Changes in Tobacco Use by Minnesota Youth, 2000-2005

Results from the Minnesota Youth Tobacco Survey

Minnesota Department of Health
Center for Health Statistics

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Commissioner's Office
625 Robert St. N.
P.O. Box 64975
St. Paul, MN 55164-0975
(651) 201-5000
www.health.state.mn.us

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Finally, we would like to thank the many people throughout the state who are dedicated to improving the health and well-being of our young people by encouraging them to reject tobacco use and other threats to health. We hope this information will help us all to understand better the trends and dynamics of tobacco use in Minnesota.

FOR MORE INFORMATION, CONTACT:

Center for Health Statistics
Minnesota Department of Health
85 East Seventh Place, 3rd Floor
P.O. Box 64882
St. Paul, MN 55164-0882

Phone: (651) 297-1232
Fax: (651) 282-5628
TDD: (651) 201-5797
E-mail: HealthStats@health.state.mn.us

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CHANGES IN TOBACCO USE BY MINNESOTA YOUTH, 2000-2005
SUMMARY

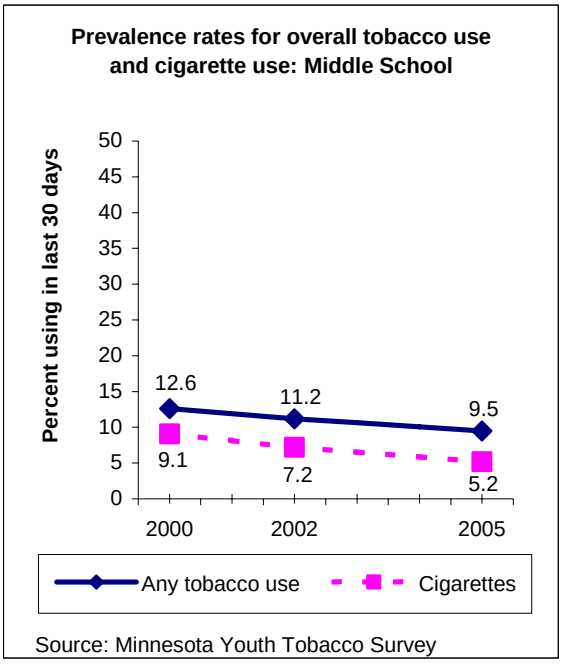
The Minnesota Youth Tobacco Survey was conducted in 2000, 2002 and 2005 to measure changes in tobacco use, secondhand smoke exposure, and attitudes and beliefs about tobacco among Minnesota teens. Schools and classrooms were selected at random and invited to participate. Results of the surveys are representative of Minnesota public school students in grades 6 through 12, and are reported separately for middle schools (grades 6-8) and high schools (grades 9-12). The number of students participating was 12,376 in 2000, 11,557 in 2002, and 10,681 in 2005.

Findings

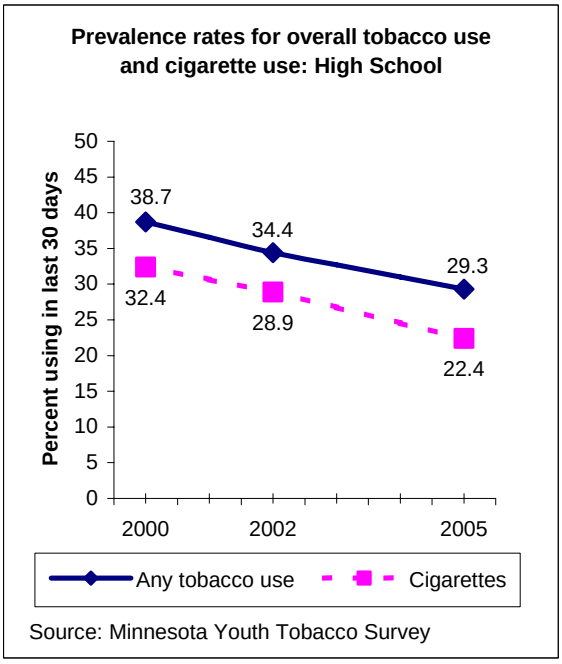
The prevalence of current tobacco use (which can include cigarettes, cigars, smokeless tobacco, pipe tobacco and other products) has declined dramatically and steadily since 2000. The percentage of middle school students who used any form of tobacco in the previous 30 days fell from 12.6 percent in 2000 to 9.5 percent in 2005, a decline of 25 percent. At the high school level, the percentage of students using tobacco in the previous 30 days fell from 38.7 percent to 29.3 percent, a decline of 24 percent.

The estimated number of students in grades 6 through 12 who are current tobacco users fell from 124,600 in 2000 to 96,600 in 2005.

Cigarette smoking declined even more abruptly. The percentage of middle school students who smoked cigarettes in the previous 30 days fell from 9.1 percent to 5.2 percent over the five-year period, a decline of 43 percent. The percentage of high school students who smoked in the previous 30 days dropped from 32.4 percent to 22.4 percent, a decline of 31 percent. In 2000, nearly one in three high school students was a current smoker, while in 2005 less than one in four was a current smoker. The reductions in overall tobacco use and in cigarette smoking were statistically significant for both middle schools and high schools.



Source: Minnesota Youth Tobacco Survey



Source: Minnesota Youth Tobacco Survey

Changes in cigarette smoking appear to be deep as well as wide. For example, the percentage of high school students who are *frequent* smokers (smoked on 20 or more of the previous 30 days) fell by 40 percent between 2000 and 2005.

