



# HSC Statistical Brief

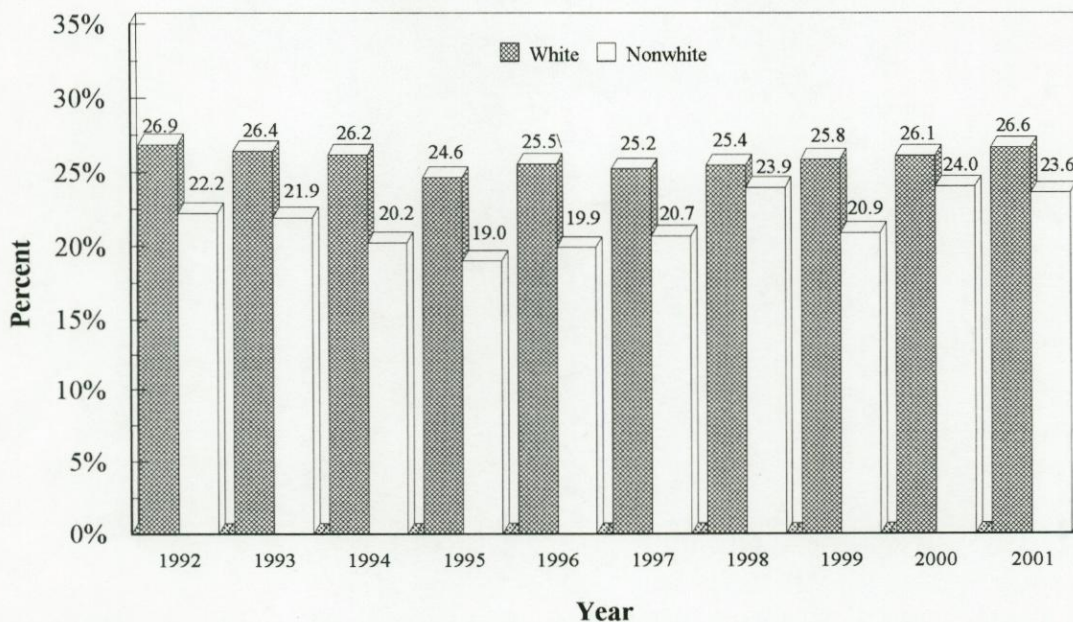


## Smoking: Effects on Mothers and Babies in West Virginia Brief No. 4 Update

Smoking by women during pregnancy is widely recognized to increase the risks of several adverse health outcomes (1). In fact, the following warning appears on some tobacco products: "SURGEON GENERAL'S WARNING: Smoking by pregnant women may result in fetal injury, premature birth, or low birth weight."

**BIRTH CERTIFICATE DATA.** Beginning with 1989, the Health Statistics Center of the West Virginia Bureau for Public Health has tracked rates of mothers who smoked during pregnancy. These data have been derived from the West Virginia certificate of live birth, which includes a question regarding the mother's smoking habits during pregnancy. The data have been tabulated for the 10-year period 1992-2001, with tobacco use being related to other items on the birth certificate.

Figure 1  
**Percent of Mothers Who Smoked During Pregnancy By Race  
West Virginia Resident Births, 1992-2001**

