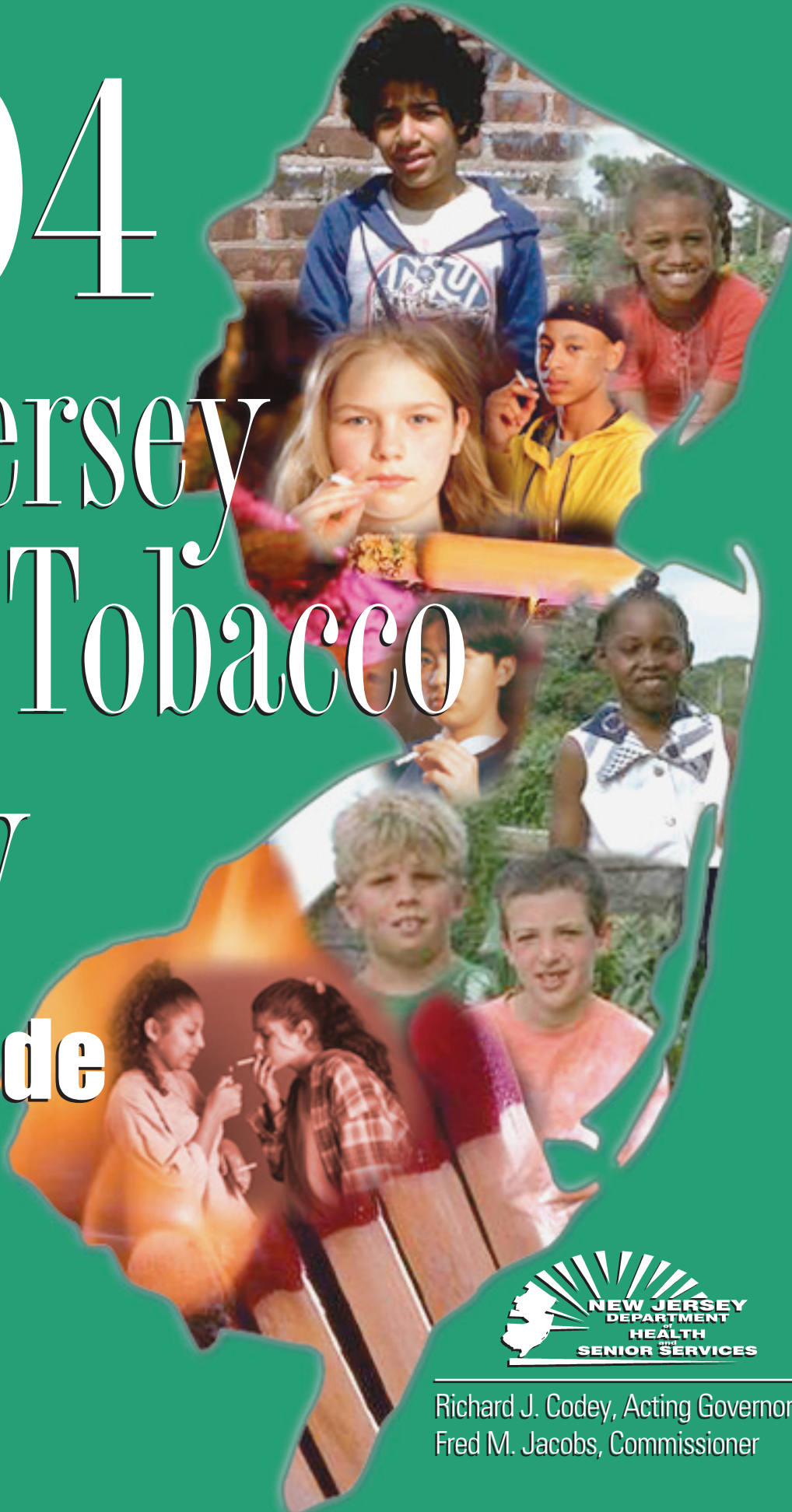


2004 New Jersey Youth Tobacco Survey

**A Statewide
Report**
April 2005



Richard J. Codey, Acting Governor
Fred M. Jacobs, Commissioner

Acknowledgments

The New Jersey Comprehensive Tobacco Control Program (CTCP) is a unit of the New Jersey Department of Health and Senior Services (NJDHSS). The CTCP is administratively located within the Public Health Services Branch, Office of the State Epidemiologist. This report was prepared for the NJDHSS by the University of Medicine and Dentistry of New Jersey - School of Public Health through funding from New Jersey's cigarette excise tax. The interpretations of data, conclusions, and recommendations expressed in this report are those of the authors and may or may not represent the views of the NJDHSS.

The 2004 New Jersey Youth Tobacco Survey was completed by

Cristine Delnevo, PhD, MPH, Project Director
Mary Hrywna, MPH
Jennifer Chee, BA
Hila Feldman, BA
Dana Momperousse, BS

YTS Trainers, Recruiters, and Field Monitors

Todd A. Billet	Kathleen A. Lynch
Denise Carter	Dana Momperousse
Jennifer Chee	Carolyn Ramage
Joanna Dimitrion	Alice Roberts
Hila Feldman	Beth Sundberg
Kate Flint	Delores Washington

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TABLE OF CONTENTS

HIGHLIGHTS	2
INTRODUCTION	3
RESULTS	4
Lifetime Use of Tobacco	4
Current Use of Tobacco	6
Current Use of Any Tobacco	7
Current Use of Cigarettes	8
Current Use of Cigars	8
Current Use of Smokeless Tobacco	9
Current Use of Bidis	10
Frequent Use of Cigarettes	11
Consumption of Cigarettes	12
Strategies to Reduce Youth Smoking	14
Access and Purchasing of Cigarettes	14
Secondhand Smoke	15
Youth Empowerment	15
CONCLUSIONS	16
Overview of Findings	16
Study Limitations	18
Recommendations	19
TECHNICAL NOTES	21
GLOSSARY	22
REFERENCES	23

HIGHLIGHTS

The 2004 New Jersey Youth Tobacco Survey found that:

- 25.5% of middle school students and 53.9% of high school students reported having ever tried some form of tobacco.
- 4.1% of middle school students and 17.3% of high school students reported current use of cigarettes.
- New Jersey has achieved the *Healthy New Jersey 2010* objectives to reduce the percentage of middle and high school students who use cigarettes to 10% and 20%, respectively.
- 3.8% and 13.8% of middle and high school students, respectively, reported smoking cigars on one or more of the 30 days preceding the survey.
- 3.1% and 7.0% of middle and high school students, respectively, reported current use of smokeless tobacco.
- 3.2% and 6.1% of middle and high school students, respectively, reported smoking bidis in the past 30 days.
- Frequent cigarette smoking, or smoking on 20 or more of the past 30 days, increased by school grade. Nearly half (46.0%) of 12th grade smokers were frequent users.
- Annual cigarette consumption among 7th to 12th grade students in 2004 was estimated at 86 million cigarettes or 4.3 million packs of cigarettes.
- Over half (58.0%) of current smokers who bought or tried to buy cigarettes in a store reported they were not asked to show proof of age.
- 48.5% and 62.0% of middle and high school students, respectively, reported being exposed to secondhand smoke in either rooms or in cars during the seven days preceding the survey.
- 24.0% of middle school students and 38.6% of high school students had ever heard of New Jersey's statewide, youth-led anti-tobacco movement, REBEL.
- Among high school students, 5.1% reported being in a REBEL chapter and 9.8% reported ever participating in a REBEL event.

INTRODUCTION

Since 2000, the Comprehensive Tobacco Control Program (CTCP) of the New Jersey Department of Health and Senior Services (NJDHSS) has developed and implemented a variety of statewide and local tobacco control initiatives as part of its goal to reduce smoking initiation among youth. The establishment of surveillance and evaluation systems, such as the Youth Tobacco Survey (YTS), was also made a high priority. Despite reductions in overall program funding during 2003, the CTCP has continued to commit significant resources to youth prevention programming and evaluation.

The CTCP has established a unique continuum of programs that includes Reaching Everyone By Exposing Lies (REBEL) for high school-age youth, a middle school program called REBEL 2, and a leadership program for college students called REBEL U. REBEL, in all its forms, delivers a youth-to-youth message through grassroots activities and events, youth empowerment and education, and anti-tobacco media. The CTCP has also funded two initiatives to assist adolescent smokers in quitting tobacco. Since 2001, the CTCP has worked with the American Lung Association (ALA) to provide the N-O-T (Not On Tobacco) youth cessation program in several schools throughout the State. More recently, the CTCP has supported training for high school staff to create and conduct a curriculum-based tobacco cessation program called Youth Quit2Win.