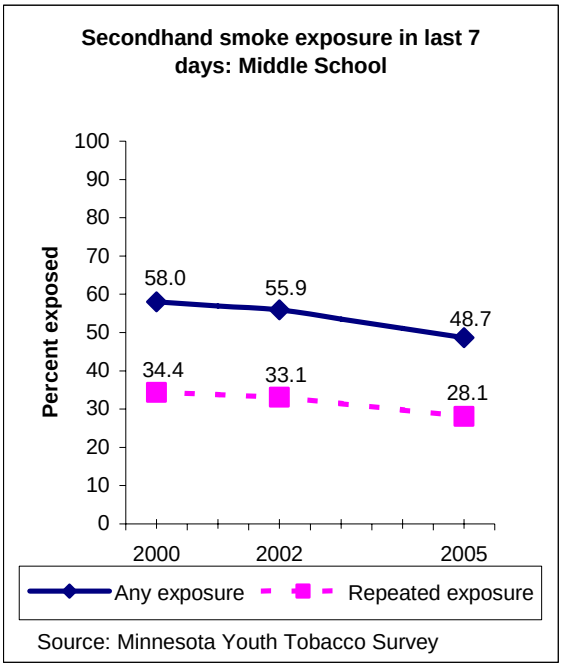
The surveys also found modest reductions in exposure to secondhand smoke. The percentage of students reporting any exposure to secondhand smoke in the past week fell from 58.0 percent to 48.7 percent in middle school and from 75.8 percent to 64.8 percent in high school. Repeated exposure to secondhand smoke in the past week also declined at both middle school and high school levels.

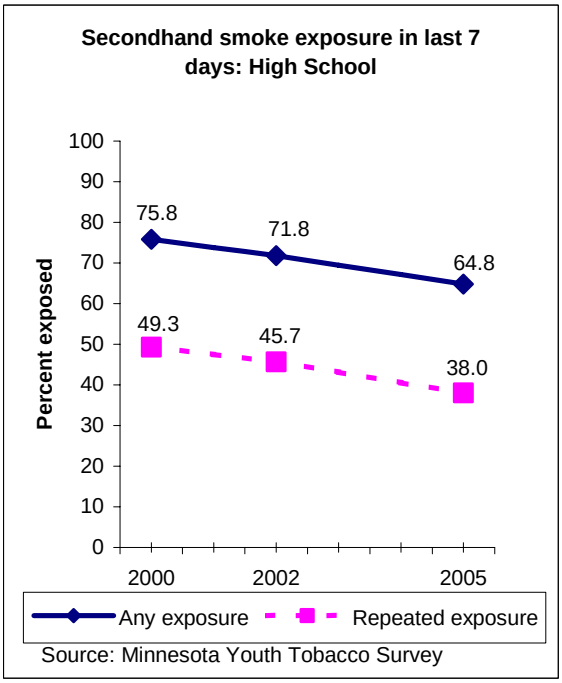
Discussion and Conclusions

The Minnesota Youth Tobacco Survey was first conducted in 2000, just before the start of the Minnesota Youth Tobacco Prevention Initiative (MYTPI), which was funded by the Tobacco Use Prevention and Local Public Health Endowment. The legislature set a goal of reducing tobacco use among youth by 30 percent by 2005. In 2003, the MYTPI came to an end when the endowment was eliminated. At that time, the legislature also modified the five-year goal from a 30% to a 25% reduction in tobacco use by 2005. In 2004, the Minnesota Department of Health (MDH) started a new grant program, called Tobacco-Free Communities in Minnesota, to fund a select set of tobacco-use prevention strategies.

The surveys found that overall tobacco use fell by 25 percent in middle schools and 24 percent in high schools between 2000 and 2005, and that cigarette smoking fell by 43 percent and 31 percent respectively.

During the five-year period between 2000 and 2005, the state and its partners made substantial investments in tobacco prevention programming. It is likely that these investments contributed to the steady decline in youth tobacco use during this period, though they were certainly not the only factor. Due to the end of the MYTPI and major shifts in funding and strategy, we do not know how much of this change is associated with MYTPI programs, or whether the results would have been different if the MYTPI had remained in force.





I. INTRODUCTION

This report describes changes in tobacco use among Minnesota teens in the five-year period from 2000 to 2005.

The year 2000 marked the start of the Minnesota Youth Tobacco Prevention Initiative (MYTPI), an ambitious campaign to prevent and reduce teen tobacco use. The program was funded with nine percent of Minnesota's settlement with the major U.S. tobacco companies, which was used to create the Tobacco Use Prevention and Local Public Health Endowment Fund. The MYTPI used a comprehensive approach, including grants to promote locally driven tobacco-prevention work, grants to reduce tobacco-related health disparities, technical assistance programs, a counter-marketing campaign, and a youth empowerment initiative.

This report focuses on change between 2000 and 2005 because the legislature set an ambitious goal to be achieved by 2005. The law that set up the endowment states:

The legislature finds that it is important to reduce the prevalence of tobacco use among the youth of this state. It is the goal of the state to reduce tobacco use among youth by 30 percent by the year 2005. . . . (M.S. 1999, section 144.396, subd. 1)

The Minnesota Youth Tobacco Survey was established by the Minnesota Department of Health (MDH) to measure progress toward achieving the state's goal and to obtain detailed statewide information about teen tobacco use. The survey was conducted in 2000, just before the start of the MYTPI,[1] and again in 2002 and 2005. Taken together, the surveys provide information on changes over time in the prevalence of tobacco use, exposure to secondhand smoke, attitudes and beliefs about tobacco use, how teens get access to tobacco products, and other topics of interest to tobacco prevention efforts.

The MYTPI came to an end in 2003, when the endowment was eliminated. In its place, the Department of Health established the Tobacco-Free Communities in Minnesota grant program to fund a select set of tobacco-use prevention strategies. When the MYTPI ended, the legislature changed the state's five-year goal from a 30 percent to a 25 percent reduction in tobacco use by 2005.

This report cannot serve and is not meant to serve as an evaluation of the MYTPI. The end of the MYTPI and the major shifts in funding and strategy that occurred between 2000 and 2005 have made an already-complex evaluation process that much more difficult. The purpose of this report is simply to describe change over five years, a period of major activity by the State of Minnesota and its partners to combat tobacco use.

