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The California Tobacco Control Program: Can We Maintain the Progress? Results from the California Tobacco Survey, 1990-2005. Volume 1

California Department of Public Health
California Tobacco Control Program

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This document has been amended to reflect the reorganization of the Department of Health Services into the California Department of Public Health and the California Department of Healthcare Services, effective July 1, 2007. This document has also been amended to reflect the re-naming of the California Tobacco Control Section to the California Tobacco Control Program, effective January 1, 2008.

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To obtain data collection and statistical methodology, please contact the California Tobacco Control Program (CTCP) at: partners.webmaster@cdph.ca.gov

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Glossary

THE CALIFORNIA TOBACCO CONTROL SUCCESSES IN
CALIFORNIA:
CAN WE MAINTAIN THE PROGRESS?

Selected Key Findings

KEY FINDINGS

Chapter 1

Tobacco Control Progress in California and the Rest of the United States

- By the end of 2005, Californians were buying half the number of cigarettes as the rest of the nation (3.6 compared to 7.0 packs per capita per month), which resulted in the rapid decline in sales in California since 1990. However, this decline in sales has slowed markedly in recent years.
- The tobacco industry's advertising and promotions budget was over 28 times higher than the California Department of Public Health's (CDPH) tobacco control program expenditures in 2003, compared to six times higher in 1990.
- Since 1990, smoking prevalence has declined an average of 0.3% per year in California, which is almost 50% higher than the decline observed in the rest of the nation.
- By 2005, California had approximately one third lower smoking prevalence than the rest of the country (14.7% compared to 20.6%). However, at the current rate of decline, smoking prevalence in California will not meet the 12% target set for the United States.
- Cessation trends between California and comparison states demonstrated that the California Tobacco Control Program (CTCP) was associated with higher rates of successful quitting in young adults (20-35 years) but not among adults aged 35 years and older.
- Among adults over age 35, CTCP was associated with more rapid declines in cigarette consumption in California than in the comparison states.
- There has been a major decline in 30-day smoking prevalence among ninth and eleventh grade students in California since 1993 that was not observed in the rest of the nation. However, this continuing decline in adolescent smoking in California has stopped, possibly as a result of the huge increase in tobacco industry advertising and promotions at a time when tobacco control funding has been unable to keep pace.

Chapter 2

Trends in Tobacco Use in California

- In 2005, the California Tobacco Survey (CTS) estimate for adult smoking prevalence was 13.7%. This was a decline of 9.2% since 2002. Since 1990, adult smoking prevalence has declined by a factor of 28%.

- The decline in prevalence of adult smoking occurred across genders, all age groups, racial/ethnic groups, and education levels. The largest declines between 2002 and 2005 were observed for young adults, college graduates, individuals with highest income, and Non-Hispanic Whites. In 2005, the racial/ethnic groups with the lowest smoking prevalence were Asian/Pacific Islanders ($11.0 \pm 2.1\%$) and Hispanics ($11.8 \pm 1.1\%$).
- The average consumption of cigarettes by daily smokers continued to decline. In 2005, the mean consumption level was 13.8 cigarettes per day. Light and occasional smokers comprised over two-thirds of all smokers (68%).
- Non-cigarette tobacco use did not increase substantially between 2002 and 2005, although cigar use continued to be common (10%) in young adult men, particularly in those who smoke cigarettes. Young adult men appeared to be experimenting with hookah use.
- Most smokers (72.9%) would definitely not replace their cigarettes with smokeless tobacco, even if they thought it was less harmful.
- Adolescent smoking was the lowest that it has been since the inception of the California Tobacco Control Program (CTCP) in 1990, representing a reduction by a factor of 64.8% since the start of the program in 1990.

Chapter 3

Smoking Cessation

- The high rate of attempted quitting, identified with the large price increase in 1999, did not return to baseline levels as might be expected when the price of a pack of cigarettes stabilizes.
- There has been no significant change since 1996 in the success rate following a quit attempt.
- Most smokers who tried to quit had implemented a smoke-free home prior to the attempt. After relapse, $80.8 \pm 3.9\%$ maintained their home as smoke-free.
- Among smokers, there was a reduction in daily consumption levels, but there were no apparent changes in the proportion of smokers who were most addicted to cigarettes.
- There was an increase in the use of cessation assistance by smokers, particularly nicotine replacement therapy (NRT).
- Self-efficacy to quit (the belief that one is capable of quitting) is one of the major predictors of future successful quitting. Moderate-to-heavy smokers who used NRT on a past quit attempt had lower self-efficacy for future quitting than those who made a quit attempt without using NRT.
- Smokers interested in quitting are likely to be susceptible to point-of-sale price promotions.

Chapter 4

Price, Taxes, and Purchasing Behavior

- Price remains an important factor in cigarette consumption and smoking prevalence. Price elasticity of demand for cigarettes in California is estimated at -0.42. This means that for a 10% price increase, cigarette sales will fall by 4.2%. About half of the decline is expected to result from reduced smoking prevalence and about half from reduced consumption among smokers.
- Moderate to heavy smokers displayed little change in purchasing behaviors in response to the price increases associated with Proposition 10 and the Master Settlement Agreement (MSA).
- The percentage of smokers engaging in individual tax avoidance activities was small and steady, averaging 5.2% over the three years between 2002 and 2005.
- Analyses of consumption, tax-paid sales, and reported pack prices in California showed no increase in tax evasion activities and no impact of tax evasion activities on consumer prices in the years following implementation of Proposition 10 and the MSA.
- Tax evasion activities are estimated to comprise only 1% of tobacco sales.

THE CALIFORNIA TOBACCO CONTROL PROGRAM:
CAN WE MAINTAIN THE PROGRESS?

Chapter 1

Tobacco Control Progress in California and the Rest of the United States

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Chapter 1

Tobacco Control Progress in California and the Rest of the United States

This chapter presents national and California cigarette consumption and smoking prevalence data from national data sources. Estimates of smoking prevalence in California from the California Tobacco Survey (CTS) will be presented in Chapter 2.

KEY FINDINGS

- By the end of 2005, Californians were buying half the number of cigarettes as the rest of the nation (3.6 compared to 7.0 packs per capita per month), which resulted in the rapid decline in sales in California between since 1990. However, this decline in sales has slowed markedly in recent years.
- The tobacco industry's advertising and promotions budget was over 28 times higher than the California Department of Health Services' tobacco control program expenditures in 2003, compared to six times higher in 1990.
- Since 1990, smoking prevalence has declined an average of 0.3% per year in California, which is almost 50% higher than the decline observed in the rest of the nation.
- By 2005, California had approximately one third lower smoking prevalence than the rest of the country (14.7% compared to 20.6%). However, at the current rate of decline, smoking prevalence in California will not meet the 12% target set for the United States.
- Cessation trends between California and comparison states demonstrated that the California Tobacco Control Program (CTCP) was associated with higher rates of successful quitting in young adults (20-35 years) but not among adults aged 35 years and older.
- Among adults over age 35, CTCP was associated with more rapid declines in cigarette consumption in California than in the comparison states.
- There has been a major decline in 30-day smoking prevalence among ninth and eleventh grade students in California since 1993 that was not observed in the rest of the nation. However, this continuing decline in adolescent smoking in California has stopped, possibly as a result of the huge increase in tobacco industry advertising and promotions at a time when tobacco control funding has been unable to keep pace.

Chapter 1

Tobacco Control Progress in California and the Rest of the United States

Introduction

The first comprehensive tobacco control program in the United States (U.S.) was initiated by California in 1990. This program included media campaigns, school and community education on smoking, cessation programs, and policy changes to discourage tobacco use and exposure. At the recent State of the Science review of the evidence in 2006 (NIH, 2006), the following were identified as effective components of a comprehensive program:

- (1) placing strict limits on the tobacco industry's ability to market its products,
- (2) restricting smoking in public places to reduce exposure to secondhand smoke,
- (3) conducting a mass media campaign aimed at denormalizing tobacco use,
- (4) enforcing laws that ban sales of cigarettes to minors,
- (5) increasing excise taxes in order to increase cigarette price and reduce demand, and
- (6) providing effective smoking education in schools.

All of the above components have been included in the California Department of Public Health, California Tobacco Control Program (CTCP) (formerly the California Department of Health Services, Tobacco Control Section) since its inception. There has been a significant decline in the cigarette consumption rate in California that is attributed to its comprehensive program (Pierce et al., 1998). As part of the program, California implemented the workplace smoke ban in 1994 to protect nonsmokers from the harmful effects of secondhand smoke (Eisner et al., 1998). The presence of a voluntary smoking ban in smokers' homes has been associated with reduced cigarette consumption (Gilpin & Pierce, 2002).

Any single component of a comprehensive tobacco control program would not have the same long-term influence on decreasing smoking prevalence as the combination of all these components. For example, an increase in cigarette price is usually followed by a decline in consumption, but because of inflation and smokers' adjustment to the new price, the magnitude of this immediate effect cannot be maintained by price increase alone. However, with a comprehensive program, the overall decline of the adult prevalence rates continues because of the synergistic effect of the program's different components (NCI, 1991).

The reasons for the decline in prevalence in California are multi-factorial. This could be due to more smokers quitting, young adult birth cohorts not picking up the habit in their teen years, the influence of migration of new residents who do not smoke as much, or inaccuracy in reporting. This report addresses some of these issues separately.

However, the inconsistency of tobacco control program funding and ongoing efforts by the tobacco industry to undermine the program have made it increasingly difficult to operate a first-rate tobacco control program in recent years. Based on data from the California Department of Public Health, funding for the program declined by more than 40% between 2001 and 2002, and it has continued at that lower level. There is a close correlation between amount of funding for comprehensive tobacco control programs and their effectiveness (Tauras et al., 2005). At the

same time, there has been an increase in the money allocated by tobacco companies to sell their products through “buy one, get one free” sales promotions and other strategies that lower prices to consumers; these strategies seem to be halting the decline of total sales. It is therefore not surprising that this report reveals some aspects of slowing or reversal of the declining smoking trends in California, compared to the rest of the U.S. However, the decline in smoking prevalence and the overall picture for smoking reflect the overall success of the program, despite inadequate funding and tobacco industry attempts to undermine its influence.

There have been arguments that California has a unique population that is driving the difference in smoking habits compared to the rest of the U.S. The relatively large Hispanic population is one of these cited factors. This report addresses this contention by carrying out analyses for Non-Hispanic White populations, where consistent declines in consumption and increases in quitting were shown for this specific ethnic group. In addition, for comparison of prevalence, the different surveys were standardized to the demographic distribution of the California population in 2005 to adjust for changes in race, ethnicity, age, and education, making it clear that these demographic factors do not explain changes in the estimates over the years.

California’s influence in tobacco control might also have an effect on national trends by dissemination of its program as a whole or as individual components to other states. Even the tobacco-producing states have shown some degree of decline in consumption and increased quitting in the last decade (Al-Delaimy et al., 2007; Messer et al., 2007).

The following sections describe in more detail the differences in smoking-related trends in California compared to the rest of the U.S.

1. Per Capita Cigarette Tax Sales

Per capita cigarette tax sales were calculated for California and the rest of the United States. The cigarette sales data were obtained from the Orzechowski and Walker annual report (Orzechowski and Walker, 2005). Both the business cycle and seasonality lead to month-to-month variability in these wholesale data. As in previous reports, this variability has been minimized by considering bi-monthly data. To obtain per capita estimates, sales were divided by the total adult population in the respective years. Finally, a seasonally-adjusted smoother model (SABL, see technical report) was used to provide the trend estimates. **Figure 1.1** presents the per capita cigarette consumption in packs. By the end of the year 2005, the average packs per

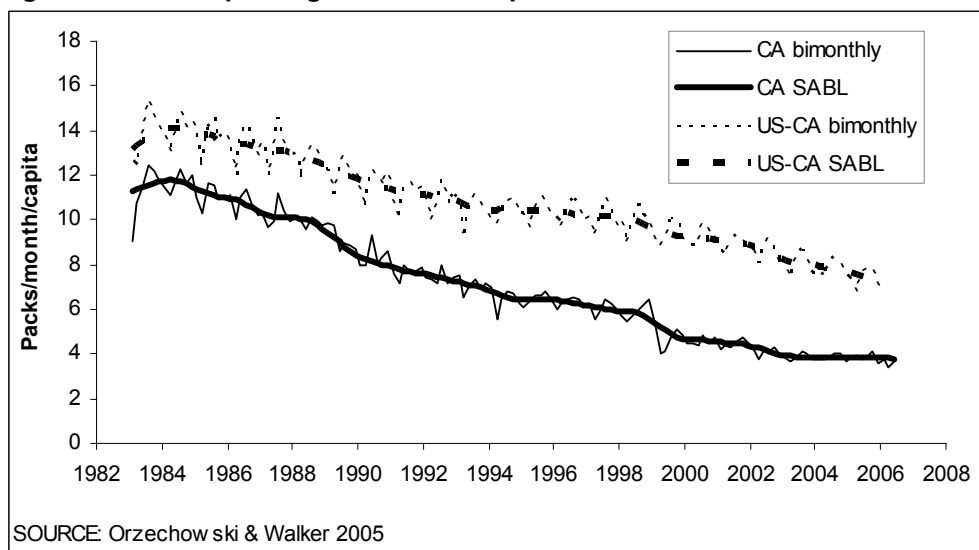
Per capita, Californians buy half as many cigarettes as the rest of the nation.

capita per month sold in California was 3.6, lower by a factor of 49% than the 7.0 packs per capita per month in the rest of the U.S. This difference has grown dramatically larger over the duration of the California comprehensive tobacco control program. At the start of the program in 1989, California per capita cigarette sales were only 19% lower than the rest of the U.S. (9.9 versus 12.2 packs per capita per month). Therefore, the percentage difference between California and the rest of the U.S. has more than doubled during the period of the

comprehensive tobacco control program.

However, between 2002 and 2005, the long trend showing a decline in per capita sales in California was virtually halted as indicated in Figure 1.1.

Figure 1.1: Per Capita Cigarette Consumption in California and the Rest of the U.S.



2. Per Capita Spending to Influence Smoking Behavior

Both the tobacco industry and CTCP spend money to influence smoking behavior. One possible reason for the leveling off in per capita sales may be a major increase in per capita advertising and promotional spending by the tobacco industry during a time when tobacco control funding by CTCP did not keep pace. Since 1966, the tobacco industry has been mandated to provide details of advertising and promotions expenditures at the national level to the Federal Trade Commission (FTC, 2005) and give an annual report to the U.S. Congress. There is considerable evidence that these advertising and promotions expenditures are not equally distributed across the nation and that the tobacco industry invests more in states that conduct tobacco control programs (such as California) (Wakefield and Chaloupka 2000). Based on this evidence, one can make a very conservative assumption by treating tobacco industry per capita advertising and promotions expenditures in California at the same level as the rest of the nation.

From 1990 through 1998, per capita expenditures on advertising and promotions by the tobacco industry were approximately \$30. In 1998, a Master Settlement Agreement between state Attorneys General and the tobacco industry restricted placement of industry advertising and promotions to places where youth were less likely to be exposed (Pierce and Gilpin, 2004).

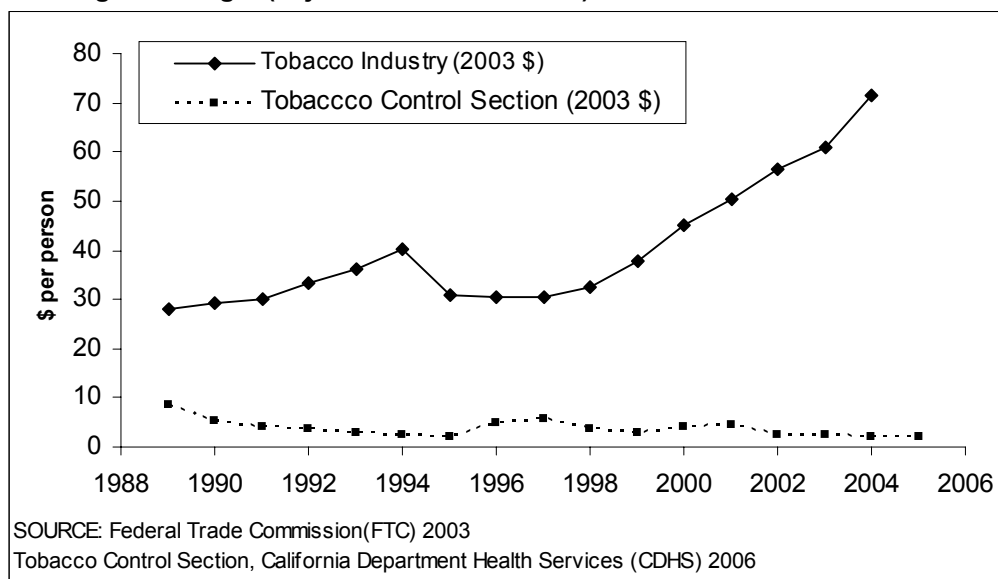
In 2003, the tobacco industry's per capita promotional spending was 28.6 times higher than that of the California Tobacco Control Program.

Starting in 1998, the tobacco industry dramatically increased its expenditures on advertising and promotions, where permitted; in 2003, the industry's per capita expenditure was \$71.60, a 2.4-fold increase over 6 years. The total expenditure by the tobacco industry on cigarette advertising and promotional spending in 1990 was close to 4 billion dollars, which increased to more than 15 billion in 2003 (FTC, 2005). The total budget in Fiscal Year 2001-2002 allotted to the California Tobacco Control Program was \$107 million. This budget dropped to \$61 million in Fiscal Year 2002-2003 and it has not increased since that time. This 40% drop in funding had a significant influence on the effectiveness of CTCP.

Figure 1.2 presents the per capita expenditure in California by the tobacco industry compared to the expenditure by CTCP (excluding the budget of the California Department of Education). The 2003 consumer price index was used to adjust for inflation and get the real price up to 2003 where the last report on the tobacco industry is available. As shown in the figure, since the year 2000 a substantial divergence has occurred between the expenditure of the tobacco industry and that of the tobacco control program in California.

The tobacco industry's dramatic increase in expenditures was not matched by CTCP. Per capita expenditures on tobacco control have remained relatively constant over the past 16 years and were \$2.50 in 2003. The ratio between tobacco industry and tobacco control expenditure was 5.9 in 1990. By 2003, the tobacco industry was outspending the tobacco control program by a factor of 28.6. It is likely that this major imbalance in expenditures contributed significantly to the apparent halting of the decline in smoking in California.

Figure 1.2: Cigarette Promotional Expenditure vs. California Tobacco Control Program Budget (adjusted to 2003 Dollars)



3. Adult Smoking Prevalence

Population estimates of smoking behavior can be influenced by many issues that introduce variability and yield different results from one study to another. This report presents the data from the major surveillance systems, including the California Tobacco Survey (CTS), and fits a simple linear regression line to estimate the overall trend in recent times.

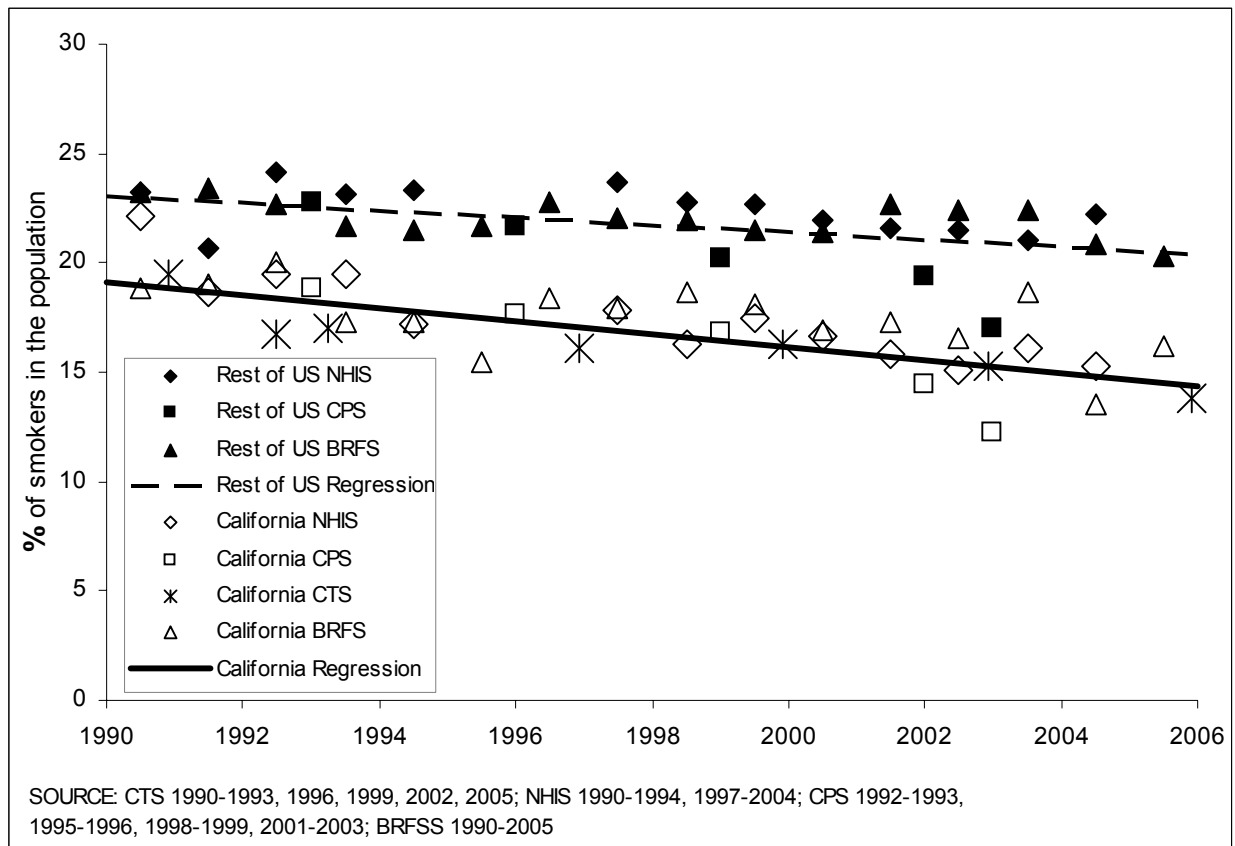
By 2005, California had approximately one-third fewer adult smokers than the rest of the nation.

To compare the adult smoking prevalence in California with the rest of the U.S., a figure was compiled using population-based surveys with accessible and relevant data on tobacco use. In addition to the CTS, these surveys include the Tobacco Use Supplement of the Current Population Survey (TUS-CPS), the National Health Interview Survey (NHIS), and the Behavioral Risk Factor Surveillance System (BRFSS). Data from the surveys was standardized to the demographic distribution of the California population in 2005 (see technical report) to adjust for changes in race, ethnicity, age, and

education; it is apparent that these demographic factors do not explain changes in the estimates.

Figure 1.3, based on data from these surveys, shows that reported smoking prevalence in California has been consistently lower than smoking prevalence in the rest of the U.S. The simple linear regression line fitted for both California and the rest of U.S. data for 1990 to 2005 is presented in Figure 1.3. On average, smoking prevalence in California declined by 0.3% per year between 1990 and 2005 and reached 14.7% in 2005. The regression line for smoking prevalence in California from the different surveys closely approximates the line for smoking prevalence from the CTS.

Figure 1.3: Reported Smoking Prevalence, Comparing U.S. and California Databases (Standardized to 2005 California Adult Population)



Over the same time period, the average decline in smoking prevalence in the rest of the United States was only 0.17% per year and reached 20.6% in 2005. Over the period of CTCP, the average decline in prevalence in California was 43% higher than in the rest of the nation. Accordingly, smoking prevalence in California in 2005 was lower than that for the rest of the U.S. by a factor of 29%; in 1990, at the beginning of the program, this difference was only 17%.

Assuming that this overall trend continues, the estimated smoking prevalence in California will be 13.2% in 2010. Thus, California will not reach the Healthy People 2010 recommended target of 12% smoking prevalence (USDHHS, 2000). More effort and expenditure will be needed in the California program in order to achieve the Healthy People 2010 suggested goal.

4. Did the California Tobacco Control Program Lead to Increased Successful Cessation among Smokers?

In an effort to assess the influence of CTCP on successful cessation (defined as quit for at least one year) during the 1990s, population trends in successful quitting were estimated from the 1980s until the late 1990s in California, with two comparison groups of states (Messer et al., 2007). Retrospective smoking histories were used to estimate annual rates of successful cessation from the national TUS-CPS surveillance system. This comparison focuses only on the Non-Hispanic White population to avoid biases associated with different racial-ethnic population groups in the different states.

The first comparison group of states is the major tobacco-growing states (TGS) in the nation. Over 90% of U.S. tobacco production since the 1980s has occurred in the following six states: Kentucky, Tennessee, North Carolina, South Carolina, Virginia, and Georgia. As a group, these states have a population close in size to that of California. Traditionally, they have had considerably lower state excise taxes than California, and are considered to have the lowest social norms against tobacco in the nation (Alamar and Glantz, 2006). Thus, this comparison group represents the population that is expected to be most different from California.

The second comparison group of states is New York and New Jersey (NY/NJ). The combined population of these two states is close to the population of California. Further, throughout the 1980s and 1990s, these states had fairly homogeneous policies on tobacco excise taxes and tax levels similar to those in California. However, neither state spent significant funds on tobacco control activities until the late 1990s. Thus, these two states can be considered as controls that reflect the influence of excise taxes to determine the effect attributable to CTCP over and above any effect from excise taxes alone.

Differences in incidence rates between states and age groups were assessed using relative odds ratios from logistic regression, controlling for gender, four levels of education, household income in 2001 constant dollars, and a binary variable for household income above twice the Census Bureau poverty threshold using standard demographics collected on the CPS (U.S. Census Bureau, 2006).

Age by State Group	% Successfully Quit/Year	Relative Odds of Cessation	95 % CI
20-34 years			
CA	4.1	1.00	
NY/NJ	3.7	0.87*	0.78, 0.98
TGS	2.8	0.79*	0.70, 0.89
35-49 years			
CA	3.8	1.00	
NY/NJ	3.6	0.96	0.84, 1.10
TGS	2.8	0.82*	0.71, 0.94
50-64 years			
CA	4.5	1.00	
NY/NJ	4.7	1.07	0.88, 1.28
TGS	4.2	1.01	0.85, 1.19

Successful cessation defined as self-reported abstinence of ≥ 1 year. CA: California. NY&NJ: New York and New Jersey. TGS: the tobacco growing states (Kentucky, Tennessee, North Carolina, South Carolina, Virginia and Georgia). Data shown are weighted percentages. Odds ratios and 95% confidence intervals from weighted logistic regression adjusting for demographics.

*Statistically significant at $p < 0.05$

Source: TUS-CPS 1992-93, 1995-96, 1998-99, 2001-02

As shown in **Table 1.1**, California smokers aged 20-34 years were more likely to successfully quit during the 1990s than smokers in either of the comparison sets of states ($p < 0.05$). For those aged 35-49 years, successful quitting was similar for smokers in California and New York/New Jersey, both of which were higher than for smokers in the TGS. For those aged 50-64 years, there were no significant differences in successful cessation between any of the state groups.

In summary, CTCP was associated with an additional effect on successful quitting over and above cigarette price increases; however, this effect was limited to the youngest group of smokers. In the 1990s, half of California cigarette smokers had quit smoking by age 44. The median age of successful cessation was 47 years in New York/New Jersey and 54 years for the tobacco growing states (Messer et al., 2007).

5. Did the California Tobacco Control Program Lead to Reduced Consumption among Smokers?

A similar analysis was undertaken to estimate whether CTCP had an effect on the consumption level of smokers (Al-Delaimy et al., 2007). While there has been concern that smokers can titrate their nicotine dose from cigarettes¹, there is also good evidence suggesting that many smokers reduce their cigarette consumption prior to making a quit attempt (Farkas et al., 1999). Thus, evidence of an effect on reducing overall consumption may predict higher cessation rates in the future. Additionally, given that the level of consumption is strongly associated with lung cancer, if smokers can reduce their exposure to carcinogenic products by reducing their cigarette consumption, this in itself should have an effect on future cancer rates.

This analysis considers only daily Non-Hispanic White smokers. State-specific estimates of cigarette consumption among smokers were used from surveys of tobacco use in the United States conducted by the Census Bureau between 1992-1993 and 2001-2002 in the Tobacco-Use Supplements to the TUS-CPS (U.S. Census Bureau). All models adjusted for gender, education (less than 12 years, high school graduate, some college, college graduate), household income in 2001 constant dollars, and a binary variable for household income above twice the Census Bureau poverty threshold (by size of family and number of children) (US Census Bureau) using standard demographics collected on the CPS.

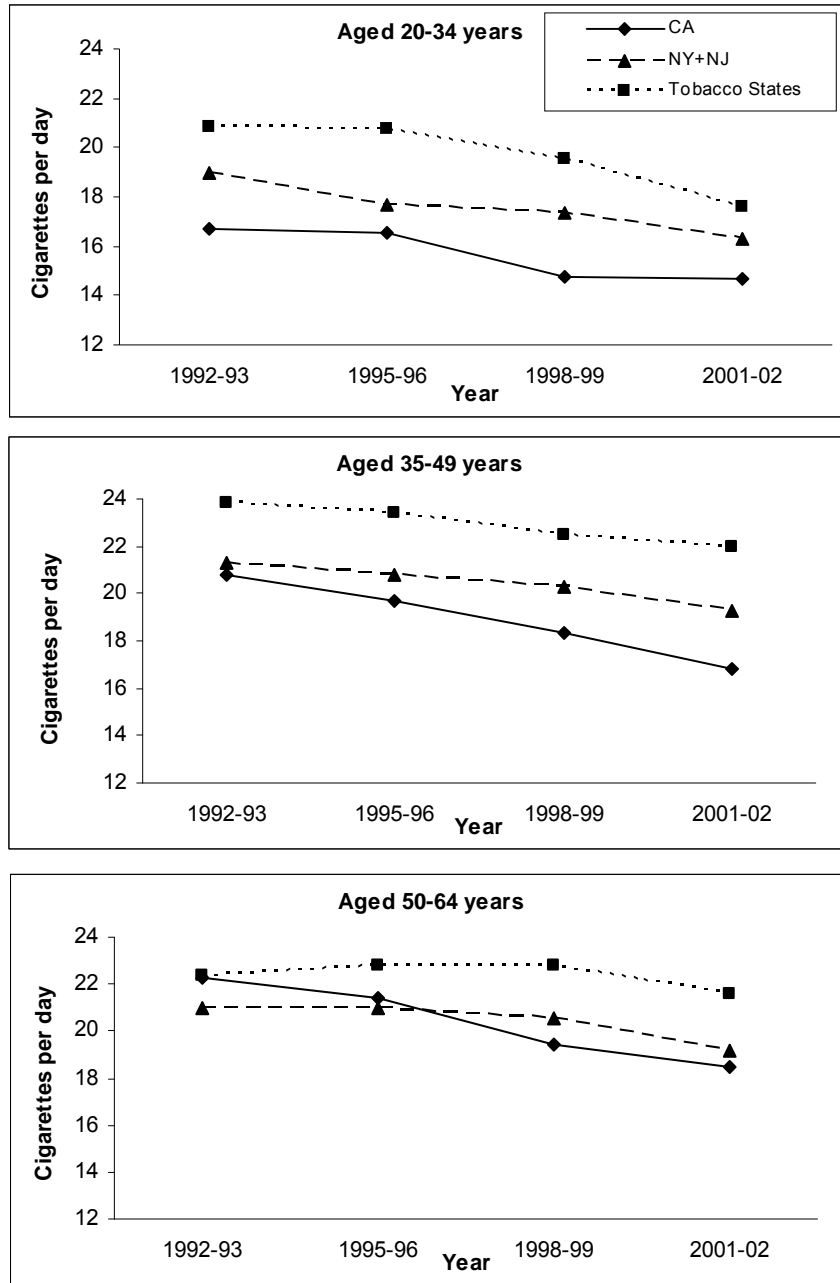
Between 1992-1993 and 2001-2002, the youngest daily smokers (aged 20-34 years) showed significant declines in smoking consumption levels in all state groups ($p < 0.01$); the rate of change in California was not higher than in comparison states. As shown in the top panel of **Figure 1.4**, the trends were almost parallel for the three groups of states. In 1992-1993, daily smokers in California smoked an average of 16.7 cigarettes per day, which was less than those in New York/New Jersey (19.0 cigarettes per day) or the Tobacco-Growing-States (20.8 cigarettes per day) ($p < 0.01$).