In the past few years, more than two-thirds of US states increased their cigarette excise taxes (1) to generate revenue and to discourage youth from starting to smoke. Indeed, research shows that higher cigarette prices are associated with decreased rates of tobacco use, particularly among adolescents.(2,3) New Jersey led the nation in progressively increasing the price of cigarettes by implementing three consecutive increases in the cigarette excise tax, for a total increase of \$1.60 per pack since 2002. New Jersey now has the second highest cigarette excise tax in the US at \$2.40 per pack.

Since the last administration of the NJYTS took place three years ago, the 2004 NJYTS provides the only representative data by which to assess any impact that occurred among youth after all three cigarette tax increases. In addition, the NJYTS allows us to evaluate the CTCP's progress toward the achievement of its goals by monitoring indicators related to short- and long-term outcomes of the program, specifically changes in tobacco related knowledge, attitudes, and behaviors. The NJYTS tracks these types of indicators among youth over time and is New Jersey's primary surveillance system for youth tobacco use.

In brief, the Centers for Disease Control and Prevention (CDC) developed the YTS to provide states with the data necessary to support the design, implementation, and evaluation of a comprehensive tobacco control program. The NJYTS was first conducted in New Jersey in 1999 and was repeated in 2001. The 2004 NJYTS was administered to 4,577 middle and high school students in 76 schools during fall 2004. Details on the methodology of the 2004 NJYTS are found in the Technical Notes on page 21. The 2004 NJYTS findings are representative of all 7th through 12th grade students in the State.

This report focuses on current patterns of tobacco use behavior among youth using the results of the most recent NJYTS. Comparisons are also made with previous NJYTS data (1999, 2001), as well as national trends.

RESULTS

Lifetime Use of Tobacco

Preventing and delaying tobacco use initiation is a critical first step to reduce the prevalence of tobacco use among young people. New Jersey youth were asked whether they had ever tried cigarettes, cigars, smokeless tobacco, bidis, or kreteks in their lifetime. Lifetime *or* ever use of all tobacco products by school type, gender, race/ethnicity and school grade is found in Table 1.

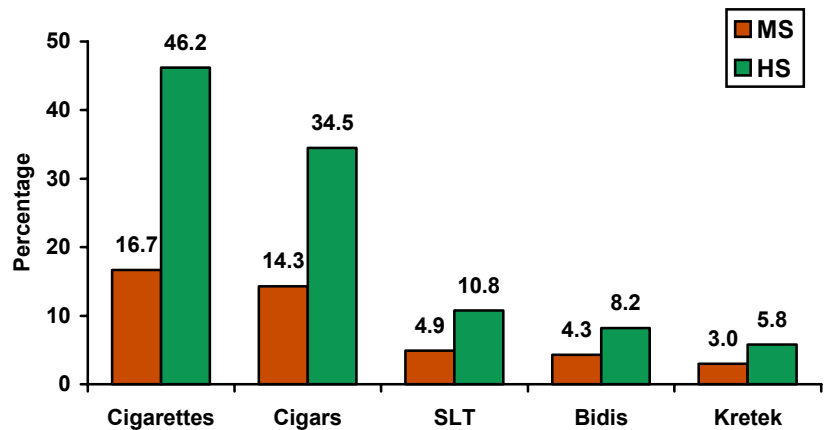
Table 1. Percentage of New Jersey middle school and high school students who ever used any tobacco product*, cigarettes, cigars, smokeless tobacco, bidis or kreteks, by gender, race/ethnicity, and school grade – NJYTS, 2004

	Any % (95% CI)	Cigarette % (95% CI)	Cigar % (95% CI)	SLT % (95% CI)	Bidis % (95% CI)	Kreteks % (95% CI)
Middle School						
<i>Gender</i>						
Male	27.4 ± 3.8	17.7 ± 3.5	16.0 ± 3.7	6.3 ± 1.6	5.8 ± 1.7	4.3 ± 1.5
Female	23.3 ± 3.6	15.5 ± 3.5	12.2 ± 3.1	3.5 ± 1.0	2.6 ± 1.1	1.5 ± 1.0
<i>Race/Ethnicity</i>						
White	22.6 ± 4.3	13.4 ± 3.6	13.4 ± 3.9	4.2 ± 1.3	3.4 ± 1.0	2.4 ± 0.9
Black	28.0 ± 5.4	21.5 ± 5.1	14.6 ± 2.8	5.2 ± 2.0	3.8 ± 2.3	2.8 ± 1.6
Hispanic	34.3 ± 5.3	23.8 ± 5.4	18.6 ± 4.1	7.1 ± 2.6	7.3 ± 3.0	5.6 ± 2.7
<i>Grade</i>						
7	20.6 ± 3.8	11.1 ± 3.6	10.8 ± 2.9	5.3 ± 1.3	3.9 ± 1.5	2.0 ± 1.1
8	30.3 ± 4.5	22.1 ± 4.3	17.6 ± 4.5	4.5 ± 1.2	4.5 ± 1.6	3.9 ± 1.2
Total (middle school)	25.5 ± 3.5	16.7 ± 3.3	14.3 ± 3.0	4.9 ± 0.8	4.3 ± 1.2	3.0 ± 0.9
High School						
<i>Gender</i>						
Male	55.7 ± 4.8	44.6 ± 5.3	39.9 ± 4.6	17.3 ± 4.1	10.8 ± 2.3	7.1 ± 2.2
Female	52.0 ± 4.5	48.0 ± 5.1	29.3 ± 3.3	4.3 ± 1.0	5.5 ± 1.5	4.6 ± 1.5
<i>Race/Ethnicity</i>						
White	53.4 ± 2.9	45.7 ± 3.6	35.2 ± 2.2	12.3 ± 2.9	7.0 ± 1.8	6.1 ± 1.9
Black	55.7 ± 7.5	48.4 ± 8.8	34.9 ± 9.2	7.0 ± 2.8	11.6 ± 4.5	6.2 ± 3.3
Hispanic	59.6 ± 6.1	51.8 ± 8.1	37.6 ± 4.4	8.8 ± 3.7	8.6 ± 2.8	5.0 ± 3.3
<i>Grade</i>						
9	41.0 ± 5.1	31.0 ± 5.5	23.4 ± 6.6	6.0 ± 3.0	7.0 ± 2.8	3.4 ± 1.4
10	51.9 ± 7.0	44.3 ± 7.2	34.1 ± 5.6	10.4 ± 4.4	9.9 ± 4.0	5.2 ± 2.2
11	59.8 ± 6.9	53.5 ± 7.5	38.1 ± 6.1	14.4 ± 3.6	8.7 ± 3.0	7.6 ± 3.5
12	65.7 ± 4.5	59.0 ± 4.7	44.3 ± 6.6	13.4 ± 3.7	6.9 ± 2.3	7.9 ± 2.4
Total (high school)	53.9 ± 3.0	46.2 ± 4.0	34.5 ± 2.8	10.8 ± 2.3	8.2 ± 1.6	5.8 ± 1.5

* Ever use of cigarettes, or cigars, or smokeless tobacco, or bidis or kreteks

In 2004, 25.5% (± 3.5) of middle school and 53.9% (± 3.0) of high school students reported ever use of any tobacco product in their lifetime. Cigarettes were the most prevalent form of tobacco ever used by New Jersey youth. Cigars were the second most prevalent form of tobacco ever used and for the first time since the NJYTS was collected in 1999, the percent of middle school students who reported ever use of cigarettes and cigars *did not* differ (see Figure 1). That is, lifetime prevalence for cigarettes and cigars in 2004 for middle school students was indistinguishable. Lastly, experimentation with other forms of tobacco such as bidis and kreteks (also known as clove cigarettes) was notable in both middle and high school students.

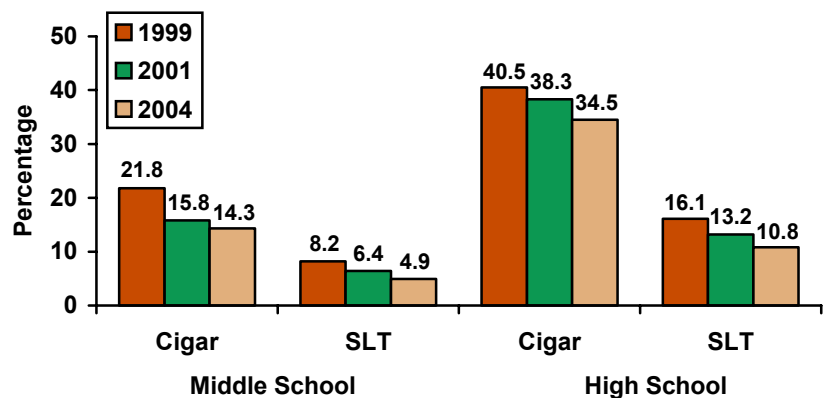
Figure 1. Percentage of middle and high school students who ever used tobacco, by type of tobacco product – NJYTS, 2004



Some gender differences existed for the various tobacco products. Among middle school students, males were more likely than females to report ever using smokeless tobacco, bidis and kreteks. Among high school students, males were significantly more likely than females to have ever used cigars, smokeless tobacco or bidis. No racial/ethnic differences were detected among middle school and high school students for ever use of cigarettes, cigars, smokeless tobacco, bidis or kreteks.

