

UCSF

Surveys and Program Evaluations from Outside UCSF

Title

Legacy First Look Report 5. Youth Access to Cigarettes: Results from the 1999 National Youth Tobacco Survey

Permalink

<https://escholarship.org/uc/item/7fr065qc>

Authors

Jeanne S Ringel, PhD
Rosalie Liccardo Pacula, PhD
Jeffrey Wasserman, PhD

Publication Date

2000-10-01

Legacy First Look Report **5**

*Youth Access to Cigarettes:
Results from the 1999 National
Youth Tobacco Survey*

October 2000

AMERICAN
LEGACY
FOUNDATION

Preamble

In November 1998, Americans won an unprecedented victory in our nation's century long fight against tobacco use and abuse. A coalition of 46 state Attorneys General successfully settled their cases with the tobacco companies amounting to \$206 billion over the first 25 years. As part of the Master Settlement Agreement (MSA), a 501(c)(3) organization was established to reduce tobacco usage in the United States. Now known as the American Legacy Foundation (Legacy), it adopted four goals:

- ▶ Reduce youth tobacco use,
- ▶ Reduce exposure to secondhand smoke among all ages and populations,
- ▶ Increase successful quit rate among all ages and populations, and
- ▶ Decrease tobacco consumption among all ages and populations.

Legacy's Board of Directors represents a diverse mix of state governors, legislators, and Attorneys General; and experts in the medical, education, and public health fields. Members include the following:

Alma Adams, PhD
State Representative, North Carolina

Jenny H. Lee
Student, University of Miami

Lonnie Bristow, MD, MACP
Former President, American Medical Association

Steven A. Schroeder
President and Chief Executive Officer, the Robert Wood Johnson Foundation

Thomas R. Carper
Governor, Delaware

John "Joe" Henry Schwarz, MD
State Senator, Michigan

Christine O. Gregoire
Attorney General, Washington

Carla J. Stovall
Attorney General, Kansas

Elmer E. Huerta, MD, MPH
Founder and Director of the Cancer Risk Assessment and Screening Center at the Washington Hospital Center in the District of Columbia

Kenneth Warner, PhD
Richard D. Remington Collegiate Professor of Public Health, University of Michigan

Michael O. Leavitt
Governor, Utah

Purpose of the First Look Report Series

The purpose of the First Look Report Series is to provide brief research findings from the National Youth Tobacco Surveys and other tobacco use surveys. The series will cover a wide range of topics including tobacco use behaviors, attitudes and beliefs about tobacco, pro- and counter-tobacco marketing efforts, results of the American Legacy Foundation Initiatives, and other policies and programs related to tobacco use.

<i>Innovative</i>	<i>and Evidence-Based Programs</i>
<i>Marketing and Education</i>	<p>The most visible of Legacy's efforts to date is the \$185 million truthsm campaign—a national youth movement against tobacco use. The truthsm campaign is aimed at reducing tobacco use among youth ages 12 to 17 who are most open to using tobacco. Modeled after successful teen brands, this multicultural counter-marketing program incorporates advertising, Internet, grassroots, and public relations components and gives teens a voice in the effort.</p>
<i>Applied Research and Evaluation</i>	<p>The National Youth Tobacco Survey, a Legacy-sponsored research effort, provided the first national assessment of smoking rates for both high school and middle school students earlier this year. The survey is one part of an integrated research program that will commission studies, fund research, and publish reports (such as this one) on tobacco issues. In addition, a comprehensive evaluation effort will ensure the effectiveness of the programs Legacy supports.</p>
<i>Grants</i>	<p>Legacy's grants program is designed to build on existing tobacco control efforts, leverage resources, and spark new tobacco control initiatives. Awards totaling \$35 million have been announced to states and organizations to develop grassroots youth empowerment programs to reduce tobacco use. Legacy is also supporting demonstration projects and encouraging model programs through competitive RFPs.</p>
<i>Priority Populations</i>	<p>A commitment to integrating minority input across all of its initiatives guides Legacy's programming. To investigate issues specific to underserved populations, Legacy is hosting a series of forums to ensure outreach and communication with and input from minority and cultural experts. These forums are just the beginning of Legacy's outreach work.</p>
<i>Technical Assistance and Training</i>	<p>Building upon best practices in tobacco prevention and cessation will ensure the success of tobacco control efforts. Legacy, as part of its commitment to providing assistance in areas such as youth empowerment, counter-marketing, policy formation, and cessation, will co-sponsor a National Training and Technical Assistance Consortium.</p>
<i>Contact</i>	<p>Information</p> <p>Phone: 202-454-5555 Email: info@americanlegacy.org</p> <p>Cheryl G. Heaton, DrPH · <i>President & CEO</i></p> <p>William Furmanski · <i>Director of Communications</i></p> <p>M. Lyndon Haviland, DrPH · <i>Executive Vice President for Program Development & Research</i></p> <p>Beverly Kastens · <i>Director of Marketing</i></p> <p>Helen Lettlow, MPH · <i>Director of Program Development for Priority Populations</i></p> <p>Adin Miller, MPA · <i>Director of Grants</i></p> <p>Sharon Natanblut · <i>Vice President for Communications</i></p> <p>Anthony O'Toole, CPA · <i>Executive Vice President & Chief Financial Officer</i></p> <p>Anna Spriggs · <i>Director of Administration</i></p> <p>Amber Hardy Thornton, MPH, CHES · <i>Vice President for Training & Technical Assistance</i></p> <p>Mitch Zeller, JD · <i>Executive Vice President for Marketing & Communications</i></p>

Legacy **First Look Report 5**

Youth Access to Cigarettes: Results from the 1999 National Youth Tobacco Survey

This report was written by

Jeanne S. Ringel, PhD[§], Rosalie Liccardo Pacula, PhD[§], and Jeffrey Wasserman, PhD[§], from the Coordinating Center for Evaluation and Applied Research.

The authors would like to acknowledge the contributions of

Pamela I. Clark, PhD[¶], Joseph R. DiFranza, MD[‡], Jean Forster, PhD[°], M. Lyndon Haviland, DrPH[†], Cheryl Heaton, DrPH[†], and Mitch Zeller, JD[†], who reviewed drafts of this report.

The authors are also grateful to

David Klein for statistical support, Andrew Jessup for graphic design, Susan Murchie and Peter Tavernise for editorial review, and to all the schools in the survey for their cooperation.

The NYTS questionnaire was developed by the CDC Foundation and Macro International Inc. with technical support from the Office on Smoking and Health, CDC. Macro developed and implemented the NYTS sampling design, recruited schools, managed data collection and processing, and weighted the data with technical support from the Office on Smoking and Health.

[†]American Legacy Foundation [§]RAND [¶]Battelle
[‡]University of Massachusetts [°]University of Minnesota

Contents

5	<i>Introduction</i>
6	<i>1999 National Youth Tobacco Survey</i>
7	<i>Youth Access to Tobacco Products</i>
8	<i>How Youth Obtain Cigarettes</i>
12	<i>Where Cigarettes are Bought</i>
13	<i>Difficulties in Buying Cigarettes</i>
16	<i>Prices Paid for Cigarettes</i>
21	<i>Summary</i>
22	<i>References</i>
23	<i>Appendix A: Cigarette Access and Price Statistics — Detailed Tables</i>

Introduction

Recent findings from the 1999 National Youth Tobacco Survey (NYTS), reported in the *Legacy First Look Report 1* (Farrelly et al., 2000), reveal that nearly 30 percent of middle school students and 64 percent of high school students have tried cigarettes in their lifetimes. Perhaps even more disturbing is the fact that nearly 10 percent of middle school students and 29 percent of high school students are current smokers, defined as having smoked a cigarette on at least one occasion in the past 30 days. The high prevalence of cigarette use among youth exists despite a wave of recent tobacco control efforts focused on limiting youth access to cigarettes. In February 1997, the FDA's final tobacco rule went into effect. In support of this rule, the FDA established a program of educational outreach and enforcement to ensure that retailers were in compliance with the new federal rules prohibiting tobacco sales to minors. Under the enforcement program, the FDA conducted wide ranging compliance checks at retail outlets. In addition, the agency sponsored an advertising campaign aimed at educating both youth and retailers about the new photo identification and age provisions. The full effects of heightened enforcement by the FDA may never be known, as the effort was halted before program maturity.

