Arkansas Comprehensive Tobacco Control Program

Key Outcome Indicators

2006

Arkansas Department of Health and Human Services
Division of Health

Tobacco Prevention and Cessation Branch

Thaer Baroud, MHSA, MA
Senior Epidemiologist

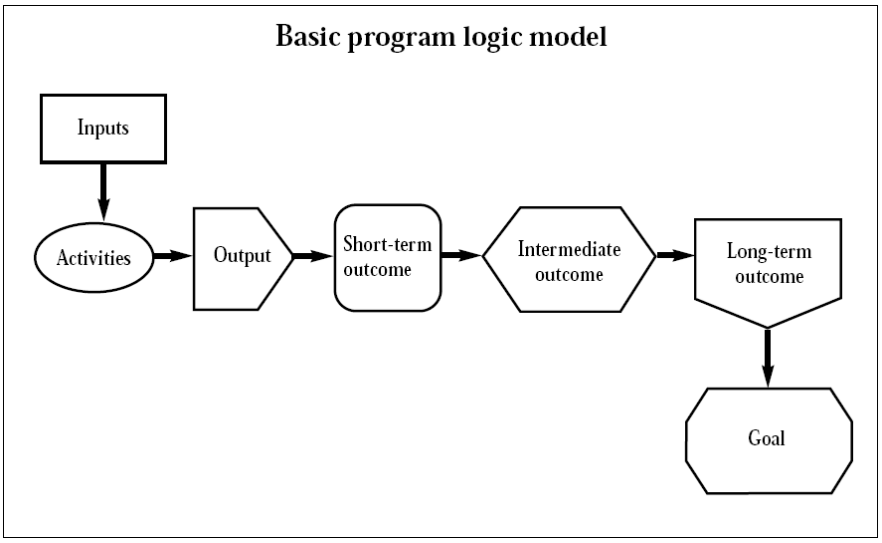
Table of Contents

Introduction

Overview of Surveillance and Evaluation

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health[1], while program evaluation is a constant approach to improve and account for public health actions by involving procedures that are useful, feasible, ethical, and accurate[2]. An effective surveillance and evaluation system monitors program accountability for Arkansas citizens, state policy makers, and others responsible for fiscal oversight. Program evaluation efforts build upon surveillance systems by linking statewide and local program efforts to progress in achieving short-term, intermediate, and primary outcome indicators[3]. The Arkansas comprehensive tobacco program draws from multiple surveillance sources to obtain key outcome indicators that are utilized in a goal-based evaluation model. The evaluation plan focuses on activities performed by the program and its partners (outputs), and initial, intermediate, and long-term outcomes delineated in its logic model (Figure 1) to direct measurement activities.

Figure 1. Logic Model



Surveillance Data Sources

The Arkansas comprehensive tobacco program uses a variety of data sources that are either well-established population-based surveillance systems (i.e., vital statistics, cancer registries, and risk-factor surveys) conducted nationally and at the state level, or tobacco-specific studies carried out in-house. Appendices A and B summarize survey and non-survey sources of data used in this report, its backgrounds, instruments, design/methods, limitations, and data availability in Arkansas. These data systems are comparable across states to develop tobacco program objectives.

Evaluation Framework

The Arkansas comprehensive tobacco program adheres to the CDC-identified four goals that tobacco control programs should work within to reduce tobacco related morbidity and mortality[4]:

- Preventing the initiation of tobacco use among young people.
- Promoting quitting among young people and adults.
- Eliminating nonsmoker's exposure to secondhand smoke.
- Identifying and eliminating the disparities related to tobacco use and its effects among different population groups.

Output Performance Measures (Process Evaluation)

Measuring the implementation of program activities is important to ensure that it is functioning as it is expected. In process evaluation, the outcome is really an output. Outputs can be broadly defined as anything that a system (or a comprehensive tobacco program) produces[5]. Output performance measures capture information about the type and amount of outputs produced by the program.

Arkansas tobacco control program obtains credible evidence from multiple sources to measure the process by which its CDC-recommended nine program components are being implemented. The program employs an online reporting data collection system to gather information from its 30 funded community coalitions, school grantees, and other partners. The reporting system collects data on the amounts of services provided, as well as the impacts that these services and activities have inflicted through tracking community changes.

Outcome Performance Measures (Outcome Evaluation)

Many stakeholders place a primary importance on effectiveness accountability in comprehensive tobacco programs. The program recognizes that the ultimate goal of its existence is to bring about quality-of-life changes in the citizens of Arkansas, manifested by a decline in adult and youth prevalence of tobacco use, a reduction in exposure to environmental tobacco smoke, as well as a decrease in morbidity, death, and economic costs that are the result of cigarette smoking and other tobacco products use.

The program uses a basic weight-of-evidence model, shown in Figure 1, which links program inputs (i.e., resources) and activities to program outcomes. Such a logic model enables the program to identify short-term, intermediate, and long-term outcomes, as well as linking these outcomes to each other and to program activities. Selecting indicators to measure (whether short-term, intermediate, or long-term) depends primarily on the state of the program development.

Short-Term Outcomes

Short-term outcomes are the immediate effects of the program and often focus on knowledge, attitudes, and skills gained by a target audience. For example, because a majority of adult current smokers (80%) begin using tobacco regularly before the age of 18, one of the primary goals of the program is to prevent the initiation of tobacco use among young people. To realize this goal, a number of short-term outcomes, such as (1) to increase knowledge of, and to improve anti-

tobacco attitudes toward policies to reduce youth initiation, (2) to increase anti-tobacco policies and programs, and (3) to increase restriction and enforcement of tobacco sales to minors, must be accomplished.

Within each of these short-term outcomes, a number of indicators (objectives) are measured periodically. For example, to assess an increase in knowledge of the dangers of tobacco and an increase in anti-tobacco attitudes among youth (*short-term outcome 1*), we measure the level of awareness of media messages and youth receptivity to tobacco industry advertising. Similarly, to examine an increase in anti-tobacco policies and programs (*short-term outcome 2*), we measure the percentage of students who were taught about the dangers of tobacco use in schools, as well as the percentage of students who participated in tobacco use prevention activities in schools and the community. Finally, to assess an increase in restriction and enforcement of tobacco sales to minors (*short-term outcome 3*), we measure the number of compliance checks conducted by enforcement agencies on Arkansas retail shops.

Intermediate Outcomes

Intermediate outcomes reflect further progress in reaching a program goal and usually link short-term outcomes with long-term outcomes. Two intermediate outcomes for the program goal presented earlier (preventing the initiation of tobacco use among young people) are (1) to reduce susceptibility to experimentation with tobacco products, and (2) to decrease minor's access to tobacco products.

Similar to short-term outcomes, each of these intermediate outcomes has a number of measurable objectives. To examine a reduction in youth susceptibility to experimentation with tobacco (*intermediate outcome 1*), we measure the following indicators: the proportion of young people who think that smoking is "cool" and helps them fit in; the proportion of young people who think that smoking attracts more friends; and the proportion of young people who report that their parents have discussed the dangers of smoking with them. Likewise, assessing a decrease in access to tobacco products (*intermediate outcome 2*) requires measuring the percentage of successful attempts to purchase tobacco by young people; the proportion of young people reporting that they have been sold tobacco products by a retailer; the proportion of young people reporting that they were not asked to show proof of age when purchased tobacco products by a retailer; and the proportion of young people reporting that they received tobacco products from a social source.

Long-Term Outcomes

Long-term outcomes reflect the ultimate goals of the program. Following on our example, the two long-term outcomes of the above-mentioned goal are (1) to reduce initiation of tobacco use among young people, and (2) to reduce the prevalence of tobacco use among youth.

To assess a reduction of youth initiation (*long-term outcome 1*), we measure the proportion of young people who reported having tried a cigarette, and the age at which young people first smoked a whole cigarette. Finally, to evaluate a reduction in youth prevalence of tobacco use (*long-term outcome 2*), we measure the prevalence of current cigarette smoking, the prevalence of frequent cigarette smoking, and the prevalence of other tobacco products (i.e., smokeless tobacco, cigar, etc.) use among young people.

