

INTRODUCTION

Nationwide, nearly 750,000 teenagers under 18 years of age become new regular daily smokers every year.¹ Almost a third of these will eventually die from smoking-related diseases. Adolescent smoking is the number one determinant of adult smoking – approximately 80% of adult smokers start smoking before the age of 18 years.

In West Virginia, almost 5,000 teenagers under 18 years become regular daily smokers every year. The consequences of such tobacco use can be staggering. More than 40,000 teenagers in West Virginia living today will die prematurely because of a decision they will make as adolescents – the decision to smoke cigarettes.¹

West Virginia has long ranked among the top five states nationwide in youth cigarette smoking and smokeless tobacco use. In the year 2000, West Virginia ranked third in the country in cigarette smoking among middle school students and ranked first among the country's public schools in cigarette smoking among high school students. In 1999, West Virginia ranked third in smokeless tobacco use among male high school students.² However, youth tobacco use in West Virginia is now on the decline, as is the case nationwide.

The West Virginia Youth Tobacco Survey (WVYTS) is a step toward understanding and controlling tobacco use among teenagers in West Virginia. It is conducted jointly by the West Virginia Department of Education, the Office of Epidemiology and Health Promotion the West Virginia Department of Health and Human Resources, and the Office on Smoking and Health at the Centers for Disease Control and Prevention (CDC). The WVYTS is designed to be administered periodically to middle and high school students in public schools throughout the state. It collects information about the patterns of tobacco use, attitudes and knowledge of students regarding tobacco, exposure to tobacco-related media and advertising, and other tobacco-related topics. Such information enables the state and its partners to plan and design youth tobacco prevention and cessation programs. The WVYTS along with the Youth Risk Behavior Survey (YRBS) also provides useful data on the changing trends in the patterns of tobacco use among youth of the state; such trend data are useful in the evaluation of programs. Furthermore, since the YTS is a standardized nationwide survey, results from the survey can be compared with other states and the overall US figures; this helps in program goal setting and monitoring of progress.

This report summarizes the findings of the West Virginia 2002 Youth Tobacco Survey. It focuses on trends using data from past years and highlights important changes from the 2000 WVYTS findings.³

METHODOLOGY

Sample Description

The 2002 WVYTS consisted of two different samples: one each for public middle schools (grades 6, 7, and 8) and high schools (grades 9, 10, 11, and 12). The sampling frame included all regular public middle and high schools in the state. For middle schools, the frame was split into eight sampling regions defined by the State Department of Education (Figure 1). For high schools, the survey was only done at the state level (single sampling frame). Within each frame or region, a two-stage cluster sample design was used to produce a representative sample of students.

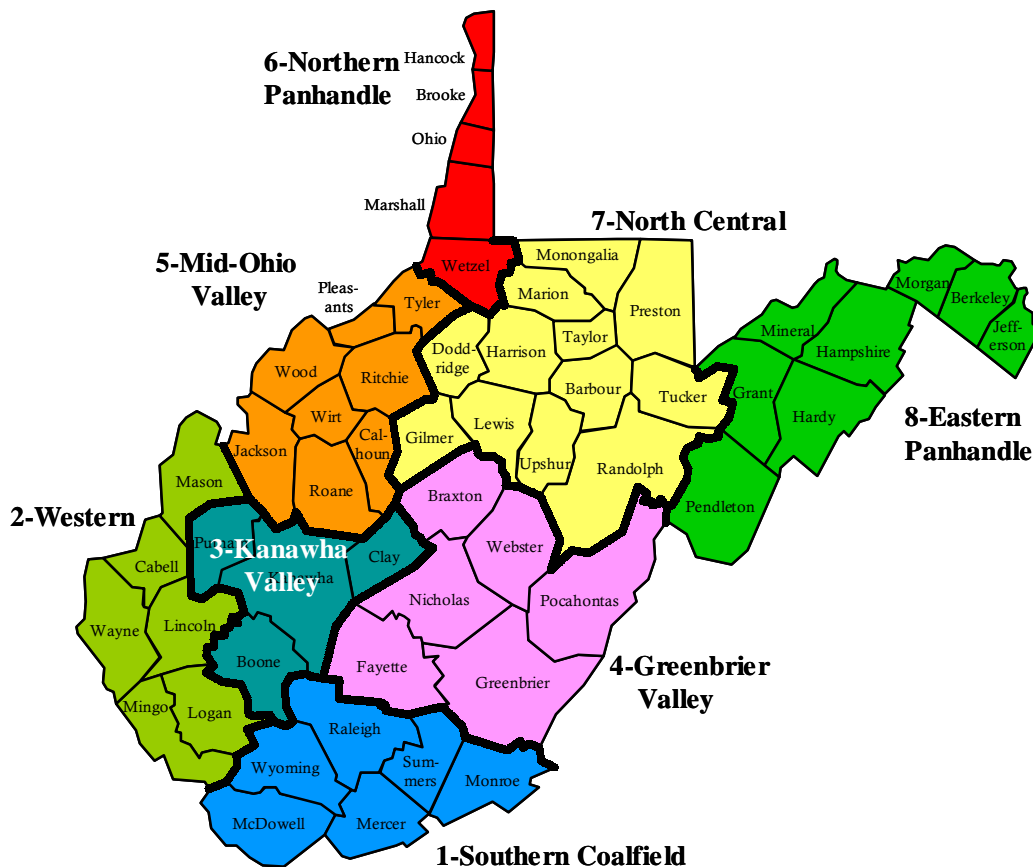
School-level sampling

The first stage of sampling consisted of all schools containing the grades of interest. Schools were selected randomly with a probability proportional to school enrollment size.

Class-level sampling

The second stage consisted of systematic equal probability sampling (with a random start) of classes from each school that participated in the survey. All 2nd period classes in the selected schools were included in the sampling frame. All students in the selected classes were eligible to participate in the survey.

Figure 1: Sampling Regions for Middle Schools: WVYTS 2002



Response Rates

The overall response rates (school and student participation rates) were 80% in middle schools and 67% in high schools. Among the eight different regions for middle schools, response rates varied from a low of 69% in the Eastern Panhandle region to a high of 89% in then Northern Panhandle region.

Data Analysis

Data were weighted appropriately to adjust for any unequal probabilities of selection, different patterns of nonresponse, and disproportionate selection of different population groups. Data analyses were done using SUDAAN statistical software and SAS software version 8e; 95% confidence intervals (CI) were generated using the SUDAAN software, which corrects for the complex sampling design. Observed differences between prevalence rates were considered to be statistically significant at the 95% confidence level if the confidence intervals did not overlap.

DEMOGRAPHICS

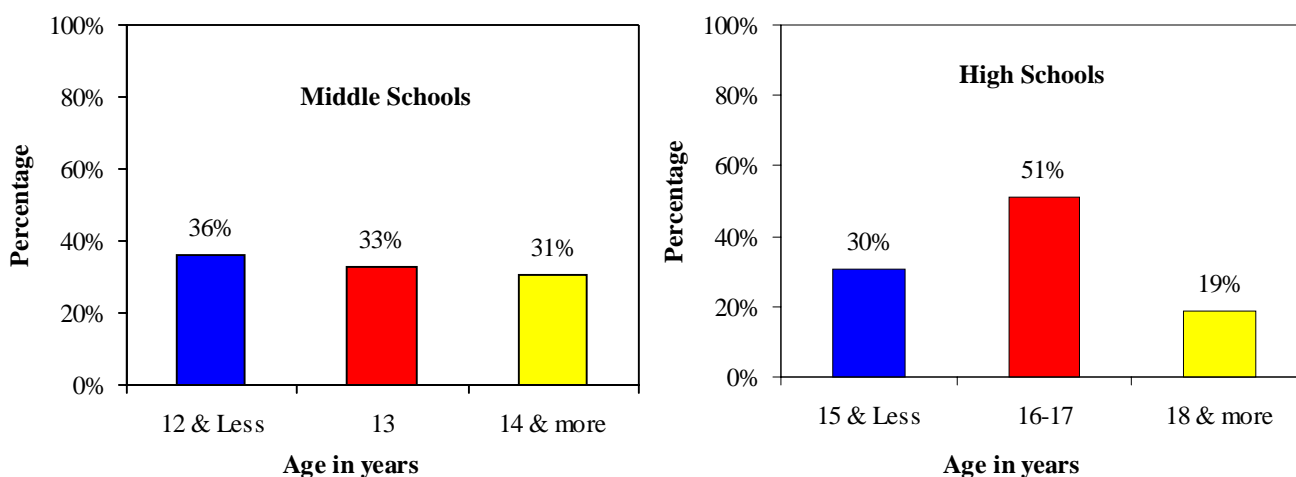
Total A total of 11,930 students were administered surveys in middle schools, of which 10,052 completed usable questionnaires. In high schools, 1,640 of the 2,058 sampled students completed usable questionnaires.

Gender The weighted sample consisted of about 52% boys and 48% girls in both middle schools (MS) and high schools (HS).

Age The weighted age distribution of students in both the schools is shown in Figure 2.

Race In the weighted sample, about 86% middle school students were white, and about 5% each were African-American and Native American. Among high school students, about 90% were white, 5% African-American, and 2% Native American.

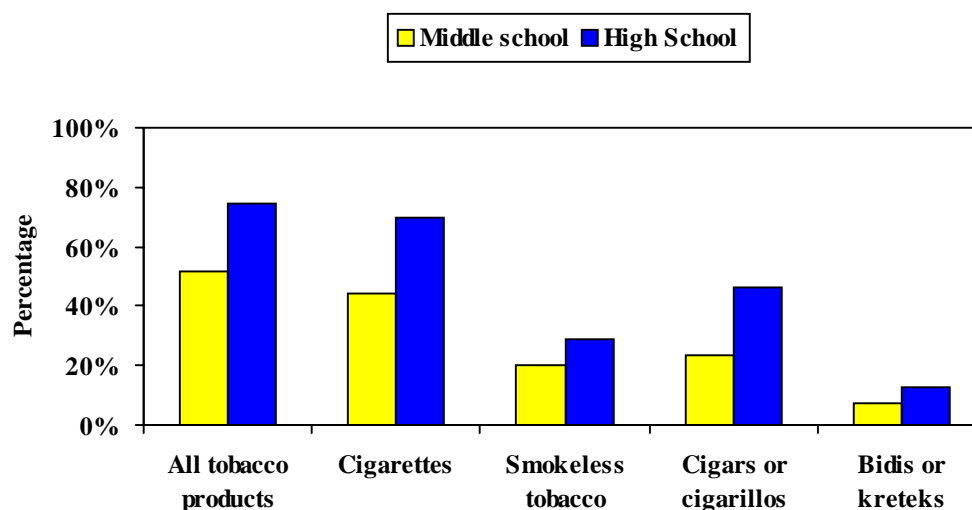
Figure 2: Weighted Age Distribution by School: WVYTS 2002



LIFETIME PREVALENCE OF TOBACCO USE

Definition *Ever tried cigarettes, smokeless tobacco, snuff or dip, cigars or cigarillos, or bidis or kreteks anytime in their lifetime.^a*

Figure 3: Lifetime Prevalence of Tobacco Use by Tobacco Product: WVYIS 2002



State Prevalence About 52% of West Virginia’s middle school students and 75% of West Virginia’s high school students had ever tried any form of tobacco.

Type of Tobacco Cigarettes were the most commonly tried form of tobacco among both middle and high school students (Figure 3). There was substantial experimentation with cigars or cigarillos; more than half of all high school boys had ever tried a cigar, compared to a little over one-fourth of middle school boys.

Gender In middle schools, males were significantly more likely than females to have ever tried any form of tobacco. No gender differences were seen in high schools.

