



TOBACCO USE PREVALENCE AMONG YOUTH

West Virginia
Youth Tobacco Survey
2013

Tobacco Use Prevalence Among Youth

West Virginia Youth Tobacco Survey 2013

Earl Ray Tomblin
Governor

Karen L. Bowling
Cabinet Secretary
Department of Health and Human Resources

Rahul Gupta, MD, MPH, FACP
Commissioner and State Health Officer
Bureau for Public Health

Anne Williams, RN, BSN, MS-HCA
Deputy Commissioner of Health Improvement
Bureau for Public Health

Daniel M. Christy, MPA
Director, Health Statistics Center
Bureau for Public Health

Report Prepared By
Kathi K. Elkins, MBA
Tobacco Epidemiologist
West Virginia Health Statistics Center
Bureau for Public Health

Edited By
Birgit A. Shanholtzer, MA
Director, Epidemiology Division
West Virginia Health Statistics Center
Bureau for Public Health

Special Acknowledgments

- Staff and students of West Virginia’s public schools who participated in the 2013 West Virginia Youth Tobacco Survey
- Staff of the West Virginia Department of Education
- Staff of the West Virginia Division of Tobacco Prevention (DTP):
 - Bruce Adkins, Interim Director, Office of Community Health Systems Health Promotion (former DTP Director)
 - Jim Kerrigan, DTP Director
 - David Deutsch, DTP Youth Program Manager
 - Christina Chill, DTP Youth Program Coordinator

Suggested Citation

All material appearing in this report is in the public domain and may be reproduced freely. Please acknowledge the source with the following citation:

West Virginia Department of Health and Human Resources, Bureau for Public Health, Health Statistics Center (2015). *Tobacco Use Prevalence Among Youth, West Virginia Youth Tobacco Survey 2013.*

Additional Information Available

To access additional West Virginia Health Statistics Center publications, visit our website: www.wvdhhr.org/bph/hsc/statserv/publist.asp or call (304) 558-9100.

The West Virginia Health Statistics Center can do customized reports and data analysis for grants, provide limited datasets for formal research, agency use, or specific community health planning and local health department activities. If you have questions about the data in this report, or feel you may need additional information, please call (304) 558-9100 and ask for the author of this report or a West Virginia Health Statistics Center staff member.

To access additional information from the West Virginia Division of Tobacco Prevention, visit the DTP website: <http://www.dhhr.wv.gov/wvntp>

Table of Contents

Introduction.....	1
Methodology.....	2
Indicators for Tobacco Use Prevalence Among High School Students.....	3
TOBACCO USE.....	3
Never-Tobacco Use Among High School Students.....	3
Current Tobacco Use Among High School Students.....	5
CIGARETTE SMOKING.....	6
Never-Smoking Among High School Students.....	6
Susceptibility Index Indicators Among High School Students.....	8
Age of Onset for Cigarette Smoking Among High School Students.....	9
Current Smoking Among High School Students.....	9
Smoking Cessation and Ex-Smokers Among High School Students.....	12
SMOKELESS TOBACCO USE.....	12
Smokeless Tobacco Use Among High School Students.....	12
Dual Use Among High School Males: Current Smokeless Tobacco Use Among Current Cigarette Smokers.....	14
USE OF OTHER TOBACCO PRODUCTS.....	15
Cigar Smoking Among High School Males.....	15
Pipe Smoking Among High School Males.....	16
Use of New Tobacco Products Among High School Students.....	16
Indicators for Tobacco Use Prevalence Among Middle School Students.....	19
TOBACCO USE.....	19
Never-Tobacco Use Among Middle School Students.....	19
Current Tobacco Use Among Middle School Students.....	19
CIGARETTE SMOKING.....	19
Never-Smoking Among Middle School Students.....	19
Susceptibility Index Indicators Among Middle School Students.....	19
Current Smoking Among Middle School Students.....	20
SMOKELESS TOBACCO USE.....	20
Smokeless Tobacco Use Among Middle School Males.....	20
Dual Use Among Middle School Males: Current Smokeless Tobacco Use Among Current Cigarette Smokers.....	21
USE OF OTHER TOBACCO PRODUCTS.....	22
Cigar Smoking Among Middle School Males.....	22

Pipe Smoking Among Middle School Males.....	22
Use of New Tobacco Products Among Middle School Students.....	22
Conclusions.....	24
Limitations	24
Descriptions of Tobacco Products	25
References.....	26

List of Tables and Figures

- Table 1. WVYTS Sampling Results
- Figure 1. Prevalence of Never-Tobacco Use Among West Virginia Youth
- Figure 2. Prevalence of Never-Tobacco Use Among West Virginia High School Students by Gender and Grade, 2000 and 2013
- Figure 3. Prevalence of Current Tobacco Use Among West Virginia Youth
- Figure 4. Prevalence of Current Tobacco Use Among West Virginia High School Students by Gender and Grade, 2000 and 2013
- Figure 5. Prevalence of Never-Smoking Among West Virginia Youth
- Figure 6. Prevalence of Never-Smoking Among West Virginia High School Students by Gender and Grade, 2000 and 2013
- Figure 7. Prevalence of Susceptibility Index Indicators Among West Virginia High School Students
- Figure 8. Prevalence of Current Cigarette Smoking Among West Virginia High School Students by Gender and Grade, 2000 and 2013
- Figure 9. Prevalence of Current Cigarette Smoking Among High School Students, West Virginia and U.S.
- Figure 10. Weighted Frequencies of Cigarette Smoking Indicators Among West Virginia High School Students
- Figure 11. Prevalence of Current Smokeless Tobacco Use Among West Virginia High School and Middle School Males
- Figure 12. Weighted Frequencies of Smokeless Tobacco Use Indicators Among West Virginia High School Males
- Figure 13. Prevalence of Dual Use Among West Virginia High School and Middle School Males: Current Smokeless Tobacco Use Among Current Cigarette Smokers
- Table 2. Prevalence of Trying or Current Use of New Tobacco Products Among West Virginia High School Students by Gender, 2013
- Figure 14. Prevalence of Current Cigarette Smoking Among West Virginia Youth
- Figure 15. Weighted Frequencies of Smokeless Tobacco Use Indicators Among West Virginia Middle School Males
- Table 3. Prevalence of Trying or Current Use of New Tobacco Products Among West Virginia Middle School Students, 2013

Introduction

Tobacco use, primarily cigarette smoking, continues to be the leading cause of preventable death in the U.S. (Centers for Disease Control and Prevention [CDC], 2015a) and in West Virginia (West Virginia Health Statistics Center [WVHSC], 2009). Smoking can damage every part of the body (CDC, 2013c), and each year in the U.S. about 480,000 deaths are caused by cigarette smoking and exposure to secondhand smoke (CDC, 2015a). In West Virginia during each year of 2006-2010, about 3,800 adults aged 35 and older died prematurely from smoking-related illnesses (WVHSC, 2013). These smokers died an average of 14.6 years prematurely (WVHSC, 2013). The annual economic costs of these deaths amounted to about \$1.78 billion from direct healthcare costs and lost productivity (WVHSC, 2013). According to the U.S. Surgeon General's Report, *Preventing Tobacco Use Among Youth and Young Adults*, 88% of adults who became daily smokers began smoking by age 18, with 99% of first use by the age of 26 (CDC, 2012). Those involved in youth tobacco prevention and research on the topic are encouraged to access this report at <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/full-report.pdf>.

Estimates indicate that in West Virginia, 147,900 children (aged 0-17 years old) now alive will become cigarette smokers, and 47,000 of them will die from smoking-related illnesses (CDC, 2012, Chapter 12). Tobacco, whether referring to cigarettes or other tobacco products, is still very accessible to youth in West Virginia. The price of a pack of cigarettes in West Virginia was about \$4.83 in 2014 (Orzechowski & Walker, 2014), and West Virginia ranks 44th among all the states and the District of Columbia in its low rate of cigarette excise tax (Campaign for Tobacco-Free Kids [CTFK], 2014b). The prevalence of West Virginia high school students who were refused the sale of cigarettes (because of their age, i.e., under 18 years old) was 15.6% in 2013 (West Virginia Youth Tobacco Survey [WVYTS]). A recent report indicated that among adolescents 12-17 years old, the rate of cigarette smoking was highest in the South and in rural populations. The report classified West Virginia in the South region, and the report's definition of rural would place West Virginia in that category (Rural Health Reform Policy Research Center, 2014).

While the prevalence of adult smoking in West Virginia has changed little in the last decade, dramatic changes have occurred between 2000 and 2013 in youth smoking, which is the focus of this report. Preventing youth from beginning to smoke is a more effective use of financial resources than helping smokers quit when they reach adulthood, as indicated by Return on Investment analyses (American Public Health Association, n. d.). The ultimate challenge in youth smoking prevention is to increase the number of youth who have never smoked cigarettes. Even experimentation or light smoking can easily lead to nicotine dependence (DiFranza et al., 2007). About half of those who will become dependent on cigarettes have done so by the time they are smoking 7 or 8 cigarettes per month (DiFranza et al., 2007). Additionally, the increased levels of nicotine in cigarettes that have occurred during the time of this analysis is another challenge in resisting nicotine addiction (Connolly, Alpert, Wayne, & Koh, 2007).

The consumer market includes a variety of tobacco products ranging from old-fashioned chewing tobacco to exotic flavored tobacco products to the newest products - dissolvable tobacco and electronic cigarettes (e-cigs). Many of these products feature flavors such as grape, peach, chocolate, vanilla and bubble-gum flavors believed to attract youth consumers. Virtually every cigarette manufacturer is now producing a variety of tobacco products. Adolescent smokeless tobacco users are more likely than nonusers to become adult cigarette smokers (CDC, 2012). While most deaths from tobacco use result from cigarette smoking, there are considerable health risks, including death, with the use of other tobacco products (CDC, 2013b). Surveillance of cigarette

smoking and the use of other tobacco and nicotine products is important to determine the need for and impact of interventions aimed at youth.

Methodology

The West Virginia Youth Tobacco Survey (WVYTS) was developed in 2000 through collaboration between the West Virginia Department of Education, West Virginia Division of Tobacco Prevention (DTP), West Virginia Health Statistics Center (WVHSC) and Centers for Disease and Prevention (CDC). The WVYTS is a self-administered, pencil-and-paper questionnaire consisting of about 80 questions designed to assess the student’s tobacco use, knowledge of and perceptions about tobacco, peer and family influences, marketing awareness, and smoke-free policy attitudes.

The WVYTS was conducted in public high schools (HS), grades 9-12, and middle schools (MS), grades 6-8, in January-April of 2000, 2002, 2007, 2009, 2011 and 2013. The WVYTS was also conducted in 2005, but only among HS students. While other state and national surveys (such as the Youth Risk Behavior Survey, National Survey on Drug Use and Health, and Monitoring the Future) assess youth risk behaviors including tobacco use, the WVYTS is the definitive data source used by the DTP due to its broader coverage of tobacco- related issues. The Youth Tobacco Survey (YTS) questions have changed over the years, evolving to assess the use of familiar and newer products, attitudes, and issues. These data are useful for the DTP and other state and local organizations to aid in planning interventions involving youth tobacco prevention. The CDC also conducts the National Youth Tobacco Survey (NYTS) by compiling data from a separate sample of all states plus the District of Columbia to estimate national-level prevalence estimates that can be compared to state-level prevalence estimates.

In West Virginia, a two-stage cluster (school level and class level) sample design was used to produce a representative sample of students. Alternative, vocational/technical and private schools and special education classes were not included in the sample (Table 1).

Table 1. WVYTS Sampling Results	2000	2013
High Schools participating	40	35
overall response rate	67%	82%
usable questionnaires	1,617	1,687
enrollment during the year of the survey	87,744	80,140
Middle Schools participating	43	49
overall response rate	68%	81%
usable questionnaires	1,739	2,224
enrollment during the year of the survey	66,349	62,059

In 2009 and subsequent survey years, student responses to questions were marked directly into the questionnaires (no answer sheets). A sampling weight was produced for each participant by the CDC, and data were weighted based on gender, grade, and race/ethnicity. Most questions on the survey are designed to stand alone (no skip patterns), and some questions were analyzed together to create calculated variables. Student non-responses for questions being analyzed were not included in the current analysis. Analysis was conducted using SAS to produce prevalence estimates, 95% confidence intervals, and weighted frequencies. Prevalence estimates may be deemed unreliable due to sample size less than 50 respondents ($n < 50$), confidence interval width greater than 20 ($CI \text{ width} > 20$), or relative standard error greater than 30 ($RSE > 30$), and noted with

an asterisk (*) where applicable. With few exceptions, the age range of HS students in the sample was 14 to 19 years and older, and the age range for MS students in the sample was 11 to 15 years. Data from the 2000 WVYTS were compared to the 2013 WVYTS, and also compared to NYTS data from corresponding survey years.

Access the WVYTS 2013 questionnaire (including questions and response options) at <http://www.wvdhhr.org/bph/hsc/statserv/publist.asp>.

Weighted frequencies are indicated for some measures. “Frequency” is the count of student responses for each option in a question (i.e., how many students responded yes or no). When these responses are weighted by school type, gender, grade, race/ethnicity, the result is a weighted frequency that represents students in the larger population (i.e., how many HS students were current smokers). Weighted frequencies are often helpful in program planning, and determining the number of students who might be eligible for interventions.