GOAL I: PREVENTING THE INITIATION OF TOBACCO USE AMONG YOUNG PEOPLE

Short-Term Outcomes

Outcome 1. Increased Knowledge of, and improved anti-tobacco attitudes toward policies to reduce youth initiation

Indicator 1.a Level of awareness of anti-tobacco media messages

According to the Youth Tobacco Survey (YTS) conducted in spring 2005, of all students in middle and high schools, 77.6% (±1.8%) had seen or heard anti-smoking commercials on TV, the Internet, or on the radio in the 30 days preceding survey administration. The rate of exposure to anti-tobacco messages has significantly declined since 2000 (82.3% ±1.9%).

Indicator 1.b Youth receptivity to tobacco industry advertising

Receptivity of adolescents to tobacco industry adverting was measured in YTS by asking students if they had bought or received, or would ever buy or receive (definitely or probably) any item with a tobacco company name, logo, or picture printed on it, such as a T-shirt, hat, sunglasses, or a lighter.

In 2005, about 39.2% (±2.1) of all middle and high school students were receptive to tobacco company merchandise. This represents a significant decline of 21.1% since the year 2000 (49.7% ±3.7%).

Outcome 2. Increased anti-tobacco policies and programs

Indicator 2.a Proportion of students who were taught about the dangers of tobacco use in schools

During 2005 school year, 63.1% (±4.2%) of all middle and high school students were taught about the dangers of tobacco use in any of their classes. *This indicator was not measured in 2000.* Additionally, 33.7% (±4.2%) of all students practiced ways to say NO to tobacco in any of their classes in 2005, indicating no significant change from the year 2000 (33.7% ±4.5%).

Indictor 2.b Proportion of students who participated in tobacco use prevention activities in the community

Of all students, about 19.2% (±2.3%) had participated in any community event to discourage people from using tobacco in the 12 months preceding the survey. There was no significant change from the year 2000 (24.6% ±3.5%).

Outcome 3. Increased restriction and enforcement of tobacco sales to minors

Indicator 3.a Number of compliance checks conducted by enforcement agencies

Maintaining a consistently high number of compliance checks is important because it conveys the message to retailers and the public that enforcement agencies are serious about laws

restricting youth access to tobacco. In 2005, a total of 1,040 compliance checks were conducted on randomly selected retail shops in Arkansas, a 20.6% increase over the number of inspections completed in 2003 (862).

Intermediate Outcomes

Outcome 4. Reduced susceptibility to experimentation with tobacco products

Indicator 4.a Proportion of young people who think that smoking is "cool" and helps them fit in

In 2005, 11.8% (±1.6%) of all middle and high school students thought that smoking by young people makes them look cool or fit in. The rate has not significantly changed since 2000 (11.0% ±1.4%).

Indicator 4.b Proportion of young people who think that smoking attracts more friends

Of all middle and high school students surveyed in 2005, 20.3% (±2.0%) thought that young people who smoke have more friends. This rate did not significantly change from 2000 (19.3% ±2.6%).

Indicator 4.c Proportion of young people who report that their parents have discussed the dangers of smoking with them

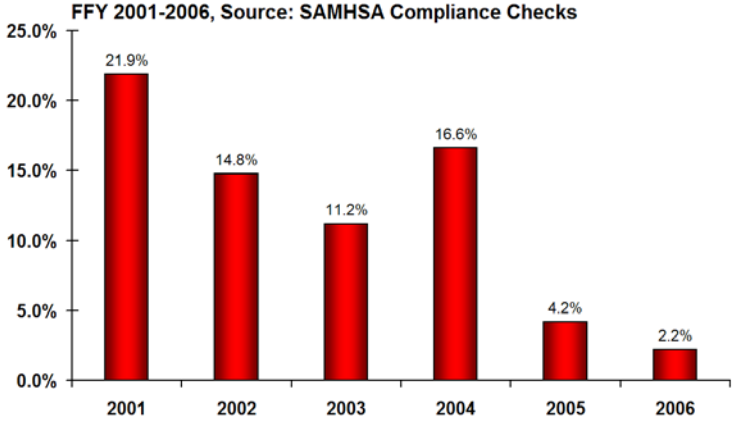
In 2005, about 44.3% (±2.3%) of all students reported discussing the dangers of tobacco use with their parents or guardians in the 12 months preceding the survey. This indicator has alarmingly declined by nearly one half since 2000 (82.7% ±1.8%).

Outcome 5. Decreased access to tobacco products

Indicator 5.a Proportion of successful attempts to purchase tobacco by young people

Based on data from the federal Synar Amendment[6], retailer violation rate in Arkansas for the 2006 Federal Fiscal Year (FFY) was at all times low (2.2%). As seen in Figure 2, the number of Arkansas retail shops that were noncompliant with the *Tobacco Age of Sale* law has dropped substantially since 2001 (21.9%).

Figure 2. Weighted retailer violation rate (percentage of successful youth attempts to purchase tobacco) in Arkansas - FFY 2001-2006, Source: SAMHSA Compliance Checks

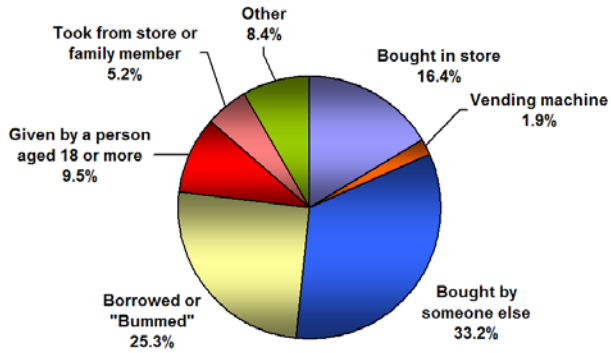


Indicator 5.b Proportion of young people reporting that they have been sold tobacco products by a retailer

As shown in Figures 3 and 4, high school current smokers were significantly more likely to purchase cigarettes from a store (16.4%) than current smokers in middle schools (5.1%). Between 2000 and 2005, the percent of high school current smokers *under the age of 18* who usually obtained their cigarettes through purchasing them in a store declined significantly from 29.8% to 16.4%.

Figure 3. How current cigarette smokers in middle schools usually obtain cigarettes, Arkansas Youth Tobacco Survey 2005

Figure 4. How current cigarette smokers in high schools (<18 years) usually obtain cigarettes, Arkansas Youth Tobacco Survey 2005



Indicator 5.c Proportion of young people reporting that they were not asked to show proof of age when purchased tobacco products by a retailer

According to the 2005 YTS, about 69.5% (±15.0%) of current smokers in middle schools and 62.3% (±10.3%) of current smokers in high schools, *who reported buying cigarettes in the 30 days preceding the survey*, were not asked to show proof of age. These rates did not change significantly between the 2000 and 2005.

Long-Term Outcomes

Outcome 6. Reduced initiation of tobacco use by young people

Indicator 6.a Proportion of young people who reported ever having tried a cigarette (*lifetime prevalence*)

Since 2000, a significant decrease in lifetime prevalence of cigarette smoking was observed in middle schools, as the percent of students who reported ever having tried a cigarette, even one or two puffs, decreased from 47.8% (±4.3%) in 2000 to 35.6% (±4.1%) in 2005. Among high school students, however, lifetime prevalence of cigarette smoking in 2005 (62.5% ±5.0%) has not changed significantly since 2000 (70.5% ±4.9%).

Indicator 6.b Age at which young people first smoked a whole cigarette

In 2005, of all middle and high school students who had ever smoked, about 17.6% (±2.5%) had first smoked a whole cigarette before the age of 11 years. This represents a significant 24.5% decline from the 2000 value (23.3% ±2.2%).

Outcome 7. Reduced youth tobacco use prevalence

Indicator 7.a Prevalence of current cigarette smoking among youth

Current cigarette smoking among young people is defined as smoking cigarettes on one or more days in the past 30 days. Overall, 9.3% of middle school students and 26.3% of high school students in Arkansas were current cigarette smokers. *This amounts to an estimated 9,710 middle school students and 34,223 high school students who were current cigarette smokers in 2005*.

As seen in Figure 5, current cigarette smoking declined significantly among middle school students from 15.8% (±2.2%) in 2000 to 9.3% (±2.1%) in 2005, a 41% reduction. Among high school students, rates dropped from 35.8% (±4.9%) in 2000 to 26.3% (±4.1%) in 2005, a significant decline of more than 26%.

Indicator 7.b Prevalence of frequent cigarette smoking among youth

Frequent cigarette smoking among youth is defined as smoking on 20 or more days in the past 30 days; an indicator that better depicts the extent of youth addiction to cigarettes than current cigarette smoking. In 2005, high school students (12.6% ±2.8%) were 6 times more likely than middle school students (2.1% ±1.0%) to report frequent cigarette smoking.

