Smoking During Pregnancy in Wisconsin and the United States

Trends and Patterns, 1990–2004

1990
1991
1992
1993
1994
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2003
2004

TOBACCO SURVEILLANCE & EVALUATION PROGRAM
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WISCONSIN DEPARTMENT OF HEALTH AND FAMILY SERVICES

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Executive Summary

This report describes trends in cigarette smoking during pregnancy from 1990 to 2004 in Wisconsin and the United States for all pregnant women and demographic subgroups. The data presented reveal the following major patterns in smoking during pregnancy:

State and National

- From 1990 to 2004, the prevalence of smoking during pregnancy decreased in both Wisconsin and the United States. In Wisconsin, the prevalence decreased from 23% in 1990 to 14% in 2004; in the United States, it decreased from 18% in 1990 to 10% in 2004*.

Race

- For all racial and ethnic groups, other than Laotian/Hmong, the prevalence of smoking during pregnancy decreased between 1990 and 2004.
- During 2002-2004, the prevalence of smoking during pregnancy among American Indians was 37%, followed by Blacks (17%), Whites (15%), Hispanics (6%), and Laotian/Hmongs (3%).
- American Indian women had the highest prevalence of smoking during pregnancy throughout the study period.
- The prevalences of smoking during pregnancy for black, Hispanic and American Indian women in Wisconsin were double the prevalence for each corresponding group in the United States.

Age

- In general, women under age 25 were twice as likely to smoke during pregnancy compared to women age 25 and older.
- The prevalence of smoking during pregnancy for black women was greater for each successively older age group. Black women 40 years of age and older had approximately three times the prevalence of smoking during pregnancy compared to black women under age 18.

Education

- The prevalence of smoking during pregnancy was lower for women in each sequentially higher category of educational attainment.
- Pregnant women with some high school education, and those with a high school diploma, were at least ten times more likely to smoke during pregnancy than women with a college degree (27%, 23%, and 2%, respectively, in 2002-2004).

Marital Status

- The prevalence of smoking during pregnancy decreased for both married and unmarried women between 1990 and 2004; however, in 1990-1992, unmarried women were about two and one-half times more likely to smoke during pregnancy than married women (40% vs. 16%); by 2002-2004, they were nearly four times more likely to smoke (29% vs. 8%).

Prenatal Care

- Compared to women who received care in the first trimester, women who initiated care in the second or third trimester were one and one-half times more likely to smoke during pregnancy; women who received no care at all were more than twice as likely to smoke during pregnancy.
- Almost one-third of women who received no prenatal care smoked during their pregnancies.

Counties

- A decreasing trend in smoking during pregnancy was observed for most counties in Wisconsin for the years 1990 to 2004. Waukesha County had the greatest relative decrease, while Marquette County had a slight increase.
- The prevalence of smoking during pregnancy varied greatly among counties. For the years 2002-2004, Ozaukee County had the lowest prevalence (6%) and Menominee County had the highest prevalence (41%).

* 2004 United States data are preliminary, see technical notes.

Introduction

Cigarette smoking during pregnancy has been shown to have adverse effects on both the mother and child. Two recent reports of the Surgeon General, *Women and Smoking* and *The Health Consequences of Smoking*, highlight the dangers of smoking during pregnancy.[1,2] Pregnant women who smoke put themselves and their babies at risk for premature rupture of membranes, placenta previa, stillbirth, pre-term delivery, and sudden infant death syndrome. 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. In Wisconsin, during 2002-2004, 10.6% of babies born to women who smoked were low birthweight, compared to 6.2% of babies born to non-smoking women.[3] During the same period, the infant mortality rate for the babies of Wisconsin mothers who smoked during pregnancy was 9.32 deaths per 1,000 live births; for babies of mothers who did not smoke the infant mortality rate was 5.93 deaths per 1,000 live births.[3]

Wisconsin recognizes these risks and is taking steps to ensure that fewer women smoke during pregnancy. Through many programs with local health departments, coalitions, health care professionals, and interested partners, the state has focused efforts on reducing tobacco use and exposure to secondhand smoke in the general population. In addition, the state supports the First Breath program, a nationally-recognized smoking cessation program for pregnant women established in 2001.

Healthy People 2010[4] outlines an ambitious objective of increasing abstinence from cigarettes among pregnant women to 99%. In addition, one of the goals of *Healthiest Wisconsin 2010*[5], Wisconsin's state health plan, is to eliminate health disparities.

In light of these goals, the purpose of this report is to examine trends in smoking during pregnancy 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. The data for this report came primarily from the *Wisconsin Interactive Statistics on Health* (WISH)[3] (see technical notes).

Pregnant women who smoke put themselves and their babies at risk for premature rupture of membranes, placenta previa, stillbirth, pre-term delivery, and sudden infant death syndrome.

…infants born to women who smoke are twice as likely to be low birthweight…

Healthy People 2010 outlines an ambitious objective of increasing abstinence from cigarettes among pregnant women to 99%.

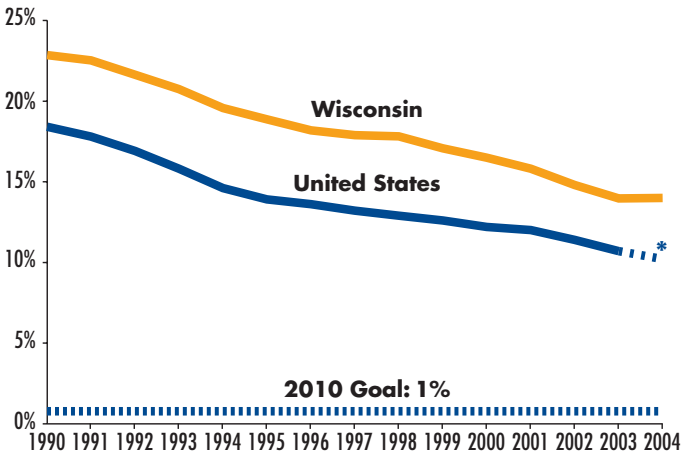
This report identifies social and demographic characteristics associated with an increased likelihood of smoking during pregnancy. However, none of the relationships presented in this report should be construed as causal.