For daily smokers aged 35-49 years in 1992-1993, smokers in California smoked an average of 20.8 cigarettes per day, which was similar to the smoking level of New York/New Jersey daily smokers for this age group (21.3 cigarettes per day). Both of these levels were significantly lower than the average 23.8 cigarettes per day of daily smokers of this age in the Tobacco-Growing-States ($p < 0.01$) (**Figure 1.4**, middle panel). Over the next 10 years, the decline in

¹ Smokers titrate or control their nicotine dose by changing either how frequently they inhale or how deeply they inhale while smoking.

consumption in California occurred at twice the rate of either New York/New Jersey or the Tobacco-Growing-States. For daily smokers aged 50-64 years in 1992-1993, all three groups of states had comparable consumption levels: 22 cigarettes per day for both California and the Tobacco-Growing-States and 21 cigarettes per day for New York/New Jersey (Figure 1.4, bottom panel). Over the next 10 years, the rate of decline in consumption rates for both California and New York/New Jersey daily smokers was very similar to the rate of decline in those aged 35-49 years. When all those above the age of 35 were combined, the decline in cigarette consumption was highest among California smokers, followed by New York/New Jersey and the Tobacco-Growing-States.

Figure 1.4: Cigarette Consumption for Daily Non-Hispanic White Smokers



	Age Group								
	20-34 years			35-49 years			50-64 years		
	CA	NY + NJ	Tobacco States	CA	NY + NJ	Tobacco States	CA	NY + NJ	Tobacco States
1992-93	16.7	19.0	20.8	20.8	21.3	23.8	22.3	21.0	22.4
1995-96	16.5	17.7	20.7	19.7	20.8	23.4	21.4	21.0	22.8
1998-99	14.7	17.4	19.6	18.3	20.3	22.5	19.4	20.6	22.8
2001-02	14.7	16.3	17.6	16.8	19.3	22.0	18.5	19.2	21.5

SOURCE: TUS-CPS 1992-1993, 1995-1996, 1998-1999, 2001-2002

The above results suggest that the comprehensive tobacco control program in California was effective in decreasing the rate of cigarette consumption among daily smokers over the age of 35. Established statistical models from cohort studies have consistently demonstrated that smoking-related diseases, especially lung cancer, vary exponentially with consumption level and smoking duration (Knoke et al., 2004). A significant reduction in the cigarette consumption level is therefore expected to reduce future lung cancer risk in the population, which is demonstrated by several studies (Lubin et al., 1984; Benhamou et al., 1989; Godtfredsen et al., 2005). In recent years, there has been a call for harm reduction strategies to decrease smoking levels in continuing smokers (Institute of Medicine, 2001). These findings suggest that a comprehensive tobacco control program that results in a decrease in the number of cigarettes smoked per day contributes to the reduction in lung cancer rates.

6. Adolescent Smoking

Over 90% of adult smokers start smoking in their teens (USDHHS, 1989). Preventing the initiation of smoking among adolescents is one of the critical objectives of the California Tobacco Control Program. The considerable success that California had between 1996 and 2002 in decreasing adolescent tobacco use has been documented (Pierce et al., 2005).

There is no comparable national surveillance for the CTS teen questionnaire. Therefore, comparison of adolescent smoking trends between California and the rest of the nation was done by comparing trends in the national school-based Youth Risk Behavior Survey (YRBS) with the similarly-designed survey for California, the California Student Survey (CSS). The YRBS and the CSS are school-based surveys; caution is warranted when comparing these estimates with household telephone surveys such as the CTS for adolescents. Chapter 2 describes the youth smoking prevalence data from the telephone-based household CTS in more detail. Each mode of data collection has its own set of biases, and these differences are particularly large for very young adolescents and for occasional users (Biglan et al., 2004). Therefore, it is important not to compare estimates from school-based surveys with estimates from telephone surveys.

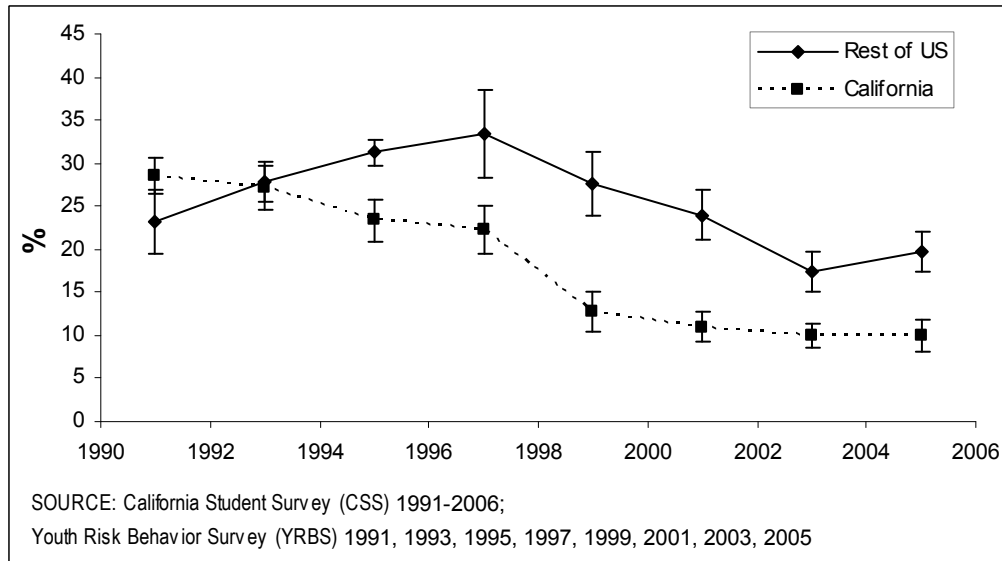
A comparison of smoking in the previous 30 days (the standard estimate of adolescent prevalence) is presented separately for students in ninth and eleventh grades from the YRBS and CSS surveys in **Figure 1.5** and **Figure 1.6**. For ninth grade students, national smoking prevalence peaked in 1997 before declining rapidly through 2003. However, the 2005 estimate demonstrates that this decline has halted. In 1990, California had a higher ninth grade smoking prevalence than the rest of the nation; smoking prevalence among this age group then declined through 2003. Nevertheless, by 2005 an estimated $9.9 \pm 1.8\%$ of ninth graders reported having smoked in the past 30 days, which was half the national figure.

The national trend for eleventh graders was similar to that for ninth graders, with an increasing prevalence through the early 1990s peaking in 1997, followed by a fairly rapid decline. In California, smoking prevalence in the 1990s was similar to that for the rest of the nation, with a decline in prevalence through 2003. In 2005, smoking prevalence among California eleventh graders was $15.1 \pm 2.2\%$, approximately 40% lower than in the rest of the nation at $24.3 \pm 3.1\%$.

The decline in adolescent smoking in California has halted in the past few years.

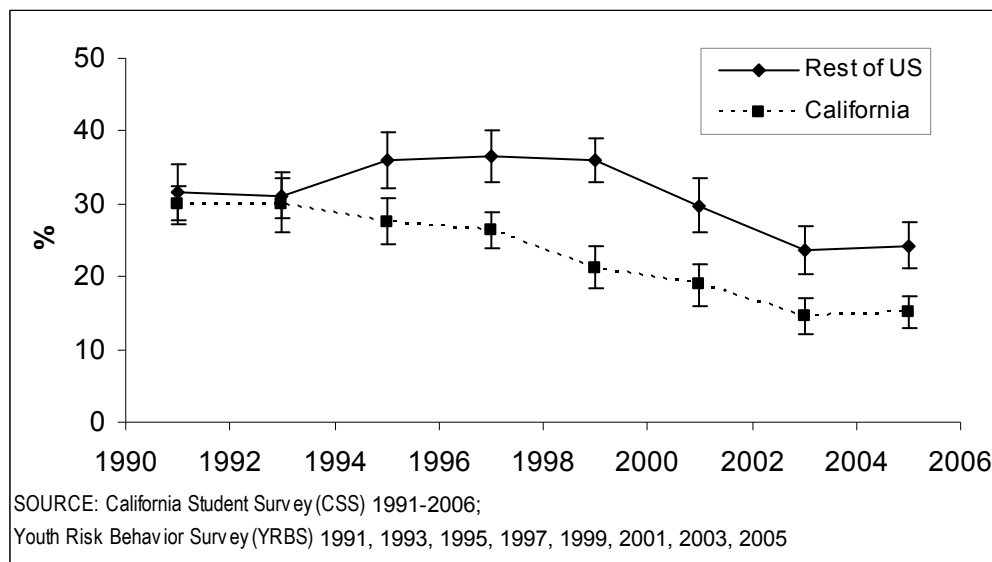
In summary, all indicators of adolescents smoking demonstrate a major effect of CTCP in reducing initiation of smoking. At the start of the program, the smoking rates for California adolescents were similar to the rest of the nation, whereas by 2005, California adolescents were approximately 50% less likely to smoke than adolescents in the nation as a whole. However, this remarkable decline in adolescent smoking in California and the rest of the nation may have been halted in the past few years.

Figure 1.5: Prevalence of Smoking among Ninth Graders in California and the Rest of the U.S., 1991 – 2005



	1991	1993	1995	1997	1999	2001	2003	2005
Rest of U.S.	23.2	27.8	31.2	33.4	27.6	23.9	17.4	19.7
California	28.5	27.2	23.4	22.3	12.7	11.0	10.1	9.9

Figure 1.6: Prevalence of Smoking among Eleventh Graders in California and the Rest of the U.S., 1991 – 2005



	1991	1993	1995	1997	1999	2001	2003	2005
Rest of U.S.	31.6	31.1	35.9	36.6	36	29.8	23.6	24.3
California	29.8	29.9	27.6	26.3	21.2	18.8	14.6	15.1

Summary

California continues to do better than the rest of the U.S. in tobacco control. The California population buys half the number of cigarettes per person than the rest of the U.S. Overall reported prevalence of smoking from multiple population-based data sets converge on the lower prevalence of adult smoking in California, compared to the rest of the U.S. The rate of decline in prevalence between 1990 and 2005 in California was double the rate of decline for the rest of the U.S. during the same period, leading to a divergence in prevalence over time between California and the U.S. Further, when compared to states with no comprehensive tobacco control programs, younger smokers in California are quitting at a higher rate and older ones are decreasing their cigarette consumption more rapidly. All of the above data is strongly suggestive of the success of the program.

When comparing adolescents in California with those in the rest of the U.S., a similar pattern emerges. The prevalence of smoking among high school students in California and the rest of the U.S. started at the same level in 1991. Starting in 1993, there was a major decline in California that was not observed for the rest of the U.S.

CTCP was successful in reducing smoking prevalence and cigarette consumption from 1990 to 2002. However, there is some concern from emerging evidence that progress is slowing down in California. Since 2002, the rate of decline in per capita cigarette sales has reached a plateau. This trend may be the result of tobacco industry sales promotions, new licensing, ordinances, or enforcement of tax stamps. According to current estimates, reported adult smoking prevalence will not reach the 12% goal recommended by Healthy People 2010. In addition, the continuing decline in smoking prevalence in California adolescents has ended and is now similar to the rest of the U.S.

Most importantly, the decline in progress seems to reflect the growing budgetary gap between tobacco control funding and tobacco industry advertisement and promotions expenditures. In 1990, the amount spent by the tobacco industry for promotions and advertising was 5.9 times greater than tobacco control spending in California. In 2003, the tobacco industry was spending 28.6 times as much as CTCP. The current decline in progress can likely only be reversed with a substantial increase in the budget for the California comprehensive tobacco control program.

References

- Alamar, B., and S. A. Glantz. 2006. Effect of increased social unacceptability of cigarette smoking on reduction in cigarette consumption. *Am J Public Health* 96:1359-63.
- Al-Delaimy, W. K., J. P. Pierce, K. Messer, M. M. White, D. R. Trinidad, and E. A. Gilpin. 2007. The California Tobacco Control Program's Effect on Adult Smokers: 2. Cigarette Consumption. *Tob Control* 16:85-90.
- Benhamou, E., S. Benhamou, A. Auquier, and R. Flamant. 1989. Changes in patterns of cigarette smoking and lung cancer risk: results of a case-control study. *Brit J Cancer* 60:601-4.
- Biglan, M., E. A. Gilpin, L. A. Rohrbach, and J. P. Pierce. 2004. Is there a simple correction factor for comparing adolescent tobacco-use estimates from school- and home-based surveys? *Nic Tob Res* 6:427-437.
- Eisner, M. D., A. K. Smith, and P. D. Blanc. 1998. Bartenders' respiratory health after establishment of smoke-free bars and taverns. *J Am Med Assoc* 280:1909-14.
- Farkas, A. J., E. A. Gilpin, J. M. Distefan, and J. P. Pierce. 1999. The effects of household and workplace smoking restrictions on quitting behaviors. *Tob Control* 8:261-265.
- Federal Trade Commission (FTC). 2005. *Cigarette Report for 2003*. Washington, D. C.: Federal Trade Commission. Available at <http://www.ftc.gov/reports/cigarette05/050809cigrpt.pdf> (Accessed August 3, 2006).
- Gilpin, E. A., and J. P. Pierce. 2002. The California Tobacco Control Program and potential harm reduction through reduced cigarette consumption in continuing smokers. *Nic Tob Res* 4:157-166.
- Godtfredsen, N. S., E. Prescott, and M. Osler. 2005. Effect of smoking reduction on lung cancer risk. *J Am Med Assoc* 294:1505-10.
- Institute of Medicine (IOM). 2001. *Clearing the Smoke. Assessing the Science Base for Tobacco Harm Reduction*. Washington, D. C.: National Academy Press.
- Knoke, J. D., T. G. Shanks, J. W. Vaughn, M. J. Thun, and D. M. Burns. 2004. Lung cancer mortality is related to age in addition to duration and intensity of cigarette smoking: an analysis of CPS-I data. *Cancer Epidem Biomar* 13:949-57.
- Lubin, J. H., W. J. Blot, F. Berrino, R. Flamant, C. R. Gillis, M. Kunze, D. Schmahl, and G. Visco. 1984. Modifying risk of developing lung cancer by changing habits of cigarette smoking. *Brit Med J (Clin Res Ed)* 288:1953-6.
- Messer, K., J. P. Pierce, S. H. Zhu, A. M. Hartman, W. Al-Delaimy, D. R. Trinidad, and E. A. Gilpin. 2007. The California Tobacco Control Program's Effect on Adult Smokers: 1. Smoking Cessation. *Tob Control* 16:85-90.

National Cancer Institute. 1991. *Strategies to Control Tobacco Use in the U.S.: A Blueprint for Public Health Action in the 1990s*. Bethesda, MD: National Institute of Health Pub. No. NCI 92-3316.

National Institutes of Health. June 12-14, 2006. *State-of-the-Science Conference Statement. Tobacco Use: Prevention, Cessation, and Control*.
<http://consensus.nih.gov/2006/TobaccoStatementDraft061406.pdf> (Accessed August 8, 2006)

Orzechowski, W., and R. C. Walker. 2005. *The Tax Burden on Tobacco. Historical Compilation*. Vol. 40. Arlington, VA: Orzechowski & Walker.

Pierce, J. P., and E. A. Gilpin. 2004. How did the Master Settlement Agreement change tobacco industry expenditures for cigarette advertising and promotions? *Health Promot Pract* 5 (suppl):84S-90S.

Pierce, J. P., E. A. Gilpin, S. L. Emery, M. M. White, A. J. Farkas, B. Rosbrook, and C. C. Berry. 1998. Has the California Tobacco Control Program reduced smoking? *J Am Med Assoc* 280:893-899.

Pierce, J. P., M. M. White, and E. A. Gilpin. 2005. Adolescent smoking decline during California's Tobacco Control Program. *Tob Control* 14:207-212.

Tauras, J. A., F. J. Chaloupka, M. C. Farrelly, G. A. Giovino, M. Wakefield, L. D. Johnston, P. M. O'Malley, D. D. Kloska, and T. F. Pechacek. 2005. State tobacco control spending and youth smoking. *Am J Public Health* 95:338-44.

U.S. Census Bureau, Housing and Household Economic Statistics Division. Available at <http://www.census.gov/hhes/www/poverty/threshld.html> (Accessed August 3, 2006).

U.S. Department of Health and Human Services. 2000. *Healthy People 2010: Understanding and Improving Health and Objectives for Improving Health*. 2nd Ed. Washington, D. C.: U.S. Government Printing Office.

U.S. Department of Health and Human Services. 1989. *Reducing the Health Consequences of Smoking: 25 Years of Progress. A Report of the Surgeon General*. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. DHHS Publication No. (CDC) 89-8411.

Wakefield, M., and F. Chaloupka. 2000. Effectiveness of comprehensive tobacco control programmes in reducing teenage smoking in the USA. *Tob Control* 9:177-186.

**THE CALIFORNIA TOBACCO CONTROL PROGRAM:
CAN WE MAINTAIN THE PROGRESS?**

Chapter 2

Trends in Tobacco Use in California

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Chapter 2

Trends in Tobacco Use in California

KEY FINDINGS

- In 2005, the California Tobacco Survey (CTS) estimate for adult smoking prevalence was 13.7%. This was a decline by a factor of 9.2% since 2002. Since 1990, adult smoking prevalence has declined by a factor of 28%.
- The decline in prevalence of adult smoking occurred across genders, all age groups, racial/ethnic groups, and education levels. The largest declines between 2002 and 2005 were observed for young adults, college graduates, individuals with highest income, and Non-Hispanic Whites. In 2005, the racial/ethnic groups with the lowest smoking prevalence were Asians/Pacific Islanders ($11.0 \pm 2.1\%$) and Hispanics ($11.8 \pm 1.1\%$).
- The average consumption of cigarettes by daily smokers continued to decline. In 2005, the mean consumption level was 13.8 cigarettes per day. Light and occasional smokers comprised over two thirds of all smokers (68%).
- Non-cigarette tobacco use did not increase substantially between 2002 and 2005, although cigar use continued to be common in young adult men (10%), particularly in those who smoked cigarettes. Young adult men also appeared to be experimenting with hookah use.
- Most smokers (72.9%) would definitely not replace their cigarettes with smokeless tobacco, even if they thought it was less harmful.
- Adolescent smoking was the lowest that it has been since the inception of the California Tobacco Control Program (CTCP) in 1990, representing a reduction by a factor of 64.8% since the start of the program in 1990.

Chapter 2

Trends in Tobacco Use in California

Introduction

This chapter examines trends in smoking prevalence, cigarette consumption, and the use of other tobacco products from the California Tobacco Surveys (CTS). The CTS are random-digit-dialed telephone surveys to landline phones in California. Only primary residences are included in the survey; businesses, nursing homes, vacation homes, and dormitory phones are excluded. Details of this survey methodology are presented in the appendix as well as in the technical report available from: partners.webmaster@cdph.ca.gov.

The methodology of the survey involves calling residential telephone lines and conducting initial interviews to obtain demographic information about the households. When an adult over the age of 18 years is identified and agrees to participate in the study, a series of questions on age, gender, race/ethnicity, education, and household income are asked about all household members. In addition, current smoking status, previous smoking history, and regularity of smoking are asked for each household member aged 12 years or older. County and zip code of the residence and information about additional phone lines at home are also collected. All of this information constitutes the screener survey, the source of most of the data in this chapter. Questions used in the screener survey are included in their respective sections in this chapter, with the specific question numbers in the survey. The numbers from the screener survey start with the letters SC, an abbreviation for screener. The importance of this chapter is in demonstrating the trends for smoking across all the above demographic factors over time. Long-term success of the California Tobacco Control Program (CTCP) is dependent on the continued decline in smoking prevalence across all age groups, genders, race/ethnicity groups, and education and income levels.

Some data is also included from the extended interviews of the CTS. These adult and adolescent interviews take place after the initial screener survey, once permission to call again to interview those household members has been obtained. The extended interviews include more detailed information on other tobacco use, attitudes, and beliefs related to smoking. Since it is important to monitor trends in the use of other tobacco products for any increasing use and also to compare it to the use of cigarettes, these trends are included in this chapter. There are also new questions asked of adult smokers in the 2005 survey, including questions about smokers' willingness to substitute their cigarettes with smokeless tobacco or other apparently less harmful products. The results are included under the section on other tobacco use by adults, since it is relevant to the use of smokeless tobacco, which some advocate as a harm reduction product.

1. Current Smoking Prevalence among Adults

Prevalence of adult smoking was measured by asking the following questions for every adult member of the household:

{As far as you know}{have you/has person} smoked at least 100 cigarettes during your lifetime? (SC9)

If answered yes: *{As far as you know} {do you/does person} smoke cigarettes every day, some days, or not at all? (SC10)*

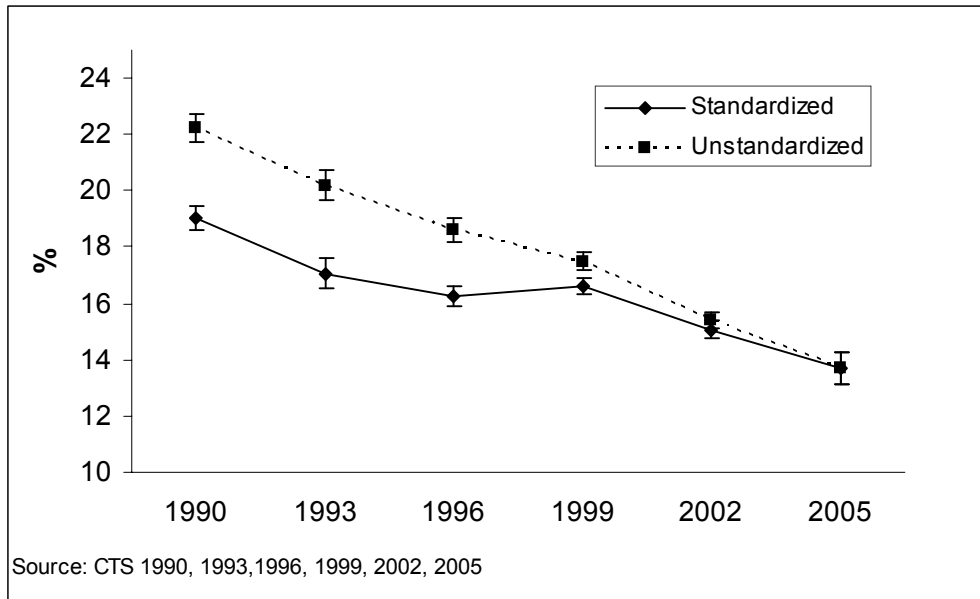
For the smoking prevalence estimate, both some day and everyday smokers are included in the numerator and all adults are included in the denominator. For the 1990, 1993, and 1996 CTS, the screener respondent was asked if household adults “smoke now.” To be consistent with national surveys, the CTS question was changed in 1999 to “smoke some days or everyday.” Therefore the new question is likely to have increased the estimate of smoking prevalence because it will include the occasional smokers who would have otherwise been excluded using the previous question.

In 2005, adult smoking prevalence continued to decline, reaching 13.7%.

Figure 2.1 presents the standardized and unstandardized prevalence for California adults. This procedure is described in detail in the technical report (data collection and statistical methodology). The standardized estimate adjusts the data from previous surveys for differences in population demographics between that year and 2005. In 2005, $13.7 \pm 0.5\%$ of the California population was classified as smokers. This represents a 28% decline from the estimated prevalence for an equivalent population in 1990. The decline in prevalence from 2002 to 2005 was 9.2%. As outlined in Table A.2.1,

there was an overall decline in prevalence of adult smoking in 2005 across each age group, gender, racial/ethnic group, and education level.

Figure 2.1: Standardized (2005) and Unstandardized Adult Smoking Prevalence, 1990-2005
(See Appendix Table A.2.1)



	Standardized	Unstandardized
1990	19.0	22.2
1993	17.0	20.2
1996	16.3	18.6
1999	16.6	17.5
2002	15.1	15.4
2005	13.7	13.7

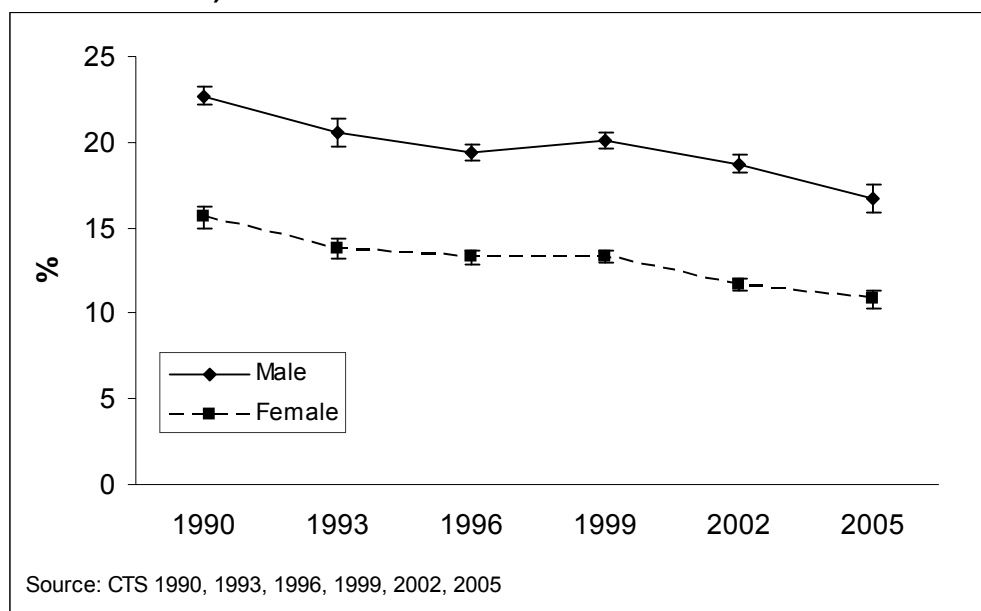
The on-going decline in smoking prevalence among adults suggests that CTCP continues to influence the overall smoking habits of adults in California 15 years after its implementation in 1990.

2. Current Smoking Prevalence for Demographic Subgroups of the Population

Differences in Smoking Prevalence by Gender

Cigarette smoking decreased among both men and women between 2002 and 2005; smoking prevalence among men was $16.7 \pm 0.9\%$ and among women was $10.8 \pm 0.5\%$. Since the start of CTCP, smoking prevalence among women has consistently been approximately two-thirds that of men. However, between 2002 and 2005, there was an 11.0% factor decrease among men (from $18.7 \pm 0.5\%$ to $16.7 \pm 0.9\%$) and only a 7.4% decline among women (from $11.7 \pm 0.4\%$ to $10.8 \pm 0.5\%$) (Appendix Table A.2.1). As shown in **Figure 2.2**, the overall trends of decline in prevalence since 1990 are similar among men and women. There are further differences in the prevalence of smoking between the two genders, according to other demographic variables described in the following sections.

Figure 2.2: Standardized (2005) Smoking Prevalence by Gender, 1990-2005
(See Appendix Table A.2.1)



	1990	1993	1996	1999	2002	2005
Male	22.7	20.6	19.4	20.1	18.7	16.7
Female	15.6	13.8	13.3	13.3	11.7	10.8

Differences in Smoking Prevalence by Race/Ethnicity

The CTS asks a standard set of questions on the screener survey to identify race/ethnicity of each member of the household (**SC13-15**). These questions identify whether the individual is Hispanic or not (including a sub-classification on Mexican heritage), and, if not Hispanic, which of the following best describes his or her background: White, Black, Japanese, Chinese,

Filipino, Korean, Other Asian or Pacific Islander, American Indian, or Alaskan Native. Because of the small numbers in each of the Asian categories, in this chapter, they have been combined into the category Asian/Pacific Islanders, and American Indian or Alaskan Native have been combined into the category "Other." Due to the very small numbers and wide confidence intervals, the category of "Other" was not included in most analyses. More detailed analyses for the specific age groups will be presented in a separate chapter on race/ethnicity in volume 2 of this report.

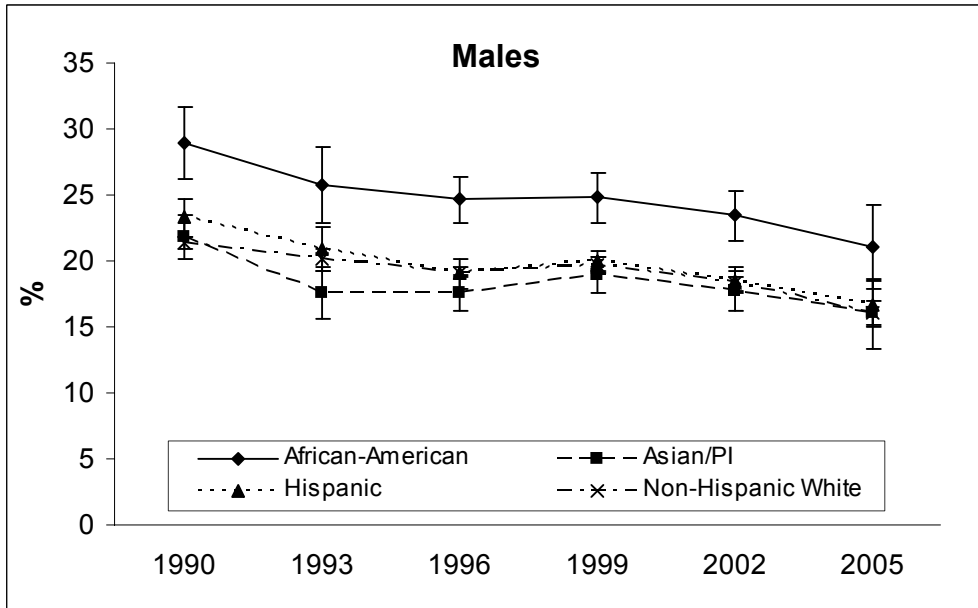
The highest smoking prevalence in 2005 was observed among African Americans (18.9% \pm 2.2) (Appendix Table A.2.1). The lowest smoking prevalence occurred among Asians/Pacific Islanders (11.0 \pm 2.1%) and Hispanics (11.8 \pm 1.1%). Non-Hispanic White smoking prevalence was 14.5 \pm 0.6% in 2005. **Figure 2.3** presents the prevalence data for these population sub-groups by gender. Both Hispanics and Asians/Pacific Islanders had much lower smoking prevalence among women than among men.

All racial/ethnic groups showed declines in current adult smoking between 1990 and 2005.

The largest decline in smoking prevalence for any ethnic group between 1990 and 2005 occurred among Hispanics (32.6% factor decrease), with Hispanic women showing a 41.6% decline. However, all race/ethnic groups experienced large declines (>25%) in smoking prevalence over this period, with the exception of Asian/Pacific Islander women, who declined by a factor of 11%. Additionally, for the period between 2002 and 2005, Non-Hispanic Whites had the highest decline (11%) compared to other ethnic groups during this period.

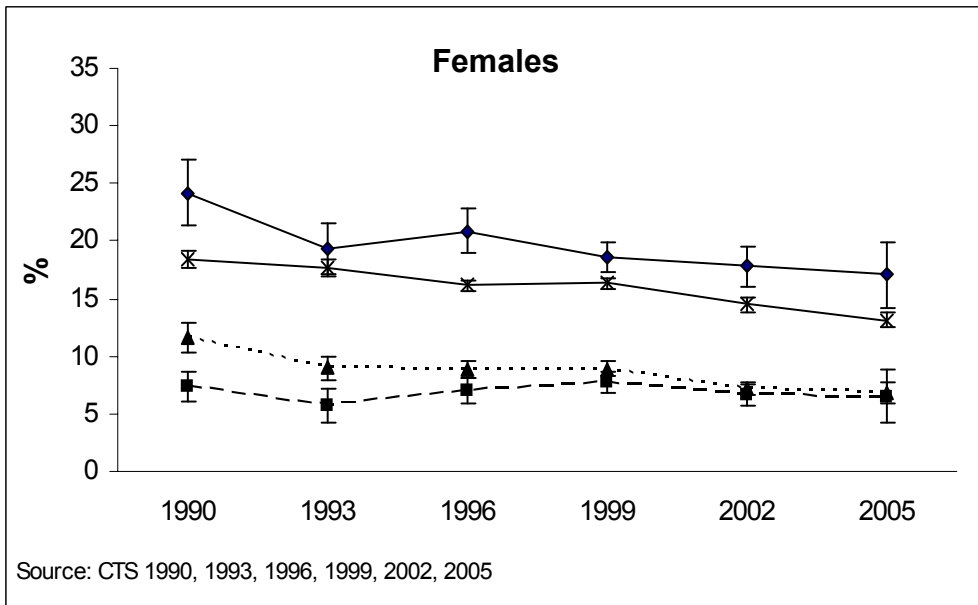
While smoking among California men was higher than that for women within each major race/ethnicity sub-group (see Appendix Tables A.2.2 and A.2.3), the gender gap in smoking was particularly marked among the Hispanic and Asian populations, where smoking prevalence among women in 2005 was 60% lower than among men. On the other hand, the gender difference among African Americans and Non-Hispanic Whites was less than 19%. The rate of decline in smoking among men in 2005 was higher than the rate of decline among women across all ethnic groups.