Regional MS Data Highest rate: Southern Coalfield region (60%).
Lowest rate: North Central region (43%).
The rate in the Southern Coalfield region was significantly higher than the state prevalence. Other regional rates were not significantly different from the state prevalence.

^aBidis are small brown hand-rolled cigarettes primarily made in India and other southeast Asian countries. Kreteks or clove cigarettes are cigarettes containing tobacco and clove extract. Cigarillos are little cigars.

CURRENT USE OF ANY TOBACCO PRODUCT

- Definition** *Used either cigarettes or smokeless tobacco or cigars/cigarillos or bidis or kreteks or smoked tobacco in a pipe on one or more days in the past 30 days.*
- State Prevalence** About 23% of middle school students and 41% of high school students in West Virginia currently use some form of tobacco. This amounts to an *estimated 48,758 students* who currently use any tobacco product (calculated using grade-specific prevalences and school enrollment).
- Gender** In both middle and high schools, male students were significantly more likely to be current users of tobacco than female students.
- Trends** Compared to the year 2000, current tobacco use among middle school students decreased by 10% and that among high school students decreased by 15%. While not significant, the changes appear to be the beginning of a declining trend in tobacco use.
- Type of Tobacco** Current tobacco use by type of product is summarized in Table 1. More details are presented in Appendix A. Many students reported using more than one type of tobacco product.

Table 1: Current Use of Tobacco Products by Type of Tobacco Product: WVYTS 2002

Type of Tobacco Product	Middle Schools %	High Schools %
Cigarettes	16.3	33.7
Smokeless tobacco (males only)	12.9	21.5
Cigars/cigarillos	7.4	14.9
Bidis	4.2	6.2
Pipe smoking	4.1	4.1
<i>Overall any tobacco</i>	22.7	40.9

- Regional MS Data** Highest rates: Southern Coalfield, Western, and Greenbrier Valley regions.
 Lowest rates: North Central and Northern Panhandle regions.
 Regional variation in prevalence: 18% to 28%.
 Regional rates were not significantly different from the state prevalence (Appendix B).
 The Southern Coalfield region had a significantly higher rate than the Northern Panhandle region.

CURRENT CIGARETTE SMOKING

Definition	<i>Smoked cigarettes on one or more days in the past 30 days.</i>
State Prevalence	About 16.3% of middle school students and 33.7% of high school students in West Virginia currently smoke. <i>This amounts to an estimated 38,558 students who are current smokers.</i>
Gender	There were no significant differences in smoking rates between girls and boys in either middle or high schools.
Race	There were no significant differences in smoking rates between students of different races in either the state overall school prevalences or the regional prevalences.
Types of Smokers	<p>Of all current smokers, in middle schools, 60% were experimenters, 13% regular non-daily smokers, and 27% established smokers (see Stages of Smoking on page 20). In high schools, the picture was somewhat reversed with only 28% of all current smokers being experimenters, 19% regular non-daily smokers, and 53% established smokers.</p> <p>The definition for established smokers compares well with that for adult smokers used by the Behavioral Risk Factor Surveillance System.⁴ <i>Thus, more than a quarter of middle school smokers, and more than half of high school smokers, already have smoking habits similar to those seen in adult smokers.</i></p>

Middle Schools

Trends	There were no significant changes in current smoking among middle school students from the year 2000. However, a declining trend appears to have begun – the prevalence decreased by 10% from 18.1% in 2000 to 16.3% in 2002.
Regional MS Data	Highest rates: Southern Coalfield, Western, Greenbrier Valley, Eastern Panhandle regions Lowest rates: North Central and Mid-Ohio Valley regions Regional rates were not significantly different from the state prevalence (Figure 4 and Appendix B).

High Schools

Trends	Current smoking prevalence has decreased significantly among high school students since 1999 (Figure 5). <i>Rates dropped from a high of 42.2% in 1999 to 33.7% in 2002 – a statistically significant decline of more than 20 %.</i> The declining trend in smoking parallels the trend nationwide; however, the gap remains – high school students in West Virginia still smoke at significantly higher rates than their counterparts nationwide.
Gender	Since 1999, rates have dropped more among female high school students (22% decline) than male students (18% decline). However, there have been substantial fluctuations in the gap between the sexes – among boys, the prevalence has decreased steadily since 1995; on the other hand, among girls, smoking peaked in 1999 and is now on the decline (Figure 6).

Figure 4
Current Cigarette Smoking among Middle School Students
WVYTS 2002

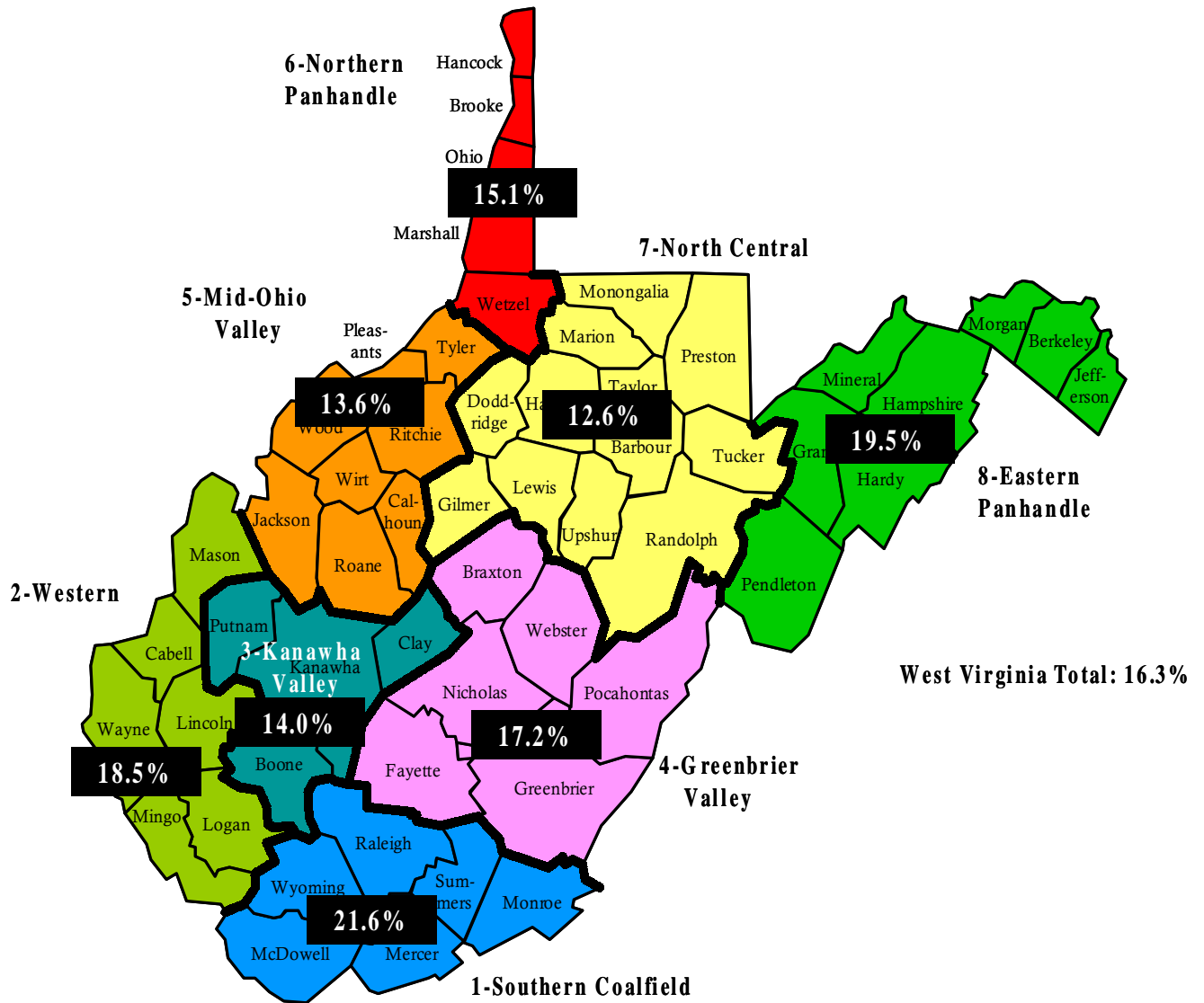
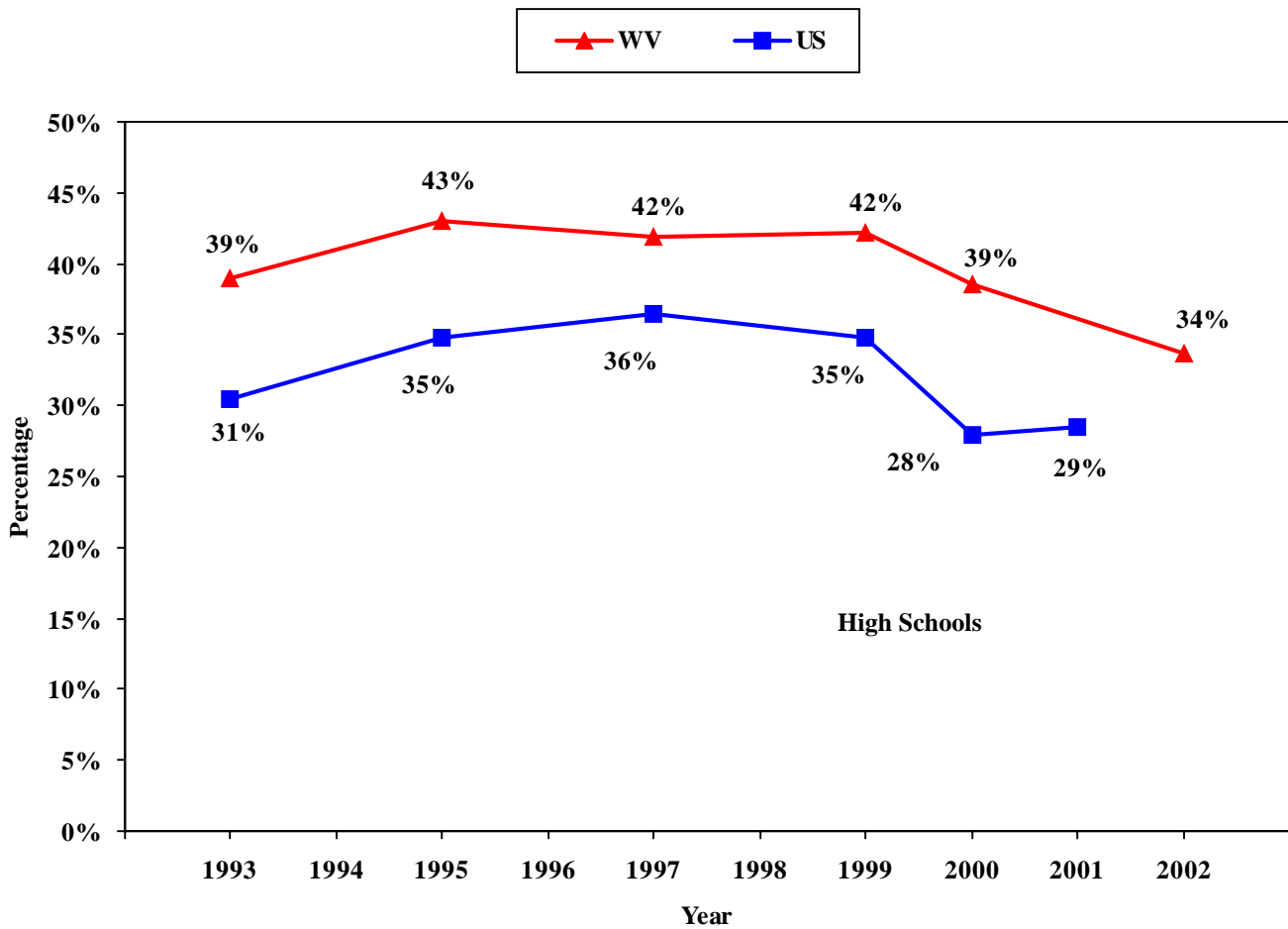
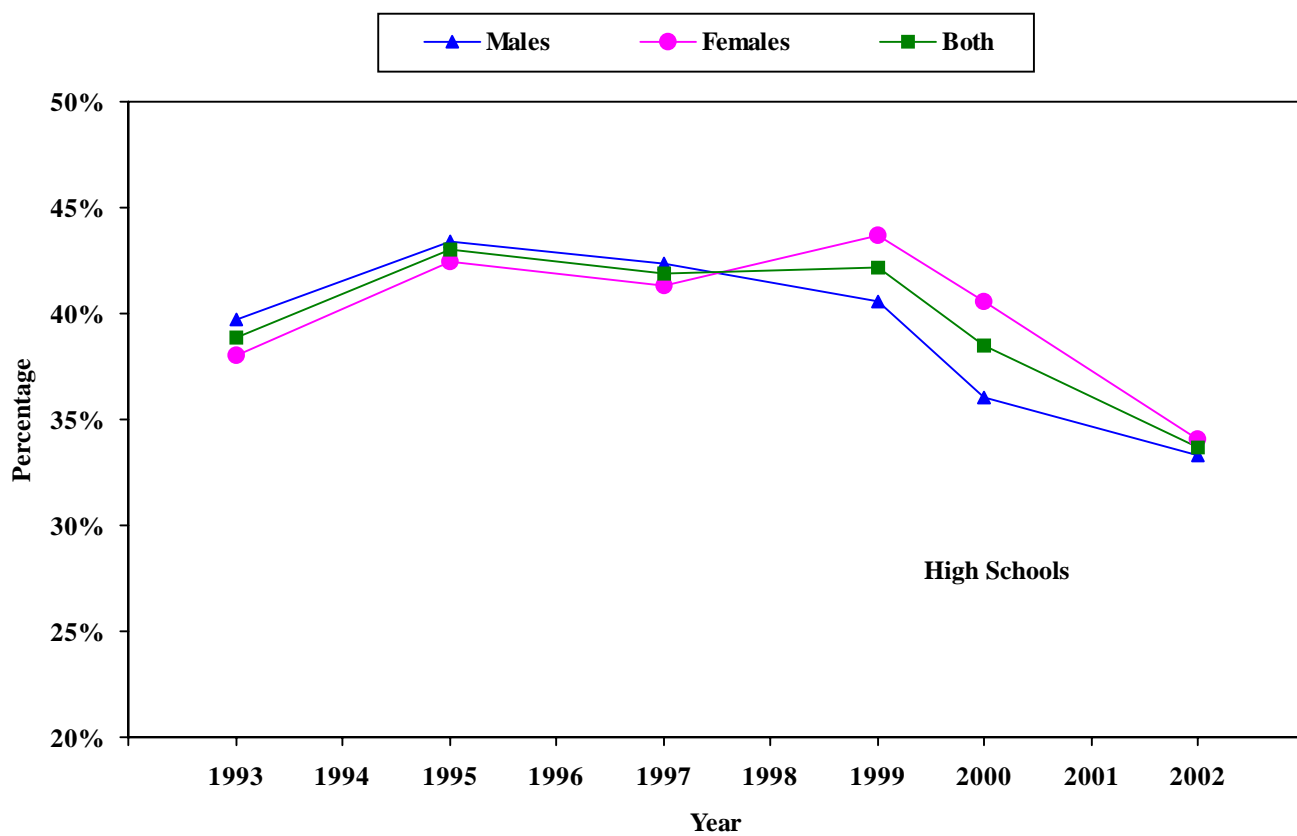


