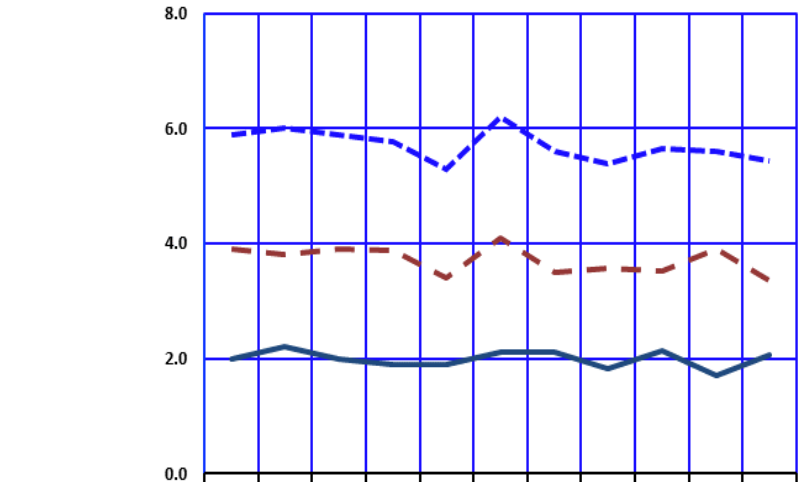
Figure 2C-1
Infant Mortality Rates by Neonatal/Postneonatal Age and Year, Arizona, 2009-2019



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total infant	5.9	6.0	5.9	5.8	5.3	6.2	5.6	5.4	5.6	5.6	5.4
Neonatal	3.9	3.8	3.9	3.9	3.4	4.1	3.5	3.6	3.5	3.9	3.4
Post-neonatal	2.0	2.2	2.0	1.9	1.9	2.1	2.1	1.8	2.1	1.7	2.1

Notes: Neonatal deaths are those deaths affecting infants age 0-27 days; Post-neonatal deaths are deaths to infants aged 28 days-1 year.

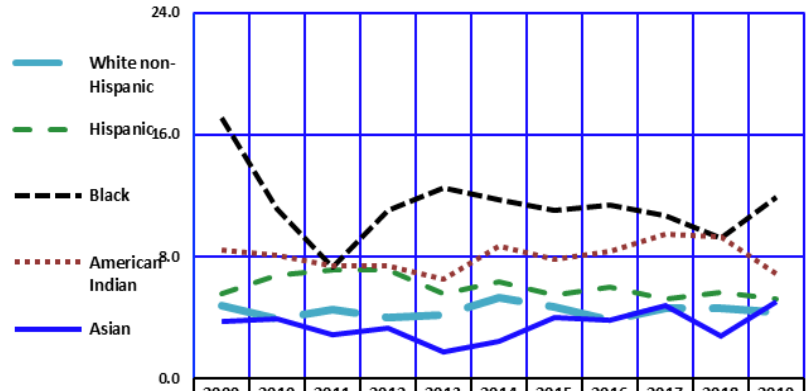
Infant mortality is defined as the number of deaths within the first year of life. The infant mortality rate is computed as the number of infant deaths in a calendar year per 1,000 live births recorded for the same period.

In 2019, 430 Arizona infants died before reaching their first birthday, 271 fewer than the latest peak of 701 infant deaths in 2007, and a decrease of 17 deaths in comparison to 2018 (**Table 2C-2**).

Even if the infant mortality rate remained the same as it was in 2007, 160 fewer infant deaths can be attributed to the absolute reduction in the number of births by 23,504 from 2007 to 2019 ((23,504 x 6.8)/1,000) = 160).

Based on the actual number of infant deaths and live births in 2019, the infant mortality was lower at 5.4 deaths per 1,000 in 2019 than in 2018 (**Figure 2C-1**).

Figure 2C-2
Infant Mortality Rates[a] by Race/Ethnicity and Year, Arizona, 2009-2019



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
White non-Hispanic	4.8	3.9	4.5	4.0	4.2	5.3	4.7	3.9	4.7	4.6	4.4
Hispanic	5.6	6.8	7.1	7.1	5.6	6.4	5.5	6.0	5.2	5.7	5.2
Black	17.1	11.1	7.3	11.0	12.5	11.7	11.0	11.4	10.7	9.2	11.9
American Indian	8.4	8.1	7.4	7.4	6.6	8.7	7.8	8.3	9.5	9.3	6.9
Asian	3.8	3.9	2.9	3.3	1.7	2.5	4.0	3.9	4.8	2.8	5.1

Note: [a] Number of infant deaths per 1,000 live births in specified group.