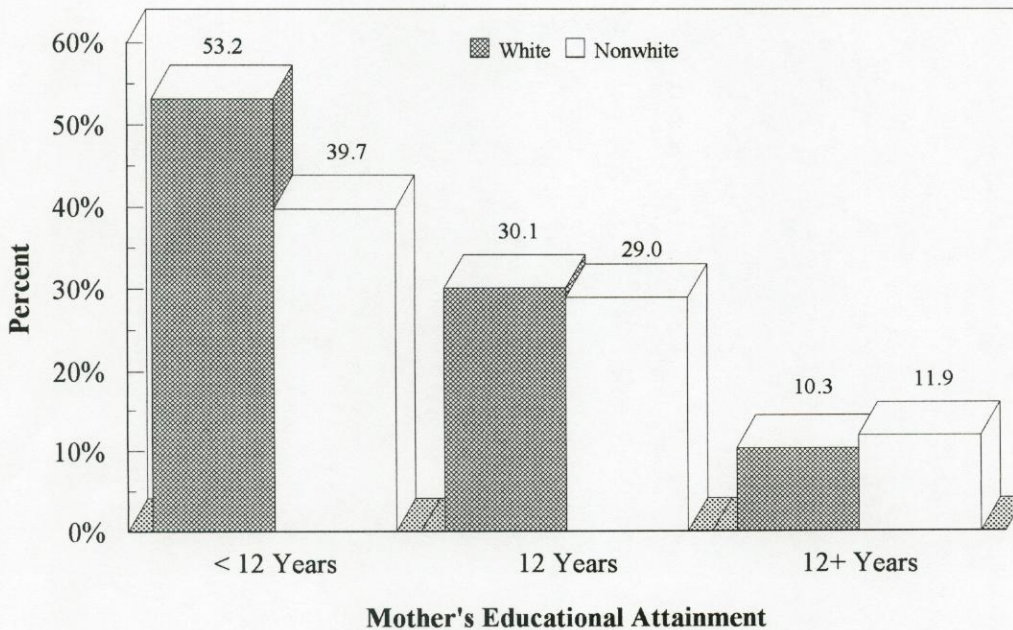


While smoking rates among the general U.S. population has gradually declined during the period, the figure among women giving birth in West Virginia, after a modest decline in the mid 1990's, has increased to a similar rate by 2001. Among white women who had babies during this ten-year period, 26.9% smoked in 1992, while 26.6% smoked in 2001. Nonwhite mothers showed an increase from 22.2% in 1992 to 23.6% by 2001. It should be pointed out, however, that these are self-reported data, causing the rates to be somewhat lower.

Smoking rates among mothers as reported on the birth certificate are less than those reported by the Behavioral Risk Factor Surveillance System (a monthly telephone survey conducted by the West Virginia Bureau for Public Health) for all women of ages 15-44 in West Virginia. These data show that, in 2001, approximately 38% of all women of childbearing age were smokers in the state. For 1998 in the U.S. as a whole, the Centers for Disease Control and Prevention reported that approximately 26% of all women of childbearing age smoked.

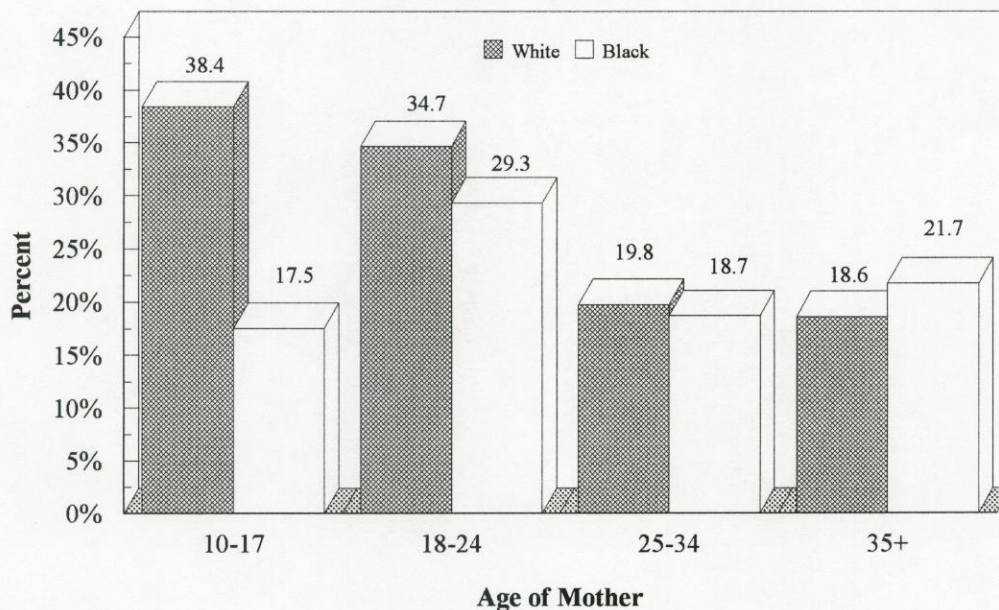
Smoking is most common among less educated mothers of all races. The highest smoking rates were among mothers with fewer than 12 years of schooling -- 53.2% of white mothers and 39.7% of nonwhite mothers smoked in 2001. The lowest smoking rates for all races were among women with one or more years of college. White mothers with less than a high school education were almost twice as likely to smoke as were high school graduates (53.2% compared to 30.1%) and were more than five times as likely to smoke than those with some college. Nonwhite mothers with less than a high school education were more than twice as likely to smoke as those with some college. Interestingly, although nonwhites reported a lower rate of smoking than whites in the two lesser education categories, those with some college reported a higher rate of smoking than their white counterparts.

Figure 2  
**Percent of Mothers Who Smoked During Pregnancy By Education  
 West Virginia Resident Births, 2001**



White mothers aged 10-17 and 18-24 were more likely to report smoking than other adolescent and early adult mothers. There was a general pattern of decline of smoking with age among white mothers, but there was an increase in smoking reported by nonwhite mothers in later adulthood (aged 35+).

Figure 3  
**Percent of Mothers Who Smoked During Pregnancy By Age**  
**West Virginia Resident Births, 2001**



Babies born with low birth weights require more medical care, have more health problems, and are more likely to die in infancy than are babies of normal or higher birth weights (2). White mothers who smoke during pregnancy are nearly twice as likely to have a low birth weight baby, and nonwhite mothers are almost 60% more likely than are mothers who do not smoke. Reducing the percentage of babies born at low birth weights has been a relatively intractable public health problem. In West Virginia, little progress has been made in reducing the percentage of low birth weight babies.