Figure 2.3: Standardized (2005) Smoking Prevalence by Ethnicity and Gender, 1990-2005 (See Appendix Tables A.2.2 and A.2.3)



RACE/ETHNICITY	1990	1993	1996	1999	2002	2005
African-American	28.9	25.8	24.6	24.8	23.5	21.0
Asian/PI	21.8	17.6	17.6	18.9	17.7	16.1
Hispanic	23.3	20.9	19.0	20.0	18.5	16.7
Non-Hispanic White	21.4	20.1	19.2	19.7	18.3	16.0

Figure 2.3: (Continued)



RACE/ETHNICITY	1990	1993	1996	1999	2002	2005
African-American	24.2	19.4	20.9	18.6	17.8	17.1
Asian/PI	7.3	5.7	6.9	7.8	6.6	6.5
Hispanic	11.7	8.9	8.9	8.9	7.2	6.8
Non-Hispanic White	18.5	17.7	16.2	16.4	14.5	13.1

Differences in Smoking Prevalence by Age

The age of each household member was reported by the adult member answering the screener survey about the age of household members **(SC6)**.

In **Figure 2.4**, smoking prevalence is presented according to age groups and gender. There was an increase in 1993 that peaked in 1999 before declining again among the younger age groups for both genders. But there was a consistent decline in prevalence across all other age groups for both genders. In this two-panel figure, the smoking rates were lowest in the oldest age groups (65+ years), with the difference between this age group and the other age groups more pronounced in males than females.

Figure 2.4: Standardized (2005) Smoking Prevalence by Age and Gender, 1990-2005 (See Appendix Tables A.2.2 and A.2.3)

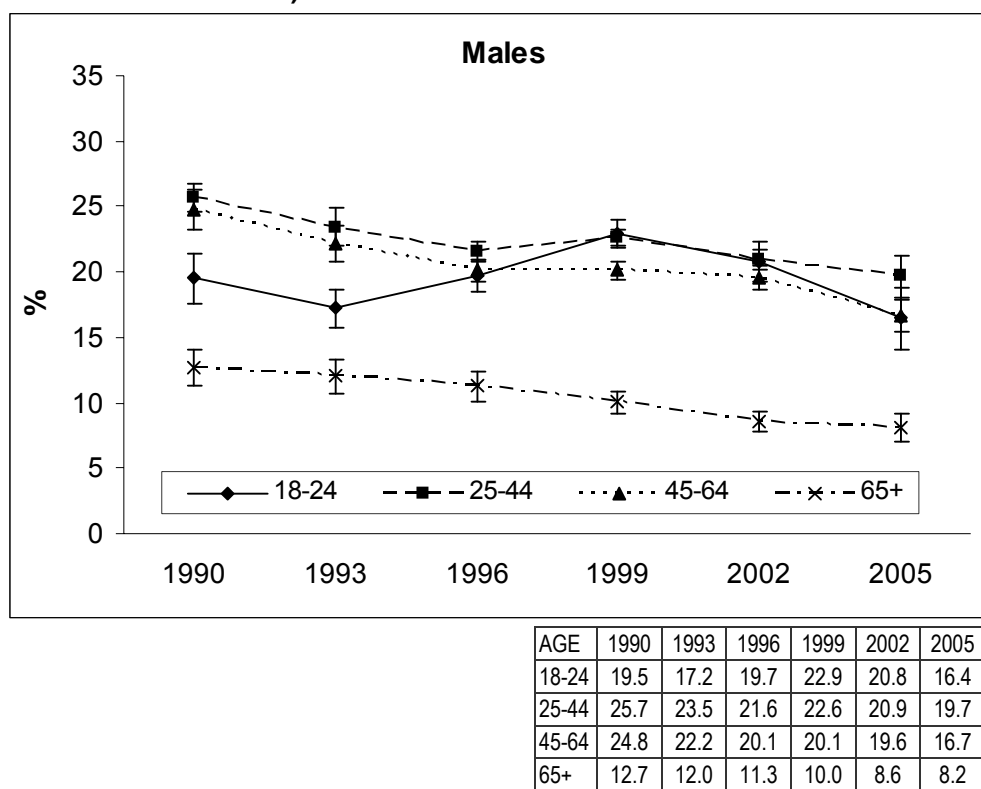
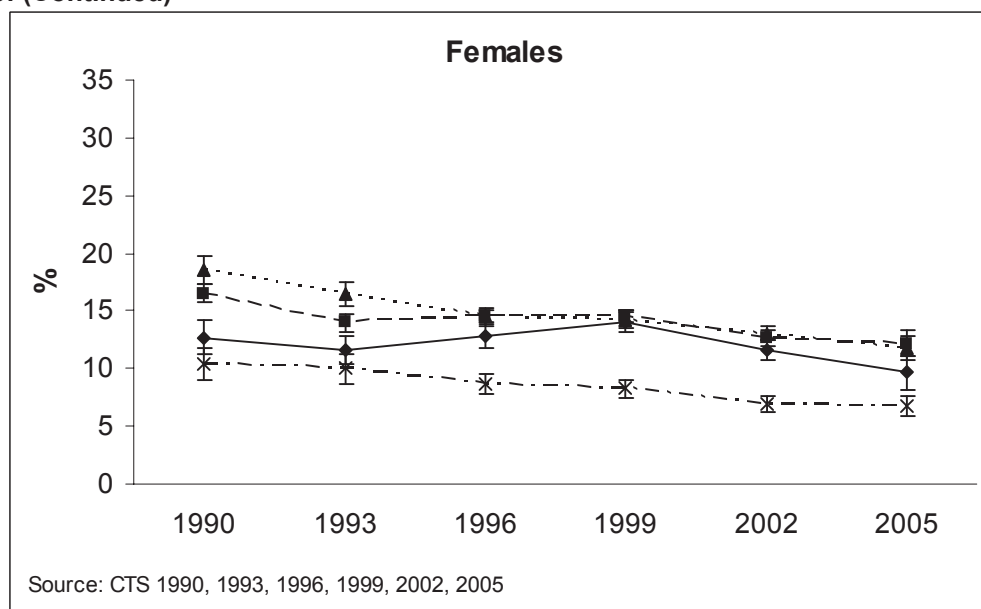


Figure 2.3: (Continued)



AGE	1990	1993	1996	1999	2002	2005
18-24	12.7	11.6	12.9	14.1	11.7	9.7
25-44	16.5	14.0	14.5	14.5	12.6	12.2
45-64	18.5	16.4	14.5	14.2	13.1	11.7
65+	10.3	10.0	8.7	8.3	6.9	6.8

In 2005, smoking prevalence was lowest among those over the age of 65 with $8.2 \pm 1.1\%$ of men and $6.8 \pm 0.9\%$ of women being current smokers. Smoking in this age group had decreased by about a third for both genders since the start of CTCP. A similar rate of decline since the start of CTCP was seen in both genders aged 45–64 years; in 2005, smoking prevalence for this age group was $16.7 \pm 1.8\%$ among men and $11.7 \pm 0.9\%$ among women.

Among those 25-44 years of age, smoking prevalence declined by approximately 25% in both genders since the start of CTCP, and at a higher rate for the 45 years and above age groups, where the decline was more than 33%. In 2005, $19.7 \pm 1.6\%$ of men and $12.2 \pm 1.1\%$ of women in this age group were current smokers, representing the age group with the highest smoking prevalence in either gender. The higher smoking prevalence in this age group is consistent with previous surveys. An examination of female smoking prevalence by age group shows that between 1999 and 2002, the 25-44-year-old age group had a factor decline of 13.1%, but between 2002 and 2005, this same age group only showed a decline of 3.5% (Appendix Table A.2.3).

Overall, adults 18-24 years old showed the largest decline of any age group in smoking prevalence between 2002 and 2005 (a factor decline of 19.1%). In 2005, the smoking prevalence was $16.4 \pm 2.4\%$ for men and 9.7 ± 1.6 for women in this age group. Although the decline from 1990 to 2005 was much greater for women than men in this age group (23.6% compared to 15.7%), since the last survey in 2002, men 18-24 years old showed the largest decline for any age group (20.9%). The high decline could be related to the high prevalence estimates seen for this age group between 1993 and 2002, which came down in 2005. This high prevalence prior to 2002 may have been a result of aging of the cohort of adolescent males who

were influenced by the very successful Joe Camel and Marlboro advertising and promotions campaigns of the late 1980s and early 1990s (Lantz, 2003).

Differences in Smoking Prevalence by Education

The screener respondent reported on the highest grade or year of regular school or college attended by each household member. These responses were grouped into four educational levels: less than 12 years, high school graduate, some college, and college graduate and above (SC16).

It has long been known that there is a strong gradient in smoking prevalence by educational status; those with higher educational levels are much less likely to smoke than those who have less education. Further, the gap between the highest educated individuals and the rest of the population has been increasing for many years (Pierce et al., 1989). Results from the 2005 CTS follow a similar pattern. In 2005, only $7.4 \pm 0.7\%$ of college graduates in California were smokers, the lowest level reported for any educational population sub-group. Since 1990, the rate of smoking among college graduates has declined by almost 40%, and this decline was consistent for both genders. The lowest smoking prevalence for any category in the 2005 CTS was for female college graduates ($6.0 \pm 1.0\%$). The propensity not to smoke among good students is clearly identifiable in the teen years (Al-Delaimy et al., 2006).

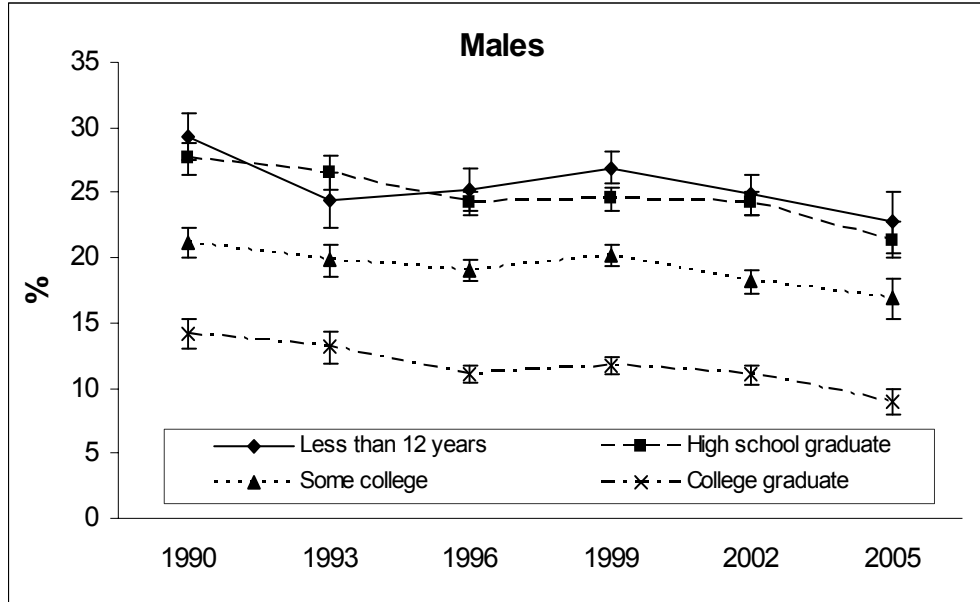
The largest declines in smoking (19%) occurred in young adults and college graduates.

The smoking rate among college graduates is now less than half the rate for those who did not attend college; the highest smoking prevalence was for high school graduates ($18.2 \pm 0.9\%$). The rate of decline in prevalence between 1990 and 2005 for those who did not graduate from college was much lower than for college graduates. Those with college degrees decreased their smoking prevalence by close to 20%, from $9.3 \pm 0.4\%$ in 2002 to $7.4 \pm 0.8\%$ in 2005. This was more than double the decrease for those

who did not graduate from college; there was negligible change in prevalence for those with less than a high school education.

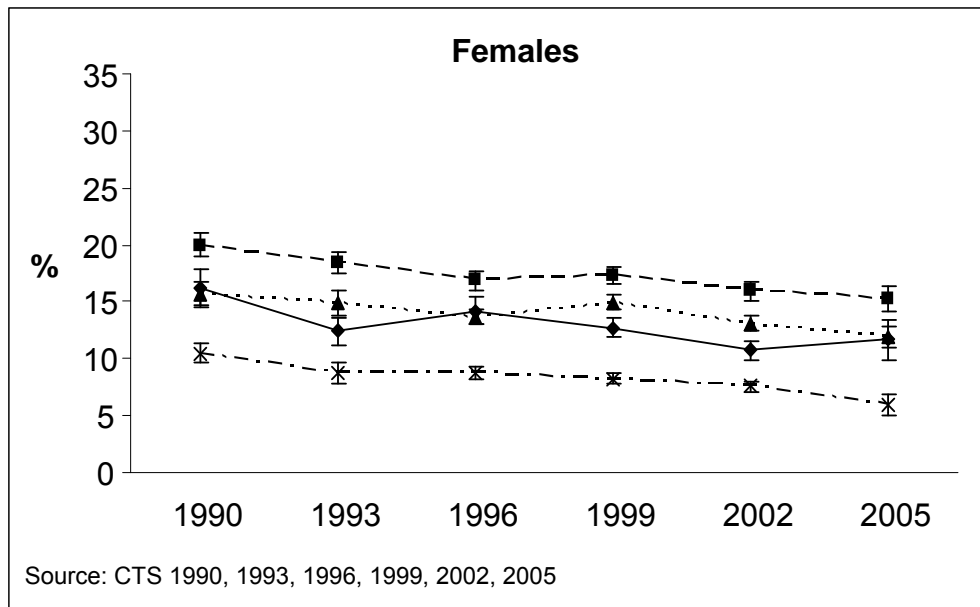
In **Figure 2.5**, the trends in smoking prevalence by education show a large gender difference. Men in the lowest educated group had the highest prevalence compared to the other educational groups, but this was not the case for women, possibly because there are a disproportionate number of Hispanic women who do not smoke and have less than a high school education. Prevalence among women who had less than 12 years of education increased by a factor of 9.3% between 2002 and 2005, whereas prevalence among men with the same education level decreased by 8.4%.

Figure 2.5: Standardized (2005) Smoking Prevalence by Education and Gender (See Appendix Tables A.2.2 and A.2.3)



EDUCATION	1990	1993	1996	1999	2002	2005
Less than 12 years	29.3	24.4	25.2	26.9	24.8	22.7
High school graduate	27.6	26.6	24.2	24.5	24.2	21.4
Some college	21.2	19.8	19.0	20.2	18.2	16.9
College graduate	14.2	13.1	11.1	11.7	11.0	8.9

Figure 2.5: (Continued)



Source: CTS 1990, 1993, 1996, 1999, 2002, 2005

EDUCATION	1990	1993	1996	1999	2002	2005
Less than 12 years	16.2	12.4	14.2	12.7	10.7	11.7
High school graduate	20.0	18.4	16.9	17.3	15.9	15.2
Some college	15.7	14.9	13.6	15.0	13.1	11.9
College graduate	10.5	8.7	8.7	8.2	7.6	6.0

Differences in Smoking Prevalence according to Household Income

The screener respondent was asked to estimate the total combined income of all persons in the household over the past year with the following question:

In studies like this, households are sometimes grouped according to income. Please tell me which group best describes an estimate of the total combined income of all persons in this household over the past year. Please include money income from all sources, such as salaries, interest, retirement, or any other source for all household members. Would you say \$10,000 or less, \$10,001 to 20,000, \$20,001 to \$30,000, \$30,001 to \$50,000, \$50,001 to \$75,000, or over \$75,000? (SC23)

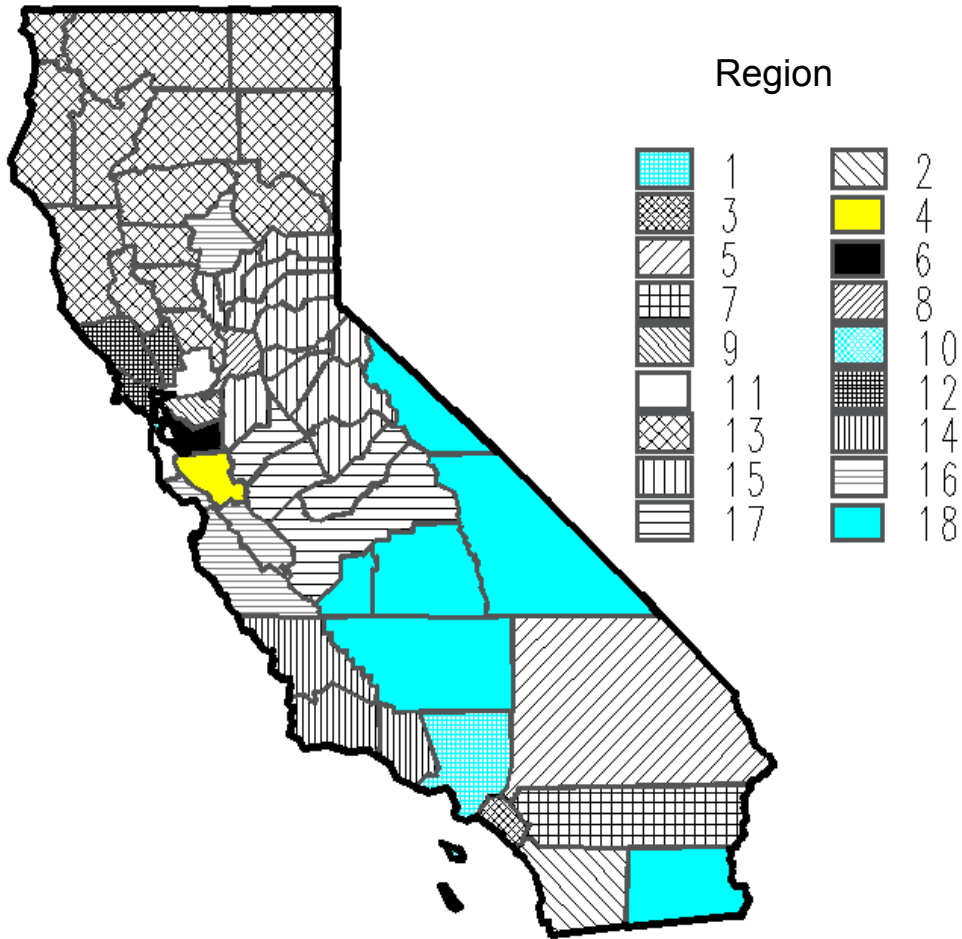
Education and income were closely associated. Nearly 70% of those in the population who had a college degree or more earned more than \$50,000 per year, while more than 70% of those with less than high school education earned less than \$30,000 per year. Given that income and education levels are correlated, it is expected that those with higher incomes will have lower rates of smoking. Lower rates of smoking are seen in all households that report incomes over \$50,000, with the lowest rate in households with incomes over \$75,000 (Appendix Table A.2.1). There were no differences in smoking rates for income sub-groups below \$50,000, except for males who reported incomes less than \$10,000 (Appendix Table A.2.2). For the men in this group, there has not been a significant decline in smoking since 1990 (2.9% decline) and they also have the highest smoking prevalence for any income level ($28.2 \pm 5.8\%$).

3. Current Smoking Prevalence among Adults by Region

Figure 2.6 shows the grouping of the various California counties into the 18 sampling regions. The CTS sample is stratified to ensure that each of California's 18 regions has representative samples of sufficient size to provide a precise estimate of smoking prevalence. The top 10 of these regions correspond to the largest counties. For the remaining 8 regions, counties were grouped with other proximal counties, so that the combined population approached 500,000 people in 1990 (UCSD and CDHS, 1990).

Table 2.1 shows the adjusted smoking prevalence rates (standardized to 2005) from the screener survey in each year. In 2005, two California counties (Santa Clara and Alameda) achieved the target 12% smoking prevalence level set by the Healthy People 2010 (USDHHS, 2000). A number of other regions that included one or more counties (San Mateo, Solano, Marin, Napa, Sonoma, Contra Costa, San Luis Obispo, Santa Barbara, and Ventura) were also very close. The highest smoking prevalence rates for any region were over 16% (San Bernardino, Imperial, Inyo, Kern, Kings, Mono, Tulare, Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity, and Yolo). Sacramento and San Francisco also had a smoking prevalence greater than 15%. In general, those counties with the highest prevalence rates also had the slowest rates of change since 1990. Rates of change varied from declines as low as 13% to declines as high as 40%.

Figure 2.6: Sampling Regions in California



**Table 2.1
Adjusted Adult Current Smoking Prevalence from the Screener Survey by Region (standardized to 2005)**

Region	1990 %	1993 %	1996 %	1999 %	2002 %	2005 %	Factor Decrease 1990-2005 %	Factor Decrease 2002-2005 %
1-Los Angeles	19.6 (±1.1)	17.2 (±1.2)	16.6 (±0.7)	16.6 (±0.7)	15.0 (±0.8)	13.1 (±1.7)	-33.3	-13.1
2-San Diego	19.5 (±2.1)	16.6 (±1.7)	15.3 (±1.4)	16.9 (±1.3)	14.2 (±1.2)	13.9 (±1.8)	-28.5	-2.0
3-Orange	17.4 (±2.6)	16.3 (±2.0)	14.2 (±1.8)	14.7 (±1.0)	14.2 (±1.5)	13.4 (±2.1)	-23.0	-5.9
4-Santa Clara	17.2 (±2.0)	16.9 (±2.0)	13.6 (±1.5)	14.7 (±1.4)	12.7 (±1.5)	12.0 (±2.5)	-30.4	-5.9
5-San Bernardino	20.7 (±1.8)	17.4 (±1.6)	18.0 (±1.9)	18.3 (±1.4)	16.4 (±1.5)	16.8 (±1.5)	-19.1	2.5
6-Alameda	19.9 (±2.3)	17.7 (±2.0)	17.9 (±2.1)	15.1 (±1.4)	15.0 (±1.6)	12.0 (±1.6)	-39.5	-19.5
7-Riverside	18.9 (±1.7)	16.1 (±1.8)	17.0 (±1.7)	18.9 (±1.5)	17.6 (±1.7)	14.3 (±1.8)	-24.4	-19.1
8-Sacramento	20.0 (±2.7)	21.4 (±2.2)	19.0 (±2.0)	16.8 (±1.5)	16.6 (±1.4)	15.4 (±1.7)	-22.7	-7.1
9-Contra Costa	19.7 (±1.8)	18.6 (±2.0)	15.7 (±1.8)	15.1 (±2.0)	13.5 (±1.6)	12.5 (±1.8)	-36.6	-7.7
10-San Francisco	19.9 (±2.2)	19.8 (±1.9)	20.3 (±2.5)	18.7 (±1.5)	18.3 (±2.3)	15.3 (±2.5)	-23.2	-16.6
11-San Mateo, Solano	16.7 (±1.8)	16.7 (±1.9)	15.6 (±1.7)	17.2 (±1.6)	14.0 (±1.5)	12.1 (±1.5)	-27.6	-13.5
12-Marin, Napa, Sonoma	17.2 (±2.2)	14.9 (±2.1)	15.3 (±1.9)	15.4 (±2.2)	14.5 (±2.2)	12.2 (±1.7)	-28.8	-15.7
13-Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity, Yolo	19.7 (±3.5)	17.7 (±2.2)	18.5 (±2.3)	19.3 (±2.2)	16.9 (±1.8)	16.4 (±1.8)	-17.0	-3.0
14-San Luis Obispo, Santa Barbara, Ventura	16.1 (±1.8)	17.5 (±1.9)	16.0 (±1.8)	16.2 (±1.6)	13.1 (±1.3)	12.8 (±1.8)	-20.2	-1.7
15-Alpine, Amador, Calaveras, El Dorado, Mariposa, Nevada, Placer, San Joaquin, Sierra, Sutter, Tuolumne, Yuba	19.4 (±3.0)	18.2 (±2.2)	17.4 (±1.7)	18.7 (±2.3)	16.7 (±1.7)	14.7 (±1.6)	-24.2	-11.7
16-Monterey, San Benito, Santa Cruz	17.7 (±2.2)	17.0 (±2.1)	15.4 (±1.6)	16.3 (±2.0)	14.6 (±1.4)	13.8 (±1.5)	-22.3	-5.9
17-Fresno, Madera, Merced, Stanislaus	20.0 (±1.9)	16.8 (±1.9)	16.8 (±2.0)	17.0 (±1.3)	16.7 (±1.7)	14.1 (±1.8)	-29.6	-15.3
18-Imperial, Inyo, Kern, Kings, Mono, Tulare	18.7 (±2.0)	17.4 (±2.1)	18.5 (±2.3)	17.8 (±1.5)	17.0 (±1.8)	16.3 (±2.5)	-13.0	-4.6

4. Changes in Cigarette Consumption among Current Smokers

In the extended adult interview, respondents were asked their smoking status with the questions:

Have you smoked at least 100 cigarettes in your entire life? (B1)

Do you smoke cigarettes every day, some days, or not at all? (B7)

Occasional current smokers were asked for their consumption level with this question:

On how many of the past 30 days did you smoke cigarettes? (B10)

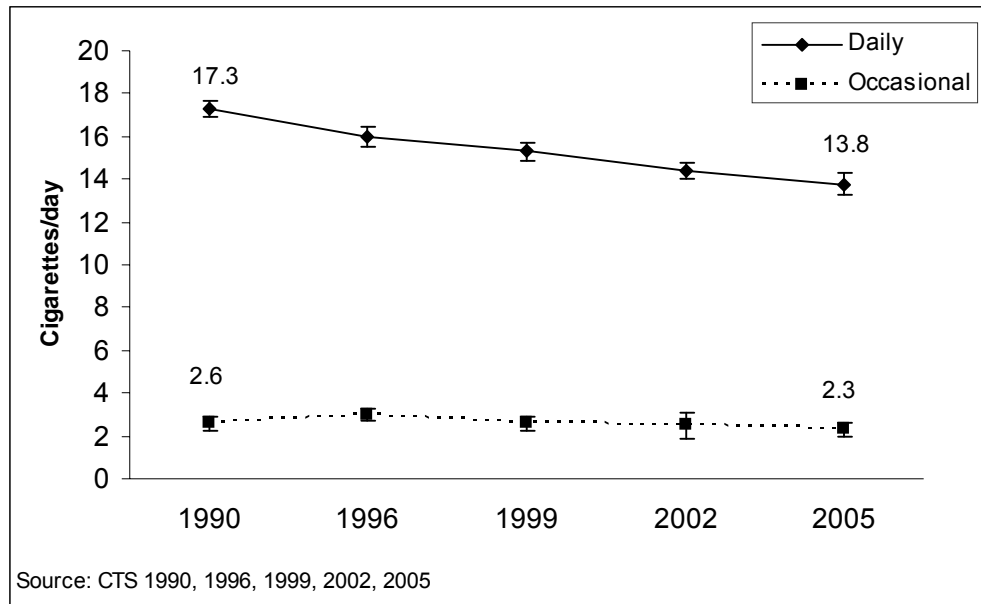
During the past 30 days, on the days that you did smoke, about how many cigarettes did you usually smoke per day? (B11)

Current daily smokers were asked for their consumption level with this question:

How many cigarettes on average do you smoke per day? (B19)

In **Figure 2.7**, the mean number of cigarettes consumed by smokers is shown separately for daily and occasional (non-daily) smokers for the period 1990 to 2005. For occasional smokers who do not smoke daily, we calculated the average daily cigarettes by multiplying the number of cigarettes they smoked on any day by the number of days per month they smoked and then divided that by the 30 days of the month to get an estimate of average cigarettes per day. As shown in the figure, occasional smokers consistently smoked around 2–3 cigarettes per day throughout the period. However, there was a significant decline in consumption among daily smokers from 17.3 cigarettes per day in 1990 to 13.8 cigarettes per day in 2005, a 20% decline.

Figure 2.7: Cigarettes Smoked Per Day among California Daily and Occasional Smokers, 1990-2005

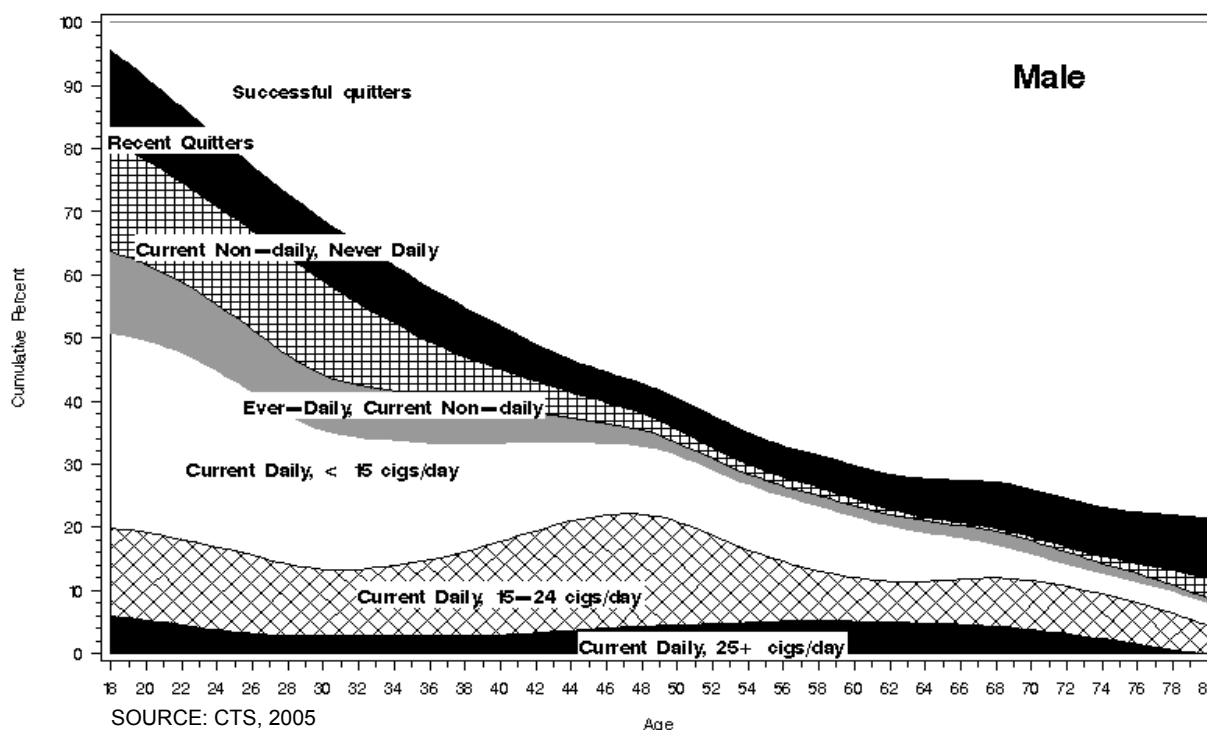


As detailed in Appendix Table A.2.4, in 2005 only $7.2 \pm 1.3\%$ of smokers overall were heavy smokers (25+ cigarettes per day), $27.9 \pm 3.7\%$ were moderately heavy smokers (15–24 cigarettes per day), $36.5 \pm 3.0\%$ were light smokers (<15 cigarettes per day) and $28.3 \pm 3.1\%$ were non-daily smokers. Smokers over age 50 years were much more likely to be heavy smokers, as were Non-Hispanic Whites. However, it should be noted that this large difference with age is partly an artifact of decline in the denominator of smokers with older age groups, as shown above.

The age group of 18-34-year-olds had the highest percentage of occasional smokers ($39.5 \pm 5.4\%$) and the lowest percentage of heavy smokers ($3.8 \pm 2.0\%$). African Americans, Hispanics and Asians/Pacific Islanders were mostly light or non-daily smokers (i.e., more than 75%). There was no appreciable change in the overall distribution of smokers among the different consumption categories compared to 2002. In terms of educational level in this age group, the most educated group (college graduate level and above) had the highest percent of occasional smoking.

The pattern of smoking among male ever smokers in 2005 is presented in **Figure 2.8**. At age 18 years, very few male smokers had successfully quit (quit >1 yr). However, this proportion of successful quitters increased dramatically with each year through age 60, after which it leveled off with over 70% having successfully quit. At each age, there was a relatively constant proportion (5–10%) of ever smokers who had quit within the previous year and had not yet relapsed or become successful quitters.

