

Wisconsin

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Tobacco Facts: Smoking During Pregnancy



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Population Health

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University of Wisconsin-Milwaukee

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SMOKING DURING PREGNANCY: PREFACE

Cigarette smoking during pregnancy has been shown to have adverse effects on both the mother and child. Two reports of the Surgeon General, *Women and Smoking*¹ and *The Health Consequences of Smoking*,² highlight the dangers of smoking during pregnancy. Pregnant women who smoke put themselves and their babies at risk for premature rupture of membranes, placenta previa, stillbirth, preterm delivery, and sudden infant death syndrome.^{1,2} These reports also show that infants born to women who smoke are twice as likely to be low birthweight, defined as weighing less than 2,500 grams at birth.^{1,2} Analysis of Wisconsin data presented in this report reveal that 13.7% of babies born to women who smoked during pregnancy during 2018 were low birthweight babies, compared to 7.0% of babies born to non-smoking women. During the same time period, the infant mortality rate for babies of Wisconsin mothers who smoked during pregnancy was 13.0 deaths per 1,000 live births, compared to 5.2 deaths per 1,000 live births for babies of mothers who did not smoke.

Wisconsin has long recognized the great risks a woman who smokes takes for herself, her unborn child, and her family. Through many programs with local health departments, coalitions, health care professionals, and interested partners, Wisconsin has focused efforts at reducing tobacco use and exposure to secondhand smoke in the general population, including pregnant women. In addition, the State supports the First Breath³ program, a nationally recognized smoking cessation program established in 2000 for pregnant women, which now serves pregnant and postpartum women, as well as their families. Moreover, the State's Tobacco Prevention and Control Plan has set forth the objective of reducing the percentage of Wisconsin pregnant women who smoke to 9% by the end of 2025.⁴

In view of this goal, the purpose of this report is to examine and monitor trends in smoking during pregnancy among women in Wisconsin. Utilizing a comprehensive data set, comprised of all births in Wisconsin, it compares the prevalence of smoking during pregnancy in Wisconsin to the prevalence in the United States for all pregnant women and for select subgroups. In addition, social and demographic characteristics associated with an increased likelihood of smoking during pregnancy are identified. It is important to note, however, that none of the relationships presented in this report should be construed as causal. Rather, they illuminate important identifying characteristics that can serve to focus related program and policy considerations on those women most in need of assistance in the prevention and cessation of maternal smoking.

In sum, this report serves as an update to the previously published series on maternal smoking in Wisconsin in order to provide an ongoing surveillance of maternal smoking in the state. The findings presented here are intended to provide a resource for health professionals, local health departments, and local coalitions working towards the reduction of the prevalence of smoking during pregnancy in Wisconsin.

SMOKING DURING PREGNANCY: KEY FINDINGS

Trends in Maternal Smoking in the United States

- In the United States, the prevalence of smoking during pregnancy decreased from 18.4% in 1990 to 6.5% in 2018, representing a relative decrease of 65%.

Trends in Maternal Smoking in Wisconsin

- In Wisconsin, the prevalence of smoking during pregnancy decreased from 22.9% in 1990 to 10.2% in 2018, representing a relative decrease of 55%.

Maternal Smoking in Wisconsin and Low Birthweight Babies

- In 2018, 13.7% of babies born to Wisconsin mothers that smoked during pregnancy were low birthweight, compared to 7.0% of babies born to mothers that did not smoke.

Maternal Smoking in Wisconsin and Infant Mortality

- In 2018, the infant mortality rate for babies born to Wisconsin mothers that smoked during pregnancy was 13.0, compared to 5.2 for babies born to mothers that did not smoke.

Maternal Smoking in Wisconsin, by Age

- In general, women 18 to 24 years of age were most likely to smoke during pregnancy during 2016-2018.
- When age and race/ethnicity were considered in tandem, however, the prevalence of smoking during pregnancy for American Indian/Alaska Native women and black women was greater for slightly older age groups. For American Indian/Alaska Native women, the highest prevalence of maternal smoking was among those 25 to 34 years of age. For black women, the highest prevalence of maternal smoking was among those 30 to 39 years of age.

Maternal Smoking in Wisconsin, by Race/Ethnicity

- During 2016-2018, American Indian/Alaska Native women had the highest prevalence of smoking during pregnancy (36.1%), followed by multi-racial women (18.6%), black women (12.5%), white women (11.3%), Hispanic women (5.8%), and Asian/Pacific Islander women (4.5%).

Maternal Smoking in Wisconsin and the United States, by Race/Ethnicity

- During 2016-2018, the prevalences of smoking during pregnancy for American Indian/Alaska Native, black, Hispanic, and Asian/Pacific Islander women in Wisconsin were more than twice the prevalence for each corresponding group in the United States. For white women, the prevalence of maternal smoking in Wisconsin was approximately one-third greater than the average in the United States.



Maternal Smoking in Wisconsin, by Education

- During 2016-2018, the prevalence of smoking during pregnancy was highest among women with a high school degree (21.5%), followed by women with less than a high school degree (19.8%), women with some college (11.6%), and college graduates (1.1%).

