

# Missouri Youth Tobacco Survey 2003-2009



Missouri Department of Health and Senior Services  
Margaret T. Donnelly, Director

# ACKNOWLEDGEMENTS

## Results from the Missouri Youth Tobacco Survey 2003-2009

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## **About the Missouri Youth Tobacco Survey**

The Missouri Youth Tobacco Survey is conducted in randomly selected public middle and high schools with students from randomly selected classrooms during odd-numbered springs. School and student participation is voluntary, and responses are anonymous and confidential. The Missouri Department of Health and Senior Services conducts the survey in collaboration with the U.S. Centers for Disease Control and Prevention (CDC). CDC developed the survey questions that collect information about tobacco use and related issues. Information from the survey is used to identify health concerns among youth, and in planning and evaluating programs and policies to address the concerns. This report summarizes the results from the survey conducted in 2003, 2005, 2007 and 2009. Results from each year were reported in fact sheets available at <http://www.dhss.mo.gov/SmokingAndTobacco/factsheets.html>. The number of schools and students that participated each year and the corresponding response rates may be found in Appendix A.

### **Key Findings from the Missouri Youth Tobacco Survey 2003-2009**

Significant changes in tobacco use and related issues among middle and high school students occurred during the period of 2003 through 2009. Statistically significant decreases were found in the percentage that:

- Ever used any form of tobacco, among middle and high school students
- Used any form of tobacco on one or more of the past 30 days, among middle school students
- Ever smoked cigarettes, among middle and high school students
- Ever smoked cigarettes daily, among middle school students that smoked
- Smoked cigarettes on one or more of the past 30 days (current smoking), among sixth graders
- Smoked bidis on one or more of the past 30 days, among middle and high school students
- Think smoking cigarettes makes young people look cool or fit in, among high school students that smoke
- Are susceptible to start smoking, among middle school students that have never smoked
- Saw or heard anti-smoking ads in past 30 days, among middle and high school students
- Had bought or received anything with a tobacco company name or picture, among middle school students that had never smoked
- Would wear anything with a tobacco company name or picture, among middle school students that had never smoked
- Bought cigarettes at a store, among high school students under age 18 that currently smoke
- Were asked by a doctor or other health professional if they smoked, among high school students
- Were in the same room with someone smoking cigarettes on one or more of the past seven days, among middle school students that had never smoked

Significant increases during the period 2003 through 2009 included the percentage that:

- Used smokeless tobacco, among high school males
- Think they would be able to quit now if they wanted to, among middle school students that currently smoke cigarettes
- Think employers should never allow smoking in places where people work, among middle and high school students

## Recommendations for reducing tobacco use among Missouri youth

Results from the Missouri Youth Tobacco Survey (YTS) 2003-2009 reveal encouraging signs that efforts to reduce tobacco use among young people are working. However, much more work is needed to continue the positive trends seen in some indicators and to impact those in which progress is lacking. Following are evidence-based strategies recommended in the *Missouri Comprehensive Tobacco Prevention and Cessation Program Strategic Plan 2006-2009*<sup>i</sup> that should be implemented to further reduce tobacco use among youth.

### ➤ **Promote quitting by adult and youth tobacco users**

In the results from the YTS that follow, the differences in influences to smoke cigarettes between students that have never smoked and those that currently smoke are significant. For example, almost twice as many middle and high school students that currently smoke live with someone that smokes than do students that have never smoked. At 23.1 percent, Missouri's adult smoking prevalence was fifth highest among all states in 2009.<sup>ii</sup> An important strategy for reducing youth smoking in Missouri is to reduce smoking among adults.

### ➤ **Increase health care provider counseling and affordable cessation service**

These strategies have been shown to effectively increase tobacco cessation.<sup>iii</sup> The 2009 YTS found a significant decrease from 2007 in the percent of high school students that were asked by a doctor or other health professional if they smoked cigarettes. Additionally, only 15 percent or less of students that smoked had participated in a program to help them quit. However, about half of students that smoke wanted to quit and more than half had tried to quit in the past year. Health care provider counseling and cessation assistance should be made available for young people that want to quit, as well as for adults.

### ➤ **Increase the price of tobacco products**

At 17 cents per pack, Missouri's state tax on cigarettes is lowest in the country and well below the national average of \$1.42.<sup>iv</sup> The YTS showed the most utilized method of obtaining cigarettes by high school students that smoke was to give money to someone else to buy them. Evidence from states that have raised the tax on cigarettes clearly shows it to be an effective strategy for reducing smoking among both young people<sup>v</sup> and adults<sup>vi</sup> because of the increase in price.

### ➤ **Create tobacco-free environments**

Each year about half of high school students and more than 40 percent of middle school students that had never smoked were exposed to secondhand smoke in the past seven days. Additionally, about a quarter of high school students work in places that allow smoking. Smoke-free work place laws not only reduce exposure to secondhand smoke, but have also been linked to reduced youth smoking initiation.<sup>vii</sup> The YTS found that the overwhelming majority of middle and high school students think secondhand smoke is harmful and should not be allowed in homes, vehicles and work places. Programs should be expanded that involve youth advocating for tobacco-free communities, such as those described in a report by the Center for Tobacco Policy Research.<sup>viii</sup>

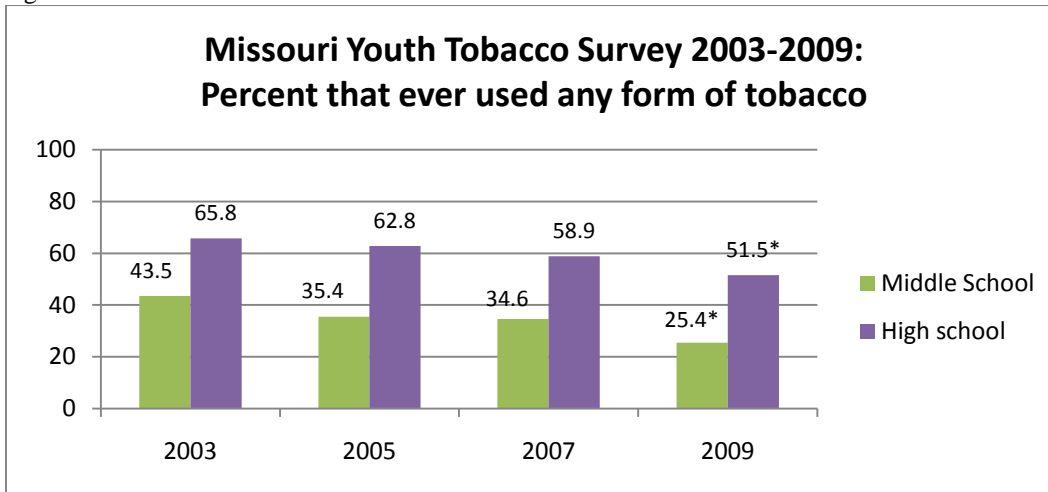
### ➤ **Decrease social acceptability of tobacco**

Each year from 2003 through 2009, significantly fewer middle school students saw or heard anti-smoking ads than saw tobacco company ads on the Internet. Additionally, there was a significant decrease in the percentage of both middle and high school students that saw or heard anti-smoking ads during this period. Anti-smoking advertising, in combination with other interventions, has been shown to reduce tobacco use among youth<sup>ix</sup> and should be increased to counter tobacco industry advertising.

## Results from the Missouri Youth Tobacco Survey 2003-2009 Tobacco use

The percentage of Missouri middle and high school students that ever used any form of tobacco decreased significantly from 2003 to 2009 (Figure 1). There was also a statistically significant downward trend during the period of 2003 through 2009 for both middle and high school students. The Average Annual Change, (AAC) for middle school was -2.7 percentage points (p-value = 0.04) and for high school was -2.2 percentage points (p-value = 0.02). Forms of tobacco may include cigarettes, cigars, smokeless tobacco, pipe, bidis or kreteks. More than forty percent (43.5 percent) of middle school students had ever used any form of tobacco in 2003 compared to 25.4 percent in 2009. Among high school students, 65.8 percent had ever used any form of tobacco in 2003 compared to 51.5 percent in 2009.

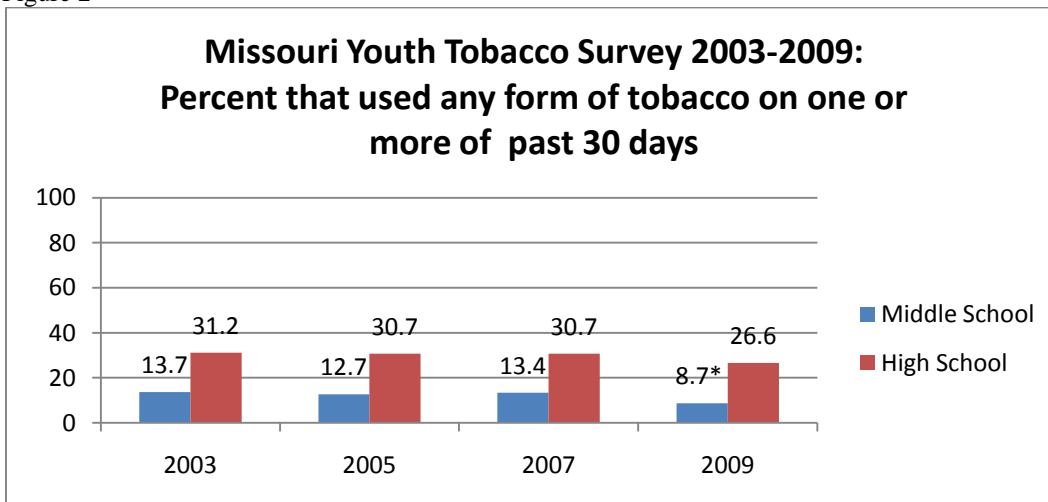
Figure 1



\*Statistically significant decrease from 2003

Current tobacco use, defined as having used tobacco on one of more of the past 30 days, declined significantly among middle school students from 2003 to 2009 (Figure 2). However there were no statistically significant changes in current tobacco use among high school students during this period.

Figure 2

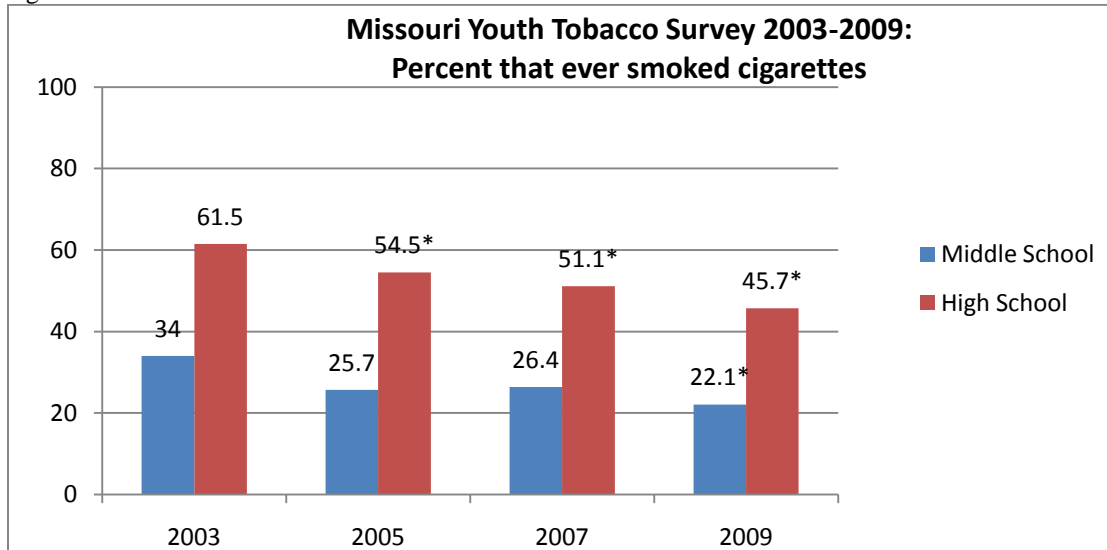


\*Statistically significant decrease from 2003

## Cigarette smoking

The percentage of high school students that ever smoked cigarettes declined significantly each year from 2003 through 2009 representing a statistically significant downward trend during the period (Figure 3). The AAC for high school students was -2.6 percentage points (p-value = 0.01). Among middle school students, the percentage that ever smoked cigarettes declined significantly from 2003 to 2009.