Survey Methods

The findings in this report are based on survey responses of Minnesota teens obtained at three different points in time – January through March of 2000, 2002, and 2005. Results of the Minnesota Youth Tobacco Survey are generally representative of the state's public school student body. In each of the survey years, between 99 and 103 randomly selected middle schools and high schools agreed to conduct the survey, and between 10,681 and 12,376 students participated. Sixty-two questions were asked in identical fashion on each of the three surveys, and these questions provide the raw material for this report. Further details about the methodology of the Minnesota Youth Tobacco Survey can be found in Appendix A.

II. THE EXTENT OF TOBACCO USE

The prevalence of any tobacco use, and in particular the prevalence of cigarette smoking, has declined dramatically and steadily over the past five years. The percentage of middle school students who used any tobacco products (cigarettes, cigars, smokeless tobacco, pipe tobacco or bidis) in the previous 30 days fell from 12.6 percent in 2000 to 9.5 percent in 2005, a decline of 25 percent. At the high school level, the percentage of students using tobacco in the previous 30 days fell from 38.7 percent to 29.3 percent, a decline of 24 percent. (Table 1)

The estimated number of students in grades 6 through 12 who are current tobacco users fell from 124,600 in 2000 to 96,600 in 2005. After five years, 28,000 fewer students were using tobacco.

Cigarettes are by far the most widely used tobacco product. Over the five-year period, the percentage of students smoking cigarettes in the previous 30 days fell from 9.1 percent to 5.2 percent among middle school students (a 43 percent decline), and from 32.4 percent to 22.4 percent among high school students (a 31 percent decline). By 2005, about one in twenty middle school students and less than one in four high school students reported current cigarette smoking. (Table 1)

Table 1. Change in percent of students who used tobacco products on one or more days in last 30 days (current users)

Middle School (Grades 6-8)

	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005	
Any tobacco use	12.6	11.2	9.5	-25%	#
Cigarettes	9.1	7.2	5.2	-43%	#
Cigars, cigarillos	3.7	2.7	3.0	--	
Smokeless tobacco	2.2	2.2	2.8	--	
Pipe	2.7	2.6	2.4	--	
Bidis*	2.8	2.8	2.8	--	

High Schools (Grades 9-12)

	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005	
Any tobacco use	38.7	34.4	29.3	-24%	#
Cigarettes	32.4	28.9	22.4	-31%	#
Cigars, cigarillos	13.0	12.3	12.0	-8%	
Smokeless tobacco	10.2	9.7	7.9	-23%	#
Pipe	5.0	5.4	3.7	--	#
Bidis*	4.8	5.5	3.9	--	

* Bidis are small brown cigarettes from India consisting of tobacco wrapped in a leaf and tied with a thread.
-- Percent change not shown when 2000 baseline percentage is too small (generally well below 10%)
Differences between 2000 and 2005 are statistically significant at $p<.05$. This means that we are at least 95% sure that we would find real differences if we were able to survey the entire population of students rather than just a sample. The odds that there is no real difference between 2000 and 2005 are less than 5%.

In middle school, few students use other tobacco products besides cigarettes and there was little change in the percentage of students using these products. In high school, use of cigars (including little cigars and cigarillos), smokeless tobacco (chewing tobacco, snuff or dip), pipe tobacco, and bidis all declined slightly. In 2005, 12 percent of high school students said they smoked cigars in the previous 30 days, down slightly from 13 percent in 2000. Also in 2005, 7.9 percent of students reported using smokeless tobacco in the previous 30 days, down from 10.2 percent in 2000. (Table 1)

Tobacco Use by Grade Level

Tobacco use declined at each grade level covered by the survey. The sharpest percent declines in overall tobacco use occurred among 8th and 9th grade students. For cigarette smoking, the percent change was strong in nearly all grade levels. Smoking cigarettes in the previous month fell by almost half, from 14.9 percent to 7.9 percent, among 8th grade students. (Table 2)

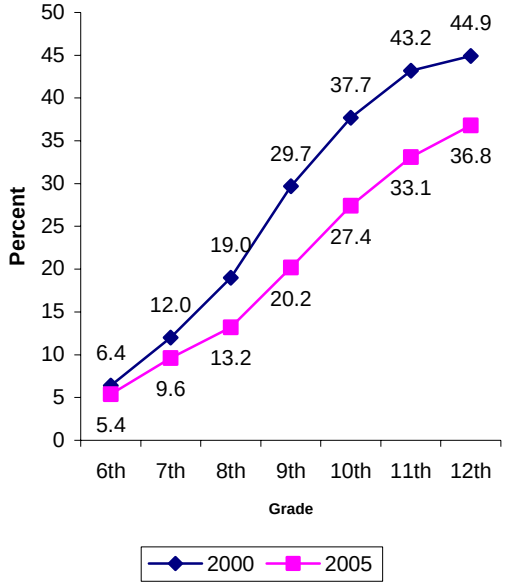
Table 2. Current tobacco use and cigarette use by grade in school

	Any tobacco use in last 30 days			
	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
6th Grade	6.4	6.1	5.4	--
7th Grade	12.0	12.4	9.6	-20%
8th Grade	19.0	15.0	13.2	-31%
9th Grade	29.7	23.6	20.2	-32%
10th Grade	37.7	32.0	27.4	-27%
11th Grade	43.2	37.2	33.1	-23%
12th Grade	44.9	44.4	36.8	-18%
	Cigarette use in last 30 days			
	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
6th Grade	3.7	3.3	2.3	--
7th Grade	8.5	7.0	5.1	-40%
8th Grade	14.9	11.2	7.9	-47%
9th Grade	24.4	19.8	15.3	-37%
10th Grade	30.9	26.3	20.2	-35%
11th Grade	37.9	32.6	26.3	-31%
12th Grade	37.1	36.8	28.1	-24%

-- Percent change not shown when 2000 baseline percentage is too small (generally well below 10%).

Figure 1 shows how the profile of tobacco use by grade level has changed in five years. Use of cigarettes and other tobacco products usually escalates rapidly during the teen years. In 2005, the pattern of escalating tobacco use is still present but appears to have slowed down. At each grade level, fewer students are now becoming current tobacco users, and fewer students are now leaving high school and entering their young adult years as tobacco users.