In high schools, the rate of frequent cigarette smoking dropped significantly from 21.0% (±3.8%) in 2000 to 12.6% (±2.8%) in 2005. No gender differences were observed in the prevalence of frequent cigarette smoking in 2005, although the rates have dropped significantly for both males and females since 2000 (Figure 6).

Figure 5. Percent of all middle and high school students who were current users of cigarettes, Arkansas Youth Tobacco Survey 2000 vs. 2005

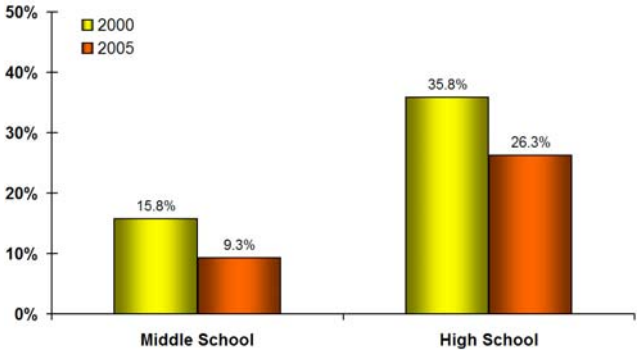
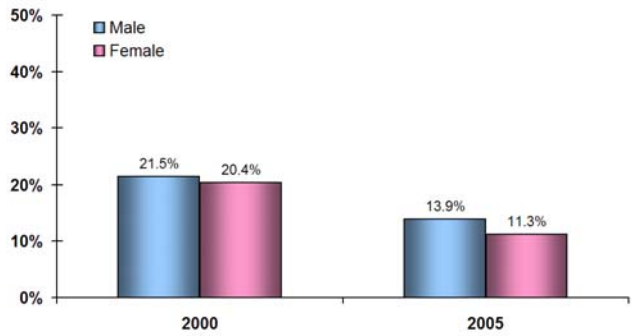


Figure 6. Percent of high school students who were frequent cigarette users by gender, Arkansas Youth Tobacco Survey 2000 vs. 2005



Indicator 7.c Prevalence of other tobacco products use among youth

Cigars/cigarillos

Cigars and cigarillos (little cigars) are the most prevalent tobacco products used by young people after cigarettes. In 2005, 7.0% (±1.8%) of middle school students and 18.9% (±3.0%) of high school students were current cigar smokers. Current cigar smoking rates in middle and high schools did not significantly change as compared to 2000 (Figure 7).

Smokeless tobacco (SLT)

Current smokeless tobacco use is defined as the use of smokeless tobacco, snuff, or dip on one or more days in the past 30 days. About 6.7% (±2.4%) of middle school students and 11.6% (±2.0%) of high school students were current smokeless tobacco users in 2005. The rate of smokeless tobacco use has not significantly changed since 2000 in both middle and high schools (Figure 8).

Figure 7. Percent of all middle and high school students who were current users of cigars and cigarillos (little cigars), Arkansas Youth Tobacco Survey 2000 vs. 2005

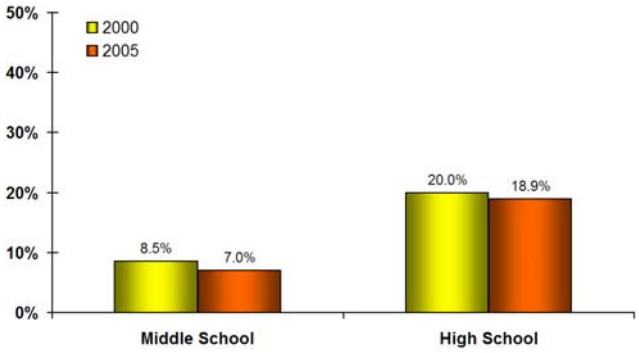
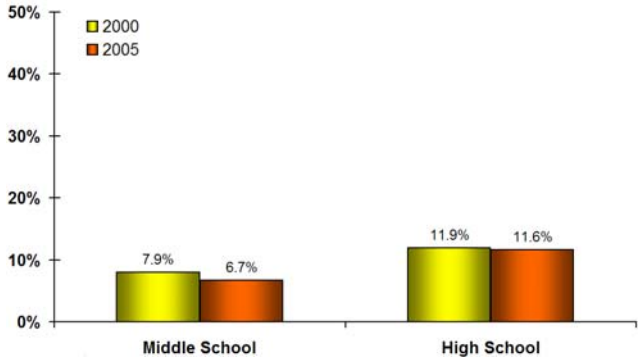


Figure 8. Percent of all middle and high school students who were current users of smokeless tobacco, Arkansas Youth Tobacco Survey 2000 vs. 2005



GOAL II. PROMOTING QUITTING AMONG ADULTS AND YOUNG PEOPLE

Short-Term Outcomes

Outcome 1. Increased intention to quit

Indicator 1.a Proportion of adult smokers who intend to quit

Based on the 2004 Arkansas Adult Tobacco Survey (ATS), 45.9% (±3.3%) of adult current smokers reported that they were seriously considering stopping smoking cigarettes within the six months following the survey. The proportion of adult smokers who were seriously considering stopping smoking in the next six months has increased significantly since 2002 (34.8% ±3.1%). The proportion of adult current smokers who reported making plans to quit in the 30 days following survey administration, however, did not significantly change from 2002 to 2004 (30.9% ±4.8% to 35.1% ±5.3%, respectively).

Indicator 1.b Proportion of young smokers who intend to quit

A common misconception about smoking among youth is that adolescents are not interested in quitting. Among all current smokers in 2005, 53.9% (±4.9%) indicated that they wanted to stop smoking (50.3% ±8.3% in middle schools and 54.9% ±6.1% in high schools). Tobacco addiction, however, was strongly evident as 33.1% (±9.7%) of current smokers in middle schools and 47.3% (±7.3%) in high schools reported that they needed a cigarette everyday.

Outcome 2. Increase in the numbers of health care providers following the Public Health Service (PHS) guidelines

Clinician counseling for tobacco cessation is recommended by the U.S. Public Health Service's (PHS) Clinical Practice Guidelines[7] as a standard approach to primary healthcare in which clinicians apply the "5 A's" (Ask, Advise, Assess, Assist, and Arrange). Below are the results of three indicators related to this outcome and monitored in ATS.

Indicator 2.a Proportion of adults who have been asked by a health care professional about smoking

Health care professionals begin by *asking* their patients about their smoking status, and systematically identifying tobacco users at every visit. According to the 2004 Arkansas ATS, 61.0% (±2.3%) of current smokers, *who visited a physician in the 12 months preceding the survey*, reported being asked about their smoking status by a health care professional. This rate has not significantly changed since 2002 (62.3% ±2.3%).

Indicator 2.b Proportion of adult smokers who have been advised to quit smoking by a health care professional

According to PHS clinical guidelines, clinicians are recommended to *advise* or strongly urge all smokers to quit. About 61.1% (±3.0%) of current smokers who visited a physician in the past year reported that their health care provider advised them to quit smoking. There was no significant change from the 2002 value (60.4% ±3.2%).

Indicator 2.c Proportion of adult smokers who have been assisted in quitting smoking by a health care professional

Assisting smokers with quitting is also a recommended practice. In 2004, of all current smokers who had visited a physician in the 12 months prior to survey administration, and have been advised to quit smoking, 29.4% (±3.7%) reported that their provider recommended or prescribed a proven cessation method, such as a nicotine patch, nicotine gum, nasal spray, an inhaler, or pills (i.e., Zyban). This rate has not significantly changed since 2002 (29.0% ±3.5%).

Intermediate Outcomes

Outcome 3. Increased number of quit attempts

Smokers usually attempt to quit cigarette smoking several times before they are finally able to quit, and thus, an increase in quit attempts is an intermediate step to increase cessation.

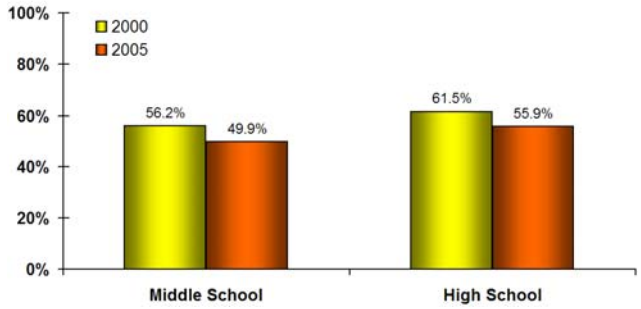
Indicator 3.a Proportion of adult smokers who have made a quit attempt

A quit a tempt is defined as stopping smoking for one day or longer regardless of the outcome (i.e., success or failure) at least once in the past year. According to the 2004 ATS, 46.9% (±2.5%) of adult current smokers made a quit attempt for one day or longer in the 12 months preceding the survey. The rate of quit attempts among adult current smokers has not changed since 2002 (46.9% ±2.5%).