Maternal Smoking in Wisconsin, by Marital Status

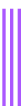
- During 2016-2018, 4.3% of married women smoked during pregnancy, compared to 22.1% of unmarried women.

Maternal Smoking in Wisconsin, by Prenatal Care

- During 2016-2018, 9.4% of women who initiated prenatal care during the first trimester of their pregnancy smoked during pregnancy, compared to 15.7% of women who initiated care during their second or third trimester, and 37.5% of women who did not receive prenatal care.

Maternal Smoking in Wisconsin Counties and the City of Milwaukee

- During 2016-2018, the average prevalence of smoking during pregnancy among all Wisconsin women was 10.9%; however, in 55 of the state's counties, the prevalences were higher than the state average.
- The prevalence of smoking during pregnancy varied greatly among counties. During 2016-2018, Waukesha County had the lowest prevalence (4.3%) and Forest County had the highest prevalence (34.1%).
- In general, higher prevalences of smoking during pregnancy were observed in counties located in the northern third of the state, and in a few centrally located counties.
- The prevalence of smoking during pregnancy in the City of Milwaukee was 10.5% during 2016-2018.



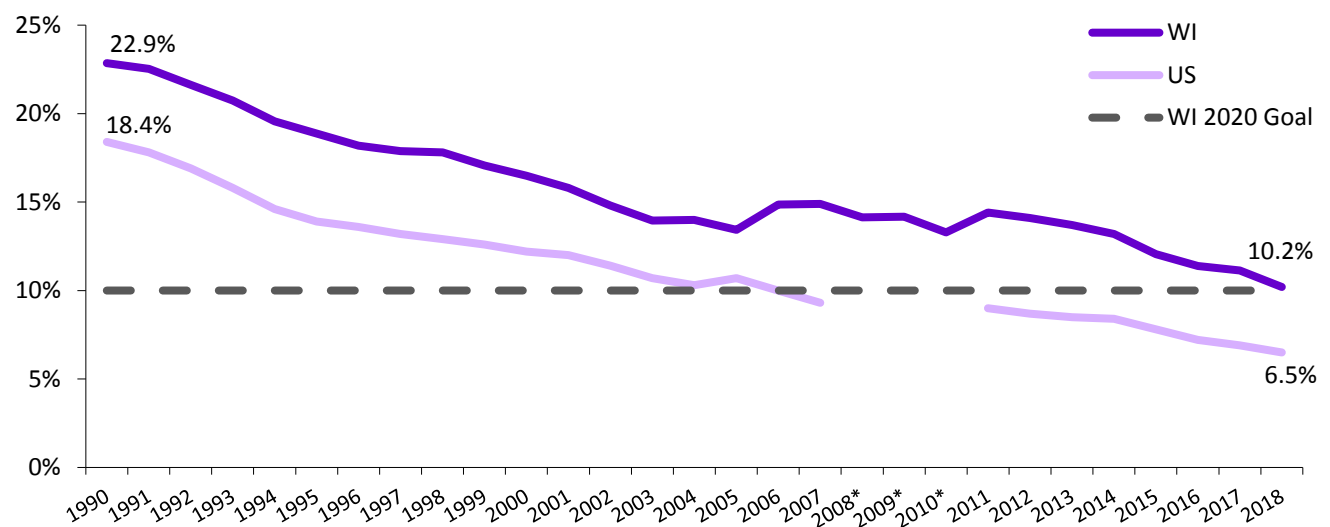
SMOKING DURING PREGNANCY: RESULTS

- ❖ Total Number of Live Births in Wisconsin in 2018: **64,143**
- ❖ Number (Percent) of Wisconsin Women Who Smoked During Pregnancy in 2018: **6,483 (10.2%)**

Data: Wisconsin Interactive Statistics on Health

Note: Calculations may not appear to be exact due to rounding. In addition, women for whom maternal smoking status is not known are not included in analyses of the prevalence of maternal smoking.

Figure 1. Trends in the Prevalence of Smoking During Pregnancy, Wisconsin and the United States, 1990-2018