Figure 1. Current tobacco use rate by grade for 2000 and 2005



Tobacco Use by Gender

The drop-off in cigarette smoking between 2000 and 2005 was virtually identical for males and females at both the middle school and high school levels. Females are just as likely to be current smokers as males. (Table 3)

The drop-off in overall tobacco use was identical for male and female high school students (minus 24 percent). In middle school, however, the use of any tobacco products in the previous 30 days fell more sharply for females (35%) than for males (16%). Males have higher rates of overall tobacco use than females because of their much greater use of cigars and smokeless tobacco.

Table 3. Current tobacco use and cigarette use by gender

	Any tobacco use in last 30 days			
	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Middle School				
Females	12.3	10.7	8.0	-35%
Males	12.9	11.5	10.8	-16%
High School				
Females	34.1	28.8	25.9	-24%
Males	42.7	39.5	32.3	-24%
	Cigarette use in last 30 days			
	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Middle School				
Females	9.5	8.0	5.2	-45%
Males	8.7	6.4	5.0	-43%
High School				
Females	32.6	27.4	22.9	-30%
Males	32.0	30.1	21.7	-32%

Trying Tobacco Products

While progress is often measured in terms of the percentage of teens who are current tobacco users or current smokers, there is additional evidence that young people are resisting the lure of cigarettes and other forms of tobacco. One sign is that fewer students report that they have *ever* tried tobacco, even if that means just one or two puffs on a cigarette. The percentage of students who had tried tobacco at any time in their lives fell from 41.3 percent to 27.8 percent in middle school and from 69.5 percent to 56.3 percent in high school. (Table 4)

Despite these healthy declines, it is still true that in 2005 over one-fourth of middle school students and well over half of all high school students have at least experimented with tobacco.

Table 4. Percent who have *ever* tried specific tobacco products

	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Middle School (Grades 6-8):				
Ever tried any tobacco product	41.3	36.5	27.8	-33%
Ever tried cigarettes	33.3	27.4	19.7	-41%
Ever tried smokeless tobacco	12.4	11.2	9.8	-21%
Ever tried cigars or cigarillos	18.3	16.3	12.8	-30%
High School (Grades 9-12):				
Ever tried any tobacco product	69.5	63.7	56.3	-19%
Ever tried cigarettes	64.7	58.4	49.4	-24%
Ever tried smokeless tobacco	29.2	26.5	20.2	-31%
Ever tried cigars or cigarillos	45.8	40.7	34.8	-24%

Regular Smoking

At the opposite end of the spectrum from simply trying tobacco, there have also been significant declines in measures of regular smoking. Several definitions can be used to identify those youth who have moved beyond experimentation or occasional smoking and who now smoke regularly.

As Table 5 shows, the percentage of students identified as established or frequent or heavy smokers fell sharply between 2000 and 2005. For example, 16.9 percent of high school students reported smoking on at least 20 of the previous 30 days in 2000, compared to only 10.2 percent in 2005. Fewer young people are progressing from experimentation to frequent smoking in their high school years.

Table 5. Measures of regular smoking (high school students only)

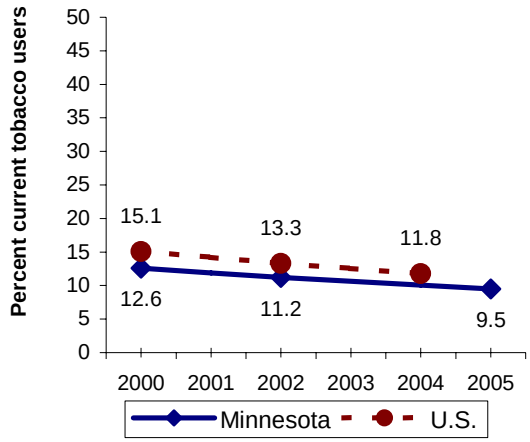
Percent of students who are:	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Established smokers (smoked more than 100 cigarettes in lifetime)	24.8	21.3	15.9	-36%
Frequent smokers (smoked on 20 or more of the past 30 days)	16.9	14.7	10.2	-40%
Heavy smokers (smoke six or more cigarettes per day on days they smoke)	10.5	9.6	6.3	-40%

Comparison with National Trends

The National Youth Tobacco Survey (NYTS) conducted by the Centers for Disease Control and Prevention is the national survey that is most similar to the Minnesota Youth Tobacco Survey. The key questions, the sampling methods, and the definitions are all the same. The national survey was administered in the spring of 2000, 2002 and 2004, and will continue to be given in even years.[2] The Minnesota survey was administered in 2000, 2002 and 2005. While the latest national and Minnesota surveys were given in different years, it is still possible to examine national and state trend results.

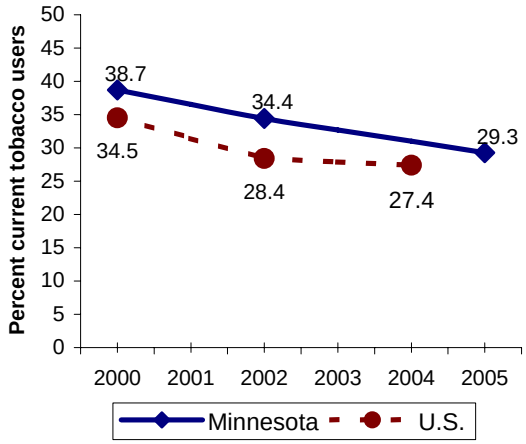
For middle school students, tobacco use has been falling in Minnesota and in the U.S. as a whole. The tobacco use rate for middle school students has been slightly lower in Minnesota compared to the national level. (Figure 2) For high school students, on the other hand, the Minnesota rate for any tobacco use in the past 30 days has been higher than the national rate. Trend results for high school students have been somewhat different. At the national level, the percentage of high school students who are current tobacco users fell from 34.5 percent in 2000 to 28.4 percent in 2002, but then leveled off somewhat to 27.4 percent in 2004. At the same time, tobacco use has fallen steadily in Minnesota with no leveling off so far. (Figure 3)

Figure 2. Percent of middle school students using any tobacco in previous 30 days: Minnesota and U.S.