Figure 5
Current Smoking Prevalence among High School Students
West Virginia and the United States: 1993-2002*



*1993-1999: YRBS data; 2000-2002: YTS data. Data for all years not available.

Figure 6
Current Smoking Prevalence among High School Students By Gender
West Virginia 1993-2002*



*1993-1999: YRBS data; 2000-2002: YTS data. Data for all years not available.

CURRENT SMOKELESS TOBACCO USE

Definition *Used smokeless tobacco, snuff, or dip on one or more days in the past 30 days.*

State Prevalence About 7.8% of middle school students and 12.4% of high school students currently use smokeless tobacco in West Virginia.

Gender The use of smokeless tobacco was significantly higher among boys as compared to girls. In the 2002 WVYTS, it was found that:

- 12.9% of middle school boys and 21.5% of high school boys currently used smokeless tobacco.
- Prevalence among females was less than 3% in both middle and high schools.

Middle School Boys

Trends There were no significant changes in the current use of smokeless tobacco among middle school boys from the year 2000. However, a declining trend appears to have begun – the prevalence decreased from 14.9% in 2000 to 12.9% in 2002.

Regional MS Data Highest rates: Southern Coalfield, Western, and Greenbrier Valley regions
Lowest rates: Northern and Eastern Panhandle regions (Figure 7)

The Eastern Panhandle region was unique in having one of the lowest rates of current smokeless tobacco use (in boys), but the second highest rate of current cigarette smoking (both boys and girls) among middle school students (see detailed table in Appendix B). Regional differences were not statistically significant.

High School Boys

Trends The prevalence of current smokeless tobacco use has steadily declined among high school boys since 1995 (Figure 8). Between 1997 to 2002, *current smokeless tobacco use among high school males showed a statistically significant decline of more than 30%*.

However, in spite of the declining trend, current smokeless tobacco use remains significantly higher in West Virginia as compared to the United States. In the year 2000, current smokeless tobacco use among high school boys in West Virginia was more than twice that nationwide.

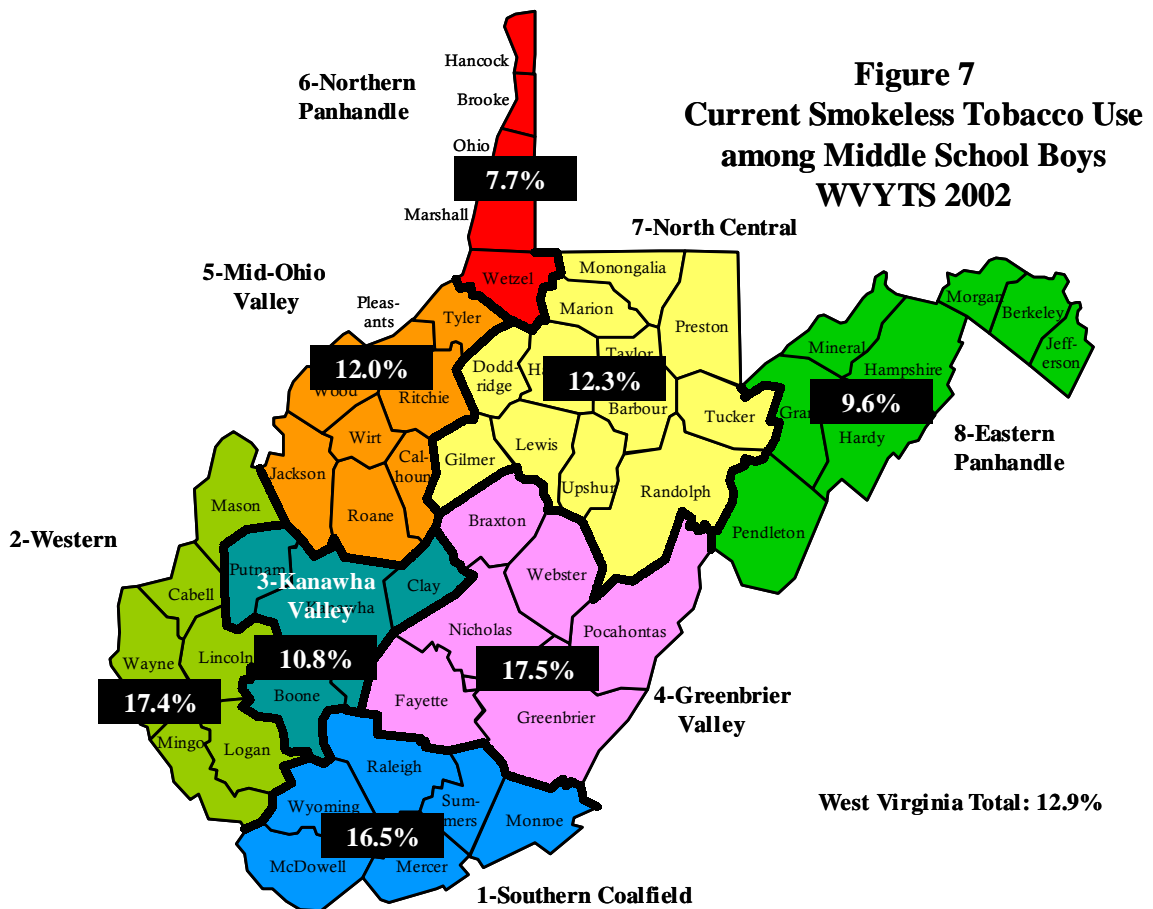
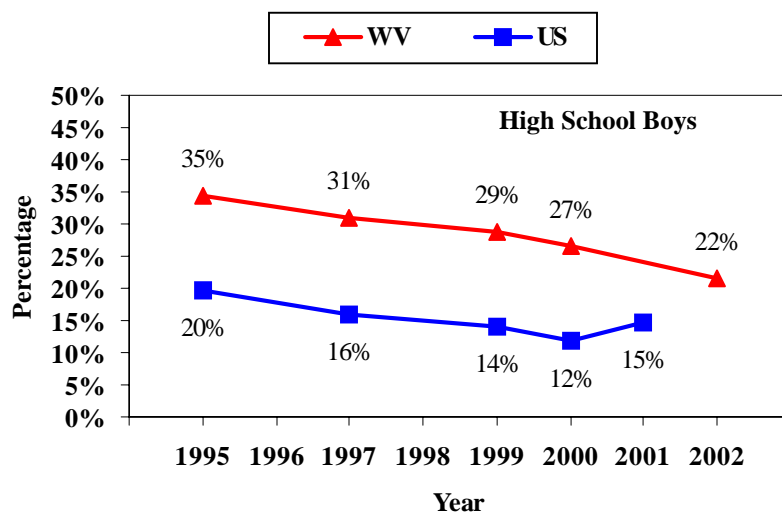


Figure 8 Current Smokeless Tobacco Use among High School Boys West Virginia and the United States: 1995-2002*



*1995-1999: YRBS data; 2000-2002: YTS data. Data for all years not available.

CURRENT USE OF OTHER TOBACCO PRODUCTS

Cigar and Cigarillos

- Current use of cigars and cigarillos constitutes a substantial part of all tobacco use among the youth of West Virginia. About 7.4% of all middle school students and 14.9% of all high school students reported using these tobacco products on one or more days in the past 30 days.
- The figures were especially striking and significantly higher for male students – about 10% of male middle school students and 21% of male high school students are current users of cigars and cigarillos. This was more than twice the rate among female students in both schools – about 4% and 9% of female students use cigars/cigarillos in middle and high schools.
- *Frequent* use of cigars and cigarillos was uncommon. Less than 2% of male students in both middle and high schools reported smoking cigars/cigarillos on 20 or more days in the past 30 days. Most current users of these tobacco products could therefore be occasional users or experimenters.
- Use of cigars and cigarillos may not reflect actual tobacco use, because students often use these to smoke marijuana rather than tobacco.

Bidis

- Bidis exported to the United States are often flavored in varieties such as fruit or licorice that make them appealing to the youth market, and they are also cheap.^{5,6}
- In West Virginia, however, since 2001, the import, sale, and distribution of bidis are prohibited under Article §16-9A-9.
- In spite of this, about 4% and 6% of middle and high school students, respectively, reported using bidis on one or more days in the past 30 days of the survey.
- Rates among male students were significantly higher than among female students in middle schools. As with cigars and cigarillos, frequent use of bidis was uncommon.

