

# Cigarette Smoking During Pregnancy: United States, 2016

Patrick Drake, M.S., Anne K. Driscoll, Ph.D., and T.J. Mathews, M.S.

## Key findings

### Data from the National Vital Statistics System

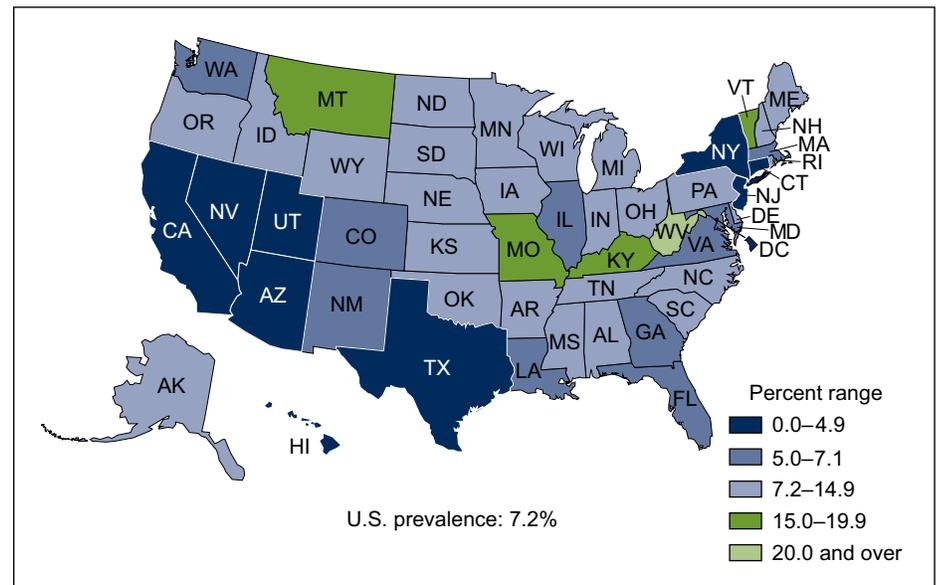
- In 2016, 7.2% of women who gave birth smoked cigarettes during pregnancy.
- Prevalence of smoking during pregnancy was highest for women aged 20–24 (10.7%), followed by women aged 15–19 (8.5%) and 25–29 (8.2%).
- Non-Hispanic American Indian or Alaska Native women had the highest prevalence of smoking during pregnancy (16.7%); non-Hispanic Asian women had the lowest (0.6%).
- The prevalence of smoking during pregnancy was highest among women with a completed high school education (12.2%), and second-highest among women with less than a high school education (11.7%).

Maternal tobacco use during pregnancy has been linked to a host of negative infant and child outcomes, including low birthweight, preterm birth, and various birth defects (1–5). The 2003 revision of the U.S. Standard Certificate of Live Birth included new and modified items on maternal cigarette smoking before and during pregnancy. The 2016 natality data file is the first for which this information is available for all states and the District of Columbia (D.C.). This report presents the prevalence of cigarette smoking at any time during pregnancy among women who gave birth in 2016 in the United States by state of residence as well as maternal race and Hispanic origin, age, and educational attainment.

*Keywords: prenatal • tobacco • National Vital Statistics System (NVSS)*

## Prevalence of cigarette smoking during pregnancy varied by state.

Figure 1. Prevalence of maternal smoking at any time during pregnancy, by state: United States, 2016



NOTE: Access data table for Figure 1 at: [https://www.cdc.gov/nchs/data/databriefs/db305\\_table.pdf#1](https://www.cdc.gov/nchs/data/databriefs/db305_table.pdf#1).  
SOURCE: NCHS National Vital Statistics System, Natality.