Figure 2.8: Distribution of Current and Former Male Smokers in 2005 according to Age



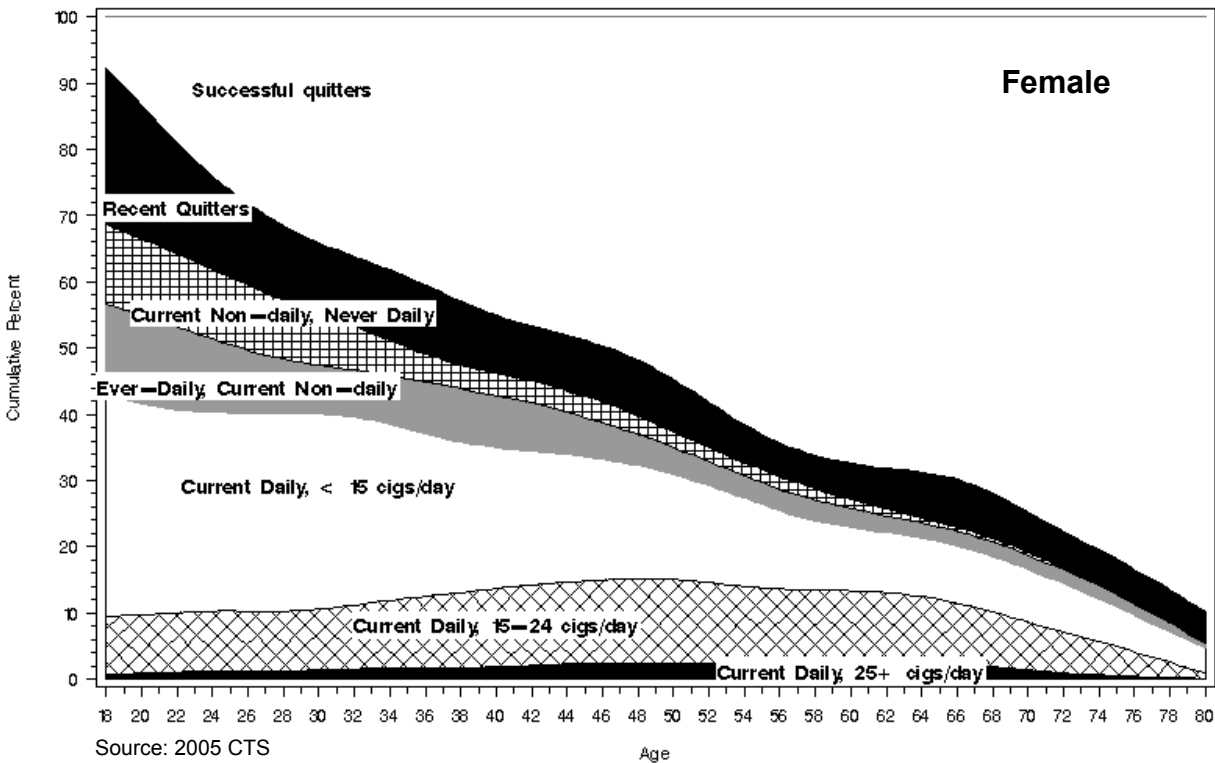
At age 18, approximately 15% of male smokers had always been occasional smokers (current non-daily, never daily smokers) and this proportion stayed fairly constant for males through age 35, but this group had virtually disappeared by age 50. There was a similar pattern for current non-daily smokers who had previously smoked on a daily basis for six months or more (current

non-daily, ever daily) – they were over 10% of ever smokers under the age of 35 and almost non-existent after the age of 50. Both of these patterns suggest that recent cohorts may have developed a less addictive smoking behavior pattern than older cohorts. About 20% of male ever smokers consumed more than 15 cigarettes per day through age 50 years, after which the proportion declined to around 10%. A fairly constant 5% of male ever smokers in each age group smoked 25+ cigarettes per day.

Approximately 30% of 18-year-old ever smokers were light daily smokers, although this proportion declined across age groups to approximately 10% through age 50 and to much lower rates in the older age groups. Again, this is consistent with the idea that either more recent birth cohorts had lower rates of addiction intensity or that many light smokers are moving into successful quitting with age.

The pattern of smoking among females in 2005 by age is presented in **Figure 2.9**. At age 18, approximately 8% of ever smokers (≥ 100 cigarettes in lifetime) had quit for over a year (successful quitting). This proportion increased consistently across age so that by age 65 years, approximately 70% had quit successfully. At each age group, particularly in the youngest age groups, a significant proportion consisted of recent quitters (quit in the last year).

Figure 2.9: Distribution of Current and Former Female Smokers in 2005 According to Age



Approximately 10% of 18-year-olds had always been occasional smokers (current non-daily, never daily smokers). While this proportion declined with age, it was still an important sub-population for women through age 40. It is not possible to determine from this cross-sectional survey the proportion of women who will go on to daily smoking and what proportion will be able to maintain a never daily smoking habit or quit entirely.

The proportion of smokers who were current non-daily smokers but had previously smoked on a daily basis for 6 months or more (current non-daily, ever daily) was also above 10% at age 18 and was an important sub-population through age 50. It is commonly thought that this group of smokers may be transitioning back to daily smoking after a period in which they had not smoked at all.

The largest proportion of ever smokers at age 18 years were light daily smokers (<15 cigarettes per day). This was the major group of current smokers through age 50 and probably represents a cohort effect of women who never developed a more intensive smoking addiction. Moderately heavy daily smoking (15–24 cigarettes per day) made up approximately 10% of the ever smoking population through age 65, and a very small proportion of ever smokers in each age group had a smoking addiction of over 25 cigarettes per day.

5. Adult Use of Other Tobacco Products

Adult respondents to the extended CTS interview were asked the following questions on other tobacco use:

Have you ever smoked a tobacco pipe? (E7a)

Have you ever smoked cigars, cigarillos, or little cigars? (E10a)

Have you ever used chewing tobacco or snuff? (E1)

Do you now smoke a tobacco pipe every day, some days, or not at all? (E9a)

Do you now smoke cigars every day, some days, or not at all? (E12a)

Do you now use chewing tobacco or snuff every day, some days, or not at all? (E3)

Men were most likely to use any other tobacco product, while only a very small fraction of women used them. This is most likely a social norm, where pipes, cigars, and smokeless tobacco have been predominantly male habits.

Prevalence of Any Tobacco Use

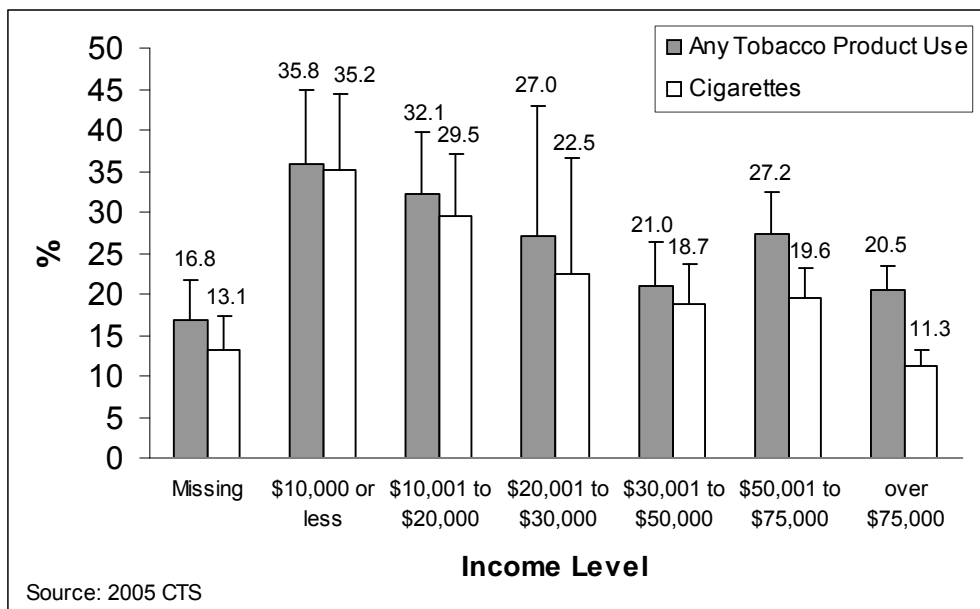
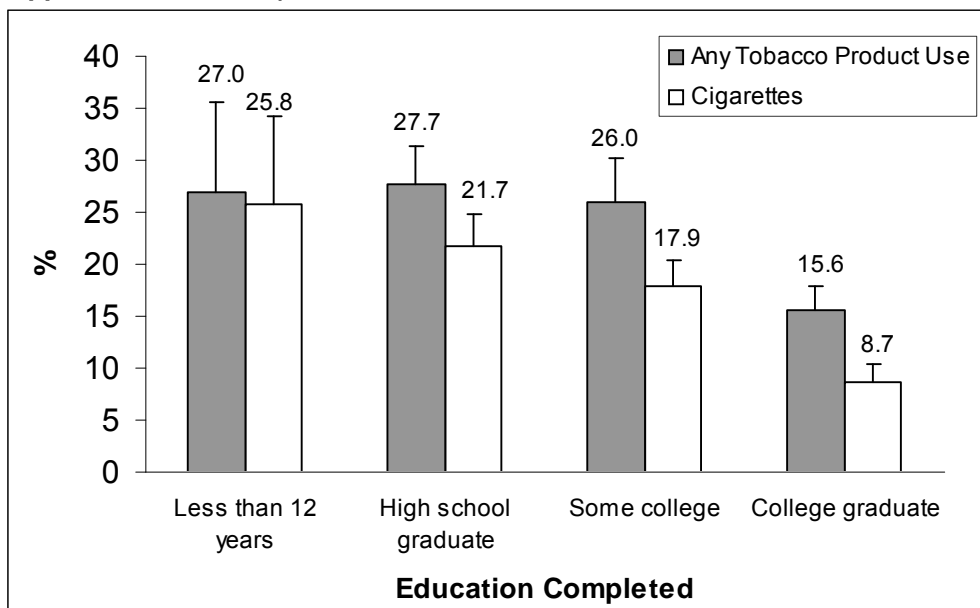
In 2005, among male college graduates, cigar use was almost equal to cigarette use.

While cigarettes make up the majority of all tobacco use, some non-cigarette smokers use other products, so any tobacco product use is compared to cigarette use alone (see Appendix Table A.2.5). For women, there is not much difference in the prevalence estimate, with a total of $11.0 \pm 0.6\%$ using cigarettes alone, compared to $11.4 \pm 0.6\%$ using any tobacco product. However, there is a dramatic increase in the prevalence estimate for men, increasing from $17.5 \pm 1.4\%$ using cigarettes alone, compared to $23.3 \pm 1.6\%$ using any tobacco product.

For men, other tobacco use increases the prevalence considerably in all age groups until age 64, and increases prevalence estimates in all race/ethnic groups. The most striking difference in prevalence was observed for college-educated men, particularly for college graduates.

Prevalence of any tobacco use was almost double that for cigarette use, with the difference coming from cigar use. The same proportion appears among those with the highest income (**Figure 2.10**). It appears that cigar use has become an alternate product for higher educated/higher income males.

Figure 2.10: Any Tobacco Use and Cigarette Use by Education and Income among Adult Males, 2005 (See Appendix Table A.2.5)



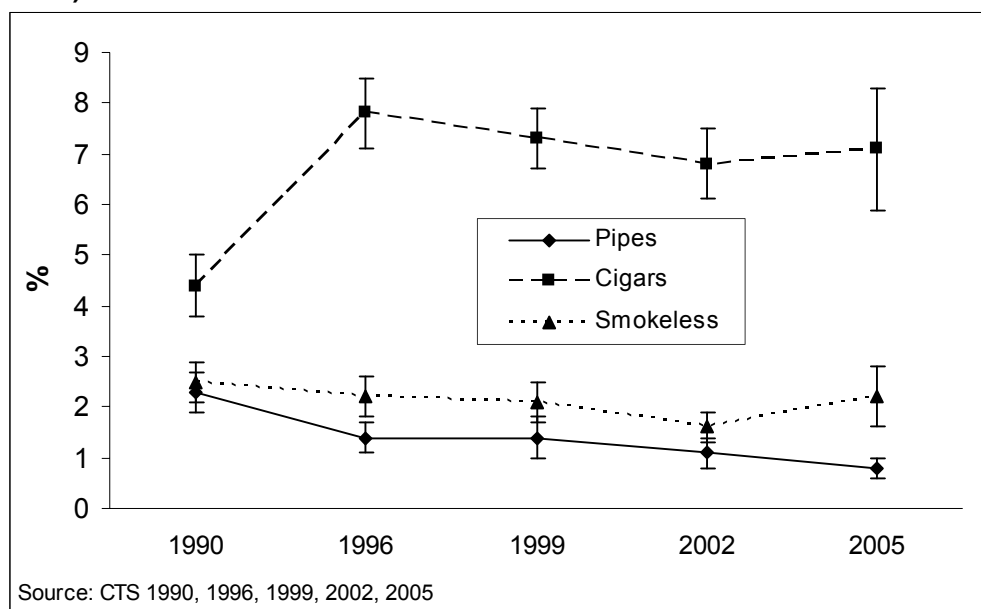
Cigar and Pipe Use

Figure 2.11 shows the use of pipes, smokeless tobacco (chewing tobacco or snuff), and cigars in each survey year only for adult males. In **Figure 2.12**, these trends are shown for ever users of these products by gender. Current cigar smoking among men increased dramatically in the early to mid 1990s but has declined somewhat since that time (Figure 2.11). This large increase was related to the major tobacco industry promotion and advertisement in the early 1990s (Gilpin and Pierce, 1999). In 2005, current cigar use was higher among younger age groups; $10.4 \pm 2.3\%$ of 18-24-year-olds reported current cigar consumption, whereas only $1.8 \pm 1.3\%$ of men older than 65 years smoked cigars (Appendix Table A.2.6). A total of $15.2 \pm 2.5\%$ of male

cigarette smokers also reported smoking cigars. However, it is important to note that $4.9 \pm 1.6\%$ of male never (cigarette) smokers and $7.3 \pm 2.9\%$ of male former (cigarette) smokers also report being current smokers of cigars (Appendix Table A.2.8).

Overall, less than 1% of males currently smoked pipes. The highest rate occurred in young adult men ($1.9 \pm 0.9\%$) (Appendix Table A.2.6). Although the numbers are small, pipe smoking has declined considerably since 1990 in older men aged 45–64 (from $3.7 \pm 1.1\%$ to $0.7 \pm 0.3\%$ in 2005) but has increased slightly in young adult men aged 18–24 (from $1.0 \pm 0.5\%$ in 1990 to $1.9 \pm 0.9\%$ in 2005).

Figure 2.11: Current Use of Other Tobacco Products among Adult Males, 1990-2005 (See Appendix A.2.6)

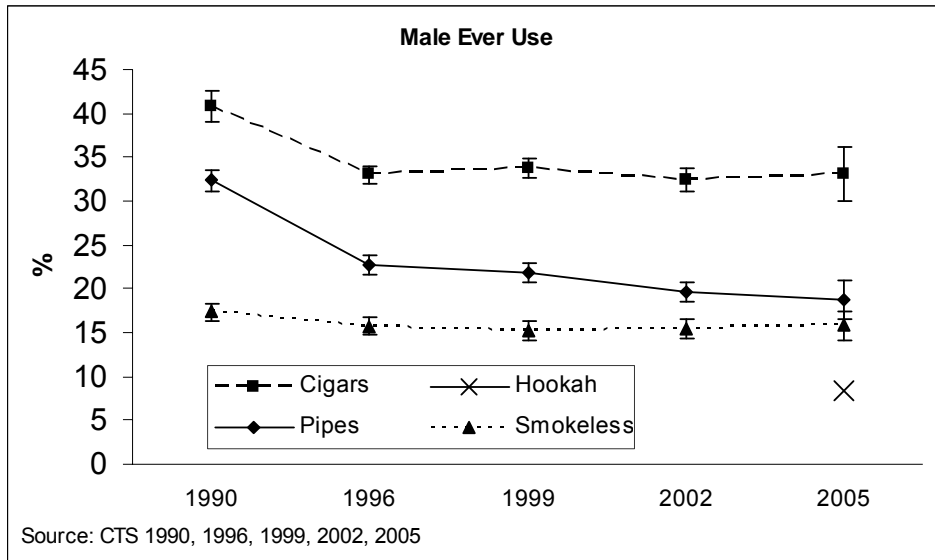


CURRENT USE	1990	1996	1999	2002	2005
Pipes	2.3	1.4	1.4	1.1	0.8
Cigars	4.4	7.8	7.3	6.8	7.1
Smokeless	2.5	2.2	2.1	1.6	2.2

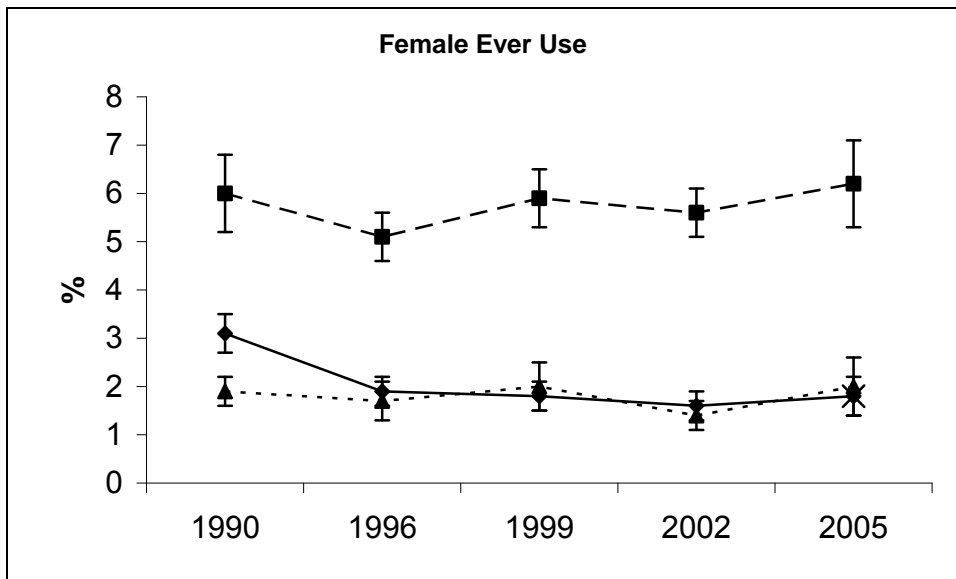
Smokeless Tobacco Use

The ever use of smokeless tobacco has not changed substantially over time (Figure 2.12). In 2005, $15.8 \pm 1.7\%$ of men reported ever using smokeless tobacco compared to $17.4 \pm 1.0\%$ in 1990 (Appendix Table A.2.6). The overall current usage of smokeless tobacco among men has not changed substantially (from $2.5 \pm 0.4\%$ in 1990 to $2.2 \pm 0.6\%$ in 2005) (Figure 2.11). A small increase was observed in men age 45–64 in recent years: their reported current smokeless tobacco use increased from $0.9 \pm 0.4\%$ in 2002 to $2.4 \pm 1.1\%$ in 2005 (Appendix Table A.2.6). For current smokeless tobacco use, the highest decline in current smokeless tobacco use between 1990 and 2005 was among young men (from $5.4 \pm 1.6\%$ to $2.7 \pm 1.4\%$) (Appendix Table A.2.6). These recent changes may be associated with the recent controversy about using smokeless tobacco as a means for reducing the harm related to smoking. However, this approach is not supported by the large majority of tobacco control researchers and policy makers, as discussed later in this section.

Figure 2.12: Adults Ever Use of Other Tobacco Products, Including Hookah (see Appendix Tables A.2.6, A.2.7 and A.2.9)



EVER USE	Cigars	Pipes	Smokeless	Hookah
1990	40.8	32.4	17.4	
1996	33.0	22.8	15.7	
1999	33.7	21.8	15.3	
2002	32.5	19.6	15.5	
2005	33.1	18.7	15.8	8.4



EVER USE	Cigars	Pipes	Smokeless	Hookah
1990	6.0	3.1	1.9	
1996	5.1	1.9	1.7	
1999	5.9	1.8	2.0	
2002	5.6	1.6	1.4	
2005	6.2	1.8	2.0	1.8

Hookah Use

A new phenomenon that is becoming a common activity in many parts of the country and especially in California is the use of hookah pipes. A hookah (also known as a water pipe, narghile, shisha, or hubble-bubble) is a traditional Middle Eastern or Asian device for smoking tobacco. It is designed with a long tube passing through an urn of water that cools the smoke as it is drawn through coal-burned tobacco.

Young adult men appear to be experimenting with hookahs.

The following question was asked in the 2005 survey:

Have you ever smoked a hookah pipe? (E14)

In the population, 5.0 ± 0.6 of respondents said they had used a hookah (Appendix Table A.2.9). Among men, $8.4 \pm 1.1\%$ had ever used it, while only $1.8 \pm 0.4\%$ of women had ever used it (Figure 2.12). Ever usage was particularly high in young adult men (18-24 years); $20.2 \pm 3.0\%$ reported ever using it, which is three to four times the rate for other age groups. When use was stratified by education level, men with some college education had the highest prevalence of ever using a hookah ($12 \pm 2.8\%$), and among the racial/ethnic groups, Non-Hispanic White males had the highest prevalence of ever use ($11.5 \pm 2.1\%$). This suggests that hookah bars may be the most common setting for its use, as they are being frequented by this group (Non-Hispanic White males) who also attend college. It has been estimated that the smoke produced from a single session of smoking a hookah contains approximately the same amount of tar as 20 cigarettes (Shihadeh, 2003); another study using a smoking machine to collect smoking topography data on hookah smoking suggests the amount of exposure is much higher (Shihadeh, 2004). Compared to the ever use of other tobacco products, the hookah is lower than ever use of smokeless tobacco. However, its recent introduction into the United States suggests that it should be monitored, as marketing may lead to significantly increased use.

Harm Reduction and Other Tobacco Products

72.9% of smokers would not replace their cigarettes with smokeless tobacco for harm reduction.

There has been some debate in the tobacco control research community about promoting the use of tobacco-related products other than cigarettes, also known as potential reduced exposure products (PREPs), which include nicotine replacement products and smokeless tobacco for use by those smokers who refuse to quit (Gray and Henningfield, 2006). What has been termed harm-reduction is being advocated by some as a way for “hard core” smokers to switch from more harmful products to possibly less harmful products.

Supporters of such an approach argue that it will help “hard-core” smokers who would otherwise never quit to lower their cigarette consumption or stop altogether by using products that would provide the nicotine levels they crave but with far fewer health risks compared to smoking tobacco. They argue that these strategies will have a much longer-term public-health benefit than the current practices of promoting quitting which does not benefit these hard core smokers. Several new tobacco products (e.g., Eclipse[®], Omni[®], Advance Lights[®], Accord[®], and Ariva[®]) have been introduced by the tobacco industry over the past few years, some with direct or implied claims that their health risks are less than those of traditional cigarettes (Institute of Medicine, 2001). Others have suggested that new forms of smokeless tobacco, such as snus (Swedish moist snuff), should be promoted as harm-reducing alternatives to smoking (Gray,

2005). However, little evidence exists that smokers who are not interested in quitting will switch to such smokeless tobacco products, and there is concern that the promotion of these products will lead to a significant increase in use among adolescents who would not have otherwise smoked. Therefore, the majority of tobacco control researchers and policy makers do not support this approach. In addition, non-smokers or former smokers may take up these new products or current smokers may adopt them instead of quitting. For this reason, CTCP continues to advocate norm changes that emphasize abstinence from the use of cigarettes and all other tobacco products.

In order to investigate the views of smokers on these products, the following questions were added to the 2005 CTS to address some of these issues for smokers:

Would you replace your cigarettes with smokeless tobacco, dip, or chew if you thought it had fewer health consequences? Definitely yes, probably yes, probably not, definitely not. (B26c_3)

Would you switch from cigarettes to a new product, if you could get the dose of nicotine that you need from the new product without smoking? Definitely yes, probably yes, probably not, definitely not. (B26c_4)

When smokers were asked if they would replace their cigarettes with a new product that would give them the same dose of nicotine without smoking, a majority said they would definitely not replace them. Almost half ($49.3 \pm 4.0\%$) of these smokers were not prepared to stop smoking even if they could get another product with less health risk that would deliver the same nicotine they craved. Only $11.9 \pm 1.7\%$ said they would definitely use such a product in place of smoking. Also, when they were asked specifically about using products such as smokeless tobacco, dip, or chew to replace their cigarettes with products with lower health risks, an overwhelming $72.9 \pm 2.9\%$ of them said they would definitely not replace their cigarettes with such products. Only $8.2 \pm 1.8\%$ said they would definitely use such products (Appendix Table A.2.10). Among only hard-core smokers who have never tried to quit and were above the age of 25, only $9.0 \pm 5.4\%$ of such smokers were willing to use such products if they had fewer health effects, and $27.2 \pm 7.2\%$ said they would switch to a new tobacco product if they could get nicotine without smoking.

6. Adolescent Smoking and Other Tobacco Use in the Past Month

All adolescents who respond to the CTS are asked the following questions:

Have you ever smoked a cigarette? (O1)

Think about the last 30 days; on how many of these days did you smoke? (O6)

Adolescent smoking prevalence declined to a low of 3.2% in 2005.

For other tobacco use, all adolescents who indicated that they had used a particular product were asked:

On how many of the last 30 days (did you use chewing tobacco or snuff) (did you smoke cigars, cigarillos, or little cigars) (did you smoke bidis) (did you use any tobacco product with flavors added such as berry, vanilla, chocolate mint, lime, or mocha)? (Q3, Q6c, Q11, Q13)

As shown in **Figure 2.13** and Appendix Table A.2.11, adolescent smoking prevalence (reported cigarette smoking in the last 30 days) increased from $9.1 \pm 1.1\%$ in 1990, peaked at $11.5 \pm 1.2\%$ in 1996, and declined steadily to a low of $3.2 \pm 0.7\%$ in 2005. This pattern was true for boys, with cigarette smoking increasing from $9.9 \pm 1.8\%$ in 1990 to $12.5 \pm 1.6\%$ in 1996, and then declining to $3.8 \pm 1.1\%$ percent in 2005. It also held for girls, with cigarette smoking increasing from $8.3 \pm 1.5\%$ in 1990 to a peak of $10.4 \pm 1.4\%$ in 1996, before declining to a low of $2.6 \pm 0.9\%$ in 2005.

Figure 2.13: Standardized (2005) and Unstandardized Current Adolescent (12–17 Years) Smoking Prevalence, 1990-2005 (See Appendix Table A.2.11)

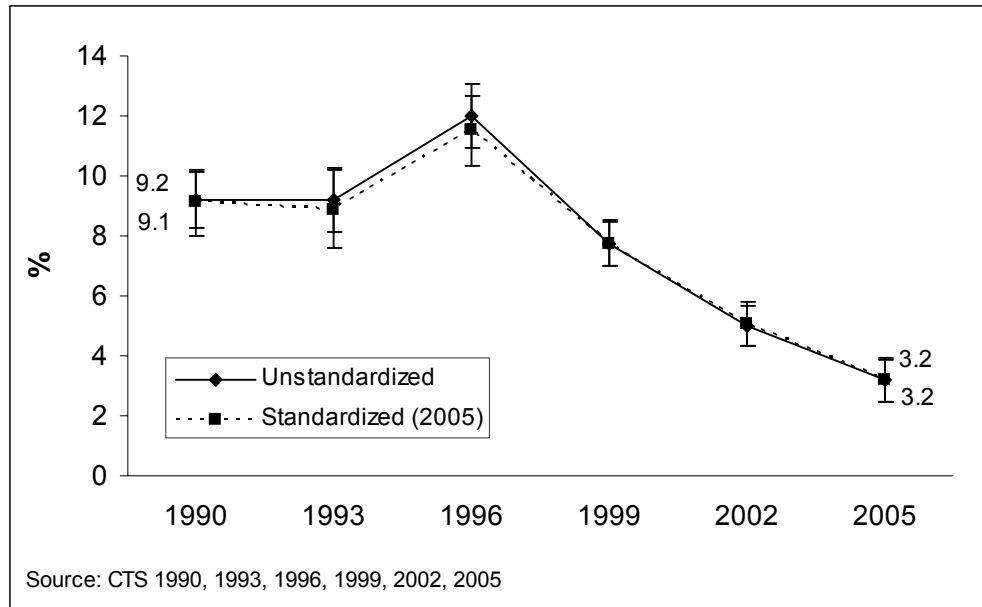


Figure 2.14 compares current smoking prevalence (standardized to 2005 population totals) and current other tobacco use for 12-17-year-old boys and girls from the 1996–2005 adolescent CTS.

Other current tobacco use among girls did not substantially increase the tobacco use prevalence estimate for girls; only $0.9 \pm 0.5\%$ used any other tobacco product in 2005 compared to a high of $2.2 \pm 0.6\%$ in 1999 (Figure 2.14). However, among boys, other current tobacco use was $6.3 \pm 1.1\%$ in 1996 and declined slowly to $3.3 \pm 1.2\%$ in 2005. Thus, for boys, the prevalence of other current tobacco use was almost equivalent to the prevalence of cigarette smoking in 2005. The prevalence of ever using any tobacco among boys was $16.1 \pm 2.5\%$ in 2005 (Appendix Table A.2.12).

Figure 2.14: Current Use of Cigarettes vs. Other Tobacco Products by Adolescents, 1990-2005

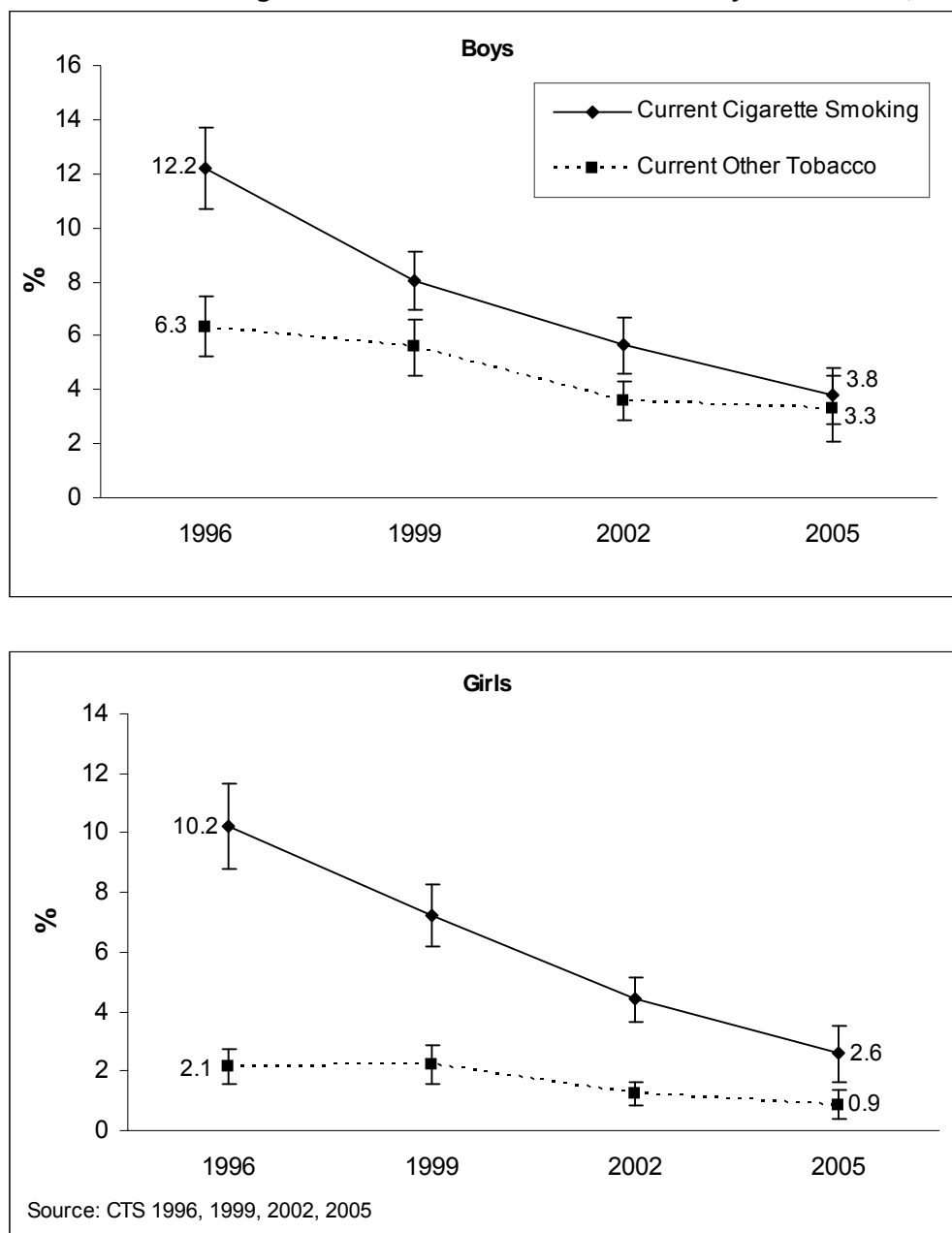
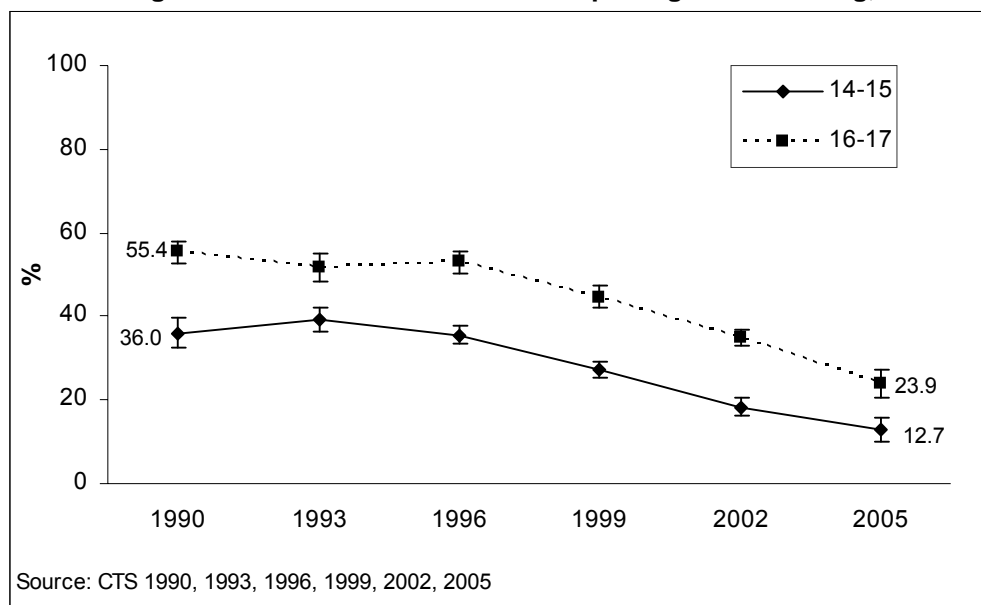


Figure 2.15 presents the proportion of adolescents who have ever smoked cigarettes. In 1993, among 14-15-year-olds in California, $39.3 \pm 3.0\%$ reported that they had smoked a cigarette. By 2005, this percentage had declined to $12.7 \pm 2.8\%$ – one third of the level of 1993. For the 16-17-year-old adolescents, $55.4 \pm 2.6\%$ reported ever smoking cigarettes in 1990, the highest level in the last 15 years. By 2005, this level had declined to $23.9 \pm 3.5\%$, less than half of the level at the start of the program.