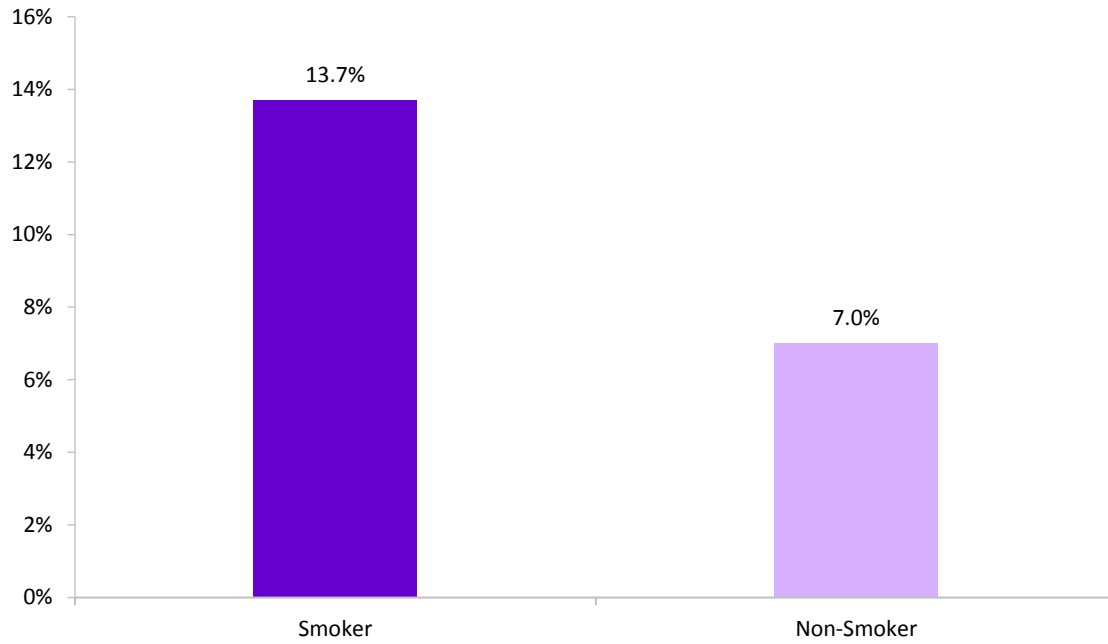


Note: Wisconsin data for 1990 through 2010, and U.S. data for 1990 through 2007, were collected using the 1989 U.S. Standard Certificate of Live Birth. Wisconsin and U.S. data for 2011 through 2018 were collected using the 2003 U.S. Standard Certificate of Live Birth.

* Because available U.S. data for 2008 through 2010 were collected using the 2003 Standard Certificate of Live Birth, they are not comparable to the Wisconsin data for those years, and thus are not included in this figure.

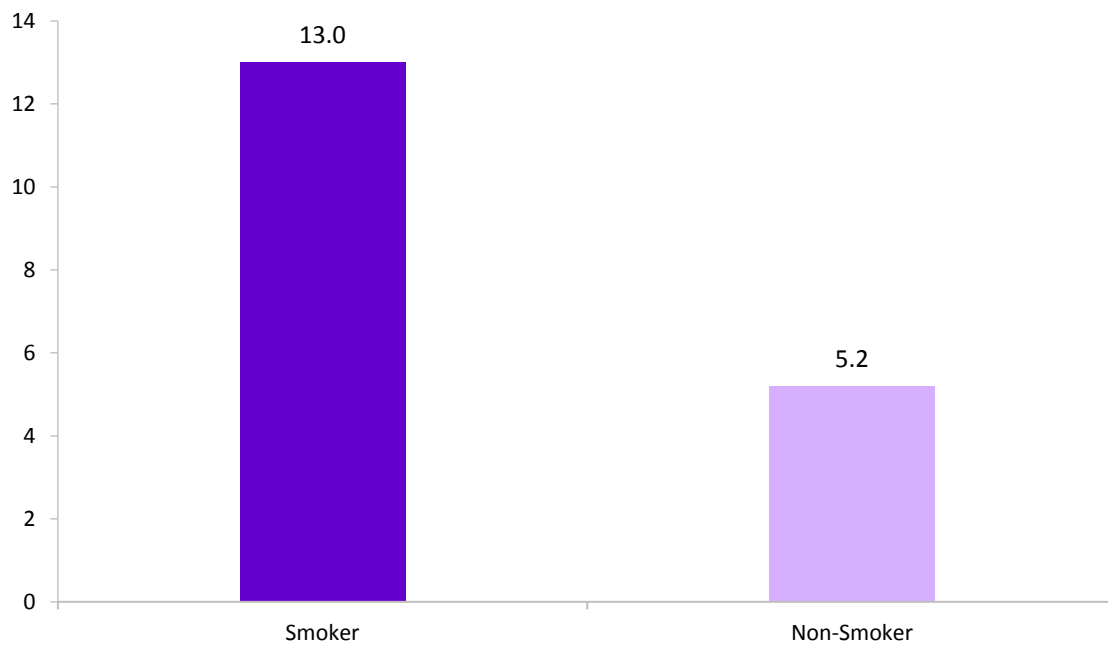
Data: Wisconsin Interactive Statistics on Health; CDC's Wide-Ranging Online Data for Epidemiologic Research; CDC's National Vital Statistics System; CDC's annual report on trends in health statistics; U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. *Women's Health USA 2010*. Rockville, Maryland: U.S. Department of Health and Human Services, 2010.