Tobacco control efforts are not limited to the federal government level. A recent report by the National Cancer Institute (2000) indicates that all 50 states currently have laws regarding the sale, purchase, and/or possession of tobacco to and by youth. Many of these state laws were preceded by local ordinances restricting youth access to tobacco in particular cities and counties within each state. Some of these local ordinances have been in effect for over 10 years. It is clear, however, that many youth are still able to obtain cigarettes in spite of the laws, raising concerns that the recently implemented youth access restrictions are not particularly effective or evenly enforced.

The purpose of this report is to examine the issue of youth access to cigarettes using data from the 1999 NYTS. Youth access to cigarettes is described in terms of youths' usual sources of cigarettes, the prices they pay, and the restrictions they encounter when trying to purchase cigarettes. This report focuses on four general questions with the following main findings:

1. How do youth obtain cigarettes?

The vast majority of youth in grades 6 through 12 (79 percent) do not use cigarettes. Among those who do, however, the most common methods of obtaining cigarettes involve giving money to another person so that (s)he can purchase them on the youth's behalf (26 percent), borrowing cigarettes from friends and/or family members (24 percent), and purchasing cigarettes in a store (21 percent).

2. Where do youth go to purchase cigarettes?

Among youth who report buying cigarettes, nearly half (47 percent) list gas stations as their primary point of purchase. The next most common outlet is convenience stores (27 percent).

3. How frequently are youth refused a purchase?

Among those respondents who bought cigarettes, slightly over one in three (37 percent) were asked to show proof of age. A similar number reported being refused a purchase (35 percent).

4. What do youth pay for a pack of cigarettes?

The average price that youth paid for a pack of cigarettes in the NYTS sample is \$3.01.

1999 National Youth Tobacco Survey

The 1999 NYTS was designed to provide nationally representative data on tobacco-related questions for a sample of students in grades 6 to 12. The survey was administered to over 15,000 students in 131 schools across the nation in the fall of 1999. The students completed anonymous, self-administered questionnaires that included a variety of tobacco-related questions. The major topic areas include the patterns of tobacco use, minors' ability to purchase tobacco products, exposure to environmental tobacco smoke, knowledge and attitudes about tobacco, and familiarity with pro- and counter-tobacco marketing. To ensure separate analysis of African-American and Hispanic students, schools with substantial proportions of African-American and Hispanic students were oversampled. A weighting factor was applied to each student record to adjust for nonresponse and for the probability of selection, including the oversampling noted above.

Youth Access to Tobacco Products

The main findings from the NYTS on youth tobacco access were summarized above. We find, however, that important differences exist across age, gender, and racial/ethnic groups in terms of source of cigarettes, purchase location, refusal rates, and prices paid. As such, a more detailed examination of these issues is presented below. Specific questions from the 1999 NYTS used to explore these issues are presented in Table I. All results discussed in the sections that follow are provided in Appendix A.¹

Table I: 1999 NYTS Questions Pertaining to Access to Cigarettes

NYTS Question	Possible Responses
Q18: During the past 30 days, how did you usually get your own cigarettes? (Choose only one answer)	<input type="checkbox"/> I did not smoke cigarettes in the past 30 days <input type="checkbox"/> I bought them in a store such as a convenience store, supermarket, or gas station <input type="checkbox"/> I bought them from a vending machine <input type="checkbox"/> I gave someone else money to buy them for me <input type="checkbox"/> I borrowed them from a friend or family member <input type="checkbox"/> I stole them <input type="checkbox"/> A person 18 years old or older gave them to me <input type="checkbox"/> I got them some other way
Q19: During the past 30 days, where did you buy the last pack of cigarettes you bought?	<input type="checkbox"/> I did not buy a pack of cigarettes during the past 30 days <input type="checkbox"/> A gas station <input type="checkbox"/> A drugstore <input type="checkbox"/> A convenience store <input type="checkbox"/> A vending machine <input type="checkbox"/> A discount store <input type="checkbox"/> A restaurant <input type="checkbox"/> A grocery store
Q20: During the past 30 days, what did you pay for the last pack of cigarettes you bought?	<input type="checkbox"/> I did not smoke cigarettes during the past 30 days <input type="checkbox"/> I did not buy a pack of cigarettes during the past 30 days <input type="checkbox"/> Less than \$1.00 <input type="checkbox"/> \$2.50 to \$2.99 <input type="checkbox"/> \$4.50 to \$4.99 <input type="checkbox"/> \$1.00 to \$1.49 <input type="checkbox"/> \$3.00 to \$3.49 <input type="checkbox"/> \$5.00 or higher <input type="checkbox"/> \$1.50 to \$1.99 <input type="checkbox"/> \$3.50 to \$3.99 <input type="checkbox"/> I don't know <input type="checkbox"/> \$2.00 to \$2.49 <input type="checkbox"/> \$4.00 to \$4.49
Q21: When you bought or tried to buy cigarettes in a store during the past 30 days, were you ever asked to show proof of age?	<input type="checkbox"/> I did not try to buy cigarettes in a store during the past 30 days <input type="checkbox"/> Yes, I was asked to show proof of age <input type="checkbox"/> No, I was not asked to show proof of age
Q22: During the past 30 days, did anyone ever refuse to sell you cigarettes because of your age?	<input type="checkbox"/> I did not try to buy cigarettes in a store during the past 30 days <input type="checkbox"/> Yes, someone refused to sell me cigarettes because of my age <input type="checkbox"/> No, no one refused to sell me cigarettes because of my age

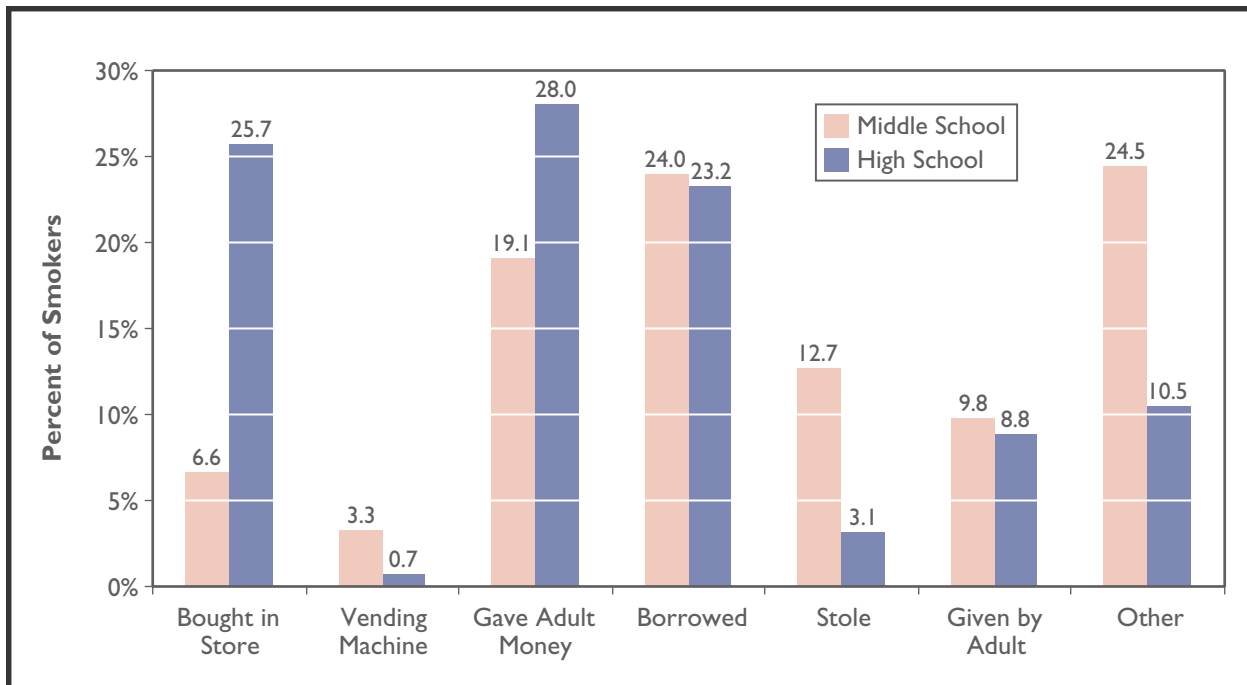
¹We selectively present results in graphical format. Additional information, upon which tables and figures are based, can be found in the Appendix.