Lifetime or ever use of tobacco among middle and high school students has decreased for all tobacco products since 1999. Ever cigarette use among middle and high school students significantly declined with each NJYTS administration (i.e., 1999, 2001 and 2004). Specifically, the percent of students reporting ever smoking a cigarette decreased from 34.7% (± 3.5) in 1999 to 16.7% (± 3.3) in 2004 in middle schools and from 63.6% (± 2.7) in 1999 to 46.2% (± 4.0) in 2004 in high schools. As shown in Figure 2, ever cigar use and smokeless tobacco use among middle and high school students has also significantly declined between 1999 and 2004, but no statistically significant changes were noted since 2001.

Figure 2. Percentage of middle and high school students who ever used cigars or smokeless tobacco, by year – NJYTS, 1999-2004



Current Use of Tobacco

Current use of tobacco is defined as the use of any tobacco product on one or more days in the 30 days preceding the survey. New Jersey youth were asked about their current use of cigarettes, cigars, smokeless tobacco, and bidis. Current use of all tobacco products by school type, gender, race/ethnicity and school grade is found in Table 2.

Table 2. Percentage of New Jersey middle school and high school students who were current users of any tobacco product*, cigarettes, cigars, smokeless tobacco, or bidis, by gender, race/ethnicity, and school grade – NJYTS, 2004

	Any % (95% CI)	Cigarette % (95% CI)	Cigar % (95% CI)	SLT % (95% CI)	Bidis % (95% CI)
Middle School					
<i>Gender</i>					
Male	10.1 ± 2.6	3.8 ± 1.7	4.3 ± 1.6	3.6 ± 1.3	4.3 ± 1.8
Female	8.7 ± 1.9	4.1 ± 1.9	3.2 ± 1.2	2.6 ± 0.8	2.0 ± 0.7
<i>Race/Ethnicity</i>					
White	8.2 ± 2.1	3.6 ± 1.9	3.4 ± 1.7	2.7 ± 0.9	2.3 ± 0.6
Black	9.5 ± 2.9	2.8 ± 1.7	4.3 ± 2.1	2.8 ± 2.1	3.1 ± 1.9
Hispanic	14.5 ± 3.5	7.0 ± 2.6	5.2 ± 2.1	4.5 ± 2.5	6.7 ± 2.7
<i>Grade</i>					
7	6.6 ± 2.2	1.8 ± 1.1	2.2 ± 1.0	3.0 ± 1.3	2.2 ± 1.2
8	12.0 ± 2.6	6.2 ± 2.7	5.3 ± 1.8	3.3 ± 1.3	3.8 ± 1.6
Total (middle school)	9.5 ± 2.0	4.1 ± 1.5	3.8 ± 1.1	3.1 ± 0.7	3.2 ± 1.1
High School					
<i>Gender</i>					
Male	28.9 ± 4.0	15.9 ± 2.9	17.2 ± 2.6	10.1 ± 3.0	7.6 ± 2.0
Female	24.6 ± 3.3	18.8 ± 3.0	10.4 ± 2.6	3.7 ± 1.4	4.7 ± 1.3
<i>Race/Ethnicity</i>					
White	29.5 ± 2.6	20.6 ± 2.4	14.9 ± 2.4	6.7 ± 1.8	5.0 ± 1.2
Black	18.9 ± 6.7	7.7 ± 4.3	10.8 ± 4.9	9.3 ± 4.0	9.9 ± 5.3
Hispanic	28.0 ± 6.3	16.0 ± 5.6	14.6 ± 3.8	6.2 ± 3.4	6.3 ± 2.4
<i>Grade</i>					
9	15.8 ± 3.3	8.7 ± 2.8	8.0 ± 2.1	4.7 ± 2.8	4.7 ± 2.5
10	26.2 ± 6.2	15.9 ± 3.8	13.2 ± 4.3	8.2 ± 3.2	7.8 ± 3.5
11	32.3 ± 5.8	22.0 ± 4.2	15.9 ± 4.7	8.8 ± 3.8	6.3 ± 2.8
12	35.2 ± 5.4	24.2 ± 4.1	19.2 ± 3.9	6.7 ± 2.7	5.7 ± 2.4
Total (high school)	26.8 ± 3.0	17.3 ± 2.3	13.8 ± 2.3	7.0 ± 1.8	6.1 ± 1.4

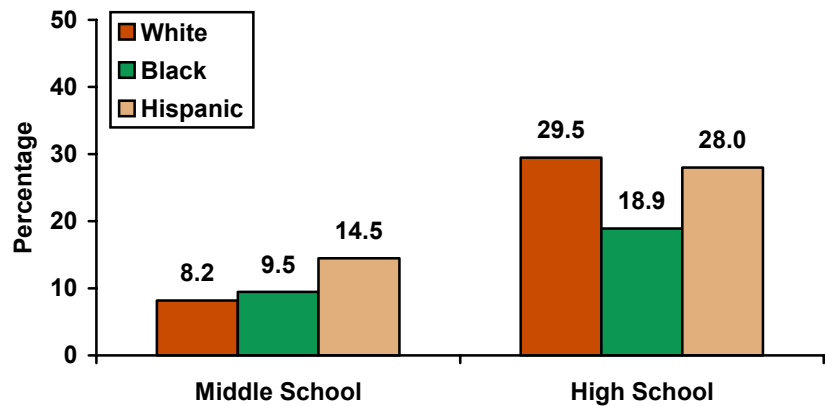
* Use of cigarettes, cigars, smokeless tobacco, or bidis during ≥ 1 of the 30 days preceding the survey

Current Use of Any Tobacco

Overall, 9.5% (± 2.0) of New Jersey middle school students and 26.8% (± 3.0) of high school students reported using some form of tobacco (i.e., cigarettes, cigars, smokeless, or bidis) in the 30 days preceding the survey. There were no significant gender differences among middle or high school students.

As seen in Figure 3, differences in current use of any tobacco were noted by race/ethnicity. In middle school, Hispanic students (14.5 $\pm 3.5\%$) were significantly more likely to report current use of any tobacco than white students (8.2 $\pm 2.1\%$). In high school, white students (29.5 $\pm 2.6\%$) reported a significantly higher prevalence of any tobacco use compared to black students (18.9 $\pm 6.7\%$).

Figure 3. Percentage of middle and high school students who were current users of any tobacco, by race/ethnicity – NJYTS, 2004

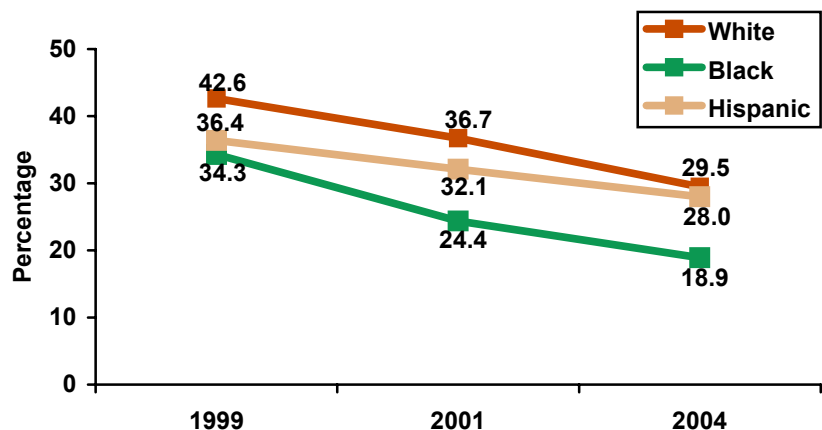


Current use of any tobacco significantly decreased among middle school students from 1999 (18.9 $\pm 2.1\%$) to 2004 (9.5 $\pm 2.0\%$). Males and females exhibited similar declines for current use of any tobacco. All racial/ethnic groups exhibited significant decreases in current use of any tobacco from 1999 to 2004 but the largest decline during this five-year period was seen among black middle school students. Current use of any tobacco decreased among black middle school students from 23.5% (± 2.8) in 1999 to 9.5% (± 2.9) in 2004.

There was also a significant decline in current use of any tobacco by high school students from 38.9% (± 2.4) in 1999 to 26.8% (± 3.0) in 2004.