Figure 2. Prevalence of Low Birthweight Babies* Born to Smoking and Non-Smoking Mothers, Wisconsin, 2018



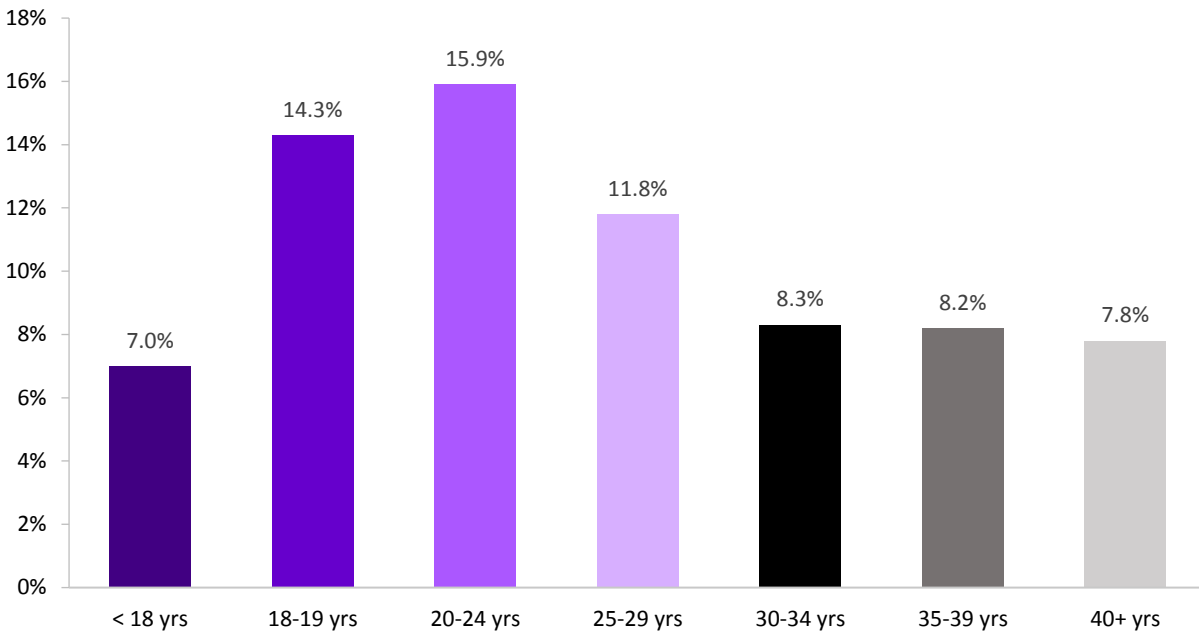
* Low birthweight is defined as weighing less than 2,500 grams (approximately 5.5 pounds) at birth.
Data: Wisconsin Interactive Statistics on Health

Figure 3. Mortality Rates† for Babies Born to Smoking and Non-Smoking Mothers, Wisconsin, 2018



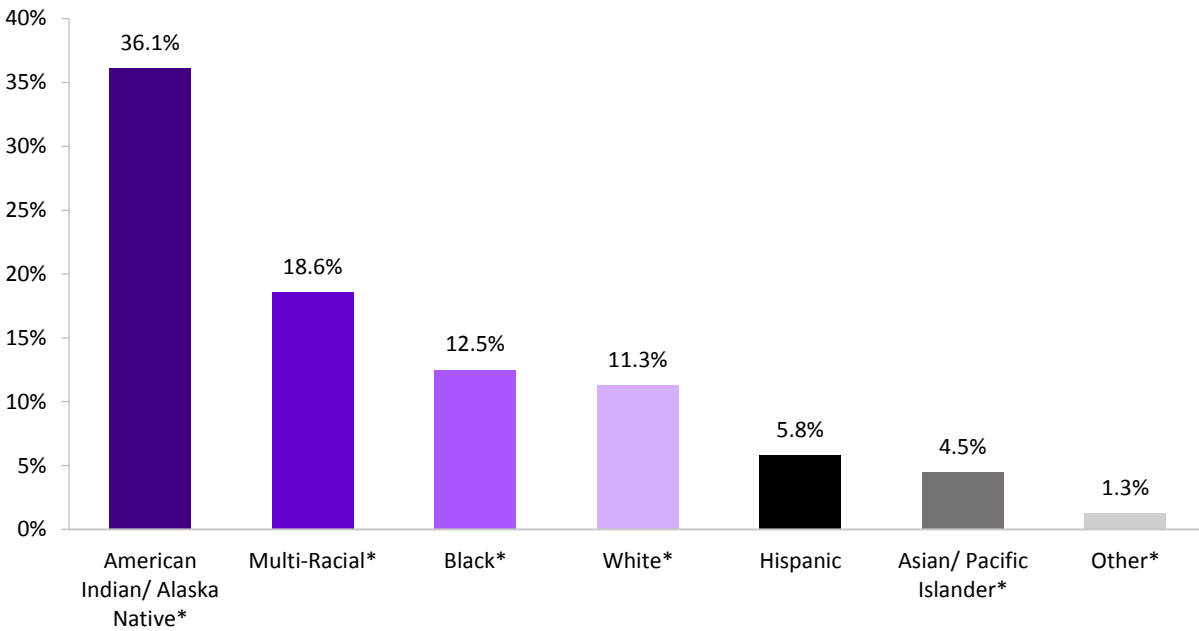
† The infant mortality rate is per 100,000 live births.
Data: Wisconsin Interactive Statistics on Health

Figure 4. Prevalence of Smoking During Pregnancy by Age of Mother, Wisconsin, 2016-2018