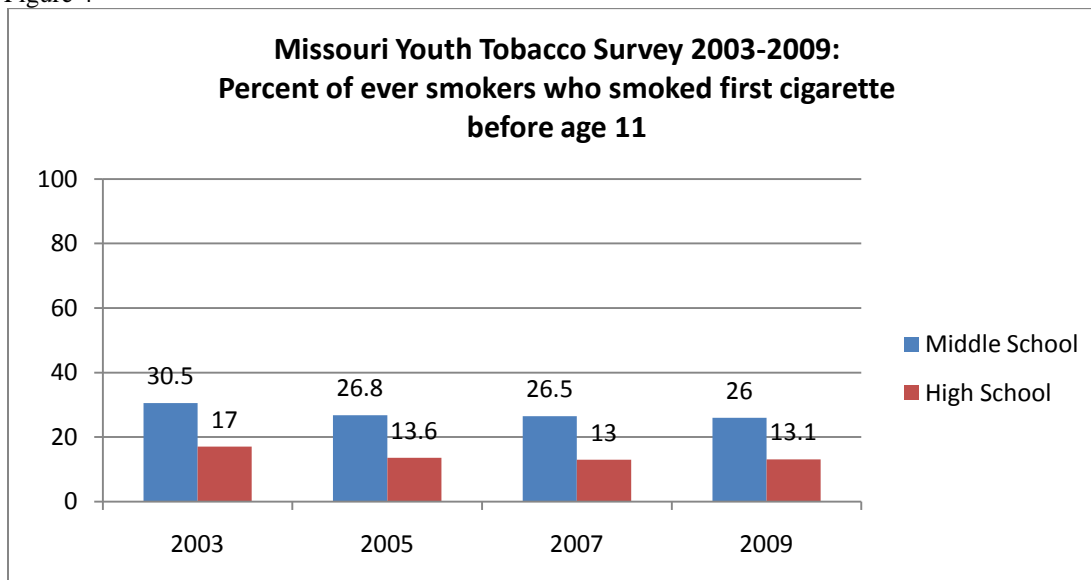
Figure 3



\*Statistically significant decrease from 2003

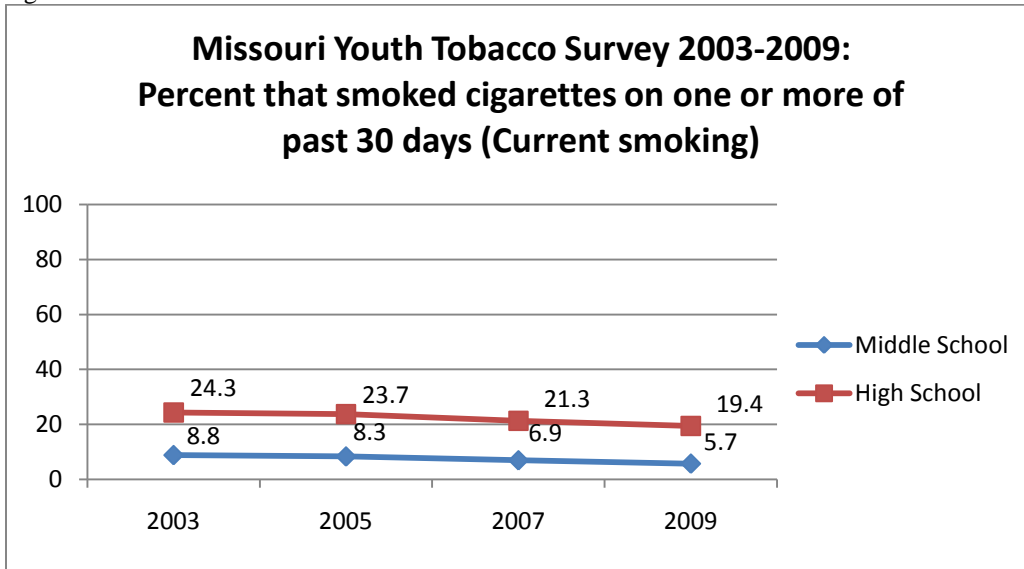
The percentage of middle and high school students that ever smoked who smoked their first cigarette before the age of 11 did not change significantly from 2003 through 2009 (Figure 4).

Figure 4



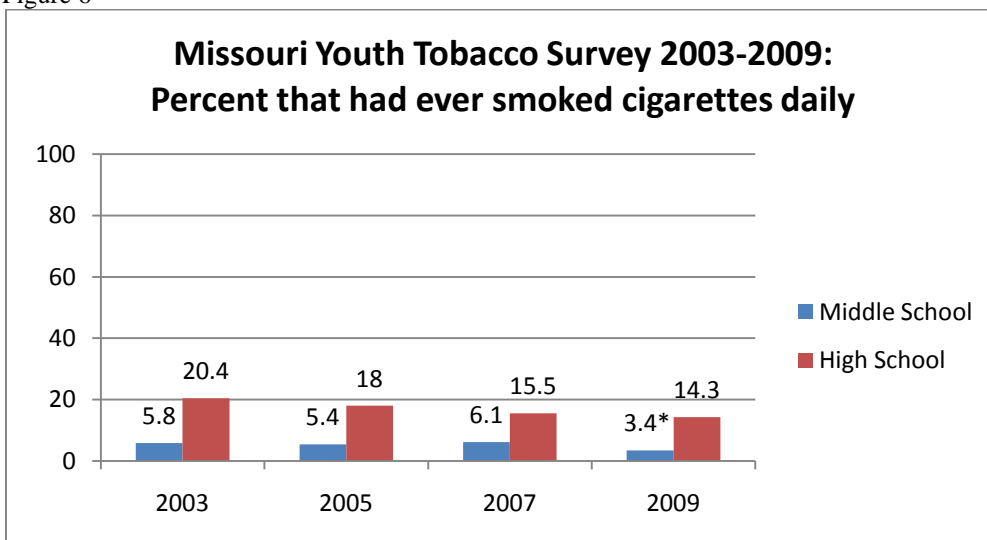
The prevalence of current cigarette smoking among middle and high school students, defined as having smoked cigarettes on one or more of the past 30 days, did not decline significantly from any one year to another (Figure 5). However, there was a statistically significant downward trend in current smoking among both middle and high school students during the period of 2003 through 2009. The AAC among middle school students was -0.6 percentage points (p-value = 0.01) and for high school students was -0.9 percentage points (p-value = 0.02).

Figure 5



Daily cigarette smoking declined significantly among middle school students from 5.8 percent in 2003 to 3.4 percent in 2009 (Figure 6). There was a statistically significant downward trend in daily cigarette smoking among high school students. The AAC among high school students was -1.1 percentage points (p-value = 0.01).

Figure 6

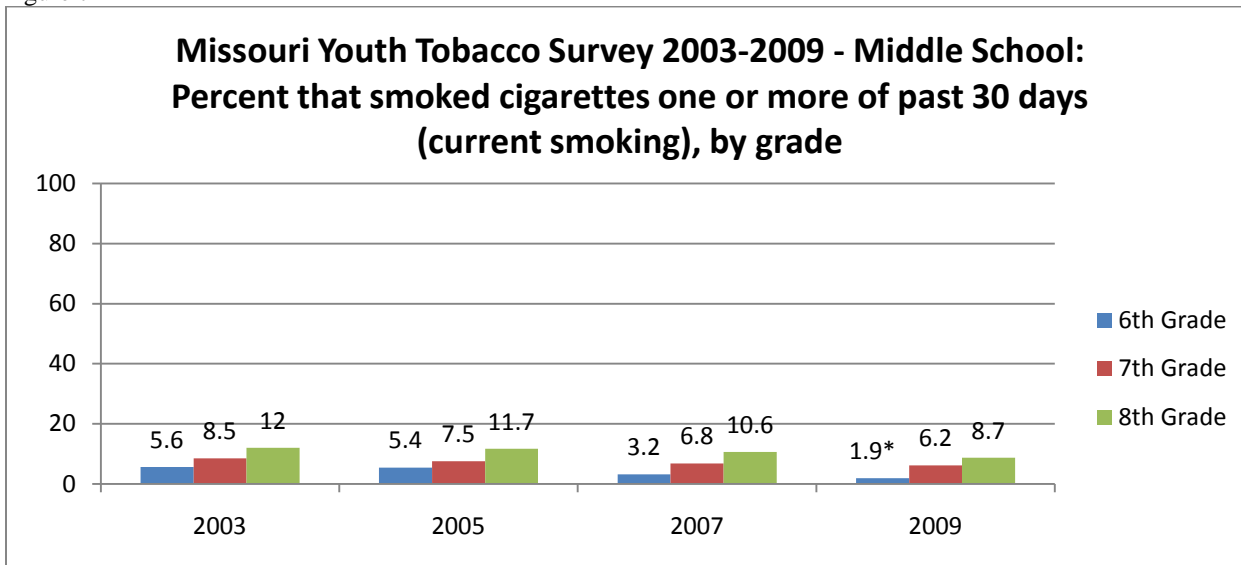


\*Statistically significant decrease from 2003



Current cigarette smoking among sixth grade students declined significantly from 5.6 percent in 2003 to 1.9 percent in 2009 (Figure 7). There were no significant changes among seventh and eighth grade students during this period.