The following indicators are discussed in this report:

- Age of onset is the age of ever trying or using the product, defined here as use by those aged 12 or younger.
- Current use is use of the product on one or more days in the past 30 days.
- Daily use is use of the product every day during the past 30 days.
- Ever-use is ever having tried the product, even a small quantity.
- Frequent use is use of the product on at least 20 days of the past 30 days.
- Never-use is never having tried or used the product.

Indicators for Tobacco Use Prevalence Among High School Students

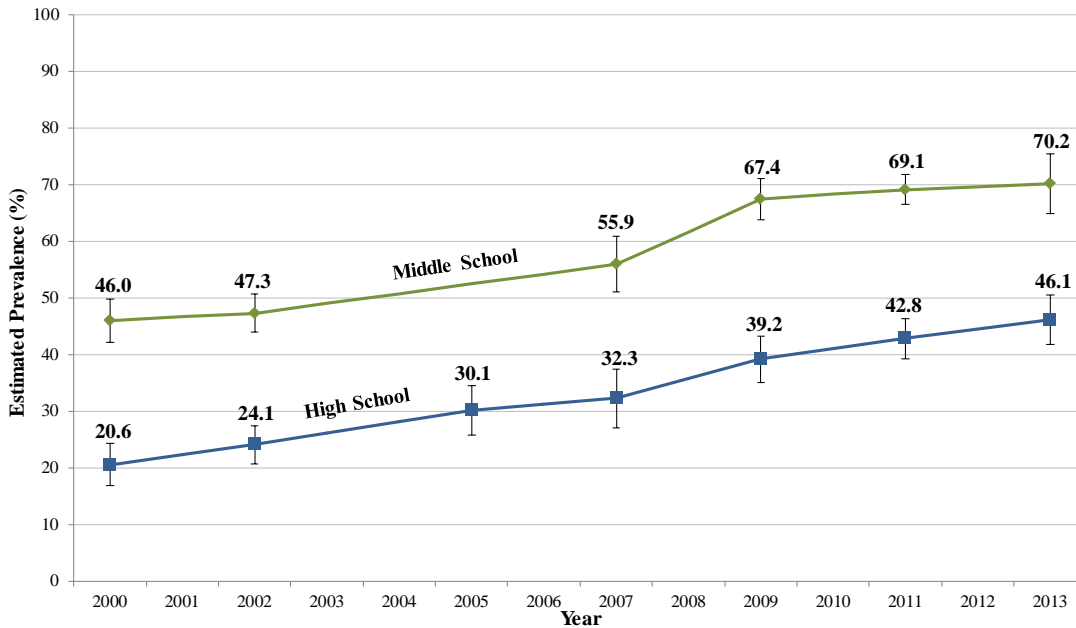
TOBACCO USE

Never-Tobacco Use Among High School Students

In 2000, the prevalence of never-tobacco use among HS students was 20.6% (about 17,535 students). These students had never tried or used tobacco of any kind (cigarettes, smokeless tobacco or cigars). In 2013, the prevalence of never-tobacco use significantly increased to 46.1% (about 35,538 students). In 2000, the prevalence of never-tobacco use among males was 18.9%, increasing significantly to 41.4% in 2013. In 2000, the prevalence of never-tobacco use among females was 22.6%, increasing significantly to 51.3% in 2013. Comparing by gender in 2013, the prevalence of never-tobacco use among females was significantly higher than males, probably due to higher never-use of smokeless tobacco and cigars among females (Figures 1 and 2).

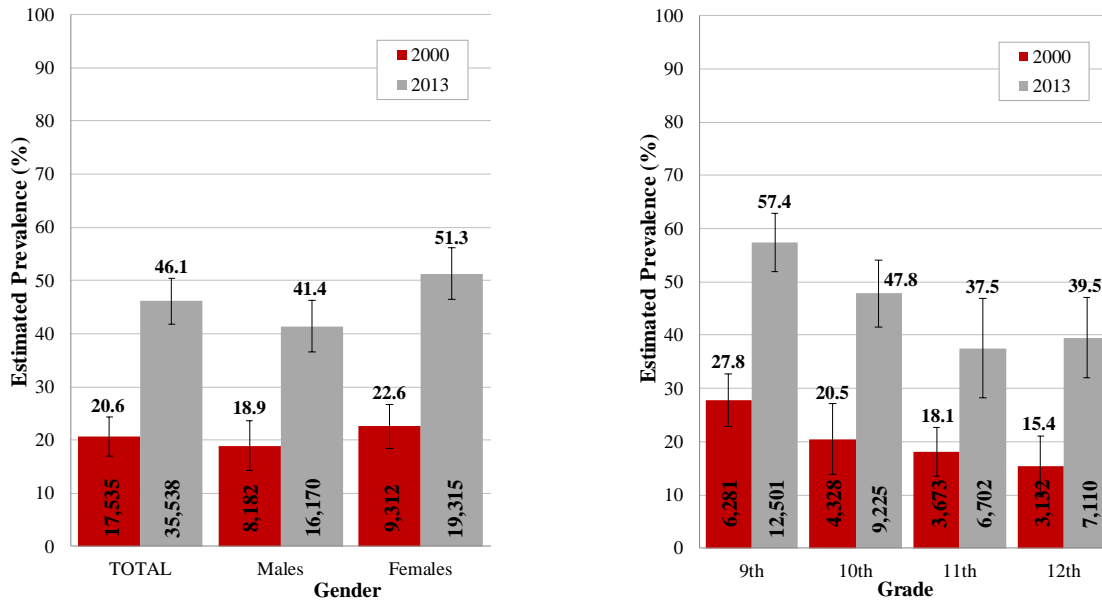
Figure 2 provides prevalence and weighted frequencies for never-tobacco use indicators. The increase in the estimated number of never-tobacco users indicated in WVYTS 2000 to WVYTS 2013 is encouraging. Comparing prevalence across grade levels, it appears that never-tobacco use decreases with increased grade level. In 2000, the prevalence of never-tobacco use for 9th graders was significantly higher than among 11th graders, and significantly higher than the prevalence for 12th graders. The same pattern was also observed in 2013.

Figure 1. Prevalence of Never-Tobacco Use Among West Virginia Youth



The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005, and subsequent odd-numbered years. The WVYTS was conducted in 2005 only for high school. Never-tobacco use is defined as never having tried cigarettes, smokeless tobacco and cigars (Note: never-use of pipes is not included in this definition due to lack of data). The WVYTS population is public high school students, grades 9-12, and middle school students, grades 6-8. In 2000, about 47,021 students (grades 6-12) were never-tobacco users, and in 2013, about 76,781 students (grades 6-12) were never-tobacco users. Confidence Interval brackets are indicated around each value. Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey. Graph prepared by the West Virginia Health Statistics Center.

Figure 2. Prevalence of Never-Tobacco Use Among West Virginia High School Students by Gender and Grade, 2000 and 2013



The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005, and subsequent odd-numbered years. The WVYTS never-tobacco use questions: "Have you ever tried cigarette smoking, even one or two puffs? Have you ever tried smoking cigars, cigarillos, or little cigars, even one or two puffs? Have you ever used chewing tobacco, snuff or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen, even just a small amount?" Students responding "No" to all questions are defined as never-tobacco users. The WVYTS population for these data is public high school students, grades 9-12. Confidence Interval brackets are indicated around each value for prevalence, and weighted frequencies are provided inside each bar. Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey. Graph prepared by the West Virginia Health Statistics Center.

Current Tobacco Use Among High School Students

In 2000, the prevalence of current use of tobacco (use of cigarettes, smokeless tobacco, cigars or pipes one or more days in the past 30 days) among HS students was 47.7% (about 40,750 students). In 2013, the prevalence had dropped to 29.5% (about 22,800 students). When comparing by gender during these years, the prevalence of current tobacco use among males was 51.6% in 2000, decreasing to 37.7% in 2013, and the prevalence among females decreased from 42.7% in 2000 to 20.3% in 2013. All of these decreases were statistically significant. Comparing males to females in 2013, the prevalence of current tobacco use was significantly higher for males than females, probably due to the higher prevalence of smokeless tobacco and cigar use among males (Figures 3 and 4).

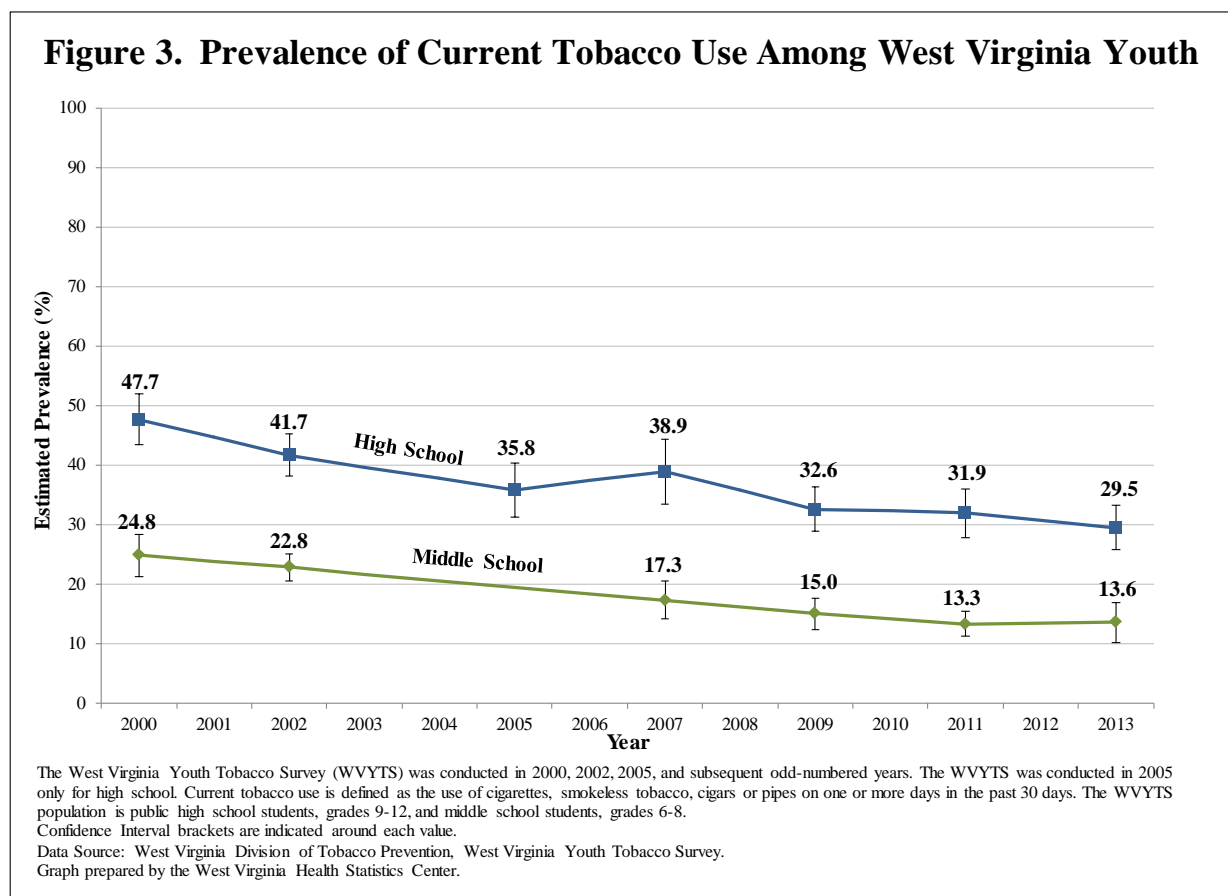
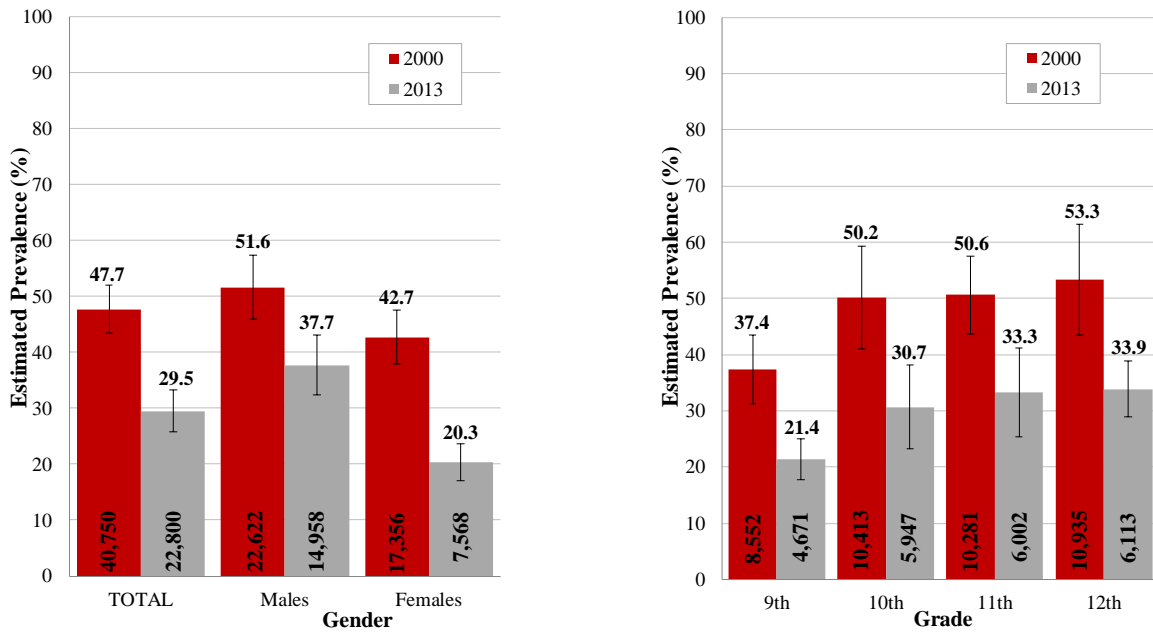