Data: Wisconsin Interactive Statistics on Health

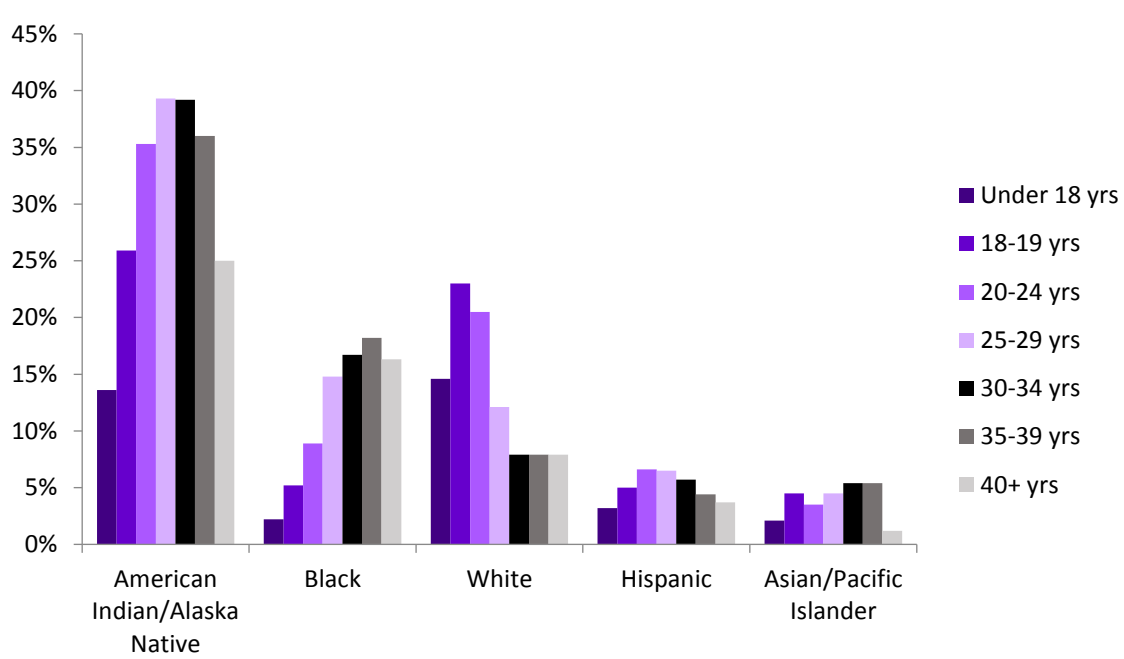
Figure 5. Prevalence of Smoking During Pregnancy by Race/Ethnicity, Wisconsin, 2016-2018



* All racial groups are non-Hispanic

Data: Wisconsin Interactive Statistics on Health

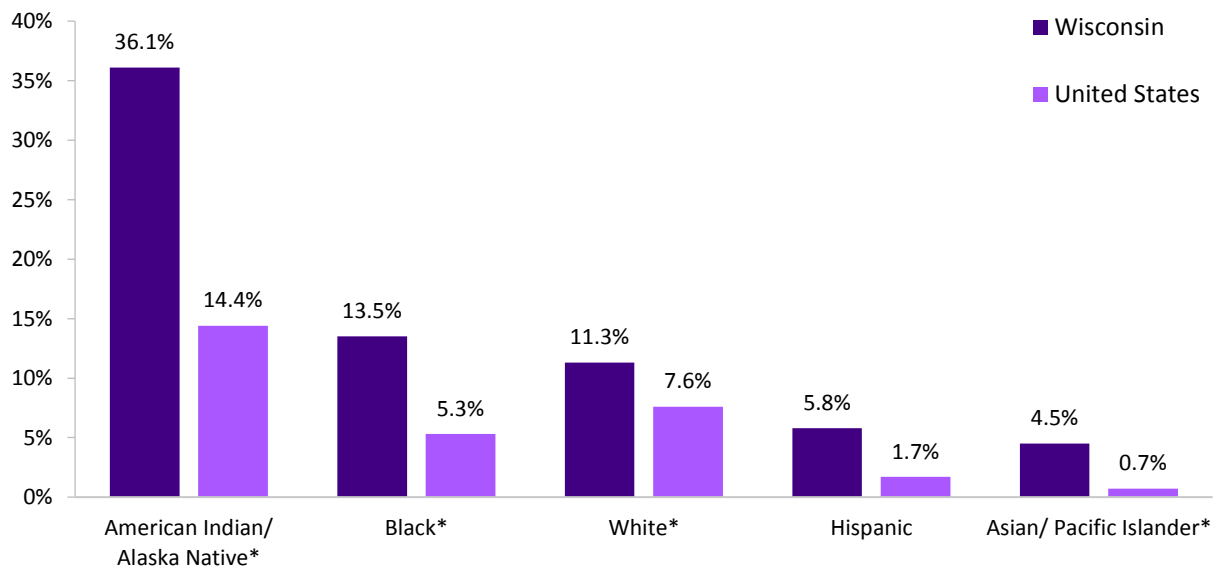
Figure 6. Prevalence of Smoking During Pregnancy by Race/Ethnicity and Age, Wisconsin, 2016-2018