Similar decreases in current use of any tobacco were found in both males and females. As shown in Figure 4, black high school students showed a greater decline in current use of any tobacco from 1999 to 2004, from 34.3% (± 4.7) to 18.9% (± 6.7), compared to their white and Hispanic counterparts.

Figure 4. Percentage of high school students who were current users of any tobacco, by race/ethnicity – NJYTS, 1999-2004

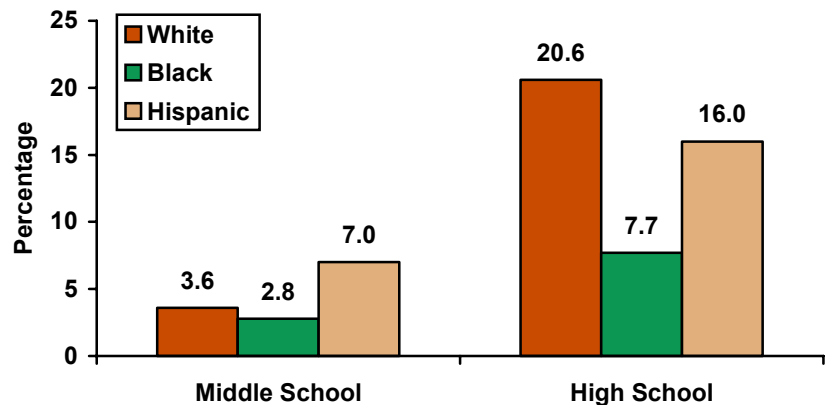


Current Use of Cigarettes

Overall, 4.1% (± 1.5) of middle school students and 17.3% (± 2.3) of high school students reported smoking a cigarette on one or more days in the 30 days preceding the survey. There were no significant gender differences in current cigarette use among middle or high school students.

Some variation by race/ethnicity was noted in current cigarette use (see Figure 5). The percent of Hispanic middle school students reporting current cigarette use ($7.0 \pm 2.6\%$) was higher compared to white ($3.6 \pm 1.9\%$) or black ($2.8 \pm 1.7\%$) middle school students but this difference was not statistically significant. In high school, the percent of white students ($20.6 \pm 2.4\%$) reporting current cigarette use was significantly higher compared to black ($7.7 \pm 4.3\%$) students.

Figure 5. Percentage of middle and high school students who were current users of cigarettes, by race/ethnicity – NJYTS, 2004



Current cigarette use significantly declined from 1999 ($10.5 \pm 1.8\%$) to 2004 ($4.1 \pm 1.5\%$) for middle school students. In high school, current cigarette use also significantly declined from 1999 ($27.6 \pm 2.6\%$) to 2004 ($17.3 \pm 2.3\%$). For both middle and high school students, there were significant decreases in current smoking across all demographic groups from 1999 to 2004.

Current Use of Cigars

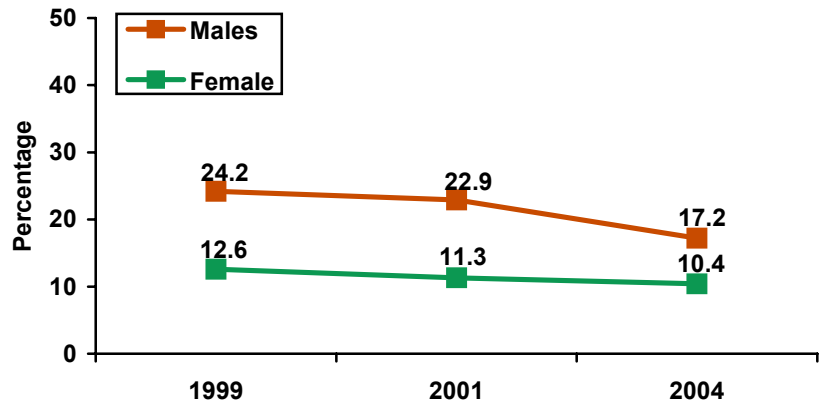
Among New Jersey youth, cigars were the most prevalent tobacco product used after cigarettes. In 2004, 3.8% (± 1.1) of middle school and 13.8% (± 2.3) of high school students reported smoking a cigar in the past 30 days. No gender or racial/ethnic differences existed among middle school students regarding current cigar use. Among high school students, males ($17.2 \pm 2.6\%$) were nearly twice as likely as females ($10.4 \pm 2.6\%$) to report current use of cigars. Current cigar use among high school students did not differ significantly by race/ethnicity.

Over the past five years, current cigar smoking has declined significantly among middle school students, steadily decreasing from 9.3% (± 1.0) in 1999 to 6.0% (± 1.7) in 2001 to 3.8% (± 1.1) in 2004. Similar declines in current cigar use were noted across all demographic groups of middle school students. Among high school students, the prevalence of current cigar use significantly declined from 1999 to

2004. Current cigar use among high school students decreased from 18.4% (± 1.3) in 1999 to 17.1% (± 2.2) in 2001 to 13.8% (± 2.3) in 2004.

Data showed substantial differences in current cigar use between male and female high school students since 1999 (see Figure 6). Current cigar use decreased significantly between 1999 and 2004 among male high school students but there was no significant decline in current cigar use among female high school students during this time period.

Figure 6. Percentage of high school students who were current users of cigars, by gender – NJYTS, 1999-2004



Lastly, among high school students, current cigar use declined significantly for white and black students between 1999 and 2004. However, the decrease in current cigar prevalence among Hispanic high school students over this time period was not significant.

Current Use of Smokeless Tobacco

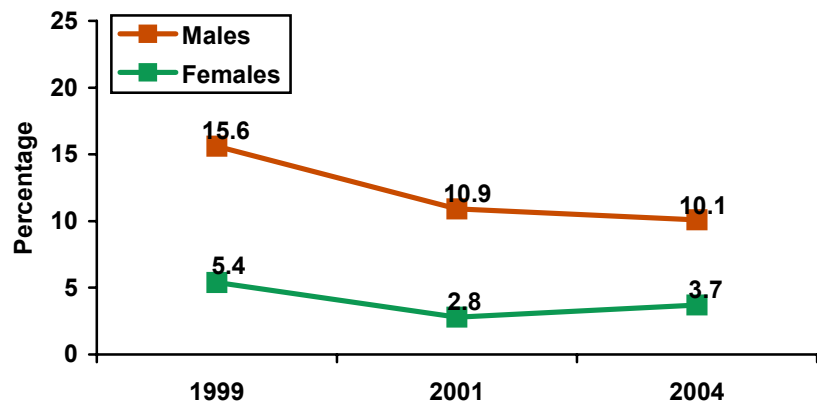
Overall, 3.1% (± 0.7) of New Jersey middle school students and 7.0% (± 1.8) of high school students reported using smokeless tobacco in the 30 days preceding the survey. While there were no gender differences in middle school, male high school students (10.1 ± 3.0 %) reported significantly higher rates of smokeless tobacco use than female high school students (3.7 ± 1.4 %). There were no significant racial/ethnic differences among middle or high school students.

During the time period between 1999 and 2004, there was a significant decrease in current smokeless tobacco use among both middle and high school students but much of the decline occurred between 1999 and 2001. That is, current use of smokeless tobacco has not significantly declined since 2001. Current use of smokeless tobacco among middle school students decreased from 4.3% (± 0.8) in 1999 to 3.6% (± 1.0) in 2001 to 3.1% (± 0.7) in 2004. Among high school students, current use of smokeless tobacco decreased from 10.7% (± 1.4) in 1999 to 6.9% (± 1.4) in 2001 to 7.0% (± 1.8) in 2004. Between 2001 and 2004, the only significant decrease in current smokeless tobacco use occurred among black middle school students. Current use of smokeless tobacco among other racial/ethnic groups has remained stable over the past three years.

However, between 1999 and 2004, current use of smokeless tobacco declined significantly among males in both middle and high school. Meanwhile, female middle and high school students did not show any statistically significant declines in current use of smokeless tobacco during this time period. In fact, data suggest that smokeless tobacco use may be on the rise among female high school students (see Figure 7).

Over the past five years, current use of smokeless tobacco significantly decreased among white and black students in middle school but not among Hispanic students. In high school, the percent of white students reporting current use of smokeless tobacco decreased significantly but there were no significant decreases among either black or Hispanic students between 1999 and 2004.

