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Increases in Neonatal Intensive Care Admissions in the United States, 2016–2023

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Key findings

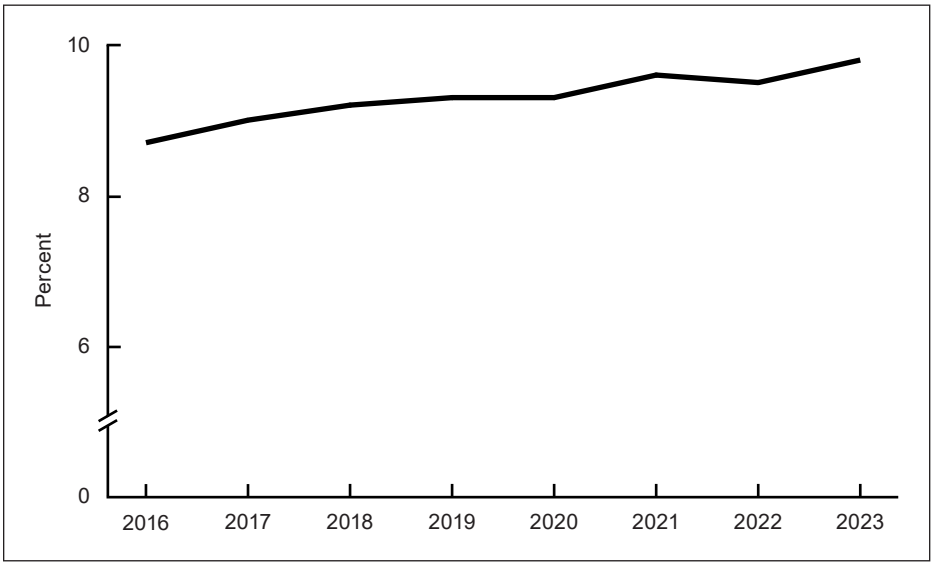
Data from the National Vital Statistics System

- The percentage of infants admitted to a neonatal intensive care unit (NICU) in the United States rose from 8.7% in 2016 to 9.8% in 2023.
- NICU rates rose for all maternal age groups from 2016 to 2023.
- NICU rates increased for each race and Hispanic-origin group from 2016 to 2023, with the largest increases for infants born to American Indian and Alaska Native non-Hispanic, White non-Hispanic, and Black non-Hispanic mothers.
- The percentage of infants admitted to a NICU increased among all gestational age and birthweight categories from 2016 to 2023.
- From 2016 to 2023, NICU rates increased in most states.

Neonatal intensive care units (NICUs), first established in the United States in 1960, are specialized medical facilities that provide intensive care for newborns, particularly those born preterm (less than 37 weeks of gestation) or with medical complications (1). Studies suggest increased survival for infants at the highest risk of poor outcomes who are cared for in a NICU (2,3). Recent reports indicate that NICU admittance rates are on the rise in the United States (4,5). National birth certificate data on NICU admission have been available since 2016. This report describes trends in NICU admission in the United States overall and by maternal age, race and Hispanic origin, gestational age and birthweight of the newborn, and state of residence of the mother from 2016 to 2023.

Infants were more likely to be admitted to a NICU in 2023 than in 2016.

Figure 1. Percentage of infants admitted to a NICU: United States, 2016–2023



NOTES: A significant increasing trend was observed from 2016 to 2023 ($p < 0.05$), with different rates of change, including a decline in the rate from 2021 to 2022 ($p < 0.05$). NICU is neonatal intensive care unit.
SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