Source: Minnesota YTS and National YTS

Figure 3. Percent of high school students using any tobacco in previous 30 days: Minnesota and U.S.



Source: Minnesota YTS and National YTS

III. EXPOSURE TO SECONDHAND SMOKE

Exposure to someone else's tobacco smoke can cause health problems for children (such as increased severity of asthma attacks, respiratory illnesses, chronic cough, bronchitis, and middle ear problems) and ultimately can lead to the same kinds of cancers and heart disease that direct smoking produces in adults.[3] The Minnesota Youth Tobacco Survey asks about exposure in two kinds of settings – being in a room with someone else who is smoking and riding in a car with someone else who is smoking. Students are asked to report the number of days out of the last seven days that they were exposed in each kind of setting.

Exposure to secondhand smoke has decreased modestly over the past five years. The percentage of students reporting any exposure to secondhand smoke in the past week fell from 58.0 percent to 48.7 percent in middle school and from 75.8 percent to 64.8 percent in high school. (Table 6) Repeated exposure, which means that the student reported being exposed to someone else's smoke on at least three days in the past week, also fell at about the same rate.

Table 6. Secondhand smoke exposure in past 7 days

	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Middle School				
Any exposure*	58.0	55.9	48.7	-16%
Repeated exposure**	34.4	33.1	28.1	-18%
High School				
Any exposure*	75.8	71.8	64.8	-15%
Repeated exposure**	49.3	45.7	38.0	-23%

* On one or more of the past 7 days

** On three or more of the past 7 days

IV. SOCIAL ENVIRONMENT OF YOUNG PEOPLE

Smokers are likely to be surrounded by other people who smoke. The social environment of young people, both at home and among friends and peers, influences smoking behavior.

The 2005 youth tobacco survey found, for example, that 33.1 percent of high school students who live with a smoker were current smokers themselves, compared to only 15.0 percent of students who do not live with anyone who smokes.[4]

Young people have more choice over their peer environment than over whom they live with. Smoking seems to be one of the major factors that shape peer groups and social networks among young people. For example, over 80 percent of frequent smokers report that half or more of their closest friends also smoke cigarettes.[5] Young people may be encouraged to start using tobacco by their friends. Once they become smokers, students often choose other smokers as friends, forming new friendship groups where smoking is accepted and reinforced.

The Minnesota Youth Tobacco Surveys found little change in the home environment. About two of every five students reported that they live with someone who smokes cigarettes, possibly a parent, brother or sister, other relative, or someone else who lives at their home. The percentage of students reporting that they live with a smoker changed very little between 2000 and 2005. (Table 7) This is consistent with the finding from Minnesota's Behavior Risk Factor Survey that the overall adult smoking rate in Minnesota has been stable over the past 5 to 10 years.[6] It is encouraging that teen smoking has decreased despite the continued presence of smoking among people they live with.

While there has been little change in the home environment, there has been substantial change in peer environments. With fewer young people taking up smoking, more and more students report that none of their closest friends now smoke. In 2000, 75.1 percent of middle school students said that *none* of their four closest friends smoked cigarettes. That percentage rose to 82.8 percent in 2005. In high school, 42.6 percent of students reported in 2000 that none of their closest friends smoked. In 2005, that percentage rose to 55.8 percent. (Table 7)

Table 7. Social environments related to cigarette smoking

	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Middle School				
Lives with someone who smokes	40.5	40.4	38.2	-6%
None of four closest friends smoke	75.1	77.6	82.8	+10%
High School				
Lives with someone who smokes	39.9	39.7	37.0	-7%
None of four closest friends smoke	42.6	46.9	55.8	+31%

V. BRAND PREFERENCES OF SMOKERS

In recent years, the Philip Morris tobacco company (now known as Altria) started its own advertising campaign to discourage youth smoking.[7] While the youth tobacco survey cannot evaluate the Philip Morris ad campaign, it can show that there has been no decline in the popularity of Marlboro cigarettes, the flagship brand of Philip Morris. In fact, the percentage of high school smokers who reported that they usually smoke Marlboro increased slightly from 57.3 percent to 60.4 percent between 2000 and 2005. (Table 8) The top three brands preferred by Minnesota teens (Marlboro, Camel, Newport) have also traditionally been the industry's three most heavily advertised brands.[8]

Table 8. Brand preferences of cigarette smokers (high school only)

What brand do you usually smoke?	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Marlboro	57.3	54.3	60.4	+5%
Camel	24.0	25.2	16.2	-33%
Newport	7.3	7.5	7.6	--
Other brands	4.9	6.1	7.1	--
Do not have a usual brand	6.4	6.9	8.6	--

-- Percent change not shown when 2000 baseline percentage is too small (generally less than 10%)

VI. CHARACTERISTICS OF CURRENT SMOKERS

With the reduction in the number of students who smoked cigarettes in the past 30 days, we might wonder whether the smokers who remain are a more hard-core group than the smokers of five years ago. At this point, there does not appear to be much evidence to support this idea.

In fact, among current high school smokers, there was a slight decrease in the intensity of cigarette use, as measured by the percentage of smokers who smoked six or more cigarettes per day. There was also a very slight decrease in the percentage of smokers who said they could not go a whole day without needing a cigarette, an indicator of addiction. (Table 9)

On the other hand, current smokers have become a little less interested in quitting. The percentage of smokers who reported that they want to stop smoking and that they have tried to quit in the past year decreased slightly between 2000 and 2005. However, it is still true that more than half of current high school smokers expressed an interest in quitting.