Pipe Smoking

- About 4% of all students in middle schools and high schools reported having smoked tobacco in a pipe on one or more days in the past 30 days.
- Rates among male students were significantly higher than among female students in middle schools.
- Again, less than 1% of all students smoked tobacco in this form frequently.

TOBACCO USE BY SCHOOL GRADE

Cigarette Smoking

- The prevalence of current cigarette use increased with each increasing grade – referred to as a “stair-step” relationship⁷ (Table 2 and Figure 9).
- In 2002, this grade-by-grade increase in smoking rates was greatest across middle school grades (142% between 6th and 8th grades, compared to 42% between 9th and 12th grades).
- As the increase was steeper in lower grades and flattened out in higher grades, it can be concluded that most students make decisions about smoking while they are still in middle school.

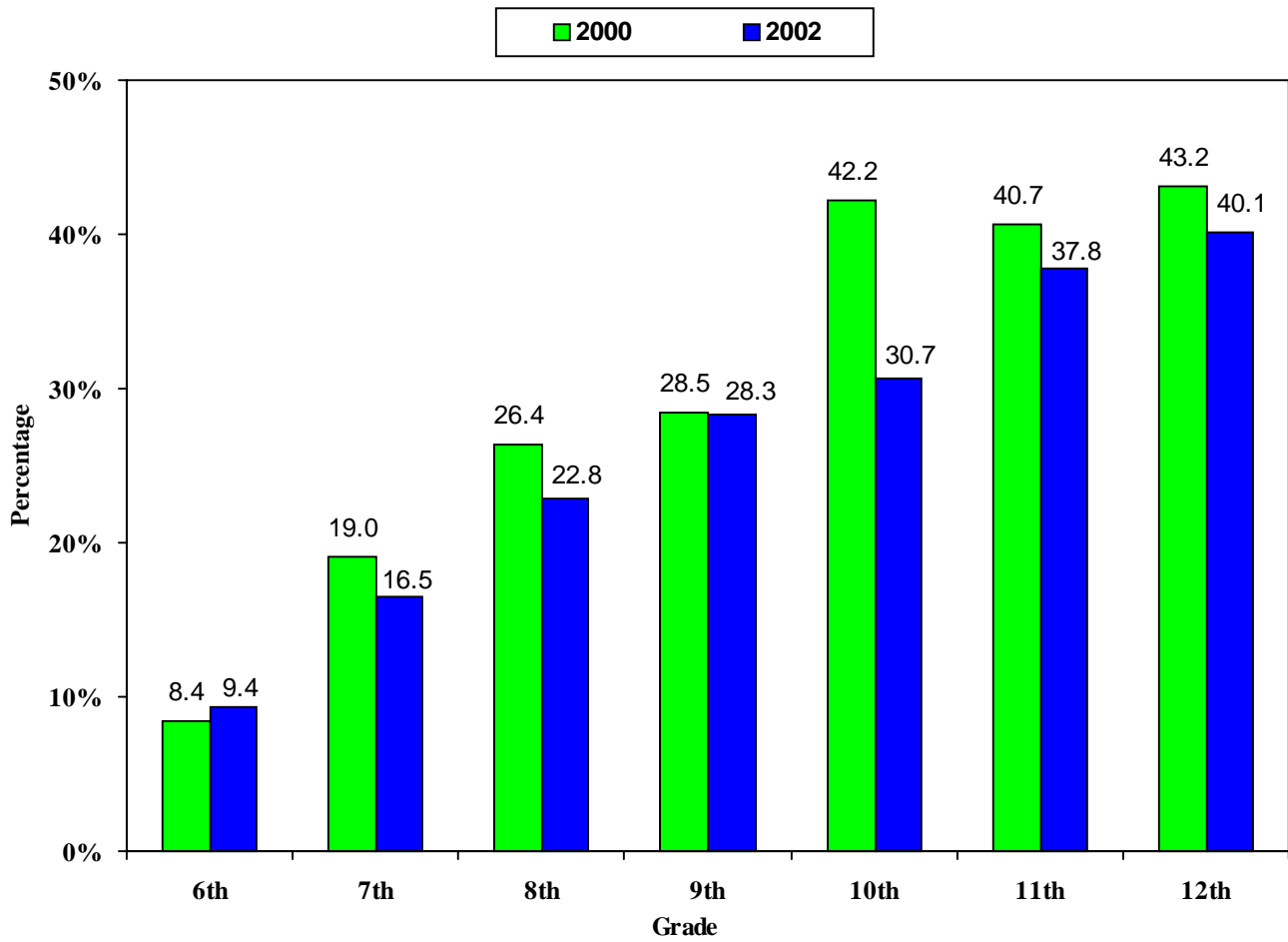
Smokeless Tobacco Use

- The stair-step relationship was also evidenced for the prevalence of current smokeless tobacco use (Table 2). That is, the prevalence showed a steady increase through all grades (except the 12th grade).
- In 2002, similar to cigarette smoking, the grade-by-grade increase in rates of smokeless tobacco use was greatest across middle school grades (56% between 6th and 8th grades, compared to 18% between 9th and 11th grades). Again, it can be concluded that most boys make decisions about smokeless tobacco use while they are still middle school.

Table 2: Current Smoking and Smokeless Tobacco Use (both sexes) by School Grade: WVYTS 2002

Grade	6 th	7 th	8 th	9 th	10 th	11 th	12 th
Current smoking prevalence (%)	9.4	16.5	22.8	28.3	30.7	37.8	40.1
Current smokeless tobacco use prevalence (%)	5.9	8.2	9.2	12.3	13.6	14.5	9.0

Figure 9
Current Smoking Prevalence by School Grade
WVYTS 2002 vs. 2000



FREQUENT USE OF TOBACCO

Not all current smokers are regular users, since students who have smoked on one or more days of the past 30 days also include occasional smokers and experimenters. *Frequent* use of cigarettes is therefore considered a better indicator of tobacco dependence.

Frequent Cigarette Smoking

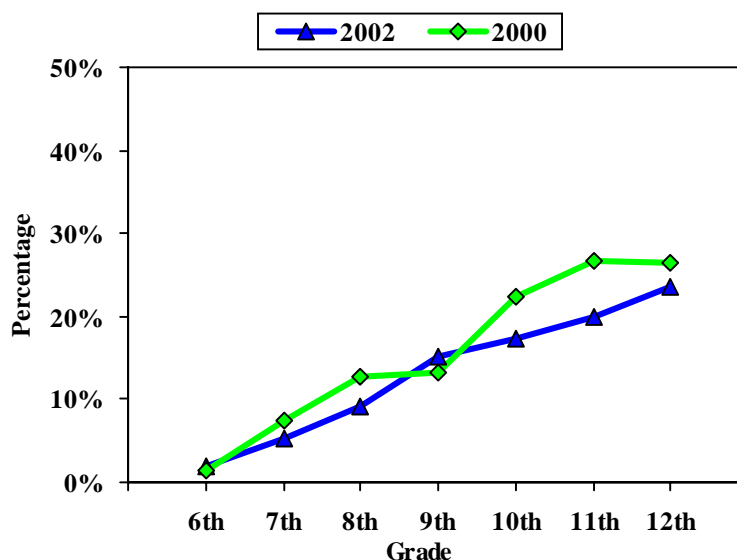
Definition Frequent current smoking is defined as smoking on 20 or more days in the past 30 days.

State Prevalence The prevalence of frequent smoking was 5.4% in middle schools and 18.7% in high schools. The rate of *everyday* smoking was even lower – about 3.7% of middle school students and 15.8% of high school students smoked every day in the past 30 days of the survey.

Gender There were no significant differences between males and females in either school.

Trends Frequent smoking among students in both middle and high schools has decreased from the year 2000; however, the decline was not significant in either of the schools (Figure 10).

Figure 10: Prevalence of Frequent Smoking: WVYTS 2002 vs. 2000



Grade In 2002, the greatest grade-to-grade increase in prevalence occurred between the 7th, 8th, and 9th grades (Figure 10). More gradual but sustained increases in higher grades led to the final prevalence of almost 24% by the time students reached 12th grade.

Frequent Smokeless Tobacco Use

Although current *smokeless* tobacco use is a substantial problem among young males in West Virginia, frequent use is much lower – about 3% of males in middle schools and 8% of males in high schools reported using smokeless tobacco frequently (on 20 or more days of the past 30 days).

OTHER PATTERNS OF TOBACCO USE

Age of Initiation

- Of all students who had ever smoked, about 26% had first smoked a whole cigarette before the age of 11 years.
- About 34% of all male students who had ever used smokeless tobacco had done so before the age of 11 years.

Brands of Cigarettes and Menthol Cigarettes

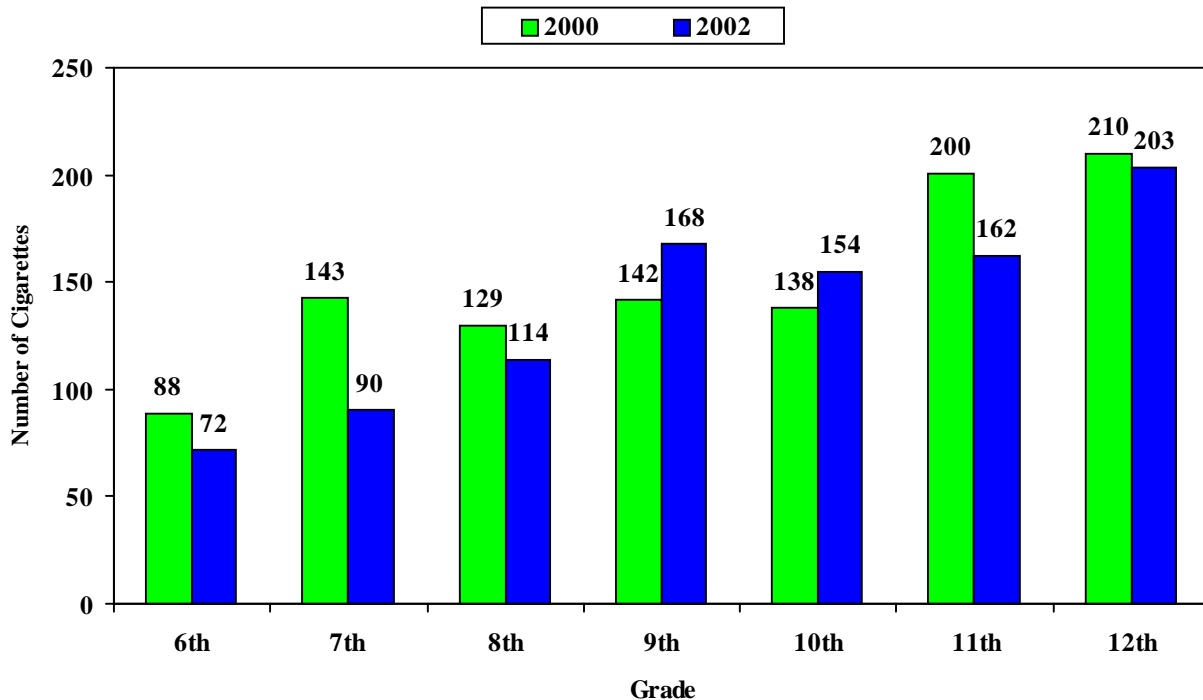
- Middle school smokers were significantly more likely to smoke menthol cigarettes (39%) as compared with high school smokers (28%). It has been suggested that light and menthol cigarettes can serve as a gateway to youth smoking; youth who smoke such cigarettes seriously underestimate the addictiveness of tobacco.⁸
- Marlboro was the brand of choice for the majority of current smokers in both middle and high schools (55%), followed by Newport (13%). About 9% of smokers did not have any usual brand of cigarettes.
- In middle schools, girls were significantly more likely than boys to smoke Camel cigarettes.
- The top brand choice correlates well with the fact that Marlboro is the most advertised brand in the United States;⁹ it also underscores the susceptibility of teenagers to tobacco industry advertising. In fact, one of the tobacco industry documents made public through tobacco lawsuits mentioned that the success of Marlboro Red was largely because it became the brand of choice among teenagers, who then stuck with it as they grew older.¹⁰

CIGARETTE CONSUMPTION

Per Capita Cigarette Consumption

About 24% of middle school smokers and 41% of high school smokers smoked more than six cigarettes per day on the days that they smoked. This has not changed significantly from the 2000 YTS figures. Based on an approach used by the American Legacy Foundation, the average per capita cigarette consumption for current smokers was estimated for each grade as the product of the average number of days smoked in the past 30 days, and the average number of cigarettes smoked on the days smoked.¹¹ A similar approach has been used in New Jersey¹² and Florida.¹³ The findings are summarized below (Figure 11).