How Youth Obtain Cigarettes

To restrict youth access to cigarettes, we must first understand how and when youth obtain cigarettes. For youth access laws to be effective, they must be rigorously enforced. As can be seen by the choices provided in response to the first question in Table I, the 1999 NYTS provides detailed information regarding the usual source of cigarettes for youth who smoke. Some of those sources, such as store purchases and purchases from vending machines, are directly targeted by legislation in some locales. Other sources, such as peers or adults, are not as easily restricted. Although laws have been passed making it illegal to furnish tobacco products to minors, these types of restrictions are often difficult and costly to enforce. Even if these laws were strictly enforced, youth are likely to find other ways of obtaining cigarettes. As such, all sources of cigarettes should be considered and addressed in policy designed to reduce youth smoking. To that end, it is important to identify from which sources cigarettes are most commonly obtained.

Findings from the NYTS reveal that those youth who smoke obtain cigarettes from a variety of sources. Figure I displays the fraction of young smokers who report obtaining cigarettes from specific sources by age group. Important insights into how youth obtain cigarettes are summarized below. (Complete results are shown in Appendix Table A-1.)

Figure I: Usual Source of Cigarettes

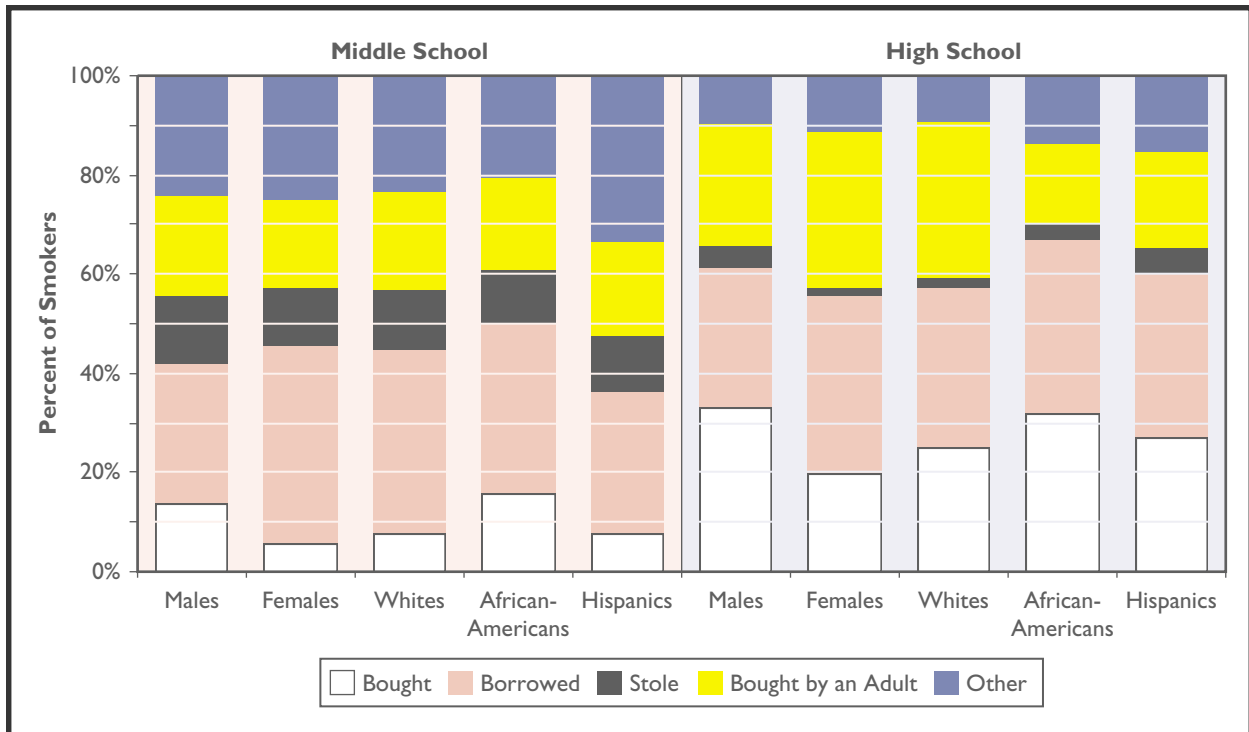


- Significant differences in the usual source of cigarettes exist between high school smokers and middle school smokers. Youth in grades 6 through 8 are included in the middle school sample and those in grades 9 through 12 are included in the high school sample.
- High school smokers were most likely to report that they usually obtained cigarettes by giving an adult money to buy cigarettes for them (28.0 percent), borrowing cigarettes from friends/family (23.2 percent), or purchasing cigarettes from a store themselves (25.7 percent).
- Middle school smokers were most likely to report that they obtained cigarettes from other sources (24.5 percent), borrowed cigarettes from friends/family (24.0 percent), or gave money to adults to purchase cigarettes for them (19.1 percent). The fact that nearly 25 percent of middle school students and 11 percent of high school students report “other sources” suggests that there are important access methods that the survey does not ask about. One potential explanation for the large “Other” category is that students may literally interpret the response that they “borrow” cigarettes. When smokers bum cigarettes they typically have no intention of returning them. As such, they are not literally borrowed. As a result, the “Other” source category may include youth who bummed cigarettes. Identifying all of the main sources available to youth should be a goal of future research.
- Middle school smokers were significantly more likely to report obtaining cigarettes by stealing them (12.7 percent) than high school smokers (3.1 percent). Middle school smokers were also significantly less likely to report purchasing them from a store (6.6 percent) or giving an adult money to purchase cigarettes for them (19.1 percent) than high school smokers (25.7 percent and 28.0 percent, respectively). It is not surprising that the younger group is less likely to report giving money to adults to buy cigarettes as adults may be less willing to buy for middle school aged youth than they are for high school aged youth.

Important differences in methods of cigarette access also exist across gender and race/ethnicity. Figure 2 breaks down the usual source of cigarettes for middle and high school smokers by gender and race. To keep the figures relatively simple, we collapsed purchases at stores and vending machines into a single “Purchase” category. Similarly, those who borrowed or were given cigarettes are combined into the “Borrowed” category. Purchases through adults, stealing, and other sources are left as individual categories. As shown in Figure 2, a number of interesting differences emerge.

- Among middle school smokers, young men are more likely than young women to report purchasing cigarettes from stores or vending machines (13.7 percent vs. 5.8 percent), while young women are more likely than young men to report borrowing cigarettes from a friend/family member or being given them by an adult (39.6 percent vs. 28.1 percent).
- These trends persist through high school, although the differences are only marginally significant. Among high school smokers, young women are less likely than young men to report purchasing cigarettes from stores or vending machines (19.6 percent vs. 33.0 percent). Young women are also more likely than their male counterparts to report borrowing cigarettes from friends/family members or getting them from

Figure 2: Usual Method of Obtaining Cigarettes



adults (36.1 percent vs. 28.2 percent). Additionally, females are more likely than males to report purchasing cigarettes through adults (31.3 percent vs. 24.6 percent).

- Among middle school smokers, Whites and African-Americans most frequently reported that they borrowed cigarettes. Hispanics were equally likely to report borrowing and other as their main source of cigarettes.
- Among high school smokers, all racial/ethnic groups report similarly high rates of borrowing and purchasing cigarettes. Purchases through adults is also an important category for the three racial/ethnic groups.

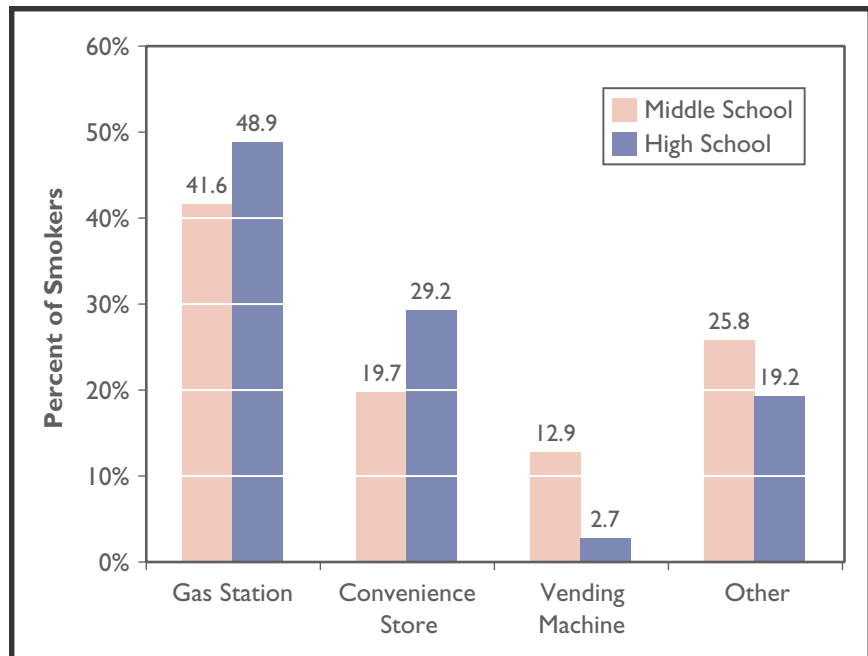
Finally, we examined differences in source of cigarettes between non-daily and regular smokers. Non-daily smokers were defined as current smokers who had smoked at least one cigarette on fewer than 20 of the last 30 days, while regular smokers were defined as those who had smoked at least one cigarette on 20 or more of the last 30 days. Not surprisingly, we find that regular smokers in both age groups are more likely to report purchasing cigarettes than non-daily smokers. Non-daily smokers are much more likely to report borrowing cigarettes. Further, we find that the “Other” source category is more important for middle school non-daily smokers than for high school non-daily or regular smokers.

