

HSC Statistical Brief No. 4 Update

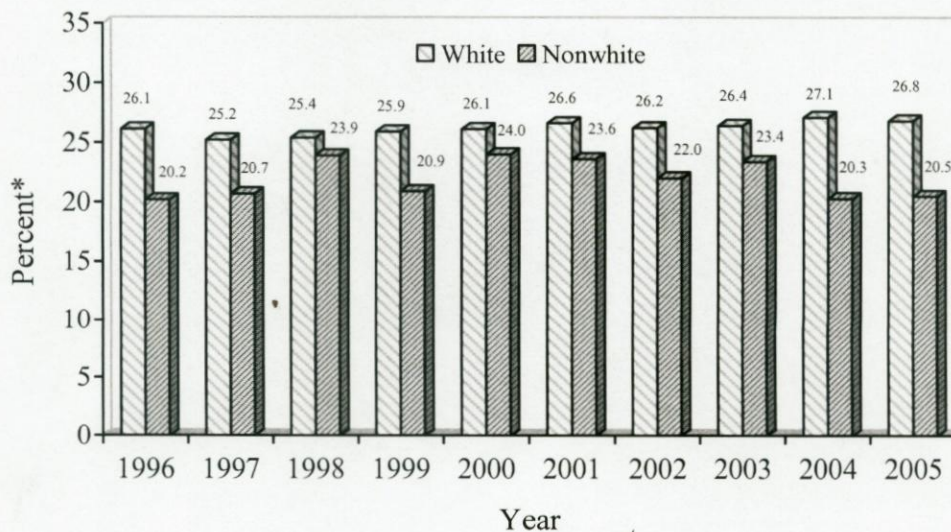
Smoking: Effects on Mothers and Babies in West Virginia

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 1996-2005, 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, 1996-2005



*Excludes unknown smoking status

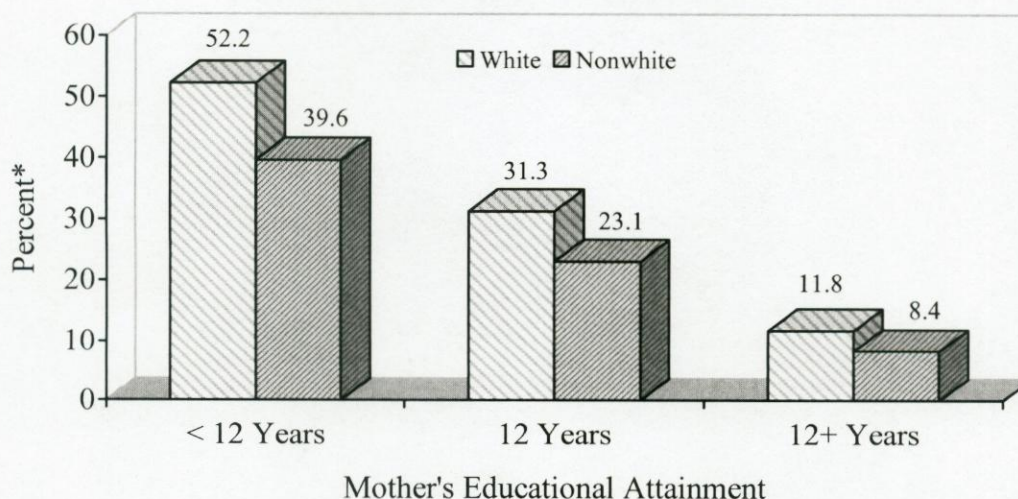
While smoking rates among the general U.S. population has gradually declined during the period, the figure among women giving birth in West Virginia, after a modest decline in the mid 1990's, has increased to a similar rate by 2005. Among white women who had babies during this ten-year period, 26.1% smoked in 1996, while 26.8% smoked in 2005. Nonwhite mothers showed an increase from 20.2% in 1996 to 20.5% by 2005. 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 -- 52.2% of white mothers and 39.6% of nonwhite mothers smoked in 2005. 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 much more likely to smoke as were high school graduates (52.2% compared to 31.3%) and were more than four times as likely to smoke than those with some college. Nonwhite mothers with less than a high school education were also more than four times as likely to smoke as those with some college.