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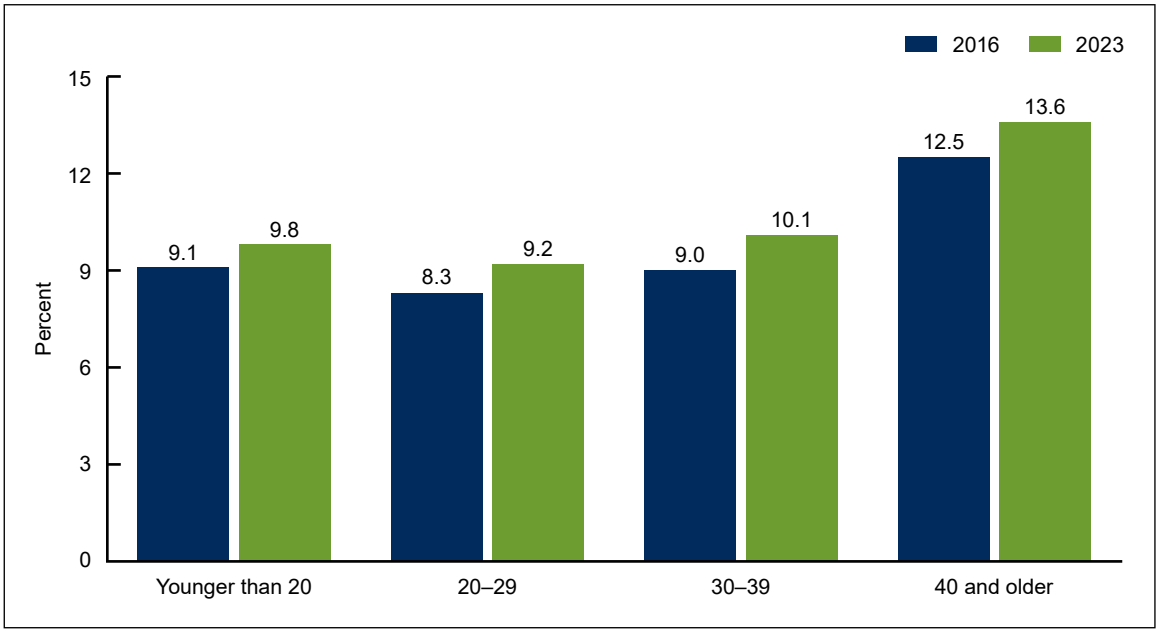
- The percentage of infants admitted to a NICU in the United States rose 13% from 2016 (8.7%) to 2023 (9.8%) (Figure 1, Table 1).
- From 2016 to 2019, the NICU rate increased 7% from 8.7% to 9.3%, was unchanged in 2020, but then rose 3% in 2021 to 9.6%. The rate then declined 1% in 2022 to 9.5% but increased 3% from 2022 to 2023 to a high of 9.8%.

The percentage of infants admitted to a NICU rose for all maternal age groups from 2016 to 2023.

- The percentage of infants admitted to a NICU increased for each maternal age group from 2016 to 2023; the largest increases were for mothers ages 20–29 (11%, from 8.3% to 9.2%) and ages 30–39 (12%, from 9.0% to 10.1%) (Figure 2, Table 2).
- NICU rates rose by 8% for mothers younger than 20 (from 9.1% to 9.8%) and 9% for mothers age 40 and older (12.5% to 13.6%).
- Infants born to mothers age 40 and older were more likely than infants to mothers of all other age groups to be admitted to a NICU in both 2016 and 2023.
- Infants born to mothers ages 20–29 were the least likely to be admitted in both 2016 and 2023.

Figure 2. Percentage of infants admitted to a NICU, by age of mother: United States, 2016 and 2023