Where Cigarettes are Bought

The successful enforcement of youth access laws requires information regarding the locations at which youth are most likely to purchase cigarettes. The responses to the second question reported in Table 1 reveal important information about the types of stores where youth successfully purchase cigarettes. Nearly half (47.4 percent) of all survey respondents who report buying cigarettes list gas stations as the place where they made their last purchase. Convenience stores are the second most frequently reported source (27.3 percent).² In Figure 3, we combine the purchase locations into four groups: gas stations, convenience stores, vending machines, and other. The “Other” category is made up of discount stores, grocery stores, drugstores, and restaurants. Again we find that there are differences in the types of stores that middle and high school students buy from, as shown in Figure 3.

- The majority of both middle and high school students reported purchasing their last pack of cigarettes from gas stations (41.6 percent vs. 48.9 percent). Both groups also infrequently report use of discount stores, drug stores, and restaurants.

Figure 3: Location of Cigarette Purchases



²We should note that it is increasingly difficult to make a meaningful distinction between gas stations and convenience stores. In recent years, many gas stations have added convenience stores on site, thus making it hard to distinguish between the two categories of stores. As such, the observed differences across the various demographic groups must be interpreted with this in mind.

- Although convenience stores are the next most frequently mentioned source of cigarettes for both age groups, high school students are much more likely than middle school students to report purchasing their last pack of cigarettes from this type of store (29.2 percent vs. 19.7 percent).
- Middle school students who bought cigarettes were significantly more likely than high school students to purchase their last pack of cigarettes from a vending machine (12.9 percent vs. 2.7 percent).

Some interesting differences in purchasing location choices are also seen across demographic lines. Some of the observed differences may reflect the types of stores in a student's neighborhood. Differences may also be indicative of whether the student lives in an urban or rural setting.

- Although we find differences in how males and females obtain cigarettes, among those who buy cigarettes there does not appear to be much variation in the types of stores where their last purchases were made. One finding, however, does stand out. In middle school, males who buy cigarettes are more likely than females to report that their last purchase was from a vending machine (16.9 percent vs. 8.0 percent).
- Among middle school students, Whites are more likely than African-Americans to have made their last purchase at a gas station (50.4 percent vs. 28.0 percent), although the difference is only marginally significant. Whites are significantly more likely than African-Americans or Hispanics to report that their last purchase was from a vending machine (15.1 percent vs. 7.8 percent and 9.9 percent, respectively).
- African-American middle school students are equally likely to have purchased their last pack of cigarettes from gas stations (28.0 percent) and convenience stores (27.5 percent). This pattern of racial/ethnic differences continues into high school.
- There appears to be very little difference in purchase location between non-daily and regular smokers (results are shown in Appendix Table A-2).

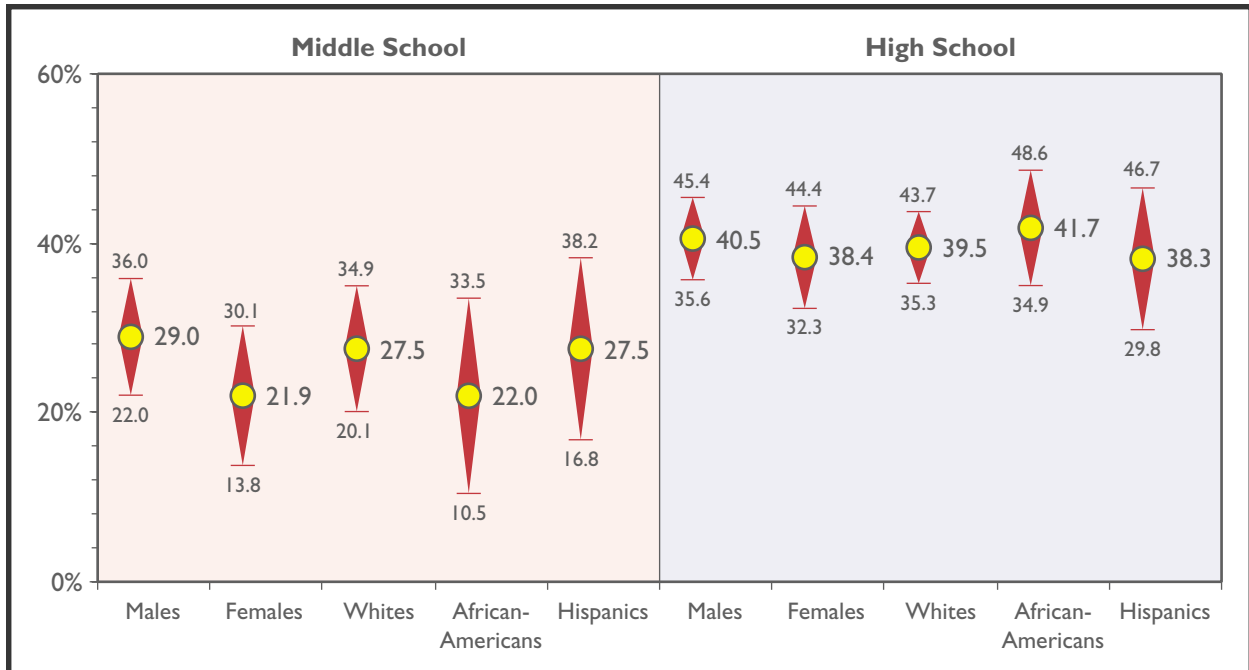
Difficulties in Buying Cigarettes

While all states have some form of youth tobacco access restrictions, it is clear that many youth are able to circumvent these laws and obtain cigarettes. Although rates of sales (as measured by compliance checks) have been falling since the early 1990s, inadequate enforcement of existing laws is thought to be the main reason that youth access to tobacco remains relatively high. The full impact of the national

enforcement effort conducted by the FDA will never be known as the program was discontinued in 2000. However, the program was in effect in 1999 when the NYTS data were collected. In an effort to understand the issues surrounding youth access to cigarettes two questions arise. First, how much difficulty do teens typically encounter in purchasing cigarettes? Second, does the implementation of youth access restrictions have differential impacts across demographic lines? The fourth and fifth questions in Table I allow us to explore these questions in some detail. A number of interesting results emerge, as shown in Figures 4 and 5.