Figure 4. Prevalence of Current Tobacco Use Among West Virginia High School Students by Gender and Grade, 2000 and 2013

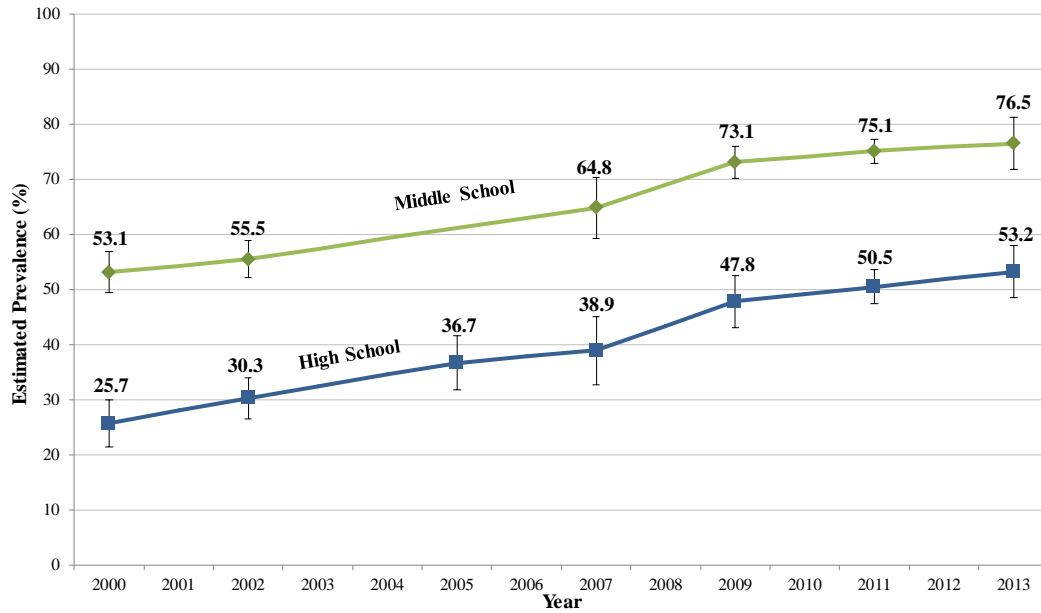


The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005, and subsequent odd-numbered years. The WVYTS current tobacco use questions: "During the past 30 days, on how many days did you smoke cigarettes? ...on how many days did you smoke cigars, cigarillos, or little cigars? ...on how many days did you use chewing tobacco, snuff or dip?" Students responding "1 or 2 days" up to "All 30 days" for any of the tobacco products are defined as current tobacco users. The WVYTS population for these data is public high school students, grades 9-12. Confidence Interval brackets are indicated around each value for prevalence, and weighted frequencies are provided inside each bar. Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey. Graph prepared by the West Virginia Health Statistics Center.

CIGARETTE SMOKING Never-Smoking Among High School Students

In 2000, the prevalence of never-smoking (never tried cigarettes, not even one or two puffs) among HS students was 25.7% (about 21,506 students), compared to the prevalence of 53.2% (about 40,747 students) in 2013. This increase was statistically significant. When examining by gender from 2000 and 2013, the prevalence of never-smoking among males increased from 26.2% to 50.7%, and the prevalence among females increased from 25.4% to 55.9%, statistically significant increases in both cases. When examining by grade level individually, the prevalence of never-smoking also showed statistically significant differences between 2000 and 2013. Not only have the prevalence estimates changed, but the weighted frequencies have nearly doubled in all subcategories of never-smoking when comparing 2000 to 2013 (Figures 5 and 6).

Figure 5. Prevalence of Never-Smoking Among West Virginia Youth



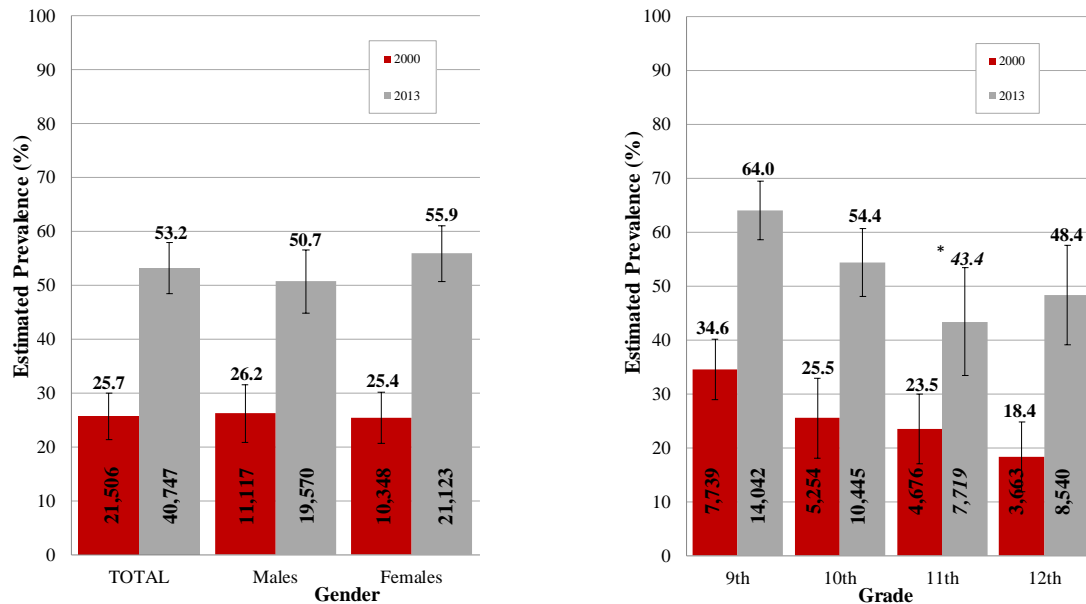
The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005, and subsequent odd-numbered years. The WVYTS was conducted in 2005 only for high school. Never-smoking is defined as never having smoked cigarettes, not even 1-2 puffs. The WVYTS population is public high school students, grades 9-12, and middle school students, grades 6-8. In 2000, about 54,996 students (grades 6-12) were never-smokers, and in 2013, about 85,888 students (grades 6-12) were never-smokers.

Confidence Interval brackets are indicated around each value.

Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey.

Graph prepared by the West Virginia Health Statistics Center.

Figure 6. Prevalence of Never-Smoking Among West Virginia High School Students by Gender and Grade, 2000 and 2013



The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005, and subsequent odd-numbered years. The WVYTS never-cigarette smoking question "Have you ever tried cigarette smoking, even one or two puffs?" Students responding "No" are defined as never-smokers. The WVYTS population for these data is public high school students, grades 9-12.

*Italics indicates that the data may be unreliable due to $n < 50$, CI width > 20 , or RSE > 30 , and should be interpreted with caution.

Confidence Interval brackets are indicated around each value for prevalence, and weighted frequencies are provided inside each bar.

Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey.

Graph prepared by the West Virginia Health Statistics Center.

Susceptibility Index Indicators Among High School Students

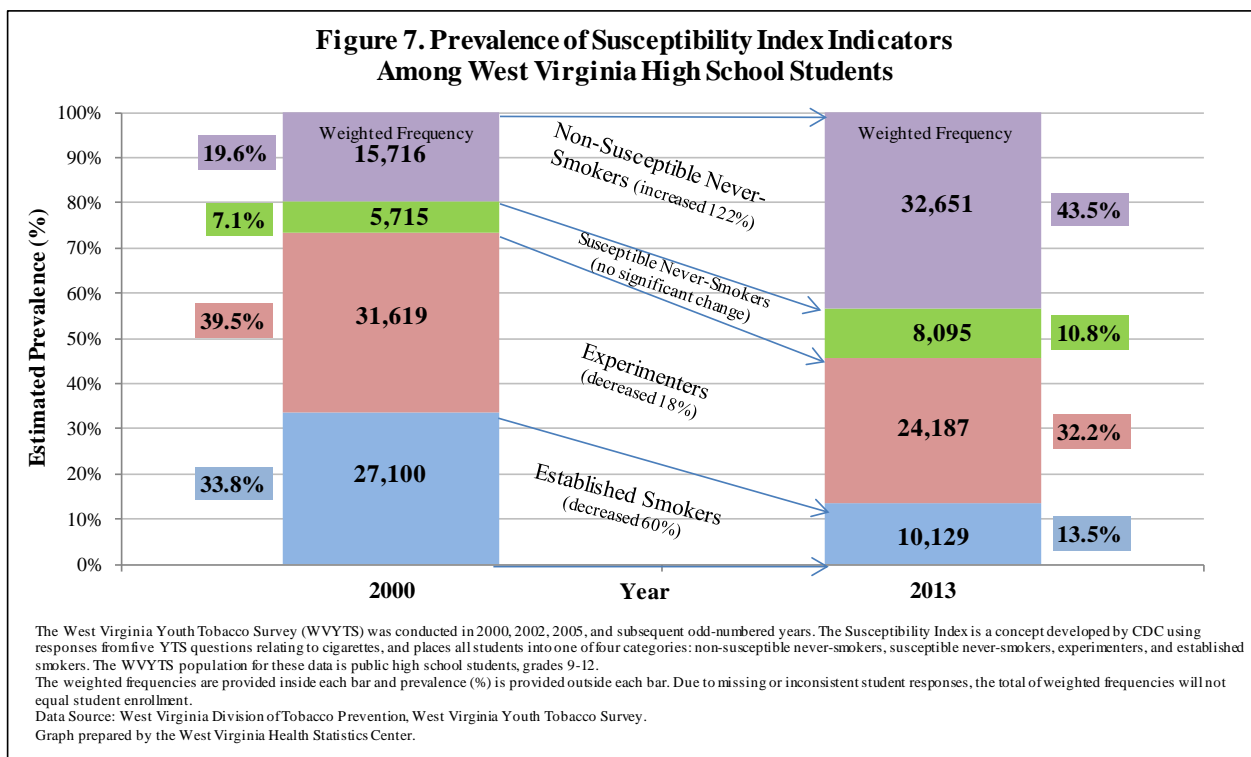
The Susceptibility Index is a concept developed by CDC using responses from five YTS questions:

- Have you ever tried cigarette smoking, even one or two puffs?
- About how many cigarettes have you smoked in your entire life?
- Do you think that you will try a cigarette soon?
- Do you think you will smoke a cigarette in the next year?
- If one of your best friends were to offer you a cigarette, would you smoke it?

Depending on the responses, students are placed into one of four categories: non-susceptible never-smokers (NSNS), susceptible never-smokers (SNS), experimenters (Exp), and established smokers (EstS). From 2000 to 2013, the prevalence of NSNS significantly increased, the prevalence of Exp significantly decreased, and the prevalence of EstS significantly decreased among HS students (Figure 7).

Looking at the weighted frequencies, the positive changes in the Susceptibility Index measures suggest that nearly 44,000 HS students have moved toward not smoking cigarettes, when comparing 2000 to 2013. The results show that NSNS increased from 15,716 to 32,651 students, SNS increased from 5,715 to 8,095 students, Exp decreased from 31,619 to 24,187 students, and EstS decreased from 27,100 to 10,129 HS students between 2000 and 2013.

Note: Public HS student enrollment fell slightly from 2000 (87,744 enrolled students) to 2013 (80,140 enrolled students).

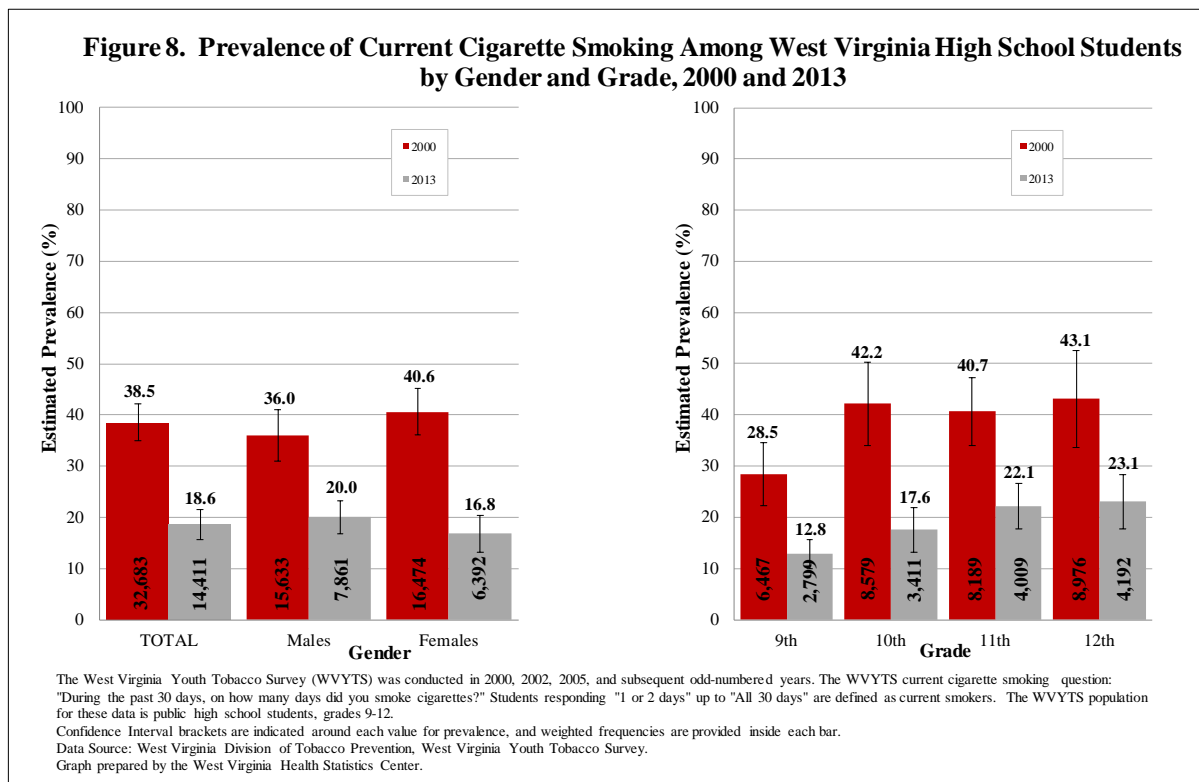


Age of Onset for Cigarette Smoking Among High School Students

In 2000, among HS ever-smokers (students who had ever smoked cigarettes, even one or two puffs), the prevalence of those who had smoked their first whole cigarette at age 12 or younger (age of onset) was about 40.5% (about 25,093 students). In 2011, the prevalence of first whole cigarette at age 12 dropped to 29.0% (about 11,246 students), indicating a statistically significant decline. Note: Due to changes in the phrasing of the question, the age of onset prevalence in 2013 (35.4%) will be a new baseline for future comparison.