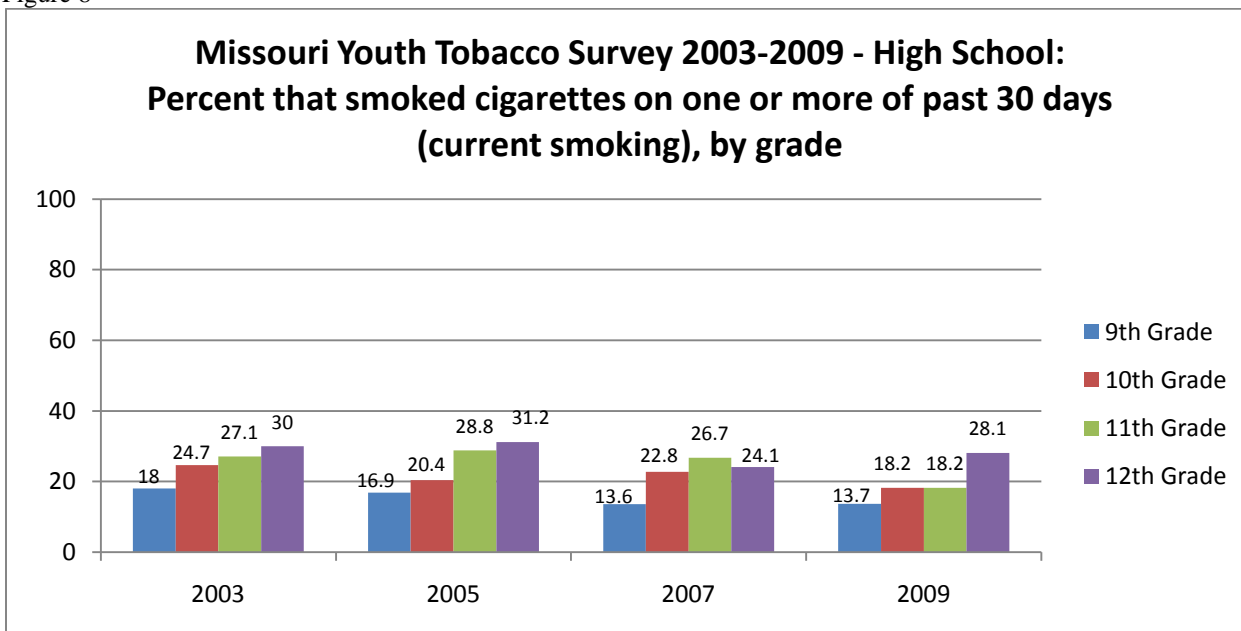
Figure 7



\*Statistically significant decrease from 2003

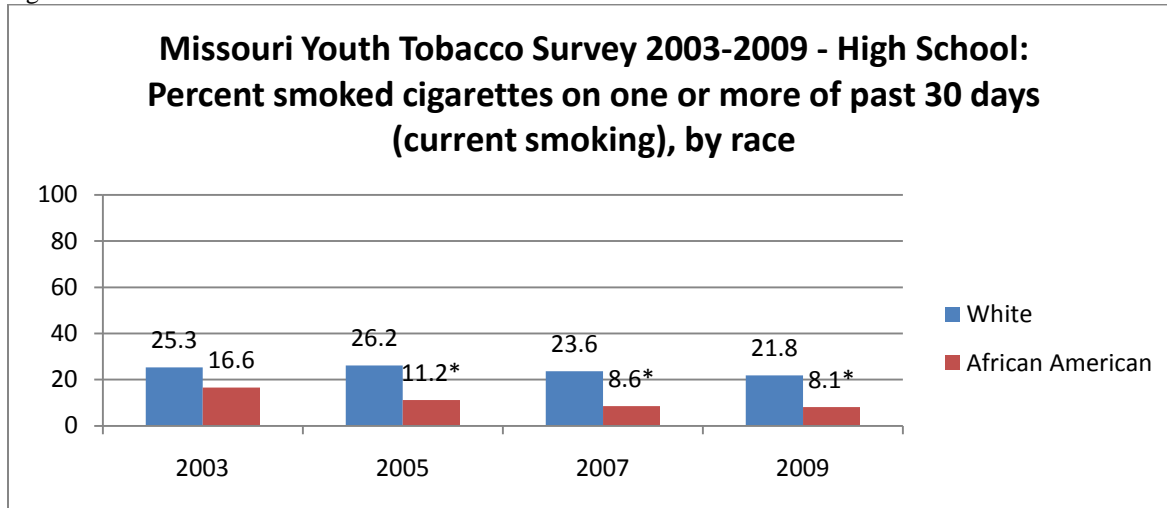
The prevalence of current cigarette smoking among high school students in all grades did not change significantly from 2003 through 2009 (Figure 8).

Figure 8



Among high school students, significantly more white than African American students smoked each year from 2005 through 2009 (Figure 9). There were no significant changes in current smoking among either white or African American students from 2003 through 2009.

Figure 9



\*Statistically significant difference between races

### **Other forms of current tobacco use**

There were no significant changes in cigar smoking from 2003 through 2009 (Table 1). However, smoking bidis decreased significantly among both middle and high school students. Of concern is the increase in use of smokeless tobacco among high school males during this period.

Table 1

<b>Percent that used in past 30 days:</b>	<b>2003</b>	<b>2005</b>	<b>2007</b>	<b>2009</b>
Cigars - Middle school	5.1	4.6	4.8	2.9
Cigars - High school	14.2	15.2	13.7	12.8
Bidis - Middle school	3.3	3.2	3.0	0.9*
Bidis - High school	4.8	3.8	6.2	2.9**
Smokeless - Middle school males	4.6	4.0	5.3	4.7
Smokeless - High school males	9.1	11.5	12.9	16.6***

\*Statistically significant decrease 2003 to 2009

\*\*Statistically significant decrease 2007 to 2009

\*\*\*Statistically significant increase 2003 to 2009

### **Smoking on school property**

Less than five percent of middle school smokers and less than 10 percent of high school smokers smoked on school property in the past 30 days (Table 2). There were no significant changes from 2003 through 2009.

Table 2

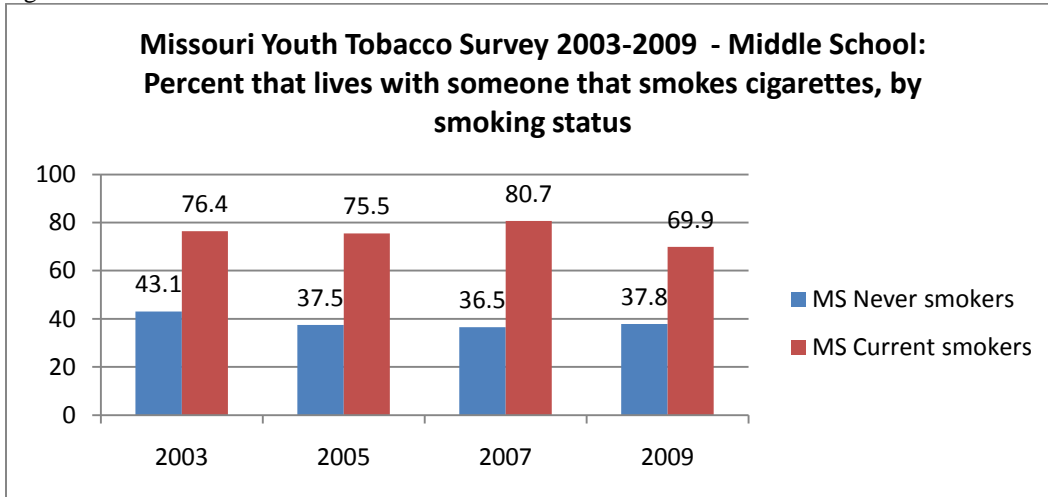
<b>Percent that smoked cigarettes on school property</b>	<b>2003</b>	<b>2005</b>	<b>2007</b>	<b>2009</b>
Middle School	3.3	3	2.2	1.7
High School	9.9	8.3	7.5	7

## Influences to use tobacco

### Family and friends that smoke

At both the middle school and high school levels, significantly more students that currently smoked cigarettes lived with someone that smoked than students that had never smoked (Figures 10 and 11). Additionally, in 2007 significantly more middle school current smokers lived with someone that smoked compared to high school current smokers.

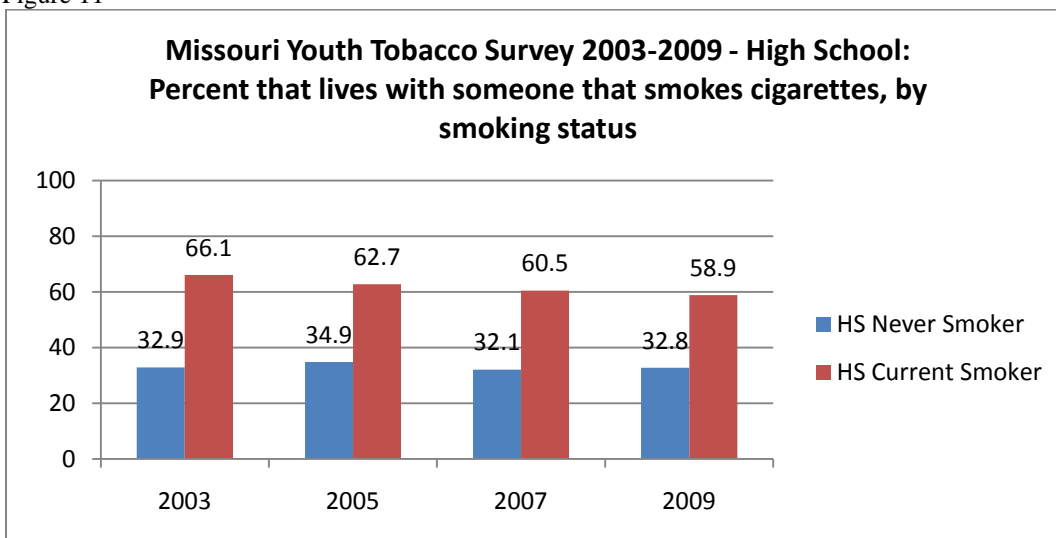
Figure 10



Statistically significant difference never smoker to current smoker each year

From 2003 through 2009, there was a statistically significant downward trend in the percent of high school smokers that lived with someone who smokes (Figure 11). The AAC was -1.2 percentage points (p-value = 0.01).

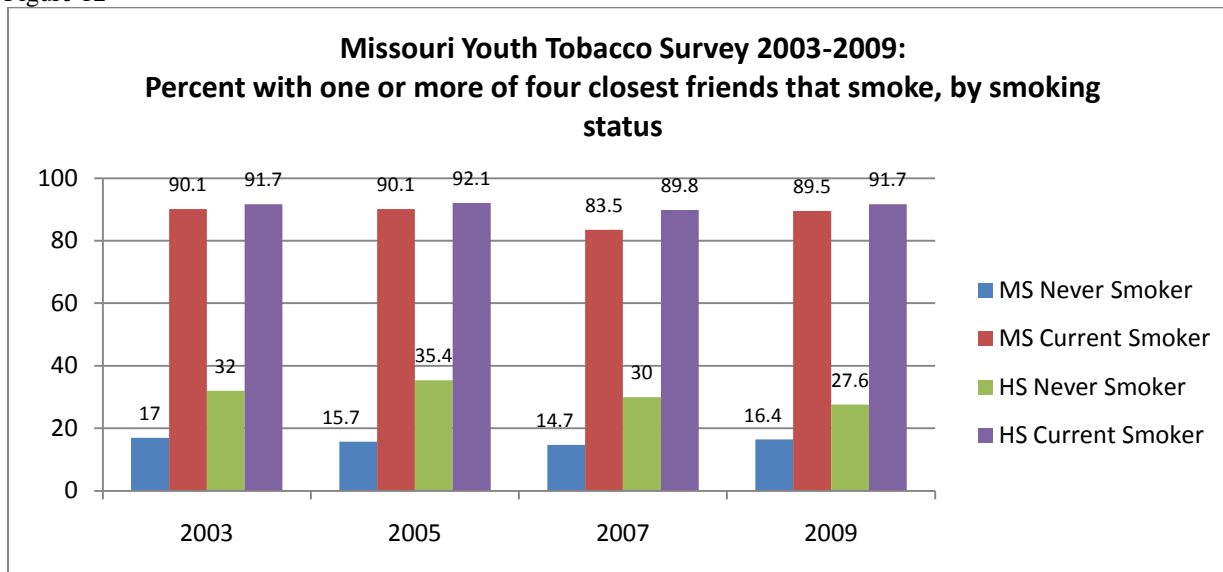
Figure 11



Statistically significant difference never smoker to current smoker each year

Each year from 2003 through 2009, significantly more middle and high school students that smoked cigarettes had one or more of their four closest friends that smoked compared to students that had never smoked (Figure 12). There were no significant changes within groups during the period.