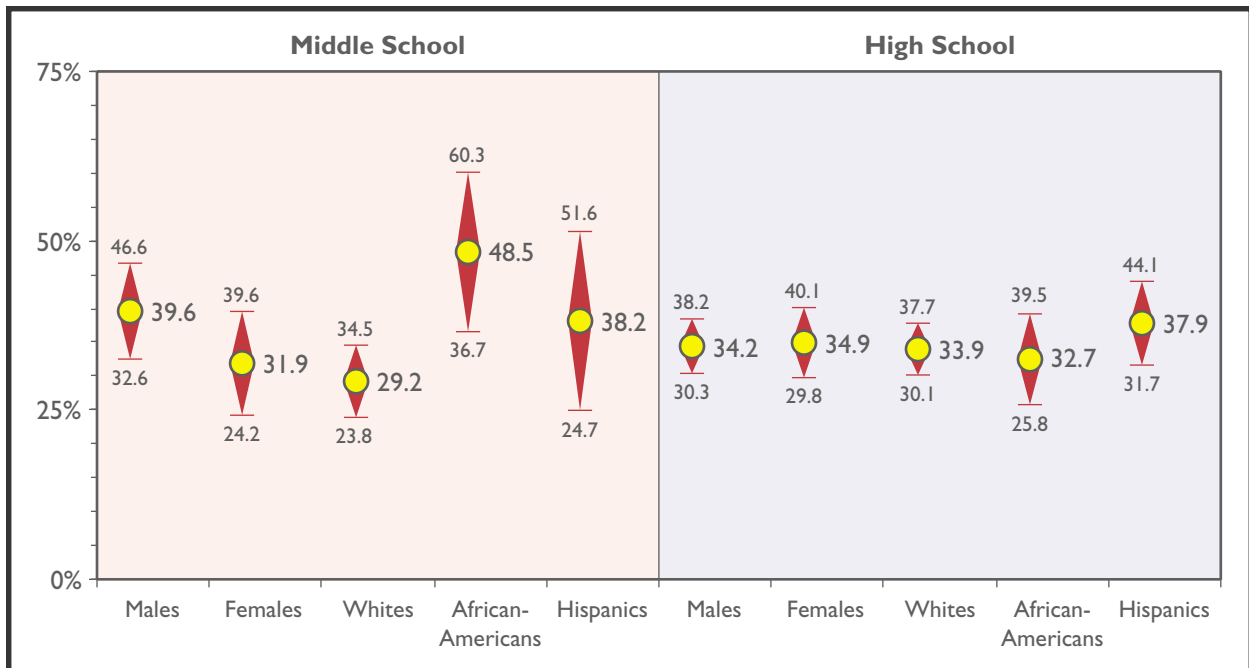
- The results indicate that over one in three youth had been asked at least once in the past 30 days to show proof of age when trying to buy cigarettes (37 percent).
- During the same time period, 35 percent reported that they had been refused cigarettes due to their age on at least one occasion.
- Older students were more likely to be asked to show identification than younger students. At first blush this appears to be a strange result. However, the difference across age lines likely stems from the differences in purchasing patterns between the groups. Recall that middle school students are more likely to purchase cigarettes from vending machines where it will be unlikely they will be asked to show proof of age. In addition, the younger group may be less likely to be asked to show proof of age because they are more likely to be refused a sale outright. Interestingly, there is virtually no difference in the rate of refusal between the two age groups.
- No statistically significant differences are found between males and females in the proportions that report being asked to show proof of age or report being refused a sale.
- Among middle school students, African-Americans are the most likely to be refused cigarettes. Nearly 50 percent of young African-Americans report having been refused cigarettes in the last 30 days. In contrast, only 29 percent of Whites and 38 percent of Hispanics report refusal. This racial/ethnic difference does not persist through high school.
- There is no difference in the proportion of youth who report being asked to show proof of age between non-daily and regular smokers at either age level. In middle school, however, non-daily smokers are significantly more likely to report being refused a sale than regular smokers are. This difference can be explained in part by the fact that regular smokers are more experienced buyers and know better how and where to successfully purchase cigarettes. The difference in rate of refusal does not persist through high school (results are shown in Appendix Table A-3).

Figure 4: Percentage Asked for Proof of Age



Note: Upper and lower ranges represent 95 percent confidence intervals that account for the survey design weighting.

Figure 5: Percentage Refused a Sale



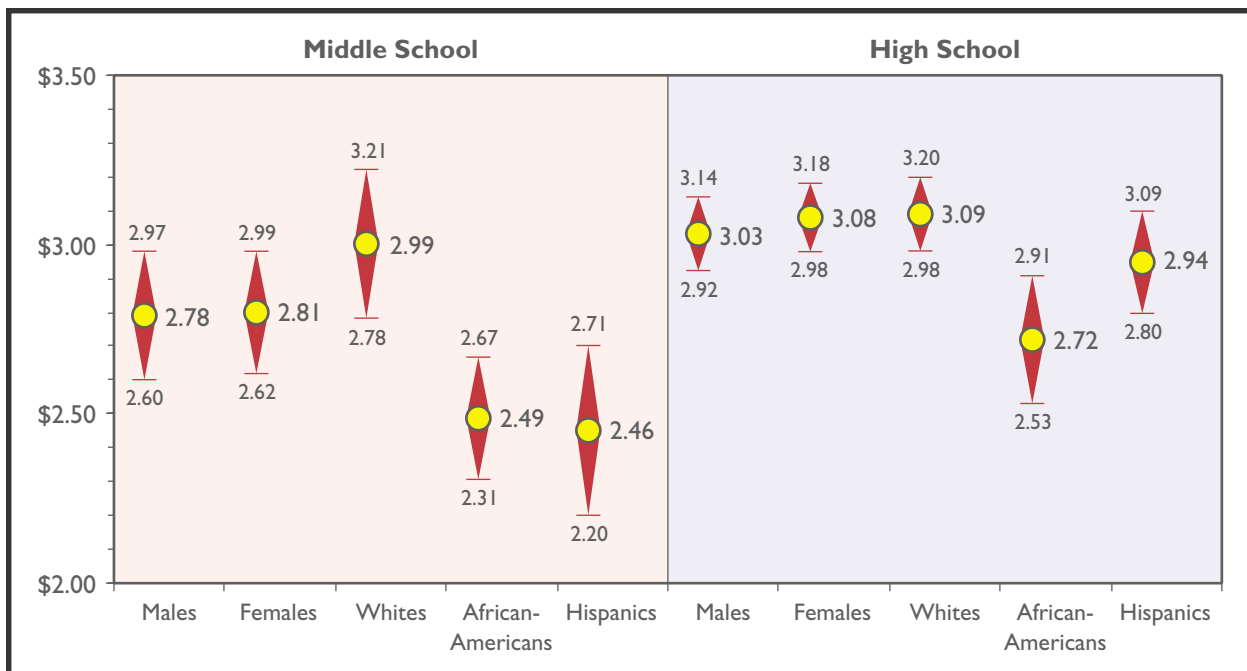
Note: Upper and lower ranges represent 95 percent confidence intervals that account for the survey design weighting.

Prices Paid for Cigarettes

Respondents in the NYTS were asked what they paid for their last pack of cigarettes purchased within the previous 30 days (Table 1). Only youth who purchased cigarettes answered this question. Because the responses are categorical (e.g., < \$1.00, \$1.00–\$1.49, \$1.50–\$1.99, and so on) and we are interested in examining average prices paid, we converted these ranges into specific values by assigning to each the middle value (or midpoint) to that category. For example, youth who report paying less than \$1.00 are assigned a value of \$0.75; youth who report paying \$1.00–\$1.49 are assigned a value of \$1.25; youth who report paying \$1.50–\$1.99 are assigned a value of \$1.75; and youth in the top category who report paying \$5.00 or more are assigned a value of \$5.25. For the sample as a whole, the average price paid for cigarettes is \$3.01 per pack. The NYTS data illustrate some interesting relationships between mean price paid and demographic group, as highlighted in Figure 6 (complete results are shown in Appendix Table A-4).

- There is no significant difference in the average price paid for cigarettes between males and females in either age group.
- High school students report paying higher prices for cigarettes on average than middle school students (\$3.06 vs. \$2.80).

Figure 6: Average Self-Reported Price



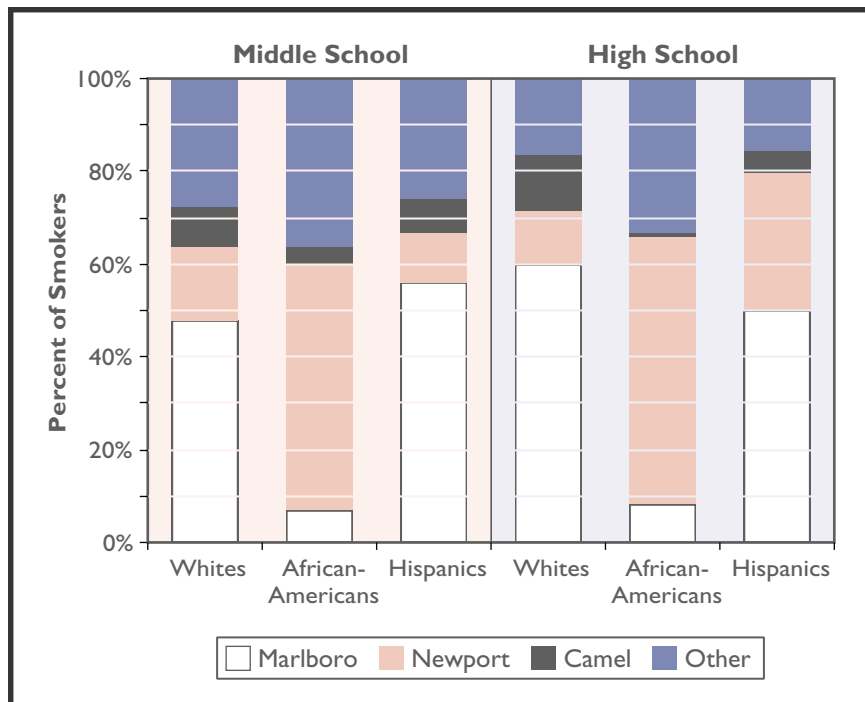
Note: Upper and lower ranges represent 95 percent confidence intervals that account for the survey design weighting.