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. This report may also assist public health agencies attempting to assess progress in the reduction of smoking during pregnancy, and aid in the determination of where to focus future efforts.

Results

Wisconsin and the United States

Figure 1. Trends in the prevalence of smoking during pregnancy, Wisconsin and the United States, 1990-2004



The percentage of pregnant women who smoked in the United States and Wisconsin from 1990 to 2004 is shown in **Figure 1**. Both the United States and Wisconsin experienced significant declines in the percentage of women who smoked during pregnancy. In Wisconsin, the prevalence of smoking during pregnancy decreased from 22.9% in 1990 to 14.0% in 2004, representing a relative percent decrease of 39%.‡ However, Wisconsin has made little progress towards reducing the gap between itself and the United States. Every year, Wisconsin's prevalence of smoking during pregnancy remained higher than the United States' prevalence.* (Data for Figure 1 are located in Table 1 of the appendix.)

Wisconsin and the United States, by race/ethnicity

Figure 2. Prevalence of smoking during pregnancy by race/ethnicity, Wisconsin and the United States, 2003

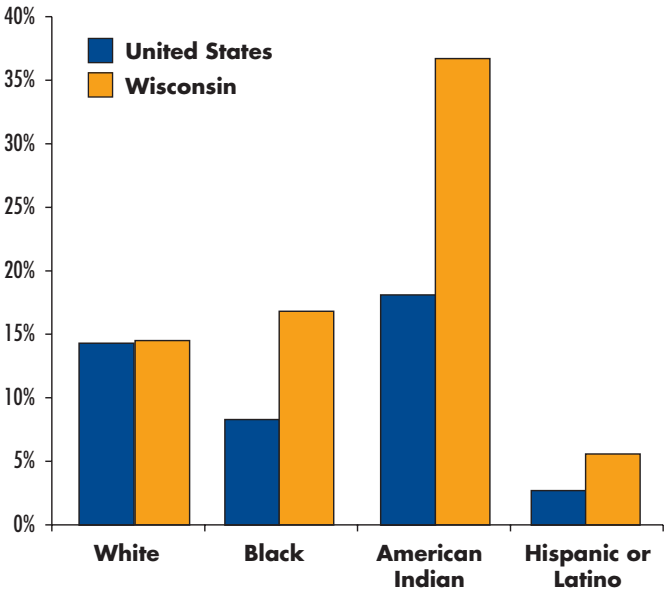


Figure 2 provides a comparison of the prevalence of smoking during pregnancy among racial and ethnic groups in Wisconsin with the prevalence among those groups nationwide in 2003.

For white women, the ratio of the prevalence of smoking during pregnancy in Wisconsin to that observed in the United States was approximately one to one. However, the prevalences of smoking during pregnancy for black, Hispanic and American Indian women in Wisconsin were double the prevalence for each corresponding group in the United States. Table 2 of the appendix demonstrates the persistence of these disparities across time.

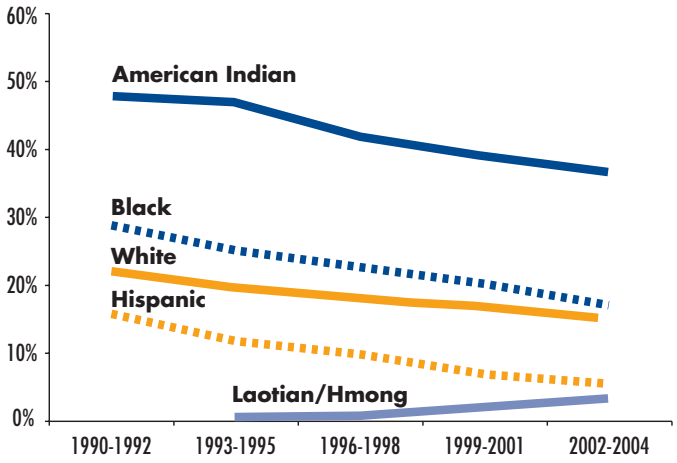
‡ Relative percent change provides a standard comparison between populations with different initial prevalences. Relative percent change is calculated by subtracting the prevalence for the initial time period from the prevalence of the most recent time period, and dividing the result by the prevalence of the initial time period. This number is then multiplied by 100% to get the relative percent change =[(% in 2004 – % in 1990) / % in 1990] x 100%.

* 2004 United States data are preliminary, see technical notes.

Results

Wisconsin, by race/ethnicity

Figure 3. Prevalence of smoking during pregnancy by race/ethnicity, Wisconsin, 1990-2004 by three-year averages

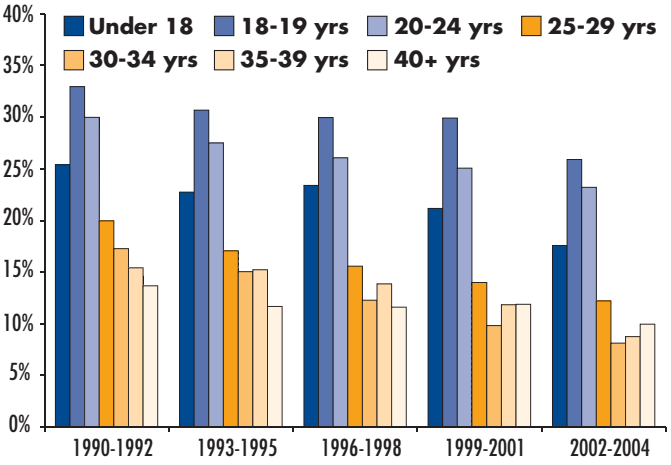


Trends in the prevalence of smoking during pregnancy for racial and ethnic groups in Wisconsin from 1990 to 2004 are illustrated in **Figure 3** using three-year averages. For all racial/ethnic groups other than Laotian/Hmong, the prevalence of smoking during pregnancy decreased during this time period. American Indian women had the highest prevalence of smoking during pregnancy throughout the study period – 48.0% in 1990-1992 and 36.6% in 2002-2004. Laotian/Hmong women consistently exhibited the lowest prevalence of smoking during pregnancy, although their rates have been steadily increasing from 0.4% in 1993-1995 to 3.4% in 2002-2004.