Figure 12



Statistically significant difference never smoker to current smoker each year and grade level

Significantly more middle and high school current smokers think that young people who smoke have more friends compared to students that had never smoked (Table 3). There were no significant changes within groups from 2003 through 2009.

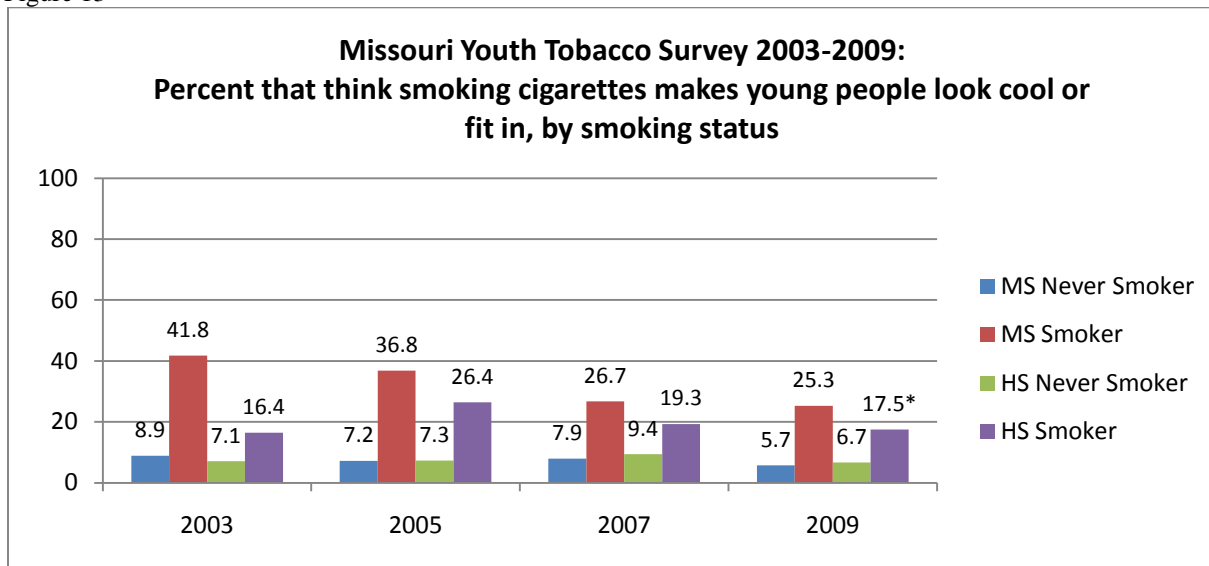
Table 3

<b>Percent that think young people who smoke have more friends</b>	<b>2003</b>	<b>2005</b>	<b>2007</b>	<b>2009</b>
Middle School Never Smoker	13.2	13.2	12.2	11.5
Middle School Smoker	41.7	51.9	39.8	36.1
High School Never Smoker	12.2	13.6	13.3	11.6
High School Smoker	29.5	31.7	26.3	36.6

Statistically significant difference never smoker to current smoker each year and grade level

Middle school and high school students that smoke also thought that smoking makes young people cool and fit in more than students that had never smoked (Figure 13). However, significantly fewer high school smokers, 17.5 percent, thought this in 2009 compared to 26.4 percent in 2005.

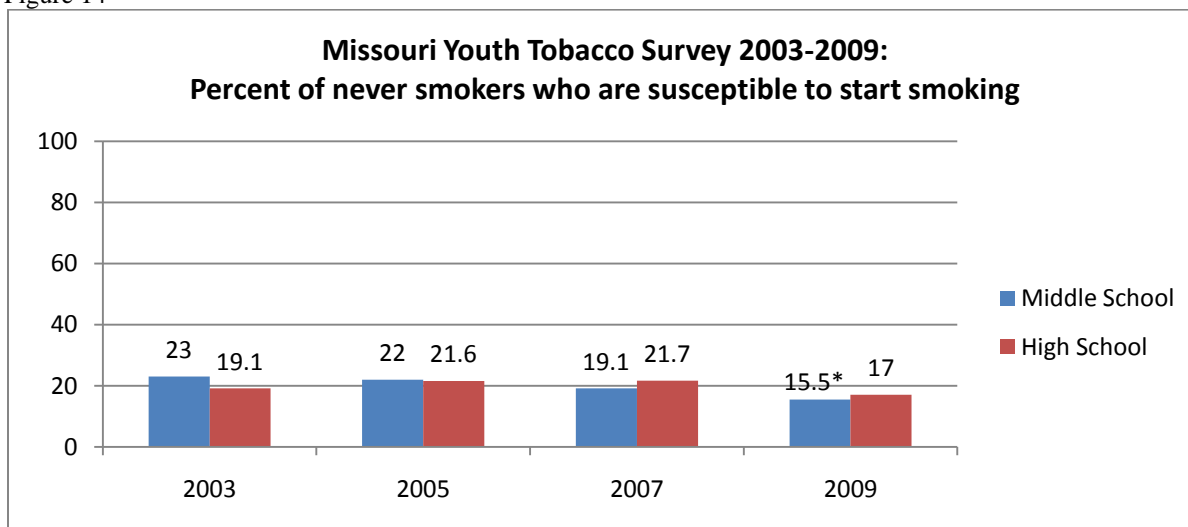
Figure 13



\*Statistically significant decrease from 2005.

The percentage of middle school student never smokers who are susceptible to start smoking declined significantly from 2003 to 2009 (Figure 14). There was also a statistically significant downward trend during this period in the percent of middle school never smokers who are susceptible to start smoking. The AAC was -1.4 percentage points (p-value = 0.02). There was no significant change among high school never smokers during the period. Susceptibility to start smoking is calculated from “definitely yes” and “probably yes” responses to questions asking if the students think they will try a cigarette soon, if they think they will smoke a cigarette anytime during the next year, and if a friend offered a cigarette, would they smoke it. Responses of definitely yes or probably yes are indications the student has not made a firm decision not to smoke cigarettes.

Figure 14

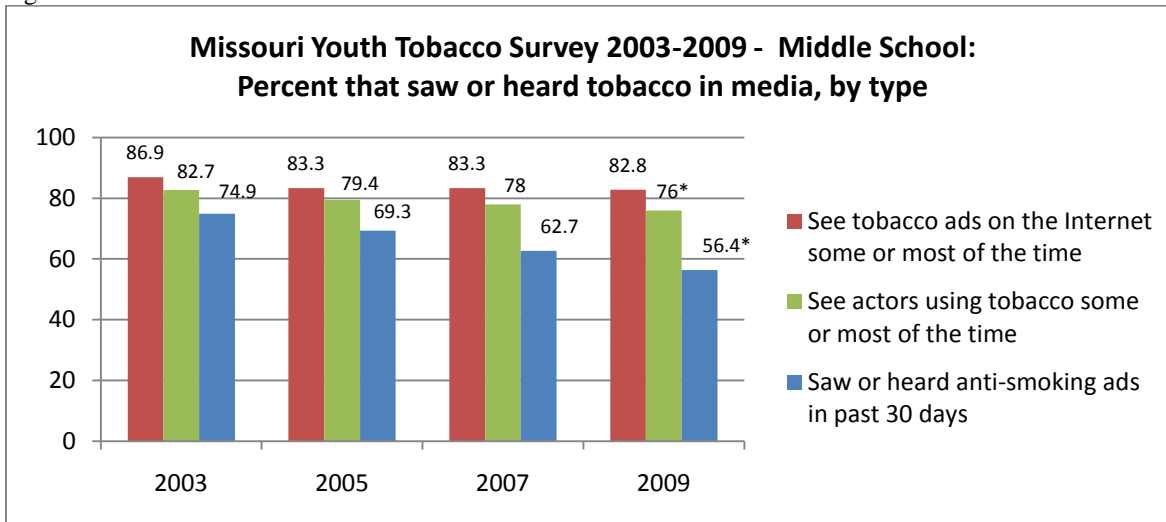


\*Statistically significant decrease from 2003

## Media and promotional influences

Significantly more middle school students saw tobacco ads on the Internet than saw or heard anti-smoking ads each year from 2003 through 2009 (Figure 15). Additionally, significantly fewer middle school students saw or heard anti-smoking ads during the past 30 days in 2009 (56.4 percent) than in 2003 (74.9 percent). Significantly fewer also saw actors using tobacco some or most of the time in 2009 (76.0 percent) than in 2003 (82.7 percent).

Figure 15

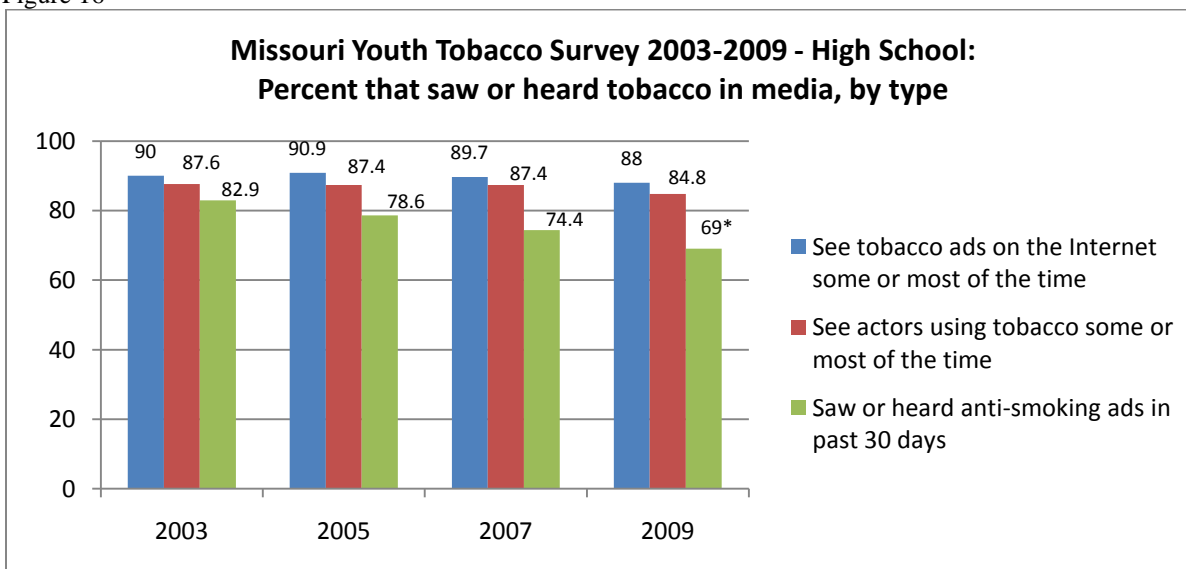


\*Statistically significant decrease from 2003.