Figure 2.15: Percentage of 14-15 and 16-17-Year-olds Reporting Ever Smoking, 1990-2005



Summary

In general, adult smoking prevalence continues to decline in California, demonstrating continued success of the state’s comprehensive tobacco control program. This decline is variable but consistent across age, race/ethnicity, gender, and education levels. Smoking prevalence in 2005 was much lower than when the program started in 1990. As expected, men continue to have a higher smoking prevalence than women, but their prevalence rate has been declining at a satisfactory rate. Hispanics and Asians/Pacific Islanders have the lowest smoking prevalence of any ethnic group; this is largely because the women in these two ethnic groups have the lowest smoking prevalence for any male or female ethnic group. Hispanic and Asian/Pacific Islander women have smoking rates 60% lower than men in these ethnic groups. On the other hand, non-Hispanic Whites with low education and African Americans have the highest smoking prevalence.

The lowest smoking prevalence was in the oldest age group and the highest smoking prevalence was for those 25–44 years of age. Young men had the largest decline of any age group in the last three years and the more highly educated and those with the highest income continue to have the lowest prevalence. Average daily number of cigarettes smoked continues to decline, while other tobacco use, specifically cigar use among young men, is not declining. There does not seem to be any substantial support among smokers for using smokeless tobacco or other products that are thought by some to be less harmful than cigarettes. These findings suggest that the prospect of successful harm reduction, that is, convincing smokers to give up their cigarettes and use less harmful nicotine delivery products, is not very promising. A large majority of smokers do not seem to be interested in using such products, even though they might be told that these products have lesser health risks. Other recent data supports our findings of dislike of these products even among smokers who have tried the products (Caraballo et al., 2006).

Adolescent smoking prevalence continues to decline since its peak in 1996, and the number of adolescents reporting ever smoking cigarettes has also decreased. There is no apparent

increase in the use of other tobacco products among adolescents, and boys remain more likely to try using these products than girls. These findings regarding the trends of tobacco use in California present an overall positive picture. A decline in tobacco use is primarily consistent with previous years. There is some indication that younger age groups, those that are highly educated, and those with high income are increasingly using other tobacco products, even though these groups have the lowest cigarette smoking prevalence. Certain sub-populations, especially males with low income and low education, and African Americans, continue to have high smoking prevalence rates.

APPENDIX

Chapter 2

Trends in Tobacco Use in California

1. Standardized Adult Smoking Prevalence for Demographic Groups

Section 2 of this chapter discussed the trends in standardized smoking prevalence by gender, age, race/ethnicity, education level, and household income. **Table A.2.1** shows the standardized trends for adult males and females combined. **Table A.2.2** and **Table A.2.3** provide the subgroup data for adult males and females separately. This data is also presented in Figures 2.2–2.5 of this chapter.

Appendix Table A.2.1 Standardized Adult Smoking Prevalence (Screener Data)								
	1990 %	1993 %	1996 %	1999 %	2002 %	2005 %	Factor Change 1990-2005 %	Factor Change 2002-2005 %
Overall	19.0 (±0.4)	17.0 (±0.5)	16.3 (±0.4)	16.6 (±0.3)	15.1 (±0.3)	13.7 (±0.5)	-28.0	-9.2
Gender								
Male	22.7 (±0.5)	20.6 (±0.8)	19.4 (±0.5)	20.1 (±0.5)	18.7 (±0.5)	16.7 (±0.9)	-26.4	-11.0
Female	15.6 (±0.7)	13.8 (±0.6)	13.3 (±0.4)	13.3 (±0.3)	11.7 (±0.4)	10.8 (±0.5)	-30.7	-7.4
Age								
18-24	16.1 (±1.4)	14.5 (±1.1)	16.3 (±0.9)	18.6 (±0.8)	16.3 (±1.0)	13.2 (±1.4)	-18.0	-19.1
25-44	21.0 (±0.8)	18.6 (±0.9)	18.0 (±0.6)	18.5 (±0.5)	16.7 (±0.4)	15.9 (±1.1)	-23.9	-4.7
45-64	21.6 (±1.0)	19.2 (±0.9)	17.3 (±0.6)	17.1 (±0.5)	16.2 (±0.6)	14.1 (±0.9)	-34.7	-12.6
65+	11.4 (±0.9)	10.9 (±1.0)	9.8 (±0.8)	9.0 (±0.6)	7.6 (±0.5)	7.4 (±0.7)	-35.5	-2.3
Race/Ethnicity								
African American	26.4 (±2.3)	22.3 (±2.1)	22.6 (±1.4)	21.5 (±1.1)	20.4 (±1.4)	18.9 (±2.2)	-28.3	-7.3
Asian/PI	14.2 (±1.1)	11.3 (±1.3)	11.9 (±0.9)	13.0 (±0.9)	11.9 (±0.9)	11.0 (±2.1)	-22.2	-7.1
Hispanic	17.6 (±1.0)	15.0 (±1.1)	14.0 (±0.8)	14.6 (±0.5)	13.0 (±0.6)	11.8 (±1.1)	-32.6	-8.7
Non-Hispanic White	19.9 (±0.4)	18.9 (±0.6)	17.6 (±0.3)	18.0 (±0.4)	16.3 (±0.4)	14.5 (±0.6)	-26.9	-11.0
Education								
Less than 12 years	23.0 (±1.5)	18.6 (±1.3)	19.9 (±1.1)	20.1 (±0.7)	18.0 (±0.8)	17.4 (±1.7)	-24.3	-3.3
High school graduate	23.7 (±0.9)	22.3 (±0.9)	20.5 (±0.6)	20.8 (±0.6)	19.9 (±0.7)	18.2 (±0.9)	-23.2	-8.7
Some college	18.3 (±0.7)	17.2 (±0.9)	16.2 (±0.5)	17.5 (±0.5)	15.5 (±0.6)	14.2 (±0.8)	-22.1	-8.3
College graduate	12.3 (±0.7)	10.9 (±0.7)	9.9 (±0.4)	10.0 (±0.4)	9.3 (±0.4)	7.4 (±0.8)	-39.8	-19.9
Income								
< \$10,000	25.1 (±1.8)		22.9 (±1.6)	23.5 (±1.7)	22.2 (±2.1)	20.7 (±2.4)	-17.6	-6.8
\$10,001-\$20,000	22.1 (±1.8)		21.7 (±1.1)	23.0 (±1.1)	21.3 (±1.7)	19.3 (±2.4)	-12.6	-9.5
\$20,001- \$30,000	21.9 (±1.6)		19.7 (±0.8)	20.1 (±0.9)	19.2 (±1.3)	18.2 (±2.4)	-17.0	-5.2
\$30,001-\$50,000	19.3 (±1.5)		16.9 (±0.8)	18.7 (±0.8)	17.8 (±0.8)	18.1 (±1.7)	- 5.9	1.8
\$50,001-\$75,000	18.9 (±1.6)		15.3 (±1.1)	16.8 (±0.8)	15.1 (±0.9)	14.4 (±1.4)	-23.8	-4.8
> \$75,000	16.9 (±2.4)		13.1 (±1.3)	14.8 (±1.0)	12.8 (±0.8)	11.3 (±1.2)	-33.1	-11.9
Unknown	17.2 (±1.4)		13.7 (±0.8)	13.1 (±0.7)	12.8 (±0.9)	11.9 (±1.6)	-30.7	-7.1

**Appendix Table A.2.2
Standardized Adult Smoking Prevalence, Male (Screener Data)**

	1990 %	1993 %	1996 %	1999 %	2002 %	2005 %	Factor Change 1990-2005 %	Factor Change 2002-2005 %
Males								
Age								
18-24	19.5 (±1.9)	17.2 (±1.5)	19.7 (±1.3)	22.9 (±1.1)	20.8 (±1.5)	16.4 (±2.4)	-15.7	-20.9
25-44	25.7 (±1.1)	23.5 (±1.4)	21.6 (±0.8)	22.6 (±0.7)	20.9 (±0.8)	19.7 (±1.6)	-23.5	-6.0
45-64	24.8 (±1.5)	22.2 (±1.4)	20.1 (±0.8)	20.1 (±0.7)	19.6 (±0.9)	16.7 (±1.2)	-32.6	-14.6
65+	12.7 (±1.4)	12.0 (±1.3)	11.3 (±1.1)	10.0 (±0.8)	8.6 (±0.8)	8.2 (±1.1)	-35.6	-4.8
Race/Ethnicity								
African American	28.9 (±2.7)	25.8 (±2.8)	24.6 (±1.8)	24.8 (±1.9)	23.5 (±1.9)	21.0 (±3.2)	-27.1	-10.3
Asian/PI	21.8 (±1.7)	17.6 (±2.0)	17.6 (±1.3)	18.9 (±1.4)	17.7 (±1.5)	16.1 (±2.7)	-26.4	-9.4
Hispanic	23.3 (±1.4)	20.9 (±1.7)	19.0 (±1.2)	20.0 (±0.7)	18.5 (±1.0)	16.7 (±1.8)	-28.2	-9.8
Non-Hispanic White	21.4 (±0.5)	20.1 (±0.8)	19.2 (±0.4)	19.7 (±0.6)	18.3 (±0.6)	16.0 (±0.9)	-25.0	-12.3
Education								
Less than 12 years	29.3 (±1.8)	24.4 (±2.1)	25.2 (±1.6)	26.9 (±1.2)	24.8 (±1.5)	22.7 (±2.4)	-22.3	-8.4
High school graduate	27.6 (±1.2)	26.6 (±1.3)	24.2 (±0.9)	24.5 (±0.9)	24.2 (±1.0)	21.4 (±1.4)	-22.6	-11.6
Some college	21.2 (±1.1)	19.8 (±1.2)	19.0 (±0.8)	20.2 (±0.8)	18.2 (±0.9)	16.9 (±1.5)	-20.3	-7.2
College graduate	14.2 (±1.2)	13.1 (±1.2)	11.1 (±0.6)	11.7 (±0.7)	11.0 (±0.7)	8.9 (±1.0)	-37.4	-19.1
Income								
< \$10,000	29.0 (±3.7)		25.3 (±2.0)	25.5 (±3.0)	24.7 (±3.6)	28.2 (±5.8)	-2.9	14.1
\$10,001-\$20,000	25.4 (±2.9)		25.1 (±1.8)	26.7 (±1.9)	23.9 (±2.6)	21.8 (±4.3)	-14.1	-8.9
\$20,001- \$30,000	24.4 (±2.6)		22.4 (±1.4)	23.6 (±1.4)	22.8 (±1.9)	21.5 (±3.4)	-11.8	-5.8
\$30,001-\$50,000	22.5 (±2.3)		19.0 (±1.3)	22.0 (±1.3)	21.1 (±1.1)	20.8 (±2.5)	-7.6	-1.3
\$50,001-\$75,000	23.1 (±3.4)		18.8 (±2.6)	21.9 (±1.3)	19.3 (±1.7)	18.2 (±2.6)	-21.0	-5.8
> \$75,000	25.3 (±2.5)		18.3 (±3.7)	19.6 (±2.4)	16.9 (±1.7)	14.8 (±2.2)	-41.6	-12.8
Unknown	21.2 (±2.5)		16.4 (±1.2)	15.9 (±1.1)	15.9 (±1.3)	14.7 (±2.0)	-30.7	-7.9

**Appendix Table A.2.3
Standardized Adult Smoking Prevalence, Female (Screener Data)**

	1990 %	1993 %	1996 %	1999 %	2002 %	2005 %	Factor Change 1990-2005 %	Factor Change 2002-2005 %
Females								
Age								
18-24	12.7 (±1.5)	11.6 (±1.3)	12.9 (±1.2)	14.1 (±1.0)	11.7 (±0.8)	9.7 (±1.5)	-23.6	-17.0
25-44	16.5 (±0.8)	14.0 (±0.8)	14.5 (±0.6)	14.5 (±0.5)	12.6 (±0.6)	12.2 (±1.1)	-26.2	-3.5
45-64	18.5 (±1.2)	16.4 (±1.1)	14.5 (±0.8)	14.2 (±0.7)	13.1 (±0.6)	11.7 (±1.0)	-36.7	-10.3
65+	10.3 (±1.4)	10.0 (±1.2)	8.7 (±0.9)	8.3 (±0.7)	6.9 (±0.7)	6.8 (±0.9)	-34.6	-2.2
Race/Ethnicity								
African American	24.2 (±2.8)	19.4 (±2.2)	20.9 (±1.9)	18.6 (±1.3)	17.8 (±1.7)	17.1 (±2.8)	-29.5	-3.9
Asian/PI	7.3 (±1.3)	5.7 (±1.5)	6.9 (±1.1)	7.8 (±0.9)	6.6 (±0.9)	6.5 (±2.3)	-11.0	-1.6
Hispanic	11.7 (±1.3)	8.9 (±1.1)	8.9 (±0.8)	8.9 (±0.6)	7.2 (±0.6)	6.8 (±1.0)	-41.6	-5.8
Non-Hispanic White	18.5 (±0.8)	17.7 (±0.7)	16.2 (±0.4)	16.4 (±0.4)	14.5 (±0.6)	13.1 (±0.7)	-29.0	-9.5
Education								
Less than 12 years	16.2 (±1.7)	12.4 (±1.2)	14.2 (±1.2)	12.7 (±0.8)	10.7 (±0.9)	11.7 (±1.8)	-28.0	9.3
High school graduate	20.0 (±1.0)	18.4 (±0.9)	16.9 (±0.8)	17.3 (±0.7)	15.9 (±0.9)	15.2 (±1.1)	-23.9	-4.6
Some college	15.7 (±1.0)	14.9 (±1.1)	13.6 (±0.7)	15.0 (±0.6)	13.1 (±0.7)	11.9 (±0.9)	-24.3	-9.6
College graduate	10.5 (±0.8)	8.7 (±0.9)	8.7 (±0.6)	8.2 (±0.5)	7.6 (±0.4)	6.0 (±1.0)	-42.9	-21.0
Income								
< \$10,000	18.9 (±2.4)		17.5 (±2.1)	18.0 (±2.1)	17.3 (±2.8)	14.2 (±2.7)	-24.6	-17.9
\$10,001-\$20,000	18.9 (±1.7)		16.0 (±1.1)	17.7 (±1.4)	16.5 (±2.1)	15.8 (±3.9)	-16.5	-4.1
\$20,001- \$30,000	17.0 (±1.8)		15.5 (±1.1)	14.8 (±1.0)	14.6 (±1.3)	13.6 (±2.2)	-20.5	-7.3
\$30,001-\$50,000	15.0 (±1.8)		14.3 (±1.0)	14.7 (±0.9)	13.6 (±1.0)	13.4 (±1.7)	-10.5	-1.4
\$50,001-\$75,000	14.8 (±3.0)		12.4 (±1.6)	12.7 (±1.0)	11.3 (±1.0)	10.9 (±1.8)	-26.6	-4.0
> \$75,000	14.7 (±6.8)		10.1 (±1.6)	11.9 (±1.6)	9.7 (±1.1)	9.5 (±1.7)	-35.6	-2.3
Unknown	12.2 (±1.4)		10.7 (±1.0)	10.0 (±0.9)	9.6 (±0.9)	9.1 (±2.0)	-25.7	-5.8

2. Demographic Comparison of Groups of Current Smokers in 2005

In 2005, only $7.2 \pm 1.3\%$ of all current smokers smoked 25 or more cigarettes per day (heavy smokers). As seen in **Table A.2.4**, a higher percentage of male smokers were heavy smokers compared to female smokers ($8.7 \pm 1.8\%$ and $5.0 \pm 1.4\%$ respectively). Heavy smoking was also more common in smokers age 50 and older compared to younger age groups and in Non-Hispanic White smokers compared to other racial/ethnic groups. Among smokers who were college graduates, the majority were light or occasional smokers.

	Heavy (25+) (n=354) %	Moderate (15-24) (n=1246) %	Light (<15) (n=1415) %	Occasional (n=928) %
Overall	7.2 (± 1.3)	27.9 (± 3.7)	36.5 (± 3.0)	28.3 (± 3.1)
Gender				
Male	8.7 (± 1.8)	29.1 (± 6.0)	32.6 (± 4.8)	29.5 (± 4.8)
Female	5.0 (± 1.4)	26.2 (± 3.5)	42.5 (± 4.0)	26.4 (± 4.2)
Age				
18-34	3.8 (± 2.0)	17.2 (± 3.5)	39.4 (± 5.5)	39.5 (± 5.4)
35-49	6.5 (± 2.3)	33.8 (± 8.2)	33.8 (± 5.4)	25.8 (± 4.3)
50+	12.9 (± 2.4)	34.5 (± 4.0)	36.4 (± 3.8)	16.1 (± 4.3)
Race/Ethnicity				
African American	3.0 (± 2.5)	13.2 (± 6.2)	56.1 (± 12.7)	27.7 (± 11.3)
Asian/PI	3.8 (± 5.3)	15.7 (± 6.5)	43.4 (± 9.9)	37.0 (± 11.9)
Hispanic	1.8 (± 1.3)	20.2 (± 13.6)	37.7 (± 9.2)	40.3 (± 8.6)
Non-Hispanic White	11.3 (± 2.3)	37.0 (± 3.2)	31.1 (± 2.5)	20.6 (± 2.6)
Education				
Less than 12 years	5.6 (± 2.7)	29.1 (± 13.7)	39.4 (± 9.8)	25.9 (± 8.1)
High school graduate	8.2 (± 2.1)	31.0 (± 4.5)	37.6 (± 4.5)	23.2 (± 5.0)
Some college	9.0 (± 3.1)	28.1 (± 3.7)	35.9 (± 5.2)	27.0 (± 5.4)
College graduate	5.2 (± 2.4)	19.9 (± 5.8)	30.6 (± 6.7)	44.3 (± 6.9)
Income				
< \$10,000	7.3 (± 4.1)	21.4 (± 7.4)	39.1 (± 10.2)	32.2 (± 9.8)
\$10,001-\$20,000	6.9 (± 2.5)	28.3 (± 8.6)	35.4 (± 8.3)	29.5 (± 11.2)
\$20,001-\$30,000	3.9 (± 1.6)	35.4 (± 25.2)	44.0 (± 20.4)	16.7 (± 8.9)
\$30,001-\$50,000	8.1 (± 2.9)	31.0 (± 5.8)	37.1 (± 7.1)	23.8 (± 6.1)
\$50,001-\$75,000	7.9 (± 3.0)	27.3 (± 5.4)	36.3 (± 5.5)	28.5 (± 6.5)
> \$75,000	8.2 (± 3.6)	25.6 (± 4.7)	31.3 (± 4.5)	34.8 (± 5.4)
Unknown	7.8 (± 4.0)	24.7 (± 5.8)	35.4 (± 9.8)	32.1 (± 12.6)

3. Demographics of Adult Use of Other Tobacco Products

Table A.2.5 presents an overview of current tobacco use in adults in 2005, including use of any tobacco product, cigarettes, pipes, or chewing tobacco/snuff. Since the use of tobacco products other than cigarettes is primarily seen in males, the detailed demographics are presented for males only. **Table A.2.6** shows trends across time for both current use and ever use of other tobacco products for adult males. Since the current use of other tobacco products in females is low, **Table A.2.7** only shows the trends for ever use of other tobacco products for adult females. **Table A.2.8** describes adult current cigar use by age and smoking status by gender. **Table A.2.9** describes ever use of hookahs for adult males and females combined and then separately by gender. **Table A.2.10** shows percentage of current smokers willing to use harm reduction products.

Table A.2.5 Current Tobacco Use Status (2005 Adult CTS)							
	Any Tobacco Product Use (%)	Cigarettes (%)	Cigars (%)	Pipes (%)	Chewing Tobacco/ Snuff (%)	Population Size (n)	Sample Size (n)
OVERALL	17.2 (±0.8)	14.2 (±0.7)	3.8 (±0.6)	0.5(±0.1)	1.1 (±0.3)	26,253,144	14,262
Sex							
Male	23.3 (±1.6)	17.5 (±1.4)	7.2 (±1.1)	0.8(±0.2)	2.2 (±0.6)	12,877,940	6,351
Female	11.4 (±0.6)	11.0 (±0.6)	0.6 (±0.2)	0.1(±0.1)	0.0 (±0.0)	13,375,204	7,911
MALES ONLY							
Age							
18-24	24.4 (±2.7)	17.2 (±2.3)	10.5 (±2.4)	2.0 (±0.9)	2.8 (±1.5)	1,998,638	1,709
25-44	27.7 (±2.7)	20.5 (±2.0)	8.6 (±2.0)	0.5 (±0.3)	2.6 (±1.2)	5,448,506	2,084
45-64	21.4 (±4.1)	16.7 (±4.0)	5.6 (±1.4)	0.7 (±0.3)	2.2 (±1.0)	3,884,878	1,840
65+	10.8 (±2.5)	9.2 (±2.1)	1.7 (±1.2)	0.9 (±0.7)	0.3 (±0.3)	1,545,918	718
Race/Ethnicity							
African American	33.3 (±7.6)	23.9 (±7.1)	10.1 (±5.2)	1.0 (±1.1)	3.1 (±4.6)	712,547	605
Asian/PI	16.8 (±3.4)	13.2 (±2.6)	4.6 (±1.9)	0.4 (±0.4)	0.8 (±0.6)	1,698,263	738
Hispanic	22.0 (±5.1)	18.7 (±4.7)	3.8 (±1.4)	0.7 (±0.4)	1.1 (±1.1)	3,900,783	1,435
Non-Hispanic White	24.2 (±2.8)	16.4 (±1.3)	9.6 (±2.3)	1.0 (±0.3)	3.2 (±1.0)	6,270,336	3,367
Education							
Less than 12 years	27.0 (±8.5)	25.8 (±8.4)	3.2 (±1.1)	0.6 (±0.4)	1.1 (±0.7)	2,714,320	824
High school graduate	27.7 (±3.7)	21.7 (±3.1)	7.5 (±2.2)	0.9 (±0.4)	3.3 (±1.5)	2,813,587	1,732
Some college	26.0 (±4.2)	17.9 (±2.5)	10.2 (±3.0)	1.2 (±0.5)	2.5 (±1.1)	3,264,662	2,120
College graduate	15.6 (±2.3)	8.7 (±1.6)	7.2 (±1.7)	0.7 (±0.4)	2.0 (±1.3)	4,085,371	1,675
Income							
Missing	16.8 (±4.8)	13.1 (±4.2)	5.2 (±1.9)	1.2 (±0.8)	1.1 (±0.7)	1,727,624	756
\$10,000 or less	35.8 (±9.2)	35.2 (±9.1)	2.5 (±1.7)	1.1 (±1.0)	0.2 (±0.3)	646,288	321
\$10,001 to \$20,000	32.1 (±7.7)	29.5 (±7.6)	5.4 (±2.7)	1.9 (±1.5)	0.4 (±0.7)	821,938	493
\$20,001 to \$30,000	27.0 (± 16)	22.5 (± 14)	5.0 (±3.7)	0.8 (±0.6)	1.6 (±1.8)	1,620,671	610
\$30,001 to \$50,000	21.0 (±5.4)	18.7 (±4.9)	4.1 (±1.4)	0.8 (±0.5)	1.7 (±1.1)	1,821,657	969
\$50,001 to \$75,000	27.2 (±5.2)	19.6 (±3.5)	9.5 (±3.4)	0.8 (±0.6)	3.6 (±2.0)	1,712,084	1,066
over \$75,000	20.5 (±3.0)	11.3 (±1.8)	10.1 (±2.3)	0.5 (±0.3)	3.2 (±1.4)	4,527,678	2,136

Table A.2.5 (Cont'd)
Current Tobacco Use Status (2005 Adult CTS)

	Any Tobacco Product Use (%)	Cigarettes (%)	Cigars (%)	Pipes (%)	Chewing Tobacco/Snuff (%)	Population Size (n)	Sample Size (n)
Region							
1-Los Angeles	15.3 (±3.2)	13.7 (±3.1)	1.8 (±0.8)	0.3 (±0.3)	0.6 (±0.6)	7,316,240	837
2-San Diego	15.2 (±3.1)	12.3 (±2.2)	4.0 (±2.7)	0.4 (±0.3)	0.9 (±0.6)	2,232,743	936
3-Orange	16.3 (±4.4)	13.2 (±3.6)	4.2 (±2.2)	0.2 (±0.3)	0.7 (±0.8)	2,212,244	609
4-Santa Clara	12.8 (±3.3)	11.6 (±3.3)	2.3 (±1.1)	0.4 (±0.4)	1.2 (±1.0)	1,351,759	718
5-San Bernardino	24.1 (±5.4)	20.3 (±4.3)	6.4 (±3.4)	0.5 (±0.5)	0.5 (±0.4)	1,207,861	1,127
6-Alameda	14.2 (±3.7)	11.9 (±3.2)	2.8 (±1.6)	0.7 (±0.6)	0.7 (±0.7)	1,108,514	821
7-Riverside	22.2 (±5.5)	15.4 (±3.5)	7.6 (±4.5)	0.2 (±0.2)	2.7 (±2.9)	1,154,500	717
8-Sacramento	19.9 (±3.5)	17.5 (±3.0)	3.9 (±2.0)	0.7 (±0.5)	1.3 (±1.0)	946,455	792
9-Contra Costa	14.5 (±3.2)	11.5 (±2.3)	4.5 (±1.9)	0.6 (±0.7)	0.7 (±0.8)	785,068	839
10-San Francisco	17.7 (±7.9)	15.1 (±6.8)	4.8 (±4.7)	0.3 (±0.4)	0.5 (±0.7)	705,637	635
11-San Mateo, Solano	16.0 (±4.0)	12.6 (±3.1)	4.2 (±2.7)	0.2 (±0.1)	1.5 (±2.0)	882,185	870
12-Marin, Napa, Sonoma	18.1 (±3.8)	12.5 (±2.2)	6.1 (±3.0)	1.3 (±1.1)	1.9 (±2.4)	690,478	654
13-Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity, Yolo	25.1 (±4.5)	19.9 (±3.3)	6.1 (±2.6)	1.4 (±0.9)	2.5 (±1.4)	847,358	910
14-San Luis Obispo, Santa Barbara, Ventura	16.2 (±4.1)	13.2 (±3.1)	4.0 (±2.8)	0.5 (±0.5)	0.6 (±0.4)	1,102,405	623
15-Alpine, Amador, Calaveras, El Dorado, Mariposa, Nevada, Placer, San Joaquin, Sierra, Sutter, Tuolumne, Yuba	19.6 (±3.4)	15.8 (±2.8)	5.1 (±2.1)	1.2 (±1.1)	1.8 (±1.4)	1,047,352	775
16-Monterey, San Benito, Santa Cruz	16.0 (±4.1)	12.6 (±2.7)	3.4 (±2.2)	0.3 (±0.3)	1.4 (±2.2)	553,846	779
17-Fresno, Madera, Merced, Stanislaus	20.8 (±4.7)	15.3 (±3.0)	4.4 (±2.1)	0.4 (±0.3)	3.0 (±3.4)	1,142,450	802
18-Imperial, Inyo, Kern, Kings, Mono, Tulare	21.2 (±5.4)	16.3 (±3.4)	6.3 (±3.3)	0.8 (±0.6)	1.9 (±1.4)	966,049	818

Table A.2.6
Other Tobacco Use - Adult Male (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Currently use cigars					
Overall	4.4 (±0.6)	7.8 (±0.7)	7.3 (±0.6)	6.8 (±0.7)	7.1 (±1.2)
Age					
18-24	3.8 (±1.4)	12.3 (±2.7)	10.6 (±2.3)	9.4 (±1.2)	10.4 (±2.3)
25-44	4.6 (±0.9)	9.6 (±1.2)	8.1 (±1.1)	7.5 (±1.1)	8.7 (±2.3)
45-64	4.5 (±0.9)	5.9 (±1.2)	6.9 (±1.1)	5.8 (±1.3)	6.0 (±1.5)
65+	4.0 (±2.0)	1.8 (±1.1)	2.7 (±1.2)	3.7 (±1.4)	1.8 (±1.3)
Race/Ethnicity					
African American	5.5 (±2.2)	6.2 (±1.7)	6.5 (±2.2)	8.1 (±2.1)	9.3 (±4.0)
Asian/PI	2.2 (±1.6)	2.9 (±1.5)	3.5 (±1.3)	3.5 (±1.7)	4.6 (±2.0)
Hispanic	3.2 (±1.2)	5.5 (±1.6)	4.9 (±1.3)	4.0 (±1.0)	4.0 (±1.4)
Non-Hispanic White	5.4 (±0.7)	10.8 (±1.1)	10.0 (±0.9)	9.2 (±1.0)	9.4 (±2.2)
Education					
Less than 12 years	4.5 (±1.3)	3.3 (±1.3)	3.8 (±1.1)	3.3 (±0.9)	3.1 (±1.3)
High school graduate	3.8 (±1.0)	8.0 (±1.6)	7.0 (±1.2)	7.7 (±1.1)	7.6 (±2.1)
Some college	4.7 (±1.2)	8.6 (±1.3)	9.4 (±1.3)	8.9 (±1.3)	9.8 (±3.0)
College graduate	4.2 (±1.0)	10.6 (±1.6)	8.4 (±1.4)	6.7 (±1.4)	7.3 (±1.9)
Income					
< \$10,000	4.7 (±2.3)	6.3 (±3.5)	5.5 (±2.3)	7.3 (±2.8)	5.4 (±3.9)
\$10,001-\$20,000	4.9 (±1.9)	7.8 (±3.1)	6.6 (±2.6)	7.2 (±5.4)	5.4 (±3.1)
\$20,001- \$30,000	4.7 (±1.9)	6.2 (±1.8)	7.3 (±2.2)	5.0 (±1.7)	8.5 (±4.6)
\$30,001-\$50,000	5.9 (±2.3)	7.5 (±2.3)	6.0 (±1.5)	7.2 (±1.8)	5.1 (±2.0)
\$50,001-\$75,000	3.6 (±1.0)	10.5 (±3.3)	9.9 (±2.3)	6.8 (±1.5)	8.5 (±2.7)
> \$75,000	7.1 (±4.4)	11.8 (±3.1)	8.7 (±1.6)	8.1 (±1.4)	9.8 (±2.8)
Unknown	3.2 (±1.0)	5.0 (±1.7)	5.5 (±2.4)	5.0 (±1.5)	6.0 (±2.2)