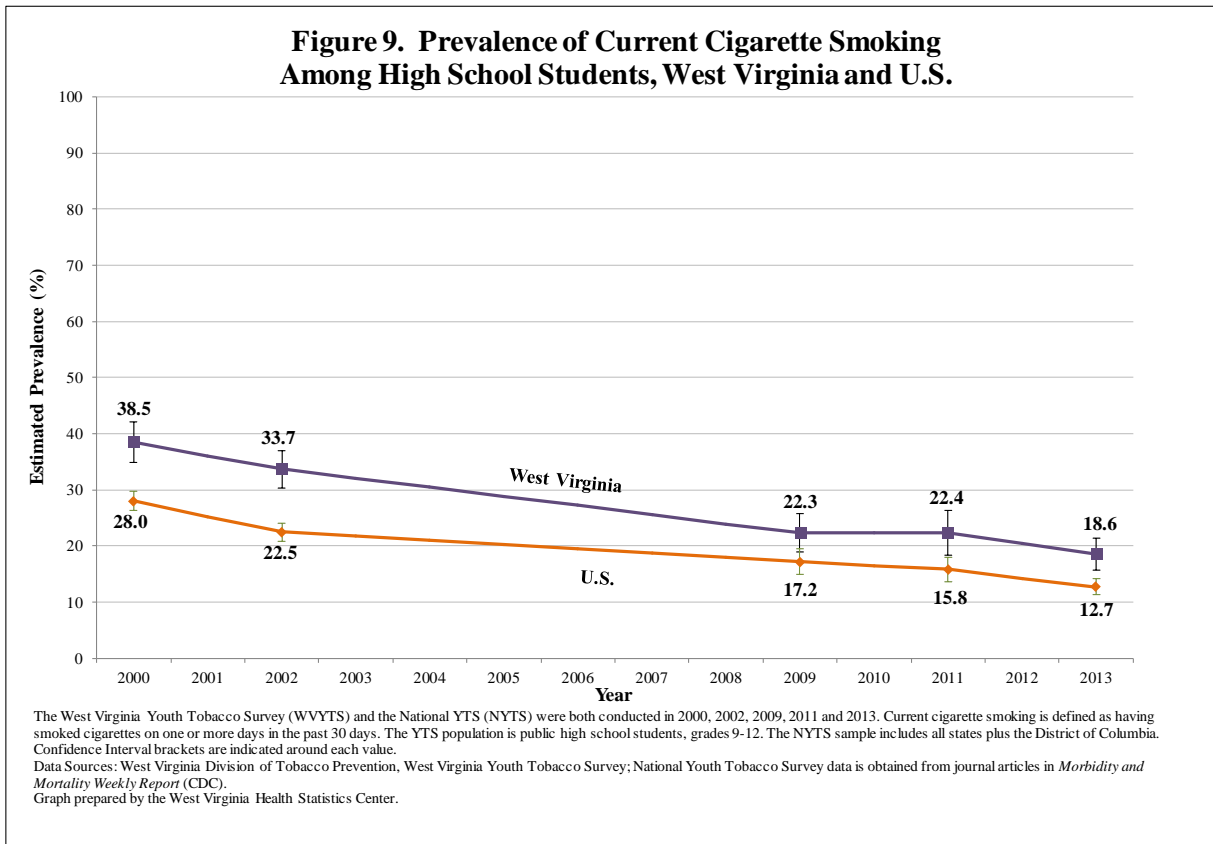
Current Smoking Among High School Students

Current smoking (having smoked cigarettes on one or more days in the past 30 days) is the most often used youth tobacco use indicator. In 2000, the prevalence of current smoking was 38.5% (about 32,683 students), compared to 2013 when the prevalence was 18.6% (about 14,411 students). This was a statistically significant decrease (Figure 8). The prevalence of current smoking decreased among both males and females during this time period. When examining individual grade levels, the prevalence of current smoking significantly decreased for all grades between 2000 and 2013. Generally, as grade level increased, the current smoking prevalence increased. Overall, about 18,000 fewer students were current smokers in 2013 than in 2000. See Figure 14 for a comparison of HS and MS current smoking prevalence.



The WVYTS and NYTS were conducted during the same years in 2000, 2002, 2009, 2011 and 2013. In the years 2000, 2002, 2011 and 2013, the prevalence of current smoking among HS students in West Virginia was significantly higher than the U.S. prevalence of HS current smoking (CDC, 2001; CDC, 2005; CDC, 2013d; CDC, 2014), as illustrated in Figure 9.

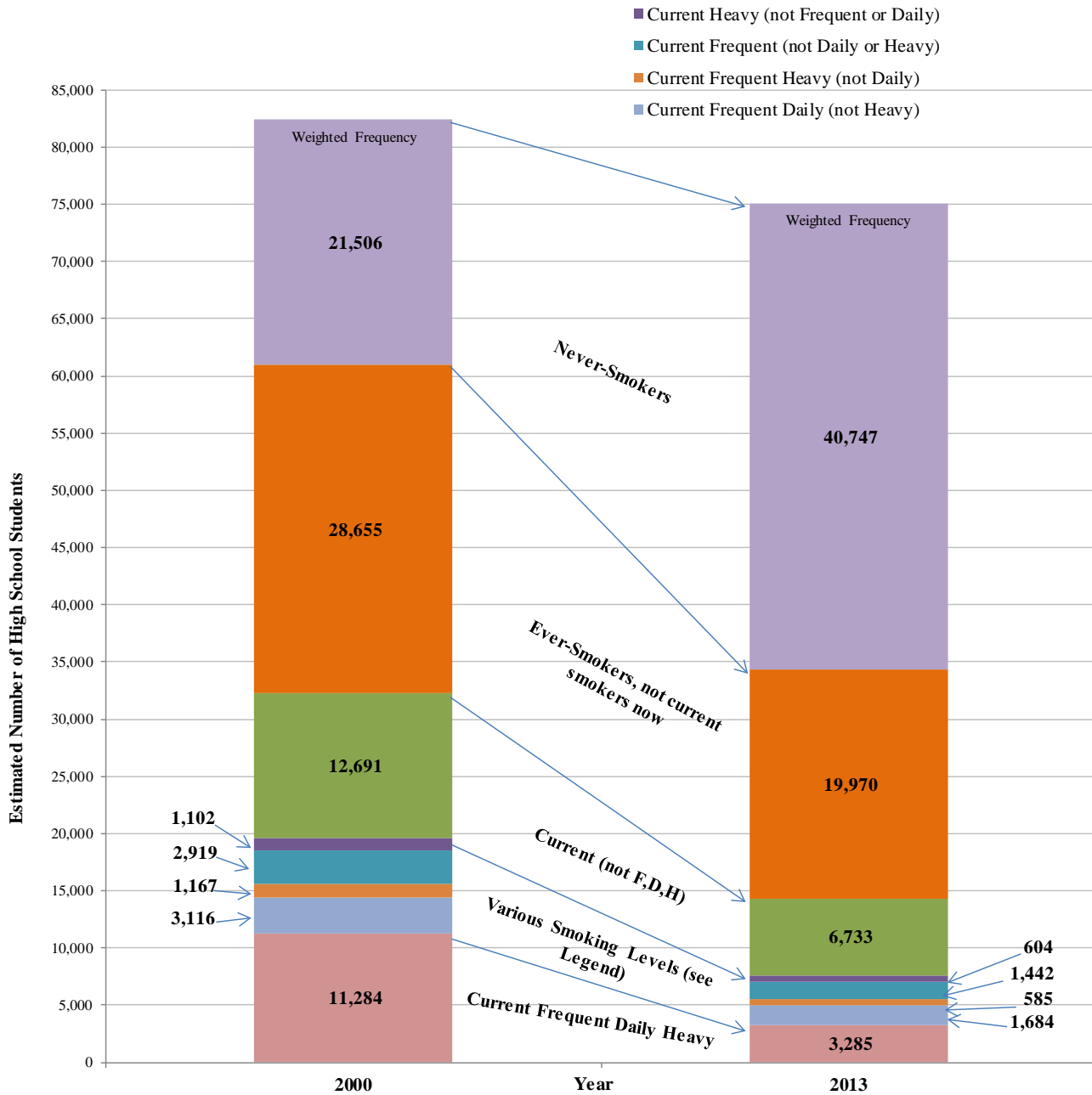
Figure 9. Prevalence of Current Cigarette Smoking Among High School Students, West Virginia and U.S.



Current smoking was further classified as frequent smoking (smoking cigarettes 20 or more days in the past 30 days) or heavy smoking (smoking six or more cigarettes on any day of the past 30 days). Note that these are not mutually exclusive groups: about 86.5% of heavy smokers are frequent smokers, and heavy smokers and frequent smokers are also current smokers. There were no statistically significant changes between 2000 and 2013 in the prevalence of these smoking classifications, but the changes in weighted frequencies are dramatic. The number of current smokers, frequent smokers and heavy smokers were all reduced by about half when comparing 2000 and 2013 (Figure 10).

In contrast to the success in reducing youth current smoking, the West Virginia adult current smoking prevalence has remained high, changing little from 26.1% in 2000, to 26.7% in 2014 (WVHSC, Behavioral Risk Factor Surveillance System [WVBRFSS]). The number of West Virginia adult current smokers (smoking every day or some days) was estimated to be about 366,000 smokers in 2000 and about 385,000 smokers in 2014. The West Virginia adult current smoking prevalence was significantly higher than the U.S. prevalence during each of these years (WVHSC, WVBRFSS).

Figure 10. Weighted Frequencies of Cigarette Smoking Indicators Among West Virginia High School Students



The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005 and subsequent odd-numbered years. Weighted frequencies accounted for all the students represented in the study. Students were either never-smokers (not ever tried cigarettes, not even one or two puffs) or ever-smokers (tried cigarettes, even one or two puffs). Among ever-smokers, students were either not current smokers (not smoking anytime in the past 30 days) or current smokers (smoking anytime in the past 30 days). Frequent smokers (F) were those who smoked 20 days or more in the past 30 days. Daily smokers (D) were those who smoked on all days in the past 30 days. Heavy smokers (H) were those who smoked 6 or more cigarettes on any day in the past 30 days. Due to missing or inconsistent student responses, the total of weighted frequencies will not equal student enrollment. The WVYTS population for these data is public high school students, grades 9-12.

Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey.
 Graph prepared by the West Virginia Health Statistics Center.

Smoking Cessation and Ex-Smokers Among High School Students

Among HS current smokers in 2000, 56.1% of them wanted to quit, 59.4% had tried to quit, and 68.0% had confidence that if they wanted to quit they would be able to quit. Among established smokers (who had smoked 100 or more cigarettes in their lifetime) in 2000, about 15.7% of them were not current smokers (they were classified as 30 day ex-smokers), and 8.1% of established smokers had not smoked in more than 6 months (they were classified as 6-month ex-smokers). Similarly, with current smokers in 2013, 50.8% wanted to quit, 65.3% had tried to quit and 68.9% had confidence that if they wanted to quit they would be able to quit. Among established smokers, 17.0% were not current smokers (30 day ex-smokers), and 8.8% were 6-month ex-smokers. While no statistically significant changes were seen in the prevalence of these measures from 2000 to 2013, the weighted frequencies dramatically decreased due to the decrease in the number of students who had been established smokers.