Figure 7. Percentage of high school students who were current users of smokeless tobacco, by gender – NJYTS, 1999-2004

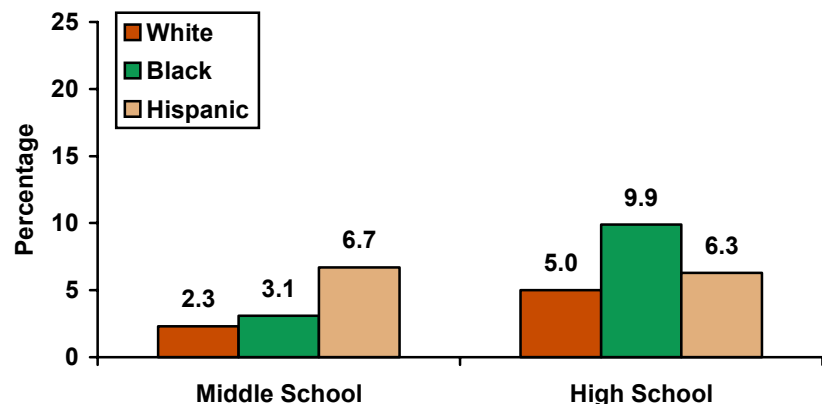


Current Use of Bidis

Bidis are small, brown, hand-rolled cigarettes primarily made in India and other Southeast Asian countries. Bidis exported to the United States are flavored in such varieties as strawberry and licorice, making them appealing to the youth market. In 2004, 3.2% (± 1.1) of middle school and 6.1% (± 1.4) of high school students reported smoking bidis in the 30 days preceding the survey. There were no significant gender differences in current use of bidis.

As shown in Figure 8, the percent of Hispanic middle school students who reported current use of bidis was significantly higher compared to white middle school students. No significant racial/ethnic differences were found among high school students. However, as in previous years, black high school students reported the highest prevalence of current bidi use.

Figure 8. Percentage of middle and high school students who were current users of bidis, by race/ethnicity – NJYTS, 2004



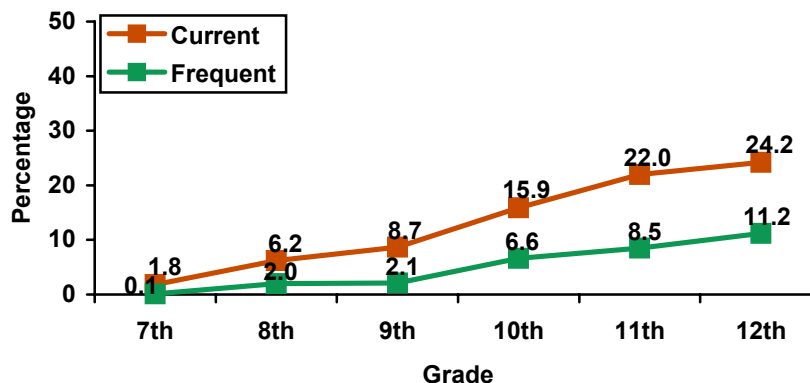
Between 1999 and 2004, current prevalence of bidis demonstrated a downward trend among all gender and racial groups for both middle and high school students. Current bidi use among middle school students significantly decreased from 7.9% (± 1.2) in 1999 to 3.2% (± 1.1) in 2004. Among high school students, current bidi use also significantly declined from 14.1% (± 1.6) in 1999 to 6.1% (± 1.4) in 2004.

Frequent Use of Cigarettes

Current use of cigarettes measures the percent of students who reported smoking cigarettes on one or more of the 30 days preceding the survey. As such, this measure includes experimenters (who may have just tried their first cigarette), occasional users (who use tobacco sporadically), and regular users of cigarettes. The measure of frequent smoking, defined as smoking cigarettes on 20 or more days of the 30 days preceding the survey, provides greater detail on youth smoking.

Prevalence of frequent cigarette smoking increased with grade (see Figure 9). Moreover, with nearly each grade level, frequent smokers made up an increasing proportion of current smokers. For example, nearly half (46.3 \pm 4.7%) of 12th grade current cigarette smokers were frequent users, smoking on 20 or more days of the month. There were no differences in frequent cigarette use by gender among either middle or high school students. In addition, there was little variation by race/ethnicity in frequent use of cigarettes among middle school students. However, in high school, the percent of white students (8.8 \pm 1.6%) who reported frequent cigarette use was significantly higher as compared to black (2.1 \pm 2.3%) or Hispanic students (4.0 \pm 2.3%).

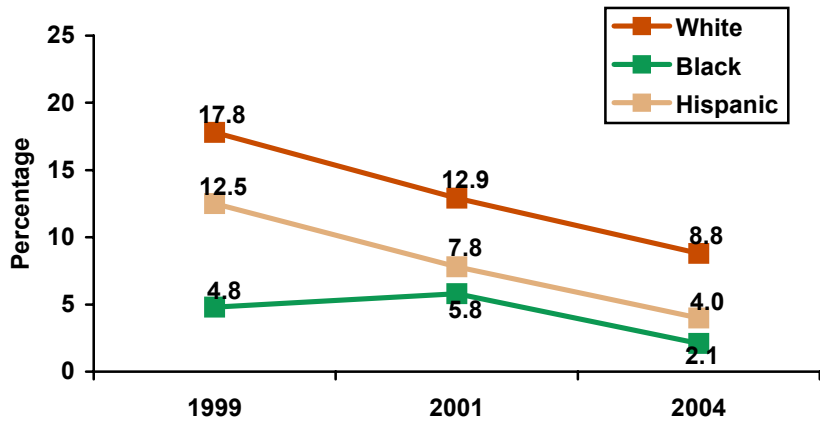
Figure 9. Percentage of all students that were current and frequent cigarette smokers, by school grade – NJYTS, 2004



From 1999 to 2004, frequent cigarette smoking decreased significantly among high school students from 13.8% (± 2.2) to 7.0% (± 1.0). Similar patterns of decline were seen among males and females. Examining prevalence by race/ethnicity, the largest decline in frequent cigarette use was seen among Hispanic high school students, from 12.5% (± 5.7) in 1999 to 4.0% (± 2.3) in 2004 (see Figure 10).

The percent of white high school students who reported frequent use of cigarettes also decreased significantly from 17.8% (± 2.5) in 1999 to 8.8% (± 1.6) in 2004. There were no statistically significant changes in frequent use of cigarettes among black high school students during this time period.

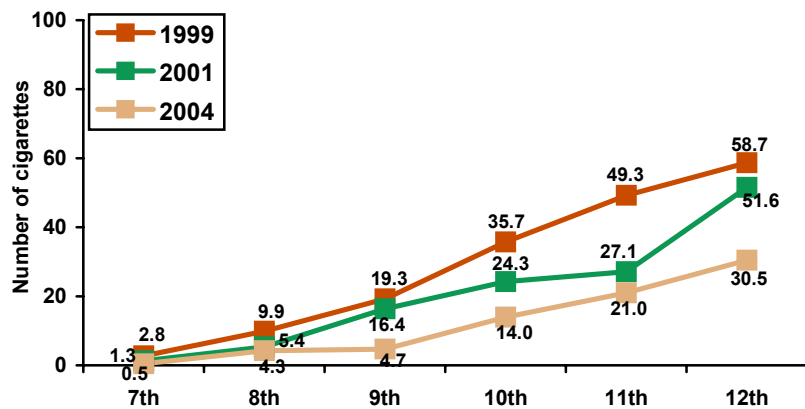
Figure 10. Percentage of high school students who were frequent users of cigarettes, by race/ethnicity – NJYTS, 1999-2004



Consumption of Cigarettes

Prevalence estimates of youth tobacco use tell us “how often” but not “how much” youth are smoking. The average number of cigarettes smoked in the past 30 days was estimated for all middle and high school students based on the self-reported number of days smoked in the 30 days preceding the survey multiplied by the average number of cigarettes smoked on days smoked. As shown in Figure 11, the average number of cigarettes smoked in the past 30 days increased dramatically by school grade. Compared to 1999 and 2001, the average number of cigarettes smoked in the past 30 days by a typical student was notably lower in 2004 for each class year.

Figure 11. Average number of cigarettes smoked over a 30 day period, by school grade – NJYTS, 1999-2004



While the average number of cigarettes smoked in the past 30 days provides a profile of the typical middle or high school student, it does not illustrate the volume of consumption. Total 30-day consumption was calculated as the average number of cigarettes smoked by middle and high school students in New Jersey in the 30 days preceding the survey multiplied by the estimated population size via the weighted sample size for each school grade. We assumed annual cigarette consumption as constant over one year and multiplied the 30-day cigarette consumption by 12 to determine the estimated number of cigarettes smoked by 7th to 12th graders in the State. Lastly, we converted the number of cigarettes smoked annually to packs of cigarettes smoked annually and multiplied this by the 2004 state excise tax rate for a pack of cigarettes (\$2.40) to estimate annual cigarette tax revenues generated from youth smoking.