Table A.2.6 (cont'd)
Other Tobacco Use - Adult Male (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Ever used cigars					
Overall	40.8 (±1.8)	33.0 (±1.0)	33.7 (±1.1)	32.5 (±1.3)	33.1 (±3.0)
Age					
18-24	28.8 (±2.8)	32.7 (±4.0)	32.1 (±3.2)	31.0 (±1.4)	29.2 (±3.4)
25-44	35.0 (±2.3)	29.2 (±2.0)	29.2 (±1.6)	27.7 (±1.6)	31.6 (±4.4)
45-64	48.2 (±3.2)	35.4 (±2.8)	39.1 (±2.8)	36.1 (±3.1)	35.2 (±5.0)
65+	54.8 (±5.7)	39.6 (±4.5)	37.1 (±3.9)	40.9 (±4.7)	37.1 (±7.6)
Race/Ethnicity					
African American	33.6 (±6.0)	27.6 (±4.4)	31.2 (±5.0)	30.4 (±3.8)	41.0 (±8.3)
Asian/PI	29.0 (±4.7)	16.5 (±3.9)	17.6 (±3.5)	20.2 (±5.5)	22.7 (±5.7)
Hispanic	26.7 (±2.9)	18.1 (±2.7)	16.5 (±2.1)	16.1 (±2.2)	17.4 (±3.3)
Non-Hispanic White	54.2 (±2.0)	47.9 (±1.6)	49.3 (±1.9)	46.7 (±2.0)	44.4 (±4.7)
Education					
Less than 12 years	29.7 (±4.1)	16.3 (±3.6)	15.9 (±2.9)	17.4 (±3.0)	17.9 (±3.5)
High school graduate	39.2 (±3.0)	33.8 (±2.3)	30.3 (±2.5)	32.6 (±2.8)	32.0 (±5.1)
Some college	45.6 (±3.5)	38.4 (±2.4)	41.6 (±2.5)	38.2 (±2.3)	39.3 (±6.1)
College graduate	45.3 (±3.2)	40.9 (±2.1)	41.8 (±2.5)	38.2 (±2.6)	37.6 (±5.2)
Income					
< \$10,000	37.4 (±7.3)	30.3 (±7.0)	24.6 (±6.2)	28.5 (±8.2)	27.4 (±15.8)
\$10,001-\$20,000	36.0 (±3.4)	29.4 (±4.4)	31.5 (±6.6)	31.8 (±6.3)	33.7 (±11.3)
\$20,001- \$30,000	40.6 (±4.1)	31.5 (±4.2)	31.4 (±4.0)	29.2 (±4.9)	33.6 (±7.5)
\$30,001-\$50,000	45.1 (±4.2)	35.2 (±3.4)	32.0 (±2.9)	31.6 (±3.1)	29.5 (±6.6)
\$50,001-\$75,000	44.5 (±4.6)	36.5 (±4.3)	37.9 (±4.0)	33.9 (±3.8)	34.9 (±6.6)
> \$75,000	42.6 (±5.0)	43.8 (±5.2)	41.6 (±4.6)	36.9 (±3.2)	38.5 (±7.3)
Unknown	38.0 (±4.1)	28.8 (±4.0)	34.6 (±5.7)	27.7 (±4.5)	29.3 (±6.7)

Table A.2.6 (cont'd)
Other Tobacco Use - Adult Male (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Currently smoke pipe					
Overall	2.3 (±0.4)	1.4 (±0.3)	1.4 (±0.4)	1.1 (±0.3)	0.8 (±0.2)
Age					
18-24	1.0 (±0.5)	1.6 (±0.8)	1.3 (±0.7)	1.2 (±0.5)	1.9 (±0.9)
25-44	1.5 (±0.5)	0.9 (±0.3)	0.9 (±0.3)	0.9 (±0.4)	0.6 (±0.3)
45-64	3.7 (±1.1)	1.8 (±0.7)	2.2 (±1.0)	1.3 (±0.7)	0.7 (±0.3)
65+	2.9 (±0.9)	2.3 (±1.5)	1.4 (±0.9)	1.3 (±1.1)	0.9 (±0.8)
Race/Ethnicity					
African American	2.6 (±1.6)	1.2 (±0.6)	1.1 (±0.9)	1.2 (±0.7)	1.2 (±0.9)
Asian/PI	2.0 (±2.0)	0.9 (±1.1)	0.4 (±0.3)	1.1 (±1.0)	0.3 (±0.4)
Hispanic	0.8 (±0.5)	0.6 (±0.4)	0.8 (±0.4)	0.6 (±0.4)	0.7 (±0.5)
Non-Hispanic White	3.3 (±0.5)	2.1 (±0.6)	2.2 (±0.7)	1.5 (±0.5)	1.0 (±0.3)
Education					
Less than 12 years	1.6 (±0.9)	0.6 (±0.5)	1.2 (±0.9)	0.2 (±0.2)	0.7 (±0.6)
High school graduate	1.5 (±0.5)	1.6 (±0.7)	1.2 (±0.5)	0.9 (±0.6)	0.9 (±0.4)
Some college	2.4 (±0.7)	2.0 (±0.8)	1.8 (±0.6)	1.5 (±0.7)	1.1 (±0.5)
College graduate	3.3 (±1.1)	1.5 (±0.9)	1.4 (±0.6)	1.5 (±0.7)	0.7 (±0.4)
Income					
< \$10,000	2.8 (±2.0)	1.2 (±1.2)	3.9 (±3.2)	0.9 (±1.0)	1.8 (±1.7)
\$10,001-\$20,000	2.5 (±0.9)	1.7 (±1.0)	3.2 (±2.6)	0.8 (±0.6)	1.5 (±1.4)
\$20,001- \$30,000	2.6 (±1.6)	1.2 (±0.8)	1.6 (±1.1)	1.1 (±1.1)	1.9 (±1.6)
\$30,001-\$50,000	2.3 (±1.4)	2.1 (±1.1)	1.5 (±1.1)	1.5 (±1.2)	1.1 (±0.9)
\$50,001-\$75,000	1.2 (±0.6)	1.7 (±1.2)	1.9 (±0.9)	0.8 (±0.5)	0.7 (±0.5)
> \$75,000	4.9 (±4.3)	1.4 (±0.9)	1.1 (±0.7)	1.2 (±0.5)	0.5 (±0.3)
Unknown	2.2 (±1.0)	0.9 (±0.6)	1.0 (±1.1)	1.2 (±0.9)	1.3 (±1.0)

Table A.2.6 (cont'd)
Other Tobacco Use – Adult Male (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Ever smoked pipe					
Overall	32.4 (±1.2)	22.8 (±1.1)	21.8 (±1.1)	19.6 (±1.1)	18.7 (±2.2)
Age					
18-24	10.4 (±1.3)	11.4 (±2.0)	10.6 (±1.9)	11.6 (±1.3)	13.1 (±2.6)
25-44	22.0 (±1.4)	12.8 (±1.2)	11.6 (±1.1)	11.1 (±1.4)	10.6 (±2.7)
45-64	44.8 (±2.8)	33.4 (±3.0)	35.5 (±2.6)	26.8 (±2.4)	25.7 (±4.1)
65+	59.9 (±6.9)	41.9 (±4.4)	34.5 (±3.8)	38.1 (±4.6)	33.7 (±6.5)
Race/Ethnicity					
African American	36.0 (±5.2)	19.2 (±4.4)	22.7 (±5.6)	18.9 (±2.9)	22.3 (±7.6)
Asian/PI	22.6 (±5.3)	9.8 (±3.7)	10.4 (±3.0)	10.7 (±4.7)	9.5 (±3.1)
Hispanic	15.1 (±2.4)	8.3 (±1.7)	7.5 (±1.4)	7.0 (±1.4)	8.0 (±2.6)
Non-Hispanic White	45.5 (±1.3)	36.2 (±1.7)	33.7 (±1.6)	30.2 (±1.4)	27.3 (±3.4)
Education					
Less than 12 years	18.5 (±3.4)	9.6 (±2.6)	10.0 (±2.2)	8.4 (±2.0)	8.0 (±2.3)
High school graduate	30.0 (±2.9)	21.3 (±2.0)	18.8 (±2.4)	18.1 (±2.8)	17.2 (±3.4)
Some college	35.8 (±2.8)	26.8 (±2.3)	26.0 (±2.3)	23.0 (±2.3)	20.5 (±3.4)
College graduate	41.5 (±2.5)	30.2 (±2.2)	28.4 (±2.5)	25.8 (±2.4)	25.2 (±4.2)
Income					
< \$10,000	29.5 (±7.9)	26.3 (±5.5)	20.4 (±5.7)	20.2 (±7.3)	15.6 (±13.0)
\$10,001-\$20,000	31.6 (±3.0)	18.5 (±3.8)	24.4 (±5.2)	24.6 (±6.3)	23.7 (±8.3)
\$20,001- \$30,000	32.2 (±3.8)	21.2 (±3.4)	20.1 (±3.2)	19.0 (±3.6)	19.5 (±5.5)
\$30,001-\$50,000	34.9 (±3.7)	24.5 (±2.7)	21.3 (±3.6)	19.4 (±2.6)	16.1 (±4.0)
\$50,001-\$75,000	34.2 (±3.7)	24.2 (±2.9)	21.7 (±3.4)	19.6 (±2.5)	21.5 (±5.3)
> \$75,000	35.4 (±4.3)	26.9 (±5.1)	24.0 (±3.9)	20.3 (±2.7)	22.1 (±4.7)
Unknown	29.9 (±3.1)	23.4 (±3.5)	21.4 (±3.5)	19.1 (±3.0)	20.0 (±5.0)

Table A.2.6 (cont'd)
Other Tobacco Use - Adult Male (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Currently use smokeless					
Overall	2.5 (±0.4)	2.2 (±0.4)	2.1 (±0.4)	1.6 (±0.3)	2.2 (±0.6)
Age					
18-24	5.4 (±1.6)	4.0 (±1.3)	3.5 (±1.2)	2.6 (±0.6)	2.7 (±1.4)
25-44	2.9 (±0.8)	2.8 (±0.7)	2.9 (±0.7)	2.2 (±0.5)	2.6 (±1.2)
45-64	1.2 (±0.3)	1.2 (±0.7)	0.9 (±0.5)	0.9 (±0.4)	2.4 (±1.1)
65+	0.9 (±0.4)	0.4 (±0.3)	0.6 (±0.6)	0.6 (±0.4)	0.2 (±0.3)
Race/Ethnicity					
African American	1.7 (±0.9)	2.7 (±2.3)	2.8 (±2.1)	2.2 (±1.3)	2.8 (±3.1)
Asian/PI	0.7 (±0.6)	1.4 (±1.6)	0.2 (±0.2)	0.8 (±0.9)	0.8 (±0.6)
Hispanic	1.4 (±0.9)	0.8 (±0.5)	0.7 (±0.5)	0.5 (±0.3)	1.0 (±1.1)
Non-Hispanic White	3.8 (±0.6)	3.1 (±0.6)	3.3 (±0.6)	2.4 (±0.5)	3.3 (±0.9)
Education					
Less than 12 years	2.3 (±0.9)	1.1 (±0.5)	1.0 (±0.6)	0.9 (±0.5)	1.2 (±0.8)
High school graduate	3.4 (±1.3)	3.5 (±1.0)	2.8 (±0.8)	2.0 (±0.6)	3.4 (±1.5)
Some college	2.8 (±0.8)	2.5 (±1.0)	2.5 (±0.8)	2.4 (±0.8)	2.5 (±1.1)
College graduate	1.5 (±0.4)	1.6 (±0.8)	1.7 (±0.6)	1.2 (±0.4)	2.1 (±1.4)
Income					
< \$10,000	2.3 (±1.5)	2.9 (±3.4)	2.8 (±2.0)	1.2 (±1.4)	0.1 (±0.2)
\$10,001-\$20,000	2.1 (±0.8)	1.9 (±0.8)	1.8 (±1.2)	1.4 (±0.9)	0.3 (±0.5)
\$20,001- \$30,000	2.4 (±0.9)	2.5 (±1.1)	3.0 (±1.5)	1.8 (±0.7)	2.7 (±2.2)
\$30,001-\$50,000	2.6 (±0.6)	3.0 (±1.0)	2.0 (±0.6)	1.6 (±0.8)	1.8 (±1.8)
\$50,001-\$75,000	4.1 (±2.7)	1.7 (±0.9)	1.9 (±0.7)	2.1 (±0.6)	3.0 (±1.8)
> \$75,000	1.6 (±0.8)	1.9 (±1.0)	2.3 (±1.7)	1.5 (±0.6)	3.6 (±3.5)
Unknown	2.1 (±0.8)	1.6 (±1.1)	0.8 (±0.9)	1.7 (±1.2)	1.8 (±1.1)

Table A.2.6 (cont'd)
Other Tobacco Use - Adult Male (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Ever used smokeless					
Overall	17.4 (±1.0)	15.7 (±1.0)	15.3 (±1.1)	15.5 (±1.1)	15.8 (±1.7)
Age					
18-24	24.2 (±2.8)	21.8 (±3.4)	17.3 (±2.4)	16.2 (±1.5)	14.3 (±2.8)
25-44	18.0 (±1.4)	19.0 (±1.5)	18.5 (±1.4)	20.5 (±1.9)	20.0 (±3.8)
45-64	12.6 (±1.5)	9.8 (±2.1)	12.2 (±2.2)	11.3 (±1.9)	14.2 (±2.4)
65+	18.6 (±4.1)	11.8 (±3.7)	10.0 (±2.4)	9.0 (±2.1)	8.5 (±3.4)
Race/Ethnicity					
African American	18.1 (±4.6)	14.3 (±3.3)	17.3 (±4.9)	16.4 (±3.5)	21.8 (±8.9)
Asian/PI	8.5 (±2.8)	7.4 (±2.3)	4.7 (±2.5)	9.2 (±3.1)	8.3 (±3.5)
Hispanic	11.1 (±1.9)	10.0 (±1.9)	7.7 (±1.3)	6.9 (±1.5)	8.4 (±2.6)
Non-Hispanic White	23.6 (±1.4)	21.7 (±1.5)	22.5 (±1.5)	22.5 (±1.8)	21.4 (±3.0)
Education					
Less than 12 years	15.3 (±2.5)	9.7 (±2.0)	9.3 (±2.4)	9.3 (±2.3)	8.2 (±2.3)
High school graduate	19.2 (±2.1)	18.3 (±1.9)	17.5 (±2.0)	16.9 (±1.8)	17.6 (±3.7)
Some college	20.6 (±2.1)	18.9 (±2.6)	18.6 (±2.0)	18.7 (±2.2)	19.2 (±3.9)
College graduate	13.6 (±1.9)	14.6 (±1.9)	14.6 (±1.8)	16.4 (±2.3)	16.7 (±3.8)
Income					
< \$10,000	19.0 (±5.6)	16.5 (±6.9)	14.7 (±4.1)	14.4 (±5.5)	15.9 (±7.7)
\$10,001-\$20,000	18.8 (±3.3)	15.1 (±3.5)	19.0 (±4.4)	15.7 (±5.7)	28.4 (±5.6)
\$20,001- \$30,000	16.3 (±2.6)	14.4 (±2.4)	17.0 (±3.6)	14.8 (±3.0)	18.6 (±6.0)
\$30,001-\$50,000	21.3 (±3.1)	18.8 (±2.8)	14.8 (±2.3)	15.6 (±2.4)	12.4 (±4.4)
\$50,001-\$75,000	18.9 (±3.8)	17.4 (±3.2)	17.0 (±3.8)	17.8 (±3.1)	18.1 (±4.7)
> \$75,000	15.8 (±4.6)	18.7 (±4.6)	17.2 (±3.4)	17.9 (±2.9)	18.4 (±4.8)
Unknown	15.3 (±2.4)	12.0 (±3.0)	12.7 (±3.1)	13.6 (±3.9)	12.7 (±3.6)

Appendix Table A.2.7
Other Tobacco Use - Adult Female (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Ever used cigars					
Overall	6.0 (±0.8)	5.1 (±0.5)	5.9 (±0.6)	5.6 (±0.5)	6.2 (±0.9)
Age					
18-24	6.3 (±3.6)	8.9 (±2.0)	10.4 (±1.9)	9.1 (±1.1)	10.4 (±2.1)
25-44	6.3 (±0.8)	6.0 (±0.9)	7.2 (±1.0)	7.0 (±1.1)	7.7 (±1.9)
45-64	6.7 (±1.5)	4.1 (±0.7)	4.4 (±1.2)	5.0 (±0.9)	4.6 (±1.4)
65+	3.5 (±1.2)	1.8 (±0.9)	1.7 (±1.0)	1.1 (±0.6)	2.6 (±1.5)
Race/Ethnicity					
African American	5.6 (±1.7)	5.0 (±1.6)	5.8 (±1.9)	7.1 (±1.9)	7.7 (±2.9)
Asian/PI	4.0 (±2.1)	1.7 (±0.8)	4.1 (±2.2)	3.5 (±1.6)	4.1 (±1.8)
Hispanic	3.7 (±1.8)	2.9 (±0.9)	2.8 (±0.7)	3.0 (±0.8)	3.0 (±1.0)
Non-Hispanic White	7.9 (±0.9)	7.3 (±0.9)	8.2 (±1.0)	7.5 (±0.8)	8.5 (±1.6)
Education					
Less than 12 years	4.2 (±1.7)	2.3 (±1.1)	1.8 (±0.9)	1.9 (±0.6)	2.2 (±1.0)
High school graduate	4.6 (±0.9)	3.7 (±0.7)	5.0 (±1.0)	4.5 (±0.9)	4.8 (±1.3)
Some college	6.2 (±0.9)	6.2 (±1.0)	7.8 (±1.1)	7.2 (±1.2)	7.8 (±1.8)
College graduate	8.2 (±2.3)	7.2 (±1.3)	7.3 (±1.3)	7.7 (±1.3)	8.9 (±2.3)
Income					
< \$10,000	37.4 (±7.3)	30.3 (±7.0)	24.6 (±6.2)	28.5 (±8.2)	27.4 (±15.8)
\$10,001-\$20,000	36.0 (±3.4)	29.4 (±4.4)	31.5 (±6.6)	31.8 (±6.3)	33.7 (±11.3)
\$20,001- \$30,000	40.6 (±4.1)	31.5 (±4.2)	31.4 (±4.0)	29.2 (±4.9)	33.6 (±7.5)
\$30,001-\$50,000	45.1 (±4.2)	35.2 (±3.4)	32.0 (±2.9)	31.6 (±3.1)	29.5 (±6.6)
\$50,001-\$75,000	44.5 (±4.6)	36.5 (±4.3)	37.9 (±4.0)	33.9 (±3.8)	34.9 (±6.6)
> \$75,000	42.6 (±5.0)	43.8 (±5.2)	41.6 (±4.6)	36.9 (±3.2)	38.5 (±7.3)
Unknown	38.0 (±4.1)	28.8 (±4.0)	34.6 (±5.7)	27.7 (±4.5)	29.3 (±6.7)

Appendix Table A.2.7 (cont'd)
Other Tobacco Use – Adult Female (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Ever smoked pipe					
Overall	3.1 (±0.4)	1.9 (±0.3)	1.8 (±0.3)	1.6 (±0.3)	1.8 (±0.4)
Age					
18-24	1.8 (±0.8)	2.3 (±0.9)	1.3 (±0.4)	2.6 (±0.6)	3.6 (±2.0)
25-44	2.8 (±0.5)	1.5 (±0.5)	2.0 (±0.5)	1.6 (±0.4)	1.5 (±0.6)
45-64	4.0 (±1.1)	2.7 (±0.7)	2.3 (±0.7)	1.8 (±0.6)	2.0 (±0.6)
65+	3.3 (±1.5)	1.1 (±0.7)	1.0 (±0.5)	0.4 (±0.3)	1.0 (±0.7)
Race/Ethnicity					
African American	3.7 (±2.5)	2.2 (±1.0)	1.6 (±1.0)	2.0 (±0.7)	2.4 (±1.5)
Asian/PI	1.8 (±1.5)	0.4 (±0.5)	1.5 (±1.5)	0.5 (±0.4)	1.7 (±1.3)
Hispanic	1.0 (±0.5)	0.6 (±0.5)	0.4 (±0.2)	0.8 (±0.3)	0.5 (±0.3)
Non-Hispanic White	4.6 (±0.5)	3.0 (±0.5)	2.8 (±0.5)	2.2 (±0.5)	2.6 (±0.6)
Education					
Less than 12 years	2.2 (±1.2)	0.7 (±0.5)	0.4 (±0.3)	0.8 (±0.5)	1.4 (±1.2)
High school graduate	2.3 (±1.2)	1.5 (±0.5)	1.5 (±0.5)	1.1 (±0.3)	1.0 (±0.4)
Some college	3.2 (±0.6)	2.3 (±0.9)	2.5 (±0.8)	1.9 (±0.4)	2.8 (±0.9)
College graduate	4.2 (±0.9)	2.6 (±0.8)	2.3 (±0.7)	2.1 (±0.6)	2.3 (±0.8)
Income					
< \$10,000	29.5 (±7.9)	26.3 (±5.5)	20.4 (±5.7)	20.2 (±7.3)	15.6 (±13.0)
\$10,001-\$20,000	31.6 (±3.0)	18.5 (±3.8)	24.4 (±5.2)	24.6 (±6.3)	23.7 (±8.3)
\$20,001- \$30,000	32.2 (±3.8)	21.2 (±3.4)	20.1 (±3.2)	19.0 (±3.6)	19.5 (±5.5)
\$30,001-\$50,000	34.9 (±3.7)	24.5 (±2.7)	21.3 (±3.6)	19.4 (±2.6)	16.1 (±4.0)
\$50,001-\$75,000	34.2 (±3.7)	24.2 (±2.9)	21.7 (±3.4)	19.6 (±2.5)	21.5 (±5.3)
> \$75,000	35.4 (±4.3)	26.9 (±5.1)	24.0 (±3.9)	20.3 (±2.7)	22.1 (±4.7)
Unknown	29.9 (±3.1)	23.4 (±3.5)	21.4 (±3.5)	19.1 (±3.0)	20.0 (±5.0)

Table A.2.7 (cont'd)
Other Tobacco Use - Adult Female (Standardized)

	1990 %	1996 %	1999 %	2002 %	2005 %
Ever used smokeless					
Overall	1.9 (±0.3)	1.7 (±0.4)	2.0 (±0.5)	1.4 (±0.3)	2.0 (±0.6)
Age					
18-24	3.4 (±1.0)	4.4 (±1.8)	3.0 (±0.9)	3.0 (±0.7)	3.7 (±1.7)
25-44	1.8 (±0.3)	2.0 (±0.5)	3.0 (±0.7)	1.8 (±0.5)	2.6 (±1.2)
45-64	1.4 (±0.7)	1.1 (±0.5)	1.2 (±1.2)	0.9 (±0.5)	1.0 (±0.4)
65+	1.6 (±1.0)	0.4 (±0.3)	0.3 (±0.3)	0.3 (±0.2)	1.0 (±0.8)
Race/Ethnicity					
African American	5.3 (±2.6)	3.0 (±1.3)	3.5 (±3.4)	2.8 (±0.9)	3.5 (±1.6)
Asian/PI	0.6 (±0.6)	0.6 (±0.5)	1.4 (±1.5)	0.5 (±0.2)	3.0 (±3.4)
Hispanic	0.6 (±0.3)	0.7 (±0.5)	0.6 (±0.3)	0.5 (±0.2)	0.5 (±0.4)
Non-Hispanic White	2.2 (±0.4)	2.4 (±0.7)	2.7 (±0.5)	2.0 (±0.5)	2.3 (±0.6)
Education					
Less than 12 years	1.5 (±0.5)	1.3 (±0.3)	1.5 (±0.5)	1.3 (±0.4)	1.5 (±0.6)
High school graduate	2.0 (±0.4)	1.9 (±0.5)	2.5 (±0.7)	1.8 (±0.5)	2.3 (±1.1)
Some college	1.5 (±0.5)	2.6 (±1.2)	2.0 (±0.7)	1.7 (±0.6)	2.3 (±1.5)
College graduate	2.2 (±1.1)	1.0 (±0.6)	1.6 (±1.6)	0.8 (±0.3)	1.7 (±1.0)
Income					
< \$10,000	19.0 (±5.6)	16.5 (±6.9)	14.7 (±4.1)	14.4 (±5.5)	15.9 (±7.7)
\$10,001-\$20,000	18.8 (±3.3)	15.1 (±3.5)	19.0 (±4.4)	15.7 (±5.7)	28.4 (±5.6)
\$20,001- \$30,000	16.3 (±2.6)	14.4 (±2.4)	17.0 (±3.6)	14.8 (±3.0)	18.6 (±6.0)
\$30,001-\$50,000	21.3 (±3.1)	18.8 (±2.8)	14.8 (±2.3)	15.6 (±2.4)	12.4 (±4.4)
\$50,001-\$75,000	18.9 (±3.8)	17.4 (±3.2)	17.0 (±3.8)	17.8 (±3.1)	18.1 (±4.7)
> \$75,000	15.8 (±4.6)	18.7 (±4.6)	17.2 (±3.4)	17.9 (±2.9)	18.4 (±4.8)
Unknown	15.3 (±2.4)	12.0 (±3.0)	12.7 (±3.1)	13.6 (±3.9)	12.7 (±3.6)

Appendix Table A.2.8 Current Use of Cigars by Cigarette Smoking Status (Standardized)					
	1990 %	1996 %	1999 %	2002 %	2005 %
Males					
Never	1.9 (±0.8)	6.0 (±1.1)	4.0 (±0.7)	4.9 (±1.2)	4.9 (±1.6)
Former	4.0 (±1.0)	7.9 (±1.8)	7.9 (±1.4)	6.2 (±1.3)	7.3 (±2.9)
Current	9.6 (±1.3)	12.9 (±1.3)	14.0 (±1.2)	13.2 (±1.6)	15.2 (±2.5)
Females					
Never	0.1 (±0.1)	0.7 (±0.3)	0.3 (±0.2)	0.6 (±0.4)	0.1 (±0.1)
Former	0.1 (±0.2)	0.5 (±0.3)	0.6 (±0.3)	0.8 (±0.5)	1.4 (±1.4)
Current	1.0 (±0.7)	2.4 (±0.7)	2.2 (±0.8)	3.0 (±0.8)	2.5 (±1.1)

Appendix Table A.2.9 Hookah Ever Use (All)		
	2005 %	N
Overall	5.0 (±0.6)	1,055
Age		
18-24	14.8 (±1.9)	516
25-44	4.9 (±1.1)	332
45-64	2.8 (±0.9)	183
65+	1.1 (±0.7)	24
Education		
Less than 12 years	2.7 (±1.2)	67
High school graduate	4.5 (±1.0)	261
Some college	7.2 (±1.2)	447
College graduate	5.3 (±1.0)	280
Race/Ethnicity		
African American	3.1 (±1.6)	41
Asian/PI	3.5 (±1.3)	75
Hispanic	2.3 (±0.6)	142
Non-Hispanic White	6.9 (±1.0)	753

Appendix Table A.2.9 (Cont'd) Hookah Ever Use – Male		
	2005 %	N
Overall	8.4 (±1.1)	794
Age		
18-24	20.2 (±3.0)	376
25-44	7.8 (±1.9)	246
45-64	5.3 (±1.9)	149
65+	2.9 (±1.9)	23
Education		
Less than 12 years	4.6 (±2.5)	53
High school graduate	9.0 (±2.2)	213
Some college	12.0 (±2.8)	328
College graduate	7.6 (±1.6)	200
Race/Ethnicity		
African American	4.3 (±1.9)	30
Asian/PI	5.6 (±2.4)	55
Hispanic	3.9 (±1.2)	105
Non-Hispanic White	11.5 (±2.1)	569

Appendix Table A.2.9 (Cont'd) Hookah Ever Use – Female		
	2005 %	N
Overall	1.8 (±0.4)	261
Age		
18-24	8.0 (±2.2)	140
25-44	1.9 (±0.8)	86
45-64	0.5 (±0.4)	34
65+	0.0 (±0.0)	1
Education		
Less than 12 years	0.6 (±0.5)	14
High school graduate	0.7 (±0.3)	48
Some college	2.7 (±0.8)	119
College graduate	2.8 (±1.2)	80
Race/Ethnicity		
African American	2.1 (±2.7)	11
Asian/PI	1.5 (±1.3)	20
Hispanic	0.9 (±0.5)	37
Non-Hispanic White	2.4 (±0.7)	184

<p style="text-align: center;">Table A.2.10 Willingness to use harm reduction products, current smokers <i>Would you replace your cigarettes with smokeless tobacco, dip, or chew if you thought it had few health consequences?</i></p>				
	Definitely yes %	Probably yes %	Probably not %	Definitely not %
Overall	8.2 (±1.8)	6.4 (±1.0)	12.5 (±2.3)	72.9 (±2.9)
Gender				
Male	8.6 (±2.3)	7.3 (±1.7)	13.3 (±3.7)	70.7 (±4.2)
Female	7.6 (±2.2)	5.0 (±1.6)	11.1 (±2.6)	76.2 (±3.3)
Age				
18-24	7.2 (±3.6)	6.5 (±3.2)	16.6 (±5.0)	69.7 (±7.8)
25-44	10.3 (±3.4)	5.9 (±1.7)	11.5 (±3.7)	72.2 (±5.0)
45-64	6.2 (±1.9)	6.4 (±2.6)	11.1 (±3.3)	76.3 (±5.1)
65+	4.5 (±2.1)	9.0 (±3.6)	17.1 (±5.6)	69.5 (±5.9)
Race/Ethnicity				
African American	9.2 (±6.2)	4.8 (±3.2)	7.8 (±4.0)	78.2 (±9.0)
Asian/PI	8.6 (±7.3)	4.9 (±2.9)	21.5 (±11.0)	65.1 (±11.7)
Hispanic	12.1 (±5.0)	8.2 (±3.8)	13.5 (±6.9)	66.2 (±9.4)
Non-Hispanic White	6.0 (±1.3)	5.0 (±1.1)	11.4 (±1.7)	77.6 (±2.4)
Education				
Less than 12 years	13.2 (±5.2)	8.2 (±3.4)	11.4 (±3.9)	67.3 (±8.3)
High school graduate	7.2 (±2.1)	5.2 (±1.7)	13.8 (±4.9)	73.8 (±5.3)
Some college	6.3 (±2.4)	7.8 (±2.5)	13.2 (±3.6)	72.7 (±4.1)
College graduate	5.1 (±2.9)	3.1 (±1.8)	10.4 (±3.8)	81.4 (±4.7)
Income				
\$10,000 or less	21.4 (±9.5)	10.1 (±5.5)	15.0 (±6.6)	53.5 (±10.5)
\$10,001 to \$20,000	9.5 (±6.3)	7.9 (±4.4)	12.2 (±5.3)	70.5 (±7.2)
\$20,001 to \$30,000	6.2 (±3.6)	5.8 (±4.3)	8.6 (±4.1)	79.5 (±9.1)
\$30,001 to \$50,000	5.5 (±2.4)	6.2 (±2.2)	12.9 (±5.4)	75.4 (±5.4)
\$50,001 to \$75,000	10.0 (±4.1)	5.0 (±3.0)	12.1 (±3.4)	72.9 (±4.9)
Over \$75,000	4.8 (±2.4)	5.4 (±2.2)	12.5 (±3.6)	77.3 (±4.4)
Missing	5.5 (±3.8)	6.3 (±2.9)	15.7 (±13.1)	72.5 (±12.6)

Table A.2.10 (Cont'd)				
Willingness to use harm reduction products, current smokers				
<i>Would you switch from cigarettes to a new tobacco product, if you could get the dose of nicotine that you need from the new product without smoking?</i>				
	Definitely yes %	Probably yes %	Probably not %	Definitely not %
Overall	11.9 (±1.7)	18.6 (±2.5)	20.3 (±2.9)	49.3 (±4.0)
Gender				
Male	11.0 (±2.4)	17.5 (±2.9)	19.7 (±4.4)	51.8 (±5.7)
Female	13.3 (±2.2)	20.2 (±3.2)	21.2 (±3.4)	45.4 (±4.4)
Age				
18-24	8.5 (±3.3)	14.0 (±4.4)	24.4 (±7.0)	53.2 (±7.4)
25-44	11.6 (±2.6)	19.7 (±3.7)	21.1 (±4.7)	47.5 (±5.4)
45-64	13.9 (±3.6)	18.5 (±4.6)	16.8 (±3.7)	50.8 (±9.0)
65+	12.1 (±5.0)	20.0 (±6.4)	20.8 (±6.7)	47.1 (±7.3)
Race/Ethnicity				
African American	11.5 (±6.0)	17.4 (±9.8)	15.3 (±9.2)	55.8 (±16.0)
Asian/PI	6.6 (±2.9)	17.1 (±8.1)	24.6 (±10.5)	51.7 (±10.7)
Hispanic	10.9 (±3.9)	17.5 (±6.7)	18.0 (±7.2)	53.7 (±11.3)
Non-Hispanic White	12.9 (±2.1)	19.7 (±2.3)	21.9 (±3.3)	45.4 (±3.6)
Education				
Less than 12 years	13.6 (±5.1)	16.1 (±5.7)	15.0 (±4.5)	55.4 (±10.5)
High school graduate	12.2 (±2.7)	17.7 (±3.7)	22.5 (±5.4)	47.6 (±5.4)
Some college	10.9 (±2.6)	21.4 (±4.3)	22.9 (±5.1)	44.8 (±5.2)
College graduate	10.1 (±3.7)	19.7 (±5.3)	20.6 (±6.2)	49.6 (±6.0)
Income				
\$10,000 or less	19.6 (±7.9)	17.0 (±8.2)	15.4 (±6.8)	48.0 (±10.1)
\$10,001 to \$20,000	16.5 (±7.2)	19.2 (±6.4)	15.6 (±6.2)	48.8 (±11.0)
\$20,001 to \$30,000	8.7 (±4.0)	17.2 (±8.7)	15.9 (±7.3)	58.2 (±16.4)
\$30,001 to \$50,000	11.2 (±3.7)	22.4 (±6.2)	21.9 (±6.7)	44.5 (±6.0)
\$50,001 to \$75,000	10.8 (±3.4)	20.2 (±4.8)	22.5 (±4.9)	46.5 (±7.1)
Over \$75,000	9.9 (±3.0)	18.3 (±3.9)	22.5 (±6.0)	49.3 (±5.7)
Missing	10.7 (±4.9)	13.4 (±5.4)	25.8 (±13.3)	50.2 (±11.3)

4. Adolescent Use of Tobacco Products

Table A.2.11 provides the current smoking prevalence for various demographic subgroups of adolescents for each survey year. Across surveys, higher smoking prevalence was seen in boys compared to girls, older compared to younger adolescents, and for those with average or below average school performance compared to those with better than average or much better than average school performance.