Significant difference each year between those that see tobacco ads and those that saw or heard anti-smoking ads

Among high school students, significantly fewer also saw or heard anti-smoking ads in the past 30 days in 2009 (69.0 percent) than in 2003 (82.9 percent) (Figure 16).

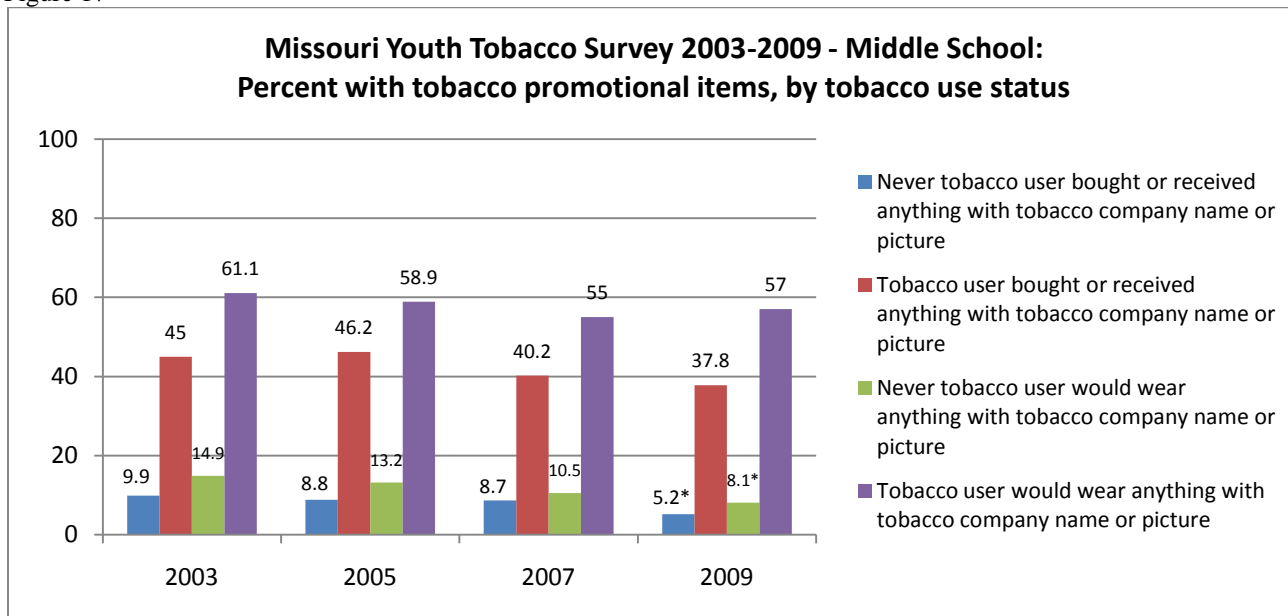
Figure 16



\*Statistically significant decrease from 2003

Each year from 2003 through 2009, significantly fewer middle school never tobacco users than current tobacco users had bought or received anything with a tobacco company name on it, or would wear anything with a tobacco company name or picture (Figure 17). The percent of never tobacco users that had received or would wear a tobacco item declined significantly from 2003 to 2009.

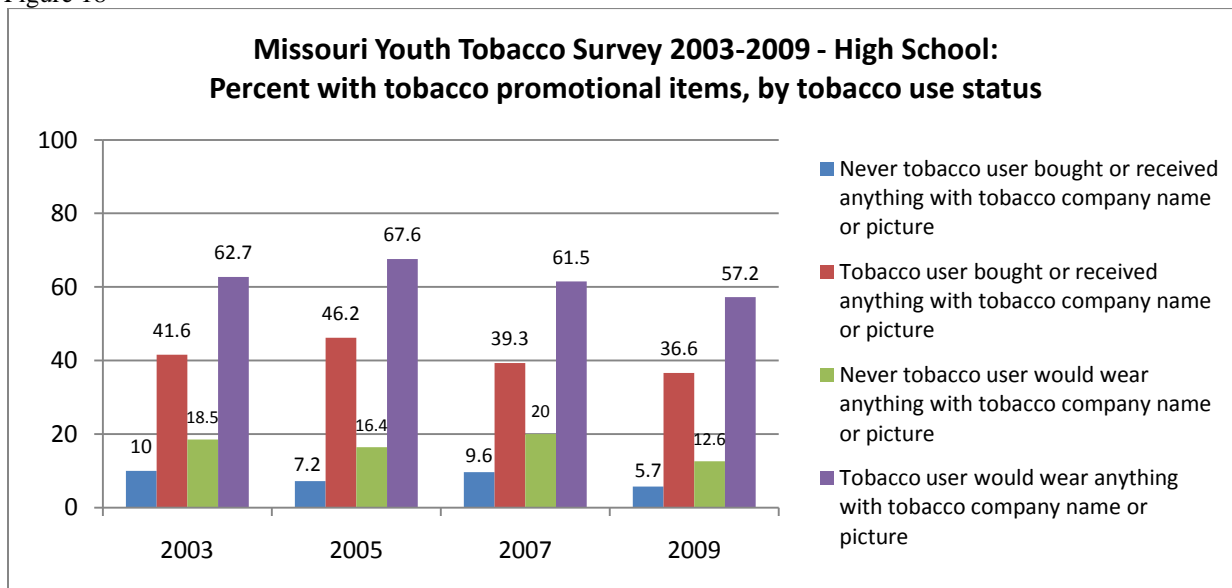
Figure 17



\*Statistically significant decrease from 2003. Statistically significant difference never smoker to current smoker each year

Among high school never tobacco users, significantly fewer had owned or would wear tobacco promotional items compared to current tobacco users each year 2003 through 2009 (Figure 18). There were no significant changes within groups during the period.

Figure 18



Statistically significant difference never smoker to current smoker each year

## Educating about the dangers of tobacco use

A majority of middle school and high school students had discussed the dangers of tobacco use with a parent or guardian in the past year each year from 2003 through 2009 (Tables 4 and 5). Also during the period, significantly more middle school than high school students had been taught at school that year about the dangers of tobacco use and practiced ways to say no to tobacco use. Far fewer middle and high school students had participated in any community event discouraging tobacco use in the past year. There were no significant changes in any of the education methods during the period.

Table 4

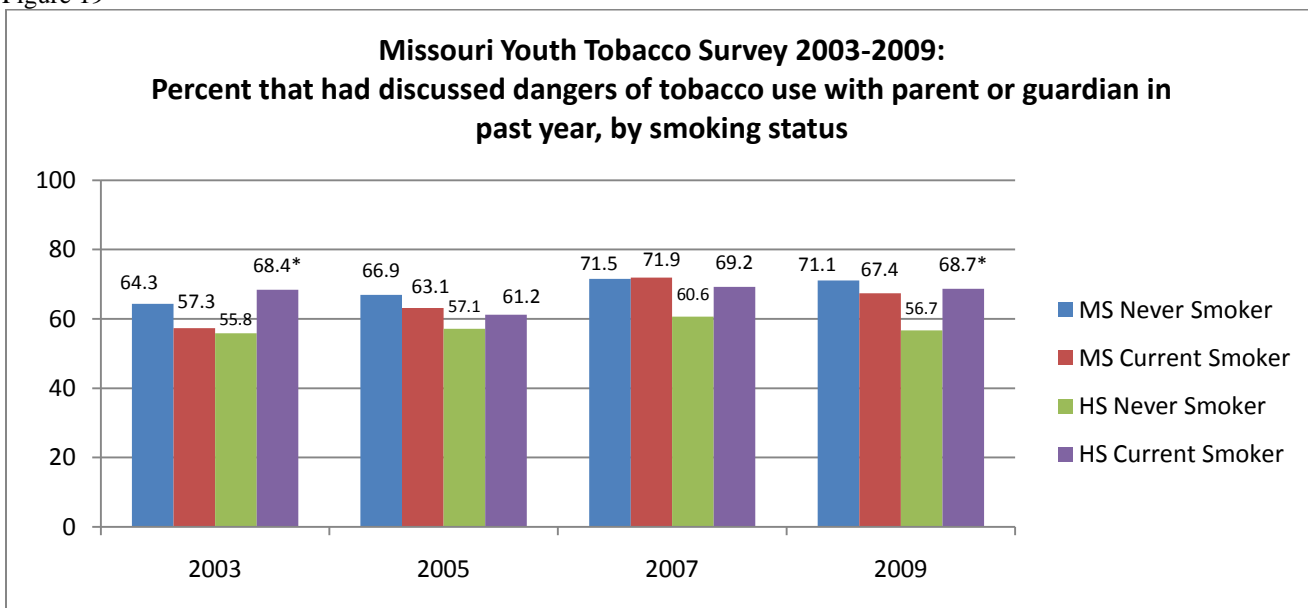
<b>Percent of middle school students that in past year:</b>	<b>2003</b>	<b>2005</b>	<b>2007</b>	<b>2009</b>
Discussed the dangers of tobacco use with a parent or guardian	63.4	64.6	68.9	69.1
Were taught about the dangers of tobacco use at school	57.8	65.3	61.9	61.9
Practiced ways to say “No” to tobacco use at school	40.4	42.8	45.5	42.1
Participated in any community event discouraging tobacco use	21.0	18.8	18.9	17.3

Table 5

<b>Percent of high school students that in past year:</b>	<b>2003</b>	<b>2005</b>	<b>2007</b>	<b>2009</b>
Discussed the dangers of tobacco use with a parent or guardian	57.7	56.6	61.3	58.2
Were taught about the dangers of tobacco use at school	38.8	34.9	39.2	37.8
Practiced ways to say “No” to tobacco use at school	14.9	15.4	18.0	18.7
Participated in any community event discouraging tobacco use	14.1	12.2	14.3	13.4

In 2003 and 2009, significantly more high school current smokers than never smokers had discussed tobacco use with a parent or guardian in the past year (Figure 19).

Figure 19



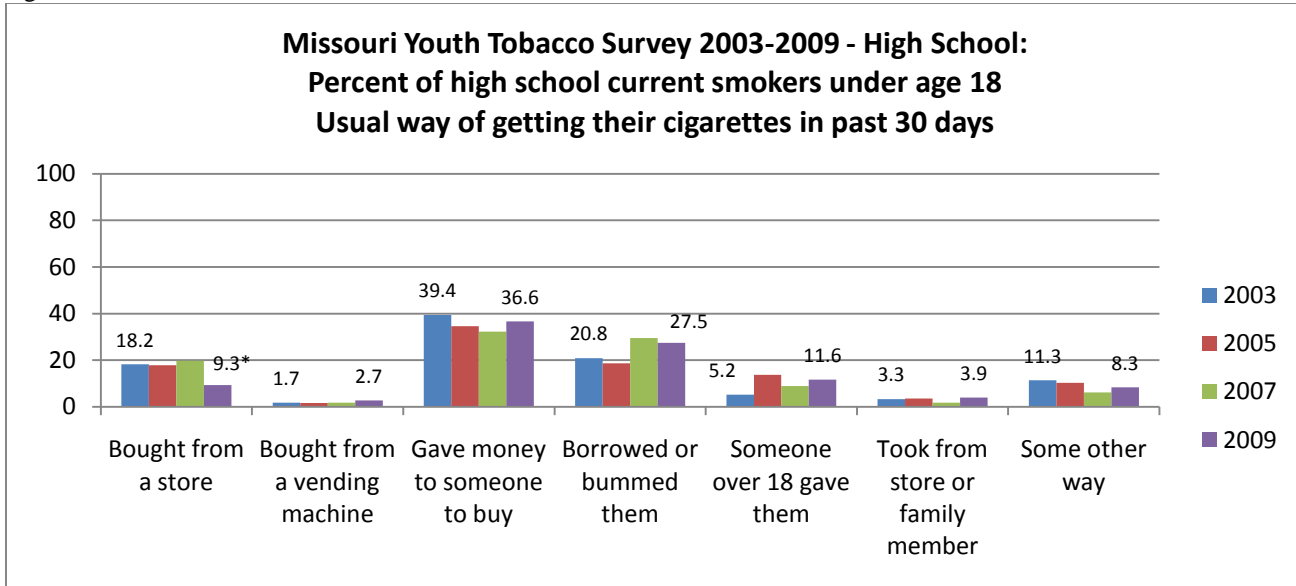
\*Statistically significant difference from never smoker



## Youth access to cigarettes

Each year from 2003 through 2009, the most prevalent ways high school smokers under the age of 18 usually obtained their cigarettes was by giving money to someone else to buy them and by borrowing them (Figure 20). Significantly fewer bought their cigarettes from a store in 2009 (9.3 percent) than in 2003 (18.2 percent).