Indicator 3.b Proportion of young smokers who have made a quit attempt

As shown in Figure 9, quit attempts among current smokers in middle and high schools in the 12 months preceding YTS administration were not encouraging, as the rates did not show significant changes from 2000.

Figure 9. Percent of all middle and high school students who were current users of cigarettes and tried to quit during the past 12 months, Arkansas Youth Tobacco Survey 2000 vs. 2005



Long-Term Outcomes

Outcome 4. Increased cessation among adults and youth

Indicator 4.a Proportion of adult smokers who have sustained abstinence from tobacco use

Based on the 2004 ATS, 24.1% (±1.4%) of adult Arkansans were former smokers. A former smoker is someone who smoked more than 100 cigarettes in his/her lifetime but does not currently smoke. The rate has not changed since 2002 (22.9% ±1.5%).

Another measure of quit success or cessation is the percent of adults who has smoked more than 100 cigarettes in their lifetime, who reported their current smoking status as "not at all", and who stopped smoking regularly within the 12 months preceding the survey. In 2004, 19.8% (±0.5%) of the previous year adult smokers in Arkansas were abstinent at the time of survey administration. Abstinent rate has significantly declined since 2002 (27.3% ±0.6%).

Indicator 4.b Proportion of young smokers who have sustained abstinence from tobacco use

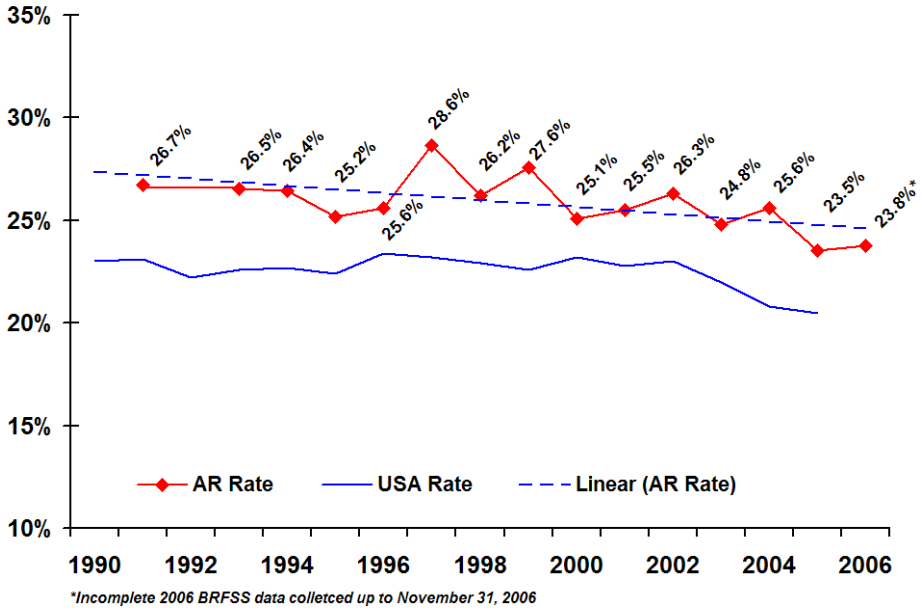
Based on the 2005 YTS, of all current smokers in middle and high schools, more than one quarter (28.7% ±4.5%) believed it was safe for them to smoke for only a year or two, as long as they quit after that. Nevertheless, of current smokers who tried to quit in the 12 months preceding survey administration, 52.4% (±11.2%) in middle schools and 70.7% (±6.5%) in high schools stayed off cigarettes for less than 30 days on the last quit attempt.

Outcome 5. Reduced tobacco use prevalence and consumption

Indicator 5.a Adult smoking prevalence

According to the Behavioral Risk Factor Surveillance System (BRFSS), Arkansas adult smoking prevalence in 2005 was ranked 8th in the nation at 23.5%. Between 2001 and 2005, the prevalence of current smoking in Arkansas dropped two percentage points from 25.5% (±1.8%) to 23.5 (±1.5%), respectively; a slight but statistically significant decline of 8% (Figure 10). Incomplete data collected in 2006 (up to November 31) revealed that the rate is not expected to change from the 2005 estimate (23.8% ±1.5%).

Figure 10. Current Cigarette Smoking among Adults - Arkansas vs. U.S., Source: BRFSS 1991-2006



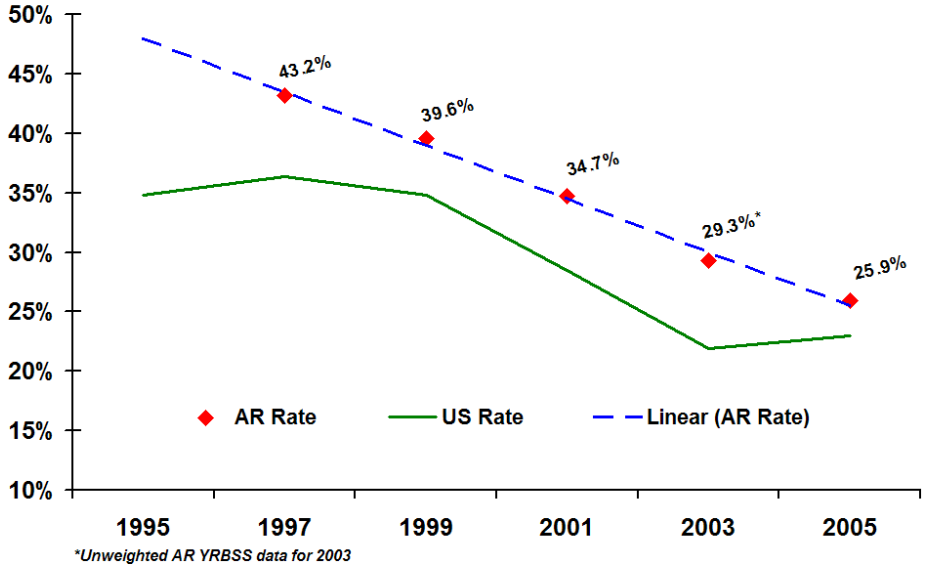
Indicator 5.b Adult smokeless tobacco use prevalence

Smokeless tobacco use persisted to be a challenge in Arkansas, especially among males. Since questions regarding the prevalence of adult smokeless tobacco use are not core BRFSS questions, estimates were only available for selected years. In 2004, current smokeless tobacco use rate among male adults was 12.9% (±2.0%), indicating no change since 2001 (12.9% ±2.3%).

Indicator 5.c Youth smoking prevalence

In previous sections, we presented findings on the significant decline of youth smoking rates among Arkansas middle and high school students (Figure 5) based on YTS. Another study that measures smoking prevalence among high school students is the Youth Risk Behavior Survey (YRBS). Administered by the Arkansas Department of Education with CDC oversight, YRBS 2005 confirmed a consistent downward trend in youth smoking (Figure 11). The Arkansas rate in 2005, however, was far higher than the nation's Healthy People 2010 target to reduce cigarette smoking prevalence to 16.0% among high school students[8].

