

Homicides Among Infants in the United States, 2017–2020

by Isabelle Horon, Dr.P.H., and Anne K. Driscoll, Ph.D.

Abstract

Objective—This report describes homicide rates among infants (under age 1 year) by selected maternal, pregnancy-related, and infant characteristics.

Methods—Linked birth/infant death files based on data collected on U.S. birth and death certificates were used to calculate homicide rates among infants for the period 2017–2020.

Results—A total of 1,067 homicides occurred among infants in the United States from 2017 through 2020, an average of 267 per year. More than one-half of all infant homicides occurred among infants aged 3 months and under. Homicide rates were higher among infants born to mothers who were young, had multiple previous live births, were Black non-Hispanic, were born in the United States, had lower levels of education, lived in rural areas, had no prenatal care, and delivered outside of a hospital. Rates were also higher for infants who were part of a multiple-gestation pregnancy, were born preterm or low birthweight, or were admitted to a neonatal intensive care unit.

Keywords: homicide • infant death • maternal characteristics • National Vital Statistics System

Introduction

Although homicide has been among the 15 leading causes of infant (under age 1 year) death in the United States each year since 2006, an in-depth study of the maternal and infant factors associated with infant homicide using national vital statistics data has not been published since 1998 (1). That study found the risk for homicide to be highest for infants born to teen mothers, especially those with previous live births, mothers who received no prenatal care, and mothers with less than a high school education. More recent reports, both using 2008–2017 data, analyzed selected factors associated with infant homicide when examining the impact of safe haven laws on infant homicide

(2), and factors associated with neonaticide (homicides in the first 24 hours of life) (3). This report uses the most recent data available from the National Vital Statistics System to provide more current findings on the association of homicide occurring in the first year of life with selected maternal, pregnancy-related, and infant factors, and to examine additional factors that were not available with older vital statistics data.

Methods

Data from the 2017–2020 period linked birth/infant death files were used to calculate homicide rates for infants under age 1 year by selected maternal, pregnancy-related, and infant characteristics. Linked birth/infant death files from the National Vital Statistics System contain information from the death certificate linked to the birth certificate, allowing data from both certificates to be used for analyses. The numerator of a period linked birth/infant death file includes all infant deaths (linked to births) occurring in a given calendar year, regardless of whether the infant was born in that calendar year or in the preceding year, and the denominator includes all births occurring in the same calendar year. The percentage of infant death records linked to birth records was 99.6% in 2017 and 99.3% in 2018–2020. Data were weighted to adjust for the records that could not be matched. Because linked files are weighted and only contain records for infants who were born and died in the United States, counts of infant deaths may differ slightly from counts in the National Vital Statistics System mortality files, which contain records of all infant deaths occurring in the United States regardless of place of birth. More information on the linkage process is available in the methodology section of the “User Guide to the 2020 Period/2019 Cohort Linked Birth/Infant Death Public Use File” (4). A summary of findings based on data from the most recent linked file is available in “Infant Mortality in the United States, 2020: Data From the Period Linked Birth/Infant Death File” (5).



Data shown in this report are based on final counts of infants who died as a result of homicide in the 50 states and the District of Columbia during 2017–2020, the most current data years available for study. The rate of infant homicide did not change significantly over the 4-year period. Data from the 2003 revision of the U.S. Standard Certificate of Live Birth were available for all jurisdictions for these years, allowing for analysis of data items not previously reported regarding infant homicide.

A death was classified as an infant homicide if the decedent was under age 1 year at the time of death, and the death was the result of injuries inflicted by another person, by any means, with the intent to injure or kill. Deaths were identified by searching for records that received an *International Classification of Diseases, 10th Revision* underlying cause-of-death code of X85–Y09 (Assault [homicide]) or Y87.1 (Sequelae of assault) (6). Counts of deaths and age of the infant at the time of death are described. Homicide counts and rates are also described for the following maternal and pregnancy-related characteristics: age, race and Hispanic origin, birthplace, education level, metropolitan status of the county of residence of the mother, live-birth order, trimester prenatal care began, place of delivery, and source of payment for the delivery. Counts and rates are also reported for infant birth characteristics: plurality, sex, length of gestation, birthweight, and admission to a neonatal intensive care unit (NICU).

Homicide counts and rates are presented for the four largest race and Hispanic-origin groups: Asian non-Hispanic single race (subsequently, Asian); Black non-Hispanic single race (subsequently, Black); White non-Hispanic single race (subsequently, White); and Hispanic. Mother's race and Hispanic origin as collected on the birth certificate were used to calculate infant mortality rates because these factors are more accurately measured from birth certificates than from death certificates (5). Race and Hispanic origin are reported separately on the birth certificate and follow the standards issued by the Office of Management and Budget in 1997 (7). Data for additional race and ethnicity groups are available in National Vital Statistics System linked files but were not included in this analysis because of small numbers of infant homicides and the statistical unreliability of estimates for those groups.