Table 9. Characteristics of current cigarette smokers (high school only)

Percent of current smokers who:	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
…smoke six or more cigarettes per day	31.6	33.0	27.9	-12%
…cannot go a whole day without needing a cigarette	41.4	41.3	38.2	-8%
…want to stop smoking	61.0	61.8	54.5	-11%
…stopped smoking for one day or more in past 12 months because they were trying to quit	61.0	59.7	57.6	-6%

VII. ACCESS TO CIGARETTES AND OTHER TOBACCO PRODUCTS

Students who are under the age of 18 cannot legally buy tobacco products, and they obtain most of their tobacco through social sources. They may get someone else to buy cigarettes for them, they may borrow or bum cigarettes, or they may be given cigarettes by an older person. In 2005, nearly three-fourths of underage high school smokers reported that they usually get their cigarettes through one of these social sources.

Overall, there has been little change over the years in the ways smokers obtain their cigarettes, except for direct purchase. (Table 10) At the high school level, the percentage of smokers who usually get their cigarettes by buying them in a store fell from 15.9 percent to 11.1 percent between 2000 and 2005. Direct purchase of smokeless tobacco and cigars by high school students also fell. (Table 11) State and local tobacco prevention programs have sought and often obtained tougher enforcement of the laws banning tobacco sales to youth under 18, which may have contributed to these drop-offs.

Table 10. *Usual* method of obtaining cigarettes (high school current smokers under 18 only)

	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Social sources:				
Gave someone else money to buy them for me	41.7	39.3	39.3	-6%
Borrowed or bummed them from someone else	23.6	25.5	25.8	+9%
Person 18 or older gave them to me	5.7	5.5	7.9	--
Direct purchase:				
Bought them in a store	15.9	16.3	11.1	-30%
Bought them from a vending machine	1.7	1.3	1.0	--
Other sources:				
Took them from store or family member	2.7	4.6	4.4	--
Got them some other way	8.7	7.5	10.5	--

-- Percent change not shown when 2000 baseline percentage is too small (usually less than 10%).

Table 11. Percent of current users under 18 who *usually* obtain their tobacco products by buying them in a store (high school only)

	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
Percent of following who *usually* bought their products in stores:				
Cigarette smokers	15.9	16.3	11.1	-30%
Cigar smokers	17.8	16.6	15.3	-14%
Smokeless tobacco users	21.2	19.4	16.7	-21%

VIII. ATTITUDES AND BELIEFS ABOUT TOBACCO

Anti-tobacco attitudes and beliefs remained strong throughout the five-year study period. Over 90 percent of students in all three survey years agreed that tobacco is as addictive as cocaine or heroin, that there is risk in smoking 1-5 cigarettes per day, and that secondhand smoke is harmful. Large majorities continued to reject the idea that it's safe to smoke for just a year or two, that smoking helps people feel cool, and that smokers have more friends.

In general, it would be very hard to improve on the already-strong indicators found in the 2000 survey. In nearly all cases, the 2005 results are very close to the 2000 results. (Table 12) One exception is that the percentage of middle school students who felt it was OK to smoke for only a year or two fell from 12.0 percent to 7.5 percent.

Table 12. Attitudes and beliefs about tobacco use

Percent agreeing with following statements:	2000 (percent)	2002 (percent)	2005 (percent)	Percent Change 2000-2005
People can get addicted to using tobacco just like they can get addicted to using cocaine or heroin.				
Middle School	93.3	92.8	90.9	-3%
High School	93.3	91.1	90.6	-3%
Young people risk harming themselves if they smoke 1-5 cigarettes per day.				
Middle School	90.1	89.9	90.6	+1%
High School	91.1	90.7	91.4	0%
Smoke from other people's cigarettes is harmful to you.				
Middle School	91.7	92.7	92.3	+1%
High School	93.3	93.4	92.6	-1%
It is safe to smoke for only a year or two, as long as you quit after that.				
Middle School	12.0	11.8	7.5	-38%
High School	16.7	15.0	13.0	-22%
Young people who smoke cigarettes have more friends.				
Middle School	14.8	15.7	12.4	-16%
High School	21.4	19.8	18.8	-12%
Smoking cigarettes makes young people look cool or fit in.				
Middle School	9.9	11.4	8.3	-16%
High School	14.0	13.7	13.0	-7%

IX. DISCUSSION

The youth tobacco survey results show that Minnesota has made substantial progress in reducing youth tobacco use. The percentage of students using any tobacco products in the previous 30 days fell by 25 percent in middle school and 24 percent in high school. The percentage who smoked cigarettes in the previous 30 days fell by 43 percent in middle school and 31 percent in high school. Measures of frequent or heavy smoking showed similar reductions. Modest declines in exposure to secondhand smoke were reported by both middle and high school students.

During the five-year study period, the State of Minnesota's tobacco prevention program went through two distinct phases. The Minnesota Youth Tobacco Prevention Initiative (MYTPI), funded by the tobacco endowment, was launched in April, 2000. MYTPI was a comprehensive strategy that incorporated most of the evidence-based components recommended by the Centers for Disease Control and Prevention. Key components included grants to local public health agencies, grants to agencies representing communities with higher-than-average tobacco use, support for evidence-based tobacco-prevention curricula, increased enforcement of laws to reduce youth access to tobacco, the Target Market counter-marketing campaign, and the Target Market youth organizing movement. Funding for MYTPI peaked at $22.6 million per year.

The MYTPI ended in 2003. In its place, the Department of Health established the Tobacco-Free Communities in Minnesota grant program. This program focuses on local efforts to create tobacco-free environments, which have been shown to discourage youth from smoking by changing community norms and reducing opportunities to smoke. Funding for Tobacco-Free Communities has averaged about $3.34 million per year since its inception in 2004.

Overall, the MYTPI operated for about three and a half years, and the Tobacco-Free Communities in Minnesota program operated during the final one and a half years prior to the 2005 youth tobacco survey.

Other possible factors

We can briefly review some of the other factors that have the potential of influencing the smoking behavior of young people.

There is a substantial body of research showing that changes in the price of cigarettes have important effects on smoking, especially among young people.[9] In other words, young people respond to prices. During the period of this study, however, cigarette prices were very stable. Between November 1, 1999 and November 1, 2004, the average price per pack increased only 2 percent after adjusting for general inflation. (See Appendix B.) A year or two before the study period began, there was a major increase in prices, as tobacco companies raised prices to cover the costs of the settlements with the states. Just after the study period, prices rose again after the state's 75 cent per pack health impact fee went into effect on August 1, 2005. But during the survey period itself, prices changed very little.