As shown in Table 3, an estimated 361,000 packs of cigarettes were smoked by middle and high school students in New Jersey during the 30 days preceding the survey. Annual cigarette consumption among 7th through 12th grade students was estimated at 86 million cigarettes or 4.3 million packs of cigarettes. While annual youth consumption was considerably lower than the 2001 estimate (6.2 million packs of cigarettes), we estimated that youth smoking in 2004 generated more than \$10 million in state cigarette tax revenue. This estimate of tax revenue may be conservative since the NJYTS does not include school dropouts or students in alternative schools; higher use of cigarettes has been documented for alternative school students.(4) Also, the estimate of tax revenue generated from youth tobacco use does not include other tobacco products. While cigarettes are the most commonly used tobacco product among New Jersey youth, their use of other tobacco products, such as cigars and smokeless tobacco, is notable and also generates tax revenue.

Table 3. Average number of cigarettes smoked in the past 30 days and annually, and annual tax revenue – NJYTS, 2004

School Grade	Average no. of cigarettes smoked in past 30 days	Packs of Cigarettes Consumed		State excise tax revenue generated from youth smoking
		per 30 days	per year	
7	0.5	2,778.3	33,339.7	\$ 80,015
8	4.3	23,656.7	283,880.6	\$ 681,313
9	4.7	26,585.8	319,029.5	\$ 765,671
10	14.0	71,183.7	854,204.4	\$ 2,050,091
11	21.0	98,881.8	1,186,582.2	\$ 2,847,797
12	30.5	137,808.0	1,653,695.7	\$ 3,968,870
Total		360,894.3	4,330,732.1	\$ 10,393,757

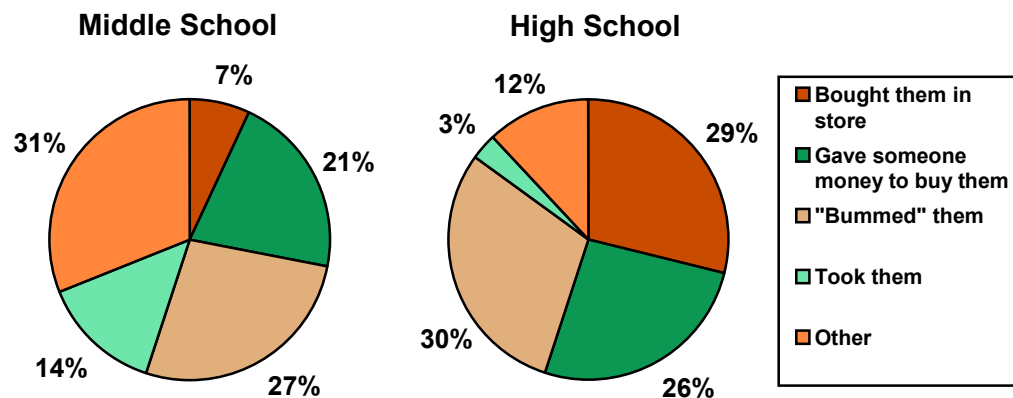
Strategies To Reduce Youth Smoking

Strategies to reduce youth smoking often include policies and programs that attempt to change the social norms, availability, or regulation of tobacco. This section addresses access to tobacco, exposure to secondhand smoke, and awareness of empowerment program activities among New Jersey youth.

Access and Purchasing of Cigarettes

As shown in Figure 12, borrowing or “bumming” a cigarette was the most frequent way of obtaining cigarettes for current smokers in middle school ($27.4 \pm 11.1\%$) and high school ($29.8 \pm 5.9\%$), followed by giving someone money to purchase them ($21.2 \pm 8.8\%$ among middle school students and $26.2 \pm 4.8\%$ among high school students). High school students ($28.8 \pm 5.5\%$) were more likely than middle school students ($7.2 \pm 3.7\%$) to report buying cigarettes. Among current smokers under the age of 18, the percent who reported usually obtaining their cigarettes by buying them in stores significantly decreased over the past five years (i.e., 1999 to 2004) from $14.2\%(\pm 2.9)$ to $7.2\%(\pm 3.7)$ among middle school students; it also decreased from $34.2\%(\pm 3.0)$ to $28.8\%(\pm 5.5)$ among high school students but this decline was not statistically significant.

Figure 12. How current cigarette smokers in middle school and high school (<18yrs.) usually obtained cigarettes – NJYTS, 2004

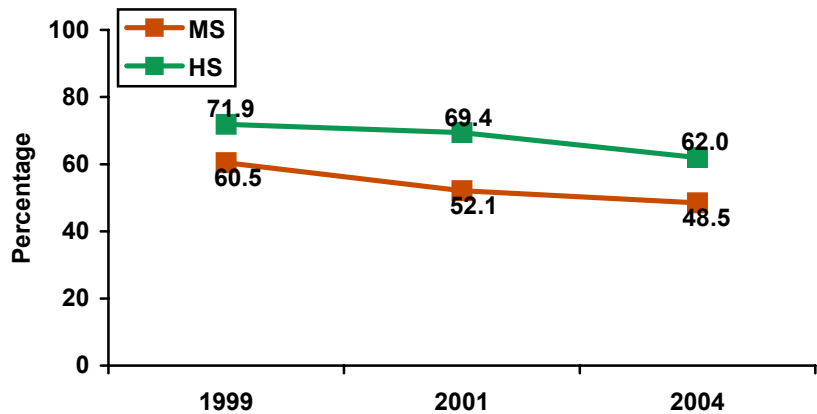


Among current smokers in high school under the age of 18 who reported buying or trying to buy cigarettes in the 30 days preceding the survey, $57.7\%(\pm 5.5)$ reported they were not asked to show proof of age. This finding represents the first significant decrease since 1999 when $67.1\%(\pm 4.4)$ of current smokers in high school reported not being asked for proof of age. Nonetheless, more than half of high school-age smokers in 2004 reported they were not carded when they bought cigarettes.

Secondhand Smoke

Overall, 48.5% (± 3.7) of middle school students and 62.0% (± 3.9) of high school students reported being exposed to secondhand smoke in either rooms or in cars in the seven days preceding the survey. There were no disparities in exposure by gender or race/ethnicity. This finding represents a decline since 1999 when 60.5% (± 1.2) and 71.9% (± 1.3) of middle and high school students, respectively, reported being exposed to secondhand smoke in rooms or cars (see Figure 13). This decline in secondhand smoke exposure is partially attributed to the lower prevalence of current smoking among youth in 2004 relative to 1999.

Figure 13. Percentage of middle and high school students who were exposed to secondhand smoke in the past 7 days, by year – NJYTS, 1999-2004



Youth Empowerment

Survey questions were included in the 2004 NJYTS to collect data on awareness of CTCP youth empowerment activities (i.e., REBEL or REBEL 2). Overall, 24.0% (± 8.0) of middle school and 38.6% (± 9.3) of high school students had heard of the statewide youth-led anti-tobacco movement, REBEL. No difference was noted in awareness since 2001. Furthermore, among high school students, 5.1% (± 1.4) reported being in a REBEL chapter and 9.8% (± 3.2) reported ever participating in a REBEL event.

CONCLUSIONS

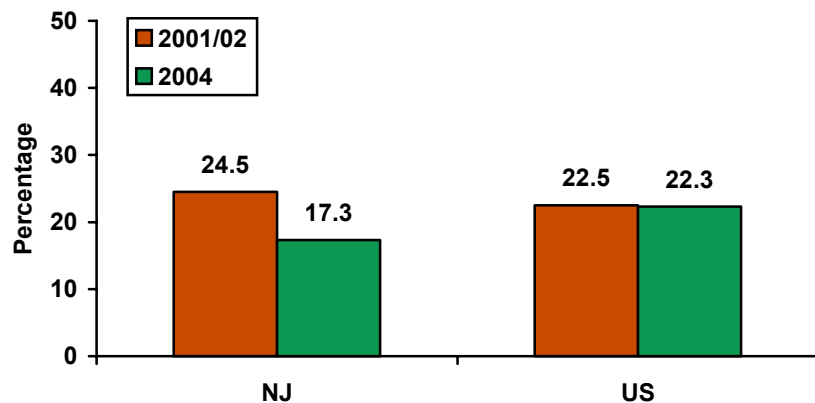
Overview of Findings

This report presents results from the 2004 NJYTS that identify areas of progress as well as challenges for New Jersey's Comprehensive Tobacco Control Program (CTCP). Since 1999, significant decreases in current smoking prevalence were seen among all gender and racial/ethnic subgroups. Furthermore, there was progress in reducing youth initiation of smoking. Lifetime prevalence, or ever use of cigarettes, has dramatically declined over the past five years. New Jersey has achieved, much sooner than anticipated, the *Healthy New Jersey 2010* objectives to reduce the percent of middle and high school students who use cigarettes to 10% and 20%, respectively.(5) As a result of these rapid declines in youth smoking, New Jersey is also poised to be among the first states to meet the nation's Healthy People 2010 target to reduce cigarette smoking prevalence to 16% among high school students.(6)