Figure 2

**Percent of Mothers Who Smoked During Pregnancy by Education
West Virginia Resident Births, 2005**

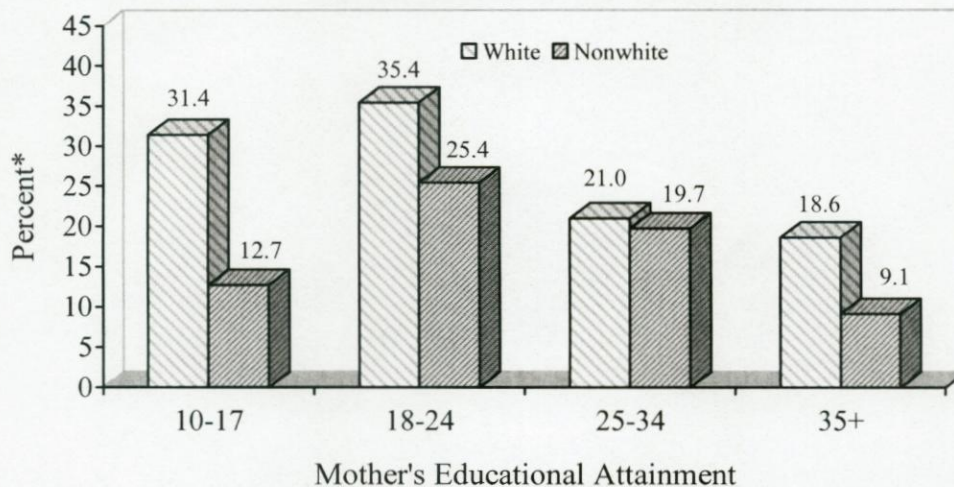


*Excludes unknown smoking status

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 and nonwhite mothers.

Figure 3

**Percent of Mothers Who Smoked During Pregnancy by Age
West Virginia Resident Births, 2005**



*Excludes unknown smoking status

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 around 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 nearly 19% 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 with known prenatal care, only 78.2% received prenatal care in the first trimester, compared with 91.5% 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, 2003-2005**

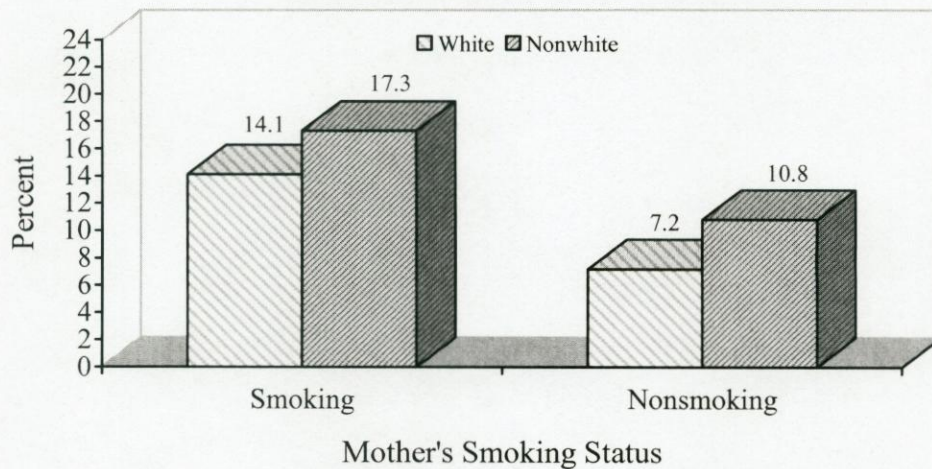
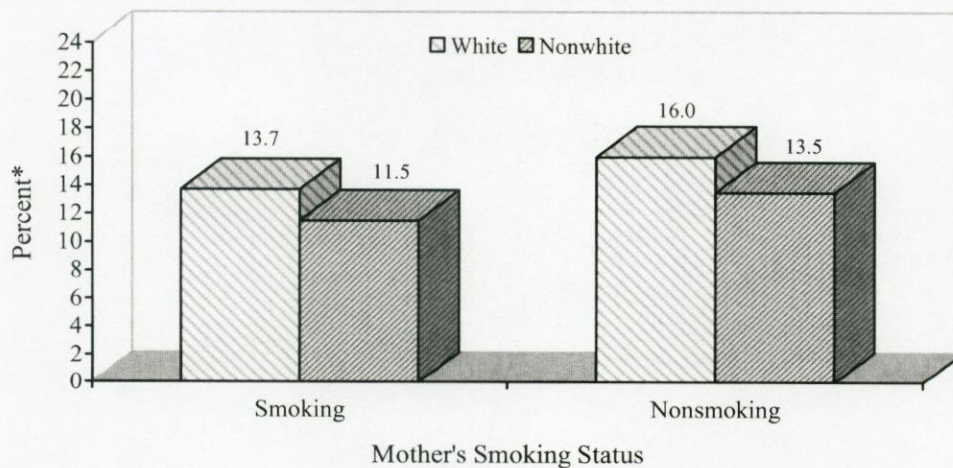