Babies of mothers who smoke weigh less on average than those born to mothers who do not smoke (3). In addition to low birth weight, smoking has also been linked to premature birth. White mothers who are smokers are 13% more likely to have a premature birth than are nonsmoking white mothers. Nonwhite mothers who smoke are over 7% more likely to have a premature birth than are nonsmokers. Premature babies, like low weight babies, have more health problems than full-term babies (4).

Mothers who smoke also tend to begin prenatal care later than nonsmoking mothers. Among white smoking mothers, only 75.2% received prenatal care in the first trimester, compared with 85.7% for nonsmokers. On average, nonwhite mothers begin prenatal care later than whites.

Figure 4  
**Percent of Low Birthweight by Mother's Smoking Status**  
**West Virginia Resident Births, 1999-2001**

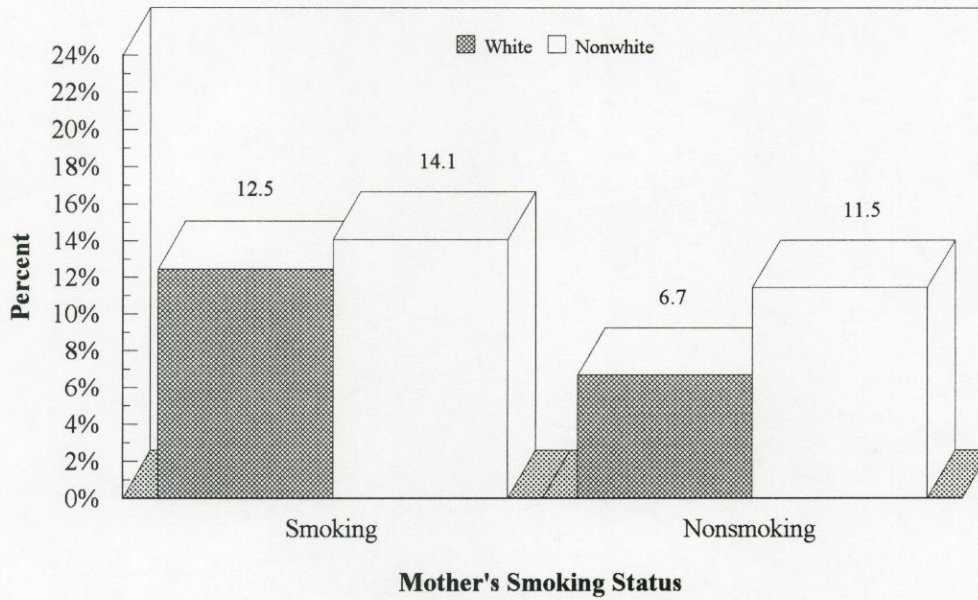


Figure 5  
**Percent of Premature Births\* by Mother's Smoking Status**  
**West Virginia Resident Births, 1998-2001**