The relative percent decrease in the prevalence of smoking during pregnancy was greatest for Hispanic women – down 63% from 1990-1992 to 2002-2004 (15.7% to 5.6%). The relative percent decrease was smallest for American Indian women (down 28%). (Data for Figure 3 are located in Table 3 of the appendix.)

Wisconsin, by age of mother

Figure 4. Prevalence of smoking during pregnancy by age of mother, Wisconsin, 1990-2004 by three-year averages

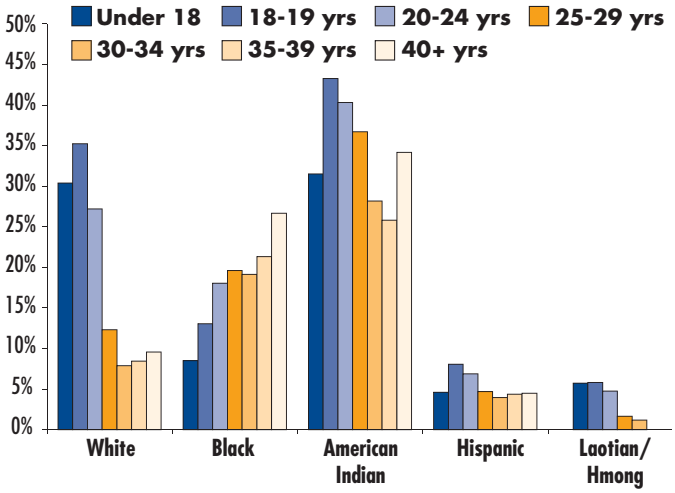


As displayed in **Figure 4**, age is an important predictor of maternal smoking. Women less than 25 years of age were most likely to smoke during pregnancy. After age 24, there was a considerable decrease in the prevalence of smoking during pregnancy. In 2002-2004, approximately 10% of women age 25 and older smoked during their pregnancies. At the same time, more than 20% of women between the ages of 18 and 24 smoked during their pregnancies. (Data for Figure 4 are located in Table 3 of the appendix.)

Results

Wisconsin, by race/ethnicity and age of mother

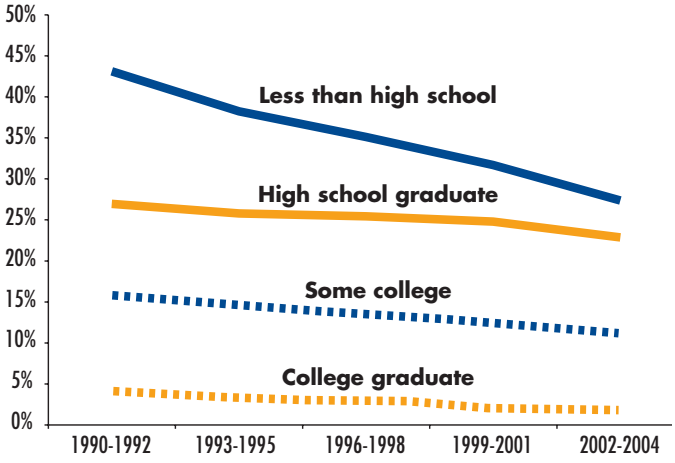
Figure 5. Prevalence of smoking during pregnancy by race/ethnicity and age, Wisconsin, 2002-2004



The age distribution of smoking during pregnancy differs by racial/ethnic group (**Figure 5**). Black women had a distinctive distribution of smoking by age; in general, older black women were more likely to smoke during pregnancy than each preceding younger group in 2002-2004. In contrast, white women were more likely to smoke during pregnancy before the age of 25. Compared to white women, American Indian and Hispanic women had a similar distribution of smoking by age, though not as pronounced. While Laotian/Hmong women had a low prevalence of smoking during pregnancy, young women were more likely to smoke than those over 25 years of age. (Data for Figure 5 are located in Table 4 of the appendix.)

Wisconsin, by education

Figure 6. Prevalence of smoking during pregnancy by educational attainment, Wisconsin, 1990-2004 by three-year averages

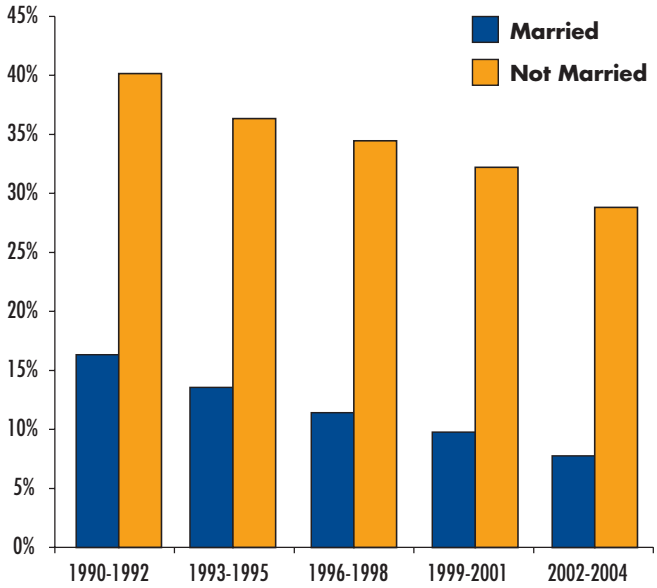


As seen in **Figure 6**, the prevalence of smoking during pregnancy decreased for every level of educational attainment between 1990 and 2004. Yet, educational disparities in smoking during pregnancy existed throughout the entire study period. Women with less than a high school degree and those who were high school graduates were roughly 10-15 times more likely to smoke during pregnancy compared to women with a college degree, for the years 2002-2004 (27.4%, 22.9%, and 1.9%, respectively). (Data for Figure 6 are located in Table 3 of the appendix.)