Birthplace of mother describes whether a mother was born in or outside the United States. Information on the highest level of education completed was included only for mothers aged 25 and over because younger mothers may not yet have completed their education. Metropolitan status of residence was based on mother's county of residence at the time of delivery using the 2013 National Center for Health Statistics Urban–Rural Classification Scheme for Counties and grouped as urban (large central metropolitan, large fringe metropolitan, medium metropolitan, and small metropolitan counties) and rural (micropolitan and nonmetropolitan counties) (8). Place of delivery refers to whether an infant was born in a hospital. Source of payment for the delivery is shown for four categories: private insurance, Medicaid, other payment sources, and self-pay. Length of gestation refers to the obstetric estimate of gestation at delivery and is grouped as preterm (under 37 completed weeks) or term and beyond. Rates by birthweight are shown for low birthweight (under 2,500 grams) and higher birthweight

infants. Plurality is defined as the number of infants and fetuses in the pregnancy regardless of outcome or date of birth (9). The multiple-birth category in this report includes any infant who was part of a multiple-birth set. Month of age at death was calculated by alternately assigning a count of 30 or 31 days to each month. The 1st, 3rd, 5th, 7th, 9th, and 11th month of life were assumed to contain 31 days, and the 2nd, 4th, 6th, 8th, and 10th month were assumed to contain 30.

Unless otherwise noted, all differences described in this report were statistically significant at the 0.05 level based on a chi-squared or two-tailed z test. Trends were evaluated using Joinpoint. Computations exclude records for which information is unknown unless otherwise specified.

Results

Number of homicides and age at death

- A total of 1,067 homicides were reported among infants under age 1 year in the United States during the years 2017–2020, ranging from 241 (2020) to 301 (2017), or an average of 267 deaths per year (Table 1).
- Approximately one-half of homicides in the first year of life occurred among infants aged 3 months and under (52%) (Table 2, Figure 1).
- The homicide rate among infants for 2017–2020 was 7.11 per 100,000 births (Table 3, Figure 2).

Maternal and pregnancy-related characteristics

- The homicide rate among infants declined with increasing maternal age, ranging from a high of 21.65 per 100,000 births for infants born to mothers under age 20 to lows of 3.57 for infants born to mothers aged 30–34 and 2.67 for infants born to mothers aged 35 and over (Table 3, Figure 2).
- The homicide rate was 2.11 for infants born to Asian mothers, 4.75 for infants born to Hispanic mothers, 5.88 for infants born to White mothers, and 16.21 for infants born to Black mothers (Table 3, Figure 3).
- The rate of homicide was four times higher for infants of mothers who were born in the United States (8.51) than for infants of mothers born outside the United States (2.10) (Table 3).
- For infants born to mothers aged 25 and over, the homicide rate was not significantly different for infants with mothers who had less than a high school diploma (6.44), a high school diploma or GED (8.20), and some college but no degree (6.21); the rate then declined to 3.36 for infants with mothers who had an associate degree and 1.47 for infants with mothers who had at least a bachelor's degree.
- Homicide rates were higher for infants of mothers living in rural areas at the time of delivery (9.31) than for infants of mothers living in urban areas (6.76).
- Homicide rates were lower for first- (6.07) and second-order (6.96) births than for third- or higher-order (8.41) births.