* All racial groups are non-Hispanic

Data: Wisconsin Interactive Statistics on Health

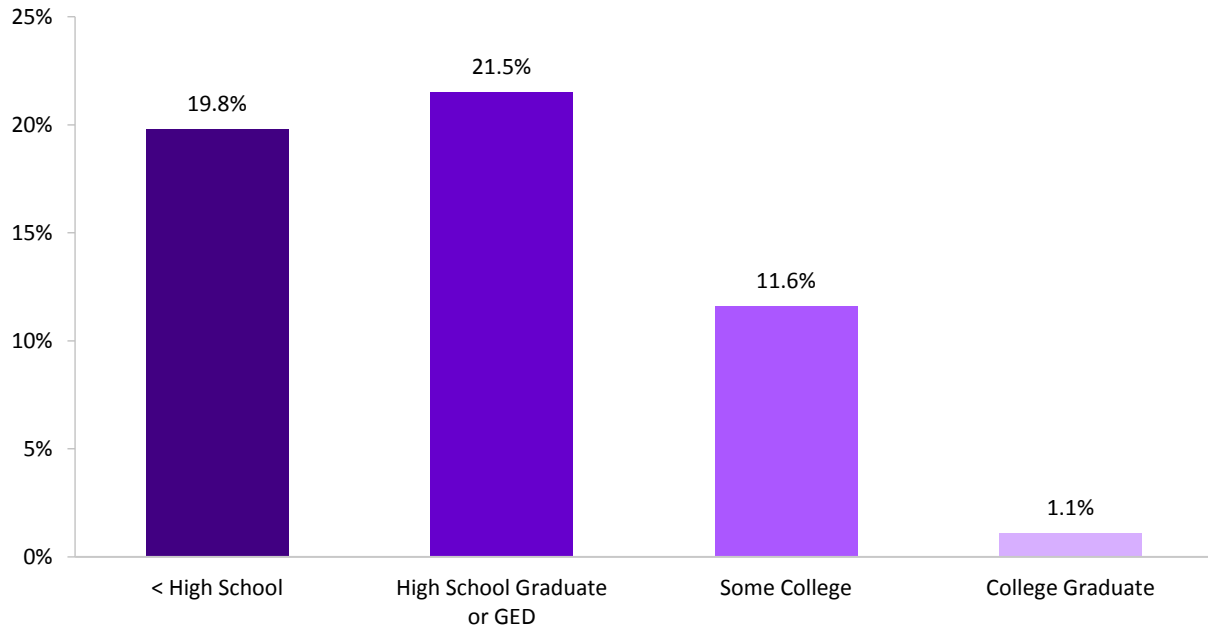
Figure 7. Prevalence of Smoking During Pregnancy by Race/Ethnicity, Wisconsin and the United States, 2016-2018



* All racial groups are non-Hispanic

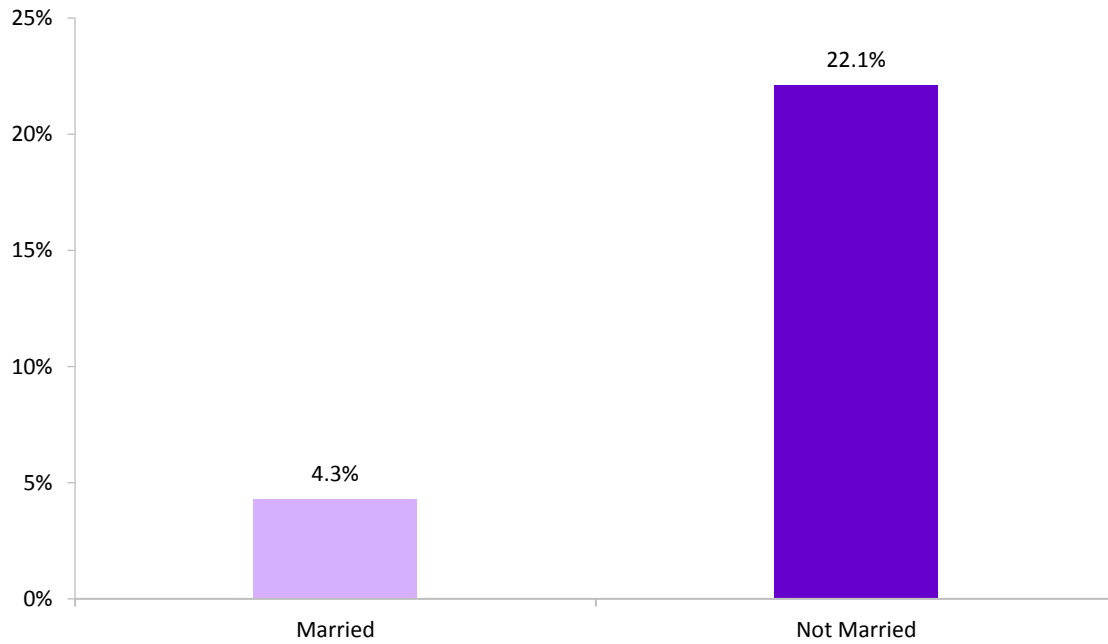
Data: Wisconsin Interactive Statistics on Health; CDC Wide-Ranging Online Data for Epidemiologic Research