Results

Wisconsin, by marital status

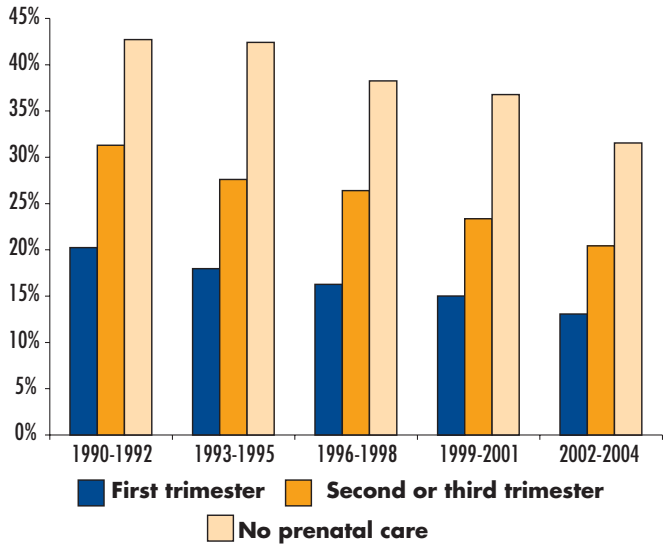
Figure 7. Prevalence of smoking during pregnancy by marital status, Wisconsin, 1990-2004 by three-year averages



The prevalence of smoking for married and unmarried pregnant women decreased between 1990 and 2004 as illustrated in **Figure 7**. However, smoking during pregnancy was more likely to be observed in women who were unmarried than in women who were married. In addition, the ratio of the prevalence of smoking during pregnancy for unmarried to married women increased over time. In 1990-1992, unmarried women were about two and one-half times more likely to smoke during pregnancy than married women (40.2% vs. 16.3%); by 2002-2004, they were nearly four times more likely to smoke (28.8% vs. 7.7%). (Data for Figure 7 are located in Table 3 of the appendix.)

Wisconsin, by prenatal care

Figure 8. Prevalence of smoking during pregnancy by trimester of prenatal care, Wisconsin, 1990-2004 by three-year averages



Smoking during pregnancy was less likely to be observed in women who received prenatal care in the first trimester than those who initiated care later in the pregnancy or not at all, as seen in **Figure 8**. Compared to women who received care in the first trimester, women who initiated care in the second or third trimester were one and one-half times more likely to smoke during pregnancy; women who received no care at all were more than twice as likely to smoke during their pregnancies. These relationships remained consistent throughout the 15-year study period. (Data for Figure 8 are located in Table 3 of the appendix.)