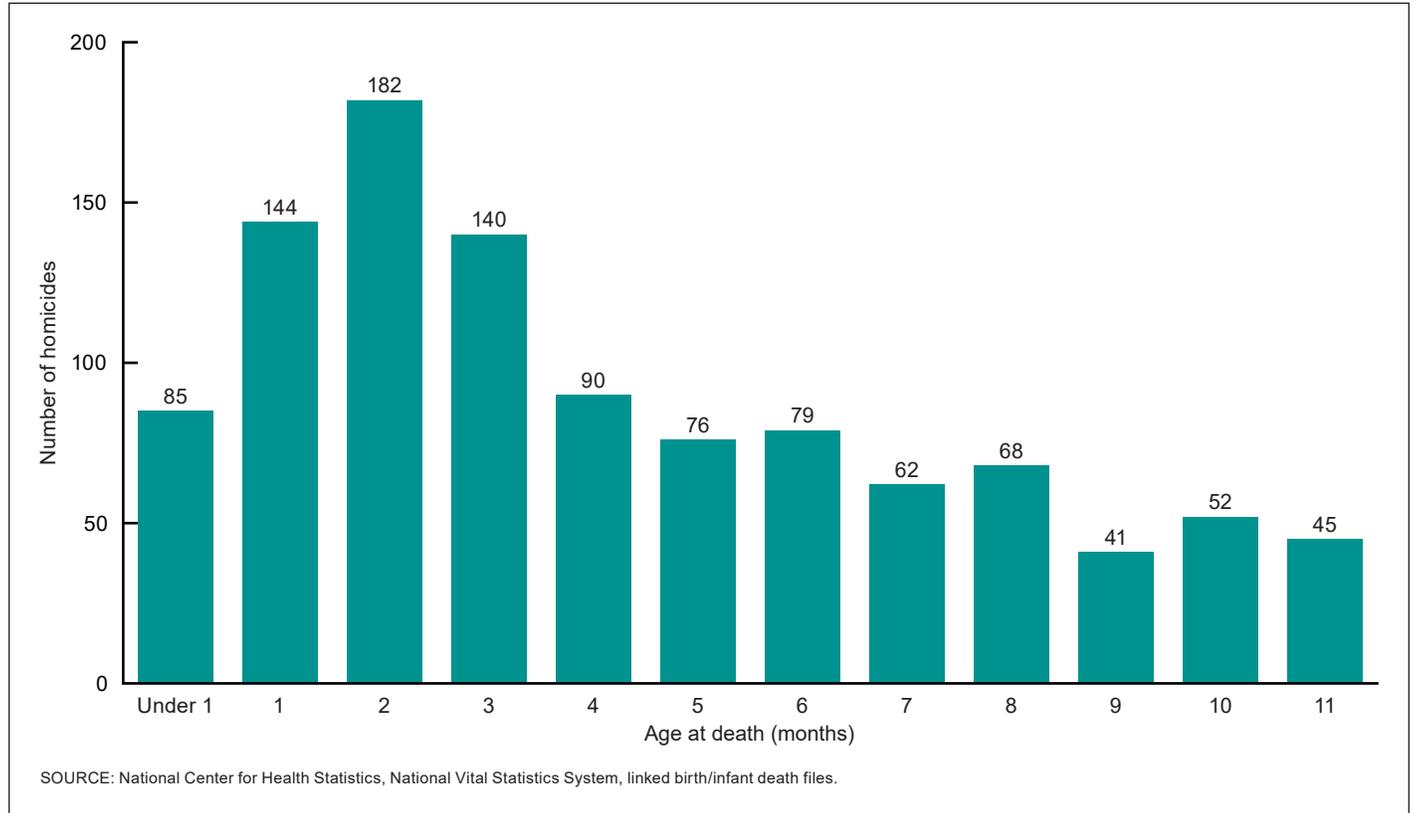
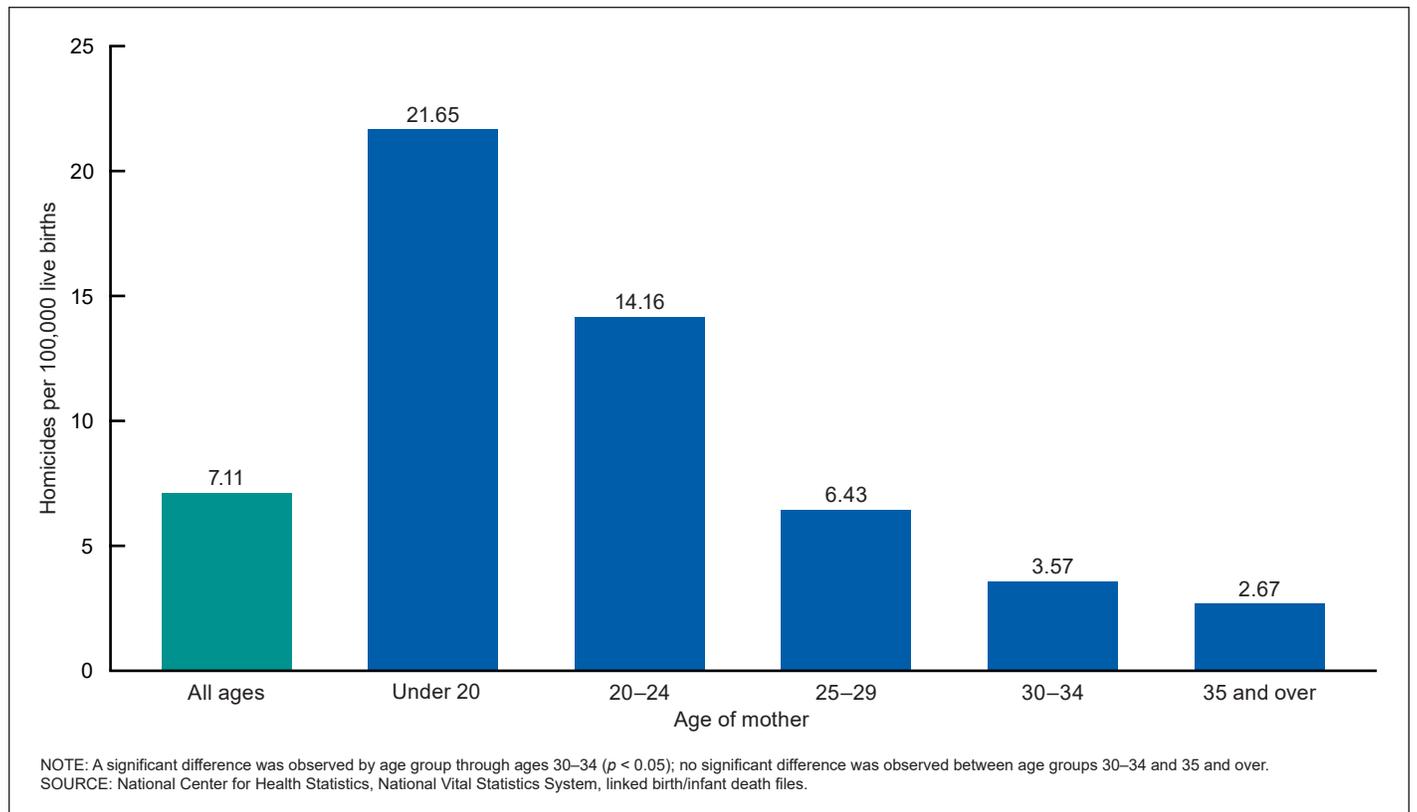
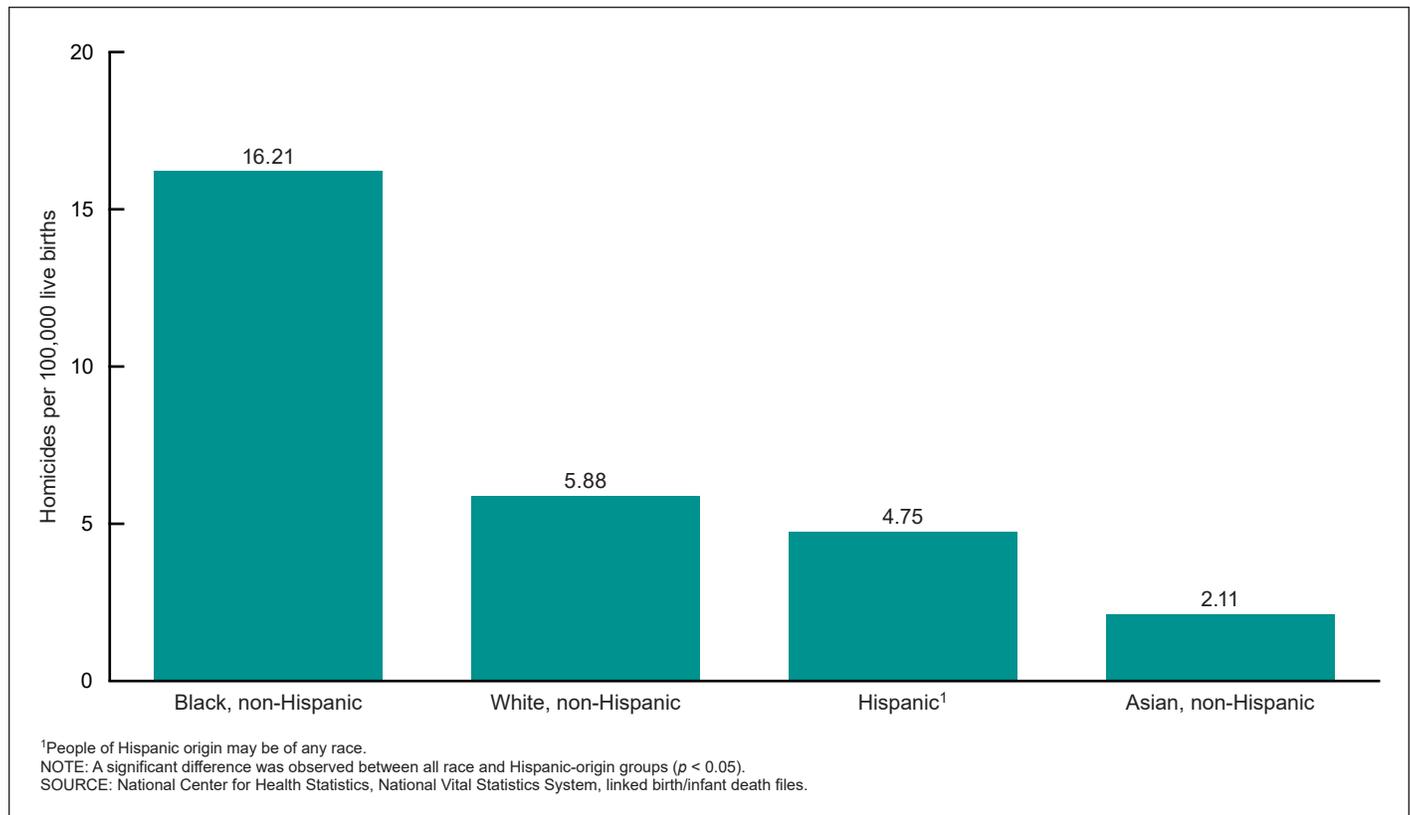
Figure 1. Number of homicides among infants, by age in months at time of death: United States, 2017–2020**Figure 2. Rate of homicide among infants under age 1 year, by age of mother: United States, 2017–2020**