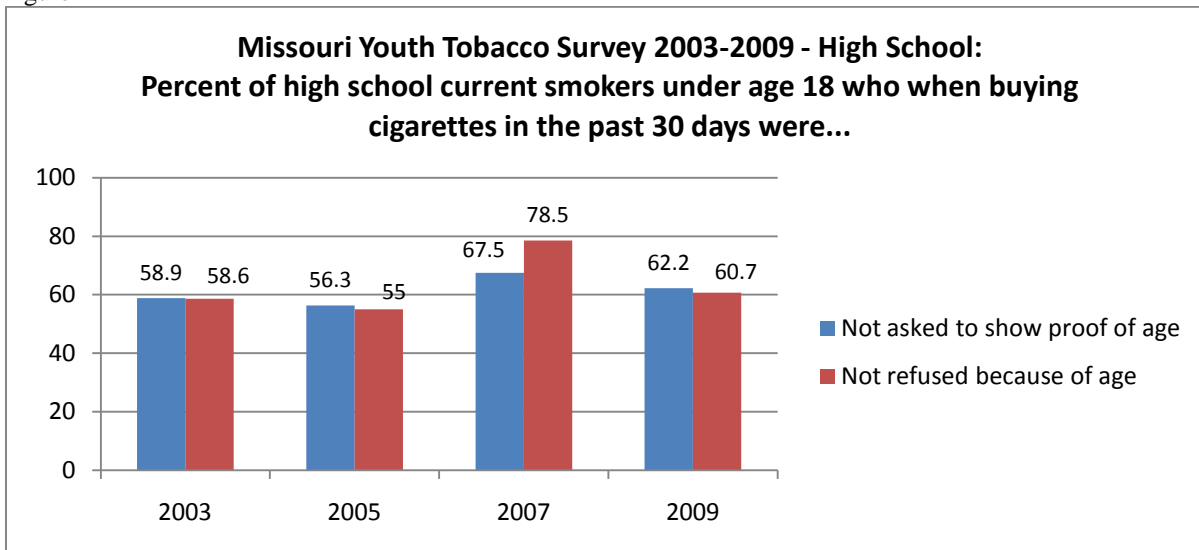
Figure 20



\*Significant decrease from 2003

Among the high school smokers under the age of 18 who bought cigarettes in the past 30 days, the majority was not asked to show proof of age nor refused the purchase because of age (Figure 21). There were no significant changes from 2003 through 2009.

Figure 21



## Quitting tobacco

The percentage of middle and high school smokers that want to quit did not change significantly from 2003 through 2009 (Figure 22), nor did the percentage that tried to quit in the past year (Figure 23). More than half of the middle and high school smokers tried to quit each year.

Figure 22

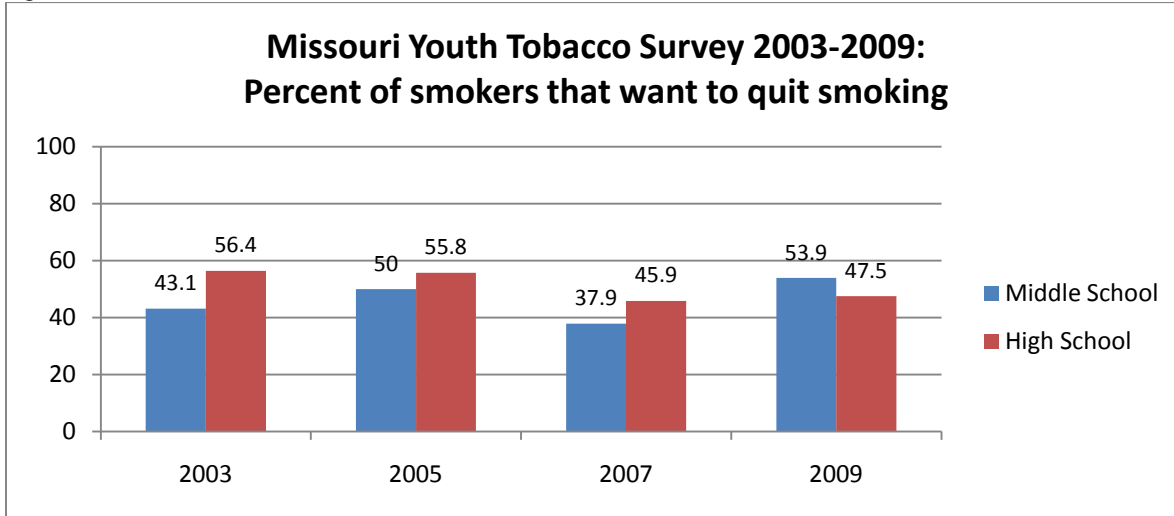
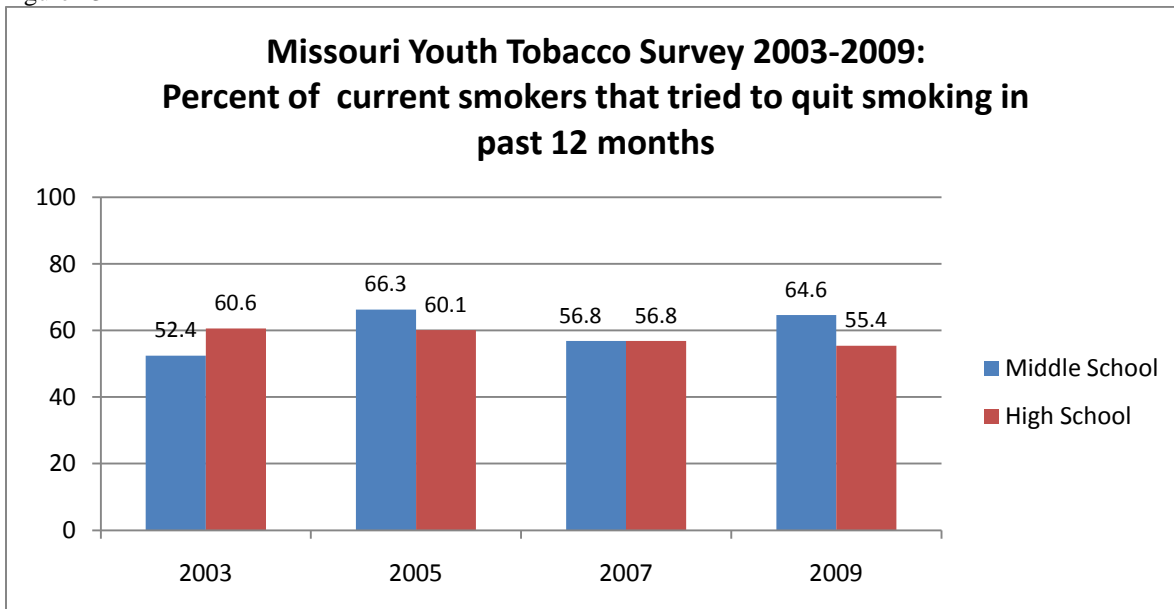


Figure 23



More than one-third of middle and high school smokers that had tried to quit stayed off cigarettes for less than 30 days the last time they tried to quit (Table 6). There were no significant changes 2003 through 2009.

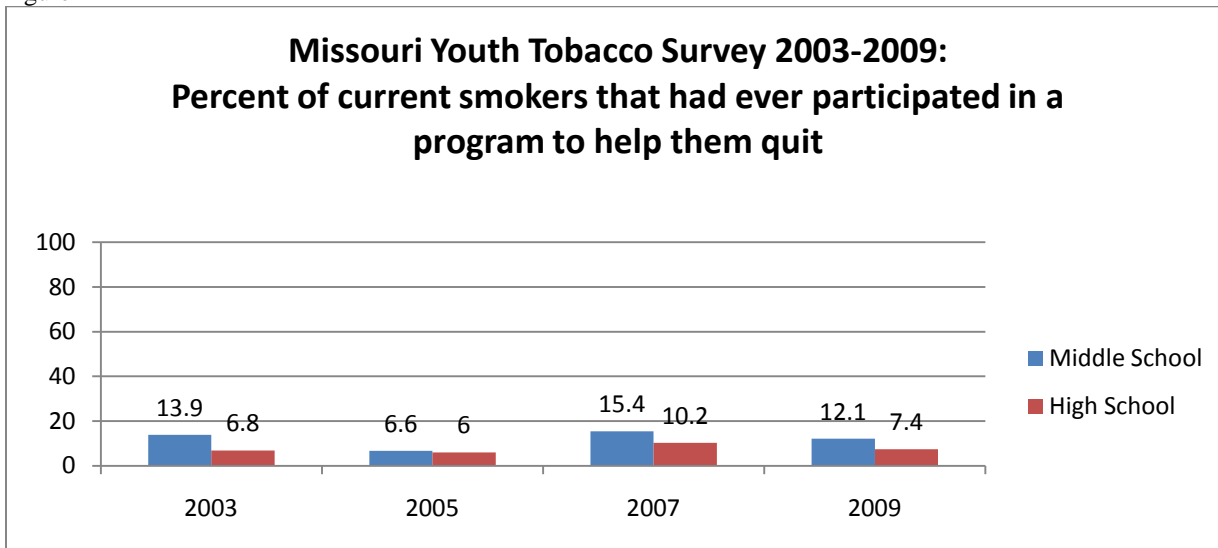
Table 6

<b>Percent of current smokers that stayed off cigarettes less than 30 days on last quit attempt</b>	<b>2003</b>	<b>2005</b>	<b>2007</b>	<b>2009</b>
Middle School Current Smokers	35.3	43.1	44.6	38
High School Current Smokers	45.8	47	41.5	41.3

**Quit assistance**

The percentage of middle and high school students who smoked that had ever participated in a program to help them quit did not change significantly from 2003 through 2009 (Figure 24).

Figure 24



Students were asked in 2007 and 2009 if their school had any special groups or classes for students wanting to quit using tobacco (Table 7). However, many students were not sure if such help existed. There were no significant changes from 2007 to 2009.