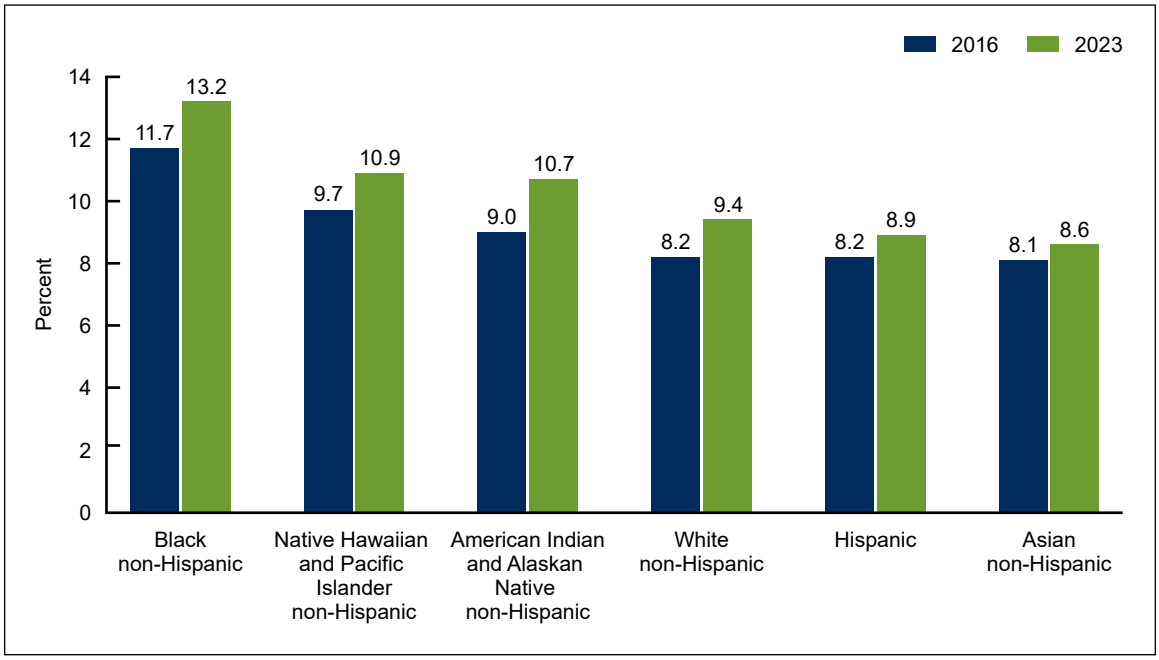


NOTES: Significant increases from 2016 to 2023 were observed for each maternal age group ($p < 0.05$). Significant differences between age groups were observed ($p < 0.05$). NICU is neonatal intensive care unit.
SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

The percentage of infants admitted to a NICU rose for each race and Hispanic-origin group from 2016 to 2023.

- NICU rates rose for each race and Hispanic-origin group from 2016 to 2023, with the largest increases for infants born to American Indian and Alaska Native non-Hispanic mothers (subsequently, American Indian and Alaska Native) (19%, from 9.0% to 10.7%), White non-Hispanic (subsequently, White) mothers, (15%, from 8.2% to 9.4%), Native Hawaiian and Pacific Islander non-Hispanic (subsequently, Native Hawaiian and Pacific Islander) (12%, from 9.7% to 10.9%), and Black non-Hispanic mothers (subsequently, Black) (13%, from 11.7% to 13.2%) (Figure 3, Table 3).
- NICU rates rose by 6% for births to Asian non-Hispanic (subsequently, Asian) mothers (8.1% to 8.6%) and 9% for births to Hispanic mothers (8.2% to 8.9%) from 2016 to 2023.
- NICU admittance rates were highest for infants born to Black, Native Hawaiian and Pacific Islander, and American Indian and Alaska Native mothers in both 2016 and 2023. In both 2016 and 2023, rates were lowest for infants to Asian mothers.

Figure 3. Percentage of infants admitted to a NICU, by maternal race and Hispanic origin: United States, 2016 and 2023