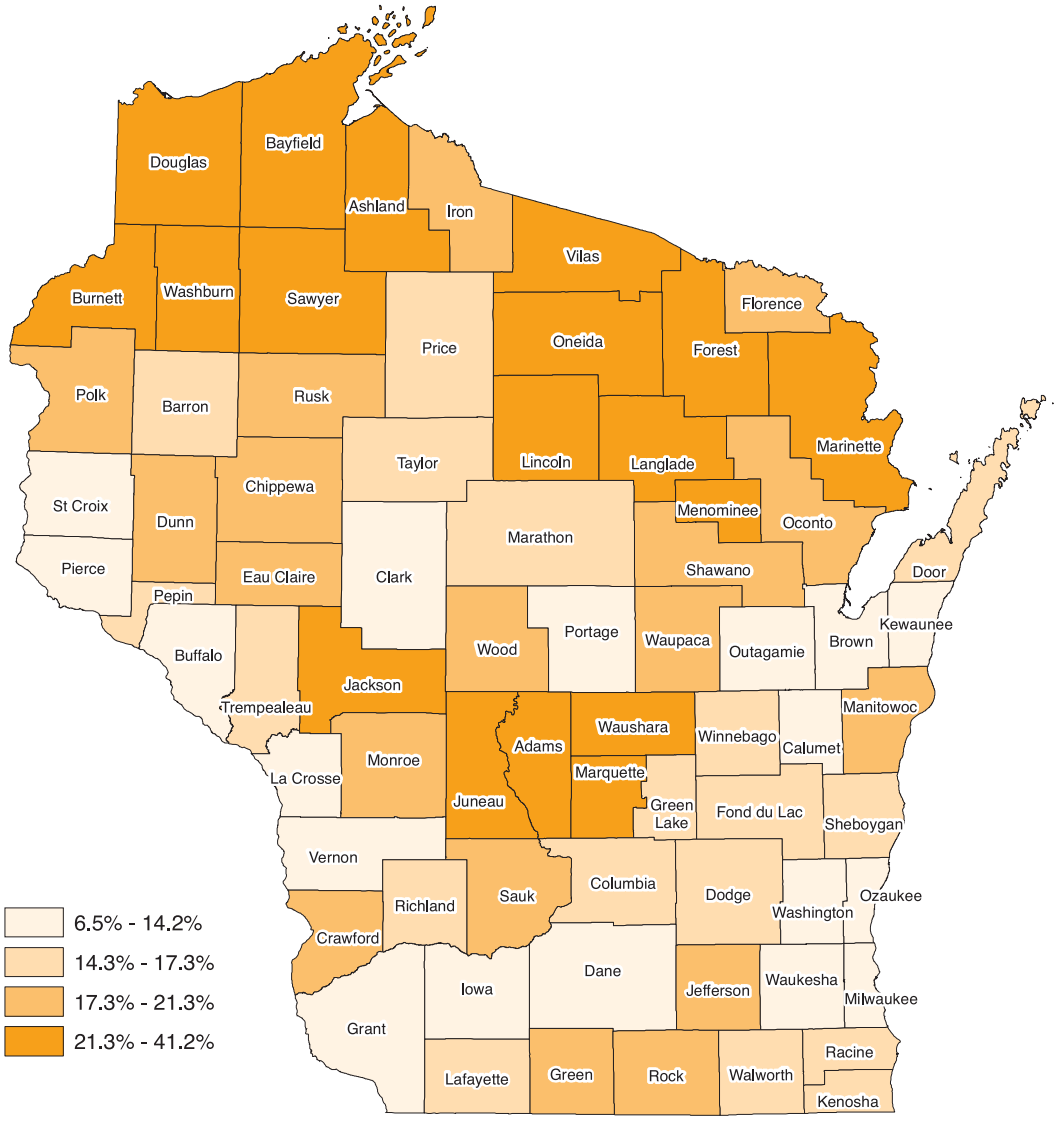
Results

Wisconsin Counties

The prevalence of smoking during pregnancy varied from county to county, as demonstrated in **Figure 9**. During the years 2002-2004, Ozaukee County had the lowest prevalence (6.5%) and Menominee County had the highest prevalence (41.2%). Wisconsin's overall prevalence of smoking during pregnancy for these years was 14.2%; however, three-fourths of counties had a prevalence of smoking during pregnancy that was higher than the statewide average. The median prevalence for Wisconsin's 72 counties was 17.3%, reflecting a slightly skewed distribution. This distribution is due to more populous counties in Wisconsin generally having a lower prevalence of smoking during pregnancy than less populous counties.

The relative percent change in the prevalence of smoking during pregnancy between 1990 and 2004 varied among counties. Nearly all counties experienced a decrease in smoking during pregnancy, with the greatest relative percent decrease observed in Waukesha County (53%). In Marquette County, the prevalence of smoking during pregnancy increased 2% by 2002-2004, relative to the prevalence in 1990-1992. Data for all Wisconsin counties are located in Table 5 of the appendix.

Figure 9. Prevalence of smoking during pregnancy by county, Wisconsin, 2002-2004



Discussion

The prevalence of smoking during pregnancy decreased in both Wisconsin and the United States between 1990 and 2004. Maternal smoking in Wisconsin decreased from 22.9% in 1990 to 14.0% in 2004. During the same time period, the national average decreased from 18.4% to 10.2%*. This overall decline in smoking during pregnancy indicates that efforts focused on the reduction of smoking among pregnant women, and in the general population, are having an impact. However, despite clear evidence on the risks that smoking presents to both a woman and her unborn child, over 9,800 women in Wisconsin still smoked during pregnancy in 2004. Moreover, the prevalence of smoking during pregnancy is not equally distributed within Wisconsin's population.

This report indicates that unmarried women, women without a college education, and American Indian women smoke at rates that are notably higher than the average rate of smoking during pregnancy among Wisconsin women. In addition, differences in the prevalence of smoking during pregnancy between Wisconsin and the United States varied by race/ethnicity. While the prevalence of smoking during pregnancy for white women in Wisconsin was similar to that observed in the United States overall, the prevalences for black, Hispanic, and American Indian women in Wisconsin were double the prevalence for each respective minority group in the United States.

The prevalence of smoking during pregnancy also varied by the age of the woman. In general, younger women (those under age 25) were more likely to smoke during pregnancy than their older peers. However, this pattern was not consistent across all racial/ethnic groups. Specifically, among black women, each successively older cohort was more likely to smoke during pregnancy compared to their younger counterparts. Other studies have shown that, among black women in general, the likelihood of smoking is greater among successively older age groups due to later initiation of smoking and decreased cessation.[6] These age-related patterns should be taken into account when designing programs to reduce the incidence of smoking during pregnancy among various racial/ethnic groups.

Maternal smoking in Wisconsin decreased from 22.9% in 1990 to 14.0% in 2004.

…unmarried women, women without a college education, and American Indian women smoke at rates that are notably higher than the average rate of smoking during pregnancy among Wisconsin women.

In general, younger women were more likely to smoke during pregnancy than their older peers.

Marital status and prenatal care also provide important indicators of smoking during pregnancy, especially for physicians. Although this report presents no evidence signifying either factor as a cause of smoking during pregnancy, both can be used to identify women who may be in greater need of smoking cessation advice and assistance – specifically, pregnant women that are not married, and those initiating prenatal care during the later stages of their pregnancy.

Considerable progress has been made in reducing the prevalence of smoking among pregnant women in Wisconsin and in the United States overall. However, to meet the goal of *Healthy People 2010*, to increase abstinence from cigarettes among pregnant women to 99%, and the goal of *Healthiest Wisconsin 2010*, to eliminate health disparities, further work needs to be done in this area. Achieving these goals in Wisconsin will take a concerted, sustained effort from public health agencies, healthcare personnel, and other groups working with pregnant women.

* 2004 United States data are preliminary, see technical notes.

Limitations

It is important to keep in mind that the relationships presented in this report should not be considered causal. The evidence displayed here does not suggest that any specific demographic or behavioral characteristic causes a woman to smoke during pregnancy.

There are several limitations associated with birth certificate data. The data on smoking are self-reported, which means that women may underreport tobacco use during pregnancy. While the wording on the birth certificate has remained the same over the years, it is not necessarily asked in the same manner by each health professional at each hospital. In some instances the questions may be asked in a way that make women less forthcoming about tobacco use.

Strategies to Reduce the Prevalence of Smoking during Pregnancy

Women have increased contact with the healthcare community during pregnancy, providing important opportunities for practitioners to engage women in programs to help them quit smoking cigarettes at this crucial time. Wisconsin is taking advantage of this fact with the First Breath program.[7] First Breath works with prenatal care providers by educating them, and providing them the training and technical assistance necessary to help pregnant women quit smoking.

In general, women under age 25 are more likely to smoke during pregnancy than older women. Programs targeting youth smoking are a recommended component of a comprehensive tobacco control program and can serve to reduce the prevalence of smoking during pregnancy among teens and young adults.[8]

Tobacco taxes have been shown to be an effective means of reducing the prevalence of smoking in the overall population.[8] In addition, two studies demonstrated that this strategy is also effective in decreasing smoking among pregnant women.[9,10]

…Wisconsin should continue to support programs that encourage health professionals to talk with pregnant women about smoking and cessation.

Programs targeting youth smoking are a recommended component of a comprehensive tobacco control program…

…emphasis should be placed on programs that target the racial, ethnic and socioeconomic disparities in tobacco use.