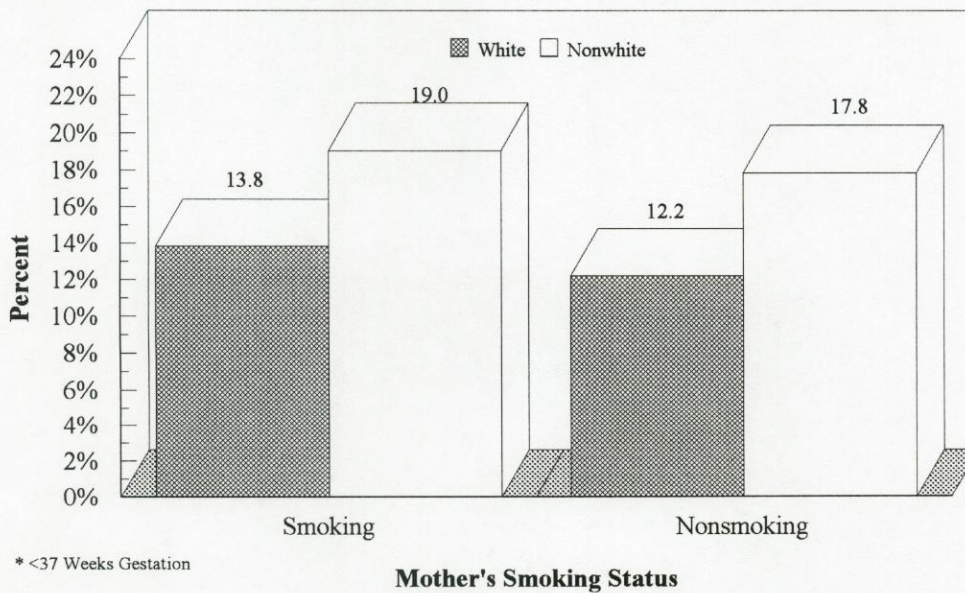
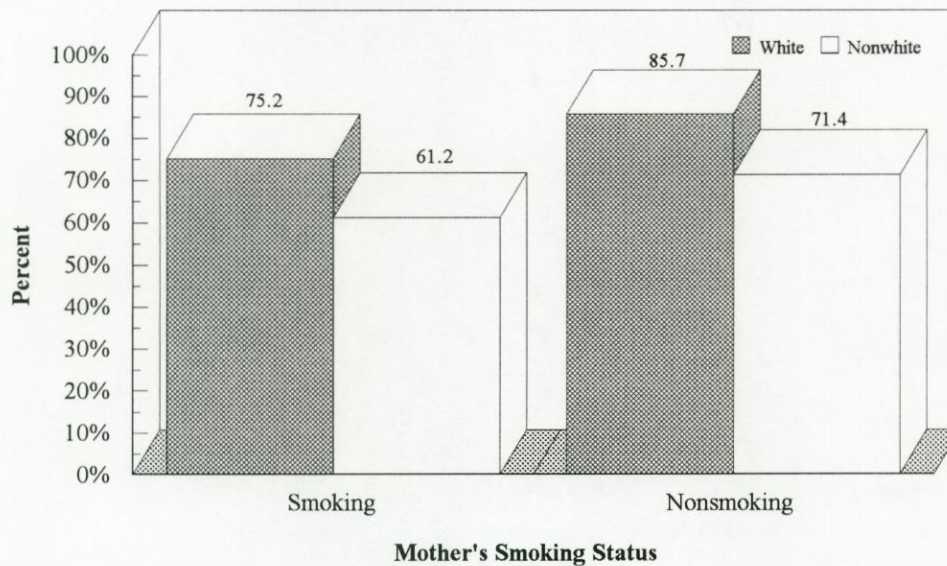
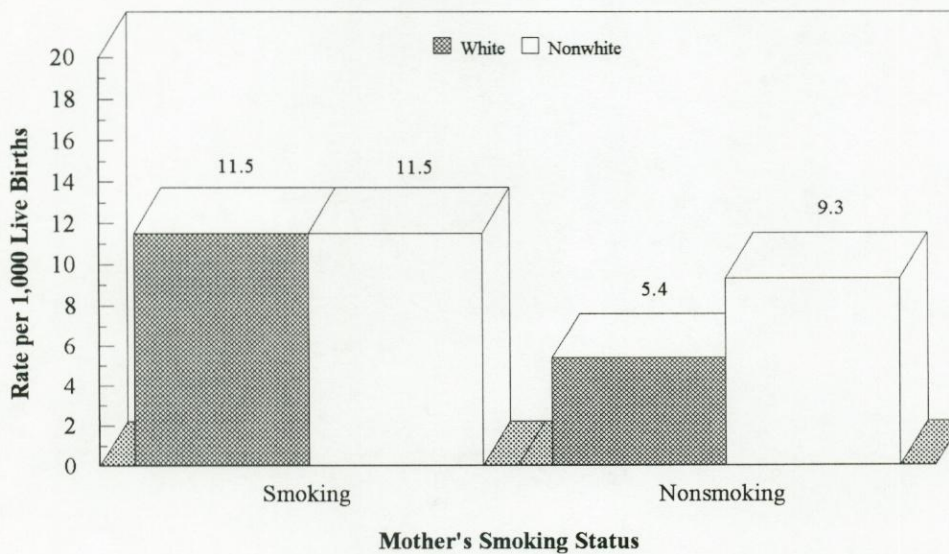


Figure 6  
**Percent of First Trimester Care by Mother's Smoking Status**  
**West Virginia Resident Births, 1998-2001**



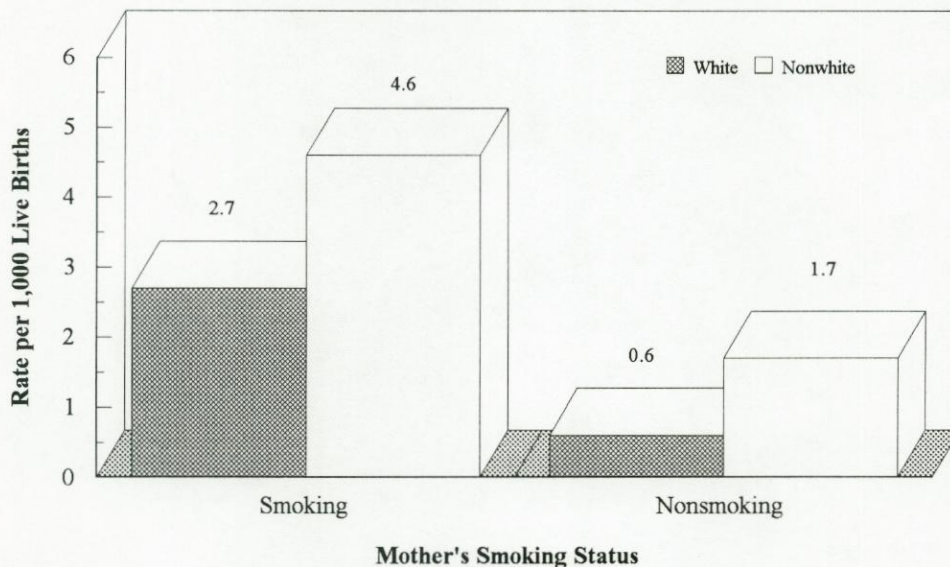
**MATCHED BIRTH AND DEATH CERTIFICATE DATA.** Infants of mothers who smoke are more likely to die in the first year of life. The infant mortality rate for babies of white mothers who smoke is 11.5 per 1,000 live births, 111% higher than the 5.4 rate for nonsmoking white mothers. For black and other races, the infant mortality rate for infants of mothers who smoke is 11.5 compared with 9.3 for those born to mothers who do not smoke, a 23% difference in rates.