Figure 11. Percent of high school students who were current users of cigarettes - Arkansas vs. US, Source: YRBSS 1995-2005



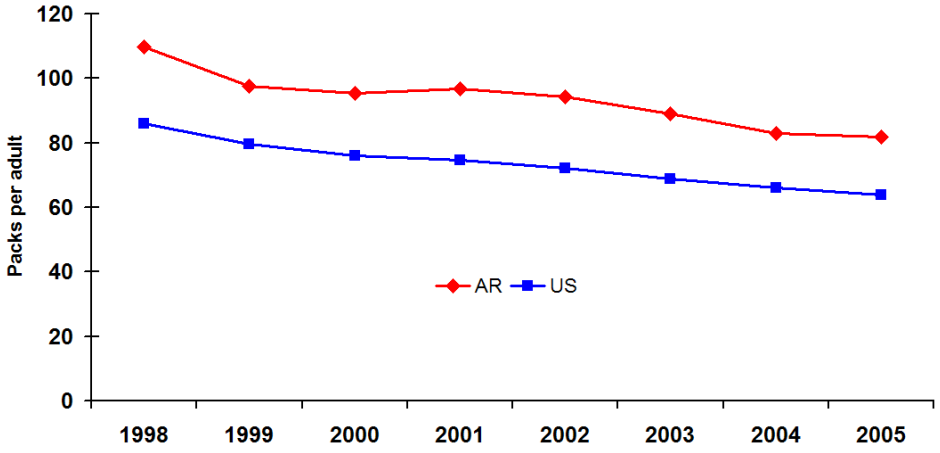
Indicator 5.d Per capita adult cigarette consumption

Since excise tax stamps are required for each pack of cigarettes sold in Arkansas, the Arkansas Department of Finance and Administration, Division of Special Taxes maintains records of all stamps issued (packs sold taxed) in the state. We use such information to measure trends in cigarette consumption. Records are aggregated on a monthly basis, which allows us to estimate annual adult per capita cigarette consumption by both fiscal and calendar years.

As illustrated in Figure 12, per capita adult cigarette consumption continued to drop. In 1998, 110 packs of cigarettes were sold for every adult in Arkansas, while in 2005; the number of

packs sold per adult declined to 82 packs. Consumption declined dramatically between 1998 (110 packs per adult) and 2000 (95 packs per adult) due to the $0.40 cigarette price increase by the tobacco industry after MSA signing (Winter 1998). Consumption leveled off until 2002, and then dropped considerably between 2002 and 2004, coinciding with the $0.25 Arkansas 2002 excise tax increase.

Figure 12.Trend in Annual Per Capita Adult (18 Years+) Consumption of Cigarettes in Arkansas and the United States - CY 1998-2005, Source: Arkansas Department of Finance and Administration

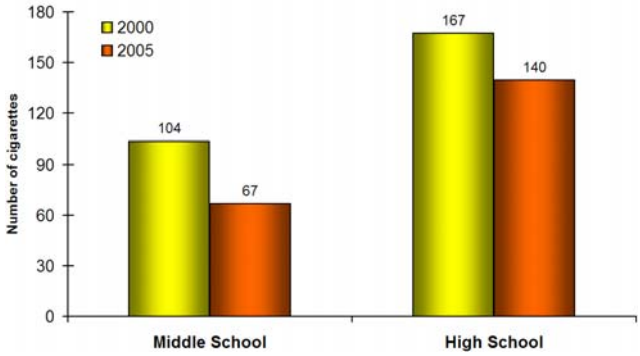


Indicator 5.e Per capita youth cigarette consumption

Prevalence estimates of cigarette smoking among young people reveal "how often" but not "how much" youth are smoking. Adopting an approach developed by the American Legacy Foundation[9], we used YTS to estimate the average per capita cigarette consumption among current smokers over a 30-day period as the product of the average number of days smoked, and the average number of cigarettes smoked on these days. We observed a decline in the monthly average per capita consumption of cigarettes among middle and high schools current smokers.

As seen in Figure 13, the average monthly number of cigarettes smoked by a current smoker in middle schools dropped from 104 in 2000 to 67 in 2005. Among current smokers in high schools, the average monthly number of cigarettes declined from 167 to 140.

Figure 13. Average per capita cigarette consumption over 30-day period among middle and high school students who were current users, Arkansas Youth Tobacco Survey 2000 vs.2005



GOAL III. ELIMINATING NONSMOKERS' EXPOSURE TO SECONDHAND SMOKE

In April 2006, Arkansas lawmakers passed the Arkansas Clean Indoor Act to protect the health of both the public and employees by reducing their exposure to secondhand smoke. The smoke-free law that took effect in July 21, 2006 prohibits smoking in all public and work places including bars and restaurants. As measured by ATS, public support for smoke-free bans in public places, businesses, and restaurants has been increasing. In 2002, a little more than half (54.0% ±0.05%) of adults in Arkansas thought that smoking should not be allowed in any indoor work area, whereas in 2004; 75.5% (±0.02%) supported such a ban. Although the law was a milestone accomplishment in eliminating nonsmokers' exposure to secondhand smoke in the state, work must continue to ensure compliance with the law.

Since smoking rules in homes and vehicles are voluntary, increasing knowledge about the harmful effects of secondhand smoke and support of such policies are necessary first steps. The following are a selection of outcomes and their respective indicators that assesses progress toward this goal.

Short-Term Outcomes

Outcome 1. Changes in Knowledge, attitudes, and support for smoke-free rules

Indicator 1.a Proportion of adults who think that secondhand smoke is harmful

Overall, the large majority of adults believed that breathing smoke from other people's cigarettes was very or somewhat harmful to one's health. In 2002, 91.9% (±0.08%) acknowledged the harmful effects of secondhand smoke, while in 2004; the rate was as high as 92.3% (±0.08%).

Indicator 1.b Proportion of young people who think that secondhand smoke is harmful

As measured by the 2005 YTS, of all middle and high school students, 90.5% (±1.1%) believed that smoke from other people's cigarettes is harmful to their health. Although there was no change in the number of students acknowledging the harm of secondhand smoke from 2000 (90.4% ±1.7%), the rates for the two periods remained high.

Intermediate Outcomes

Outcome 2. Creation of smoke-free policies

Indicator 2.a Proportion of adults who reported smoke-free policies in their homes

Using data from the 2004 ATS, 67.3% (±1.4%) of adults reported that smoking was not allowed in their homes. This represents a minor, but statistically significant increase from 2002 (63.7% ±1.5%).

Long-Term Outcomes

Outcome 3. Reduced exposure to secondhand smoke

Indicator 3.a Proportion of adults reporting exposure to secondhand smoke at home and in vehicles

In 2004, one quarter of adults in Arkansas (25.0% ±1.2%) reported that someone, including him or herself, smoked cigarettes, cigars, or pipes inside their homes at least once during the 7 days preceding the survey. This represents a significant decline from 2002 where 28.2% (±1.3%) of adults reported past 7-day exposure to secondhand smoke in their households.

According to the 2004 ATS, 29.8% (±1.4%) of adults in Arkansas reported that they have rode in a car with someone who was smoking during the 7 days preceding the survey. The rate of exposure to secondhand smoke in vehicles among adults has not significantly changed since 2002 (30.1% ±1.4%).

Indicator 3.b Proportion of young people reporting exposure to secondhand smoke at home and vehicles

In 2005, 62.4% (±2.2%) of all public middle and high school students in Arkansas were exposed to secondhand smoke by being in the same room with someone who was smoking cigarettes on at least on occasion in the seven days preceding the survey. This rate has significantly decreased by 12.7% since the year 2000 (71.5% ±2.9%).

Additionally, about 51.9% (±2.4%) of all students were exposed to secondhand smoke by riding in a car with someone who was smoking cigarettes on at least on occasion in the seven days preceding the survey. This also represents a statistically significant decline of 14.5% from the 2000 value (60.7% ±2.6%).

Combining reported exposure patterns at homes and in cars, 68.0% (±2.0%) of all students in 2005 were exposed to secondhand smoke by either being in the same room or riding with someone who smoked cigarettes on at least one occasion in the seven days preceding the survey. This combined indicator also represents a significant decrease from 2000 (77.1% ±2.7%).

Since smoking patterns of family members and close friends reinforce youth smoking behaviors, it is was not surprising in 2005 to find that exposure to secondhand smoke indoors or in vehicles was significantly higher among current smokers (95.3% ±2.9%) than exposure among never smokers (52.6% ±2.2%).