In 2019, 93.7 percent (403/430)* of all infant death records were successfully matched to their corresponding birth records.

The mortality risk for infants varies by race/ethnicity. During the 11-year period (2009-2019), infants born to Asian or Pacific Islander mothers witnessed the lowest mortality rates among all racial/ethnic groups for the most part (**Figure 2C-2, Table 2C-2**). The exception being 2019, as the infant mortality for Whites was the lowest of all racial/ethnic groups.

In parallel, in each year from 2009 to 2019, Black or African American and American Indian infants had the worst survival chances among the racial/ethnic groups (**Figure 2C-2**).

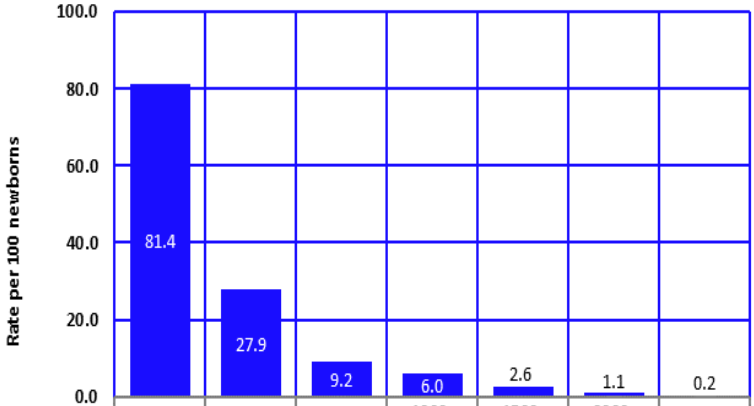
*Infant death records that were not linked to their corresponding birth certificates include unrecorded home births (i.e., no birth certificates were issued) and out-of-State births (i.e., the State issuing the certificate of birth did not send a copy to Arizona).

Newborn weight at birth is one of the most important predictors of an infant's survival chances. In 2019, the mortality rate of very low birth weight babies (birthweight less than 500 grams) was 81.4 per 100 live births (**Figure 2C-3**).

The absolute number of low birthweight births remained lower in 2019 at 5,829 than at its peak in 2007 (7,285). The proportion of babies whose weight at birth was less than 1,000 grams decreased slightly from 7.8 percent of all low birthweight births in 2018 to 7.2 percent in 2019 (**Table 1B-3**).

In summary, infants with low birth weight (weighing less than 2,500 grams at birth) accounted for 8.5 percent of births and 58.1 percent of all infant deaths with a matching birth record.

Figure 2C-3
Proportion of Infant Deaths by Birthweight, Arizona, 2019



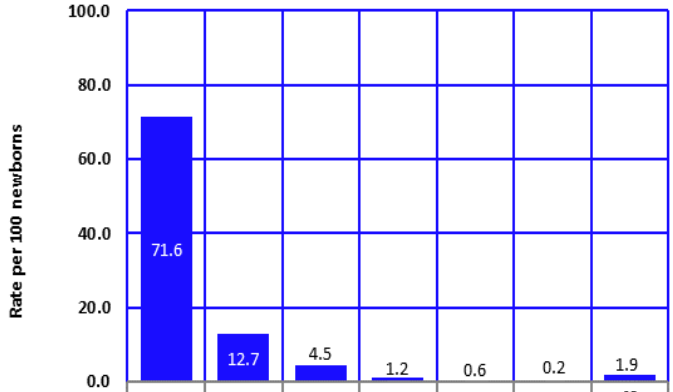
	< 500 grams	500-749 grams	750-999 grams	1000-1499 grams	1500-1999 grams	2000-2499 grams	2500+ grams
Newborns	102	122	195	483	1,134	3,793	73,306
Infant deaths	83	34	18	29	30	40	166
Infant deaths per 100 newborns	81.4	27.9	9.2	6.0	2.6	1.1	0.2

Note: 48 cases in the complete 2019 birth file had missing birthweight estimates.

Similar to low birthweight infants, preterm and very preterm babies contribute greatly to the total infant mortality rate because of their higher risk of mortality. For example, in 2019 births occurring between 20-27 weeks of gestation accounted for only 0.5 percent of all births but 28.3 percent of infant deaths with a matching death record. Births at 20-23 weeks of gestation have a very high infant mortality rate of 71.6 per 100 live births (**Figure 2C-4**). Overall, in 2019 preterm infants (those born before 37 weeks of gestation) accounted for 9.3 percent of all births (**Table 1B-2**) and 49.6 percent of all infant deaths (only those with matching death records).