Figure 11
Average per Capita Cigarette Consumption among Current Smokers
over a 30-day Period by School Grade
WVYTS 2002 vs. 2000



- In 2002, the average per capita cigarette consumption over a 30-day period among *current smokers* varied from 72 cigarettes among 6th graders to 203 cigarettes among 12th graders.
- In effect, a current smoker in the 6th grade smokes on average a little more than three and one half packs of cigarettes per month, while a 12th grader smokes about 10 packs – almost three times the amount a 6th grader smokes (Table 3). Thus, with increasing school grade, not only do more students smoke (increased current smoking prevalence), but those who smoke also smoke more cigarettes (increased cigarette consumption).
- Cigarette consumption among *middle school smokers in 2002 was significantly lower than that in 2000*. There is thus a promising trend of *declining cigarette consumption* among West Virginia’s youth. Between the years 2000 and 2002, cigarette consumption among current smokers decreased in all grades except the 9th and 10th.
- In the year 2000, cigarette consumption among youth smokers in West Virginia was not significantly different from that among youth smokers nationwide.¹¹

Packs of Cigarettes

The total number of packs of cigarettes consumed by current smokers in each grade was estimated as a product of the average per capita cigarette consumption and the statewide population of students for each grade. It was found that current youth smokers smoke *about 3.5 million packs of cigarettes per year*. These data are limited by the fact that only public school students were included in the WVYTS, so smokers among private school students, school drop outs, and home schooled students were not included and did not contribute to the estimated cigarette consumption. The grade distribution of smoking and cigarette consumption is shown in Table 3.

Table 3: Estimated Number of Packs of Cigarettes Smoked by Current Smokers over a 12-month Period by School Grade: WYTS 2002

Grade	Prevalence of current smoking	Student Population (School Enrollment)*	Estimated total number of smokers	Estimated average 30-day per capita consumption of packs among current smokers	Estimated total number of packs smoked by all current smokers in a 30-day period
6th	9.4%	22,227	2,092	3.59	7,509
7th	16.5%	22,216	3,659	4.52	16,539
8th	22.8%	21,591	4,923	5.71	28,109
9th	28.3%	23,211	6,571	8.41	55,262
10th	30.7%	21,269	6,521	7.72	50,343
11th	37.8%	19,716	7,459	8.11	60,489
12th	40.1%	18,276	7,334	10.17	74,588
		148,506	38,558 (26% of all students)		292,839
Estimated total number of current youth smokers:					38,558 (26% of all students)
Total number of packs smoked in a 30-day period by current smokers:					292,839
Total number of packs smoked in one year by current smokers:					3,514,063

*School Enrollment for the year 2001-2002.

STAGES OF SMOKING: ADOLESCENT PROGRESSION TOWARD ESTABLISHED SMOKING

Adolescents progress to established smoking by passing through five stages – (1) never smokers not susceptible to starting smoking; (2) never smokers, susceptible to starting smoking; (3) experimenters; (4) regular non-daily smokers, and (5) established smokers.^{14,15} These stages are shown in Table 4, along with the category of former smokers.

**Table 4: Adolescent Progression to Established Smoking: Stages and Definitions
WVYTS 2002**

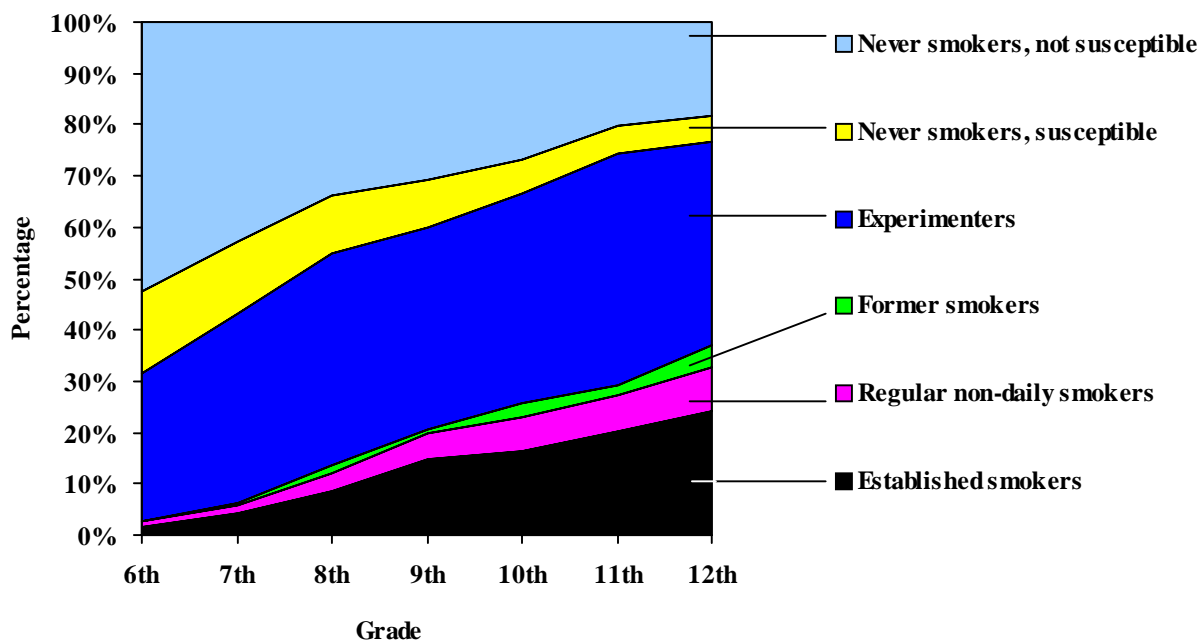
	Stage	Definition
1.	Never smokers not susceptible to smoking	Never tried a cigarette, not even a few puffs <i>and</i> who answered "No, will not try a cigarette soon" <i>and</i> "Definitely no, will not smoke a cigarette in the next year" <i>and</i> "Definitely no, would not smoke a cigarette if best friend offered a cigarette." (All others were considered susceptible)
2.	Never smokers, susceptible to smoking	Never smoker whose answers to susceptibility questions were anything other than in stage 1.
3.	Experimenters	Smoked fewer than 100 cigarettes in lifetime.
4.	Regular non-daily smokers	Smoked ≥ 100 cigarettes in lifetime <i>and</i> smoked on 1-19 days in the last 30 days.
5.	Established smokers	Smoked ≥ 100 cigarettes in lifetime <i>and</i> smoked on ≥ 20 days in the last 30 days.
6.	Former smokers	Smoked ≥ 100 cigarettes in lifetime <i>and</i> did not smoke in the last 30 days.

On an average, it is estimated that the transition from experimentation to established smoking for teenagers takes about three years.¹⁶ Therefore, this provides ample opportunity for physicians and public health professionals alike to intervene to halt this progression.

The percentages of West Virginia students in various stages of progression are shown graphically in Figure 12.

Never smokers: It was found that the percentage of never smokers (categories 1 and 2) decreased by grade as more and more students entered the “smoking” pool (categories 3-6). About 68% of 6th graders had never smoked, compared to just 23% of 12th graders. In general, about 23% of all never smokers are susceptible to starting smoking.

Figure 12: Stages of Progression to Established Smoking by Grade: WVYTS 2002



Experimenters: About 36% of all middle school students and 41% of all high school students are experimenters. Thus, the majority of students are in this stage, and may also spend a substantial amount of time here before progressing to other stages. More and more students transition from “never smoking” to “experimenting” in middle school grades – the percentage of never smokers falls drastically (light blue and yellow areas of graph) until students reach the 8th or 9th grade, by which time the patterns seem to stabilize. Thus, most decisions about smoking have been made by the time students reach 9th grade.

Regular non-daily smokers: These constitute a small proportion of all students (2% and 7% in middle and high schools, respectively). This is an important category nevertheless because, according to the 1994 Surgeon General’s report,¹⁵ experimenters and regular non-daily smokers are at the highest risk of becoming established smokers, since they have already smoked cigarettes – *together, these represent almost 44% of all middle and high school students in West Virginia.* While the actual percentage of students in this category at any one point is small, this could just represent students residing in this stage for a brief period before progressing to the established smokers stage, the percentage of which keeps rising. Students may also regress to lower stages.

Established smokers: These represent about 5% of all middle school students and 19% of all high school students in West Virginia.

The implications for tobacco prevention programs in the state would be to develop programs and seek participation of younger students (middle school students) who are forming opinions and making decisions about the use of tobacco, and also to develop ways to specifically target the high-risk experimenters and non-daily smokers in all grades.

ACCESS TO TOBACCO: METHODS OF OBTAINING TOBACCO

The legal age for purchasing any tobacco product is 18 years, yet 23% of middle school students and 41% of high school students are tobacco users.

Usual Source of Cigarettes in Past 30 Days

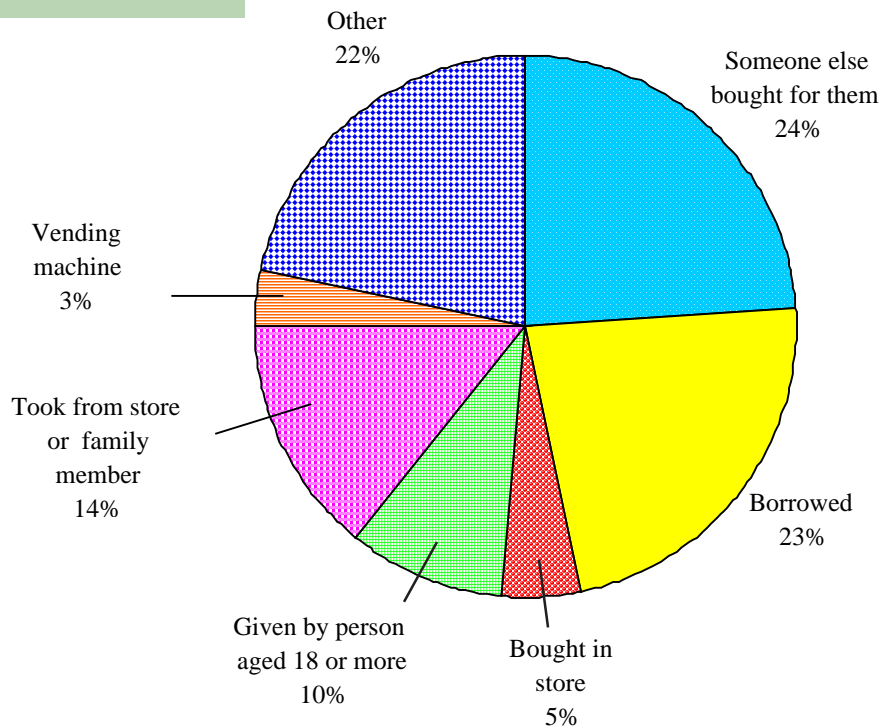
- The adolescent's perceived ease of access to tobacco and the actual ability to get tobacco are considered to be crucial in determining the subsequent use of tobacco. Nationwide, therefore, increased efforts are under way to curb teenagers' access to tobacco products and strictly enforce the proof of age requirement for purchasing tobacco.
- In West Virginia, among current smokers under 18 years in both middle and high schools, the two most common ways of obtaining cigarettes in the last 30 days of the survey were:
 - 1) giving money to someone else to buy cigarettes for them
 - 2) borrowing cigarettes (Figure 13).
- Among middle school students, the third most common way was taking or stealing cigarettes from a store or family member. Among high school students, the third most common way was *buying* cigarettes in a store.
- High school students were significantly more likely than middle school students to *buy* their cigarettes in a store. This pattern was also seen for smokeless tobacco – that is, high school users of SLT were significantly more likely to buy their SLT in a store than middle school users.
- *Almost one in five high school underage smokers (19%) and about 5% of middle school underage smokers usually purchased their cigarettes in the past 30 days.*
- Cigarette purchasing patterns among students did not change significantly between the years 2000 and 2002.