GOAL IV. IDENTIFYING AND ELIMINATING THE DISPARITIES RELATED TO TOBACCO USE AND ITS EFFECTS AMONG DIFFERENT POPULATION GROUPS

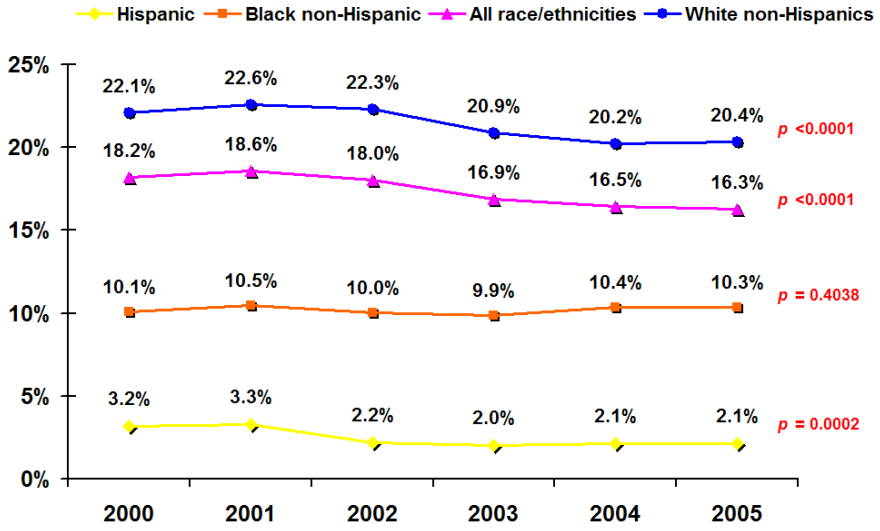
Outcome 1. Reduced Prevalence of tobacco use among vulnerable populations

Indicator 1.a Proportion of Arkansas mothers who smoked during pregnancy

Smoking by pregnant women has major impacts on maternal and child health. The risk of having unfavorable birth outcomes, such as low birthweight, preterm birth, complications of labor and delivery, and fetal injury, significantly increase among women who smoke during pregnancy. Moreover, smoking during pregnancy has substantial economic implications on the health care system. In particular, the state Medicaid program is most affected as the majority of pregnant women who smoke during pregnancy come from a low socioeconomic status and more likely than others to be Medicaid recipients.

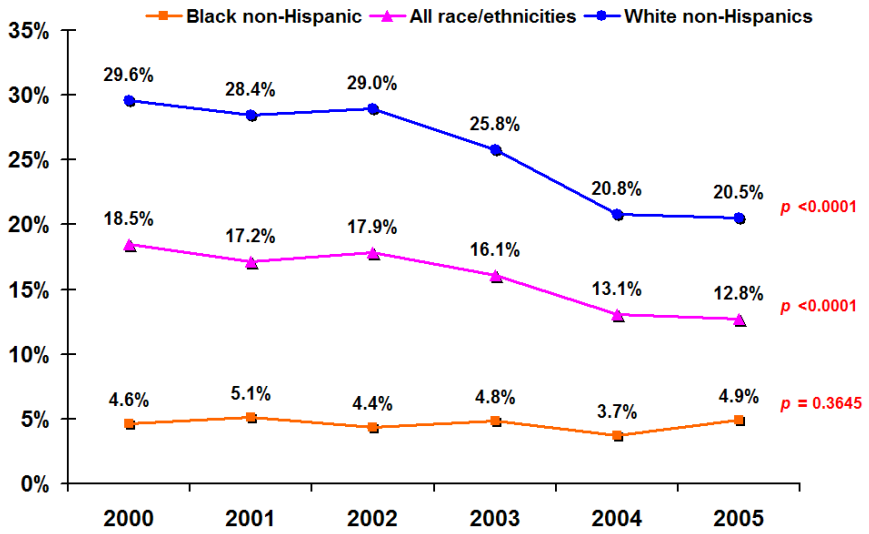
Data collected in birth certificates and reported to CDC's National Vital Statistics System indicated that smoking by pregnant women significantly declined from 18.2% in 2000 to 16.3% in 2005 for all women in Arkansas (p <0.0001). As depicted in Figure 14, white-non-Hispanic women were more likely to smoke during pregnancy, although the rate significantly declined from 22.1% in 2000 to 20.4% in 2005 (p <0.0001). The rate of cigarette smoking by pregnant black non-Hispanic women was roughly 50% lower than that among white pregnant women, but did not show a significant decline (p = 0.4038), nonetheless. Smoking prevalence among pregnant women of Hispanic origin was substantially the lowest, and did in fact decrease significantly (p <0.0002) during that period.

Figure 14. Percentage of pregnant women (all ages) who smoked during pregnancy by race/ethnicity, Arkansas 2000-2005



As teenage mothers (<18 years) are more likely than women from older age groups to smoke during pregnancy, and since there is an observed decline in birth rates for teenagers both nationally and in Arkansas[10], we examined if the decrease in maternal smoking rates for women of all ages was attributable to the decline in teenage birth rates. We repeated the analysis presented earlier, while limiting it to women less than 18 years of age for the same period (Figure 15).

Figure 15. Percentage of pregnant teenagers (<18 years) who smoked during pregnancy by race/ethnicity, Arkansas 2000-2005



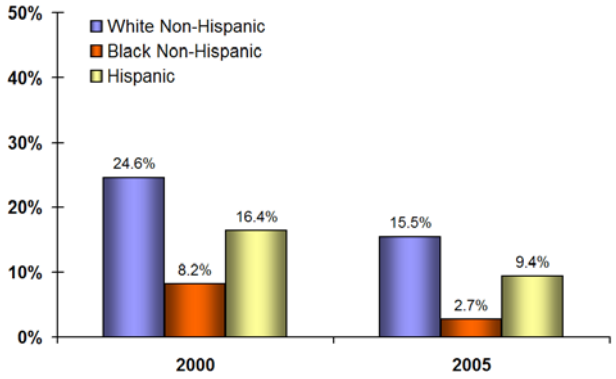
The significant downward trend in maternal smoking rate for women of all ages between 2000 and 2005 was also observed among women less than 18 years. Once again, white teenagers were more likely to smoke during pregnancy than black teenagers. Smoking rates during pregnancy, however, declined significantly among white teenage mothers (p <0.0001), but remained unchanged among black teenagers (p = 0.3645). Data for Hispanic teenagers was not presented due to the very small numbers of mothers less that 18 years of age who smoked during pregnancy in this group (ranged from 2 to 6 teenagers in any given year).

Technical note: All p-values presented in the previous section are for the Cochran-Armitage test of significance in trend. At the 95% level of confidence, a one-sided p-value <0.05 denotes a significant downward trend.

Indicator 1.b Prevalence of frequent cigarette smoking among youth from minority populations

Prevalence of frequent smoking, defined as smoking on 20 or day in the 30 days preceding the survey, is a strong indicator of tobacco addiction among young people. As presented earlier, the rate of frequent cigarette smoking among all high school students dropped significantly from 21.0% (±3.8%) in 2000 to 12.6% (±2.8%) in 2005. The overall decline in frequent smoking among high school students was observed in all racial/ethnic subgroups. Nonetheless, racial/ethnic differences were significant in 2005 with white students being the most frequent users, followed by Hispanics and then blacks (Figure 16).

Figure 16. Percent of high school students who were frequent cigarette users by race/ethnicity, Arkansas Youth Tobacco Survey 2000 vs. 2005



References

1. Centers for Disease Control and Prevention. *Updated Guidelines for Evaluating Public Health Surveillance Systems*. MMWR 2001; 50(No. RR-13).

2. Centers for Disease Control and Prevention. *Framework for Program Evaluation in Public Health*. MMWR 1999;48(RR-11):1-40.

3. Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs.* Atlanta GA: United States Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, August 1999.

4. MacDonald G, Starr G, Schooley M, Yee SL, Klimowski K, Tuner K. *Introduction to Program Evaluation for Comprehensive Tobacco Control Programs*. Atlanta (GA): Centers for Disease Control and Prevention, 2001.

5. Swiss, J. 1991. Public Management Systems, Englewood Cliffs, NJ: Prentice Hall.

6. United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Substance Abuse Prevention. SAMHSA Tobacco Regulation for the Substance Abuse Prevention and Treatment Block Grant. Available at http://www.samhsa.gov/centers/csap/SYNAR/fctsheet.htm

7. United States Department of Health and Human Services, Office of the Surgeon General. Available at http://www.surgeongeneral.gov/tobacco/default.htm

8. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office. November 2000. Available at http://www.healthypeople.gov/Document/pdf/uih/2010uih.pdf

9. Mowery PD, Brick PD, Farrelly, MC. *Legacy First Look Report 3: Pathways to Established Smoking – Results from The 1999 National Youth Tobacco Survey*. American Legacy Foundation. Washington, DC. October 2000. Available at http://www.americanlegacy.org/content/PDF/FLR3 final.pdf

10. Martin JA, Hamilton BE, Sutton PD, et al. Births: Final data for 2004. National vital statistics reports; vol 55 no 1. Hyattsville, MD: National Center for Health Statistics. 2006. Available at http://www.cdc.gov/nchs/data/nvsr/nvsr55/nvsr55_01.pdf

Appendix A: Summary of Tobacco Control Surveillance Sources

I. Arkansas Behavioral Risk Factor Surveillance System (BRFSS)

Background and purpose

BRFSS, the world's largest continuously conducted telephone survey, is a major source of prevalence of chronic disease risk-behaviors among adults aged 18 years or older in the United States. Health departments of all states, the District of Columbia, Puerto Rico, the Virgin Islands, and Guam conduct the BRFSS with assistance from CDC. In addition to chronic diseases, BRFSS monitors indicators of injuries and infectious diseases. BRFSS is intended to track risk-behavior and health problems and to develop and evaluate public health programs. The CDC launched the state-level BRFSS in 1984, in which the federal government provides technical assistance to states in sample selection, quality control, and survey data analysis.