SMOKELESS TOBACCO USE

Smokeless Tobacco Use Among High School Students

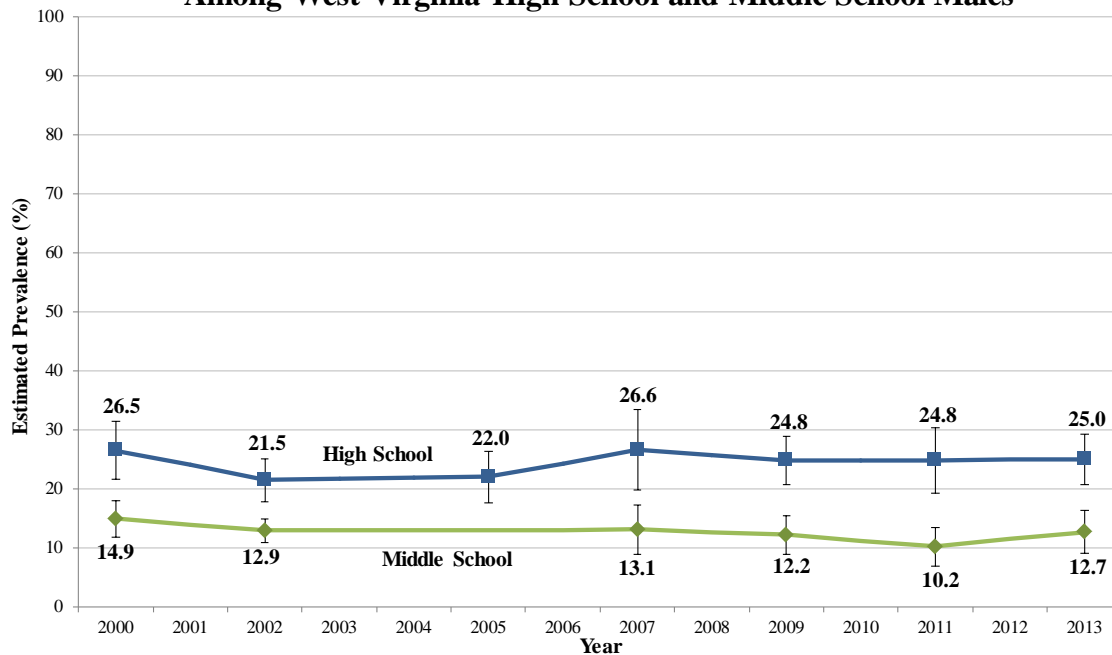
Analysis of smokeless tobacco data for females usually results in unreliable data due to the small sample size; therefore, emphasis will be placed on data analysis for males, with occasional comments about females.

In 2000, the prevalence of never-smokeless tobacco use was 51.8% among HS male students and increased to 61.4% in 2013.

In 2000, among males who had ever tried/used smokeless tobacco, the prevalence of those who first used by age 12 (age of onset) was about 48.3%. In 2013, the prevalence of first smokeless use by age 12 among males had decreased, but not significantly, to 36.9%. Changes in the phrasing of the question in 2013 did not result in a change in prevalence.

Figure 11 presents data for current smokeless tobacco use among males. While current cigarette smoking among youth shows tremendous decline, statistics show very little change in prevalence of current smokeless tobacco use. In 2000, the prevalence of current smokeless tobacco use (use on one or more days in the past 30 days) among HS male students was 26.5% (about 11,633 males), and in 2013, the prevalence was relatively unchanged at 25.0% (about 10,016 males). In 2000, the prevalence of current smokeless tobacco use among HS female students was 2.6% (about 1,077 females) and changed little in 2013 when the prevalence was 3.6% (about 1,380 females).

Figure 11. Prevalence of Current Smokeless Tobacco Use Among West Virginia High School and Middle School Males



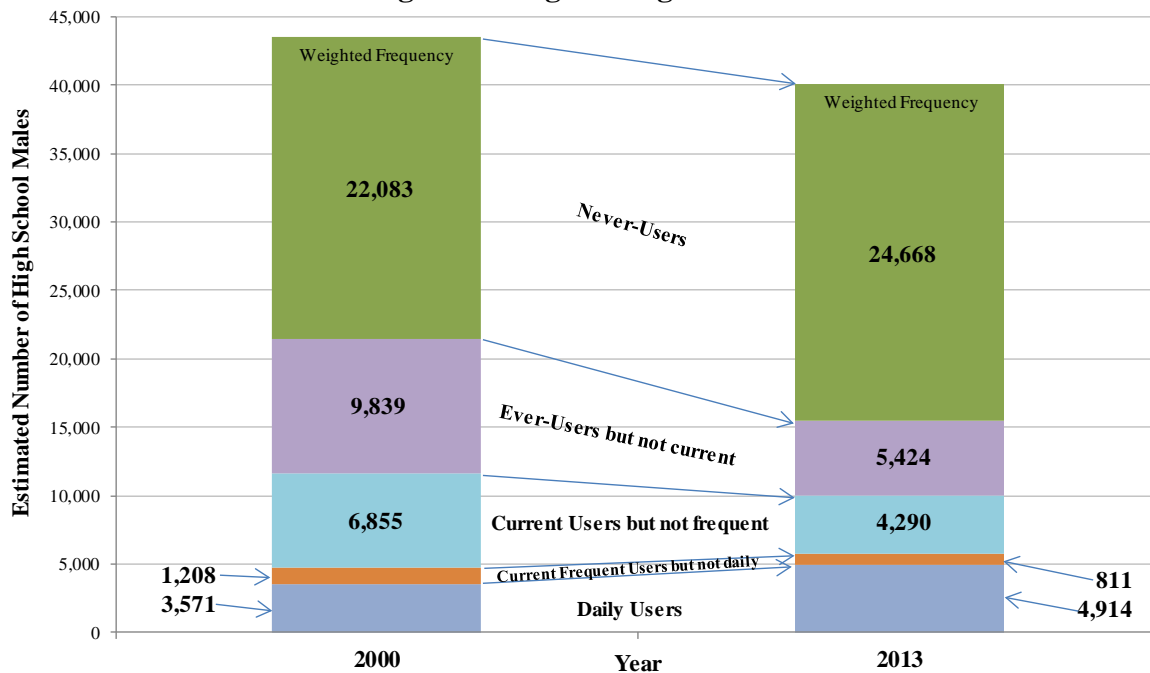
The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005, and subsequent odd-numbered years. The WVYTS was conducted in 2005 only for high school. Current smokeless tobacco use is defined as use of smokeless tobacco on one or more days in the past 30 days. The WVYTS population for this graph is public high school students, grades 9-12, and middle school students, grades 6-8, males only. Confidence Interval brackets are indicated around each value. Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey. Graph prepared by the West Virginia Health Statistics Center.

The prevalence of current smokeless tobacco use among HS male students appears to increase with increase in grade level, but these increases were not statistically significant. In 2000, the prevalence for HS male students in 9th grade was 19.4% compared to the prevalence of *30.5% for HS male students in 12th grade. In 2013, the prevalence among those in 9th grade was 20.2% and the prevalence among those in 12th grade was 27.9%. *Prevalence estimates may be unreliable due to n<50, CI width >20, or RSE >30, and should be interpreted with caution (see page 3).

The prevalence of frequent use (use on 20 or more days of the past 30 days) among HS males who were current smokeless tobacco users increased from 41.1% in 2000 (about 4,779 males) to 57.2% in 2013 (about 5,725 males). The prevalence of daily smokeless tobacco use among HS male current users increased significantly from 30.7% in 2000 (about 3,751 males) to 49.1% in 2013 (about 4,914 males).

Figure 12 illustrates the weighted frequencies of HS male students who were never-users, ever-users, and among ever-users, those who were currently using and not currently using smokeless tobacco. While the changes from 2000 to 2013 are not statistically significant, the increase in the estimated number of never-users of smokeless tobacco among HS male students is encouraging.

Figure 12. Weighted Frequencies of Smokeless Tobacco Use Indicators Among West Virginia High School Males



The West Virginia Youth Tobacco Survey (WVYTS) was conducted in 2000, 2002, 2005 and subsequent odd-numbered years. Weighted frequencies accounted for all the students represented in the study. Students were either never-users (not ever tried smokeless tobacco) or ever-users (tried smokeless tobacco). Among ever-users, students were either not current users (not using any time in the past 30 days) or current users (using any days in the past 30 days). In the current user category, students could also be frequent users (used on 20 days or more in the past 30 days), and/or daily users (used each day in the past 30 days). Note: daily users were also frequent and current users. Due to missing or inconsistent student responses, the total of weighted frequencies will not equal student enrollment. The WVYTS population for these data is public high school students, grades 9-12, males only. Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey. Graph prepared by the West Virginia Health Statistics Center.

The U.S. average prevalence of current smokeless tobacco use (from NYTS) among HS male students was 11.8% in 2000 (CDC, 2001) and 9.6% in 2013 (CDC, 2014), compared to the significantly higher prevalence of 26.5% in 2000 and 25.0% in 2013 among West Virginia HS male students.

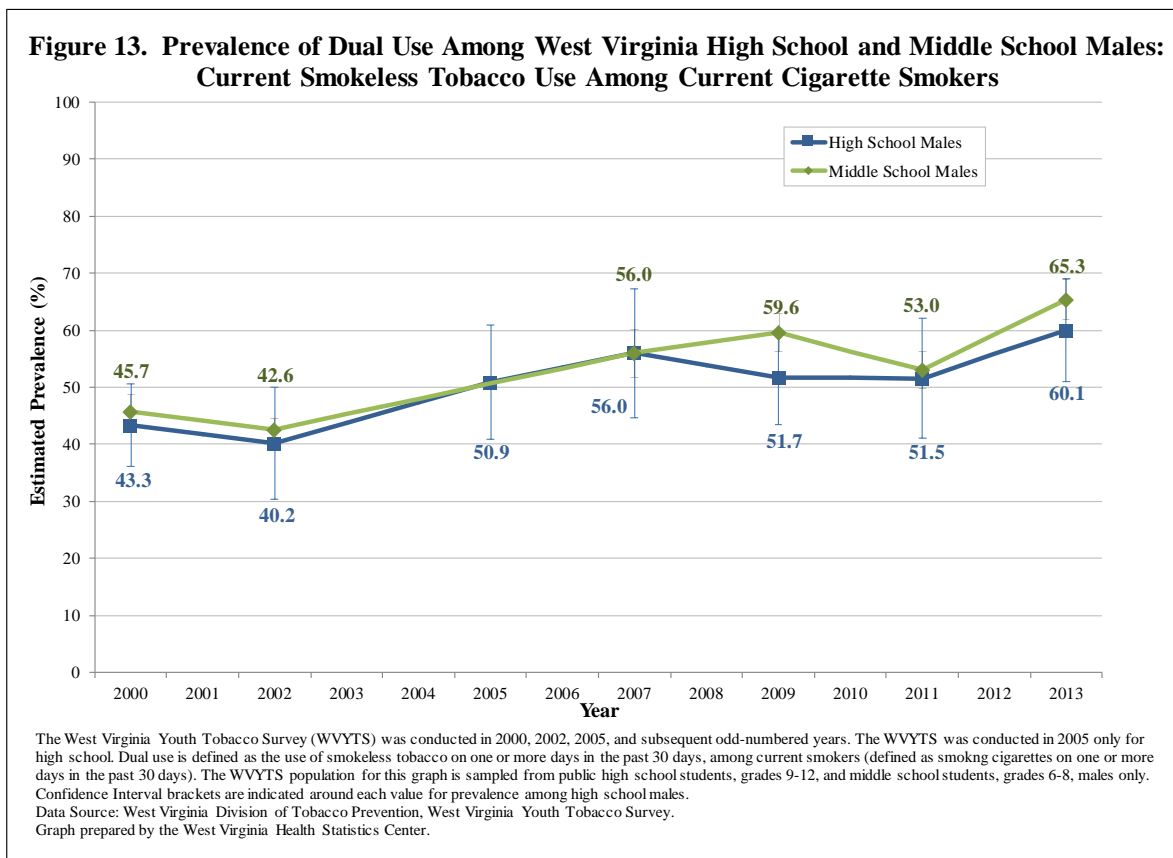
In comparison to West Virginia HS male students, the prevalence of current smokeless tobacco use (some days or every day) among West Virginia adult males (age 18 and older) was 17.9% (about 116,516 men) in 2000 and 16.5% (about 116,879 men) in 2014 (WVHSC, WVBRFSS). West Virginia often ranks #1 or #2 in the use of smokeless tobacco among adult males, compared to all other states (WVHSC, WVBRFSS). In 2000, about 19% of HS data represent students aged 18 and older, and in 2013, about 16% of students were 18 and older, so there may be a slight overlap of those represented in WVYTS and WVBRFSS.

Dual Use Among High School Males: Current Smokeless Tobacco Use Among Current Cigarette Smokers

There is growing concern that youth are augmenting or replacing cigarette smoking with the use of other tobacco products, and in West Virginia, the most used non-cigarette product is snuff. Dual use is defined as the current use of smokeless tobacco among current cigarette smokers. In 2000, the prevalence of dual use among male current smokers was 43.3% (about 6,547 male students), and the prevalence increased significantly to 60.1% (about 4,686 male students) in 2013. The prevalence of dual use among HS female students significantly increased from 5.9% (about 958 female students) to 17.7% (about 1,123 female students) during this time. The definition of

dual use is based upon the population of current smokers. Due to the dramatic decrease in the number of current smokers from 2000 to 2013, changes in weighted frequency for dual use measures may not mirror the size or direction of the change in prevalence. The increase in dual use among youth warrants more investigation. Perhaps the ability to use smokeless tobacco in a school setting and also in other smoke-free venues is a factor that increases cross-product use (Figure 13).

The prevalence of dual use (defined as use of smokeless tobacco some days or every day, among those who currently smoke some days or every day) among adult men was about 13.5% in 2000 and 15.9% in 2014 (WVHSC, WVBRFSS).



USE OF OTHER TOBACCO PRODUCTS

Cigar Smoking Among High School Males

In 2000, the prevalence of never-cigar use (never having tried or smoked a cigar, cigarillo, or little cigar) among HS male students was 37.4% (about 15,995 males) compared to the prevalence of 60.8% (about 24,439 males) in 2013, a statistically significant increase.