Last Pack of Cigarettes

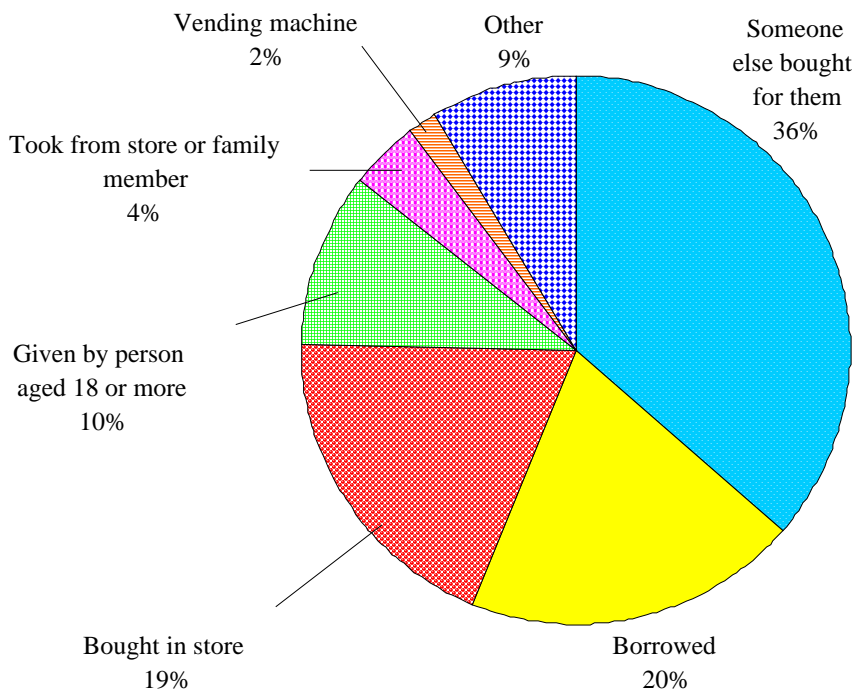
The majority of underage smokers – 36% in middle schools and 68% in high schools – had bought their last pack of cigarettes at either a gas station or at a convenience store, rather than at any other place (such as grocery store, drug store, vending machines, Internet). This suggests that underage students are less likely to be asked for proof of age at gas stations and convenience stores than at other stores. Vending machines and the Internet constituted a very small proportion of all sources of purchases.

Figure 13
How Current Smokers under Age 18 Usually Got Their Cigarettes
during the Past 30 Days: WVYTS 2002

Middle Schools



High Schools



ACCESS TO TOBACCO: SALES TO MINORS

Sales to minors constitute a serious problem in West Virginia. Of all current smokers under the age of 18 years:

- About 70% of those in middle school and 61% of those in high school were *not* asked for proof of age while purchasing cigarettes in the past 30 days.
- About 69% of those in middle schools and 63% of those in high schools were *not* refused a cigarette sale because of their age.

Shortcomings

The high percentages above should be interpreted with caution because:

- As seen in the preceding section, purchase of cigarettes represents only about 5% of all methods used to acquire cigarettes among middle school underage smokers and about 19% among high school underage smokers.
- Furthermore, it is likely that students who buy their tobacco often know the stores that will not ask for proof of age. Therefore, the high percentages above do not necessarily indicate a corresponding percentage of stores selling tobacco to minors.

In fact, according to the 2002 Synar Report, only about 10.1% of the surveyed tobacco retail shops in West Virginia sold tobacco products to minors.¹⁷ The Synar Report is an annual survey conducted in all states under federal Synar Regulations to determine the rate of compliance with state laws prohibiting the sale of tobacco to minors. The survey consists of annual random unannounced inspections of tobacco retail outlets by the West Virginia State Police along with trained youth. It is coordinated by the United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration and the West Virginia Bureau for Behavioral Health and Health Facilities.

Trends

- The percentage of students who were *not* asked for proof of age did not change significantly from the previous year; however, a declining trend is evident since 1999.
- Since most underage smokers who buy cigarettes do so at gas stations or convenience stores as noted in the preceding section, these stores should serve as targets for proof of age enforcement. However, it should be realized that enforcement, however strict, will not stop teenagers' access to tobacco because of other more common methods of obtaining tobacco, as noted in the previous section. Rather, it is more important to educate older students about the harm of supplying tobacco to younger students.

Regional Middle School Data

- Among middle schools, regional variations existed in the percentage of underage smokers asked for proof of age, but, again, none of these were statistically significant (Appendix C).

TOBACCO USE ON SCHOOL PROPERTY

Not only is tobacco use prohibited on school property, but tobacco possession is also prohibited. Yet tobacco continues to be a problem on school campuses statewide.

Trends among High School Students

Figure 14 shows the rates of smoking and smokeless tobacco use on school property among high school students since 1993. Substantial reductions were especially seen in the rate of smoking on school property:

- *Smoking on school property showed a statistically significant decline of 30% in 2002 as compared to 1999.*
- *Smokeless tobacco use by boys on school property showed a statistically significant decline of almost 40% in 2002 as compared to 1995.* However, there was a slight increase in the year 2000 that was not significant.

2002 WVYTS Findings

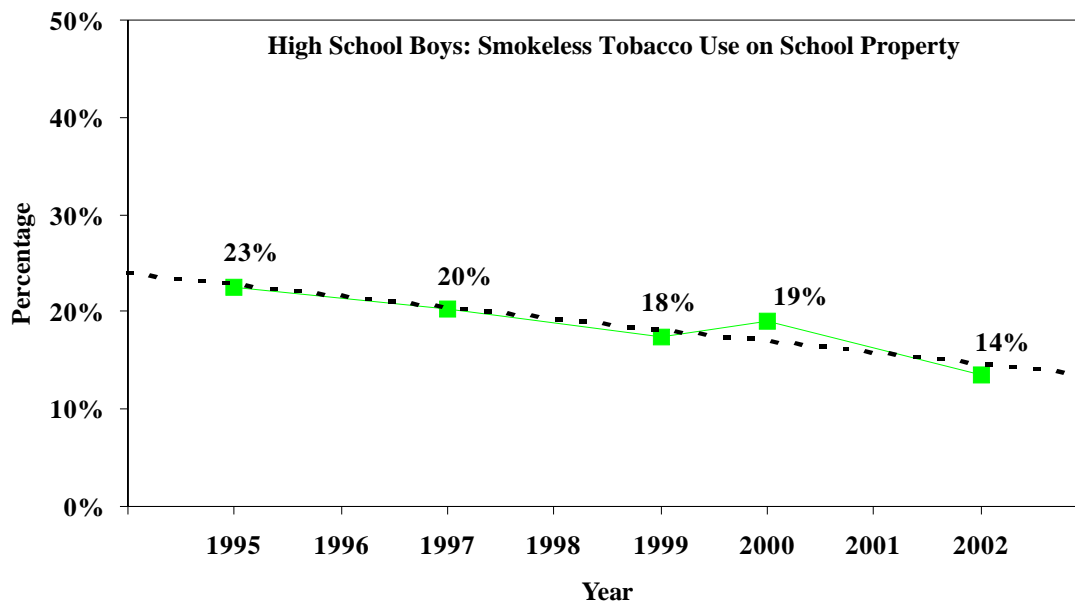
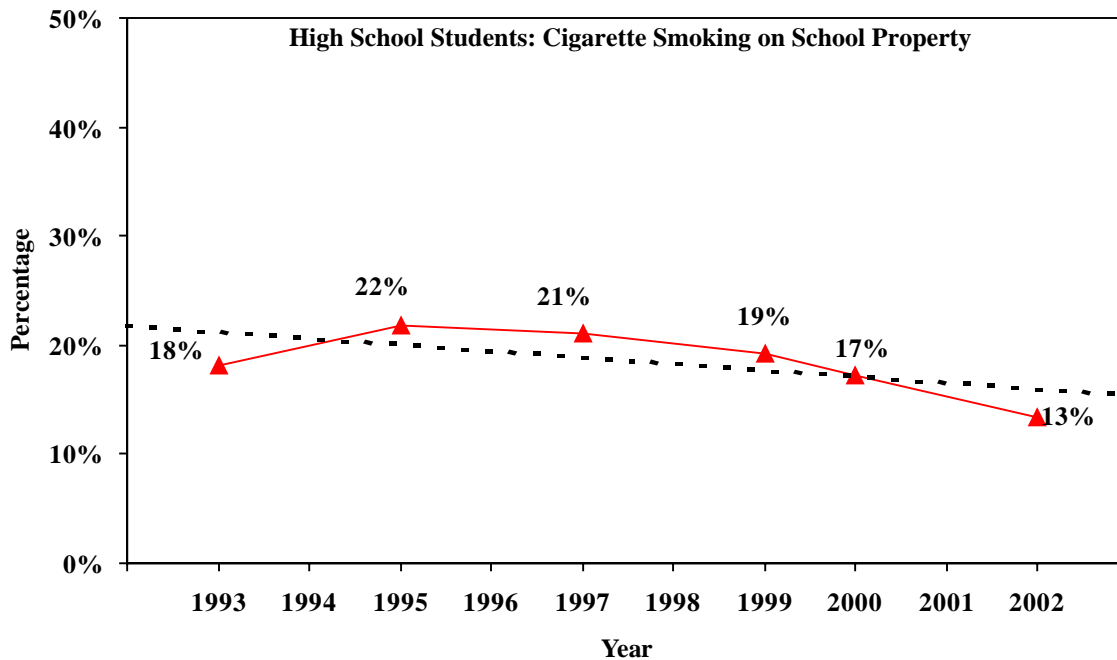
Much still remains to be accomplished in terms of tobacco use on school property. In the 2002 WVYTS, it was found that:

- About 5% of all middle school students and 13% of all high school students smoked cigarettes on school property in the past 30 days.
- About 6% of middle school males and 14% of high school males used smokeless tobacco on school property in the past 30 days.
- The use of both cigarettes and smokeless tobacco on school property increased through each upper school grade, reaching its peak in the 12th grade (Figure 15).
- No significant differences were observed between male and female students.
- Regional middle school data showed variations in different regions, but none of these were significantly different from the state overall (Appendix C).

Among current smokers/smokeless tobacco users:

- More than one quarter (28%) of middle school current smokers smoked on school property in the past 30 days. About 38% of all middle school boys who currently use smokeless tobacco used it on school property in the past 30 days.
- About 38% of all high school current smokers smoked on school property in the past 30 days. About 57% of all high school boys who currently use smokeless tobacco used it on school property in the past 30 days.