Figure 7  
**Infant Mortality Rate by Mother's Smoking Status**  
**West Virginia Resident Births, 1999-2001**



Tobacco smoke may be a significant contributor to SIDS, or sudden infant death syndrome. Infants of white mothers who smoke are more than four times more likely to die of SIDS than are babies of white mothers who do not smoke. Since many of these infants die during the postneonatal period, this implies that either smoking has latent effects or that the mother's continued smoking can affect the baby's health (5).

Figure 8  
**SIDS Mortality Rate by Mother's Smoking Status**  
**West Virginia Resident Births, 1992-2001**



Cigarette smoking contributes to serious respiratory problems in infants. In addition, any environmental tobacco smoke in the home, car, restaurant, day care setting, or in the general environment may seriously damage the infant's developing respiratory system. Cigarette smoking mothers are more likely to be teenagers if they are white, to be over 30 if they are nonwhite, to be less educated, and to begin prenatal care later in pregnancy. Babies of smokers are more likely to be premature, to be low birth weight, to die in infancy, and to experience respiratory problems.

**PRAMS DATA.** In February 1993, PRAMS, the Pregnancy Risk Assessment Monitoring System, started collecting data for research in defining and exploring risk factors in infant mortality and low birth weight. Sample data are collected by sending questionnaires to randomly selected mothers of babies born within the past six months. In surveying mothers, a special attempt is made to reach high-risk mothers.

A substantial proportion of women still smoke during the last three months of their pregnancy. This proportion of last trimester smoking prevalence in West Virginia is 23.9%, which ranked as the highest in the nation in 1997. Many women who stop smoking during pregnancy resume smoking following delivery. For the same year, the prevalence of smoking at two to six months after pregnancy was again the highest in the nation at 29.3%.



**SMOKING CESSATION AND HEALTH CARE FUNDING.** In attempting to resolve the dilemma of perinatal maternal smoking in West Virginia, a consideration of the numbers of health insurance covered individuals compared to those not covered should be made. This has significance when looking at programs for quitting smoking in the state. A tobacco cessation telephone “quitline” is a free service available to all Public Employee Insurance Agency (PEIA) insured West Virginians, as well as all Medicaid recipients. This program makes health professionals available with confidential assistance in smoking cessation. This can involve individual phone coaching, mailed information and materials, nicotine replacement therapy and other pharmacological aids to cessation, or a combination of options.

The numbers relating to health insurance coverage indicate that there are 199,530 publicly covered PEIA recipients plus 29,999 with dual PEIA/Medicare coverage for a total of 229,529 covered individuals. This compares with a Medicaid-eligible population of 251,297 plus 11,251 with dual Medicaid/Medicare eligibility for a total of 262,548 (6).

**CONCLUSION.** It is the intent of this paper to relate the importance of eliminating adverse tobacco use behaviors in order to increase the well-being of the mother, fetus, and newborn infant. It is beyond the scope of this brief to recommend strategies to accomplish this, although it must be recognized that only through specific interventions will the numbers of mothers and babies at risk for smoking-related disease and disability be reduced. Efforts toward this end are addressed in the Healthy People 2010 Objectives for West Virginia, including reduction of the prevalence of smoking among young women aged 18-24 to 25% or less, reduction of the prevalence of smoking among pregnant women to 12% or less, and an increase in smoking cessation early in pregnancy to 60% or more.