A second factor that has received much attention is the passage of local laws creating smoke-free workplaces, including restaurants and bars. Such smoke-free policies are aimed at protecting people from secondhand smoke, but they also help to change the norms of the community regarding when smoking is tolerated and when it is not. However, during the period of the study, most of the state was not

covered by smoke-free policies in restaurants and bars, and the laws passed recently in Hennepin and Ramsey counties and several other locations went into affect after the 2005 survey was completed.

Another factor is the advertising and promotional spending by the tobacco industry. Between 2000 and 2003 (the last year for which figures are available) the tobacco industry increased its cigarette advertising and promotion spending from $9.6 billion to $15.1 billion nationwide, an increase of 57 percent.[10] It is estimated that the industry spent $274.3 million in Minnesota alone in 2003.[11]

Finally, we must note that the State of Minnesota was not the only entity dedicating resources to tobacco use prevention. Other efforts, including national, statewide and local programs, were in place during the study period.

In short, there were no major economic or policy changes operating separately from the state's programs that would have acted independently to drive down smoking rates. Cigarette prices remained stable, and smoke-free ordinances were not yet in effect by 2005, except in Duluth, Rochester and some smaller towns. The major external development that occurred between 2000 and 2005 was the sharp increase in tobacco industry spending on marketing its products, but that change would have tended to push smoking rates up rather than driving them down.

Conclusion

The state and its partners made substantial investments in tobacco prevention programming between 2000 and 2005. It is likely that these investments contributed to the dramatic and steady decline in youth tobacco use during this five-year period.

APPENDIX A: YOUTH TOBACCO SURVEY METHODS

Questions

The Minnesota Youth Tobacco Survey (MYTS) uses a core set of questions and procedures developed by the Centers for Disease Control and Prevention for use in state surveys on adolescent tobacco use. Questions cover the extent of use of various tobacco products, sources of tobacco, secondhand smoke exposure, attitudes and beliefs, media exposure, and other topics. The core set of questions has remained very stable. Each of the Minnesota Youth Tobacco Surveys conducted in 2000, 2002 and 2005 contained 62 core questions with identical wording in all three years. A small handful of questions were added to round out the survey. Since the late 1990's, over 40 states have used CDC's questions and procedures for their own youth tobacco surveys.

Sample

Students were selected for the survey in two stages. First, lists were obtained of public schools containing one or more grades between grades 6 and 8 and of public schools, including Area Learning Centers, with one or more grades between grades 9 and 12. Fifty-seven schools were randomly selected from the middle school list and 77 schools were randomly selected from the high school list, with probability of selection based on size of enrollment. Second, five or six classrooms within each participating school were randomly selected, and all students in these classrooms were invited to participate.

Notification and Confidentiality

Parents were informed by letter about the survey and could notify the school if they did not want their student to participate. Students were also informed that the survey was completely voluntary on their part and that they could decide not to participate or not to answer specific questions if they did not want to. Students were assured that their answers would be anonymous and confidential. Students were not asked for names, ID numbers or any other identifying information.

Response Rate

On average over the years, about 79 percent of middle schools and 72 percent of high schools in the sample have agreed to participate. Table A-1 shows school participation for each survey year. There has been some fluctuation from year to year. Participation rates for students attending schools that take part in the survey have been fairly stable, ranging between 81 and 88 percent. The primary reason why students did not participate is simply that they were absent from school on the survey date due to illness, skipping school, make-up tests, field trips, or other activities that kept them out of the classroom. Some students decided not to take the survey. The number of students submitting usable surveys was 12,376 in 2000, 11,557 in 2002, and 10,681 in 2005. After appropriate weighting, the sample is representative of public school students in Minnesota.

Timing

The 2000 youth tobacco survey was designed to provide baseline data for the new MYTPI programs. It was administered in January, February and part of March, just before the airing of the first Target Market ads in April, 2000. Subsequent surveys in 2002 and 2005 were administered in those same three months. The exact survey date was set by the school.

Table A-1. Survey participation statistics.

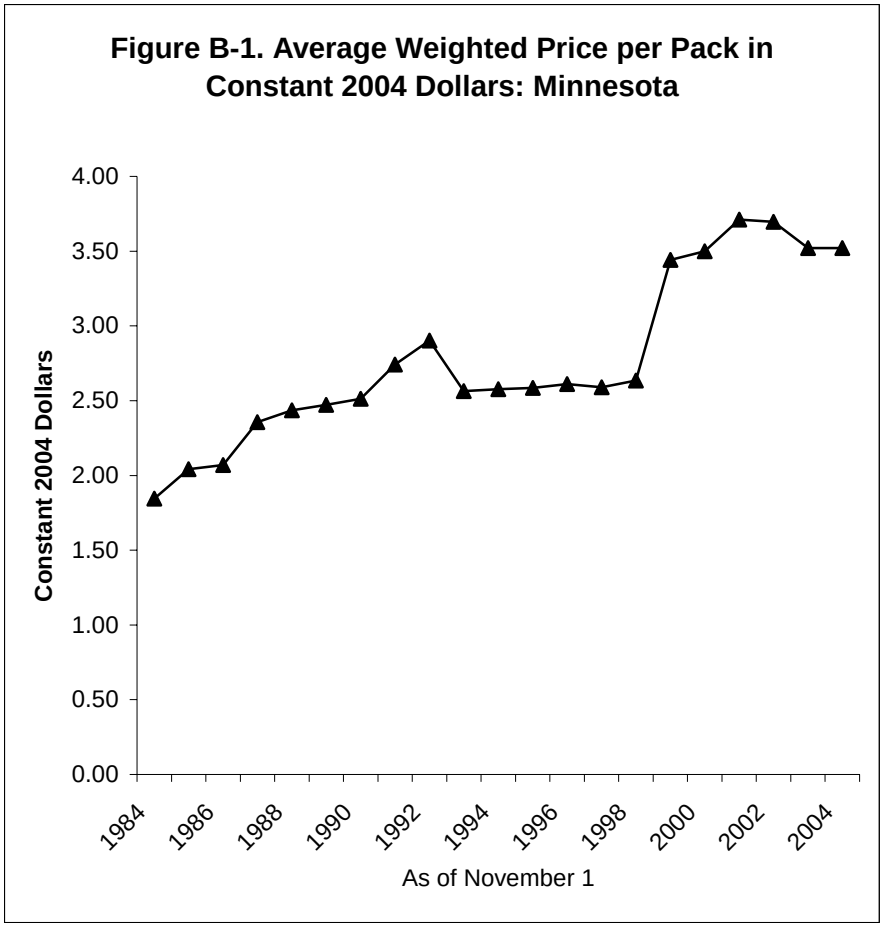
Year	Number of schools in sample	Number of schools participating	School participation rate	Student participation rate*	Total surveys
2000					
Middle school	58	46	79.3%	87.9%	4,751
High school	77	57	74.0%	84.6%	7,625
2002					
Middle school	58	51	87.9%	85.6%	4,751
High school	77	50	64.9%	83.2%	6,806
2005					
Middle school	57	39	68.4%	88.3%	4,119
High school	77	60	77.9%	81.4%	6,562