Figure 8. Prevalence of Smoking During Pregnancy by Educational Attainment, for Women 20 Years Old and Older, Wisconsin, 2016-2018



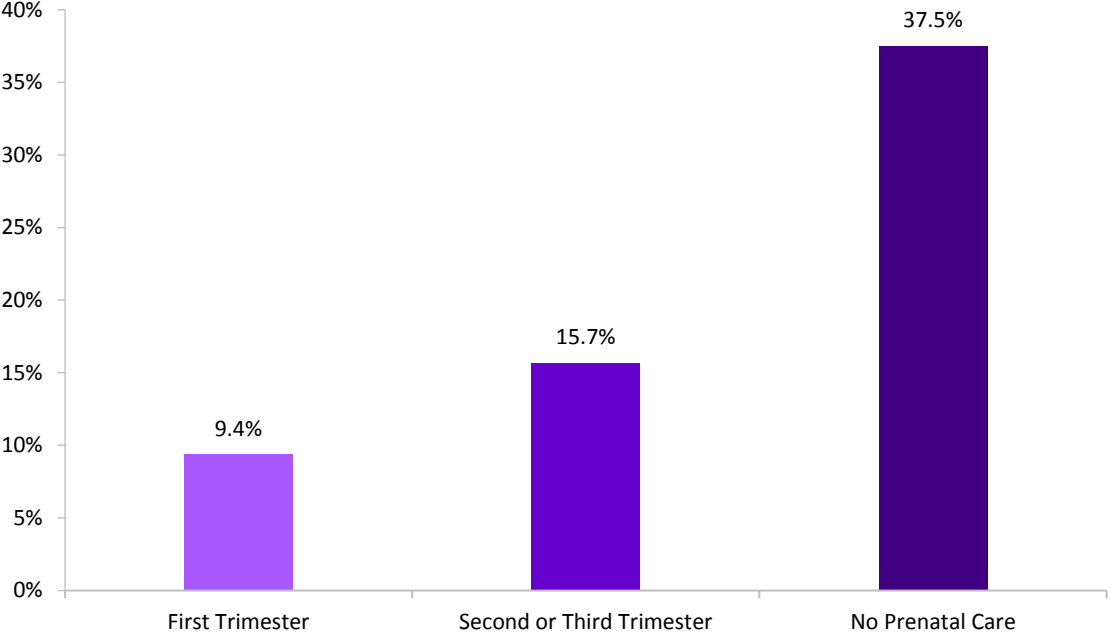
Data: Wisconsin Interactive Statistics on Health

Figure 9. Prevalence of Smoking During Pregnancy by Marital Status, Wisconsin, 2016-2018



Data: Wisconsin Interactive Statistics on Health

Figure 10. Prevalence of Smoking During Pregnancy by Trimester of Prenatal Care, Wisconsin, 2016-2018



Data: Wisconsin Interactive Statistics on Health

Table 1. Prevalence of Smoking During Pregnancy in Wisconsin, by County and the City of Milwaukee, 2016-2018

| State/County | Total live births 2016-2018 | Smoking Prevalence 2016-2018 | State/County | Total live births 2016-2018 | Smoking Prevalence 2016-2018 |
|----------------------|--------------------------------|------------------------------------|--------------|--------------------------------|------------------------------------|
| Wisconsin | 195,730 | 10.9% | | | |
| Adams | 364 | 22.7% | Marathon | 4,648 | 13.2% |
| Ashland | 516 | 24.7% | Marinette | 1,130 | 19.9% |
| Barron | 1,500 | 16.3% | Marquette | 411 | 19.7% |
| Bayfield | 382 | 17.1% | Menominee | 271 | 33.8% |
| Brown | 9,818 | 10.6% | Milwaukee | 40,116 | 9.1% |
| Buffalo | 407 | 13.7% | Monroe | 1,763 | 14.8% |
| Burnett | 394 | 21.3% | Oconto | 1,118 | 18.3% |
| Calumet | 1,446 | 8.1% | Oneida | 934 | 20.2% |
| Chippewa | 2,064 | 14.7% | Outagamie | 6,738 | 9.3% |
| Clark | 1,738 | 7.6% | Ozaukee | 2,484 | 4.5% |
| Columbia | 1,784 | 12.0% | Pepin | 246 | 11.8% |
| Crawford | 479 | 16.8% | Pierce | 1,134 | 11.3% |
| Dane | 17,694 | 5.1% | Polk | 1,230 | 18.4% |
| Dodge | 2,366 | 16.5% | Portage | 2,037 | 10.9% |
| Door | 656 | 11.9% | Price | 344 | 23.3% |
| Douglas | 1,251 | 16.7% | Racine | 6,980 | 9.9% |
| Dunn | 1,313 | 14.4% | Richland | 527 | 14.1% |
| Eau Claire | 3,528 | 12.9% | Rock | 5,784 | 14.2% |
| Florence | 95 | --- | Rusk | 430 | 21.0% |
| Fond du Lac | 3,170 | 14.6% | St. Croix | 3,036 | 7.4% |
| Forest | 310 | 34.1% | Sauk | 2,269 | 13.2% |
| Grant | 1,729 | 11.3% | Sawyer | 468 | 29.6% |
| Green | 1,097 | 11.3% | Shawano | 1,344 | 16.5% |
| Green Lake | 620 | 17.5% | Sheboygan | 3,731 | 11.4% |
| Iowa | 797 | 10.7% | Taylor | 657 | 12.1% |
| Iron | 104 | 18.6% | Trempealeau | 1,282 | 11.9% |
| Jackson | 672 | 17.6% | Vernon | 1,245 | 8.0% |
| Jefferson | 2,529 | 13.2% | Vilas | 531 | 27.1% |
| Juneau | 823 | 23.3% | Walworth | 2,827 | 10.5% |
| Kenosha | 5,587 | 11.3% | Washburn | 410 | 18.3% |
| Kewaunee | 599 | 11.5% | Washington | 3,924 | 8.4% |
| La Crosse | 3,551 | 11.0% | Waukesha | 11,793 | 4.3% |
| Lafayette | 630 | 8.1% | Waupaca | 1,515 | 18.8% |
| Langlade | 604 | 22.2% | Waushara | 622 | 15.9% |
| Lincoln | 819 | 20.9% | Winnebago | 5,536 | 12.9% |
| Manitowoc | 2,326 | 15.6% | Wood | 2,439 | 18.9% |
| City of Milwaukee | 28,425 | 10.5% | | | |