## REFERENCES

1. Lambers DS, Clark KE. The maternal and fetal physiologic effects of nicotine. *Semin Perinatol* 1996; 20:115-26
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# APPENDIX

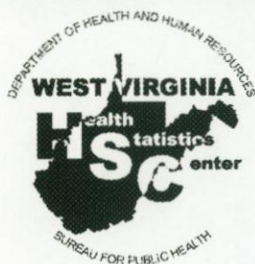


**Mothers Who Did Smoke During Pregnancy  
West Virginia Resident Births, 2001**

Factor	White		Black		Other		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Smoking Mothers	5,213	26.6	193	27.7	8	5.2	5,414	26.5
Birthweight								
Low Birth Weight	694	13.3	26	13.5	1	12.5	721	13.3
Very Low Birthweight	116	2.2	8	4.1	0	0.0	124	2.3
Maternal Age								
Mothers < 20 Years	1,002	19.2	33	17.1	0	0.0	1,035	19.1
Mothers >= 20 Years	4,167	79.9	160	82.9	7	87.5	4,334	80.1
Mothers With Known Prenatal Care								
First Trimester Care	3,963	79.9	134	75.3	5	62.5	4,102	79.7
Second Trimester Care	825	16.6	36	20.2	3	37.5	864	16.8
Third Trimester Care	126	2.5	5	2.8	0	0.0	131	2.5
No Prenatal Care	47	0.9	3	1.7	0	0.0	50	1.0
Gestational Age								
> 37 Weeks	4,310	82.7	141	73.1	7	87.5	4,458	82.3
38+ Weeks	642	12.3	29	15.0	1	12.5	672	12.4
Unknown	8	0.2	1	0.5	0	0.0	9	0.2
Education of Mother								
< 12 Years	1,968	37.8	58	30.1	2	25.0	2,028	37.5
12 Years	2,383	45.7	94	48.7	3	37.5	2,480	45.8
> 12 Years	804	15.4	40	20.7	3	37.5	847	15.6

**Mothers Who Did Not Smoke During Pregnancy  
West Virginia Resident Births, 2001**

Factor	White		Black		Other		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Nonsmoking Mothers	14,182	72.4	501	71.8	146	94.2	14,829	72.6
Birthweight								
Low Birth Weight	1,003	7.1	55	11.0	11	7.5	1,069	7.2
Very Low Birthweight	193	1.4	12	2.4	1	0.7	206	1.4
Maternal Age								
Mothers < 20 Years	1,489	10.5	109	21.8	6	4.1	1,604	10.8
Mothers >= 20 Years	12,605	88.9	388	77.4	139	95.2	13,132	88.6
Mothers With Known Prenatal Care								
First Trimester Care	12,255	89.4	366	76.9	114	81.4	12,735	88.9
Second Trimester Care	1,264	9.2	94	19.7	21	15.0	1,379	9.6
Third Trimester Care	149	1.1	13	2.7	3	2.1	165	1.2
No Prenatal Care	42	0.3	3	0.6	2	1.4	47	0.3
Gestational Age								
> 37 Weeks	11,609	81.9	414	82.6	132	90.4	12,155	82.0
38+ Weeks	1,443	10.2	60	12.0	15	10.3	1,518	10.2
Unknown	5	0.0	0	0.0	0	0.0	5	0.0
Education of Mother								
< 12 Years	1,685	11.9	86	17.2	5	3.4	1,776	12.0
12 Years	5,480	38.6	203	40.5	31	21.2	5,714	38.5
> 12 Years	6,948	49.0	207	41.3	109	74.7	7,264	49.0