Figure 3. Rate of homicide among infants under age 1 year, by race and Hispanic origin of mother: United States, 2017–2020

- For infants of mothers under age 20, the homicide rate was 19.51 for first births and 28.93 for second births, but the observed difference in these rates was not statistically significant (Table 4, Figure 4). Counts of homicides were too small to calculate statistically reliable rates for infants of teenagers with higher-order live births.
- Homicide rates for first-, second-, and third- or higher-order births were 9.49, 17.32, and 23.80, respectively, for infants of mothers ages 20–24, and 2.84, 5.67, and 11.45 for infants of mothers ages 25–29 (Table 4). For infants of mothers aged 30 and over, the homicide rate was 4.38 for third- or higher-order births, significantly higher than the rates of 1.90 for first-order and 2.84 for second-order births.
- The rate of homicide was 5.00 for infants whose mothers began prenatal care in the first trimester of pregnancy and increased to 11.31 for infants of mothers beginning care in the second trimester and 12.90 for infants of mothers beginning care in the third trimester. The rate was 29.43 for infants whose mothers received no prenatal care (Table 3).
- The homicide rate was twice as high for infants born outside of a hospital (14.70) as for infants born in a hospital (6.97); however, only 38 infants were born outside of a hospital for the combined 4-year period.
- The homicide rate was higher for infants of mothers whose deliveries were covered by Medicaid (12.47) than for those covered by private insurance (2.65), had another source of payment for delivery (5.86), or self-paid for delivery (5.57).

Infant characteristics

- The rate of homicide was greater for infants who were part of a multiple-birth pregnancy than for infants of singleton pregnancies (10.64 compared with 6.99 per 100,000 live births) (Table 5, Figure 5).
- The rate of homicide was higher for male (8.22) than female (5.95) infants.
- Infant homicide rates were more than twice as high for infants born preterm (14.50) than for infants born at term or later (6.18).
- Homicide rates were higher for low birthweight infants than for infants born at higher birthweights (16.31 compared with 6.25).
- The rate of homicide was twice as high for infants admitted to a NICU (13.49) than for infants not admitted to a NICU (6.39).

Summary

On average, 267 infants under age 1 year were reported to have died due to homicide in the United States each year during 2017–2020. This figure likely undercounts the actual number of infant homicides either because the birth or death was never reported, or because the death was misclassified as resulting from another cause, such as unintentional injury or sudden infant death syndrome (10–12). Despite the likely undercount,

Figure 4. Rate of homicide among infants under age 1 year, by live-birth order and age of mother: United States, 2017–2020