Note: Counts of newborns listed in Figures 2C-3 and 2C-4 of the 2017 printed report have been adjusted in the online version of the report to reflect the actual numbers of resident births.

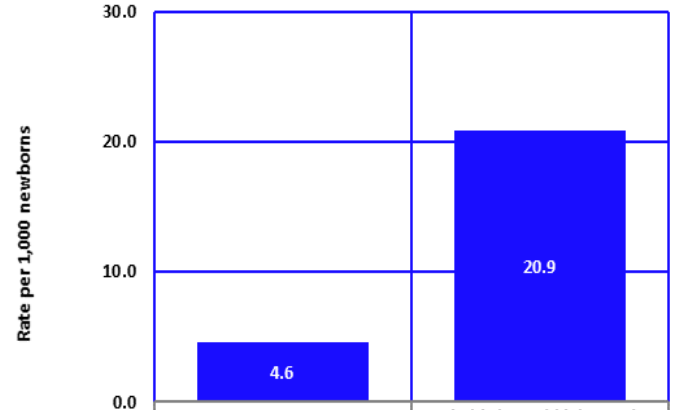
Figure 2C-4.1
Proportion of Infant Deaths by Gestational Age, Arizona, 2019



	20-23 weeks	24-27 weeks	28-31 weeks	32-35 weeks	36 weeks	37-41 weeks	42 weeks or more
Newborns	109	283	643	3,256	3,068	71,552	158
Infant deaths	78	36	29	40	17	177	3
Infant deaths per 100 newborns	71.6	12.7	4.5	1.2	0.6	0.2	1.9

Note: 77 cases in the complete 2019 birth file had missing gestational age. Zero of which were missing in the linked infant death file.

Figure 2C-4.2
Infant Mortality Rates for Single and Multiple Births, Arizona, 2019



	Singleton births	Twin births and higher order multiples
Newborns	76,837	2,343
Infant deaths	354	49
Infant deaths per 1,000 newborns	4.6	20.9

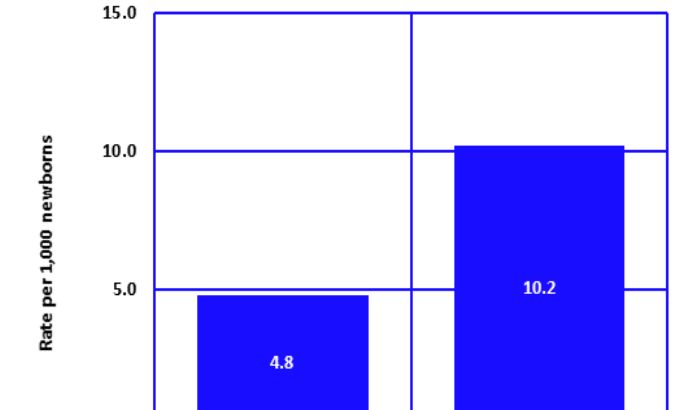
Note: 3 cases in the complete 2019 birth file were missing plurality.

As already noted in Section 1B, infants born in multiple deliveries tend to be born at shorter gestations and smaller than those in singleton deliveries. In 2019, infants born in multiple deliveries were 11.9 times more likely (45.3 vs. 3.8 percent) to be born earlier than expected (at less than 37 completed weeks of gestation) and smaller (at less than 2,500 grams) than singleton births (**Figure 1B-10**).

The infant mortality rate for single births was 4.6/1,000 live births in 2019 (**Figure 2C-4.2**). The infant mortality rate for twin births or higher order multiples (20.9/1,000 live births) was 4.5 times higher than the infant mortality for singleton births.

Babies born in multiple deliveries accounted for 3.0 percent of births (**Table 1B-16**), but 12.2 percent of all infant deaths in Arizona in 2019 (only those with matching birth and death records).