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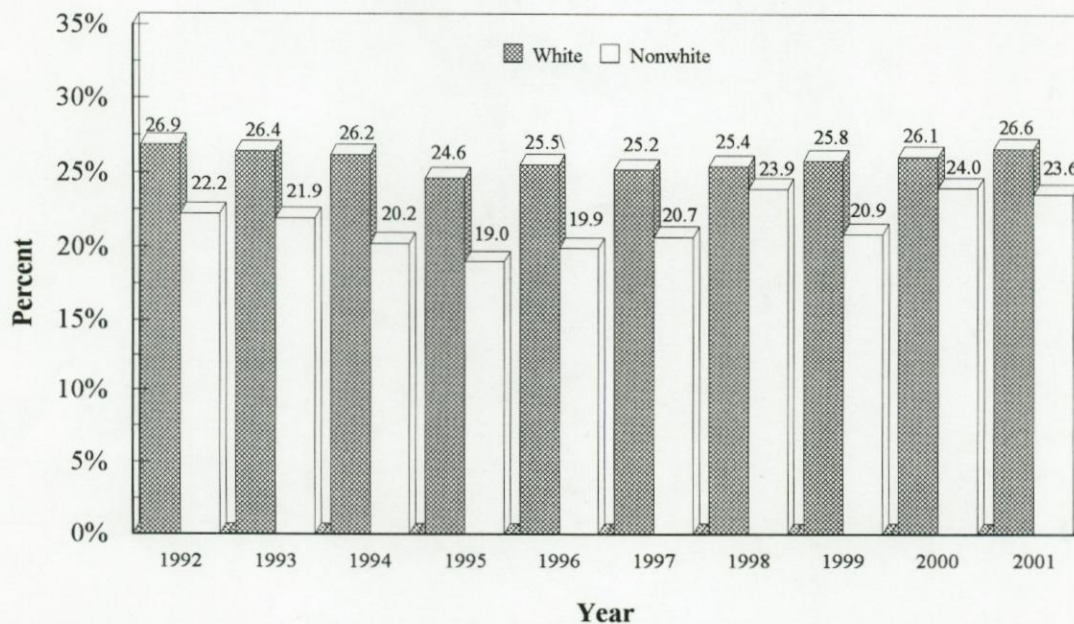
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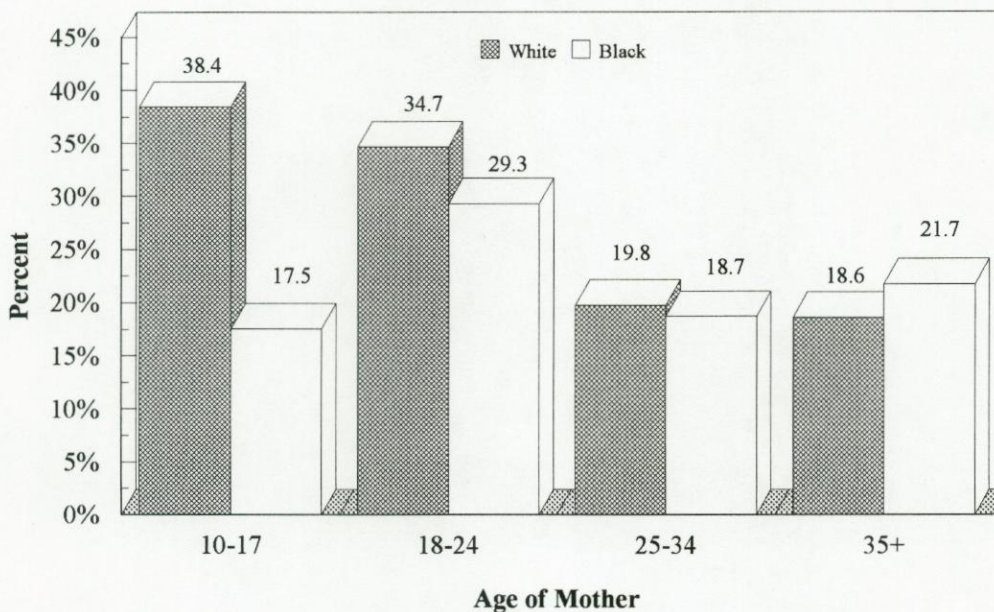
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**Percent of Mothers Who Smoked During Pregnancy By Age**  
**West Virginia Resident Births, 2001**



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Figure 4  
**Percent of Low Birthweight by Mother's Smoking Status**  
**West Virginia Resident Births, 1999-2001**