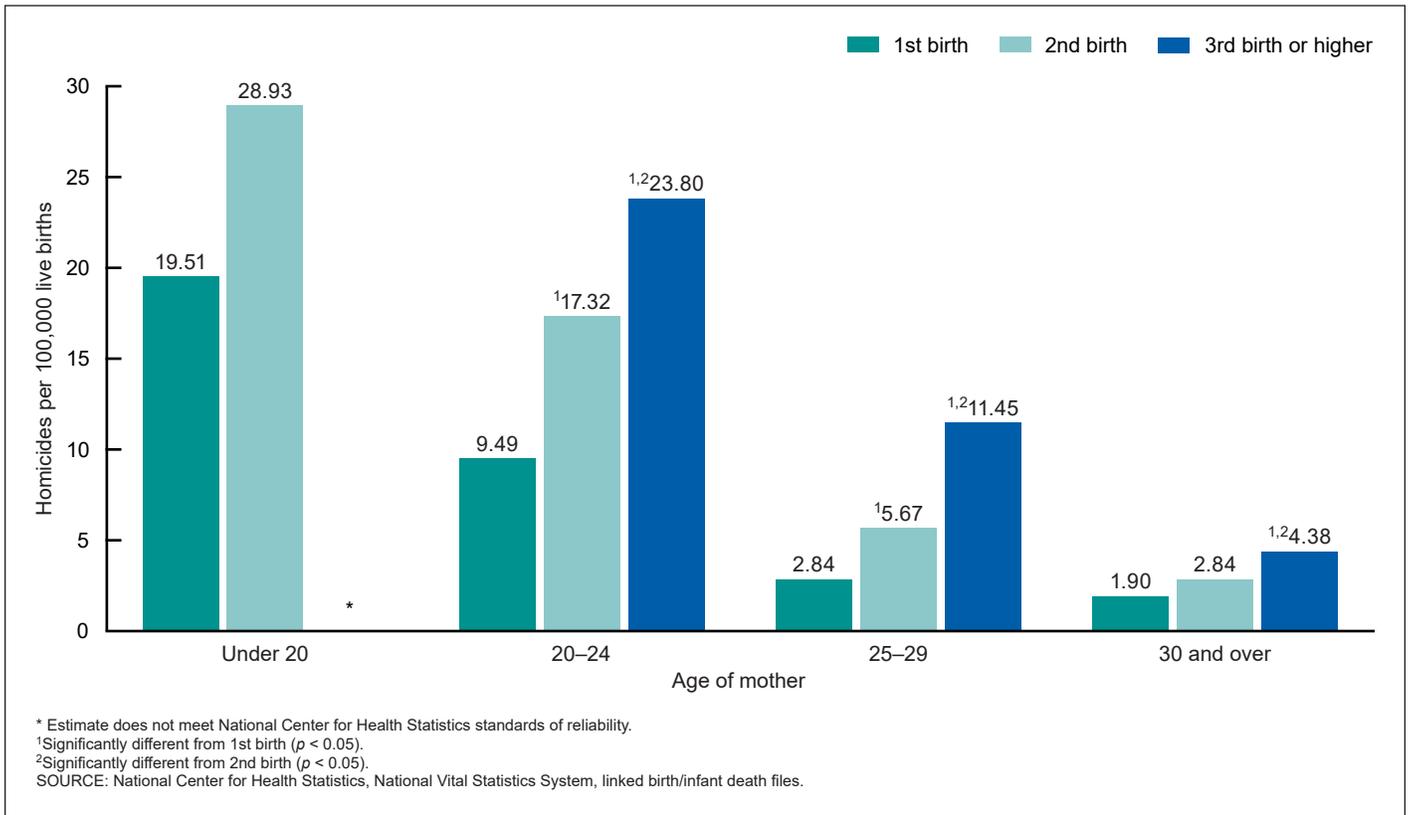
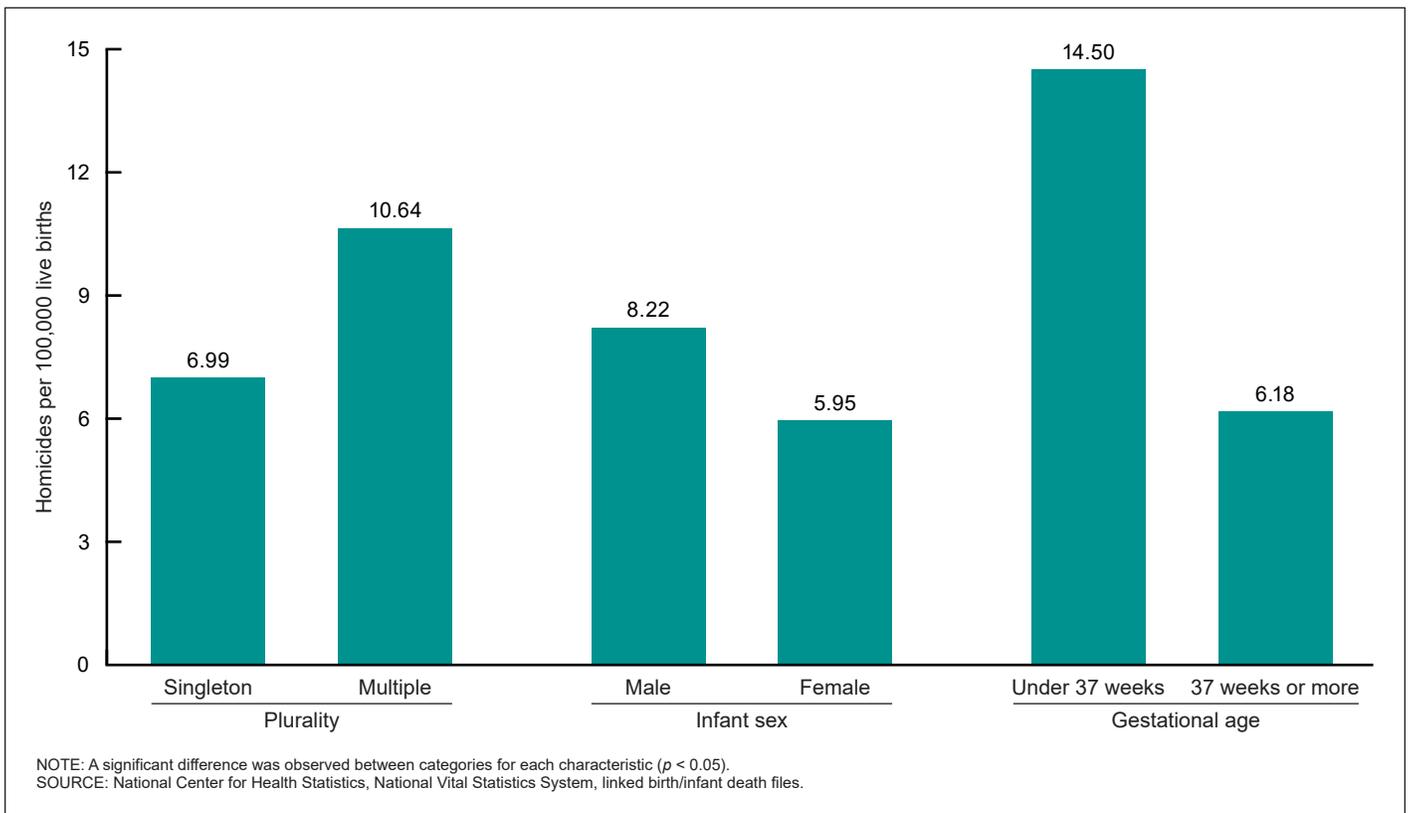


Figure 5. Rate of homicide among infants under age 1 year, by selected characteristics: United States, 2017–2020



the homicide rate is higher in the first year of life than for any other single year of childhood under age 17 (13).

Just over one-half of all homicides occurred among infants aged 3 months and under. Homicide rates were highest for infants born to teen mothers and generally highest for infants born to women with multiple previous live births. Rates were also higher for infants born to mothers who were Black, were born in the United States, had lower levels of education, lived in rural areas, and delivered outside of a hospital.