Table A.2.12 describes any use of tobacco products in adolescents, including use of cigarettes, chewing tobacco/snuff, cigars, and bidis. The table first presents the data for boys and girls combined and then separately. Boys were more likely than girls to have ever used cigarettes or other tobacco products. Ever use of any tobacco product was higher in older age groups, Non-Hispanic White adolescents, and those with average and below average school performance.

Appendix Table A.2.11
Standardized (2005) Adolescent Current (in Last 30 Days) Smoking Prevalence

	1990 %	1993 %	1996 %	1999 %	2002 %	2005 %	Factor Change 1993-1996 %	Factor Change 1996-2002 %	Factor Change 2002-2005 %
Overall	9.1 (±1.1)	8.9 (±1.3)	11.5 (±1.2)	7.7 (±0.8)	5.1 (±0.7)	3.2 (±0.7)	29.4	-55.9	-36.6
Gender									
Male	9.9 (±1.8)	9.6 (±1.8)	12.5 (±1.6)	8.1 (±1.1)	5.7 (±1.1)	3.8 (±1.1)	29.9	-54.6	-33.3
Female	8.3 (±1.5)	8.1 (±1.9)	10.4 (±1.4)	7.3 (±1.0)	4.4 (±0.8)	2.6 (±0.9)	28.6	-57.5	-41.4
Age									
12-13	4.0 (±1.9)	3.0 (±1.1)	3.3 (±0.9)	1.8 (±0.8)	0.8 (±0.5)	0.2 (±0.2)	10.7	-75.7	-77.1
14-15	7.7 (±1.5)	9.1 (±2.0)	10.5 (±1.5)	5.6 (±1.1)	3.7 (±1.1)	2.3 (±1.1)	16.2	-65.0	-37.7
16-17	16.0 (±2.5)	14.9 (±3.3)	21.2 (±2.5)	16.2 (±2.2)	11.0 (±1.7)	7.4 (±1.9)	41.6	-47.9	-33.2
Race/Ethnicity									
African American	7.3 (±3.7)	7.7 (±3.9)	9.0 (±2.6)	7.8 (±2.8)	4.4 (±1.8)	4.0 (±2.5)	17.0	-51.2	-9.0
Asian/PI	5.9 (±3.1)	7.1 (±5.8)	8.9 (±2.6)	5.5 (±2.2)	4.1 (±1.7)	2.9 (±2.1)	24.2	-54.0	-28.7
Hispanic	8.9 (±2.1)	7.1 (±1.7)	10.6 (±1.9)	7.4 (±1.3)	4.8 (±1.4)	2.6 (±1.2)	49.6	-54.3	-45.9
Non-Hispanic White	10.9 (±1.3)	11.9 (±1.4)	14.1 (±1.2)	8.8 (±1.2)	5.9 (±0.9)	3.8 (±1.1)	18.8	-58.4	-35.2
School Performance									
Much better than average	4.7 (±2.2)	3.0 (±1.0)	6.5 (±1.9)	5.6 (±2.6)	3.1 (±1.1)	1.6 (±1.5)	121.6	-53.3	-47.4
Better than average	5.9 (±1.2)	6.5 (±1.8)	9.6 (±1.6)	6.6 (±1.2)	3.5 (±1.1)	2.6 (±1.1)	49.4	-63.6	-26.9
Average and below	13.5 (±2.3)	12.8 (±1.9)	16.3 (±1.8)	10.3 (±1.1)	7.6 (±1.3)	5.1 (±1.7)	27.5	-53.6	-31.9
Household Income									
\$10,000 or less	14.5 (±5.9)		15.9 (±5.0)	15.9 (±5.0)	6.6 (±2.9)	4.3 (±6.2)		-58.7	-72.8
\$10,001 to \$20,000	9.1 (±2.9)		14.2 (±3.9)	14.2 (±3.9)	6.5 (±2.6)	5.4 (±3.9)		-54.1	-62.0
\$20,001 to \$30,000	9.8 (±2.7)		11.3 (±2.0)	11.3 (±2.0)	5.6 (±2.4)	7.2 (±4.2)		-50.8	-36.3
\$30,001 to \$50,000	9.5 (±3.4)		12.0 (±2.7)	12.0 (±2.7)	5.4 (±1.6)	3.7 (±2.2)		-55.3	-69.5
\$50,001 to \$75,000	8.9 (±3.3)		11.4 (±2.6)	11.4 (±2.6)	4.8 (±1.4)	5.1 (±3.3)		-57.4	-55.0
Over \$75,000	8.6 (±3/1)		14.5 (±4.5)	14.5 (±4.5)	4.1 (±0.9)	1.9 (±0.9)		-71.6	-87.0
Missing	7.7 (±2.7)		11.3 (±3.0)	11.3 (±3.0)	3.9 (±1.8)	4.8 (±3.4)		-65.1	-57.6

Appendix Table A.2.12
Ever Use of Tobacco Among Adolescents (2005 Adolescent CTS)

	Any Tobacco Product Use (%)	Cigarettes (%)	Chewing Tobacco/ Snuff (%)	Cigars (%)	Bidis (%)	Population Size (n)	Sample Size (n)
Overall	13.5 (±1.6)	10.1 (±1.3)	1.9 (±0.7)	7.4 (±1.2)	1.6 (±0.6)	3,361,209	4,468
Gender							
Male	16.1 (±2.5)	11.4 (±2.0)	2.9 (±1.3)	10.2 (±2.0)	1.7 (±0.7)	1,764,007	2,288
Female	10.7 (±1.8)	8.7 (±1.8)	0.8 (±0.5)	4.3 (±1.3)	1.5 (±0.8)	1,597,202	2,180
Age							
12-13	3.7 (±1.4)	1.9 (±1.1)	0.5 (±0.4)	1.6 (±0.9)	0.2 (±0.2)	1,111,248	1,381
14-15	11.3 (±2.4)	8.4 (±1.8)	2.0 (±1.6)	6.1 (±2.1)	1.5 (±0.9)	1,185,795	1,561
16-17	26.2 (±3.5)	20.7 (±3.5)	3.3 (±1.0)	14.9 (±2.9)	3.1 (±1.4)	1,064,166	1,526
Race/Ethnicity							
African American	13.0 (±7.2)	8.4 (±6.0)	0.5 (±0.7)	5.2 (±4.2)	1.4 (±1.5)	233,333	271
Asian/PI	7.2 (±3.3)	6.3 (±3.2)	0.7 (±0.8)	3.5 (±2.3)	1.7 (±1.7)	371,362	373
Hispanic	12.8 (±2.5)	10.1 (±2.2)	1.1 (±0.6)	6.2 (±1.7)	1.4 (±0.8)	1,388,206	1,423
Non-Hispanic White	15.7 (±2.7)	10.9 (±2.1)	3.2 (±1.7)	9.9 (±2.6)	1.9 (±1.0)	1,190,349	2,172
School Performance							
Much better than average	9.7 (±3.0)	5.6 (±1.9)	2.3 (±2.2)	6.6 (±2.7)	0.9 (±0.7)	820,311	1,090
Better than average	10.7 (±1.5)	7.6 (±1.5)	1.3 (±0.6)	5.4 (±1.5)	2.0 (±1.2)	1,225,486	1,660
Average and below	18.6 (±3.6)	15.3 (±3.1)	2.1 (±0.6)	9.7 (±2.3)	1.6 (±0.6)	1,315,412	1,718
Household Income							
\$10,000 or less	11.2 (±6.5)	9.0 (±5.8)	0.5 (±0.7)	6.6 (±6.4)	0.0 (±0.0)	184,437	164
\$10,001 to \$20,000	15.9 (±4.7)	13.9 (±4.1)	1.4 (±1.0)	7.5 (±3.9)	1.5 (±1.1)	302,093	364
\$20,001 to \$30,000	15.1 (±5.4)	14.7 (±5.3)	0.8 (±0.7)	7.4 (±3.7)	2.2 (±2.0)	317,158	356
\$30,001 to \$50,000	12.3 (±3.8)	9.8 (±3.1)	1.8 (±1.3)	4.2 (±1.9)	2.0 (±1.4)	413,474	566
\$50,001 to \$75,000	16.4 (±3.4)	13.7 (±3.5)	2.7 (±1.5)	8.7 (±2.5)	1.8 (±1.3)	442,037	687
Over \$75,000	12.0 (±2.6)	6.7 (±1.8)	2.2 (±1.4)	8.1 (±2.2)	1.0 (±0.5)	1,342,863	1,938
Unknown	14.9 (±5.3)	12.5 (±4.9)	1.9 (±1.3)	7.1 (±2.7)	3.2 (±3.7)	359,147	393

Table A.2.12 (cont'd)
Ever Use of Tobacco Among Adolescents (2005 Teen CTS)

	Any Tobacco Product Use (%)	Cigarettes (%)	Chewing Tobacco/ Snuff (%)	Cigars (%)	Bidis (%)	Population Size (n)	Sample Size (n)
Males							
Age							
12-13	5.1 (±2.3)	2.7 (±1.9)	0.3 (±0.4)	2.6 (±1.5)	0.4 (±0.3)	600,066	717
14-15	14.9 (±4.4)	10.4 (±3.0)	3.2 (±3.0)	9.7 (±3.9)	2.3 (±1.7)	616,697	794
16-17	29.6 (±5.9)	22.2 (±5.3)	5.4 (±1.8)	19.1 (±4.8)	2.3 (±1.0)	547,244	777
Race/Ethnicity							
African American	13.5 (± 11)	8.3 (±8.6)	0.2 (±0.4)	6.4 (±7.0)	0.2 (±0.3)	144,172	146
Asian/PI	8.2 (±3.9)	6.5 (±3.4)	1.6 (±1.8)	4.8 (±2.9)	1.7 (±1.6)	160,864	200
Hispanic	15.0 (±4.0)	11.5 (±3.3)	1.7 (±1.1)	8.7 (±2.9)	1.8 (±1.3)	703,129	705
Non-Hispanic White	19.1 (±4.3)	12.4 (±3.3)	4.9 (±3.1)	13.8 (±4.2)	1.9 (±1.1)	654,157	1,121
School Performance							
Much better than average	13.0 (±5.4)	5.2 (±2.0)	4.6 (±4.9)	10.5 (±5.3)	0.9 (±0.6)	363,527	513
Better than average	11.5 (±2.5)	7.7 (±2.3)	1.6 (±0.9)	7.0 (±2.2)	1.8 (±1.5)	627,467	827
Average and below	21.3 (±4.9)	17.4 (±4.1)	3.0 (±1.0)	12.7 (±3.5)	1.9 (±0.8)	773,013	948
Household Income							
\$10,000 or less	17.4 (± 12)	13.7 (± 11)	0.5 (±1.0)	12.5 (± 12)	0.0 (±0.0)	95,099	78
\$10,001 to \$20,000	19.1 (±7.6)	17.9 (±7.4)	2.3 (±1.9)	9.4 (±5.7)	1.8 (±1.7)	164,854	176
\$20,001 to \$30,000	11.5 (±6.0)	11.0 (±5.8)	0.9 (±1.0)	5.9 (±3.8)	2.0 (±1.8)	177,573	175
\$30,001 to \$50,000	12.4 (±5.7)	10.2 (±5.0)	2.3 (±1.6)	4.6 (±2.7)	1.9 (±1.4)	222,357	290
\$50,001 to \$75,000	20.2 (±5.2)	15.8 (±5.3)	4.5 (±2.6)	11.2 (±3.6)	3.1 (±2.3)	251,629	374
Over \$75,000	15.9 (±4.2)	7.5 (±3.1)	3.5 (±2.9)	13.0 (±4.0)	0.9 (±0.5)	656,371	983
Unknown	16.8 (±7.3)	14.1 (±6.7)	2.8 (±1.9)	9.4 (±4.2)	2.5 (±4.3)	196,124	212

Table A.2.12 (cont'd)
Ever Use of Tobacco Among Adolescents (2005 Teen CTS)

	Any Tobacco Product Use (%)	Cigarettes (%)	Chewing Tobacco/ Snuff (%)	Cigars (%)	Bidis (%)	Population Size (n)	Sample Size (n)
Females							
Age							
12-13	2.2 (±1.1)	1.0 (±0.6)	0.8 (±0.9)	0.4 (±0.5)	0.0 (±0.1)	511,182	664
14-15	7.5 (±1.9)	6.2 (±1.7)	0.7 (±0.7)	2.3 (±1.2)	0.5 (±0.6)	569,098	767
16-17	22.6 (±4.4)	19.1 (±4.5)	1.0 (±0.6)	10.4 (±3.8)	4.0 (±2.5)	516,922	749
Race/Ethnicity							
African American	12.2 (±7.2)	8.5 (±6.6)	0.9 (±1.9)	3.3 (±2.9)	3.2 (±3.6)	89,161	125
Asian/PI	6.3 (±4.7)	6.3 (±4.7)	0.1 (±0.2)	2.5 (±3.1)	1.7 (±2.5)	210,498	173
Hispanic	10.5 (±3.0)	8.6 (±2.8)	0.5 (±0.6)	3.7 (±2.1)	1.0 (±0.9)	685,077	718
Non-Hispanic White	11.6 (±2.7)	9.1 (±2.3)	1.2 (±0.9)	5.2 (±1.4)	1.9 (±1.9)	536,192	1,051
School Performance							
Much better than average	17.0 (± 12)	13.8 (± 11)	2.5 (±4.1)	10.0 (± 11)	0.0 (±0.0)	456,784	577
Better than average	7.1 (±2.9)	5.9 (±2.7)	0.5 (±0.5)	3.5 (±1.9)	0.9 (±1.1)	598,019	833
Average and below	9.9 (±2.7)	7.6 (±2.5)	1.0 (±0.9)	3.8 (±2.1)	2.1 (±1.8)	542,399	770
Household Income							
\$10,000 or less	14.7 (±3.6)	12.3 (±3.4)	0.9 (±0.8)	5.6 (±2.4)	1.3 (±1.1)	89,338	86
\$10,001 to \$20,000	4.7 (±3.5)	4.1 (±3.4)	0.6 (±1.1)	0.3 (±0.6)	0.0 (±0.0)	137,239	188
\$20,001 to \$30,000	12.1 (±6.2)	9.1 (±3.3)	0.3 (±0.7)	5.3 (±6.1)	1.1 (±1.3)	139,585	181
\$30,001 to \$50,000	19.7 (±9.5)	19.4 (±9.4)	0.6 (±1.1)	9.3 (±8.1)	2.5 (±4.2)	191,117	276
\$50,001 to \$75,000	12.2 (±4.6)	9.4 (±3.5)	1.3 (±2.3)	3.7 (±2.9)	2.1 (±2.1)	190,408	313
Over \$75,000	11.4 (±5.3)	10.9 (±5.4)	0.4 (±0.6)	5.5 (±4.1)	0.2 (±0.3)	686,492	955
Unknown	8.3 (±2.2)	5.8 (±1.9)	0.9 (±0.7)	3.5 (±1.4)	1.1 (±0.9)	163,023	181

References

- Al Delaimy, W. K., M. M. White, and J. P. Pierce. 2006. Adolescents' perceptions about quitting and nicotine replacement therapy: findings from the California Tobacco Survey. *J Adolescent Health* 38:465-468.
- Caraballo, R. S., L. L. Pederson, and N. Gupta. 2006. New tobacco products: do smokers like them? *Tob Control* 15: 39-44.
- Institute of Medicine. 2001. *Clearing the Smoke. Assessing the Science Base for Tobacco Harm Reduction*. Washington, D. C.: National Academy Press.
- Gray, N. 2005. Mixed feelings on snus. *Lancet* 366:966-967.
- Gray, N., and J. Henningfield. 2006. Dissent over harm reduction for tobacco. *Lancet* 368:899-901.
- Gilpin, E. A., and J. P. Pierce. 1999. Cigar smoking in California: 1990-1996. *Am J Prev Med* 16:195-201.
- Lantz, P. M. 2003. Smoking on the rise among young adults: implications for research and policy. *Tob Control* 12:160-170.
- Pierce, J. P., M. C. Fiore, T. E. Novotny, E. Hatziandreu, and R. Davis. 1989. Trends in cigarette smoking in the United States: Educational differences are increasing. *J Am Med Assoc* 261:56-60.
- Shihadeh, A., S. Azar, C. Antonios, and A. Haddad. 2004. Towards a topographical model of narghile water-pipe café smoking: a pilot study in a high socioeconomic status neighborhood of Beirut, Lebanon. *Pharmacol Biochem Be* 79:75-82.
- Shihadeh, A. 2003. Investigation of mainstream smoke aerosol of the argileh water pipe. *Food Chem Toxicol* 41:143-152.
- U.S. Department of Health and Human Services. November 2000. *Healthy People 2010*. 2nd ed., with Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, D. C.: U.S. Government Printing Office.
- University of California, San Diego, and California Department of Health Services. 1990. *Tobacco Use in California, 1990. A Preliminary Report Documenting the Decline of Tobacco Use*. La Jolla, CA: University of California, San Diego. Available at <http://ssdc.ucsd.edu/tobacco/> (Accessed August 22, 2006).

**THE CALIFORNIA TOBACCO CONTROL PROGRAM:
CAN WE MAINTAIN THE PROGRESS?**

Chapter 3

Smoking Cessation

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Chapter 3

Smoking Cessation

KEY FINDINGS

- The high rate of attempted quitting, identified with the large price increase in 1999, did not return to baseline levels as might be expected when the price of a pack of cigarettes stabilized.
- There has been no observable change since 1996 in the success rate following a quit attempt.
- Most smokers who tried to quit had implemented a smoke-free home prior to the attempt. After relapse, $80.8 \pm 3.9\%$ maintained their homes as smoke-free.
- Among smokers, there was a reduction in daily consumption levels, but there were no apparent changes in the proportion of smokers who were most addicted to cigarettes.
- There was an increase in the use of cessation assistance by smokers, particularly nicotine replacement therapy (NRT).
- Self-efficacy to quit (the belief that one is capable of quitting) is one of the major predictors of future successful quitting. Moderate-to-heavy smokers who used NRT on a past quit attempt had lower self-efficacy for future quitting than those who made a quit attempt without using NRT.
- Smokers interested in quitting are likely to be susceptible to point-of-sale price promotions.

Chapter 3

Smoking Cessation

Introduction

A major goal of the California Tobacco Control Program (CTCP) is to increase successful cessation among California smokers (TEROC, 2006). Successful cessation depends on the proportion of smokers who are trying to quit, as well as the proportion of quit attempts that result in long-term success. The successful cessation rate for California smokers could increase with either of the following combinations:

- (1) The proportion of smokers making a quit attempt increases AND the success rate per quit attempt remains the same, or
- (2) The proportion of smokers making a quit attempt remains the same AND the success rate per quit attempt increases.

Since the start of CTCP, attempts have been made to both increase the proportion of smokers making a quit attempt and increase the success rate of each quit attempt (Pierce, 1998). The consensus of experts indicates that motivating smokers toward quitting can occur by increasing the price of cigarettes (Chaloupka, 1999), conducting an antismoking mass media program (CDC, 1999), imposing restrictions on smoking in key locations previously used for smoking (Farkas et al., 2000; Gilpin et al., 1999), and making changes in societal norms that are less supportive of smoking (Zhang et al, submitted). All of these approaches have been key intervention strategies of California's program (TEROC, 2006).

The probability of any quit attempt being successful is not high. The hazard rate for relapse decreases as the length of the quit attempt increases. Successful quitting has been defined as at least one year of continuous abstinence; the hazard rate for relapse in this group is below 5% (Gilpin et al., 1997).

Successful quitting has been shown to vary with the degree of the smoker's addiction (as assessed by cigarettes per day), self-efficacy about quitting (confidence that a quit attempt will be successful), and previous level of quitting success (duration of previous quit attempts) (Pierce et al., 1998). Further, there is considerable literature suggesting that providing assistance to smokers during a quit attempt will increase the success rate. Pharmaceutical aids such as nicotine replacement therapy (NRT) and bupropion increase the rate of successful quitting (Silagy et al., 2004). Additionally, behavioral assistance, such as that provided by services like the California Smokers' Helpline, has been demonstrated to significantly increase success (Zhu et al., 2002). Thus, measuring the proportion of smokers who use cessation aids is one way to examine the effects of tobacco control efforts.

Cessation literature has traditionally focused on increasing the success of those who are trying to quit rather than on increasing the quit attempts in the population. However, it has been recently demonstrated that the proportion of smokers making an attempt to quit is often the most important indicator of overall cessation success on the population level (Zhu, 2006). For example, the first generation Chinese immigrants in California have a dramatically higher overall success rate than the Chinese in China and this is mostly because the first group is much more

likely to make a quit attempt. The same study has shown that the difference in cessation rates across various populations can mostly be explained by the difference in the proportion of smokers making attempts to quit (Zhu, 2006). First and foremost, a tobacco control program should increase the rate of attempts to quit among target smokers. Thus, this chapter will use population quit attempts as the main measure of progress in smoking cessation. In this chapter, trends in the two components of successful cessation are examined: (1) the major indicator, which is the proportion of smokers trying to quit, and (2) the secondary indicator, which is success per quit attempt. Variables known to be associated with cessation are examined, including current smokers' cigarette consumption level, duration of their previous quit attempts, existence of restrictions on smoking in home environments, self-efficacy for quitting, exposure to physicians' advice to quit, and use of formal cessation assistance. This analysis will focus on the decade from 1996 through 2005, a period of time in which the questions were consistent across surveys.

1. Smokers Making Quit Attempts

As mentioned earlier, change in the percentage of established smokers trying to quit is a good predictor of changes in the overall population cessation rate (Zhu, 2006). In order to calculate the proportion of smokers who made a quit attempt in the past year, the CTS included a question which was used to estimate the proportion of people who could have made a quit attempt. Thus, all ever smokers (lifetime 100 or more cigarettes) were asked:

Were you smoking at all around this time 12 months ago? (C1)

This question identifies the pool of potential quitters who, taken together, comprise the denominator of the calculation of quit attempts. To estimate who made a quit attempt, current smokers were asked:

During the past 12 months, have you quit smoking intentionally for one day or longer? (C6)

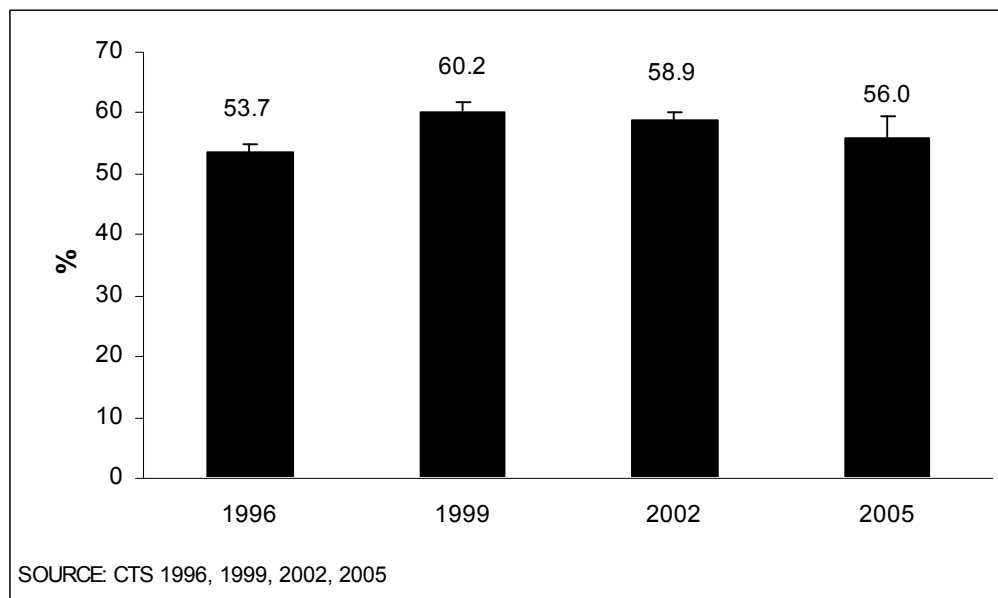
And former smokers who said they were smoking a year ago were asked:

When did you last smoke regularly? (B28)

Only those who had quit less than 12 months before the time of the survey and who were currently not smoking are included as recent former smokers in this analysis.

Figure 3.1 shows changes in the percentages of quit attempts in the 12 months prior to the survey. The largest increase in the price of cigarettes since the start of the tobacco control program took place in 1999. This price increase occurred from a voter-approved increase in the tobacco excise tax and also from the tobacco industry's price increase as a result of the Master Settlement Agreement (MSA). Given that price is known to impact quit attempts, it was to be expected that 1999 would be the peak year for quit attempts; a significant increase in quit attempts (factor change of 12.1%) was observed between 1996 and 1999, from $53.7 \pm 1.2\%$ to $60.2 \pm 1.5\%$. Further, this large increase was observed in all sociodemographic groups, as previously reported (Gilpin et al., 2004).

Figure 3.1: Percentage of Smokers who Made at Least One Quit Attempt in the Last Year, 1996-2005



In 2005, 56% of smokers made a quit attempt in the past year.

With no further major increases in cigarette prices, it might be expected that there would be a decline in quit attempts as smokers quickly adjust their lifestyle to accommodate the higher prices. As expected, between 1999 and 2002, the proportion of smokers attempting to quit each year declined and the downward trend continued between 2002 and 2005. However, importantly, the estimated proportion of smokers who tried to quit in 2005 (56.0 ± 3.5 percent) was still slightly higher than in 1996 (53.7 ± 1.2 percent). Other non-price interventions of CTCP may have prevented the level of quit attempts by smokers from dropping back to the 1996 level.

Demographics of Smokers Who Made Quit Attempts

The point estimates of attempts to quit are presented by standard demographic groups in **Table 3.1**. As noted above, all groups responded to the large price increase in 1999 with a dramatic increase in quit attempts. The sub-populations with the highest quit attempt rates remain the youngest age groups. In 2005, $69.2 \pm 6.0\%$ of 18-24-year-olds tried to quit and $60.8 \pm 4.4\%$ of 25-44-year-old smokers reported trying to quit. Among smokers 45-64 years old, $46.8 \pm 8.8\%$ reported a quit attempt, and for smokers over the age of 65 it was $44.1 \pm 6.9\%$.

Among racial/ethnic groups, African American smokers were the ones most likely to report making a quit attempt ($68.4 \pm 9.3\%$) followed by Hispanics ($59.2 \pm 12.4\%$). Non-Hispanic Whites were the race/ethnic group with the lowest attempt rate in 2005 at $53.0 \pm 2.9\%$. A high percentage of quit attempts was observed among those with at least some college education, $59.8 \pm 4.0\%$.

Table 3.1 Percentage of Smokers Who Made Quit Attempts in the Last Year by Demographics (Denominator Includes all Smokers in the Last Year)				
	1996 %	1999 %	2002 %	2005 %
Overall	53.7 (±1.2)	60.2 (±1.5)	58.9 (±1.4)	56.0 (±3.5)
Gender				
Male	54.9 (±1.8)	61.8 (±2.1)	60.7 (±2.0)	56.5 (±5.3)
Female	52.2 (±1.7)	57.8 (±2.3)	56.2 (±2.1)	55.2 (±3.8)
Age				
18-24	74.1 (±3.1)	78.0 (±3.6)	77.3 (±3.6)	69.2 (±6.0)
25-44	55.2 (±1.8)	62.3 (±2.5)	59.6 (±2.3)	60.8 (±4.4)
45-64	43.5 (±1.9)	48.8 (±3.1)	50.1 (±3.1)	46.8 (±8.8)
65+	43.1 (±4.0)	47.3 (±5.8)	45.8 (±6.4)	44.1 (±6.9)
Race/Ethnicity				
African-American	59.5 (±5.8)	68.3 (±5.8)	62.7 (±5.8)	68.4 (±9.3)
Asian/PI	57.5 (±6.6)	64.8 (±6.1)	65.4 (±5.6)	54.5 (±11.1)
Hispanic	64.3 (±3.0)	66.5 (±3.6)	69.3 (±3.7)	59.2 (±12.4)
Non-Hispanic White	49.2 (±1.2)	56.8 (±1.8)	53.3 (±2.0)	53.0 (±2.9)
Education				
Less than 12 years	56.6 (±2.7)	61.4 (±4.4)	59.9 (±4.4)	54.8 (±13.1)
High school graduate	49.0 (±2.2)	58.9 (±2.7)	54.7 (±2.7)	51.8 (±5.6)
Some College	55.0 (±2.2)	60.5 (±2.4)	61.9 (±2.3)	59.8 (±4.0)
College graduate	56.7 (±3.2)	60.4 (±2.6)	60.7 (±3.5)	59.1 (±6.3)
Income				
\$10,000 or less	51.8 (±3.9)	58.3 (±4.9)	60.7 (±4.9)	64.0 (±8.3)
\$10,001 to \$20,000	59.2 (±3.7)	61.8 (±4.2)	58.7 (±4.8)	62.5 (±7.2)
\$20,001 to \$30,000	53.1 (±3.7)	61.3 (±4.1)	59.4 (±4.1)	43.8 (±20.0)
\$30,001 to \$50,000	53.5 (±2.4)	58.7 (±4.1)	57.2 (±4.0)	52.7 (±6.8)
\$50,001 to \$75,000	52.6 (±3.9)	59.8 (±4.1)	61.9 (±3.9)	55.4 (±7.2)
Over \$75,000	54.1 (±4.6)	61.8 (±3.3)	57.6 (±3.2)	59.0 (±5.9)
Missing	50.8 (±4.3)	59.0 (±6.9)	57.8 (±7.1)	57.1 (±6.5)

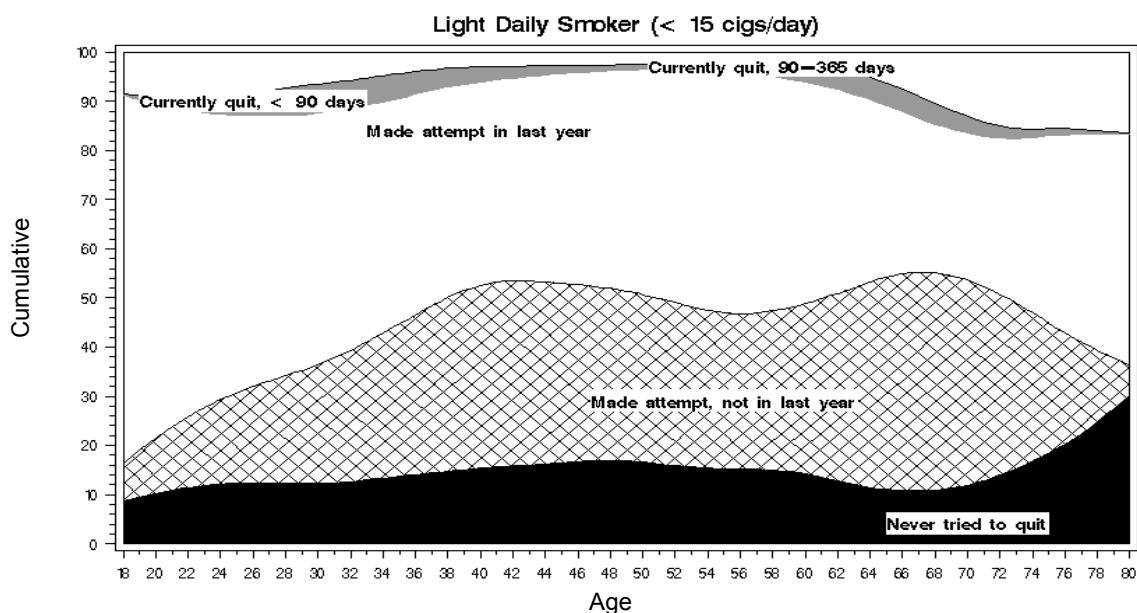
Frequency and Duration of Quit Attempts according to Smoking Status

To assess the difference in the frequency and duration of quit attempts according to level of addiction or smoking level one year ago, the figures below are shown for light, moderate, and heavy smokers.