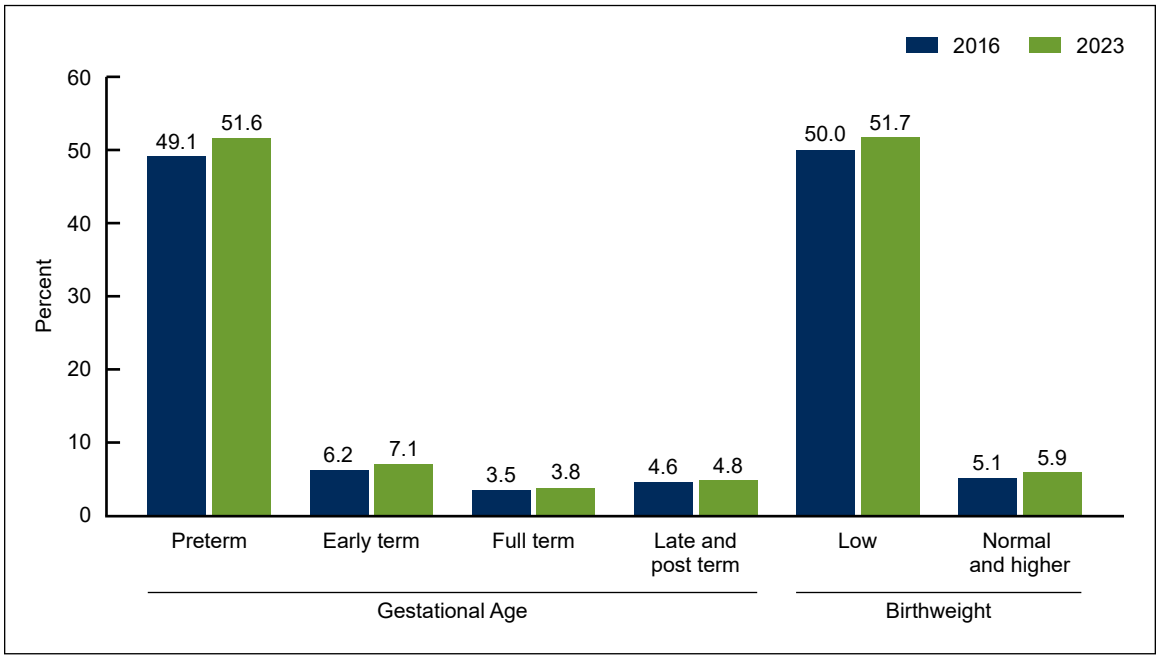


NOTES: Significant increases from 2016 to 2023 were observed for each maternal race and Hispanic-origin group ($p < 0.05$). Significant differences among all race and Hispanic-origin groups were observed for 2016 and 2023 except for between White non-Hispanic and Hispanic infants for 2016 and American Indian or Alaska Native non-Hispanic and Native Hawaiian and Pacific Islander non-Hispanic infants for 2023 ($p < 0.05$). NICU is neonatal intensive care unit. People of Hispanic origin may be of any race.
SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

The percentage of infants admitted to a NICU increased for each gestational and birthweight category from 2016 to 2023.

- By gestational age, the largest increase in NICU rates was for infants delivered at early term, an increase of 15%, from 6.2% to 7.1% (Figure 4, Table 4).
- NICU rates increased by 5% among preterm infants (from 49.1% to 51.6%), by 9% for full-term infants (3.5% to 3.8%), and by 4% for infants delivered late and post term (4.6% to 4.8%).
- By birthweight, NICU rates increased 3% among low birthweight infants (from 50.0% to 51.7%) and 16% for normal and higher birthweight infants (5.1% to 5.9%).
- Preterm infants and low birthweight infants were at least seven times as likely to be admitted to a NICU than those born at later gestational ages and higher birthweights.

Figure 4. Percentage of infants admitted to a NICU, by gestational age and birthweight: United States, 2016 and 2023