- Among middle school students, Whites paid an average of \$2.99 for the last pack bought, while African-Americans and Hispanics paid an average of \$2.49 and \$2.46, respectively.
- Although the mean prices are somewhat higher, a similar pattern of differences across race/ethnicity is observed for high school students (\$3.09 for Whites vs. \$2.72 for African-Americans and \$2.94 for Hispanics). The difference between the average price for Whites and Hispanics, however, is no longer significant.

At least two different factors could be contributing to the differences in the average price paid across racial/ethnic lines. First, some brands of cigarettes (e.g., Marlboro) are more expensive than other brands (e.g., Basic). To the extent that different demographic groups prefer specific brands, the average price paid could be affected. Second, the price charged for the same brand of cigarettes varies by store type, with some stores (e.g., convenience stores) charging more than other stores (e.g., grocery stores). Differences in purchasing location could also lead to the observed differences in average price paid across groups.

Legacy First Look Report 1 (Farrelly et al., 2000) examined brand preferences across demographic groups. The interesting differences in brands smoked across racial and ethnic lines are summarized below and shown in Figure 7. Among current smokers in high school, Whites and Hispanics overwhelmingly prefer Marlboro to any other brand.

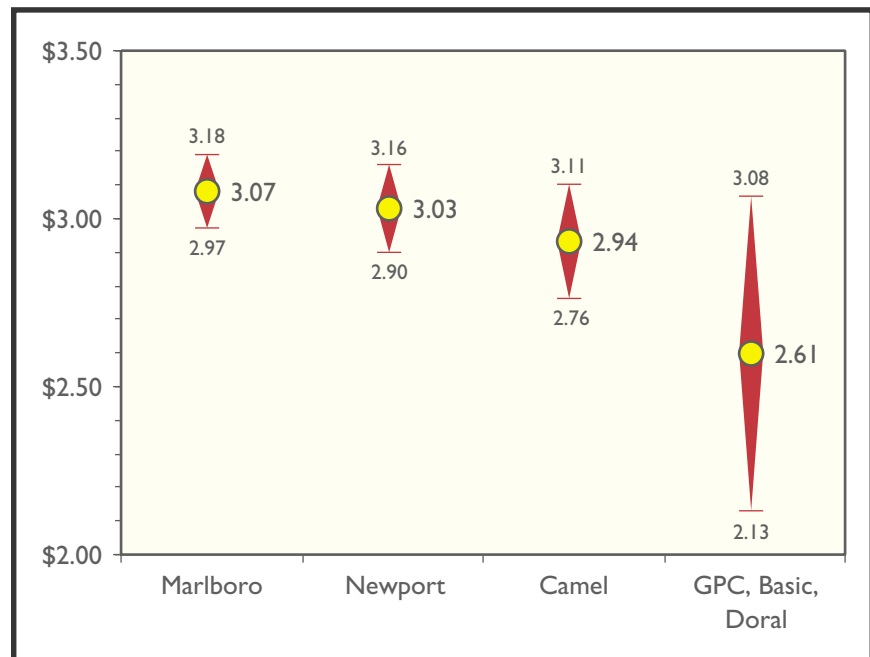
Figure 7: Brand Preference



Sixty percent of Whites and 49.9 percent of Hispanics report Marlboro as their usual brand. In contrast, 57.7 percent of African-American high school students report Newport as their usual brand. Although the numbers are for high school students, the differences in brand preference are consistent across age groups.

The fact that African-Americans predominantly smoke Newport cigarettes and pay a lower price on average could suggest that the Newport brand costs less than the Marlboro brand, the preferred brand among Whites. Figure 8 provides an examination of the average price paid by brand, and the findings with respect to the average price of Marlboro (\$3.07) and Newport (\$3.03) brands do not support this conclusion. There is no statistically significant difference between the reported price paid for Marlboro and Newport brand cigarettes. Brand choice alone, therefore, cannot be driving the differences in reported average price paid.

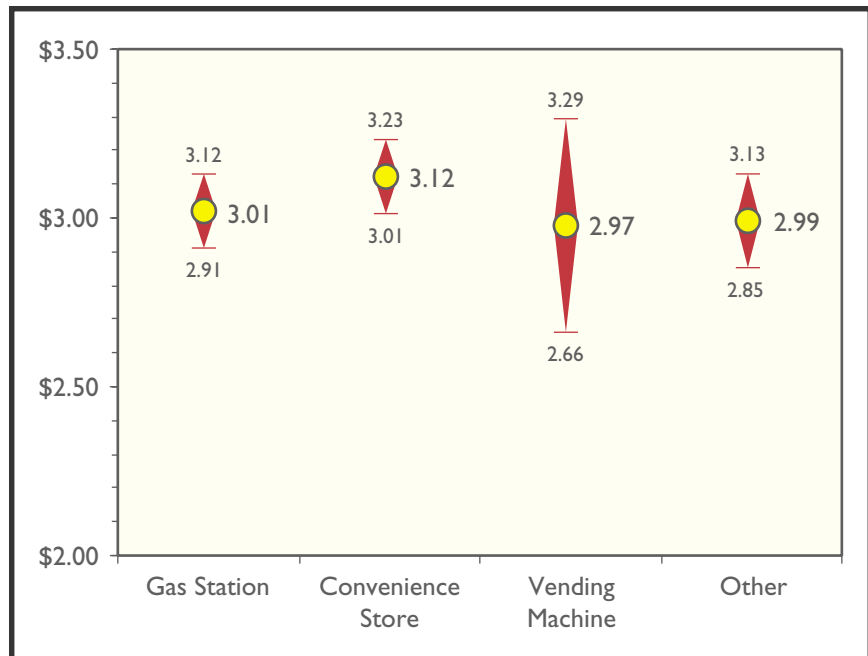
Figure 8: Average Price by Brand Preference



Note: Upper and lower ranges represent 95 percent confidence intervals that account for the survey design weighting.

As was noted previously, there are significant differences in purchase locations across racial and ethnic lines among both middle and high school students. To see the effect of the point of purchase on the price paid we need to explore the extent to which different prices are charged at different store types. Based on the price information in the NYTS, we can see in Figure 9 that the highest average price paid for cigarettes is at convenience stores. The lowest average price paid is at discount stores, which are included in the “Other” category.³ While the price differences are somewhat suggestive, none are statistically significant at the 95 percent confidence level.

Figure 9: Average Price by Location



Note: Upper and lower ranges represent 95 percent confidence intervals that account for the survey design weighting.

Looking across Figures 10 and 11, an individual’s smoking level appears to be an important determinant of the average price paid for cigarettes. Non-daily smokers tend to spend less than regular smokers. This difference is found for both middle school and high school students and is statistically significant. This difference is driven in part by the fact that regular smokers prefer to purchase a specific brand of cigarettes such as Marlboro or Newport, while non-daily smokers tend not to be tied to a specific brand. As such, non-daily smokers may be more influenced by price differences when purchasing cigarettes.

³The “Other” category includes cigarettes purchased at discount stores, grocery stores, drugstores, and restaurants.