Data Source: Wisconsin Interactive Statistics on Health

--- Data not reported due to small sample size

SMOKING DURING PREGNANCY: REFERENCES

1. U.S. Department of Health and Human Services. *Women and Smoking: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2001.
2. U.S. Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2004.
3. Wisconsin Women's Health Foundation. First Breath. Website: <https://www.wwhf.org/first-breath/>
4. Wisconsin Department of Health Services, Division of Public Health, Bureau of Community Health Promotion, Tobacco Prevention and Control Program. *Wisconsin Tobacco Prevention & Control Plan 2020-2025*. Available at: https://www.tobaccofreewisconsin.org/uploads/1/1/6/5/116511217/final_tobacco_plan_10.8.19_f.pdf

SMOKING DURING PREGNANCY: DATA SOURCES & TECHNICAL NOTES

Wisconsin Data. All Wisconsin data are from Wisconsin Interactive Statistics on Health (WISH), which employs multiple sources from protected databases. WISH is developed and maintained by the Wisconsin Department of Health Services, Division of Public Health, Office of Health Informatics. Available from: <https://www.dhs.wisconsin.gov/wish/>

National Data. Data for the United States trend analysis have been routinely accessed and collected over the years in order to track and compare the U.S average maternal smoking prevalence to that of Wisconsin. Accordingly, multiple sources (published and data repositories) have been used, including:

- Centers for Disease Control and Prevention's annual report on trends in health statistics, *Health, United States, with Chartbook on Trends in the Health of Americans*. Available from:

<https://www.cdc.gov/nchs/hus/index.htm>

- Centers for Disease Control and Prevention's National Vital Statistics System. Available from:

<https://www.cdc.gov/nchs/nvss.htm>

- Centers for Disease Control and Prevention's Wide-Ranging Online Data for Epidemiologic Research (WONDER). Available from: <https://wonder.cdc.gov/>

- U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. *Women's Health USA 2010*. Rockville, Maryland: U.S. Department of Health and Human Services, 2010. Online version available from: <https://mchb.hrsa.gov/whusa10/>

Maternal cigarette use is based on the mother's report of smoking during pregnancy. Information on smoking during pregnancy is obtained from the woman during prenatal care visits or at the time of delivery and is recorded on the birth certificate by the attending physician, nurse, or other health professional at the time of delivery.



The 29 years of data analyzed for this report were collected using two different birth certificates, the 1989 U.S. Standard Certificate of Live Birth and the 2003 revision. The 1989 version reports smoking at any time during pregnancy, using one “yes/no” question. In 2003, the birth certificate was revised to assess cigarette use during the three months prior to pregnancy and during each trimester of pregnancy. States have the option of determining which certificate they will use.

Wisconsin data presented in this report for the years 1990 through 2010 are from the 1989 U.S. Standard Certificate of Live Birth. Comparable U.S data (those using the 1989 birth certificate) were available through 2007.

Wisconsin and U.S. data presented in this report for the years 2011 through 2018 are from the 2003 U.S. Standard Certificate of Live Birth.

By 2008, a majority of U.S. states were using the 2003 revision of the birth certificate. Wisconsin, however, used the 1989 version through 2010. Thus, comparable U.S data (those using the 1989 birth certificate) were not being reported or published in readily accessible databases for 2008 through 2010. Accordingly, Wisconsin data on smoking during pregnancy are not compared to U.S. data for the years 2008, 2009, and 2010.

A three-year time period (2016-2018) was utilized for select analyses in order to increase sub-sample sizes.

Cases for which data on smoking status or other key factors were missing were excluded from analysis on a case by case basis.