To reduce the prevalence of smoking during pregnancy, Wisconsin should continue to support programs that encourage health professionals to talk with pregnant women about smoking and cessation. Regarding youth smoking, continued efforts focused on the prevention of initiation, and early intervention for those youth already smoking, are crucial. In addition, emphasis should be placed on programs that target the racial, ethnic and socioeconomic disparities in tobacco use.

Technical Notes

All Wisconsin data in this report are from the Wisconsin Interactive Statistics on Health (WISH) Web site, http://dhfs.wisconsin.gov/wish/. The information in the WISH birth-related modules is from Wisconsin resident birth certificate data. The Infant Mortality module is based on both birth data and death certificate data. Data were primarily analyzed in five three-year time periods (1990-1992, 1993-1995, 1996-1998, 1999-2001, and 2002-2004).

Maternal tobacco use is based on the mother's report of smoking during pregnancy. Information on smoking during pregnancy is recorded on the birth certificate by the attending physician, nurse, or other health professional at the time of delivery. This information can be obtained from the woman during prenatal care visits or at the time of delivery. Amount or duration of tobacco use during pregnancy were not assessed.

National birth data for the years 1990 to 2003 were gathered from *Health, United States, 2005.*[11] Table 12 of that report provides the annual prevalence of smoking during pregnancy for all states that included the standard question about smoking during pregnancy. In 2003, reporting states comprised 81% of the total births in the United States. For more information, please see the report at: http://www.cdc.gov/nchs/data/hus/hus05.pdf#summary. Preliminary birth data for 2004 can be found in a recently published report[12]. The data lack some comparability with earlier years due to its inclusion of only 40 states. Nine states were excluded due to revisions in their questions about smoking during pregnancy during 2004.

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, Maryland: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General; 2004.
3. Wisconsin Department of Health and Family Services. Wisconsin Interactive Statistics on Health (WISH). Available at: http://dhfs.wisconsin.gov/wish/. Accessed May 16, 2006.
4. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health.* Washington, DC: U.S. Government Printing Office; 2000.
5. Wisconsin Department of Health and Family Services. *Healthiest Wisconsin 2010: A Partnership Plan to Improve the Health of the Public;* 2002.
6. Moon-Howard J. African American women and smoking: starting later. *Am J Public Health*. 2003;93:418-420.
7. Wisconsin Women's Health Foundation. First Breath. Available at: http://www.wwhf.org/fb_web/aboutfb/fb_home.html. Accessed April 30, 2006.
8. Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs—August 1999*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 1999.
9. Ringel JS, Evans WN. Cigarette taxes and smoking during pregnancy. *Am J Public Health*. 2001;91:1851-1856.
10. Evans WN, Ringel JS. Can higher cigarette taxes improve birth outcomes? *Journal of Public Economics*. 1999;72:135-154.
11. National Center for Health Statistics. *Health, United States, 2005 with Chartbook on Trends in the Health of Americans.* Hyattsville, Maryland: 2005.
12. Hamilton BE, Ventura SJ, Martin JA, Sutton PD. Preliminary births for 2004. *Health E-stats*. Hyattsville, Maryland: National Center for Health Statistics; Released October 28, 2005.

Appendix of Data Tables

Appendix of Data Tables

Table 1. Trends in the prevalence of smoking during pregnancy, Wisconsin and the United States, 1990-2004

	Wisconsin	United States
1990	22.9%	18.4%
1991	22.5%	17.8%
1992	21.6%	16.9%
1993	20.7%	15.8%
1994	19.6%	14.6%
1995	18.9%	13.9%
1996	18.2%	13.6%
1997	17.9%	13.2%
1998	17.8%	12.9%
1999	17.1%	12.6%
2000	16.5%	12.2%
2001	15.8%	12.0%
2002	14.8%	11.4%
2003	14.0%	10.7%
2004	14.0%	10.2%*
Relative % decrease	**39%**	**42%**

Table 2. Prevalence of smoking during pregnancy by race and ethnicity and the rate ratio, Wisconsin and the United States, 1990, 1995, and 2000-2003

	Wisconsin	United States	Ratio of Rates Wisconsin : US
White			
1990	22.5%	21.0%	**1.1**
1995	18.9%	17.1%	**1.1**
2000	17.1%	15.6%	**1.1**
2001	16.5%	15.5%	**1.1**
2002	15.4%	15.0%	**1.0**
2003	14.5%	14.3%	**1.0**
Black			
1990	29.6%	15.9%	**1.9**
1995	24.1%	10.6%	**2.3**
2000	19.6%	9.2%	**2.1**
2001	19.1%	9.1%	**2.1**
2002	18.0%	8.8%	**2.0**
2003	16.8%	8.3%	**2.0**
American Indian			
1990	46.5%	22.4%	**2.1**
1995	47.1%	20.9%	**2.3**
2000	39.5%	20.0%	**2.0**
2001	37.7%	19.9%	**1.9**
2002	37.4%	19.7%	**1.9**
2003	36.7%	18.1%	**2.0**
Hispanic			
1990	15.2%	6.7%	**2.3**
1995	10.2%	4.3%	**2.4**
2000	6.7%	3.5%	**1.9**
2001	5.7%	3.2%	**1.8**
2002	5.6%	3.0%	**1.9**
2003	5.6%	2.7%	**2.1**

Note: The rates of smoking during pregnancy for Laotian/Hmongs were not reported at the national level.