In 2000, the prevalence of current cigar smoking among HS male students was about 25.2% (about 11,118 males) compared to 16.3% in 2013 (about 6,575 males), which was a statistically significant decrease. In all measures of cigar smoking among females, the prevalence of never-cigar smoking was very high, and the prevalence of current cigar smoking was very low, with the prevalence among males being significantly higher than among females.

Among HS male current cigar smokers, the prevalence of frequent cigar smoking (smoked cigars on 20 days in the past 30 days) and daily cigar smoking was very low in all years. Blunts are cigars that have been hollowed out to allow a marijuana joint to be placed inside. The user smokes the cigar tobacco along with the marijuana, masking the visual appearance and smell of the marijuana. YTS data does not assess the use of blunts, nor the use of cigars as blunts.

The U.S. prevalence of current cigar smoking (from NYTS) among HS male students was 15.4% in 2013 (CDC, 2014), but not significantly different from the West Virginia prevalence of 16.3%.

Pipe Smoking Among High School Males

In 2000, the prevalence of current pipe smoking among HS male students was about 7.2% (about 3,198 males) compared to 2013 when the prevalence among HS male students was 5.8% (about 2,329 males). The prevalence of current pipe smoking among females was very low in all years.

The U.S. prevalence of current pipe smoking (from NYTS) among HS male students was 5.0% in 2013 (CDC, 2014) compared to the West Virginia prevalence of 5.8%.

Use of New Tobacco Products Among High School Students

In 2013, new questions were added to the WVYTS to assess the degree to which youth were trying or currently using newly developed or marketed tobacco products. Table 2 provides the prevalence of each by total and by gender. Among current smokers, the prevalence of current use of any new product was 72.1% suggesting that most HS cigarette smokers were getting nicotine from a variety of sources during the past 30 days.

In 2013, the category of flavored cigarettes appears to have the highest prevalence for a new product being tried and current use of a new product. In 2009, the U.S. Food and Drug Administration (FDA) banned the manufacture and sale of candy, fruit, and clove-flavored cigarettes (FDA, 2015), but other flavored products were not included in the ban (NBC News, 2009). Student responses in the 2013 WVYTS indicating whether they tried or currently used flavored cigarettes are confusing. This raises questions as to the availability of these products or whether students are unsure about the product in question.

The 2013 NYTS report revealed that the current new tobacco use prevalence was 5.2% for hookah, 1.8% for snus, 4.5% for e-cigs, and 0.4% for dissolvable tobacco, and in all cases, the prevalence among males was higher than females (CDC, 2014).

The 2011-2014 NYTS report revealed that the prevalence of HS current use of any tobacco product remained stable, however, the prevalence of current use of e-cigs and current use of hookah increased, offset by a decrease in current use of cigarettes, cigars, tobacco pipes, bidis, and snus (CDC, 2015b). The prevalence for current use of e-cigs tripled from 4.5% in 2013 to 13.4% in 2014, and the prevalence for current use of hookah increased from 5.2% in 2013 to 9.4% in 2014 (CDC, 2015b). In the 2013 WVYTS, among all HS students, the prevalence of trying e-cigs was 15.5%, the prevalence of current use of e-cigs was 4.9%, and the prevalence of current use of e-cigs among current cigarette smokers was 18.3%. Now that this baseline has been established for e-cigs and other emerging products, West Virginia can monitor youth experimentation and current use in the future.

E-cigs are at the center of several controversies: 1) whether the FDA can regulate the marketing and sales of e-cigs, especially to under-age youth; 2) whether state and federal governments will include e-cigs in excise taxation; and 3) whether e-cigs should be included in the definition of a tobacco product and thereby be included in smoke-free air restrictions.

Among the emerging new products, a new category is referred to as electronic nicotine delivery system (ENDS). The ENDS category includes e-cigs and similar nicotine products where liquids are heated using a battery, resulting in vapors that are inhaled. Vaping is now a common term referring to electronic devices that produce vapor that may or may not contain nicotine and are available in a wide range of flavors and components. The public health community is responding quickly to assess the use of these products among youth and adults and to address other issues surrounding them, including increased incidents of poisoning among children and adults who have ingested/absorbed nicotine liquid from e-cigs (American Association of Poison Control Centers, 2015).

Although the health dangers of long-term use cannot be assessed at this time, research indicates that there are health risks associated with exposure to the chemicals in the liquids and in the vapor, and e-cigs have been shown to not be effective for adults who are trying to quit smoking cigarettes (Popova & Ling, 2013). A recent study revealed that youth who used e-cigs were 8.3 times more likely to transition to traditional cigarette smoking within a year (Primack et al., 2015).

**Table 2. Prevalence of Trying or Current Use of New Tobacco Products
Among West Virginia High School Students, by Gender, 2013**

Product	Students who had EVER TRIED this product:					Students who were CURRENTLY USING this product (any use in past 30 days):				
	Total: % (95% CI)	Weighted Frequency	Gender	% (95% CI)	Weighted Frequency	Total: % (95% CI)	Weighted Frequency	Gender	% (95% CI)	Weighted Frequency
Roll-your-own cigarettes	11.5 (9.2-13.8)	9,202	Males	12.6 (9.4-15.8)	5,131	5.1 (3.7-6.5)	4,060	Males	6.4 (4.3-8.4)	2,594
			Females	10.2 (8.0-12.3)	3,961			Females	3.8 (1.9-5.6)	1,466
Flavored cigarettes	17.8 (15.2-20.3)	14,220	Males	17.6 (13.9-21.3)	7,156	8.4 (6.8-10.0)	6,724	Males	8.2 (5.5-10.8)	3,323
			Females	17.9 (15.3-20.5)	6,954			Females	8.5 (6.9-10.1)	3,292
Clove cigars	2.2 (1.1-3.2)	1,725	Males	2.7 (1.3-4.2)	1,118	0.5 (0.2-0.9)	435	Males	*0.7 (0.1-1.4)	305
			Females	*1.6 (0.4-2.7)	607			Females	*0.3 (0.0-0.8)	130
Flavored little cigars	14.5 (11.8-17.2)	11,613	Males	17.3 (13.8-20.8)	7,052	5.1 (3.7-6.4)	4,044	Males	6.4 (4.3-8.4)	2,603
			Females	11.7 (9.2-14.2)	4,561			Females	3.7 (1.9-5.5)	1,441
Hookah/waterpipe	7.6 (6.0-9.3)	6,120	Males	8.0 (5.8-10.1)	3,247	2.4 (1.6-3.1)	1,890	Males	2.7 (1.4-4.0)	1,095
			Females	7.4 (5.4-9.4)	2,873			Females	1.9 (0.9-3.0)	748
Snus	11.2 (9.3-13.0)	8,929	Males	17.0 (14.3-19.7)	6,916	3.9 (2.1-5.7)	3,124	Males	6.0 (3.5-8.5)	2,440
			Females	5.1 (3.0-7.1)	1,966			Females	*1.8 (0.4-3.2)	684
Dissolvable tobacco	1.1 (0.3-1.9)	917	Males	1.5 (0.6-2.4)	624	0.6 (0.0-1.1)	463	Males	*0.8 (0.1-1.4)	315
			Females	*0.8 (0.0-1.6)	293			Females	*0.4 (0.0-1.1)	148
Electronic cigarettes (e-cigs)	15.5 (12.6-18.4)	12,396	Males	15.6 (11.6-19.6)	6,348	4.9 (3.4-6.4)	3,900	Males	6.0 (3.6-8.5)	2,459
			Females	15.4 (12.1-18.7)	5,981			Females	3.5 (1.6-5.5)	1,373
Some other new product not listed here	4.0 (2.9-5.0)	3,165	Males	4.9 (3.2-6.6)	2,001	2.7 (1.8-3.7)	2,196	Males	3.9 (2.3-5.5)	1,581
			Females	3.0 (2.2-3.8)	1,164			Females	1.6 (0.8-2.3)	615
Any new product	34.0 (29.8-38.2)	27,179	Males	36.6 (31.2-42.0)	14,893	19.2 (16.3-22.2)	15,375	Males	23.1 (18.9-27.2)	9,384
			Females	31.2 (27.4-35.0)	12,128			Females	15.0 (12.0-18.0)	5,834
Among current cigarette smokers, any new product	84.0 (79.4-88.6)	12,102	Males	84.2 (78.3-90.0)	6,616	72.1 (66.4-77.8)	10,388	Males	71.1 (63.3-78.9)	5,589
			Females	83.4 (76.7-90.0)	5,330			Females	72.6 (64.5-80.7)	4,642

* indicates that the data may be unreliable due to n<50, or CI width >20, or RSE>30, and should be interpreted with caution.

Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey.

Table prepared by the West Virginia Health Statistics Center.

Indicators for Tobacco Use Prevalence Among Middle School Students

TOBACCO USE

Never-Tobacco Use Among Middle School Students

In 2000, the prevalence of never-tobacco use (never having tried or used cigarettes, smokeless tobacco, or cigars) among MS students was 46.0% (about 29,485 students). In 2013, the prevalence of never-tobacco use increased significantly to 70.2% (about 41,243 students) (Figure 1). This represents a 53% increase in never-tobacco use prevalence between 2000 and 2013. Significant increases were observed when examining prevalence of never-tobacco use by gender from 2000 to 2013, with the prevalence for males increasing from 42.5% to 65.5%, and the prevalence for females increasing from 49.9% to 75.0%.

Current Tobacco Use Among Middle School Students

In 2000, the prevalence of current tobacco use (cigarettes, smokeless tobacco, cigars, or pipes in the past 30 days) among MS students was 24.8% (about 15,892 students). In 2013, the prevalence of current tobacco use had dropped to 13.6% (about 8,239 students) (Figure 3). The 2000 prevalence of current tobacco use for males was 28.4%, which decreased to 17.4% in 2013. Females also showed a decrease in prevalence of current tobacco use from 20.8% in 2000 to 9.8% in 2013. All of these decreases were statistically significant. When examining 2013 data by gender, the prevalence of current tobacco use among MS males (17.4%) was significantly higher than the prevalence for females (9.8%).

CIGARETTE SMOKING

Never-Smoking Among Middle School Students

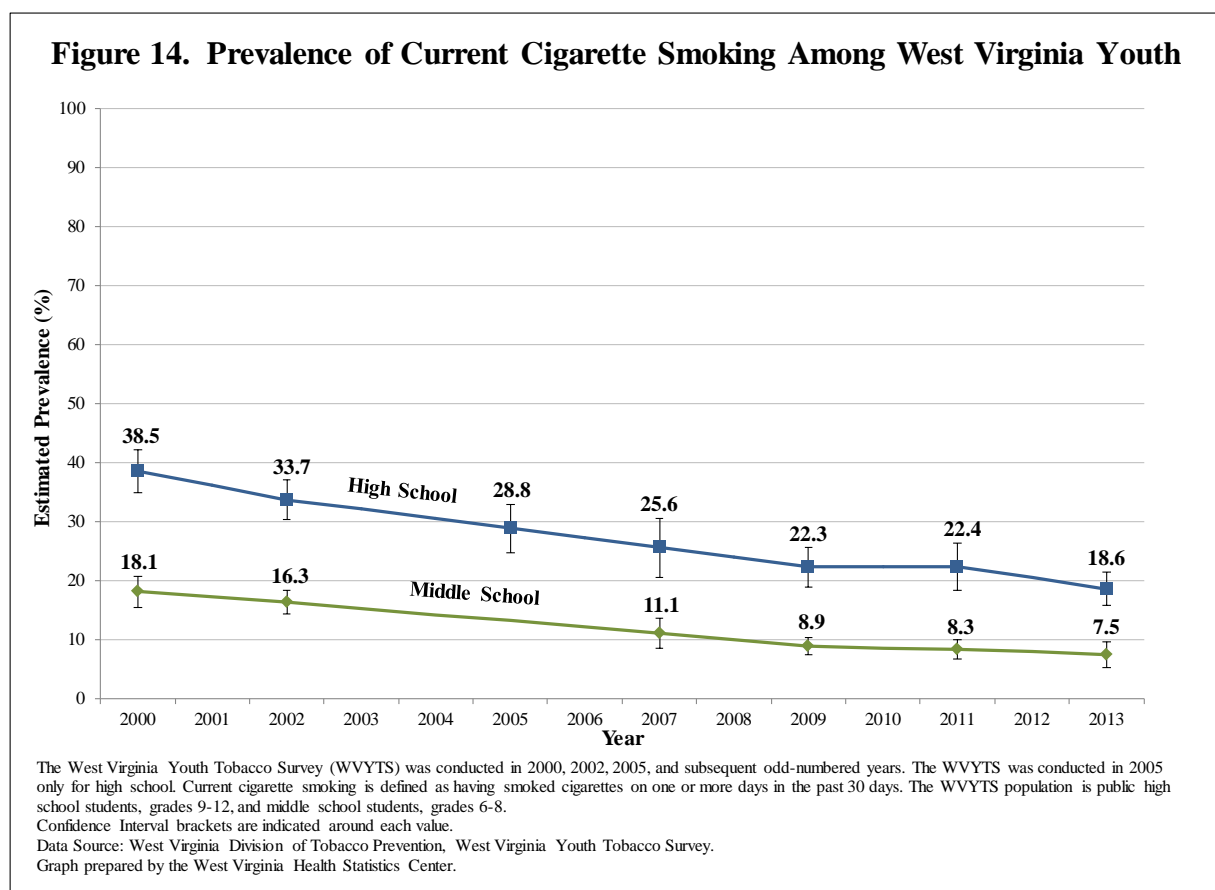
In 2000, the prevalence of never-smoking was 53.1% compared to the prevalence of 76.5% in 2013 (Figure 5). This was a statistically significant increase. When examining gender individually, the prevalence of male never-smoking significantly increased from 52.8% to 75.2%, and female never-smoking significantly increased from 53.4% to 77.9% between 2000 and 2013. Significant increases were seen in the prevalence of never-smoking among 6th graders (68.0% increasing to 88.2%), among 7th graders (49.9% increasing to 72.5%), and among 8th graders (42.5% increasing to 68.9%) between 2000 and 2013.