Figure 5

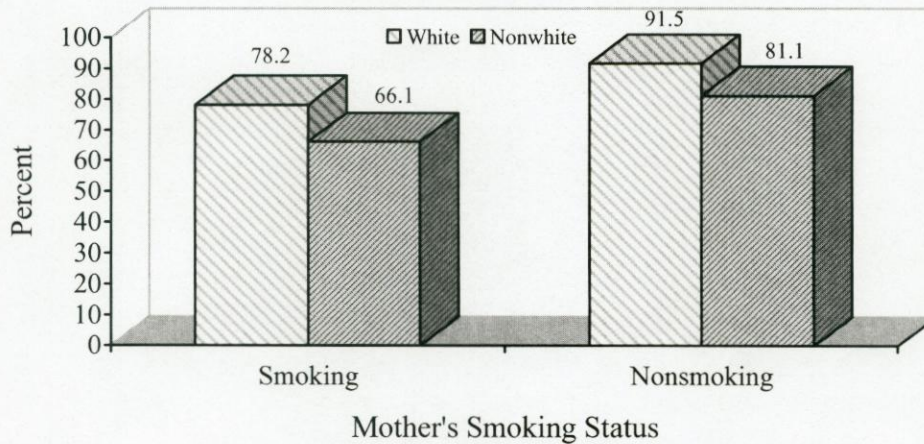
**Percent of Premature Births* by Mother's Smoking Status
West Virginia Resident Births, 2003-2005**