BRFSS instrument

BRFSS questions have the primary focus of measuring health risk indicators among U.S. adults, in particular, these that are associated with the leading causes of death: heart disease, cancer, stroke, diabetes, and injury. Core questions assess the prevalence of major risk factor groups, such as not enough physical activity, not eating enough fruits and vegetables, being overweight or obese, cigarette smoking and other tobacco products use, not using seatbelts, and not receiving preventive medical services (i.e., flu shots and other immunizations, mammograms, clinical breast exams, and sigmoidoscopy/colonoscopy screening tests).

The BRFSS questionnaire undergoes dynamic revisions through the BRFSS Working Group annual meeting of key constituencies. Representatives from the CDC-Behavioral Surveillance Branch (BSB), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), and state health agencies meet in February of every year to ensure utility and versatility of the instrument. In addition to core questions, CDC provides a number of optional modules that are either expansions of core sections, such as smoking cessation, cardiovascular health, diabetes, and heart attack and stroke; or standalone modules that measure unique health issues, such as oral health, and sexual violence. States can select not to add any optional modules, or to adopt as many modules in their state-specific questionnaires. States can also add their own questions to the instrument to meet its individual public health surveillance and evaluation needs. To be eligible for CDC assistance, nonetheless, states must ask all core component questions without any modifications. This is done to ensure that data is available to make comparisons among states in order to highlight differences in state and local estimates, and to evaluate national public health objectives.

The BRFSS questionnaire is available through the CDC's web service[a] in English and Spanish for different years, in addition to listings of optional modules used by state and by health category.

[a] http://www.cdc.gov/brfss/questionnaires/questionnaires.htm

Arkansas BRFSS data availability

Core tobacco questions in BRFSS for Arkansas have been available since 1991. Data collection for 2006 is underway and final results will become available in early 2007.

II. Arkansas Adult Tobacco Survey (ATS)

Background and purpose

Core BRFSS questionnaire collects limited information on smoking prevalence and quit attempts. In 2001, states or jurisdictions started to add tobacco-related modules to their BRFSS questionnaires that are collected simultaneously with core tobacco questions every second year. Modules contain questions on prevalence of other tobacco products; including smokeless tobacco, cigar, bidis and pipe smoking; physician or health professional tobacco counseling; and official smoking policy at work settings.

Adult tobacco surveillance indicators collected in BRFSS are important and constitute valuable resource to state tobacco prevention programs, as well as community health coalitions and partners. However, program efforts in media and advertising, secondhand smoke exposure reduction, and public support for smoking bans encompass essential short and intermediate program indicators that ought to be monitored and evaluated. CDC developed ATS to complement BRFSS by collecting data on these indicators. It is important to mention that ATS was designed so that its tobacco-related questions have the same wording and response options as BRFSS to allow comparability of questions in the two studies.

ATS instrument

ATS questionnaire collects data on six major areas: (1) prevalence of smoking and other tobacco products use, (2) cessation and quit attempts, (3) risk perceptions and social influences, (4) environmental tobacco smoke, (5) support for policies to prohibit smoking in restaurants, other public places, and in worksites, and (6) anti-tobacco media exposure. Questions in ATS come from a pool of survey questions provided by CDC to states to select those items that meet their individual needs. Depending on the program's stage of development, tobacco programs can alter questions or develop its own. Short-term program indicators collected in ATS can be sensitive to tobacco programs' immediate activities. For example, ATS collects demographic characteristics of respondents (i.e., employment status, student, housewife, etc.), and measures the number of days per week in which respondents have seen TV messages about the harmful effects of smoking. Analyzing these data provides insights for selecting best time of day to advertise, as well as the regional extent of media coverage. ATS can be a powerful public health advocacy tool as well. For example, testing public support for banning indoor smoking in restaurants, bars, and worksites puts forward efforts in lobbying local legislatures to institute such a policy.

BRFSS and ATS sample selection

Samples for BRFSS and ATS are selected using the "List-assisted" Random Digit Dial (RDD) methods. The universe is derived from databases of directory-listed household telephone numbers. List-assisted RDD frames depend solely on two major telephone directory databases:

the BELLCORE database file, produced by Bell Communications Research, and the Donnelley database (also known as DQI[3]), released by Donnelley Marketing. Combined together, the two databases contain approximately 96% of residential telephone numbers in the United States and its territories.

The word "list" does not mean that the population is restricted to household listed telephone numbers, but rather denotes that the frame was obtained from telephone directory listings. In fact, samples for these surveys are stratified based on whether selected random telephone numbers are listed or non-listed in the telephone directory. Listed telephone numbers are sampled at 1.5 times the rate for non-listed numbers. A disproportionate stratification method is employed because listed numbers have higher probability of being residential numbers. This increases efficiency since listed numbers take less time to complete, and hence, cost less than processing non-listed numbers. States can also request that their samples are further stratified by different criteria, such as by geographic region or district. Some states select to oversample among selected racial/ethnic groups to increase their representation in the overall sample. In this method, area code/prefix combinations assigned to counties known to have high proportions of racial/ethnic minorities, are sampled at higher rates. States review BRFSS and ATS design and sample selection with their designated statisticians and the CDC to ensure a consistent methodology.

Data collection

In implementing BRFSS surveys, states receive monthly samples of telephone numbers from the CDC-BSB, carry out the interviews, and submit the data to CDC for processing. It is the responsibility of states to perform error checking and data edits before the monthly data is submitted to CDC. Sample selection, data collection, and BRFSS data quality are subjects to stringent CDC protocols. For example, all errors found in the monthly collected data must be resolved before submission. Resolving such errors may require contacting interviewers, or calling back the respondents. Similarly, data for ATS is collected through telephone interviews, but are not collected monthly. Depending on the sample size and length of the interview, collecting data for state ATS may take from 3 to 6 months.

Arkansas ATS data availability

Arkansas has successfully conducted ATS in 2002 and 2004, and data collection for 2006 is underway. The sample size in 2006 is expected to be the largest ever collected in the state with a target of 12,000 complete interviews.

III. Arkansas Youth Risk Behavior Surveillance System (YRBSS)

Background and purpose

During the late 1980s and early 1990s, school health programs were developed without scientific bases on what key behaviors that most affect youth health, as well as if variations in the prevalence of these behaviors existed among subgroups of students. In response, CDC developed the Youth Risk Behavior Surveillance System (YRBSS) to monitor priority health risk-behaviors that contribute markedly to the leading causes of death, disability, and social problems among

youth in the United Sates. YRBSS is a school-based survey conducted nationally by CDC as well as state, territorial, and local school-based surveys conducted biennially. The survey targets high school students (grades 9-12) and surveys are conducted by most state, territorial, and local education agencies, or state health departments, that receive funding from CDC through cooperative agreements. In 2003, 32 states and 20 school districts were able to obtain representative samples of their students.

YRBSS is intended to collect data on the prevalence of health risk-behaviors, as they exist among high school students, and to track these indicators over time. Since changes in health behaviors are not expected to change in a short time, CDC in 1991 has determined that conducting the survey every two years is sufficient to retrace youth health indicators. The survey facilitates comparisons between national, state, and local estimates, and provides comparable estimates among student population subgroups (i.e., gender, race/ethnicity, school grade level).

YRBSS instrument

The YRBSS instrument has went through a series of revisions since the first version of the questionnaire was completed in October 1989. The second version was employed in the spring of 1990 to collect national data, as well as samples of high school students from 25 states and nine districts. It was revised again in October 1990 for wording of questions, response categories, and to account for input from state and local representatives. CDC added 10 more questions to the questionnaire in 1993 to measure the prevalence of drug use, and an extensive review was undertaken in 1997 to account for measuring national youth health objectives for 2010 that were being developed at that time. In 1999, CDC took on another revision: added 16 questions, deleted 11 questions, and made substantial wording changes to 14 other questions.