Figure 2C-4.3
Infant Mortality Rates by Mother's Smoking Status during Pregnancy, Arizona, 2019



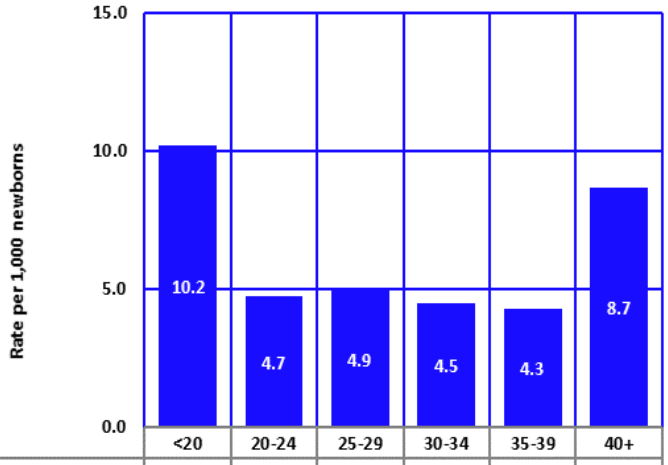
	Nonsmoker	Smoker
Newborn	75,030	3,426
Infant deaths	359	35
Infant deaths per 1,000 newborns	4.8	10.2

Note: 727 cases in the complete 2019 birth file were missing mothers' smoking status.

Smoking during pregnancy has been shown to increase the risk of preterm delivery, low birth weight and infant mortality. In 2018, among the 3,626 mothers who smoked during pregnancy, the risk of infant mortality was 1.3 times higher than among nonsmoker mothers (**Figure 2C-4.3**).
Smoking during pregnancy has been shown to increase the risk of preterm delivery, low birth weight and infant mortality. In 2019, among the 3,426 mothers who smoked during pregnancy, the risk of infant mortality was 2.1 times higher than among nonsmoker mothers (**Figure 2C-4.3**).

Infant mortality rates vary with maternal age. In 2019, infants born to younger mothers (less than 20 years) and older mothers (40 years or over) had the highest infant mortality rates of all age groups, 10.2/1,000 and 8.7/1,000 respectively (**Figure 2C-4.4**). For mothers aged 20 through 39 years, the infant mortality rates were consistently lower than 5 deaths/1,000.

Figure 2C-4.4
Infant Mortality Rates by Mother's Age Group, Arizona, 2019

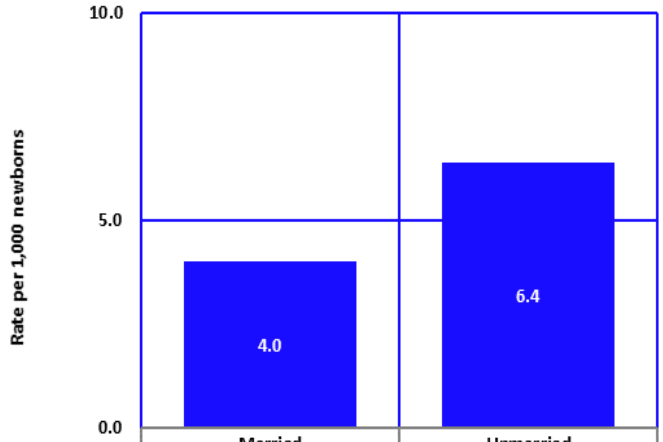


	<20	20-24	25-29	30-34	35-39	40+
Newborns	4,323	16,856	24,287	20,834	10,458	2,422
Infant deaths	44	80	120	93	45	21
Infant deaths per 1,000 newborns	10.2	4.7	4.9	4.5	4.3	8.7

Note: 3 cases in the complete 2019 birth file were missing mother's age.

Infants born to unmarried mothers accounted for the absolute majority of infant deaths in 2019 (227 infant deaths) compared to married mothers (171 infant deaths). In 2019, more children were born to married women (42,686) than their unmarried counterparts (35,610; **Table 1B-25**). Infants of unmarried mothers had an infant mortality rate of 6.4 deaths per 1,000 live births, 1.6 times higher than the rate for infants of married mothers (4.0 infant deaths per 1,000 live births; **Figure 2C-4.5**). The effect of marital status on infant mortality suggests that marital status is a proxy measure of factors traditionally related to infant mortality such as poverty conditions, access to health care and social support. Mother's marital status may signify the presence or absence of emotional, social, and financial resources.

Figure 2C-4.5
Infant Mortality Rates by Mother's Marital Status, Arizona, 2019



	Married	Unmarried
Newborns	42,686	35,610
Infant deaths	171	227
Infant deaths per 1,000 newborns	4.0	6.4

Note: 887 cases in the complete 2019 birth file were missing mother's marital status.