The rate of homicide increased for higher-risk pregnancies, such as multiple-gestation pregnancies and pregnancies for which the mother received no prenatal care. Rates were also higher for infants with poor pregnancy outcomes, including preterm and low birthweight infants, and infants with these and other conditions requiring NICU admission.

In addition to this study's limitation related to the likely undercount of infant homicides, the relatively small number of infant homicides over the 4-year period may have impacted identification of significant differences between groups. Small counts for some groups also prevented more detailed analyses by race and Hispanic origin and other factors. The study was limited to data collected on vital records, which prevented examination of the characteristics of people committing infant homicides, family social and economic circumstances, or history of child abuse or neglect involving the infant or older siblings. Despite these limitations, the findings of this study enhance understanding of the maternal, pregnancy-related, and infant risk factors associated with infant homicide, which may help inform efforts to reduce maltreatment and neglect resulting in death.

References

- Overpeck MD, Brenner RA, Trumble AC, Trifiletti LB, Berendes HW. Risk factors for infant homicide in the United States. *N Engl J Med* 339(17):1211–6. 1998. DOI: <https://dx.doi.org/10.1056/NEJM199810223391706>.
- Wilson RF, Klevens J, Williams D, Xu L. Infant homicides within the context of safe haven laws—United States, 2008–2017. *MMWR Morb Mortal Wkly Rep* 69(39):1385–90. 2020.
- Wilson RF, Klevens J, Fortson B, Williams D, Xu L, Yuan K. Neonaticides in the United States—2008–2017. *Acad Forensic Pathol* 12(1):3–14. 2022. DOI: <https://dx.doi.org/10.1177/19253621221077870>.
- National Center for Health Statistics. User guide to the 2020 period/2019 cohort linked birth/infant death public use file. 2022. Available from: https://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/DVS/period-cohort-linked/20PE19CO_linkedUG.pdf.
- Ely DM, Driscoll AK. Infant mortality in the United States, 2020: Data from the period linked birth/infant death file. *National Vital Statistics Reports*; vol 71 no 5. Hyattsville, MD: National Center for Health Statistics. 2022. DOI: <https://dx.doi.org/10.15620/cdc:120700>.
- Xu JQ, Murphy SL, Kochanek KD, Arias E. Deaths: Final data for 2019. *National Vital Statistics Reports*; vol 70 no 08. Hyattsville, MD: National Center for Health Statistics. 2021. DOI: <https://dx.doi.org/10.15620/cdc:106058>.
- Office of Management and Budget. Revisions to the standards for the classification of federal data on race and ethnicity. *Fed Regist* 62(210):58782–90. 1997. Available from: <https://www.govinfo.gov/content/pkg/FR-1997-10-30/pdf/97-28653.pdf>.
- Ingram DD, Franco SJ. 2013 NCHS urban–rural classification scheme for counties. *National Center for Health Statistics. Vital Health Stat* 2(166). 2014.
- National Center for Health Statistics. Guide to completing the facility worksheets for the Certificate of Live Birth and Report of Fetal Death. 2019. Available from: <https://www.cdc.gov/nchs/nvss/facility-worksheets-guide.htm>.
- Crume TL, DiGuseppi C, Byers T, Sirotnak AP, Garrett CJ. Underascertainment of child maltreatment fatalities by death certificates, 1990–1998. *Pediatrics* 110(2 Pt 1):e18. 2002. DOI: <https://dx.doi.org/10.1542/peds.110.2.e18>.
- Overpeck MD, Brenner RA, Cosgrove C, Trumble AC, Kochanek K, MacDorman M. National underascertainment of sudden unexpected infant deaths associated with deaths of unknown cause. *Pediatrics* 109(2):274–83. 2002. DOI: <https://dx.doi.org/10.1542/peds.109.2.274>.
- Palusci VJ, Council on Child Abuse and Neglect, Kay AJ, Batra E, Section on Child Death Review and Prevention, Moon RY, et al. Identifying child abuse fatalities during infancy. *Pediatrics* 144(3):e20192076. 2019. DOI: <https://dx.doi.org/10.1542/peds.2019-2076>.
- Centers for Disease Control and Prevention. CDC WONDER. National Vital Statistics System, Mortality 1999–2020, released in 2021. Data are from the multiple cause-of-death files, 1999–2020, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Available from: <https://wonder.cdc.gov/ucd-icd10.html>.

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Table 1. Number and rate of homicides among infants and number of live births: United States, 2017–2020

Year of death	Number of homicides	Rate of homicide ¹	Number of live births
All years	1,067	7.00	15,008,399
2017	301	7.81	3,855,500
2018	264	6.96	3,791,712
2019	261	6.96	3,747,540
2020	241	6.67	3,613,647

¹Number of homicides per 100,000 live births.

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

Table 2. Number and percentage of homicides among infants, by month of age at death: United States, 2017–2020

Age (months) at time of death	Number of homicides	Percent of homicides
Total ¹	1,067	99.7
Under 1	85	8.0
1	144	13.5
2	182	17.1
3	140	13.1
4	90	8.4
5	76	7.1
6	79	7.4
7	62	5.8
8	68	6.4
9	41	3.8
10	52	4.9
11	45	4.2

¹Categories may not add to total because of rounding.

