	98.4
Louisiana	100.0
Maine	100.0
Maryland	100.0
Massachusetts	99.6
Michigan	99.8
Minnesota	100.0
Mississippi	100.0
Missouri	99.2
Montana	100.0
Nebraska	98.6
Nevada	98.9
New Hampshire	100.0
New Jersey	98.0
New Mexico	97.7
New York	98.9
New York City	99.5
North Carolina	98.8
North Dakota	100.0
Ohio	99.5
Oklahoma	100.0
Oregon	98.8
Pennsylvania	98.1
Rhode Island	100.0
South Carolina	99.7
South Dakota	100.0
Tennessee	100.0
Texas	95.4
Utah	100.0
Vermont	100.0
Virginia	98.9
Washington	100.0
West Virginia	97.4
Wisconsin	99.7
Wyoming	100.0

¹Excludes data for Puerto Rico, U.S. Virgin Islands, and Guam.

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

data based on obstetric estimate of gestation at delivery data are available only from data year 2007 forward. Information on and discussion of the reasons for the change, as well as a detailed comparison of the two measures, are presented elsewhere (11).

Sex, birthweight, plurality, and nativity

Detailed definitions and more information on sex, birthweight, plurality, and nativity are available elsewhere (1,3).

Cause-of-death classification

The mortality statistics presented in this report were compiled in accordance with World Health Organization regulations, which specify that member nations classify and code causes of death according to the current revision of the *International Statistical Classification of Diseases* (ICD). ICD provides the basic guidance to code and classify causes of death, details disease classification, and supplies definitions, tabulation lists, the format of the death certificate, and the rules for coding cause of death. Cause-of-death data presented in this report were coded by procedures outlined in annual issues of the *NCHS Instruction Manual* (12,13).

In this report, tabulations of cause-of-death statistics are based solely on the underlying cause of death. Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. This is captured in NCHS multiple cause-of-death statistics (14,15).

Tabulation lists and cause-of-death ranking

The cause-of-death rankings for ICD–10 are based on the “List of 130 Selected Causes of Infant Death.” The tabulation lists and rules for ranking leading causes of death are published in the *NCHS Instruction Manual, Part 9, ICD–10 Cause-of-death Lists for Tabulating Mortality Statistics* (16).

Computation of rates

Information on and discussion of computation of rates (1) is also available from the “User Guide to the 2010 Natality Public Use File” at: https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/natality/UserGuide2010.pdf.

Random variation in infant mortality rates

For information and discussion on random variation and significance testing for linked data (1), see also the “User Guide to the 2010 Natality Public Use File” at: https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/natality/UserGuide2010.pdf.

Availability of linked file

Linked file data are available for download from the Vital Statistics Online Data Portal: https://www.cdc.gov/nchs/data_access/vitalstatsonline.htm. Linked period file data may also be accessed via the Centers for Disease Control and Prevention’s WONDER database, available from: <https://wonder.cdc.gov/lbd>.

[html](https://www.cdc.gov/nchs/nvss/nvss-restricted-data.htm). Beginning with 2005, the public-use file no longer includes geographic detail; such files are available upon special request (see the NCHS Division of Vital Statistics data release policy at: <https://www.cdc.gov/nchs/nvss/nvss-restricted-data.htm>). Data are also available in issues of *Vital and Health Statistics, Series 20; National Vital Statistics Reports*; and *NCHS Data Briefs* from the NCHS website: <https://www.cdc.gov/nchs/products/index.htm>.

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