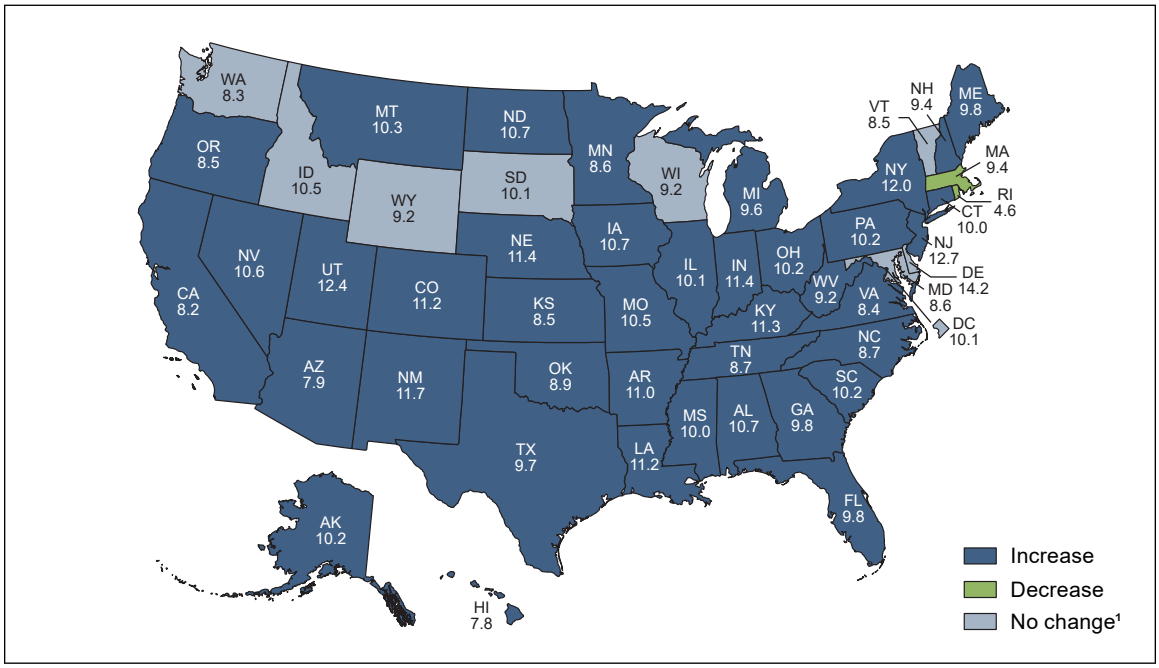


NOTES: Significant increases from 2016 to 2023 were observed for each gestational age and birthweight category ($p < 0.05$). Significant differences were observed between gestational age categories for 2016 and 2023 ($p < 0.05$); significant differences between birthweight categories were observed for 2016 and 2023 ($p < 0.05$). NICU is neonatal intensive care unit. Preterm is less than 37 completed weeks of gestation, early term is 37–38 weeks, full term is 39–40 weeks, and late and post term is 41 weeks and later. Low birthweight is less than 2,500 grams, normal and higher birthweights are 2,500 grams or more.
SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

NICU rates increased in most states from 2016 to 2023.

- NICU admission rates increased in 40 states from 2016 to 2023; increases of 31%–37% were reported for Alabama, Arkansas, Mississippi, and New Hampshire (Figure 5, Table 5).
- NICU rates declined in two states (Massachusetts and Rhode Island) and were essentially unchanged in eight states and the District of Columbia.
- In 2023, state rates ranged from less than 8% (Rhode Island [4.6%], Hawaii [7.8%], and Arizona [7.9%]), to more than 12% (Utah [12.4%], New Jersey [12.7%], and Delaware [14.2%]).

Figure 5. Percentage of infants admitted to a NICU, by state for 2023 and changes in rate by state from 2016 to 2023



¹Changes not significant at $p = 0.05$.
NOTE: NICU is neonatal intensive care unit.
SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Summary

Nearly 1 in 10 infants (9.8%) was admitted to a NICU in 2023, an increase of 13% from 2016. Increases from 2016 to 2023 were seen for each maternal age, race and Hispanic-origin group, gestational age and birthweight category, and among most U.S. states. Earlier reports have found increases in NICU admittance across maternal age and race and ethnicity groups and birthweight categories (5,6).

Increases in NICU rates were most pronounced for mothers ages 20–29, American Indian and Alaska Native, White, and Black mothers, infants born early term and at normal and higher birthweights, and in Alabama, Arkansas, Mississippi, and New Hampshire. In 2023, NICU rates were highest among mothers age 40 and older, Black, American Indian and Alaska Native, and

Native Hawaiian and Pacific Islander mothers, very preterm infants, and in Delaware, New Jersey, and Utah.

This report includes infants born as part of a multiple birth but did not study trends in NICU admission by plurality. Births in multiple-gestation deliveries are more likely to be admitted to a NICU than singletons (43% of multiples compared with 9% of singletons in 2023) (7). The multiple birth rate has been on the decline, from 35.1 per 1,000 total births in 2014 to 31.4 in 2023 (8), and this change would be expected to have a downward impact on NICU rates. In contrast, the incidence of births to older mothers and those born preterm has risen over the study period—such changes would be expected to increase the overall NICU rate. This report confirms this increase but also demonstrates that NICU rates have increased among births to women of all ages and gestational ages.

Definitions

Birthweight: Low birthweight is less than 2,500 grams, and normal and higher birthweights are 2,500 grams or more.

Gestational age: Based on the obstetric estimate of gestation. Preterm is less than 37 completed weeks, early term is 37–38 weeks, full term is 39–40 weeks, and late and post term is 41 weeks and later.

Neonatal Intensive Care Unit (NICU) admission: Admission into a facility or unit staffed and equipped to provide continuous mechanical ventilatory support for a newborn. It includes NICU admission at any time during the infant's hospital stay following delivery.

Data source and methods

This report is based on birth certificate data from the National Vital Statistics System (NVSS). The vital statistics natality file includes information for all births occurring in the United States in a given year and includes a wide range of information on demographic and health characteristics of mothers and infants. Provisional and final NVSS data may also be accessed through the CDC WONDER database at: https://wonder.cdc.gov/natality.html.