The National Youth Tobacco Survey (NYTS), which serves as a benchmark for comparable state Youth Tobacco Surveys, allows for comparison between national and state-specific prevalence estimates. Current cigarette use significantly declined between 2001 and 2004 among high school students in New Jersey. However, the NYTS observed no changes in cigarette smoking prevalence among middle or high school students between 2002 and 2004.(7) Figure 14 illustrates the

considerable decline in cigarette use among high school students in New Jersey compared to the US overall. Additionally, current cigarette use among New Jersey middle and high school students (4.1%, 17.3%, respectively) was significantly lower than the national estimates (8.1%, 22.3%) in 2004.(7)

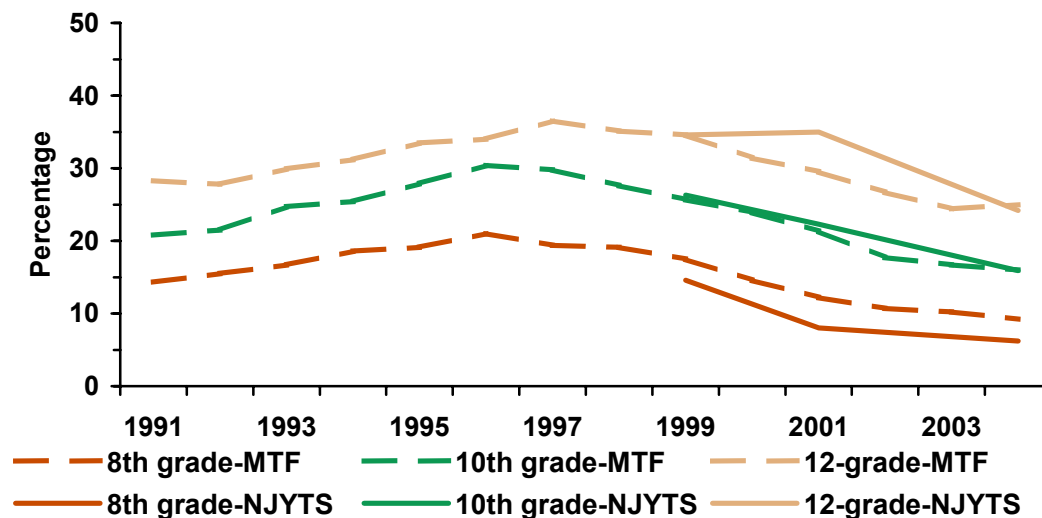
Figure 14. Current cigarette use among high school students – NJYTS, 2001-2004; NYTS, 2002-2004



It is useful to consider the results from other sources of data on youth tobacco use, such as the *Youth Risk Behavior Survey* (YRBS) and *Monitoring the Future* (MTF) when discussing the NJYTS. Given that these surveys differ from the NJYTS on a number of methodological issues, the utility of these data is limited to comparison of trends and should not be considered for comparison of specific prevalence estimates.

An analysis of the New Jersey YRBS from 1995 to 2003 found a consistent downward trend in youth smoking over this eight-year span.(8) These data showed a significant decline in the overall prevalence of lifetime, current, and ever use of cigarettes among high school students since 1995. Data from MTF reveal a similar pattern. As shown in Figure 15, in each case, the percent decline seen in New Jersey was greater than the declines seen nationally. Between 1999 and 2004, MTF documented a 47% decline in current cigarette use among 8th graders nationally while New Jersey's decline was slightly steeper (58%). This pattern continues for 10th and 12th graders where the decline in New Jersey slightly exceeded that of national trends. Lastly, the findings in New Jersey support trends illustrated in MTF, where younger age groups first demonstrate rapid declines in cigarette use followed by older age groups since 1999. Thus, the declines seen in youth smoking prevalence on the NJYTS are consistent with trends seen on YRBS and MTF, which show similar declines over the last several years.

Figure 15. Prevalence of current (30 day) cigarette smoking in the US and New Jersey, by school grade – NJYTS, 1999-2004; MTF, 1991-2004



The results from the 2004 NJYTS demonstrate substantial progress toward achieving many of the primary goals of the CTCP: decreasing the number of youth who start smoking and reducing exposure to secondhand smoke. Despite its successes, the CTCP is not without its challenges. When reductions in tobacco use prevalence are not consistent across products and groups, new disparities or issues will emerge.

Lifetime use among middle and high school students significantly decreased for all tobacco products between 1999 and 2004. However, presenting the data by year reveals less progress in reducing the lifetime use of other tobacco products.

For the first time, lifetime use of cigarettes and cigars were reported in similar proportions of middle school students, due in large part to evidence showing no decrease in ever cigar use between 2001 and 2004. In middle school, students experimented with these tobacco products at comparable rates.

Current cigar use decreased significantly between 1999 and 2004 among male high school students but there was no significant decline in current cigar use among female high school students during this time period. Similarly, there was no significant decline in current use of smokeless tobacco use among both female middle and high school students. The gender disparity in current use of cigars and smokeless tobacco is shrinking largely because use of these products is decreasing among males but remaining stable among females. Hispanic high school students also failed to exhibit significant reductions in the use of cigars or smokeless tobacco, perhaps because of the small sample size. The absence of significant reductions in prevalence among certain population groups does suggest targeting these groups for intervention.

The percent of current smokers who were *not* asked for proof of age significantly decreased for the first time since 1999. Unfortunately, the stronger the enforcement of Tobacco Age of Sale (TASE) laws, the more it seems that youth will work to avoid these laws by finding other means of obtaining cigarettes. Indeed, there was a shift in the sources of cigarettes obtained by minors. In both middle and high school, more students are relying on social sources to obtain cigarettes. Only 11% of middle school students and 29% of high school students bought them directly from a commercial source. Instead, many students gave someone money to buy their cigarettes or borrowed cigarettes from someone else. Although reducing commercial access to cigarettes through strong TASE enforcement is important, it may have the offsetting effect of increasing access through other means.(9,10) If social sources continue to be a popular means of obtaining cigarettes, then efforts to reduce youth access must extend to these sources.

Study Limitations

The limitations of the NJYTS deserve discussion when considering these results. The notably smaller sample size for the 2004 NJYTS may have prevented the identification of trends as statistically significant, particularly with respect to minority populations. Additionally, differences in timing, consent procedures, survey questions and ordering, sampling approach, weighting, and participation rates can affect survey estimates.(11) While the overall approach for the 1999, 2001 and 2004 NJYTS was based on standard CDC YTS protocol, there were minor differences between the administrations, including sample size as mentioned above, oversampling of minority schools in 2001, response rates, and history (e.g., post 9/11). However, all three administrations of the NJYTS were designed to yield findings representative of all 7th to 12th graders in New Jersey. Lastly, although data such as the NJYTS can evaluate outcome indicators like smoking prevalence, it cannot directly assess the degree to which certain factors contribute to outcomes.

As such, while we believe the CTCP has demonstrated the ability to make significant contributions to improving the health of New Jersey youth, we cannot assess exactly how much of the progress can be credited to the CTCP.

Progress in reducing smoking among New Jersey youth is likely the result of a combination of factors including the CTCP's youth initiatives, American Legacy's national countermarketing campaign, known as truth®, and three consecutive increases in the state cigarette excise tax. All of these factors have likely played a role in the success achieved in New Jersey - fewer New Jersey youth are smoking cigarettes. To further reduce smoking prevalence, the CTCP will need to improve efforts to reach specific population groups, such as females and Hispanics, as well as develop initiatives that target other tobacco products, like cigars and smokeless tobacco.

Recommendations

Policy-based interventions must be considered when addressing the use of other tobacco products among youth. Research has documented that higher cigarette prices are associated with increased probability of use of other products like cigars and smokeless tobacco among youth and adults.(12,13,14) Evidence from the NJYTS is in no way conclusive but is compelling enough to suggest that New Jersey youth may soon exhibit similar patterns. While the State raised its cigarette excise tax three times in as many years, it rolled back the ad valorem (i.e., percentage of price) excise tax on other tobacco products in 2002, from 48% to 30%. As such, there is a large disparity between the state cigarette excise tax and the state excise tax on other forms of tobacco. Lower prices may encourage youth to experiment with or switch to other tobacco products. Raising the excise tax on other forms of tobacco is likely to discourage the use of these products among youth and adults and generate additional revenue for the State.