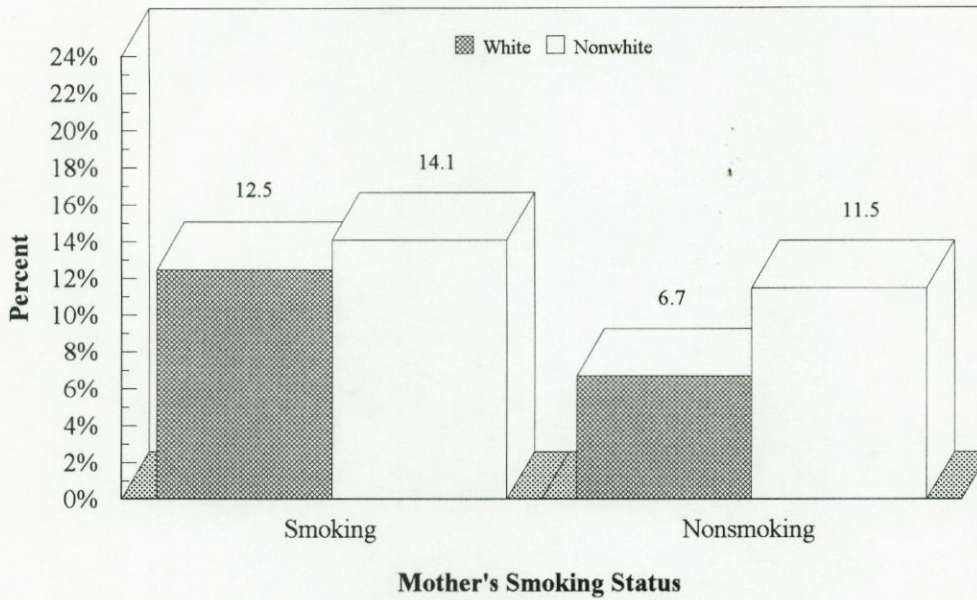


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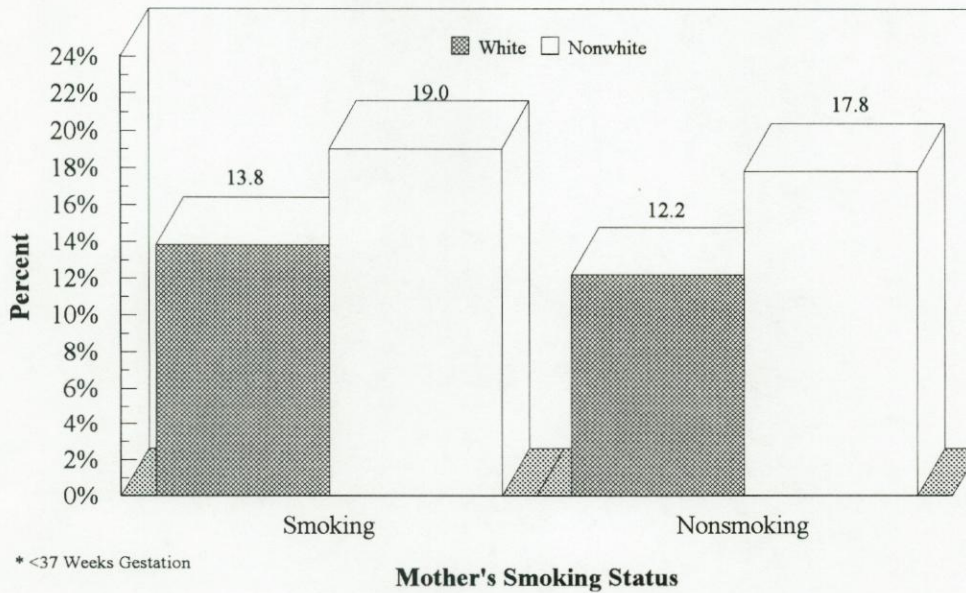
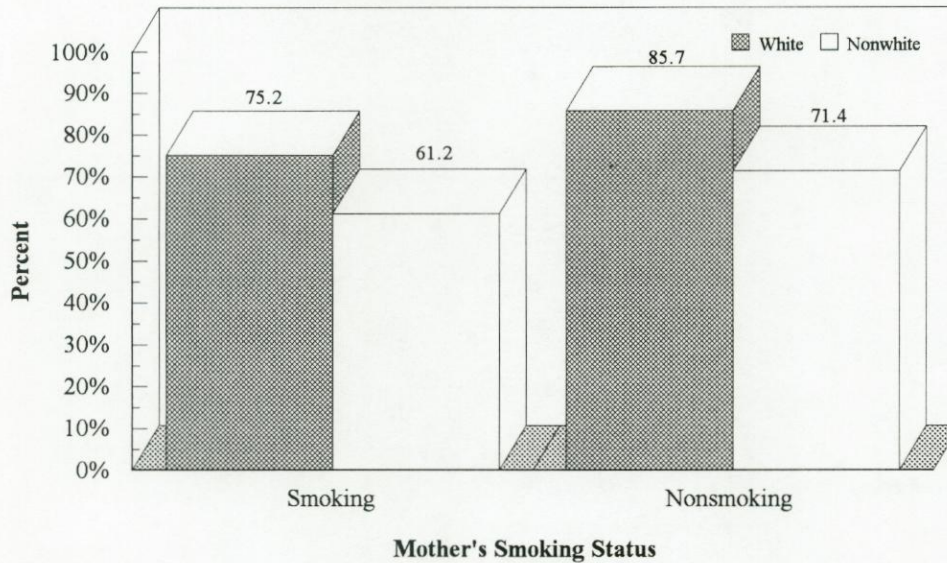
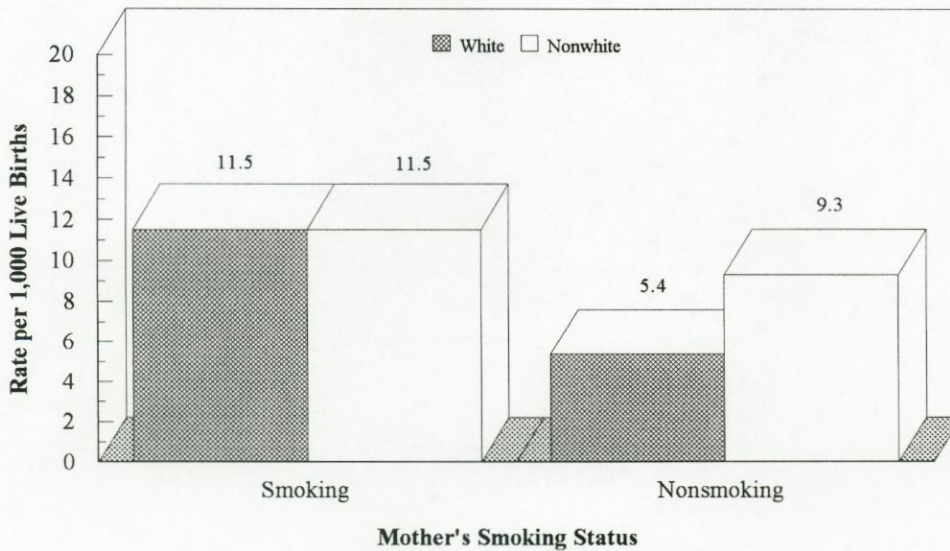


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