Table 3. **Prevalence of smoking during pregnancy by selected maternal characteristics, Wisconsin, 1990-2004 by three-year averages**

	1990-1992		1993-1995		1996-1998		1999-2001		2002-2004		Relative change (%) 1990-1992 to 2002-2004
	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence	
Wisconsin	**215,337**	**22.3%**	**205,520**	**19.7%**	**201,019**	**18.0%**	**206,482**	**16.5%**	**208,640**	**14.2%**	
Race/ethnicity											
White	180,306	22.0%	169,619	19.7%	163,752	18.1%	164,163	16.9%	162,846	14.9%	**-32%**
Black	21,505	28.7%	20,421	25.1%	19,226	22.6%	19,348	20.1%	19,244	17.1%	**-41%**
American Indian	2,501	48.0%	2,422	46.9%	2,463	42.1%	2,710	39.0%	2,989	36.6%	**-23%**
Hispanic	5,934	15.7%	7,427	11.7%	9,977	9.8%	13,665	6.9%	16,711	5.6%	**-63%**
Laotian/Hmong	3,518	NA	3,647	0.4%	3,126	0.7%	3,133	2.3%	3,032	3.4%	**NA**
Age											
Under 18	7,658	25.4%	8,045	22.7%	7,833	23.4%	7,119	21.1%	5,808	17.6%	**-31%**
18-19 yrs	14,375	32.9%	13,334	30.7%	13,408	30.0%	14,115	29.9%	13,130	25.9%	**-21%**
20-24 yrs	51,481	30.0%	46,261	27.5%	42,949	26.0%	46,543	25.1%	48,003	23.2%	**-23%**
25-29 yrs	71,832	19.9%	63,489	17.0%	60,234	15.6%	58,486	14.0%	60,132	12.2%	**-39%**
30-34 yrs	50,855	17.2%	52,431	15.0%	51,598	12.2%	52,844	9.8%	52,923	8.1%	**-53%**
35-39 yrs	16,630	15.4%	18,928	15.2%	21,332	13.8%	22,940	11.8%	23,779	8.7%	**-43%**
40+ yrs	2,490	13.7%	3,013	11.6%	3,655	11.6%	4,419	11.9%	4,827	9.9%	**-27%**
Education											
< High school	34,991	43.1%	32,704	38.2%	31,135	35.1%	32,674	31.7%	32,343	27.4%	**-37%**
High school grad.	87,245	26.9%	73,652	25.8%	66,401	25.4%	64,691	24.8%	61,267	22.9%	**-15%**
Some college	48,925	15.7%	50,286	14.8%	49,344	13.5%	49,755	12.5%	49,930	11.1%	**-29%**
College grad.	42,400	4.2%	47,217	3.4%	52,961	3.0%	58,334	2.3%	64,000	1.9%	**-55%**
Marital status											
Married	161,049	16.3%	149,686	13.6%	144,000	11.4%	144,927	9.8%	144,254	7.7%	**-53%**
Not Married	54,285	40.2%	55,821	36.3%	57,013	34.5%	61,553	32.2%	64,356	28.8%	**-28%**
Trimester prenatal care initiated											
1st trimester	175,784	20.2%	170,123	18.0%	169,090	16.3%	173,079	15.0%	176,648	13.1%	**-36%**
2nd or 3rd trimester	37,590	31.3%	33,279	27.6%	29,948	26.4%	31,281	23.4%	30,055	20.4%	**-35%**
No prenatal care	1,679	42.7%	1,755	42.4%	1,648	38.2%	1,616	36.8%	1,468	31.5%	**-26%**

NA = Not Available (due to sample size)

Table 4. **Prevalence of smoking during pregnancy by race/ethnicity and age, Wisconsin, 2002-2004**

	White		Black		American Indian		Hispanic		Laotian/Hmong	
	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence	# of live births	Smoking Prevalence
Under 18 yrs	2,405	30.4%	1,876	8.5%	197	31.5%	1,004	4.6%	263	5.7%
18-19 yrs	7,677	35.2%	2,787	13.0%	370	43.2%	1,744	8.0%	414	5.8%
20-24 yrs	33,074	27.2%	6,946	18.0%	1,077	40.3%	5,352	6.9%	997	4.7%
25-29 yrs	48,998	12.3%	4,078	19.6%	690	36.7%	4,580	4.7%	613	1.6%
30-34 yrs	45,824	7.8%	2,288	19.1%	423	28.1%	2,722	3.9%	433	1.2%
35-39 yrs	20,723	8.4%	1,038	21.3%	190	25.8%	1,085	4.3%	--	--
40+ yrs	4,135	9.5%	229	26.6%	41	34.1%	224	4.5%	--	--