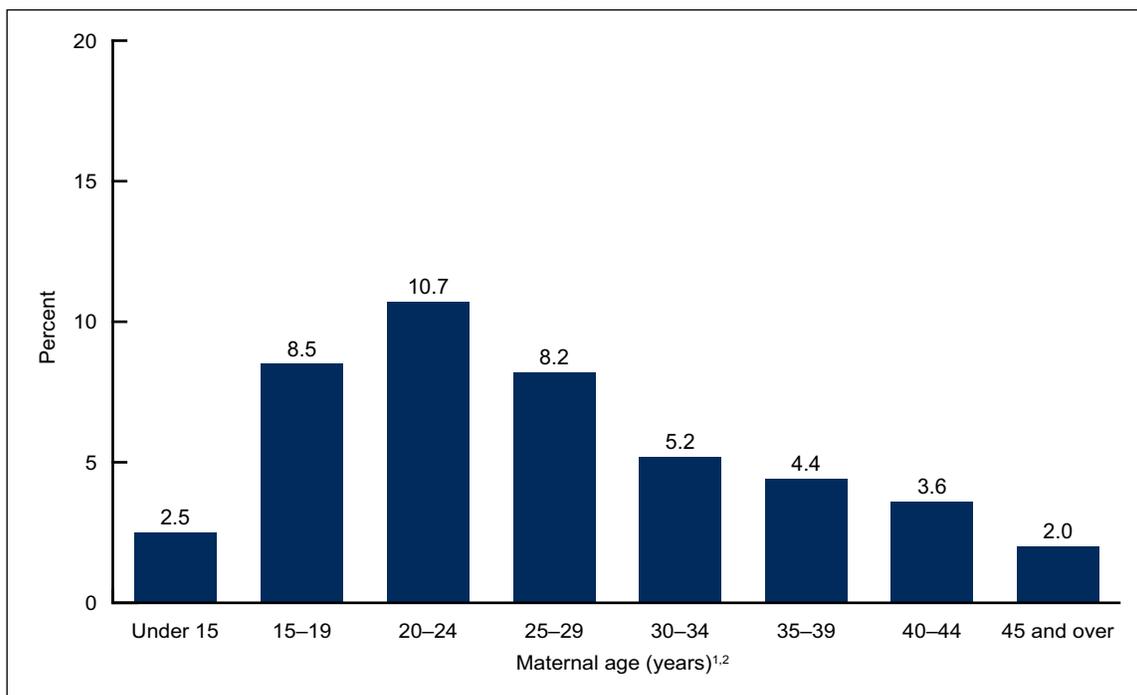


- One in 14 women who gave birth in the United States in 2016 (7.2%) reported smoking during pregnancy (Figure 1). Compared with the nation overall, smoking during pregnancy was lower in 19 states and D.C., and higher in 31 states.
- The prevalence of smoking during pregnancy was highest in West Virginia (25.1%), followed by Kentucky (18.4%), Montana (16.5%), Vermont (15.5%), and Missouri (15.3%).
- The prevalence of smoking during pregnancy was lowest in Arizona, California, Connecticut, Hawaii, New Jersey, New York, Nevada, Texas, Utah, and D.C.; each had a prevalence of less than 5.0%.

### Women aged 20–24 were most likely to smoke cigarettes during pregnancy.

- Prevalence of smoking was highest among women aged 20–24 (10.7%), followed by women aged 15–19 (8.5%) and 25–29 (8.2%) (Figure 2).
- The prevalence of smoking during pregnancy increased for mothers under age 15 through those aged 20–24, and then declined with increasing maternal age.
- Smoking during pregnancy was least prevalent among those aged 45 and over (2.0%) and those under age 15 (2.5%).

Figure 2. Prevalence of maternal smoking at any time during pregnancy, by age of mother: United States, 2016



<sup>1</sup>Significant differences among all age groups except between women under age 15 and women aged 45 and over ( $p < 0.05$ ).

<sup>2</sup>Significant decreasing trend from women aged 20–24 to women aged 45 and over ( $p < 0.05$ ).

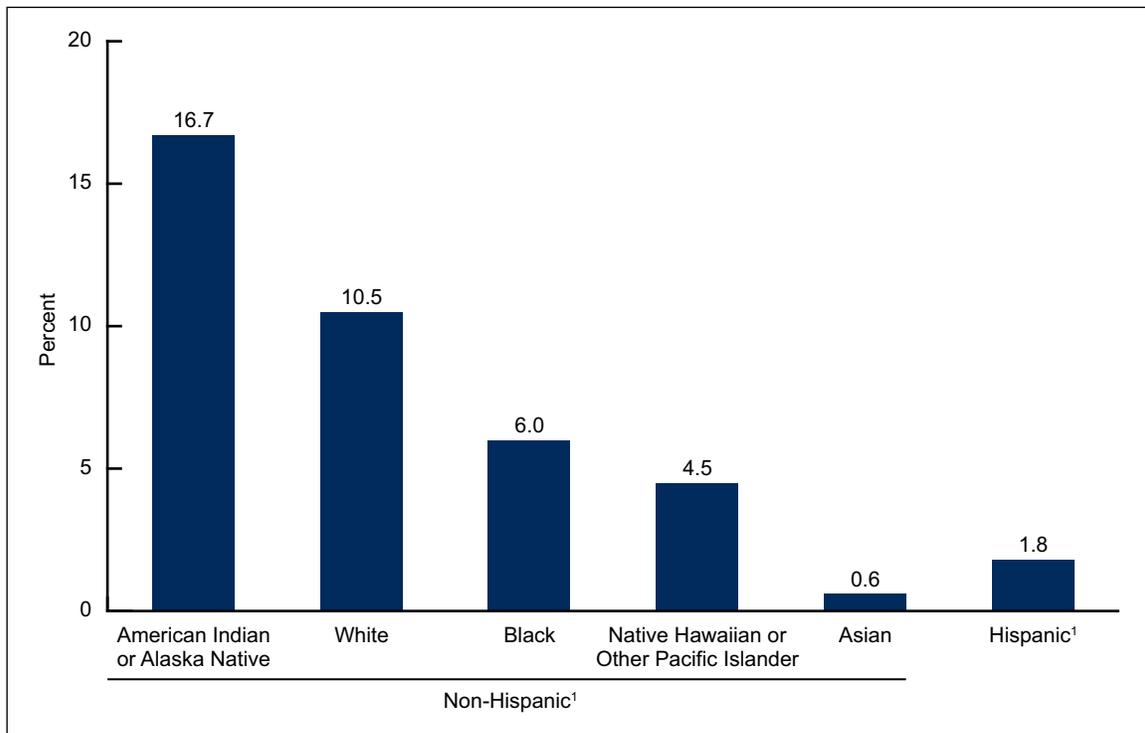
NOTE: Access data table for Figure 2 at: [https://www.cdc.gov/nchs/data/databriefs/db305\\_table.pdf#2](https://www.cdc.gov/nchs/data/databriefs/db305_table.pdf#2).