Susceptibility Index Indicators Among Middle School Students

Similar to HS data, three of the four Susceptibility Index measures showed statistically significant changes in prevalence between 2000 and 2013. The prevalence of non-susceptible never-smokers (NSNS) increased from 41.2% to 62.2%, the prevalence of experimenters (Exp) decreased from 35.2% to 20.7%, and the prevalence of established smokers (EstS) decreased from 9.8% to 2.5%. No change was observed in the prevalence of susceptible never-smokers (SNS), with 13.8% in 2000 and 14.7% in 2013. During this time, the number of NSNS increased from 25,065 to 36,508 students, the number of SNS increased from 8,425 to 8,633 students, the number of Exp decreased from 21,428 to 12,127 students, and the number of EstS decreased from 5,935 to 1,451 students. The positive changes in the Susceptibility Index measures suggest that about 25,000 MS students have moved toward not smoking cigarettes, when comparing 2000 to 2013.

Current Smoking Among Middle School Students

The prevalence of current smoking among MS students decreased significantly from 18.1% in 2000 (about 11,542 students) to 7.5% in 2013 (about 4,552 students) (Figure 14). Statistically significant decreases were also evident by gender, with the prevalence for males decreasing from 17.5% to 7.8%, and the prevalence for females decreasing from 18.8% to 7.2% between 2000 and 2013. The current smoking prevalence significantly decreased among 6th graders (8.4% to 3.0%), among 7th graders (19.0% to 9.2%), and among 8th graders (26.4% to 10.2%) between 2000 and 2013. Overall, about 7,000 fewer MS students were current smokers in 2013 compared to 2000.



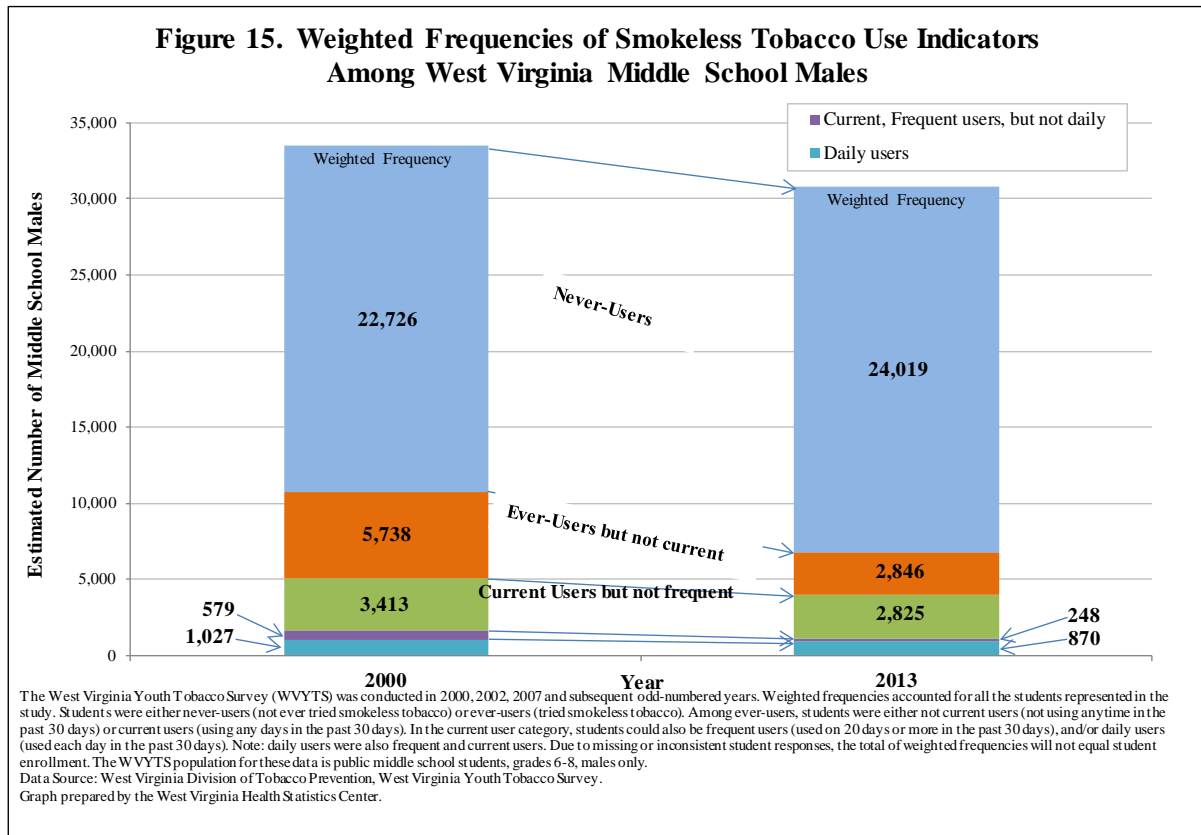
The prevalence of current smoking among MS students in West Virginia was significantly higher than the U.S. prevalence in 2000 and 2013. In 2000, the West Virginia prevalence was 18.1% compared to the U.S. prevalence (from NYTS) of 11.0% (CDC, 2001). In 2013, the West Virginia prevalence was 7.5%, compared to the U.S. prevalence of 2.9% (CDC, 2014).

SMOKELESS TOBACCO USE

Smokeless Tobacco Use Among Middle School Males

In 2000, the prevalence of never-smokeless tobacco use was 68.3% among MS male students, and this increased significantly to 77.9% in 2013 (Figure 11). In 2000, the prevalence of current smokeless tobacco use (use on one or more days in the past 30 days) among MS male students was 14.9% (about 5,019 males), and in 2013, the prevalence dropped slightly to 12.7%

(about 3,942 males). From 2000 to 2013, statistically significant changes occurred in these groups: an increase in prevalence of never-users, a decrease in prevalence of ever-users, and a decrease in prevalence of current use of smokeless tobacco among the MS male ever-users. Figure 15 illustrates the weighted frequencies of smokeless tobacco use indicators among MS male students.



In 2000, among MS male current smokeless tobacco users, the prevalence of frequent use (use on 20 or more days of the past 30 days) was *32.0% (about 1,606 males), and in 2013, the prevalence of frequent use was 28.4% (about 1,118 males). In 2000, the prevalence of daily smokeless tobacco use among MS male current smokeless tobacco users was 20.5% (about 1,027 males), and in 2013, the prevalence was 22.1% (about 870 males). *Prevalence estimates may be unreliable due to $n < 50$, $CI \text{ width} > 20$, or $RSE > 30$, and should be interpreted with caution (see page 3).

The U.S. prevalence (from NYTS) of current smokeless tobacco use among MS male students was 5.7% in 2000 (CDC, 2001) and 1.9% in 2013 (CDC, 2014), significantly lower than the West Virginia prevalence of 14.9% in 2000 and 12.7% in 2013.

Dual Use Among Middle School Males: Current Smokeless Tobacco Use Among Current Cigarette Smokers

The prevalence of dual use among MS male students increased from 45.7% (about 2,546 students) in 2000 to *65.3% (about 1,577 students) in 2013, but this was not statistically significant (Figure 13). Analysis of dual use among MS female students resulted in unreliable data due to a low frequency of responses. *Prevalence estimates may be unreliable due to $n < 50$, $CI \text{ width} > 20$, or $RSE > 30$, and should be interpreted with caution (see page 3).

USE OF OTHER TOBACCO PRODUCTS

Cigar Smoking Among Middle School Males

In 2000, the prevalence of never having tried or smoked a cigar, cigarillo, or little cigar among MS male students was 69.1% (about 23,243 males) compared to the prevalence of 85.3% in 2013 (about 26,564 males), a statistically significant increase.

In 2000, the prevalence of current cigar smoking among MS male students was about 11.7% (about 4,014 males) compared to 6.3% in 2013 (about 1,967 males), which was a statistically significant decrease. In both 2000 and 2013, the prevalence of never-cigar smoking among males was significantly lower than that for females, and the prevalence of current cigar smoking among males was significantly higher than that for females. The prevalence of frequent or daily cigar smoking among MS male current cigar smokers was very low in both 2000 and 2013.

The U.S. prevalence (from NYTS) for MS male current cigar smoking was 3.3% in 2013 (CDC, 2014), but not significantly different from the West Virginia prevalence of 6.3%.

Pipe Smoking Among Middle School Males

The prevalence of current pipe smoking among West Virginia MS male students decreased from 6.2% (about 2,121 males) in 2000 to 3.6% (about 1,117 males) in 2013. The U.S. prevalence (from NYTS) for MS male current pipe smoking was 1.6% in 2013 (CDC, 2014), but not significantly different from the West Virginia prevalence.

Use of New Tobacco Products Among Middle School Students

For MS students in 2013, the highest prevalence for students trying a new product was for roll-your-own cigarettes (prevalence 5.9%), e-cigs (prevalence 5.3%), and flavored cigarettes (prevalence 5.0%). The prevalence of MS students trying any new product was 16.1%. The prevalence of current use of any new product was 9.9%. Among MS current smokers, the prevalence of current use of any new product was 67.5%. This last measure indicates that the majority of MS current cigarette smokers was getting nicotine from a variety of sources in 2013. There were no significant differences by gender in the prevalence of ever trying or current use of new products. See Table 3 for prevalence estimates and weighted frequencies for trying any new product or using any new product.

The prevalence of current use of e-cigs among West Virginia MS students was 2.1% in 2013, but not significantly different from the U.S. average prevalence (from NYTS) of 1.1% in 2013.

**Table 3. Prevalence of Trying or Current Use of New Tobacco Products
Among West Virginia Middle School Students, 2013**

Product	Students who had EVER TRIED this product:		Students who were CURRENTLY USING this product (any use in past 30 days):	
	Total: % (95% CI)	Weighted Frequency	Total: % (95% CI)	Weighted Frequency
Roll-your-own cigarettes	5.9 (3.9-7.8)	3,639	4.0 (2.8-5.3)	2,510
Flavored cigarettes	5.0 (3.6-6.3)	3,079	2.4 (1.5-3.4)	1,501
Clove cigars	0.9 (0.3-1.5)	560	*0.3 (0.0-0.6)	209
Flavored little cigars	3.5 (2.5-4.5)	2,155	1.6 (0.9-2.3)	1,002
Hookah/waterpipe	2.0 (1.1-2.8)	1,229	1.3 (0.5-2.0)	778
Snus	3.7 (2.7-4.8)	2,324	2.2 (1.2-3.2)	1,353
Dissolvable tobacco	0.7 (0.4-1.1)	462	*0.5 (0.1-0.9)	307
Electronic cigarettes (e-cigs)	5.3 (3.7-6.9)	3,299	2.1 (1.3-2.8)	1,286
Some other new product not listed here	3.3 (2.2-4.4)	2,041	2.6 (1.6-3.6)	1,628
Any new product	16.1 (12.8-19.4)	10,001	9.9 (7.4-12.5)	6,169
Among current cigarette smokers, any new product	76.3 (71.2-81.5)	3,474	67.5 (59.9-75.1)	3,072

* indicates that the data may be unreliable due to n<50, or CI width >20, or RSE >30, and should be interpreted with caution.

Data Source: West Virginia Division of Tobacco Prevention, West Virginia Youth Tobacco Survey.

Table prepared by the West Virginia Health Statistics Center.

Conclusions

From 2000 to the most recent data in 2013, dramatic changes have occurred in the prevalence of HS and MS tobacco use. The prevalence of never-tobacco use among HS students increased 124%, from 20.6% in 2000 to 46.1% in 2013. The never-tobacco use prevalence among MS students increased 53%, from 46.0% in 2000 to 70.2% in 2013. The estimated number of HS never-tobacco users doubled, from 17,535 students in 2000 to about 35,538 students in 2013. Similarly, the estimated number of MS never-tobacco users increased from 29,485 students in 2000, to about 41,243 students in 2013. Current tobacco use decreased significantly among both HS and MS students during 2000 to 2013.

The prevalence of HS never-smoking increased 107%, and the prevalence of MS never-smoking increased 44% between 2000 and 2013. According to the Susceptibility Index, changes from 2000 to 2013 indicate that nearly 44,000 HS students and about 25,000 MS students are choosing not to smoke cigarettes. Although many HS current smokers indicated that they wanted to quit, have tried to quit, and have confidence that they could quit, the prevalence of students who are ex-smokers is very small. There were over 10,000 fewer current smokers among HS female students and about 3,500 fewer current smokers among MS female students in 2013 compared to 2000. If these females can continue to be nonsmokers as they enter adulthood, they may experience the health benefits of a smoke-free life, smoke-free pregnancies, and smoke-free homes.

While the prevalence of HS and MS current cigarette smoking in West Virginia has been significantly higher than the national averages, the gaps are decreasing. From 2002 to 2013, the decrease in the prevalence of current smoking among West Virginia HS students occurred at a greater rate than the decrease in prevalence seen among HS students in the U.S. (WVHSC, 2015). West Virginia may be well on its way to meeting the Healthy People 2020 goal of 16.0% current smoking among adolescents in grades 9-12 by the year 2020 (U.S. Department of Health and Human Services, 2015). Youth is the only population in West Virginia experiencing dramatic improvements in reducing cigarette smoking.