Figure 10: Brand Preference by Smoking Level

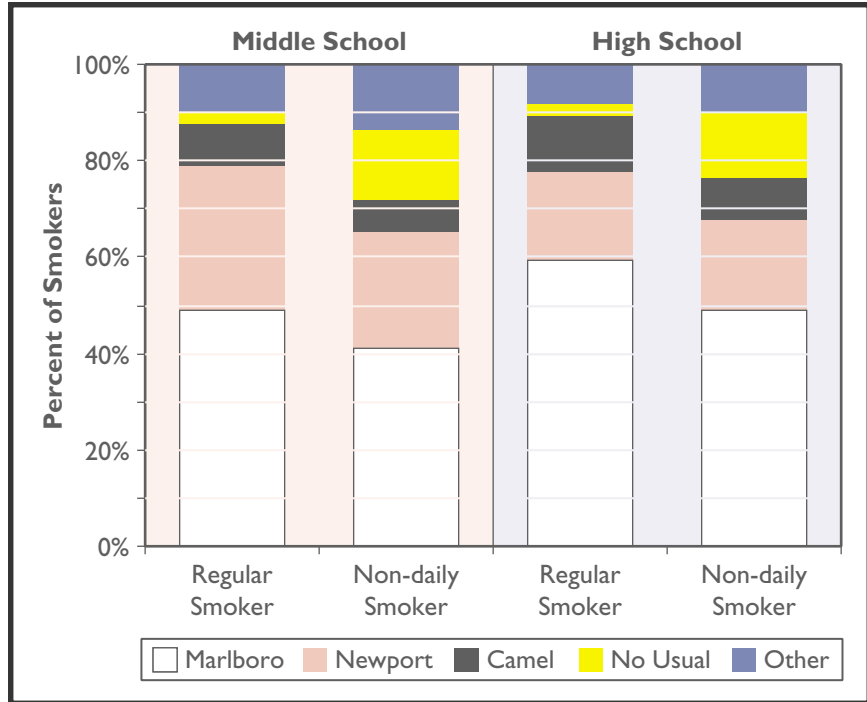
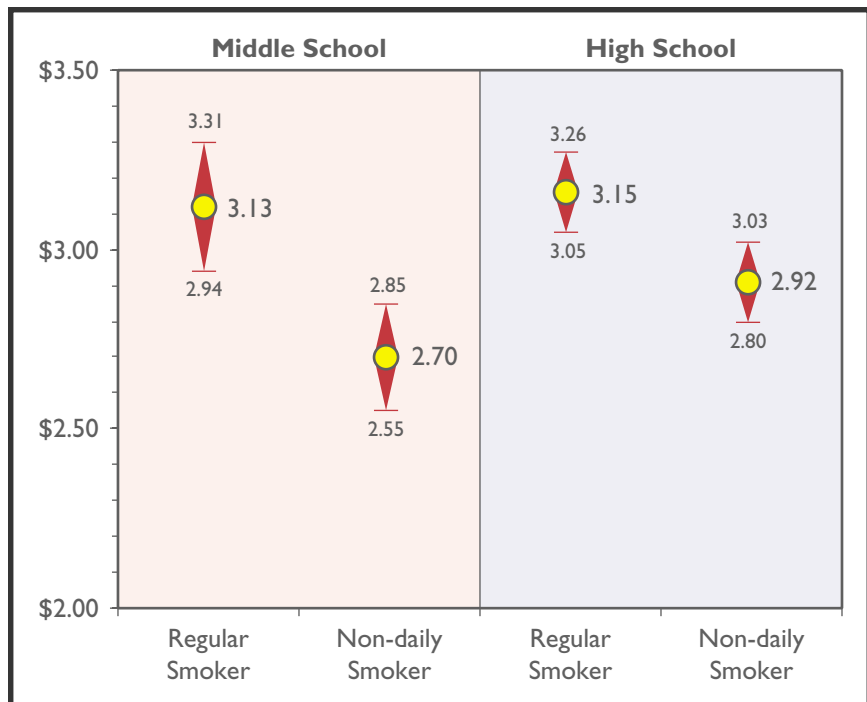


Figure 11: Average Price by Smoking Level



Note: Upper and lower ranges represent 95 percent confidence intervals that account for the survey design weighting.

Summary

The findings reported above illustrate that there is no neat and simple way to restrict teen access to tobacco products. On the contrary, the fact that teenagers report having obtained cigarettes from a wide variety of sources argues that policy makers and tobacco control programs must embrace a multi-pronged approach.

The fact that over 20 percent of the teenagers surveyed were able to successfully purchase cigarettes, largely from gas stations and convenience stores, indicates that state and local teen access laws need to be more rigorously enforced. Moreover, vending machines still appear to be an important source of cigarettes, for middle school students in particular, suggesting that lock boxes and other measures to limit vending machine purchases by youth have not been entirely successful.

Our findings also suggest that efforts to reduce adult cigarette consumption may have a significant indirect effect on teenagers. Nearly 10 percent of the respondents reported that their cigarettes were given to them by an adult and another 5 percent indicated that they stole cigarettes (quite possibly from adults). It is therefore reasonable to conclude that policy efforts such as increasing excise taxes and enacting clean indoor air laws, which have been shown to have a significant impact on adult cigarette consumption, may have a high payoff with respect to young people.

Finally, our findings point to the need to learn more about youths' sources of cigarettes. For example, nearly a quarter of all middle school students and 11 percent of high school students reported that they obtained cigarettes from "other sources." Thus, survey instruments must be refined to identify more precisely these additional sources (e.g., the Internet). Moreover, multivariate analyses of data related to cigarette prices and teen access restrictions will yield additional insight into appropriate policy initiatives.

References

Farrelly, M.C., D.L. Faulkner, and P.D. Mowery. June 2000. *Legacy First Look Report 1. Cigarette Smoking Among Youth: Results from the 1999 National Youth Tobacco Survey*. Washington, DC: American Legacy Foundation.

National Cancer Institute. August 2000. *State and Local Legislative Action to Reduce Tobacco Use. Smoking and Tobacco Control Monograph No. 11*. NIH Pub. No. 00-4804. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute.

Appendix A: ***Cigarette Access and Price Statistics —*** ***Detailed Tables***

Table A-1: Percentage of Subpopulation that Used Each Method of Obtaining Cigarettes [95% Confidence Interval]

	Middle School						
	Bought in Store	Vending Machine	Gave Cash to Other	Borrowed	Stole	Given by Adult	Other
Overall	6.6% [4.8–9.0]	3.3% [1.9–5.6]	19.1% [16.0–22.7]	24.0% [21.4–26.9]	12.7% [10.6–15.2]	9.8% [07.8–12.3]	24.5% [20.8–28.6]
Males	8.6% [5.7–12.8]	5.1% [0.4–3.8]	20.4% [16.2–25.5]	21.5% [22.9–30.4]	13.8% [10.5–17.9]	6.6% [5.0–8.8]	24.0% [20.3–28.2]
Females	4.5% [2.7–7.4]	1.3% [0.4–3.8]	17.8% [14.3–22.0]	26.4% [22.9–30.4]	11.8% [9.0–15.3]	13.2% [10.0–17.2]	24.9% [19.8–30.9]
Whites	4.6% [2.9–7.1]	2.9% [1.2–6.8]	19.8% [15.3–25.4]	26.8% [22.2–32.1]	12.0% [9.3–15.4]	10.4% [7.9–13.6]	23.5% [19.1–28.5]
African-Americans	10.2% [6.3–16.2]	5.7% [2.5–12.7]	18.7% [11.2–29.5]	24.2% [18.0–31.6]	10.7% [6.0–18.3]	9.9% [6.5–15.0]	20.6% [14.5–28.3]
Hispanics	5.7% [2.9–10.8]	1.9% [0.6–5.9]	18.8% [15.2–23.0]	21.0% [15.8–27.4]	11.5% [8.3–15.6]	7.6% [3.5–15.6]	33.6% [24.8–43.6]
Regular Smokers	16.3% [10.3–24.9]	3.4% [0.9–12.2]	32.8% [24.3–42.6]	6.1% [2.6–13.8]	16.6% [10.9–24.4]	9.6% [5.8–15.5]	15.3% [10.7–21.5]
Non-daily Smokers	4.0% [2.2–7.1]	2.5% [1.4–4.6]	17.8% [14.3–22.1]	11.4% [8.8–14.6]	11.4% [8.8–14.6]	9.1% [6.7–12.2]	25.1% [20.9–29.8]
	High School						
	Bought in Store	Vending Machine	Gave Cash to Other	Borrowed	Stole	Given by Adult	Other
Overall	25.7% [22.3–29.3]	0.7% [0.4–1.4]	28.0% [25.0–31.1]	23.2% [20.8–25.7]	3.1% [2.2–4.3]	8.8% [7.2–10.7]	10.5% [8.8–12.5]
Males	32.1% [28.5–35.9]	0.9% [0.4–2.0]	24.6% [21.1–28.4]	21.5% [18.4–24.9]	4.5% [3.0–6.8]	6.7% [4.9–9.1]	9.8% [8.2–11.7]
Females	19.0% [14.9–24.0]	0.6% [0.2–1.6]	31.3% [28.0–34.9]	25.0% [21.7–28.6]	1.7% [0.9–3.1]	11.1% [9.0–13.6]	11.3% [8.5–14.9]
Whites	24.3% [20.2–28.9]	0.9% [0.5–1.8]	31.2% [27.7–35.0]	22.9% [20.1–25.9]	2.3% [1.6–3.5]	9.0% [7.3–11.0]	9.3% [7.5–11.6]
African-Americans	32.0% [25.0–39.8]	0.0% [0.0–0.0]	16.3% [11.5–22.6]	25.4% [17.5–35.4]	3.1% [1.4–6.6]	9.5% [5.7–15.3]	13.8% [9.8–19.2]
Hispanics	26.7% [20.4–34.1]	0.4% [0.0–2.8]	19.6% [14.0–26.6]	26.8% [21.2–33.3]	5.1% [2.4–10.6]	6.2% [3.7–10.3]	15.3% [11.4–20.3]
Regular Smokers	36.1% [30.7–41.8]	0.5% [0.2–1.4]	39.5% [34.9–44.3]	3.4% [2.3–5.1]	4.7% [3.1–7.1]	6.5% [4.8–8.7]	9.3% [7.3–11.9]
Non-daily Smokers	17.0% [14.2–20.3]	0.7% [0.3–1.6]	19.2% [16.3–22.4]	39.7% [36.7–42.8]	1.4% [0.8–2.4]	11.0% [8.6–14.0]	11.0% [8.9–13.5]