Access may be another important factor contributing to the use of other tobacco products or use of these products among specific population groups. Efforts to reduce youth access to tobacco have focused almost exclusively on cigarettes. Although there is no statewide law in New Jersey banning self-service displays of cigarettes, there are 97 municipalities that require cigarettes to be kept behind the counter. And for many years, most retail stores have voluntarily moved cigarettes behind the counter to prevent theft. However, these local ordinances and voluntary policies do not always extend to other tobacco products. Cigars, cigarillos, and smokeless tobacco are readily available in the aisles of retail stores that sell tobacco, increasing the opportunity for theft. Any ban on self-service displays should include all tobacco products. In addition, in a study analyzing compliance checks conducted in 36 states and the District of Columbia, researchers found that attempts by underage youth to purchase smokeless tobacco products were almost twice as successful as attempts to buy cigarettes.(15) Retailer compliance with the sales of all forms of tobacco to youth must be consistently enforced.

Also, future research and surveillance efforts should closely monitor smoking prevalence among specific population groups, particularly females and Hispanics. Trends among females and Hispanics have not followed the promising declines in smoking prevalence seen among white or male students. Future research must gain a better understanding of the factors influencing tobacco use in these groups.

Lastly, consistent funding for youth prevention must continue. Despite the considerable success achieved in New Jersey, funding for comprehensive tobacco control was reduced by nearly two-thirds of its original funding level of \$30 million. There is evidence that higher state-level tobacco control funding is associated with lower youth smoking prevalence and cigarette consumption.⁽¹⁶⁾ Earlier in this report, we conservatively estimated that youth smoking in New Jersey generated more than \$10 million in state cigarette tax revenue in 2004. This tobacco-generated revenue could be used to expand and further develop youth smoking prevention programs.

TECHNICAL NOTES

Instrument

Students were surveyed using the 2004 NJYTS instrument. The instrument was designed to meet the specific needs of the CTCP. Forty-three items came from the CDC Core YTS and 33 state specific items were added. The NJYTS addresses eight content areas: tobacco prevalence; access to tobacco; smoking cessation; smoking intention; perceived consequences of tobacco use; mass media; awareness of tobacco industry strategies; and environmental tobacco smoke.

Sample

The NJYTS is a representative survey of all middle and high school students in New Jersey. The survey was administered to 2187 middle school students (grades 7-8) in 38 schools and 2390 high school students (grades 9-12) in 38 schools located throughout New Jersey.

A two-stage cluster sample design was utilized to assess statewide trends. The first stage sampling frame was constructed from all public, private, charter and vocational middle and high schools in New Jersey. Schools were selected with a probability proportional to size (PPS), without replacement for a total of 40 high schools and 40 middle schools. The second stage of sampling involved the random selection of approximately 3 classes within sampled schools.

An overall participation rate of 84% and 85% was achieved in the middle and high schools, respectively. Overall participation rates are calculated by multiplying the school participation rate by the student participation rate. The data were weighted to adjust for non response and the varying probabilities of selection, providing results representative of New Jersey's 7-12th grade student population.

Analysis

SUDAAN statistical software, which corrects for the complex sample design, was used to generate 95% confidence intervals. Differences between estimates were considered statistically significant at the $p = 0.05$ level if the 95% confidence intervals did not overlap.⁽¹⁷⁾ Hypothesis testing based on a t-statistic (see formula) was used to determine whether the changes over time were statistically significant. If the absolute value of the computed t-statistic was greater than 1.96, then it was concluded that the difference was statistically significant at the 5% level.

$$t = \frac{(P_{1999} - P_{2005})}{\sqrt{(SE_{1999})^2 + (SE_{2005})^2}}$$

GLOSSARY

Bidis	Small, brown, hand-rolled cigarettes primarily made in India and other Southeast Asian countries. Often flavored.
CDC	Centers for Disease Control and Prevention is an agency of the US Department of Health and Human Services.
Consumption	A calculated indicator based on the reported number of days on which smoking occurred multiplied by the mean number of cigarettes smoked daily.
CTCP	The Comprehensive Tobacco Control Program is a program of the New Jersey Department of Health and Senior Services. Its mission is to decrease deaths, sickness and disability among New Jersey residents who use tobacco or are exposed to ETS.
Current Use	Defined as the use of tobacco on one or more of the 30 days preceding the survey.
Secondhand Smoke	A mixture of the smoke given off by the burning end of a cigarette, pipe, or cigar and the smoke exhaled from the lungs of smokers.
Ever Use	Defined as the use of a tobacco product over the course of one's lifetime.
Frequent Use	Defined as the use of a tobacco product on 20 or more days of the past 30 days.
High School Students	Comprised of students who were in 9th, 10th, 11th, or 12th grade at the time of the survey.
Kreteks	Cigarettes which combine shredded clove buds and tobacco, primarily manufactured in Indonesia.
Middle School Students	Comprised of students who were in the 7th or 8th grade at the time of the survey.
MTF	Monitoring the Future is an ongoing study of the behaviors, attitudes, and values of American secondary school students, college students, and young adults. The study is conducted at the Institute for Social Research at the University of Michigan.
NJYRBSS	The New Jersey Youth Risk Behavior Surveillance System is a population-based survey designed to monitor priority health risk behaviors that contribute markedly to the leading causes of death, disability, and social problems among youth in New Jersey.
TASE	Tobacco Age of Sale Enforcement includes merchant education and random unannounced compliance check inspections by NJDHSS staff or local health officers accompanied by underage youth.

REFERENCES

1. McMahon K. *Cigarette Tax Increases by State per Year*. Campaign for Tobacco-Free Kids: Washington, DC; March 18, 2005.
2. Chaloupka FJ and Grossman M. Price, Tobacco Control Policies and Youth Smoking. National Bureau of Economic Research Working Paper No. 5740, Cambridge, MA: National Bureau of Economic Research; 1996.
3. Chaloupka FJ and Wechsler H. Price, tobacco control policies, and smoking among young adults. *Journal of Health Economics* 1997;16:359-373.
4. Grunbaum JA, Kann L, Kinchen SA, Ross JG, Gowda VR, Collins JL, Kolbe LJ. Youth Risk Behavior Surveillance—National Alternative High School Youth Risk Behavior Survey—United States, 1998. *MMWR* 1999;48(SS-7):1-44.
5. New Jersey Department of Health and Senior Services (NJDHSS). Healthy New Jersey 2010: A health agenda for the first decade of the new millennium, Volume I. Available at: <http://www.state.nj.us/health/chs/hnj2010vol1.pdf>. Accessed March 28, 2005.
6. U.S. Department of Health and Human Services (USDHHS). *Healthy People 2010*. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office, November 2000.
7. Centers for Disease Control and Prevention. Tobacco use, access, and exposure to tobacco in media among high school students - United States, 2004. *MMWR* 2005;54:297-301.
8. Delnevo CD, Hrywna M, Brown ME, Abatemarco A, Staniewska D. Tobacco use among New Jersey teens: Findings from NJYRBSS 1995-2003. New Brunswick, NJ: University of Medicine and Dentistry of New Jersey-School of Public Health; June 2004.
9. Jones SE, Sharp DJ, Husten CG, Crossett LS. Cigarette acquisition and proof of age among US high school students who smoke. *Tobacco Control* 2002;11(1):20-5.
10. Dent C and Biglan A. Relation between access to tobacco and adolescent smoking. *Tobacco Control* 2004;13(4):334-8.
11. Giovino GA. Epidemiology of tobacco use among US adolescents. *Nicotine & Tobacco Research* 1999;(1 Suppl 1):S31-40.
12. Ohsfeld RL, Boyle RG, Capilouto E. Effects of tobacco excise taxes on the use of smokeless tobacco products in the USA. *Health Economics* 1997;6(5):525-31.

13. Chaloupka FJ and Warner KE. The Economics of Smoking. (March 1999). NBER Working Paper No. W7047.
14. Delnevo CD, Hrywna M, Foulds J, Steinberg MB. Cigar use before and after a cigarette excise tax increase in New Jersey. *Addictive Behaviors* 2004;29(9):1799-807.
15. Clark PI, Natanblut SL, Schmitt CL, Wolters C, Iachan R. Factors associated with tobacco sales to minors: lessons learned from the FDA compliance checks. *JAMA* 2000;284(6):729-734.
16. Tauras JA, Chaloupka FJ, Farrelly MC, Giovino GA, Wakefield M, Johnston LD, O'malley PM, Kloska DD, Pechacek TF. State tobacco control spending and youth smoking. *American Journal of Public Health* 2005;95(2):338-44.
17. Research Triangle Institute. SUDAAN: software for the statistical analysis of correlated data, release 9.0, 2004 [user's manual]. Research Triangle Park, NC: Research Triangle Institute; 2004.



Prepared by:

**SCHOOL OF
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