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

Table 3. Number and rate of homicides among infants and number of live births, by selected maternal and pregnancy-related characteristics: United States, 2017–2020

Characteristic	Number of homicides	Rate of homicide ¹	Number of live births
Total	1,067	7.11	15,008,399
Maternal age			
Under 20	154	21.65	711,170
20–24	405	14.16	2,860,892
25–29	278	6.43	4,325,567
30–34	155	3.57	4,341,879
35 and over ²	74	2.67	2,768,891
Race and ethnicity			
Asian, non-Hispanic	20	2.11	947,885
Black, non-Hispanic	355	16.21	2,190,630
White, non-Hispanic	453	5.88	7,708,218
Hispanic ³	168	4.75	3,538,154
Birthplace of mother			
Born in the United States	987	8.51	11,594,905
Born outside the United States	71	2.10	3,383,910
Education level ⁴			
Less than high school	68	6.44	1,055,577
High school graduate or GED ⁵	186	8.20	2,267,656
Some college but no degree ⁵	132	6.21	2,124,032
Associate degree	36	3.36	1,070,143
Bachelor's degree or higher	70	1.47	4,753,159
Metropolitan status of county of residence ⁶			
Urban	877	6.76	12,977,682
Rural	189	9.31	2,030,717
Live-birth order			
1st	345	6.07	5,680,447
2nd	334	6.96	4,798,321
3rd or higher	378	8.41	4,492,615
Trimester prenatal care began			
1st trimester	568	5.00	11,361,631
2nd trimester ⁷	269	11.31	2,378,203
3rd trimester	84	12.90	650,952
None	78	29.43	265,078
Place of delivery			
In hospital	1,028	6.97	14,749,111
Not in hospital	38	14.70	258,577
Source of payment for delivery			
Medicaid	788	12.47	6,318,216
Private insurance	197	2.65	7,435,629
Other coverage ⁸	32	5.86	546,221
Self-pay	34	5.57	610,844

¹Number of homicides per 100,000 live births.²No significant difference from age group 30–34.³People of Hispanic origin may be of any race.⁴Includes women aged 25 and over.⁵No significant difference from less than high school.⁶Based on mother's county of residence at the time of delivery using the 2013 National Center for Health Statistics Urban–Rural Classification Scheme for Counties and grouped as urban (large central metropolitan, large fringe metropolitan, medium metropolitan, and small metropolitan counties) and rural (micropolitan and nonmetropolitan counties).⁷No significant difference from 3rd trimester.⁸No significant difference from self-pay.NOTE: Differences between categories are significantly different ($p < 0.05$) unless otherwise noted.

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

Table 4. Number and rate of homicides among infants and number of live births, by live-birth order and age of mother: United States, 2017–2020

Age of mother	Live-birth order			Total
	1st	2nd	3rd or higher	
Number of homicides				
Total	344	334	377	1,055
Under 20	117	28	9	154
20–24	144	158	101	403
25–29	46	81	145	272
30 and over	37	67	122	226
Rate of homicide ¹				
Total	6.07	6.96	8.39	7.05
Under 20	19.51	28.93	*	21.70
20–24	9.49	² 17.32	^{2,3} 23.80	14.12
25–29	2.84	² 5.67	^{2,3} 11.45	6.30
30 and over	1.90	2.84	^{2,3} 4.38	3.19
Number of live births				
Total	5,680,447	4,798,321	4,492,615	14,971,383
Under 20	599,585	96,795	13,353	709,733
20–24	1,517,679	912,078	424,423	2,854,180
25–29	1,618,978	1,429,487	1,266,455	4,314,920
30 and over	1,944,205	2,359,961	2,788,384	7,092,550

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

¹Number of homicides per 100,000 live births.

²Significantly different from first-order births ($p < 0.05$).

³Significantly different from second-order births ($p < 0.05$).

NOTES: Live-birth order was missing for 12 records. Differences between categories are significantly different ($p < 0.05$) unless otherwise noted.

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

Table 5. Number and rate of homicides among infants and number of live births, by selected infant characteristics: United States, 2017–2020

Characteristic	Number of homicides	Rate of homicide ¹	Number of live births
Total	1,067	7.11	15,008,399
Plurality			
Single	1,014	6.99	14,510,222
Multiple	53	10.64	498,177
Infant sex			
Male	631	8.22	7,676,602
Female	436	5.95	7,331,797
Gestational age			
Under 37 weeks	219	14.50	1,510,051
37 weeks or more	833	6.18	13,488,198
Birth weight			
Under 2,500 grams	203	16.31	1,245,016
2,500 grams or more	859	6.25	13,754,602
Neonatal intensive care unit admission			
Yes	186	13.49	1,379,167
No	870	6.39	13,615,213

¹Number of homicides per 100,000 live births.

NOTE: Differences between categories are significantly different ($p < 0.05$) unless otherwise noted.

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

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

Division of Vital Statistics

Steven Schwartz, Ph.D., *Director*
Andrés A. Berruti, Ph.D., M.A., *Associate Director for Science*