Note: Rows may not sum to 100% due to rounding. In some cases the 95% confidence intervals are asymmetric because they are calculated for proportions, which are bounded by 0 and 1.

Table A-2: Percentage of Subpopulation that Purchased Cigarettes at Each Type of Store [95% Confidence Interval]

	Middle School						
	Gas Station	Convenience Store	Discount Store	Grocery Store	Drug Store	Vending Machine	Restaurant
Overall	41.6% [33.3–50.4]	19.7% [15.1–25.4]	4.7% [2.6–8.3]	12.5% [8.6–17.8]	4.2% [2.3–7.3]	12.9% [9.5–17.2]	4.6% [2.4–8.4]
Males	40.1% [32.1–48.7]	16.6% [11.8–22.9]	4.3% [1.9–9.3]	12.7% [8.6–18.3]	5.0% [2.5–9.8]	16.9% [12.1–22.9]	4.6% [1.9–10.6]
Females	43.6% [33.4–54.3]	23.4% [17.1–31.1]	5.2% [2.4–10.9]	12.3% [7.3–19.8]	3.1% [1.3–7.2]	8.0% [4.6–13.5]	4.6% [2.0–9.9]
Whites	50.4% [39.8–60.9]	16.7% [11.5–23.7]	2.0% [0.7–5.8]	9.4% [6.7–13.1]	3.1% [1.4–6.7]	15.1% [10.3–21.6]	3.4% [1.4–8.0]
African-Americans	28.0% [16.6–43.2]	27.5% [18.2–39.1]	7.8% [3.1–17.9]	16.5% [6.8–34.9]	4.3% [1.7–10.8]	7.8% [3.0–18.7]	8.2% [3.3–18.9]
Hispanics	42.8% [28.8–58.0]	17.1% [10.1–27.4]	6.0% [2.5–13.5]	11.2% [6.9–17.6]	8.7% [2.9–23.3]	9.9% [5.8–16.6]	4.4% [1.0–17.4]
Regular Smokers	43.1% [33.2–53.6]	21.4% [13.6–32.1]	3.4% [1.2–9.2]	11.0% [6.6–17.8]	4.2% [1.5–11.2]	9.8% [5.5–16.9]	7.0% [3.1–15.1]
Non-daily Smokers	47.8% [37.7–58.1]	18.6% [12.4–26.8]	2.8% [1.3–5.9]	13.1% [8.3–20.1]	2.2% [0.8–5.8]	13.8% [9.5–19.5]	1.7% [0.6–4.6]

	Middle School						
	Gas Station	Convenience Store	Discount Store	Grocery Store	Drug Store	Vending Machine	Restaurant
Overall	48.9% [42.6–55.2]	29.2% [24.7–34.2]	2.7% [1.9–3.9]	12.3% [9.6–15.7]	2.7% [1.8–4.1]	2.7% [1.8–3.8]	1.5% [0.9–2.7]
Males	50.8% [43.2–58.3]	26.5% [21.1–32.8]	3.1% [2.2–4.3]	12.3% [9.5–15.6]	3.0% [1.8–4.9]	3.0% [1.9–4.6]	1.5% [0.8–2.8]
Females	46.7% [40.0–53.5]	32.3% [27.5–37.6]	2.4% [1.2–4.6]	12.3% [8.8–17.1]	2.4% [1.2–4.8]	2.3% [1.2–4.4]	1.5% [0.6–4.2]
Whites	53.3% [46.4–60.0]	28.9% [23.7–34.8]	2.3% [1.4–3.6]	9.1% [6.8–12.0]	2.2% [1.4–3.7]	2.9% [1.9–4.4]	1.4% [0.7–2.9]
African-Americans	32.5% [18.0–51.4]	36.9% [24.1–51.7]	5.1% [1.8–13.8]	18.7% [9.6–33.3]	6.0% [2.5–14.1]	0.8% [0.0–5.6]	0.0% [0.0–0.0]
Hispanics	42.7% [31.6–54.6]	24.7% [16.7–34.9]	1.9% [0.6–5.9]	21.4% [13.5–32.2]	3.7% [1.5–9.0]	3.4% [1.4–7.8]	2.1% [0.6–7.5]
Regular Smokers	52.4% [45.7–59.0]	27.4% [22.3–33.1]	2.4% [1.5–4.1]	11.8% [8.9–15.4]	2.2% [1.2–3.9]	2.3% [1.3–3.9]	1.6% [0.9–3.1]
Non-daily Smokers	44.1% [36.9–51.7]	32.9% [26.8–39.6]	2.2% [1.2–4.2]	13.0% [9.0–18.5]	3.4% [8.9–15.4]	3.2% [1.9–5.2]	1.2% [0.5–3.0]

Note: Rows may not sum to 100% due to rounding. In some cases the 95% confidence intervals are asymmetric because they are calculated for proportions, which are bounded by 0 and 1.

Table A-3: Percentage Reporting Difficulties in Purchasing Cigarettes [95% Confidence Interval]

	Percentage Asked to Show Proof of Age		Percentage Refused a Sale	
	Middle School	High School	Middle School	High School
Overall	26.1% [21.0–31.3]	39.5% [36.0–42.9]	36.2% [30.2–42.9]	34.4% [31.4–37.4]
Males	29.0% [22.0–36.0]	40.5% [35.6–45.4]	39.6% [32.6–46.6]	34.2% [30.3–38.2]
Females	21.9% [13.8–30.1]	38.4% [32.3–44.4]	31.9% [24.2–39.6]	34.9% [29.8–40.1]
Whites	27.5% [20.1–34.9]	39.5% [35.3–43.7]	29.2% [23.8–34.5]	33.9% [30.1–37.7]
African-Americans	22.0% [10.5–33.5]	41.7% [34.9–48.6]	48.5% [36.7–60.3]	32.7% [25.8–39.5]
Hispanics	27.5% [16.8–38.2]	38.3% [29.8–46.7]	38.2% [24.7–51.6]	37.9% [31.7–44.1]
Regular Smokers	27.1% [16.8–37.5]	43.3% [38.5–48.1]	24.4% [15.9–32.9]	34.7% [29.9–39.5]
Non-daily Smokers	28.1% [21.2–35.0]	36.3% [30.4–42.2]	39.1% [29.7–48.5]	34.4% [28.8–40.0]

**Table A-4: Average Self-Reported Price Paid in Dollars for Cigarettes
[95% Confidence Interval]**

	Middle School	High School
Overall	2.80 [2.67–2.92]	3.06 [2.97–3.15]
Males	2.78 [2.60–2.97]	3.03 [2.92–3.14]
Females	2.81 [2.62–2.99]	3.08 [2.98–3.18]
Whites	2.99 [2.78–3.21]	3.09 [2.98–3.20]
African-Americans	2.49 [2.31–2.67]	2.72 [2.53–2.91]
Hispanics	2.46 [2.20–2.71]	2.94 [2.80–3.09]
Regular Smokers	3.13 [2.93–3.31]	3.15 [3.05–3.26]
Non-daily Smokers	2.70 [2.55–2.85]	2.92 [2.80–3.03]

**American Legacy Foundation
1001 G Street, NW, Suite 800
Washington, DC 20001**

202-454-5555 phone

202-454-5599 fax

www.americanlegacy.org

AMERICAN
LEGACY
FOUNDATION