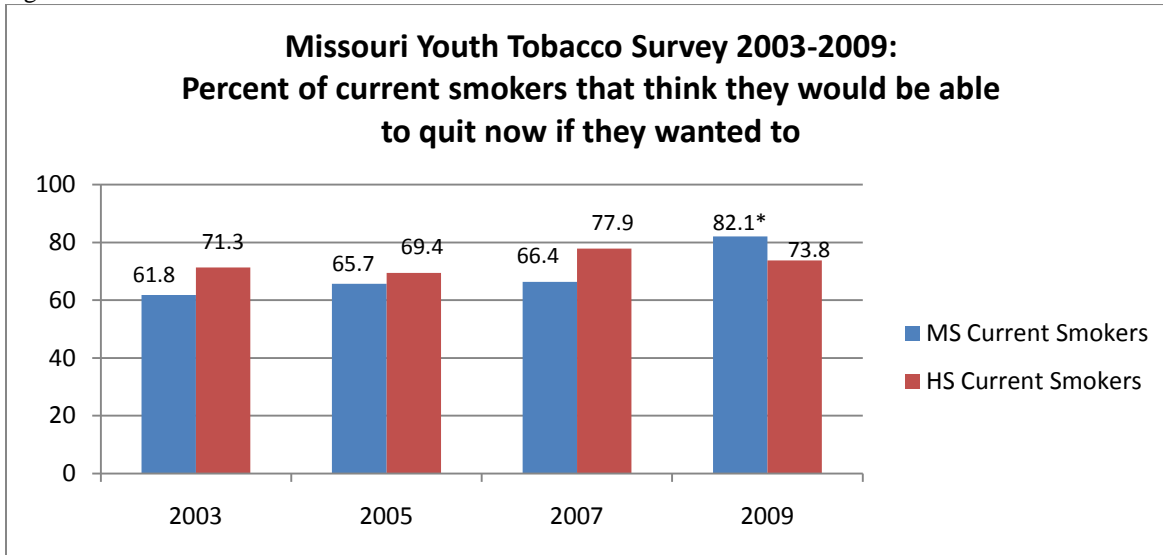
Table 7

<b>Percent of students reporting if their school had groups or classes to help students wanting to quit</b>	<b>2007</b>	<b>2009</b>
Middle School - Yes	5.4	5.3
Middle School - No	40.8	41.8
Middle School - Not sure	53.8	53.0
High School - Yes	9.1	6.1
High School - No	48.2	49.4
High School - Not sure	42.6	44.5

## **Beliefs about quitting**

The majority of middle and high school students that smoke think they would be able to quit now if they wanted to (Figure 25). Significantly more middle school smokers thought they could quit in 2009 (82.1 percent) than in 2003 (61.8 percent).

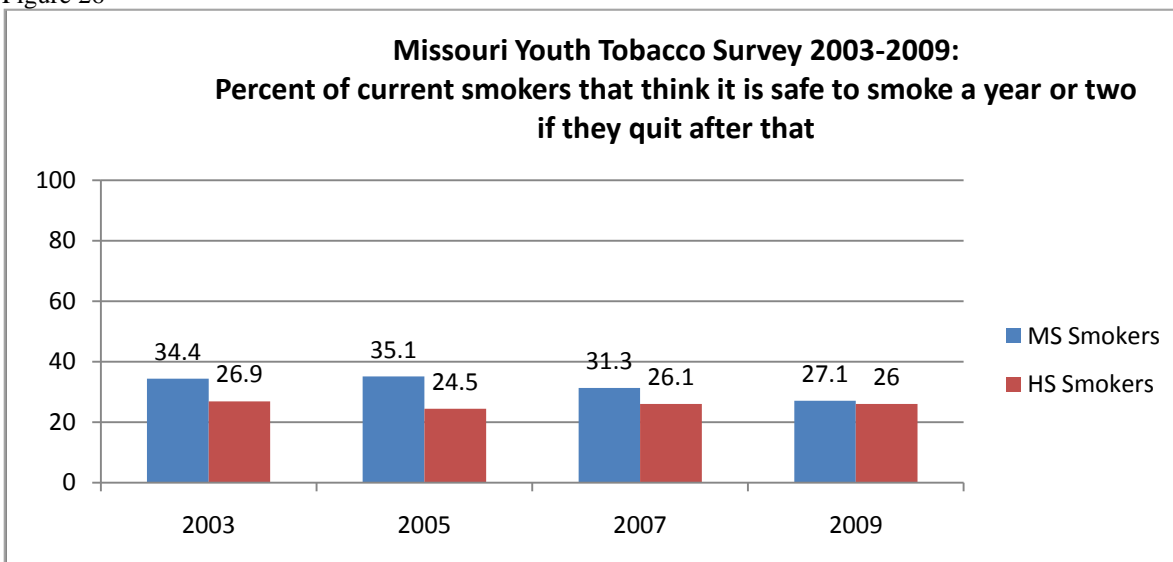
Figure 25



\*Statistically significant increase from 2003

In 2009, more than a quarter of middle and high school smokers thought it is safe to smoke a year or two as long as you quit after that (Figure 26). There were no significant changes from 2003 through 2009.

Figure 26



### **Health care provider counseling**

In 2007 and 2009, students were asked if a doctor or other health professional had asked if they smoked or if they had been advised not to smoke. There were no significant changes among middle school students for either from 2007 to 2009 (Table 8).

Table 8

<b>Percent of middle school students that were:</b>	<b>2007</b>	<b>2009</b>
Asked if they smoked by a doctor or other health professional	16.1	12.1
Advised not to smoke by a doctor or other health professional	27.3	23.8

Significantly fewer high school students were asked by a doctor or health professional if they smoked in 2009 (28.9 percent) than in 2007 (37.5 percent) (Table 9). The percent that were advised not to smoke did not change significantly.

Table 9

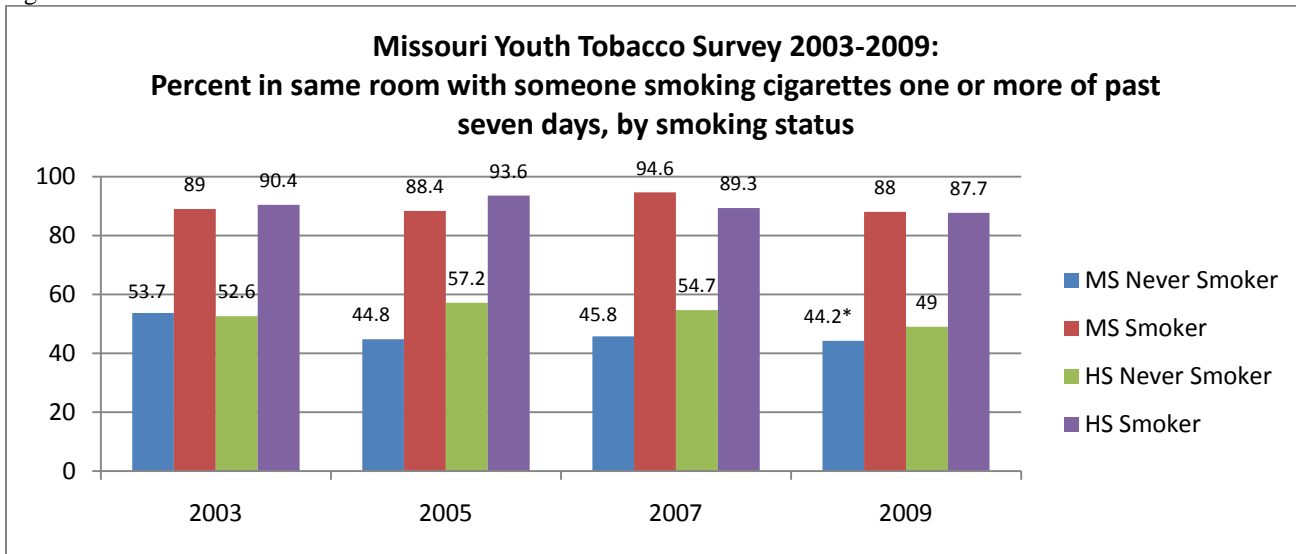
<b>Percent of high school students that were:</b>	<b>2007</b>	<b>2009</b>
Asked if they smoked by a doctor or other health professional	37.5	28.9*
Advised not to smoke by a doctor or other health professional	29.4	33.6

\*Statistically significant decrease from 2007

## Secondhand smoke exposure and beliefs

Significantly more middle and high school smokers than never smokers were in a room with someone else that smoked on one or more of the past 7 days each year 2003 through 2009 (Figure 27). In 2009, more than 40 percent of middle and high school never smokers were exposed to secondhand smoke on one or more of the past seven days. The percentage of middle school never smokers exposed to secondhand smoke decreased significantly from 2003 (53.7 percent) to 2009 (44.2 percent).

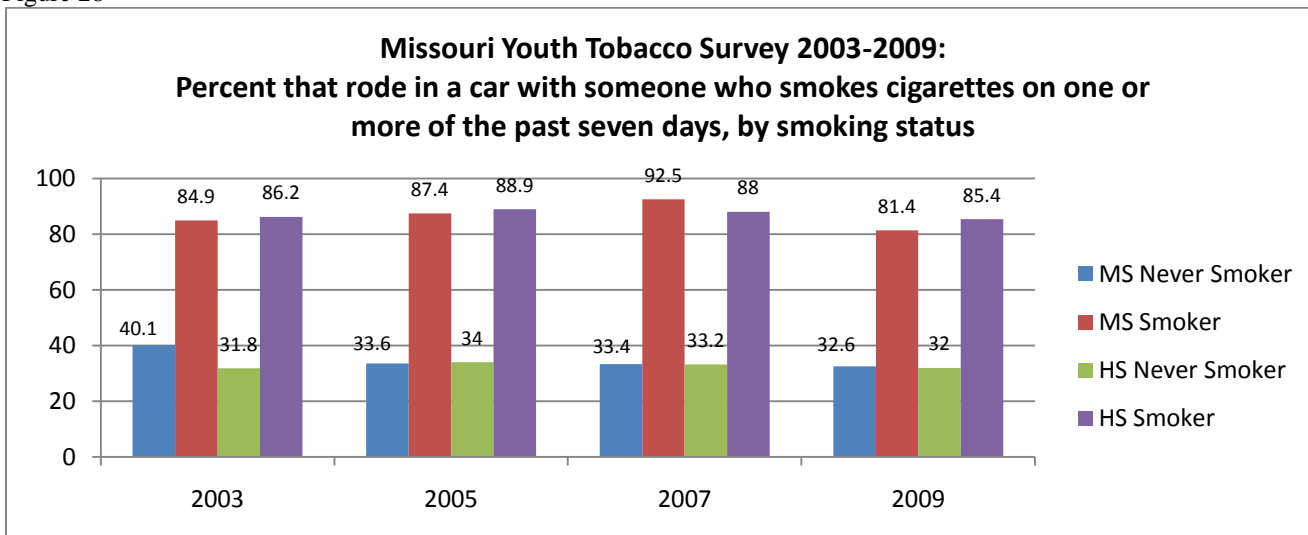
Figure 27



\*Statistically significant decrease from 2003. Significant difference between smokers and never smokers each year.

Approximately one-third of middle and high school never smokers rode in a car with someone who smokes on one or more of the past seven days (Figure 28). There were no significant changes from 2003 through 2009. Significantly more smokers than never smokers rode in a car with someone who smokes each year.