*Percentage of enrolled students in selected classrooms of participating schools who took the survey.

Limitations

The Minnesota Youth Tobacco Survey is a survey of public school students. The most obvious limitation of the survey is that it does not represent all young people. Private schools, many alternative schools, juvenile correctional facilities, and treatment centers were not included in the study. Teens who have dropped out of school are not represented, and students who frequently miss school due to truancy, illness or other reasons are under-represented. Another limitation is the content of the survey. The MYTS focuses on tobacco use and does not provide information on social, cultural and behavioral factors that have been linked to tobacco use. Finally, the survey provides no opportunity for youth to write more detailed responses in their own words.

APPENDIX B: CHANGES IN CIGARETTE PRICES IN MINNESOTA, 1984-2004



Note: Average weighted price per pack is provided as of November 1 of each calendar year and includes generic brands. Price estimates do not include sales tax, but do include state and federal excise taxes. 2004 constant prices are calculated by adjusting yearly price by the Consumer Price Index-All Urban Consumers (CPI-U).

Source for cigarette prices: Orzechowski and Walker, *The Tax Burden on Tobacco: Historical Compilation*, Volume 39, 2004, Tables 13, 13A and 13B, pp. 122-157.

Source for CPI-U: U.S. Bureau of Labor Statistics.

NOTES

[1] Baseline data and analysis can be found in: Minnesota Department of Health. *Teens and Tobacco in Minnesota: Results from the Minnesota Youth Tobacco Survey.* December 2000. Available at: http://www.health.state.mn.us/divs/hpcd/tpc/TobaccoReports.html.

[2] See: Centers for Disease Control and Prevention. Tobacco Use Among Middle and High School Students – United States, 2002. *MMWR*. November 14, 2003; 52(45):1096-1098; and Tobacco Use, Access, and Exposure to Tobacco in Media Among Middle and High School Students – United States, 2004. *MMWR*. April 1, 2005; 54(12):297-301. Note that corrected figures have been made available by CDC for the 2004 National Youth Tobacco Survey and are used in this report.

[3] U.S. Department of Health and Human Services. *The health consequences of involuntary smoking: Report of the Surgeon General*. Washington, D.C. 1986; U. S. Environmental Protection Agency. *Respiratory health effects of passive smoking: Lung cancer and other disorders*. Washington, D.C. 1992; California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. *Health effects of exposure to environmental tobacco smoke*. Sacramento, CA. 1997; World Health Organization. *International consultation on environmental tobacco smoke (ETS) and child health: Consultation report*. Geneva, Switzerland. 1999.

[4] The large difference in the smoking rates of high school students who live with a smoker compared to those who do not live with a smoker has also been found in earlier Minnesota youth tobacco surveys. In 2000, the smoking rate was 41.7% for students living with a smoker and 24.5% for students who did not live with a smoker. In 2002, the smoking rate was 40.4% for students living with a smoker and 19.7% for those who did not.

[5] The percentage of frequent high school smokers who reported that two or more of their four closest friends were also smokers was 89% in 2000, 83% in 2002, and 86% in 2005.

[6] The Behavior Risk Factor Surveillance System is an annual survey conducted by each state in the U.S. Minnesota BRFSS data is available at http://www.cdc.gov/brfss.

[7] A recent study suggests that the Phillip Morris ad campaign may not be effective at reducing smoking. See Terry-McElrath Y, Wakefield M, Ruel E, et al. The effect of anti-smoking advertising executional characteristics on youth appraisal and engagement. *J Health Communications*. 2005;10:127-143.

[8] Centers for Disease Control and Prevention. Changes in the cigarette brand preferences of adolescent smokers – United States, 1989-1993. *MMWR*. August 19, 1994; 43(32):577-581.

[9] Ross H and Chaloupka FJ. *The Effect of Public Policy and Prices on Youth Smoking*. ImpacTeen Research Paper Series #8. University of Illinois at Chicago. February 2001. Also, Tauras JA, O'Malley PM, and Johnston LD. *Effects of Price and Access Laws on Teenage Smoking Initiation: A National Longitudinal Analysis*. ImpacTeen Research Paper Series #2. University of Illinois at Chicago. April, 2001.

[10] Federal Trade Commission. *Cigarette Report for 2003*. Washington, D.C. 2005.

[11] Campaign for Tobacco-Free Kids. State-Specific Tobacco Company Marketing Expenditures 1998-2003. Available on the web at http://www.tobaccofreekids.org. The FTC does not collect state-by-state marketing figures from the industry. This estimate is based on Minnesota's share of total cigarette packs sold in the U.S.