* < 37 Weeks Gestation

Figure 6

**Percent of First Trimester Care* by Mother's Smoking Status
West Virginia Resident Births, 2003-2005**

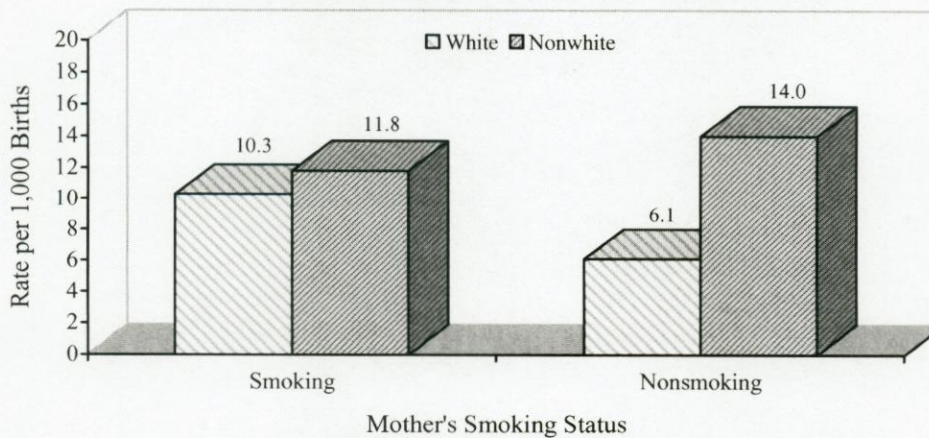


* Births with Known Prenatal Care

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 10.3 per 1,000 live births, 69% higher than the 6.1 rate for nonsmoking white mothers. Interestingly for black and other races, the infant mortality rate for infants of mothers who did not smoke is 14.0 compared with 11.8 for those born to mothers who did smoke, a 19% difference in rates.

Figure 7

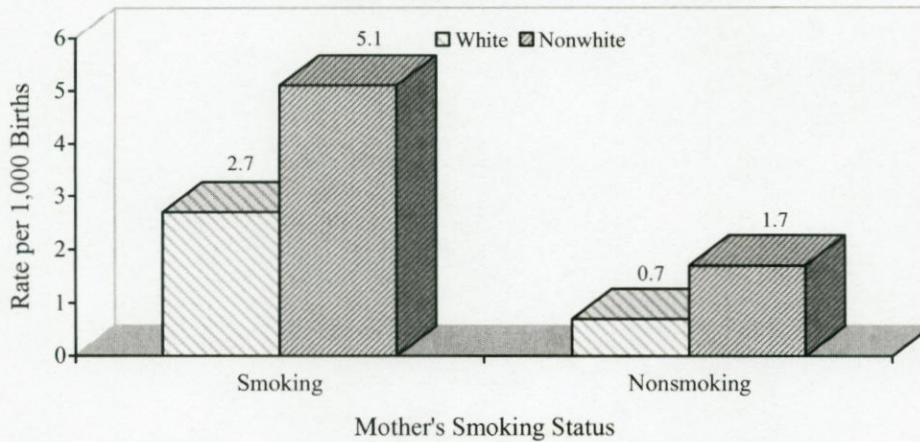
**Infant Mortality Rate by Mother's Smoking Status
West Virginia Resident Births, 2003-2005**



Tobacco smoke may be a significant contributor to SIDS, or sudden infant death syndrome. Infants of white mothers who smoke are nearly 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, 2003-2005**



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 and young adults (18-24) if they are white, to be adults ages 18-34 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. Pregnancy Risk Assessment Monitoring System, is an ongoing, population-based surveillance system designed to identify and monitor selected maternal experiences and behaviors that occur before and during pregnancy and during the child's early infancy among a stratified sample of women delivering a live birth. PRAMS was initiated in 1987 as part of the Centers for Disease Control and Prevention (CDC) initiative to help state health departments establish and maintain an epidemiologic surveillance system of selected maternal behaviors and experiences. West Virginia was one of six initial states to begin collecting data in 1988 and has had continuous data collection since that time. There are currently 32 states and the city of New York participating in PRAMS which represents over 75% of all births nationwide.

The **PRAMS** sample of women who have had a recent live birth is drawn from the state's birth certificate file. West Virginia samples roughly 2,400 women per year. Every woman in

West Virginia who had a live birth in the past 2 – 4 months has an equal chance to be selected. Names are randomly selected, like in a lottery, from the West Virginia Birth Certificate Registry. No other factors cause mothers to be included in this survey. Selected women are first contacted by mail. If there is no response to repeated mailings, women are contacted and interviewed by telephone.

PRAMS data for 2005 indicate that 32% of women smoked during their last trimester of pregnancy. Many women who stop smoking during pregnancy resume smoking following delivery. For 2005, 39% of women were smoking after delivery. In 2004, the latest year available for state comparison, West Virginia ranked first among the 26 participating PRAMS states for women smoking during the last trimester of pregnancy and also for smoking following delivery.