SOURCE: NCHS, National Vital Statistics System, Natality.

## Hispanic and non-Hispanic Asian women were least likely to smoke tobacco during pregnancy.

- By race and Hispanic origin, the prevalence of smoking during pregnancy ranged from less than 1% among non-Hispanic Asian women (0.6%) to 16.7% of non-Hispanic American Indian or Alaska Native (AIAN) women (Figure 3).
- Non-Hispanic AIAN women were 1.6 times as likely to smoke during pregnancy as non-Hispanic white women (10.5%), the group with the second-highest rate.
- Among the three largest race and Hispanic-origin groups, non-Hispanic white women had the highest prevalence of smoking during pregnancy, followed by non-Hispanic black women (6.0%) and Hispanic women (1.8%).

Figure 3. Prevalence of maternal smoking at any time during pregnancy, by race and Hispanic origin of mother: United States, 2016



<sup>1</sup>Significant differences among all race and Hispanic-origin groups ( $p < 0.05$ ).

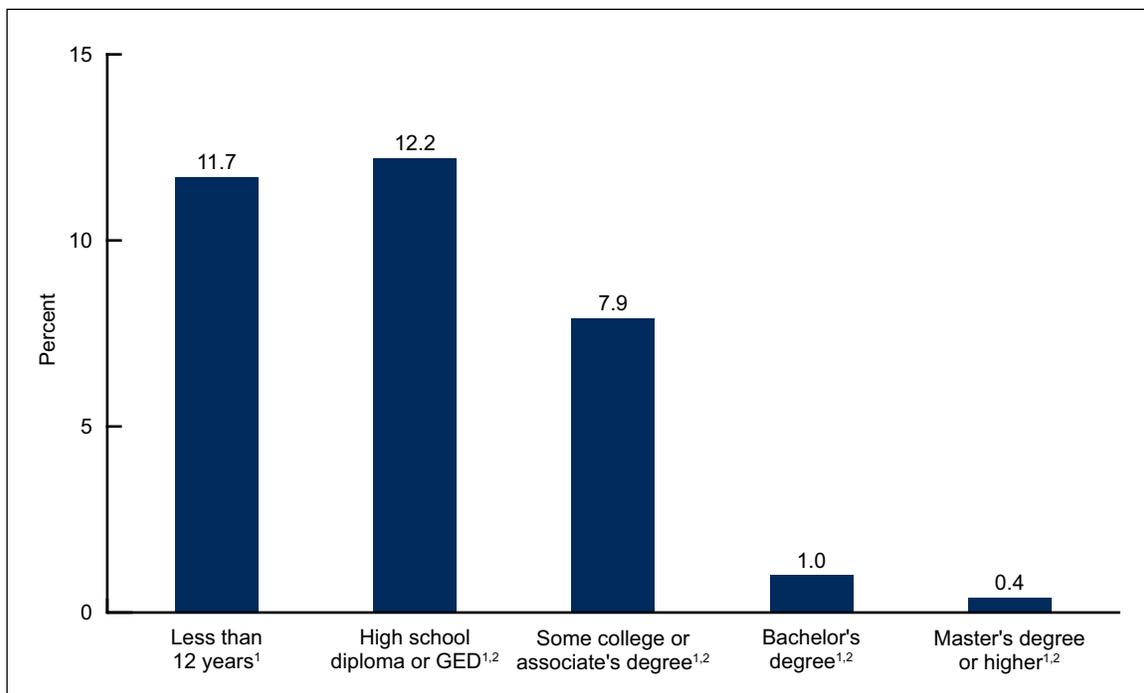
NOTE: Access data table for Figure 3 at: [https://www.cdc.gov/nchs/data/databriefs/db305\\_table.pdf#3](https://www.cdc.gov/nchs/data/databriefs/db305_table.pdf#3).