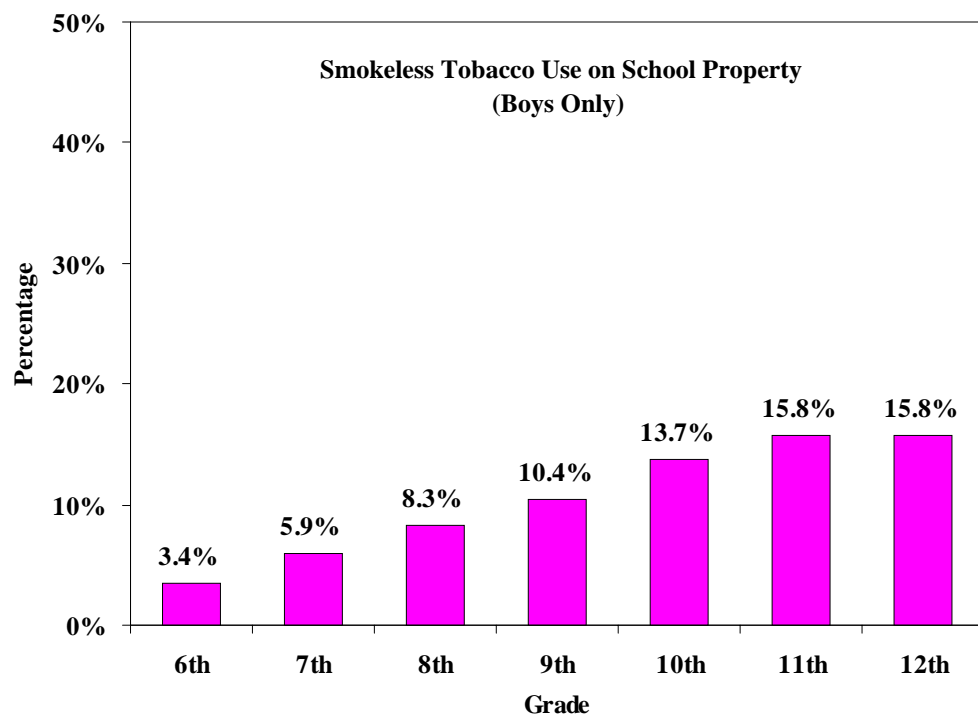
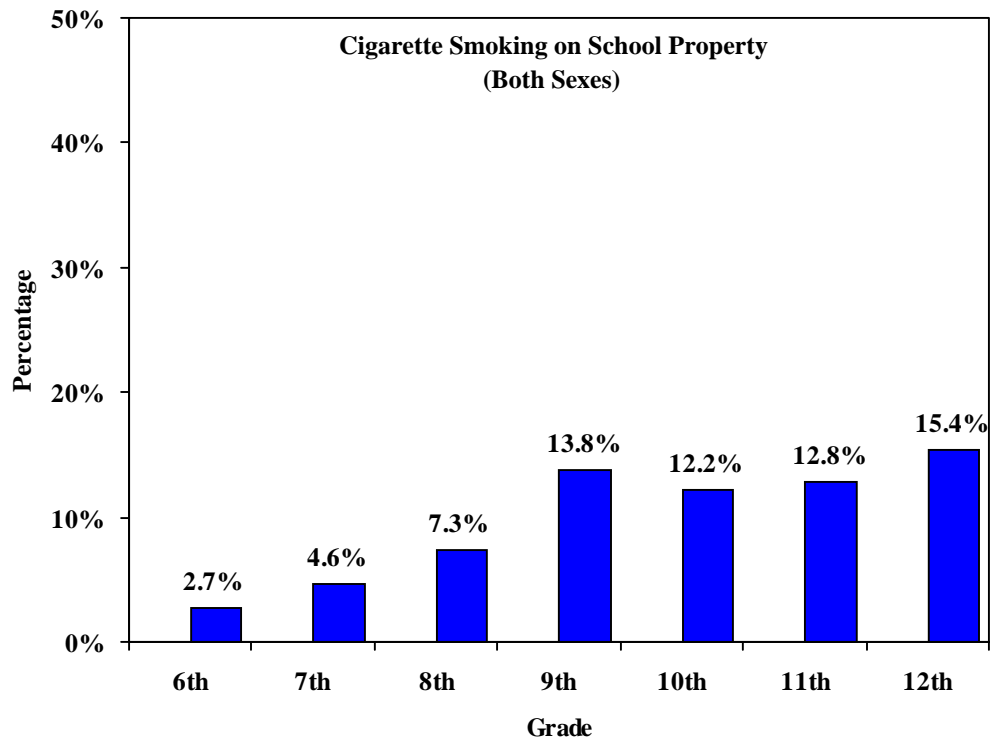
Figure 14
Trends in Cigarette Smoking and Smokeless Tobacco Use on School Property Among
High School Students in West Virginia: 1993-2002*



*1993-1999: YRBS data; 2000-2002: YTS data. Data for all years not available. Trend lines were not created for middle school students since data for these were available only for the years 2000 and 2002.

- - - - - Least Squares Regression Line

Figure 15
Percentage of Students Who Smoked Cigarettes or Used Smokeless Tobacco on School Property by School Grade: WVYTS 2002



SMOKING CESSATION

About 34% of middle school smokers and 49% of high school smokers feel that they need a cigarette everyday. This is a strong indication of nicotine addiction.

Desire to Quit and Self-Efficacy

- More than half of all current smokers indicated that they wanted to stop smoking (51% in middle schools and 59% in high schools).
- However, about 28% of current smokers in middle schools and 27% in high schools also thought that they would NOT be able to quit smoking now if they wanted to.
- This “self-efficacy,” that is, the confidence in one’s ability to successfully quit, was significantly lower among *frequent* smokers– 45% of frequent smokers in middle schools and 38% in high schools believed that they would not be able to quit now if they wanted to.
- There were no significant differences between males and females in either desire to quit or self-efficacy. There were also no changes from the year 2000.

Attempts to Quit

Of all current smokers:

- More than half said that they tried to quit smoking during the past 12 months – 57% in middle schools and 58% in high schools. This has not changed significantly from the year 2000.
- About 43% in middle schools and 49% in high schools stayed off cigarettes for *less than 30 days* on the last quit attempt. The lower self-efficacy probably translates into a lower success rate of quitting.

Knowledge of Cessation Programs

- Only 12% of current smokers in middle schools and 9% of those in high schools had ever participated in a cessation program to help quit using tobacco. This has not changed significantly from the year 2000.
- *Female smokers in middle schools* were significantly *less likely* to have ever participated in a cessation program than male smokers. In high schools, though the pattern was similar, it was not significant. It is possible that cessation programs in the state are reaching out more to boys who smoke rather than girls.

SECONDHAND SMOKE (SHS)

Exposure to Secondhand Smoke Indoors and in Cars

- About 69% of middle school students and 80% of high school students were in the same room with someone who was smoking cigarettes on at least one occasion in the past seven days.
- About 55% of middle school students and 61% of high school students rode in the same car with someone who was smoking cigarettes on at least one occasion in the past seven days.
- Combining the two, 73% of middle school students and 83% of high school students *either* rode in a car *or* were in the same room with someone who was smoking cigarettes in the past seven days.
- *For middle school students, this represented a statistically significant decline of 7% from the 2000 value.* The decline among high school students was not significant.
- These percentages amount to *an estimated 116,792 students in West Virginia who were exposed to SHS in a room or a car on at least one occasion in the past seven days. Of these, 79,533 were non-smokers.* Interestingly, more than 91% of students in both schools believed that smoke from other people's cigarettes is harmful to them.

Exposure to Secondhand Smoke in Current Smokers vs. Never Smokers

Exposure was significantly higher among current smokers than never smokers in both middle schools and high schools. This could be interpreted in two different ways:

Family members

It is possible that exposure to SHS while with friends or family influences smoking patterns in the teenager and lead to smoking behavior. For example:

- About 52% of middle school students and 50% of high school students live in the same household with someone who currently smokes.
- However, a significantly higher percentage of *current* smokers (68%) as compared with *never* smokers (37%) live with someone who currently smokes. Thus, adult smokers in the family can have a significant influence on inducing smoking habits in adolescents. Similar patterns were also seen for smokeless tobacco use.

Close friends

It is also possible that current smokers develop friend circles that include mostly smokers. Such friend circles may in turn further reinforce the smoking behavior. For example:

- Of all middle school *current* smokers, 90% had one or more smokers among their four closest friends. For high school smokers, this figure was 92%.
- For *never* smokers, these percentages were 28% for middle school and 48% for high school. Similar patterns were also seen for smokeless tobacco use.

KNOWLEDGE, BELIEFS AND ATTITUDES

Perceived Harmful Effects

- Teenagers in general are more likely to perceive the *harmful effects* of tobacco use than the benefits. The overwhelming majority of students, smokers and non-smokers alike, were aware that cigarette smoking is addictive and can cause serious diseases (Figure 16).

Perceived Benefits

- One in five students in both middle and high schools thought that young people who smoke have more friends. About 14% of middle school students and 11% of high school students thought that smoking cigarettes made young people look cool or fit in.
- The perceived benefit of having more friends was an opinion more resistant to extinction as students progressed through higher grades. That is, a higher percentage of students continued to have this opinion in upper school grades (compared to other perceived benefits).
- An important opinion that was *not surveyed* was the perceived benefit of weight loss or weight control associated with smoking. This is known to be an important perceived belief especially among girls.¹⁸ There were no significant changes in perceived benefits and harmful effects from 2000.

Perceived Harmful Effects and Benefits among Current Smokers

- Current smokers in both schools were *less* likely than never smokers to perceive the *harmful effects* of tobacco use. Especially in middle schools, but also in high schools, more smokers than never smokers thought that it was safe to smoke for a year or two as long as they quit after that. Younger students probably underestimate how difficult it is to quit once addicted to tobacco. Though the majority of smokers (85%) were aware of the addictive properties of tobacco, about 59% still believed that they would not be smoking five years from now.
- Current smokers were also *more* likely to perceive *benefits* related to smoking than non-smokers (more pronounced in middle school than high school). For example, of all middle school smokers, 44% thought that young people who smoke have more friends (high school: 27%) and 32% thought that smoking cigarettes made young people look cool or fit in (high school: 16%).