The prevalence of never-smokeless tobacco use among MS male students has significantly increased from 2000 to 2013, but the prevalence among HS male students is unchanged. The data suggests that many current smokeless tobacco users among HS male students are drifting toward frequent and daily smokeless tobacco use. The prevalence of dual use (current smokeless tobacco use among current cigarette smokers) has increased among HS male and female students. The prevalence of cigar and pipe smoking remains very low, but monitoring will continue. In all comparisons of tobacco use and smokeless tobacco use among males, MS students seem to be resisting tobacco with greater success than HS students.

With the onslaught of new tobacco products and heavier marketing to youth, the data suggest that youth are experimenting with, and showing evidence of current use of, many different forms of tobacco, especially the youth who are current cigarette smokers.

In the future, tobacco prevention advocates will be hopeful in observing the continued increase in the prevalence of never-use of any of these tobacco products and the continued decrease in the prevalence of current use. Future analysis may reveal at what point the decreasing tobacco use prevalence among West Virginia youth will result in a significant decrease in the prevalence among all West Virginia adults, as youth age into adulthood.

Limitations

Findings in this report are subject to the following limitations. Data represent only youth in public schools in regular classrooms, therefore, students in private schools, alternative schools, or modified classes may not be represented. Data are self-reported and are subject to recall and response bias.

Descriptions of Tobacco Products

- **Bidis and kreteks:** Bidis are small, thin, hand-rolled cigarettes imported from India and other Southeast Asian countries. They are made from tobacco wrapped in a tendu or temburni leaf and may be tied with a colorful string. Bidis can be flavored (e.g., chocolate, cherry, mango) or unflavored. Kreteks are sometimes referred to as clove cigarettes, are imported from Indonesia and contain a mixture of tobacco, cloves, and other additives. Bidis and kreteks have higher concentrations of nicotine, tar, and carbon monoxide than regular cigarettes (CDC, 2013a). The sale of bidis has been prohibited in West Virginia since 2001 (West Virginia State Code, 2001).
- **Cigars, cigarillos, and little cigars:** Cigars are rolls of tobacco wrapped in leaf tobacco. Cigar tobacco leaves are aged and then fermented, causing chemical and bacterial reactions that make cigars quite different from cigarettes. Cigars differ from cigarettes in size and type of tobacco used. Many brands of larger cigars contain between 100 and 200 mg and as high as 444 mg of nicotine (compared to 8 mg in the average cigarette). Cigarillos are slightly smaller than regular cigars and are often flavored. Little cigars are about the size of cigarettes, some come in flavors, and some have filters. They are often sold in packs of 20 (American Cancer Society, 2014).
- **Clove cigars:** Clove cigars are usually smaller cigars with a blend of tobacco and cloves. Due to the 2009 FDA ban (FDA, 2015) on the manufacture and sale of clove-flavored cigarettes (also called kreteks), some manufacturers are producing clove cigars to avoid the ban (NBC News, 2009).
- **Dissolvable tobacco products:** Dissolvable tobacco products come in several forms: pellets, similar to breath mints; strips, similar to breath strips; and sticks, shaped like long toothpicks. The convenient size, shape and flavoring of dissolvables make them especially attractive to children and youth. In many instances, these products look and taste like candy. They are easily concealed and not easily detected (CTFK, 2014a).
- **Electronic cigarettes:** E-cigarettes (or e-cigs) are battery-operated devices with an atomizer that heats a liquid containing nicotine, turning it into a vapor that can be inhaled (The Mayo Clinic, 2014). The West Virginia Legislature includes e-cigs in its definition of vapor products (West Virginia State Code, 2014).
- **Flavored cigarettes:** Flavored cigarettes are flavored with herb, spice, strawberry, grape, orange, clove, cinnamon, pineapple, vanilla, coconut, licorice, cocoa, chocolate, cherry, coffee, etc. In 2009, the FDA banned flavored cigarettes, but excluded menthol from the ban (FDA, 2015).
- **Hookah or waterpipe (narghile, argileh, hubble-bubble, goza):** Hookahs are water pipes that are used to smoke specially-made tobacco that comes in a variety of flavors (apple, mint, cherry, chocolate, coconut, etc.). The tobacco is heated in the bowl at the top of the hookah, and the smoke is filtered through the water in the hookah's base. Hookah smoking has health risks similar to cigarette smoking, plus additional health risks when hookah mouthpieces are shared in a group setting (CDC, 2013e).

- Pipe tobacco: Pipe tobacco is dried tobacco leaves that are often cut into ribbons or flaked. Many aromatic pipe tobacco blends are sprayed with flavors like cherry, orange, chocolate, coffee, and whiskey (smokingpipes.com, 2014).
- Roll-your-own tobacco (RYO): RYO is loose cigarette tobacco often purchased at a retailer that will also assist with machine rolling the cigarettes. Due to inconsistencies in tobacco taxation, RYO cigarettes are often much cheaper than manufactured cigarettes. In 2012, RYO retailers became subject to federal cigarette taxes (Charleston Gazette, 2012).
- Smokeless tobacco: 1) looseleaf chewing tobacco is comprised of stripped and processed cigar-type tobacco leaves, loosely packed to form small strips, usually treated with sugar or licorice; 2) plug chewing tobacco is semi-soft chewing tobacco that comes in small, oblong blocks and often contains sweeteners and other flavoring agents; 3) oral (moist) snuff is a finely cut, processed tobacco, which the user places between the lower lip and gum; 4) moist or dry nasal snuff is a fine tobacco powder that is sniffed into the nostrils, and flavorings and perfumes may be added; and 5) snus is moist snuff and flavorings, sold in tea-bag like packets, placed between the upper gum and lip, and does not require the user to spit, unlike traditional moist snuff (CTFK, 2014a).
- Snus: (See definition of smokeless tobacco above. WVYTS analysis will also provide analysis of snus as a separate product from the smokeless tobacco grouping).

References

- American Association of Poison Control Centers. (2015, July 31). E-cigarette devices and liquid nicotine. Retrieved from <http://www.aapcc.org/alerts/e-cigarettes/>
- American Cancer Society. (2014, February 19). Learn about cancer. What causes cancer? Cigar smoking. How are cigars different from cigarettes? Retrieved from <http://www.cancer.org/cancer/cancercauses/tobaccocancer/cigarsmoking/cigar-smoking-cigars-vs-cigarettes>
- American Public Health Association. (n. d.). Public health and chronic disease: Cost savings and return on investment (Get the facts). Retrieved August 10, 2015, from https://www.apha.org/~media/files/pdf/factsheets/chronicdiseasefact_final.ashx
- Campaign for Tobacco-Free Kids. (2014a, September 9). Smokeless tobacco in the United States. Retrieved from <http://www.tobaccofreekids.org/research/factsheets/pdf/0231.pdf>
- Campaign for Tobacco-Free Kids. (2014b, December 30). Key state-specific tobacco-related data & rankings. Retrieved from <http://www.tobaccofreekids.org/research/factsheets/pdf/0176.pdf>
- Charleston Gazette. (2012, July 10). Roll-your-own cigarette outlets now subject to manufacturing tax. Retrieved from <http://www.wvgazette.com/News/201207100122>
- Centers for Disease Control and Prevention. (2001). Youth tobacco surveillance --- United States, 2000. *Morbidity and Mortality Weekly Report*, 50(SS04), 1-84. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5004a1.htm>
- Centers for Disease Control and Prevention. (2005). Tobacco use, access, and exposure to tobacco in media among middle and high school students --- United States, 2004. *Morbidity and Mortality Weekly Report*, 54(12), 297-301. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5412a1.htm>
- Centers for Disease Control and Prevention. (2012). Preventing tobacco use among youth and young adults: A report of the Surgeon General. Atlanta, GA. Retrieved from <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/full-report.pdf>

- Centers for Disease Control and Prevention. (2013a, July 9). Smoking & tobacco use: Bidis and kreteks. Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/tobacco_industry/bidis_kreteks
- Centers for Disease Control and Prevention. (2013b, July 10). Oral cancer. Deadly to ignore. Retrieved from http://www.cdc.gov/OralHealth/publications/factsheets/oral_cancer/oc_facts.htm
- Centers for Disease Control and Prevention. (2013c, October 29). Vital signs: Tobacco use. Retrieved from <http://www.cdc.gov/vitalsigns/tobaccouse/smoking>
- Centers for Disease Control and Prevention. (2013d, November 15). Tobacco product use among middle and high school students --- United States, 2011 and 2012. *Morbidity and Mortality Weekly Report*, 62(45), 893-987. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6245a2.htm>
- Centers for Disease Control and Prevention. (2013e, December 17). Smoking & tobacco use: Hookahs. Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/tobacco_industry/hookahs/
- Centers for Disease Control and Prevention. (2014). Tobacco use among middle and high school students --- United States, 2013. *Morbidity and Mortality Weekly Report*, 63(45), 1021-1026. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6345a2.htm>
- Centers for Disease Control and Prevention. (2015a, April 15). Smoking & tobacco use: Fast facts. Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/
- Centers for Disease Control and Prevention. (2015b, April 17). Tobacco use among middle and high school students --- United States, 2011-2014. *Morbidity and Mortality Weekly Report*, 64(14), 381-385. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6414a3.htm?s_cid=mm6414a3_w
- Connolly, G. N., Alpert, H. R., Wayne, G. F., & Koh, H. (2007). Trends in nicotine yield in smoke and its relationship with design characteristics among popular U.S. cigarette brands, 1997-2005. *Tobacco Control*, 16(e5). Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2598548/>
- DiFranza, J. R., Savageau, J. A., Fletcher, K., O'Loughlin, J., Pbert, L., Ockene, J. K.,... Wellman, R. K. (2007). Symptoms of tobacco dependence after brief intermittent use. *Archives of Pediatrics & Adolescent Medicine*, 161(7), 704-710. Retrieved from <http://archpedi.jamanetwork.com/article.aspx?articleid=570706>
- Food and Drug Administration. (2015). What are FDA's regulations for flavored tobacco? Retrieved from <http://www.fda.gov/AboutFDA/Transparency/Basics/ucm208085.htm>
- The Mayo Clinic. (2014). Expert Answers: What are electronic cigarettes? Are they safer than conventional cigarettes? Retrieved from <http://www.mayoclinic.org/healthy-living/quit-smoking/expert-answers/electronic-cigarettes/faq-20057776>
- NBC News. (2009). Importer tries to get around clove cigarette ban. Retrieved from <http://www.nbcnews.com/id/32723154/ns/business-retail/t/importer-tries-get-around-clove-cigarette-ban>
- Orzechowski, W., & Walker, R. C. (2014). *The tax burden on tobacco: Historical compilation*, volume 49, 2014. Arlington, VA: Orzechowski and Walker. Retrieved from <http://www.taxadmin.org/fta/tobacco/>
- Popova, L., & Ling, P. M. (2013). Alternative tobacco product use and smoking cessation: a national study. *American Journal of Public Health*, 2013 May; 103(5):923-30. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/23488521>
- Primack, B. A., Soneji, S., Stoolmiller, M., Fine, M. J., & Sargent, J. D. (2015). Progression to traditional cigarette smoking after electronic cigarette use among U.S. adolescents and young adults. *JAMA Pediatrics*. Published online September 8, 2015. Retrieved from

http://archpedi.jamanetwork.com/article.aspx?articleID=2436539&utm_source=Silverchair%20Information%20Systems&utm_medium=email&utm_campaign=JAMAPediatrics%3AOnlineFirst09%2F08%2F2015

- Rural Health Reform Policy Research Center. (2014). *The 2014 update of the rural-urban chartbook*. Retrieved from <https://ruralhealth.und.edu/projects/health-reform-policy-research-center/pdf/2014-rural-urban-chartbook-update.pdf>
- Smokingpipes.com. (2014). Glossary. Retrieved from <http://www.smokingpipes.com/information/glossary>
- U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. (2015). Healthy People 2020 tobacco use objectives. Retrieved from https://www.healthypeople.gov/node/5342/data_details
- West Virginia Department of Health and Human Resources, West Virginia Bureau for Public Health, West Virginia Health Statistics Center. (2009). Tobacco is killing (and costing) us: 2002-2006. Retrieved from http://www.wvdhhr.org/bph/hsc/pubs/other/tikacu2009/TIKACU_for_online_final_09_02_09.pdf
- West Virginia Department of Health and Human Resources, Bureau for Public Health, Health Statistics Center. (2013). West Virginia smoking-attributable morbidity and mortality economic costs (SAMMEC): 2006-2010. Unpublished data.
- West Virginia Department of Health and Human Resources, Bureau for Public Health, Health Statistics Center. (2015). Joinpoint regression analysis of data from West Virginia Youth Tobacco Survey and National Youth Tobacco Survey. Unpublished data.
- West Virginia State Code. (2001). §16-9A-9. Selling of bidis prohibited; penalties. Retrieved from <http://www.legis.state.wv.us/WVCODE/Code.cfm?chap=16&art=9A>
- West Virginia State Code. (2014). §16-9A-2. Definitions; sale or gift of cigarette, cigarette paper, ...pipe, cigar, snuff, chewing tobacco, pipe tobacco, roll-your-own tobacco, tobacco products, tobacco-derived and alternative nicotine product or vapor products to persons under eighteen; penalties for first and subsequent offense; consideration of prohibited act as grounds for dismissal; impact on eligibility for unemployment benefits. Retrieved from <http://www.legis.state.wv.us/WVCODE/Code.cfm?chap=16&art=9A>