SOURCE: NCHS, National Vital Statistics System, Natality.

## Smoking during pregnancy was least prevalent among women with a master's degree or higher.

- Prevalence of smoking during pregnancy was highest for women with a high school diploma or GED (12.2%), followed by women with less than a high school diploma (11.7%) and women with some college or an associate's degree (7.9%) (Figure 4).
- The prevalence of smoking decreased with increasing education among women with a completed high school education or higher.
- Women with a bachelor's degree or higher had a prevalence of smoking during pregnancy of 1.0% or less.

Figure 4. Prevalence of maternal smoking at any time during pregnancy, by educational attainment of mother: United States, 2016



<sup>1</sup>Significant differences among all groups ( $p < 0.05$ ).

<sup>2</sup>Significant decreasing trend from high school diploma or GED to master's degree or higher ( $p < 0.05$ ).

NOTES: Data include only women aged 25 and over. Access data table for Figure 4 at: [https://www.cdc.gov/nchs/data/databriefs/db305\\_table.pdf#4](https://www.cdc.gov/nchs/data/databriefs/db305_table.pdf#4).

SOURCE: NCHS, National Vital Statistics System, Natality.

## Summary

This report presents the first national data on maternal smoking during pregnancy based on the 2003 birth certificate revision. Cigarette smoking during pregnancy was shown to differ across states, as well as by maternal age, race and Hispanic origin, and educational attainment. Smoking during pregnancy was most common among women aged 20–24, non-Hispanic AIAN mothers, and women with a high school education or less. Identifying maternal characteristics linked with smoking during pregnancy can help inform the development of strategies to reduce the prevalence of maternal smoking and increase smoking cessation during pregnancy in the United States.

## Definitions

Prevalence of smoking during pregnancy: Number of births to women who reported smoking cigarettes at any point during pregnancy per 100 births in the given category. The question from the 2003 revised birth certificate asks for the number of cigarettes (or packs) smoked in the 3 months before pregnancy and in each trimester. If the mother reported smoking in any of the 3 trimesters of pregnancy, she was classified as a smoker (smoked anytime during pregnancy). Women with unknown smoking status for any trimester were classified as “Unknown smoking status” and excluded from this analysis.

Race and Hispanic origin: Race and Hispanic origin are reported independently on the U.S. Standard Certificate of Live Birth. This report presents data for single-race non-Hispanic white, single-race non-Hispanic black, single-race non-Hispanic Asian, single-race non-Hispanic American Indian or Alaska Native, single-race Native Hawaiian or Other Pacific Islander, and Hispanic births.

## Data source and methods

This report is based on data from the 2016 natality data file of the National Vital Statistics System. The natality file is based on information derived from birth certificates and includes information for all births occurring in the United States. Publicly available birth data files are available from: [https://www.cdc.gov/nchs/data\\_access/vitalstatsonline.htm](https://www.cdc.gov/nchs/data_access/vitalstatsonline.htm).

Maternal education analyses are restricted to women aged 25 and over to allow for completion of education. The items regarding maternal smoking on the 2003 birth certificate include the average number of cigarettes or packs smoked per day during four periods: over the 3 months before pregnancy and in each of the 3 trimesters of pregnancy. This report does not include data on the reporting of smoking during the 3 months before pregnancy. The information on maternal smoking is recommended to be asked of the mother on the mother's worksheet in the hospital around the time of delivery. The total percentage of records with missing information on smoking during any trimester of pregnancy for the United States was 0.5%. By state, rates of missing data for this measure ranged from 0.1% (New York) to 4.4% (West Virginia).

The difference between any percentages is noted in the text only if it is statistically significant. References to decreasing linear trends are statistically significant at the 0.05 level and assessed using the Cochran–Armitage test for trends, a modified chi-squared test.

## About the authors

Patrick Drake, Anne K. Driscoll, and T.J. Mathews are with the National Center for Health Statistics, Division of Vital Statistics, Reproductive Statistics Branch.

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