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 in 2003 indicate that there are 173,212 publicly covered PEIA recipients plus 32,387 with dual PEIA/Medicare coverage for a total of 205,599 covered individuals. This compares with a Medicaid-eligible population of 281,279 plus 15,128 with dual Medicaid/Medicare eligibility for a total of 296,407 (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.

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4. Butler NR, Goldstein H, Ross EM. Cigarette smoking in pregnancy; its influence on birthweight and perinatal mortality. *Br Med J* 1972; 2:127-30
5. Golding J. Sudden infant death syndrome and parental smoking – a literature review. *Paediatr Perinatal Epidemiol* 1997; 11:67-77
6. HSC Statistical Brief Number 2 Update. Selected Sources of Publicly Funded Health Care Coverage in West Virginia. Mar 2004. Sources are provided by Public Employees Insurance Agency (PEIA), U.S. Health Care Financing Administration (HCFA), and WV Bureau for Medical Services.

APPENDIX

**Mothers Who Did Smoke During Pregnancy
West Virginia Resident Births, 2005**

Factor	White		Black		Other		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Smoking Mothers	5,316	26.9	173	25.0	20	8.3	5,509	26.6
Birthweight								
Low Birthweight	788	14.9	32	18.5	6	30.0	826	15.0
Very Low Birthweight	95	1.8	4	2.3	2	10.0	101	1.8
Maternal Age								
Mothers < 20 Years	809	15.2	37	21.4	2	10.0	848	15.4
Mothers 20+ Years	4,507	84.8	136	78.6	18	90.0	4,661	84.6
Mothers With Known Prenatal Care								
First Trimester Care	3,860	76.2	105	66.5	11	57.9	3,976	75.8
Second Trimester Care	983	19.4	40	25.3	5	26.3	1,028	19.6
Third Trimester Care	168	3.3	8	5.1	2	10.5	178	3.4
No Prenatal Care	57	1.1	5	3.2	1	5.3	63	1.2
Mothers With Known Gestational Age								
< 37 Weeks	733	13.8	34	19.7	5	26.3	772	14.1
37+ Weeks	4,566	86.2	139	80.3	14	73.7	4,719	85.9
Mothers With Known Education Level								
< 12 Years	1,855	35.4	73	44.2	5	25.0	1,933	35.7
12 Years	2,373	45.3	62	37.6	10	50.0	2,445	45.1
12+ Years	1,005	19.2	30	18.2	5	25.0	1,040	19.2

**Mothers Who Did Not Smoke During Pregnancy
West Virginia Resident Births, 2005**

Factor	White		Black		Other		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Smoking Mothers	14,482	73.1	519	75.0	220	91.7	15,221	73.4
Birthweight								
Low Birthweight	1,064	7.3	60	11.6	23	10.5	1,147	7.5
Very Low Birthweight	212	1.5	16	3.1	7	3.2	235	1.5
Maternal Age								
Mothers < 20 Years	1,494	10.3	104	20.1	18	8.2	1,616	10.6
Mothers 20+ Years	12,986	89.7	414	79.9	202	91.8	13,602	89.4
Mothers With Known Prenatal Care								
First Trimester Care	12,429	88.2	373	74.2	163	76.2	12,965	87.5
Second Trimester Care	1,410	10.0	108	21.5	39	18.2	1,557	10.5
Third Trimester Care	188	1.3	20	4.0	6	2.8	214	1.4
No Prenatal Care	67	0.5	2	0.4	6	2.8	75	0.5
Mothers With Known Gestational Age								
< 37 Weeks	1,699	11.7	76	14.7	26	11.9	1,801	11.8
37+ Weeks	12,744	88.3	442	85.2	192	88.1	13,408	88.2
Mothers With Known Education Level								
< 12 Years	1,683	11.7	95	18.5	24	11.0	1,802	11.9
12 Years	5,177	36.0	190	37.0	46	21.1	5,413	35.8
12+ Years	7,522	52.3	229	44.6	148	67.9	7,899	52.3