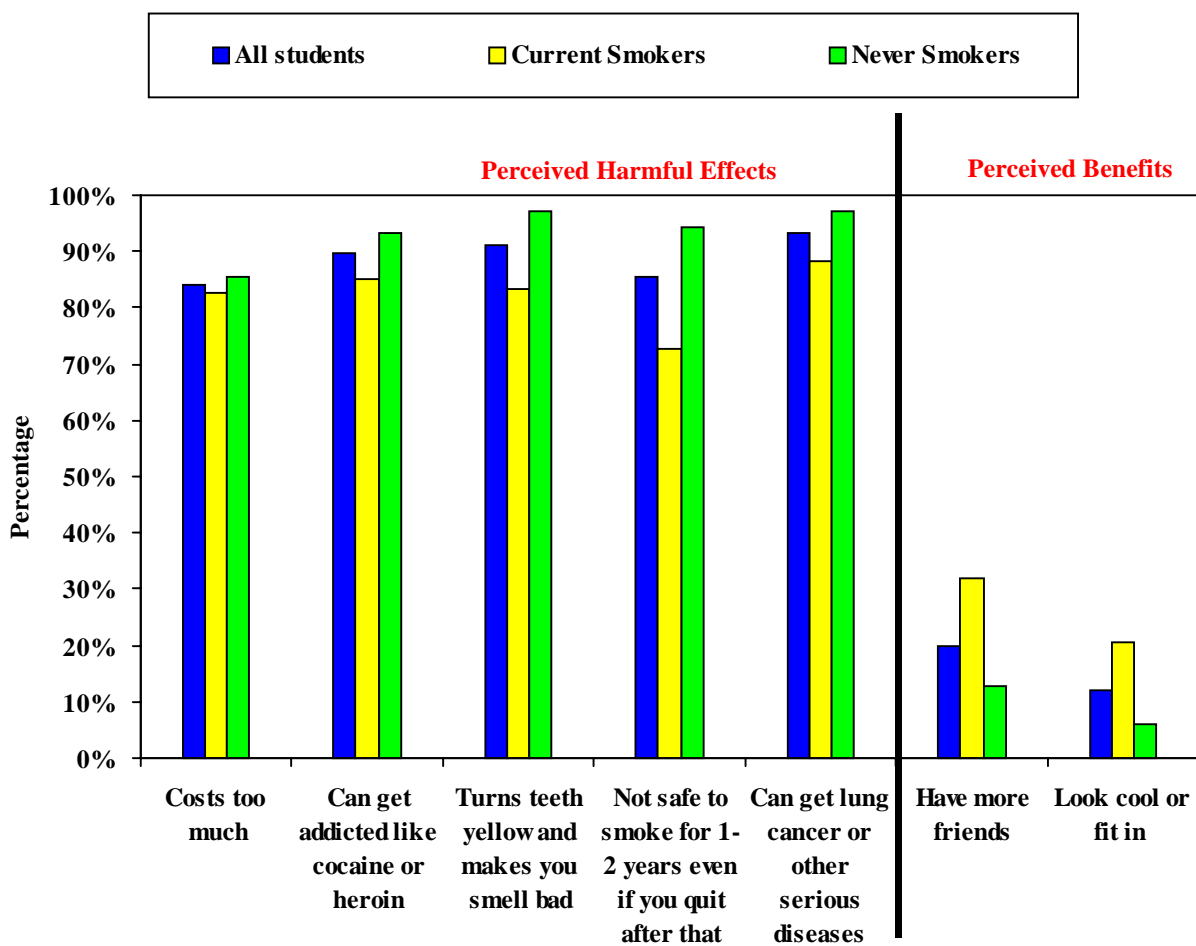
Beliefs about Future Smoking

- About 20% of middle school students and 36% of high students said they think they will smoke a cigarette at anytime during the next one year.
- About 17% of middle school students and 22% of high school students believe that they will be smoking five years from now.

Other Opinions (among High School Students)

- About 73% believe that teenagers who use tobacco products are victims of tobacco companies' marketing and advertising.
- About 90% believe that tobacco products could cause them to potentially lose a family member to disease.
- About 69% were worried about their parents or relatives using tobacco products.

Figure 16
Perceived Harmful Effects and Perceived Benefits of
Tobacco Use among Adolescents
WVYTS 2002*



* Questions on "costs too much," "turns teeth yellow and makes you smell bad," and "can get lung cancer or other serious diseases" were asked to high school students only.

TOBACCO INDUSTRY ADVERTISING AND ADOLESCENT RECEPTIVITY

Tobacco Industry Advertising

Most adult smokers start smoking before the age of 18 years. It is generally believed that tobacco industries target teenagers to a greater extent than most other industries.

- About 89% of all students see actors using tobacco most/some of the time when watching movies or TV.
- About 36% of all students see athletes using tobacco when watching TV.
- About 36% of all students see ads for tobacco products when using the Internet. The Internet has especially become an important and unregulated source of advertising in recent years and is thus reaching out to more than a third of all students.

Overall, more than 91% of all students were exposed to tobacco industry advertising while watching TV or movies or using the Internet. There were no significant changes from the year 2000.

Adolescent Receptivity

Receptivity of adolescents to tobacco industry advertising was determined by asking if they had bought or received, or would ever buy or receive (definitely or probably), anything with the tobacco company name or picture printed on it, for example, a T-shirt, hat, sunglasses, or a lighter. It was found that:

- A little less than half (45%) of all middle school students and more than half (52%) of all high school students were receptive to tobacco company merchandise. A declining trend is evident from the year 2000.
- Current tobacco users were more receptive to tobacco company merchandise than never tobacco users:
 - ◆ As many as 79% of current tobacco users in middle schools and 73% in high schools were receptive to advertising.
 - ◆ Among never tobacco users, 24% of students in both middle and high schools were receptive to advertising.

The high percentages of students receptive to tobacco company advertising underscores the impressionable nature of the adolescent mind.

GENERAL ANTI-TOBACCO INFLUENCES

Peer influence and tobacco industry advertising are often recognized as major influences on teens; however, it is reported that family, physicians, schools, and different anti-tobacco campaigns make a substantial contribution in counteracting these.

At Home

- About 71% of middle school students and 65% of high school students had discussed the dangers of tobacco use with their parent or guardian in the past 12 months.
- Unfortunately, this also means that the parents of 29% of middle school students and 35% of high school students had NOT had such a discussion with their children in one full year.
- *Unfortunately again, fewer students had such a discussion with their parent/guardian in 2002 than in 2000 – this declining trend was statistically significant among high school students.*
- In middle schools, girls were significantly more likely to have had such a discussion with their parents than boys.

Not surprisingly, never smokers were significantly more likely to have had such a discussion with their parents than current smokers. This emphasizes the importance of parents discussing the dangers of tobacco use with their children, even middle-school-aged children. Parents need to responsibly recognize their role in preventing tobacco use by their children.

At School

Were taught about dangers of tobacco:

- About 76% of middle school students and 56% of high school students said that they were taught about the dangers of tobacco use in any class in the past school year.
- There were no significant changes from the year 2000.

Practiced ways to say NO to tobacco:

- About 51% of middle school students and 24% of high school students said that they practiced ways to say NO to tobacco in any class in the past school year.
- There were no significant changes from the year 2000.

In the Community

- In both middle and high schools, about 14% of students had participated in any community event to discourage people from using tobacco in the past 12 months. But 39% of middle school students and 27% of high school students *did not know* about such events.
- In middle schools, never tobacco users were significantly more likely than current tobacco users to have participated in such events when they knew about the event (in high schools, this pattern was not significant).

MASS MEDIA AND ANTI-TOBACCO CAMPAIGNS

Media

- About 77% of middle school students and 84% of high school students had seen or heard anti-smoking commercials during the past 30 days.
- In general, high school students were more likely to have noticed such commercials than middle school students.
- Middle school *girls* in particular were significantly more likely to have noticed such commercials than middle school boys.

Type of Media

Television was the most common type of media through which students had seen or heard anti-tobacco advertising in both middle and high school students. Billboards, magazines and radio were also common (Table 5). Few students had seen or heard anti-tobacco advertisements in newspapers or on the Internet.

Table 5: Type of Media on Which ANTI-Tobacco Messages Were Seen or Heard in the Past 60 Days by School: WVYTS 2002*

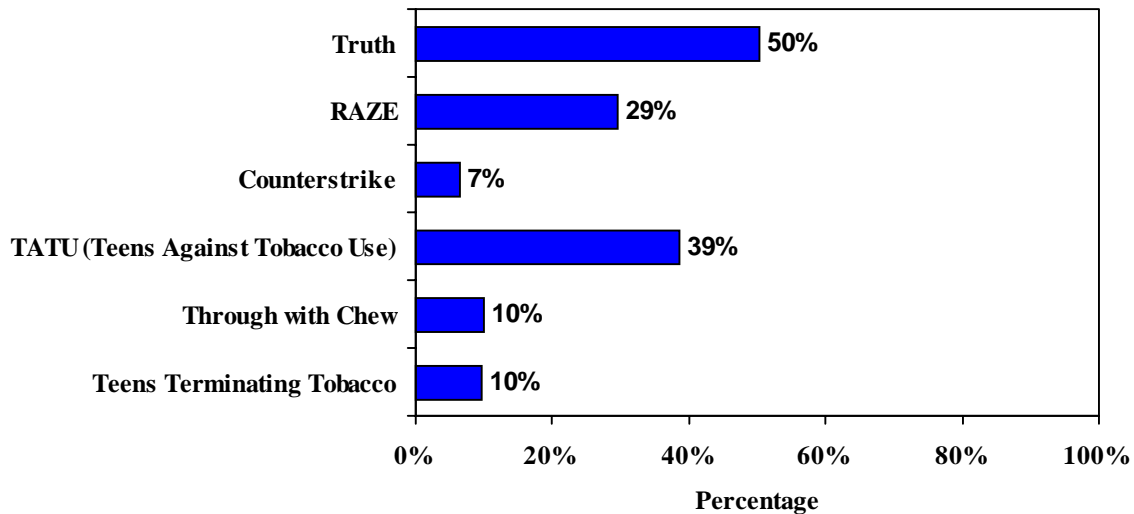
Type of Media	Percent of students who saw or heard anti-tobacco advertising on specific media	
	Middle School	High School
Television	75%	76%
Billboards	38%	37%
Radio	35%	40%
Magazine	35%	35%
Internet	18%	15%
Newspaper	14%	15%

* Percentages add to more than 100% because students could choose more than one response among the answer choices.

Anti-Tobacco Campaigns

About 29% of all students had seen or heard advertising of the state-sponsored tobacco prevention program RAZE (Figure 17). However, the WVYTS was conducted before RAZE was launched on a wide scale, and therefore this percentage is very likely an underestimate of the current situation. Roughly half of all students had seen or heard advertising of the nationwide anti-tobacco campaign Truth.

Figure 17: Percent of Students Who Saw or Heard ANTI-Tobacco Ads in the Past Two Months by Type of Campaign: WVYTS 2002*



*Percentages add to more than 100% because students could choose more than one answer.

Type of Sponsoring Organization

High school students were asked if they specifically recognized the sponsors of anti-tobacco campaigns. The American Heart Association and American Lung Association were the most widely recognized sponsors (78% and 62%, respectively).

SUMMARY AND PROGRAM IMPLICATIONS

Youth tobacco use continues to be a significant problem in West Virginia. The 2002 WVYTS provides an insight into the areas that need to be specifically targeted in order to sustain and enhance the declining trend of tobacco use that has begun in recent years.

- The southern parts of the state – the Southern Coalfield region, the Western region and the Greenbrier Valley region – need to be specifically targeted for preventing tobacco use.
- Given the large number of experimenters in both schools, specific measures need to be taken for the “primary prevention” of tobacco use. Equal resources should be allocated for prevention among girls and boys.
- Younger middle school students should be more vigorously targeted for primary prevention because the transition from “never smoking” to “experimenting” generally occurs before students reach the 9th grade.
- The dangers of menthol and light cigarettes, bidis, and kreteks should be emphasized as being no less than ordinary cigarettes.
- Tobacco prevention programs should include measures to increase self-efficacy about quitting. Information about cessation programs should be made more widely available, especially to girls.
- Gas stations and convenience stores should be prime targets for enforcing proof of age requirements for tobacco sales. Furthermore, older students should be educated about the harm of supplying tobacco to younger students.
- Measures should be taken to increase awareness among parents about the need to educate children about the dangers of tobacco use. Schools could play an active role in this by requiring parental interaction or parent education.
- Similarly, there is also a need to increase awareness among parents about rules on smoking at home or in the car or when teenagers are present.
- Since most adolescents are aware of the dangers of tobacco use, there is greater need to address the perceived *benefits* of tobacco use.
- Greater efforts have to be made in terms of legislation and policy making to curb tobacco advertising, especially distribution of free promotional items in the vicinity of schools and, more recently, Internet advertising.
- With tobacco industry advertising expanding to the Internet, *anti*-tobacco campaigns should use this media on a wider scale for their messages.
- Future surveys should gather data on the perceived benefit of weight loss associated with smoking, especially among girls, and also on the knowledge, acceptance, and popularity of the state’s anti-tobacco campaign, RAZE.