In 2005, YRBSS questionnaire collected data on 4 demographic characteristics, 20 items on unintentional injuries and violence, 11 questions on tobacco use, 18 questions on alcohol and other drug use, 7 items on responsible sexual behaviors, 16 items on body weight and dietary behaviors, 7 questions on physical activity, and 4 questions on other health topics; a total of 87 questions.

CDC allows states to modify the questionnaire to meet its public health surveillance needs, but states must abide by three conditions: two-thirds of the original survey questions should be maintained, questions are limited to eight mutually exclusive response options, and skip patterns, grid formats, are fill-in-the-blank formats are not to be used. In addition, for states that decide to modify the standard CDC questionnaire, CDC provides a list of optional questions to choose from. National YRBSS questionnaire is similar to the state's version, but includes 5-8 extra questions that cover other health topics such as oral health and sun protection.

YRBSS data availability

Weighted Arkansas YRBSS data is available for 1997, 1999, 2001, and 2005. Data were collected in 2003, but the overall response rate attained did not meet the minimum criteria for the collected sample to be representative of the population, and therefore, the results are not usable.

IV. Arkansas Youth Tobacco Survey (YTS)

Background and purpose

CDC recommends that states establish and maintain comprehensive tobacco control programs to reduce tobacco use among youth. To assist states in developing and maintaining their state-based comprehensive tobacco prevention and control programs, CDC developed the Youth Tobacco Surveillance and Evaluation System, which includes international, national, and state-based surveys of middle school and high school students.

YTS is intended to enhance the capacity of agencies and organizations to design, implement, and evaluate tobacco prevention and control programs. The data currently available in states that do not conduct the YTS are limited to prevalence rates for cigarette, cigar, and smokeless tobacco use, obtained via YRBSS. The YTS supplements the YRBSS by collecting measures that are missing such as prevalence of other tobacco products (i.e., pipe use, bidis, and kreteks), knowledge and attitudes regarding tobacco use, indicators of the impact of media and advertising, information on the enforcement of minors' access regulations and laws, knowledge of tobacco in school curriculum, cessation attempts and successes, and exposure to secondhand smoke.

CDC provides sites that conduct YRBSS and YTS with camera-ready copies of the questionnaire and scanable answer sheets. When data collection is completed, sites mail their answer sheets to CDC or its contractors for data processing and quality control including answer-sheet scanning, data edits, and data management.

YTS instrument

The 2002 CDC core questionnaire provided 64 questions that all states must collect. States have the option to include additional questions to meet their individual needs. The core questionnaire includes items about tobacco use (i.e., cigarettes, cigars, bidis, kreteks, pipes, and smokeless tobacco), exposure to secondhand smoke, smoking cessation, tobacco-related school curriculum, minors' access to tobacco products, knowledge and attitudes about tobacco, influence of tobacco companies advertisement, and familiarity with anti-tobacco media messages. Tobacco use-related questions in YRBSS and YTS instruments have identical wording and response options. Since both surveys have comparable questions and methodologies, state are able to make comparisons of high school estimates obtained from the two studies.

The national YTS questionnaire collects data elements on similar content areas as the state questionnaire, as well as additional topic areas. For example, the national survey collects data on middle school and high school students' average weekly allowance and the number of school days missed in the 30 days preceding the study. Additional questions that collect data on locations where current smokers in middle and high schools use to smoke (i.e., home, school, work, friend house, and sporting or other social events) are also included.

YRBSS and YTS sample selection

a. State-level YRBSS and YTS

State YRBSS and YTS employ a two-stage cluster sampling design to produce representative samples of school students. YRBSS is conducted only on high school students (grades 9-12), whereas YTS; consists of two sampling frames (multi-frame), a middle school frame (grades 6-8) and a high school frame (grades 9-12). For the majority of states, BRFSS and YTS sampling frames are constructed from all public regular schools. Few states elect to include private, charter, vocational, or special schools.

At the first sampling stage, schools or primary sampling units (PSUs) are selected with probability proportional to its enrollment size (PPS). The second stage of sampling involves the systematic equal probability sampling (with a random start) of intact classes (secondary sampling units) from sampled schools. All classes in a single class period in selected schools are included in the sampling frame. All students (ultimate sampling units at the lowest hierarchical level) in selected classes are eligible to participate in the survey.

Since many states conduct both YRBSS and YTS, and possibly other school-based surveys, in the same year[b], these states select to coordinate the sampling process between multiple surveys. This is done to ensure that a school selected in one sampling frame is not selected in another in order to reduce the burden on schools and students. Education agencies prepare an up-to-date school enrollment file of the school calendar year and make it available for sampling YRBSS and the high school frame of YTS. The number of high schools sampled is doubled to produce nonoverlapping samples of high schools for the two surveys. Sampling for the middle school YTS is done on a separate frame of middle schools provided by the education agency in a particular jurisdiction.

b. National YRBSS and YTS

The National YRBSS and YTS use a stratified, three-stage cluster sample design to obtain a nationally representative sample of students in the United States. The universe for the national YRBSS comprises all public and private high school students (grades 9-12) whereas the universe for the national YTS includes all public and private middle and high school students (grades 6-12) in the 50 states and the District of Columbia. U.S. territories are excluded from the sampling frame.

National YRBSS and YTS are stratified by state, census region, and metropolitan statistical area (MSA[c]). The PSU is a county, a group of small counties, or a portion of a large county. Cluster sampling is applied within each stratum. At the first stage, one PSU is selected without replacement. Schools represent the secondary sampling units in which 3 schools are selected within each PSU. At the third stage, intact classrooms are randomly selected from sampled schools.

[b] Certain states select to conduct the YRBSS and YTS in odd-numbered years and even-numbered years, respectively, to decrease the burden on the school system. In many instances, however, both surveys are conducted in the same year.
[c] Defined according to the Office of Management and Budget (OMB) standards as a core area containing a substantial population nucleus and its surronding communities. An MSA must have at least one urbanized area of 50,000 or more inhabitants.

Data collection

YRBSS and YTS are administered during one class period, usually the second period. Student participation is anonymous and voluntary. Before students in selected classes can participate, parental permission must be obtained and institutional review board criteria ought to be followed. In most states, students complete a self-administered questionnaire in the classroom, recording their responses on a computer-scanable answer sheet. Some states are looking into proposals to use an online YTS system. In this system, students in selected classes complete an online version of the "pencil and paper YTS" questionnaire. States purchase a selected number of online questionnaires depending on the expected number of students participating in the survey from an outside vendor. The data is then compiled, weighted, and analyzed. Some YTS online systems offer build-in data analysis tools.

Response rates and data analysis

Overall participation rates in YRBSS and YTS are calculated by multiplying school participation rate by student participation rate. An overall response rate of 60% or over is required by CDC to weight and analyze the data. Since BRFSS and YTS use a complex sampling design, estimating sample variances and standard errors necessitates a software package that takes such design into account when analyzing the data.

Arkansas state-level YTS data availability

YTS data were collected successfully in Arkansas in 2000 and 2005. Planning for the Arkansas YTS 2007 is currently in progress.

Appendix B: Other Data Sources for Tobacco Surveillance

Birth Data

Research shows that smoking by pregnant mothers increases the risk of unfavorable birth outcomes, such as low birthweight (<2,500 grams), preterm birth (<37 weeks gestation), infant mortality, as well as other birth defects and fetal injuries. Arkansas State laws require birth certificates to be completed for all births, and Federal law mandates national collection and publication of births and other vital statistics data[d]. The National Vital Statistics System (NVSS), the Federal compilation of this data, is the result of cooperation between CDC's National Center for Health Statistics (NCHS) and state agencies that brings about a wealth of statistical information from birth certificates. In Arkansas, the Health Statistics Branch of the DHHS-Division of Health is responsible for collecting accurate, timely, and complete birth data for all resident mothers.

Data items in birth certificates that have utility to the Arkansas comprehensive tobacco control program include whether mothers smoked during pregnancy, amount of cigarettes smoked per day, as well as maternal complications and birth outcomes associated with such behavior.

[d] Centers for Disease Control and Prevention (CDC). National center for Health Statistics (NCHS). Available at http://www.cdc.gov/nchs/nvss.htm