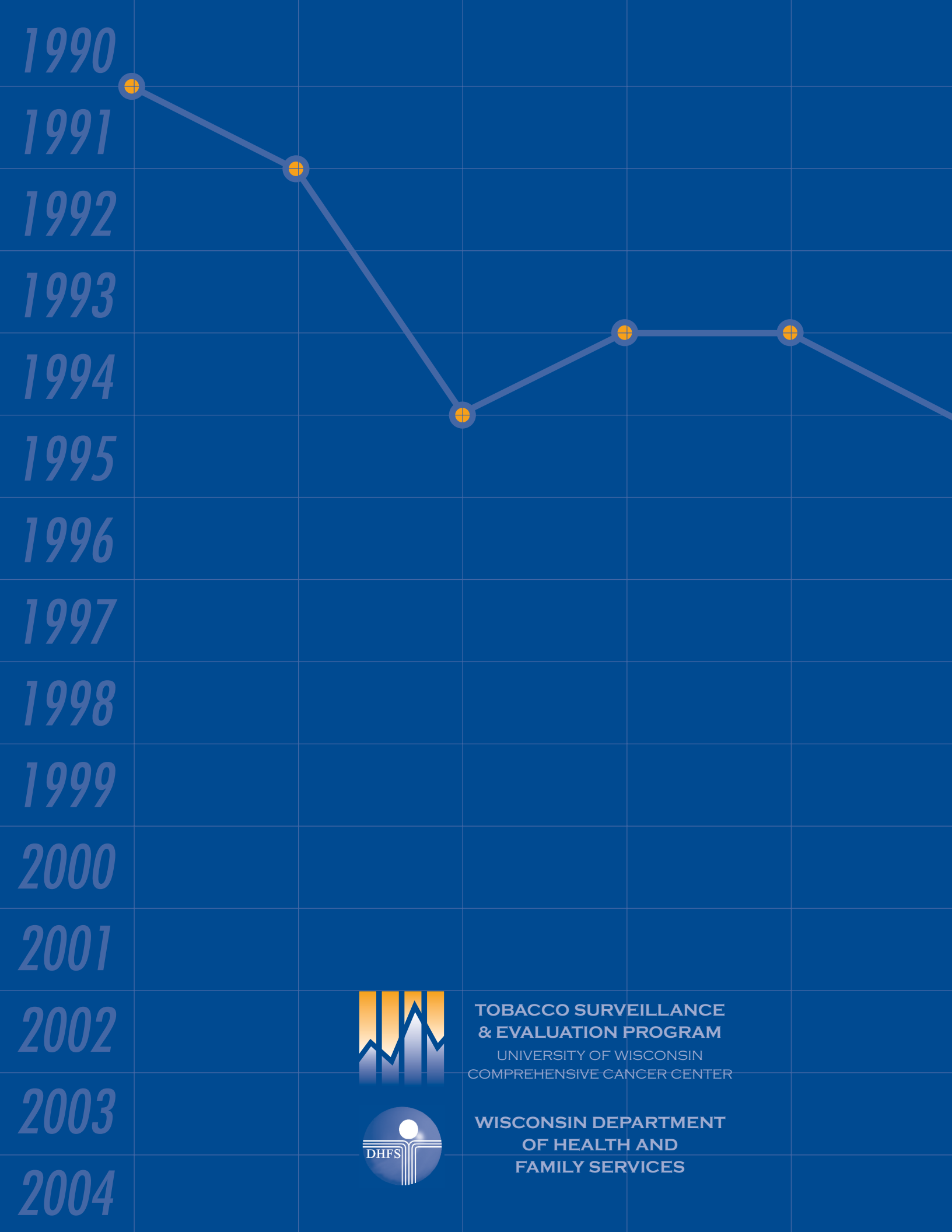
Table 5. **Prevalence of smoking during pregnancy, 2002-2004, and relative percent change, 1990-1992 to 2002-2004 and ranks, Wisconsin, by county**

	2002-2004			Relative percent change 1990-1992 to 2002-2004	
	Total live births	Smoking Prevalence	Rank	% change	Rank
Adams	483	31.9%	70	-12%	57
Ashland	603	31.5%	69	-3%	70
Barron	1,581	17.0%	33	-32%	21
Bayfield	402	23.1%	58	-28%	28
Brown	9,857	14.2%	18	-37%	14
Buffalo	465	13.3%	12	-20%	42
Burnett	454	31.3%	68	-6%	67
Calumet	1,907	9.3%	4	-45%	5
Chippewa	2,095	21.2%	53	-16%	50
Clark	1,622	13.4%	13	-34%	17
Columbia	1,905	16.9%	32	-30%	25
Crawford	586	19.1%	44	-17%	48
Dane	17,281	9.0%	3	-45%	6
Dodge	2,893	17.1%	34	-22%	39
Door	723	17.3%	36	-12%	56
Douglas	1,461	23.5%	59	-8%	64
Dunn	1,387	17.3%	37	-12%	55
Eau Claire	3,313	17.7%	38	-15%	52
Florence	106	18.9%	43	-44%	8
Fond du Lac	3,458	16.9%	31	-23%	38
Forest	330	32.1%	71	-9%	61
Grant	1,722	13.4%	14	-44%	9
Green	1,178	18.1%	40	-7%	65
Green Lake	682	16.9%	29	-18%	46
Iowa	921	13.7%	16	-32%	22
Iron	137	21.2%	52	-37%	13
Jackson	701	25.2%	63	-12%	58

Table 5. ***(Continued from facing page)***

Jefferson	2,960	18.1%	41	-27%	29
Juneau	876	30.7%	67	0%	71
Kenosha	6,376	14.5%	21	-49%	3
Kewaunee	725	13.1%	11	-17%	47
La Crosse	3,759	14.0%	17	-32%	24
Lafayette	590	14.4%	20	-17%	49
Langlade	666	28.1%	64	-6%	68
Lincoln	933	24.8%	62	-5%	69
Manitowoc	2,602	20.6%	50	-9%	62
Marathon	4,580	14.5%	22	-14%	54
Marinette	1,276	22.2%	56	-18%	44
Marquette	471	29.1%	65	2%	72
Menominee	277	41.2%	72	-9%	63
Milwaukee	43,760	11.7%	7	-52%	2
Monroe	1,770	19.7%	45	-29%	26
Oconto	1,175	21.3%	54	-20%	41
Oneida	961	22.3%	57	-15%	53
Outagamie	6,886	12.7%	10	-18%	45
Ozaukee	2,682	6.5%	1	-48%	4
Pepin	254	15.7%	24	-23%	34
Pierce	1,358	11.8%	8	-38%	12
Polk	1,420	20.8%	51	-26%	30
Portage	2,188	13.5%	15	-23%	35
Price	397	16.9%	30	-33%	20
Racine	7,578	14.3%	19	-45%	7
Richland	643	16.8%	28	-15%	51
Rock	6,023	18.6%	42	-35%	15
Rusk	480	20.4%	49	-18%	43
St. Croix	3,154	10.6%	5	-39%	10
Sauk	2,216	19.9%	46	-23%	37
Sawyer	512	30.3%	66	-26%	31
Shawano	1,416	19.9%	47	-9%	60
Sheboygan	4,138	15.9%	25	-24%	32
Taylor	712	17.3%	35	-10%	59
Trempeleau	981	16.4%	27	-33%	19
Vernon	1,222	12.3%	9	-34%	16
Vilas	563	24.5%	61	-34%	18
Walworth	3,468	15.6%	23	-32%	23
Washburn	510	24.1%	60	-7%	66
Washington	4,435	11.0%	6	-39%	11
Waukesha	12,941	7.1%	2	-53%	1
Waupaca	1,750	20.3%	48	-24%	33
Waushara	746	21.3%	55	-23%	36
Winnebago	5,429	16.0%	26	-28%	27
Wood	2,528	17.8%	39	-22%	40

Notes



TOBACCO SURVEILLANCE
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