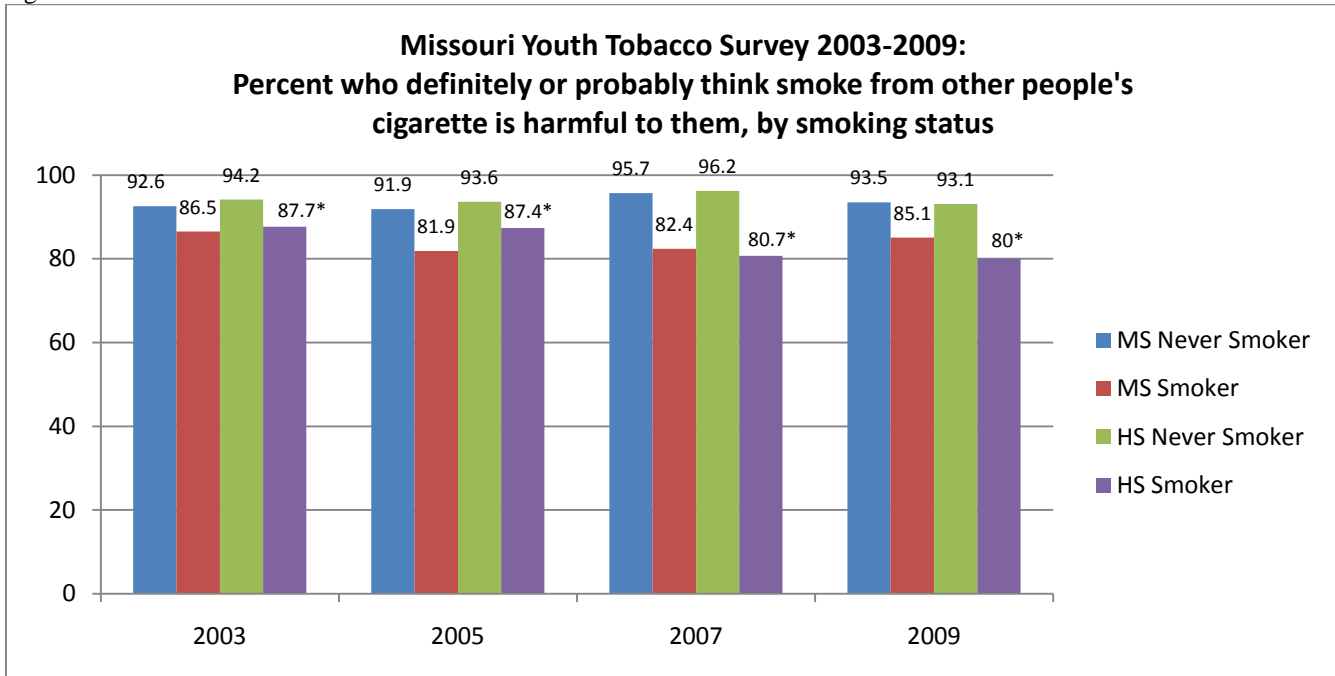
Figure 28



Significant difference between smokers and never smokers each year

More than 90 percent of middle and high school never smokers and more than 80 percent of current smokers definitely think or probably think other people’s cigarette smoke is harmful to them (Figure 29). Significantly more high school never smokers than smokers thought secondhand smoke is harmful each year from 2003 through 2009.

Figure 29



\*Statistically significant difference high school smoker to high school never smoker

Students were asked in 2007 and 2009 about smoking rules at home and in the vehicle in which they ride or drive most. The majorities of middle and high school students live in homes and ride in or drive vehicles in which smoking is never allowed (Table 10). There were no significant changes between 2007 and 2009.

Table 10

Percent that	2007	2009
Live in a home where smoking is never allowed – Middle school	65.7	68.7
Live in a home where smoking is never allowed – High school	65.8	69.1
Ride in vehicle most in which smoking is never allowed – Middle school	61.1	65.8
Ride in or drive vehicle most in which smoking is never allowed – High school	55.6	58.4

In 2007 and 2009, students were also asked what they think rules about smoking in homes and vehicles should be. The majority of middle and high school students think smoking should never be allowed in homes and vehicles (Table 11). Both years significantly more middle than high school students thought smoking should never be allowed in vehicles. There were no significant changes from 2007 to 2009.

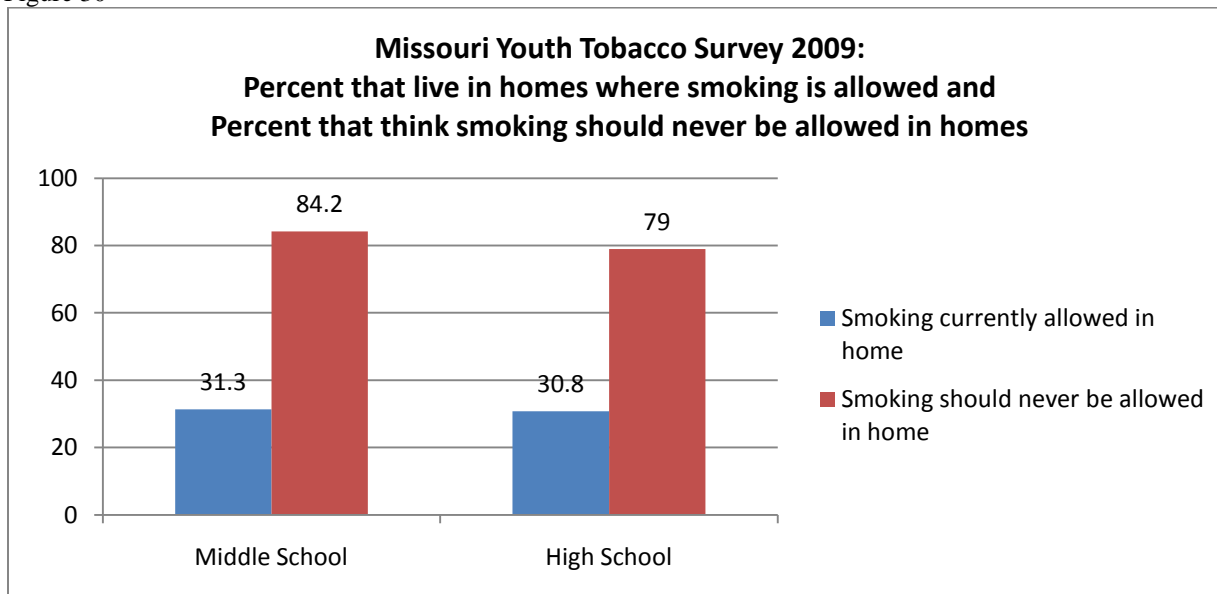
Table 11

<b>Percent that think smoking should never be allowed in</b>	<b>2007</b>	<b>2009</b>
Homes – Middle school	80.7	84.2
Homes – High school	74.1	79.0
Vehicles – Middle school	78.9	83.7
Vehicles – High school	65.0*	70.6*

\*Statistically significant difference from middle school

In 2009, almost one-third of middle and high school students lived in homes where smoking was allowed while approximately 80 percent thought smoking should never be allowed in homes (Figure 30).

Figure 30





## Secondhand smoke in the workplace

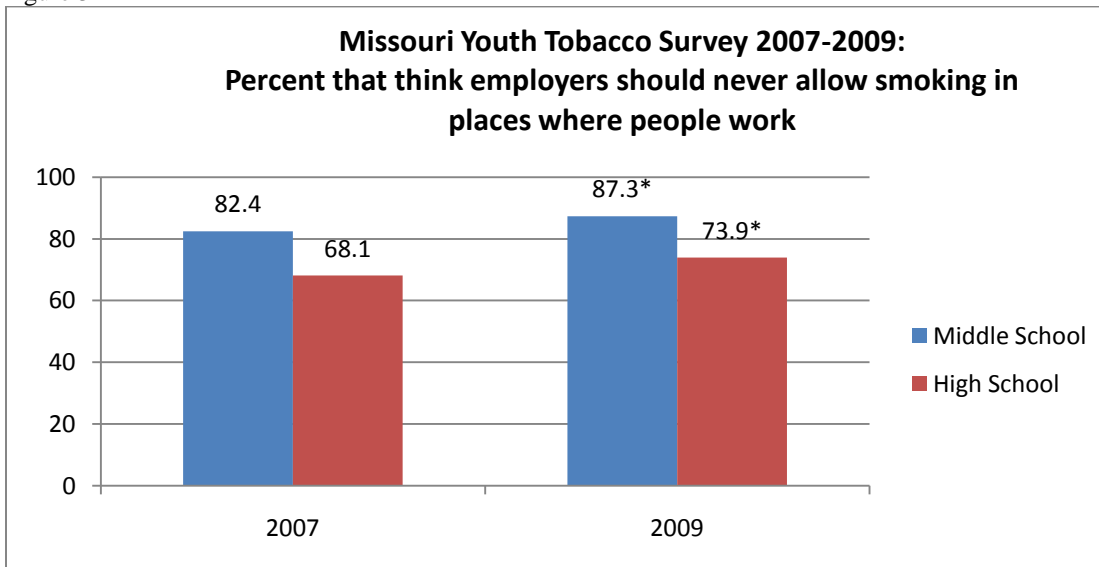
More than 20 percent of high school students work in places that allow smoking (Table 12). Twenty percent (20.7 percent) in 2007 and 14.5 percent in 2009 were exposed to cigarettes smoke at work in the past seven days. There were no significant changes from 2007 to 2009.

Table 12

<b>Percent of high school students that:</b>	<b>2007</b>	<b>2009</b>
Work in places that allow smoking	29.5	23.2
Were exposed to cigarette smoke at work in past seven days	20.7	14.5

Significantly more middle and high school students thought smoking should never be allowed in indoor areas where people work in 2009 compared to 2007 (Figure 31).

Figure 31



Statistically significant increase from 2007

## Missouri Youth Tobacco Survey 2003-2009 Participation and Response Rates by Year

### 2003

	Number of schools sampled	Number of schools participated	Percent of School Response	Number of students sampled	Number of students participated	Percent of Student Response	Overall Response Rate*
<b>Middle School</b>	50	39	78.0%	1817	1501	82.6%	64.4%
<b>High School</b>	50	41	82.0%	1802	1438	79.8%	65.4%

\*Overall response rate = Percent of school response times percent of student response

### 2005

	Number of schools sampled	Number of schools participated	Percent of School Response	Number of students sampled	Number of students participated	Percent of Student Response	Overall Response Rate
<b>Middle School</b>	50	44	88.0%	1987	1711	86.1%	75.8%
<b>High School</b>	50	42	84.0%	1812	1510	83.3%	70.0%

### 2007

	Number of schools sampled	Number of schools participated	Percent of School Response	Number of students sampled	Number of students participated	Percent of Student Response	Overall Response Rate
<b>Middle School</b>	50	36	72.0%	1544	1338	86.7%	62.4%
<b>High School</b>	50	38	76.0%	1681	1330	79.1%	60.1%

### 2009

	Number of schools sampled	Number of schools participated	Percent of School Response	Number of students sampled	Number of students participated	Percent of Student Response	Overall Response Rate
<b>Middle School</b>	41	30	73.2%	1940	1721	88.7%	64.9%
<b>High School</b>	40	33	82.5%	2271	1987	87.4%	72.1%

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