Trends in the rate of NICU admissions for 2016–2023 were evaluated using the Joinpoint Regression Program (9). 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.

About the authors

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Figure Tables

Data table for Figure 1. Percentage of births admitted to a NICU: United States, 2016–2023

Year	Percent
2016	8.7
2017	9.0
2018	9.2
2019	9.3
2020	9.3
2021	9.6
2022	9.5
2023	9.8

NOTE: NICU is neonatal intensive care unit.

SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Data table for Figure 2. Percentage of births admitted to a NICU, by age of mother: United States, 2016 and 2023

Age of mother	2016	2023
Younger than 20	9.1	9.8
20–29	8.3	9.2
30–39	9.0	10.1
40 and older	12.5	13.6

NOTE: NICU is neonatal intensive care unit.

SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Data table for Figure 3. Percentage of births admitted to a NICU, by maternal race and Hispanic origin: United States, 2016 and 2023

Race and Hispanic origin	2016	2023
Black non-Hispanic	11.7	13.2
Native Hawaiian and Pacific Islander non-Hispanic	9.7	10.9
American Indian or Alaskan Native non-Hispanic	9.0	10.7
White non-Hispanic	8.2	9.4
Hispanic	8.2	8.9
Asian non-Hispanic	8.1	8.6

NOTE: NICU is neonatal intensive care unit. People of Hispanic origin may be of any race.

SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

Data table for Figure 4. Percentage of births admitted to a NICU, by gestational age and birthweight: United States, 2016 and 2023

Outcome	2016	2023
Gestational age		
Preterm	49.1	51.6
Early term	6.2	7.1
Full term	3.5	3.8
Late and postterm	4.6	4.8
Birthweight		
Low	50.0	51.7
Normal and higher	5.1	5.9

NOTE: NICU is neonatal intensive care unit. People of Hispanic origin may be of any race.

Source: National Center for Health Statistics, National Vital Statistics System, natality data file.

Data table for Figure 5. Percentage of births admitted to a NICU, by state: United States, 2016 and 2023

State	2016	2023	Percent change
Alabama	8.1	10.7	32
Alaska	9.2	10.2	11
Arizona	6.9	7.9	14
Arkansas	8.4	11.0	31
California	7.4	8.2	11
Colorado	10.4	11.2	8
Connecticut	7.9	10.0	27
Delaware	14.7	14.2	-3
District of Columbia	10.0	10.1	1
Florida	9.0	9.8	9
Georgia	8.9	9.8	10
Hawaii	6.4	7.8	22
Idaho	10.6	10.5	-1
Illinois	9.5	10.1	6
Indiana	9.6	11.4	19
Iowa	8.6	10.7	24
Kansas	7.8	8.5	9
Kentucky	9.3	11.3	22
Louisiana	9.3	11.2	20
Maine	7.7	9.8	27
Maryland	8.6	8.6	0
Massachusetts	10.2	9.4	-8
Michigan	7.8	9.6	23
Minnesota	8.2	8.6	5
Mississippi	7.3	10.0	37
Missouri	8.3	10.5	27
Montana	8.7	10.3	18
Nebraska	10.7	11.4	7
Nevada	9.6	10.6	10
New Hampshire	7.0	9.4	34
New Jersey	10.9	12.7	17
New Mexico	10.8	11.7	8
New York	11.7	12.0	3
North Carolina	7.8	8.7	12
North Dakota	9.5	10.7	13
Ohio	9.1	10.2	12
Oklahoma	8.4	8.9	6
Oregon	7.4	8.5	15
Pennsylvania	8.9	10.2	15
Rhode Island	6.7	4.6	-31
South Carolina	8.1	10.2	26
South Dakota	10.1	10.1	0
Tennessee	7.5	8.7	16
Texas	8.5	9.7	14
Utah	10.2	12.4	22
Vermont	8.0	8.5	6
Virginia	7.1	8.4	18
Washington	8.4	8.3	-1
West Virginia	8.1	9.2	14
Wisconsin	9.2	9.2	0
Wyoming	8.3	9.2	11

NOTE: NICU is neonatal intensive care unit.

SOURCE: National Center for Health Statistics, National Vital Statistics System, natality data file.

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