Light daily smokers (<15 cigarettes per day):

Among ever smokers (18–65 years old) who indicated that they were light smokers 12 months ago, a consistent 10% reported never having tried to quit (**Figure 3.2**). This proportion increased to 30% for those in their mid-70s. Approximately 70% of 18-20-year-olds in this group reported making a quit attempt in the past year. However, this proportion decreased rapidly and consistently to approximately 40% by the age of 44 years. The proportion of light smokers who made a quit attempt but not in the last year peaked at 40% at age 45 years, and their proportion only declined after age 75 years. Those who quit for more than 3 months were a small fraction and only became more than 10% among smokers who were older than 68 years. Therefore the general impression for light smokers is that the middle-aged groups are less likely to make quit attempts.

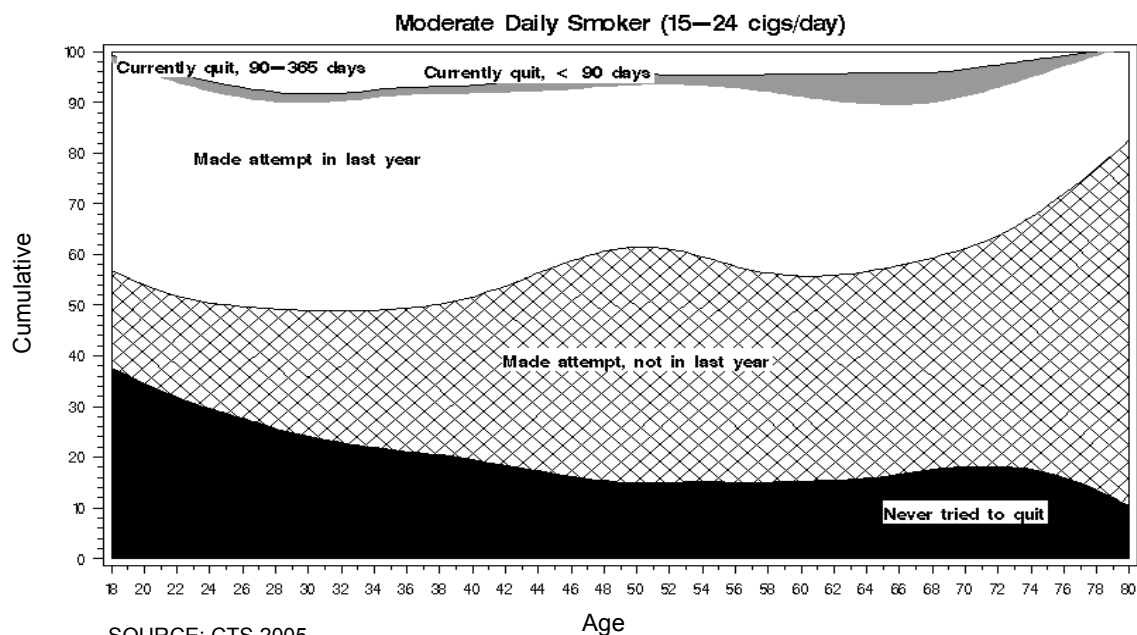
Figure 3.2: Proportions of Light Daily Smokers Reporting Quit Attempts by Age



SOURCE: CTS 2005

Moderate to heavy daily smokers (15–24 cigarettes per day): Among those who identified themselves as having been moderate to heavy smokers 12 months ago, approximately 38% of 18-year-olds reported that they never tried to quit. This proportion then declined and stabilized at 15% after age 44 (Figure 3.3). Those who had a quit attempt but not in the last year gradually increased from around 20% at age 18 to more than 65% at age 80. Forty percent of 18-year-olds had a quit attempt in the last year. This proportion declined after age 36. The successful quitters were stable at less than 10% for all age groups.

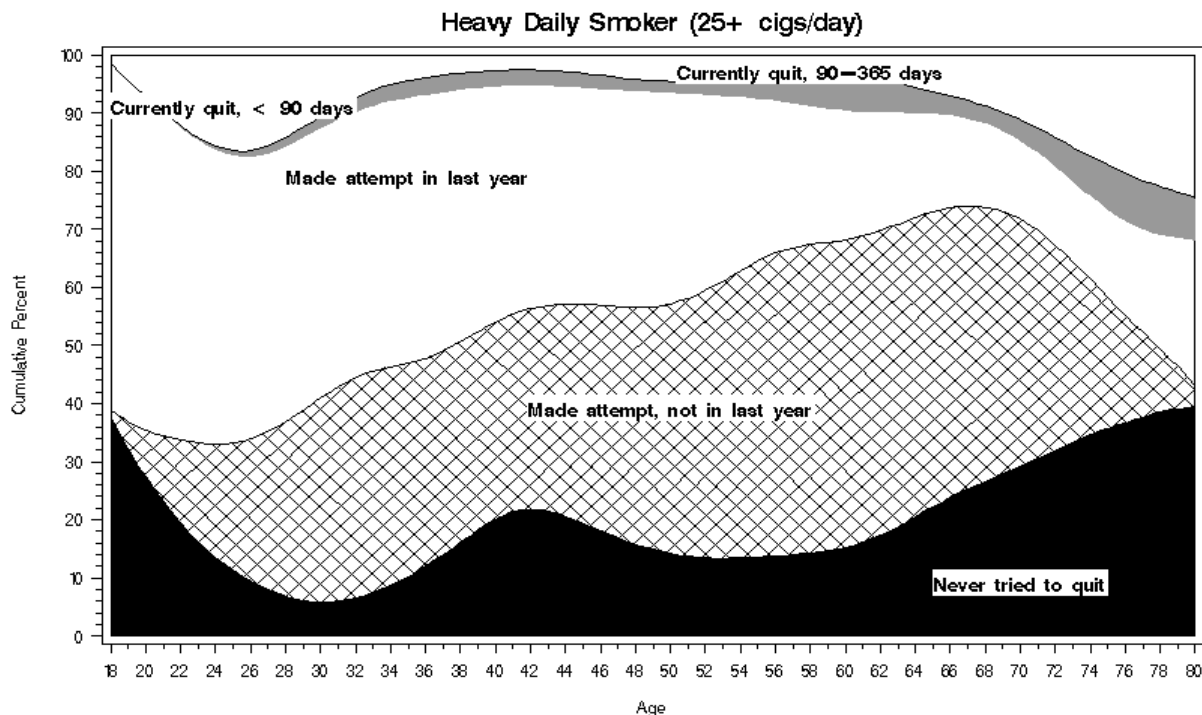
Figure 3.3: Proportions of Moderate to Heavy Smokers Reporting Quit Attempts by Age



SOURCE: CTS 2005

Heavy daily smokers (25+ cigarettes per day): Only 7.2% of current smokers were heavy daily smokers in 2005. The percent of heavy smokers who reported never having tried to quit was highest at ages 18, 42, and after age 70 (between 20% and 30%) (**Figure 3.4**). Only a very small proportion of heavy smokers in early adulthood had a quit attempt that was not in the last year; this increased to more than 50% for those in their mid-50s. However, for those who had tried quitting in the last year, most (60%) were in the younger age groups and this gradually declined to around 10% after age 70. The majority of successful quitters (of three or more months) among heavy smokers were in their 20s or their 70s.

Figure 3.4: Proportions of Heavy Smokers Reporting Quit Attempts by Age



SOURCE: CTS 2005

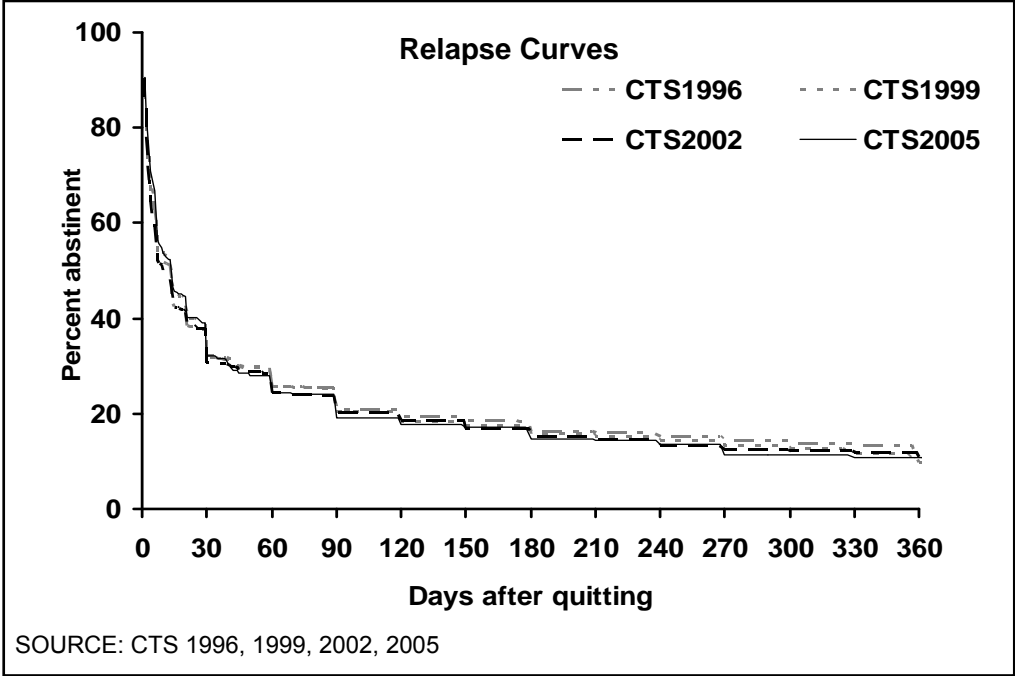
2. Successful Quitting

As discussed earlier, the vast majority of quit attempts result in relapse. To compare successful quitting over time, a Kaplan-Meier relapse curve was used, where survival is defined as continuous abstinence. This curve was constructed using the total number of smokers who indicated that they were smoking 12 months ago and who reported a quit attempt in the year previous to the survey. Thus, this is a reconstructed quitting history from the most recent quit attempt rather than a prospectively collected smoking history from all those who had quit at a particular time. Using the most recent quit as the basis for the curve means that the asymptote will be higher than what it would be if the graph included those who quit within the first month of the 12-month recall period. Previously, it was demonstrated that recall of details of the most recent quit attempt provided a more valid estimate than recall of details of all quit attempts (or the earliest quit attempt) within a 12-month period (Gilpin and Pierce, 1994). Provided that the same analytic approach is used, it is valid to compare survival curves from different years as well as among those who used different approaches to cessation (Pierce and Gilpin, 2002).

The success rate following a quit attempt has not changed since 1996.

Figure 3.5 presents the Kaplan-Meier relapse curves for the four most recent survey years (1996, 1999, 2002, and 2005). These curves are essentially overlapping, indicating very little change in the success per quit attempt among California smokers over the past decade. Of particular importance is the fact that the relapse curve did not get worse during those years in which there was a high rate of quit attempts (e.g., 1999). This finding underscores the importance to CTCP of increasing the quit attempt rate as a means of helping smokers to quit.

Figure 3.5: Comparison of Kaplan-Meier Relapse Rates Following Quit Attempts, 1996-2005



The Kaplan-Meier relapse curves indicate that the hazard rate for relapse is reduced substantially once the duration of the quit attempt has reached 3 months. To compare quitting success across sociodemographic groups, the proportion of those who smoked in the past year who quit for at least three months at the time of the survey were selected (see **Table 3.2**).

Comparing across the years since 1996, this proportion was relatively constant from 2002 to 2005. In 2005, the sociodemographic group with the lowest proportion of extended quitters was among those with 12 or fewer years of education ($5.0 \pm 3.0\%$) and the highest proportion was among college graduates ($14.1 \pm 4.8\%$), females who quit for this extended duration was higher than for males ($10.6 \pm 2.5\%$ versus $7.2 \pm 2.2\%$). Both the youngest (18–24 years) and oldest (65+ years) smokers had higher percentages of recent quitters than other age groups.

The percentage of recent quitters also varied by income level. For those with the lowest income levels, the percentage decreased over the past 10 years to a low of less than 4% in 2005; among those earning over \$50,000 per year, the proportion increased, so that in 2005 it was more than 11%.

3. Predictors of Quitting

Readiness to Quit over Time

A smoker's intention regarding quitting has been shown to be a good predictor of future quit attempts, but it is not a good predictor of who will succeed. Thus, the goal of the tobacco control program is to motivate smokers so that they form an intention to quit in the near future. To address this issue, the following question was asked of all current smokers:

What best describes your intentions regarding quitting? (B26a)

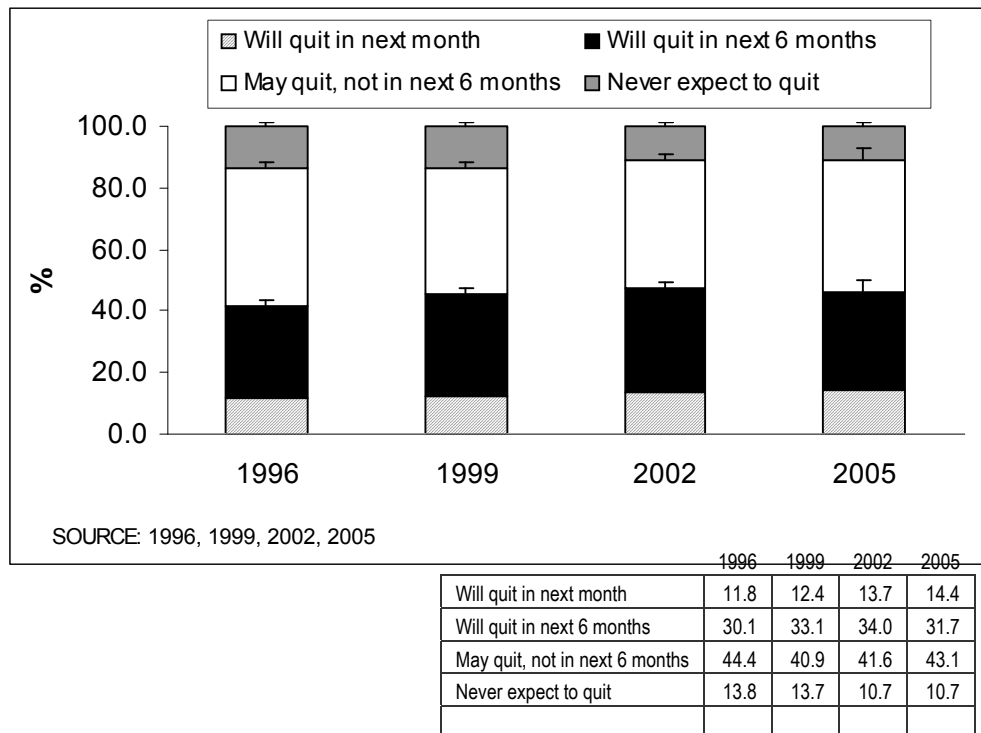
Figure 3.6 presents this data across the past four surveys. An important group is those smokers who indicate that they never expect to quit. Some of these smokers will never have made a quit attempt; others will be smokers who have tried to quit one or more times and have low self-efficacy about their ability to quit. In 1996 and 1999, almost 14% of current smokers reported that they never expected to quit smoking. This figure was significantly lower (under 11%) in both the 2002 and the 2005 survey.

There is little evidence that the probability of a quit attempt in the next year is different for those who indicate that they are ready to quit in the next month and those who indicate that they will quit in the next six months.

Over 40% of California smokers have reported a readiness to quit in each survey over the past 10 years, with this percentage being over 46% since 2002. In both 2002 and 2005, the readiness of California smokers to quit did not change but was slightly higher than in earlier years.

	1996 %	1999 %	2002 %	2005 %
Overall	7.2 (±0.6)	7.4 (±0.7)	8.9 (±1.0)	8.6 (±1.6)
Gender				
Male	6.9 (±0.8)	7.1 (±1.1)	8.7 (±1.4)	7.2 (±2.2)
Female	7.5 (±0.9)	7.9 (±1.1)	9.2 (±1.3)	10.6 (±2.5)
Age				
18-24	9.0 (±1.9)	7.6 (±1.4)	9.9 (±1.8)	11.5 (±3.6)
25-44	7.3 (±1.0)	7.7 (±1.2)	9.1 (±1.5)	8.7 (±2.6)
45-64	5.7 (±1.1)	6.8 (±1.7)	8.0 (±1.9)	6.3 (±2.5)
65+	8.1 (±2.7)	7.7 (±2.4)	8.5 (±4.3)	12.4 (±6.5)
Race/Ethnicity				
African-American	3.8 (±2.0)	6.8 (±3.8)	7.6 (±3.2)	6.6 (±3.3)
Asian/PI	6.7 (±3.8)	6.5 (±4.0)	9.6 (±3.3)	8.9 (±7.3)
Hispanic	8.3 (±2.0)	6.2 (±1.5)	11.4 (±2.7)	7.3 (±3.7)
Non-Hispanic White	7.4 (±0.8)	8.2 (±1.1)	8.2 (±0.9)	9.9 (±2.1)
Education				
Less than 12 years	5.9 (±1.5)	6.6 (±1.9)	7.6 (±2.4)	5.0 (±3.0)
High school graduate	6.2 (±1.2)	7.3 (±1.3)	7.5 (±1.8)	7.5 (±2.4)
Some college	7.7 (±1.2)	7.8 (±1.4)	9.6 (±1.5)	9.7 (±3.5)
College graduate	10.0 (±1.8)	8.5 (±2.1)	11.9 (±2.6)	14.1 (±4.8)
Income				
\$10,000 or less	5.0 (±1.5)	6.1 (±3.1)	7.7 (±3.6)	3.7 (±1.8)
\$10,001 to \$20,000	6.3 (±1.9)	7.4 (±2.0)	7.0 (±2.5)	6.3 (±3.6)
\$20,001 to \$30,000	6.4 (±1.8)	7.8 (±2.5)	10.2 (±2.4)	6.6 (±4.7)
\$30,001 to \$50,000	7.6 (±1.7)	6.0 (±1.4)	9.3 (±2.6)	7.1 (±2.9)
\$50,001 to \$75,000	8.1 (±1.9)	7.6 (±1.9)	11.2 (±2.5)	12.5 (±5.5)
Over \$75,000	9.3 (±2.5)	9.3 (±2.3)	8.9 (±1.7)	11.7 (±3.6)
Missing	7.5 (±2.3)	8.0 (±3.2)	5.4 (±2.2)	8.0 (±4.0)

Figure 3.6: Distribution of Smokers according to Their Reported Intent to Quit, 1996-2005



Cigarette Consumption Level

Higher levels of consumption are known to be associated with a lower successful quit attempt rate and are also associated with a lower probability of making an attempt. In part, this would appear to be related to heavy smokers reducing their smoking level prior to a quit attempt. Heavy smokers who cut back to 15 or fewer cigarettes per day before quitting also have higher success rates (Farkas, 1999). To assess cigarette consumption, the following questions were asked among current smokers:

Do you smoke cigarettes every day, some days, or not at all? (B7)

On how many of the past 30 days did you smoke cigarettes? (For occasional smokers) (B10)

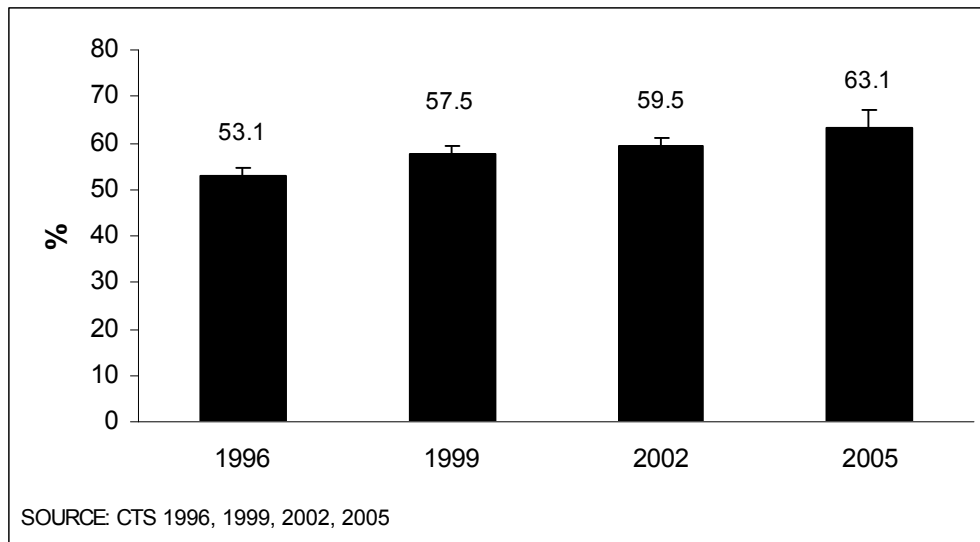
During the past 30 days, on the days that you did smoke, about how many cigarettes did you usually smoke per day? (B11)

How many cigarettes on average do you smoke per day? (For daily smokers) (B19)

Consumption levels for occasional smokers can be calculated from monthly averages based on their level of smoking on the days when they do smoke. For all occasional smokers surveyed, daily averages worked out to fewer than 15 cigarettes per day, so all occasional smokers are included in the group of light smokers. In **Figure 3.7**, there has been an increasing trend in the percentage of California smokers who are light smokers (<15 cigarettes per day). Over the past decade, this proportion has increased consistently at around 1% per year.

The proportion of light smokers (<15 cigarettes per day) has increased.

Figure 3.7: Percentage of Current Smokers Smoking < 15 Cigarettes/Day, 1996-2005



Smoking Shortly after Waking

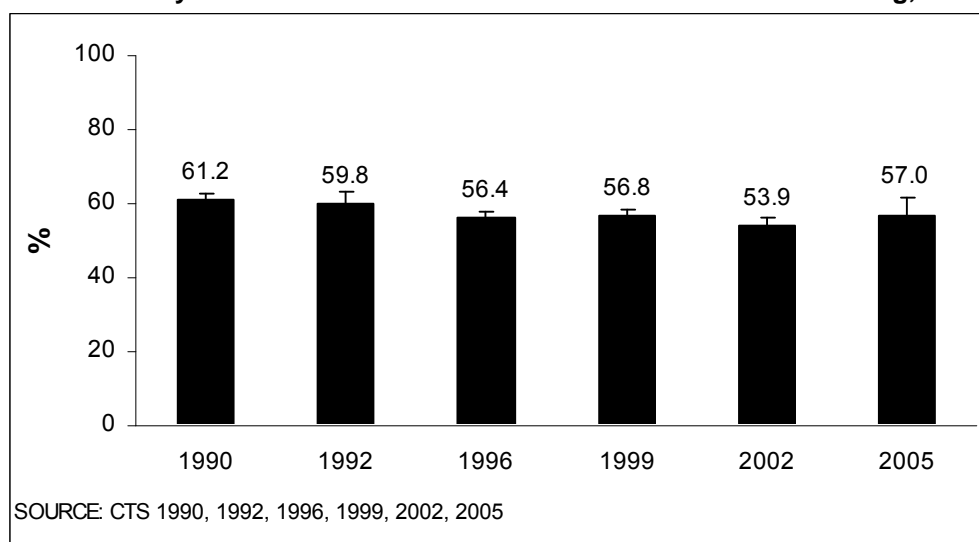
In addition to daily consumption, a key predictor of quitting from the Fagerstrom addiction scale (Fagerstrom, 1978) is whether the smoker has a cigarette within the first 30 minutes after waking, since the smoker is deprived of nicotine while sleeping. Consequently, most smokers will either wake up to smoke during the night or they will have a cigarette shortly after waking.

Current smokers were asked the following question:

How soon after you awake in the morning do you usually smoke your first cigarette? (B18)

In 2005, $57.0 \pm 4.8\%$ of smokers reported smoking within the first 30 minutes; this percentage has been relatively constant since the early 1990s (**Figure 3.8**). It is somewhat surprising that this proportion has not changed, given the increase in the number of light smokers in the population.

Figure 3.8: Current Daily Smokers who Smoke within 30 Minutes after Awakening, 1990-2005



Restrictions on Smoking in Homes of Smokers

There has been a 61% increase in the percent of smokers with home smoking bans since 1996.

Following the classification of secondhand smoke as a carcinogen (NCI, 1993), California became the first state to ban smoking at work in order to protect non-smokers in 1994. Such restrictions on where a smoker can smoke led to considerable changes in smoking behavior, since smokers now have to go outside to smoke. There is now considerable evidence that having a smoke-free home is associated with more smokers trying to quit (Gilpin et al., 1999; Borland, 1991) and also with more success among those who make an attempt (Gilpin et al., 2006). A smoking ban in the

home, there is an additional barrier that can help smokers successfully reduce their daily cigarette consumption levels before quitting. This barrier can also assist the smoker not to relapse because specific cues to smoke (e.g., ashtrays, lighters, others smoking, etc.) have been removed and the smoker has to go outside the home to smoke. Current smokers were asked:

Has smoking ever been banned completely in your home? (F0)

What are the smoking rules and restrictions in your home, if any? Would you say smoking is completely banned for everyone, smoking is generally banned for everyone with few exceptions, smoking is allowed in some rooms only, or there are no restrictions on smoking? (F1)

Figure 3.9 shows the percentage of current smokers in California in whose homes smoking was completely banned at the time of the survey. This proportion has increased from $35.9 \pm 1.2\%$ of current smokers in 1996 to $57.8 \pm 3.6\%$ of current smokers in 2005, a factor increase of 61%.

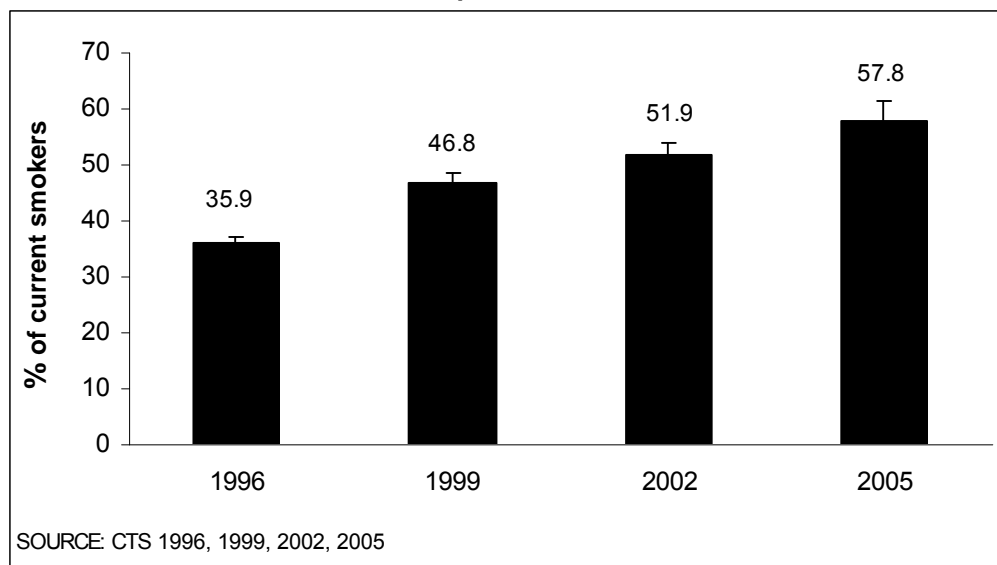
In 2005, to assess whether smokers who relapsed might renegotiate the rules about smoking in the home and to explore the timing of home bans, the following question was asked:

Prior to this last quit attempt, was smoking allowed inside your home? (C8a).

In 2005, $71.8 \pm 4.1\%$ of smokers who reported making a quit attempt in the previous year had a smoke-free home in place prior to that quit attempt. Furthermore, $80.8 \pm 3.9\%$ of these smokers kept their home smoke-free after they relapsed, $12.8 \pm 3.8\%$ changed the rules so that they could smoke in at least one room of the house, and $6.5 \pm 2.5\%$ removed all restrictions on where they smoked at home.

Importantly, of the $28.2 \pm 4.1\%$ of smokers who made a quit attempt in the last year who did not have a smoke-free home, $15.1 \pm 6.1\%$ of them had a smoke-free home at the time of the survey and less than half had no restrictions on their smoking at home.

Figure 3.9: Current Smokers Who Have Complete Home Bans, 1996-2005



Physician Advice

When a physician or other trusted health care professional advises a smoker to quit, the smoker is more likely to quit (Tobacco Use & Dependence Clinical Practice Guideline Panel, 2000; Lancaster and Stead, 2004). Physician advice, when combined with a referral for cessation assistance, increases the chances that smokers will use that assistance, further improving their chances of successful quitting. The CTS asks all current smokers and recent former smokers if they have visited a doctor at least once in the past 12 months. Those answering “yes” are asked these questions:

In the last 12 months (In the last 12 months before you quit), did a doctor advise you to stop smoking? (F32)

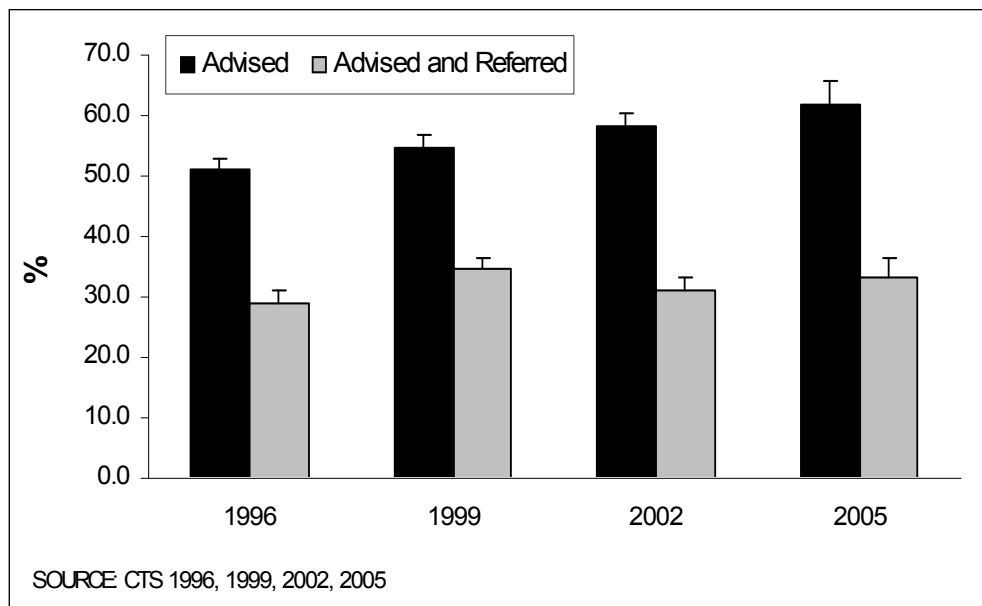
(If no) In the last 12 months (In the last 12 months before you quit), did another health professional advise you to stop smoking? (F32a)

In the last 12 months (In the last 12 months before you quit), did a doctor refer you to, or give you information on, a smoking cessation program? (F33c)

Figure 3.10 shows trends in physician advice and referral. From 1996 to 2005, the percentage of smokers who received physician advice to quit steadily increased by about 1% per year.

However, there did not appear to be any change in the one third of physicians who referred smokers to services or products that might make the quit attempt more successful. Physician advice to quit does not appear to be a sufficient motivator to increase quit attempts; in 2005, a total of $55.2 \pm 4.3\%$ who received physician advice to quit had made a quit attempt, while $56.6 \pm 5.8\%$ of those who did not receive physician advice to quit had made a quit attempt.

Figure 3.10: Percentage of Smokers Advised by their Physician to Quit, 1996-2005



	1996	1999	2002	2005
Advised	51.0	54.6	58.2	61.9
Advised and Referred	29.0	34.5	31.1	33.3

Self-Efficacy to Quit

Social cognitive theory introduced the concept of self-efficacy as one of the important predictors of future behavior change (Bandura 1977; Bandura 1997). This theory defines self-efficacy as the individual's own assessment of his or her ability to undertake a behavior in different situations. The more confident the smoker is in his or her ability to quit, the higher the likelihood of success. However, high self-efficacy by itself is no guarantee of success.

In most years, the CTS had a single question regarding self-efficacy:

How sure are you that you could refrain from smoking for at least one month? Would you say very sure, somewhat sure, somewhat unsure, or very unsure? (B27)

Smokers who responded "very sure" were categorized as having a high level of self-efficacy. Levels stayed consistent in 1996, 1999, and 2002, with slightly more than 40% reporting high self-efficacy. This proportion increased markedly between 2002 and 2005, from $41.7 \pm 1.8\%$ to $50.8 \pm 3.2\%$. This change in the percentage may be an artifact, however, as in the 2005 survey, a series of new questions that might have an impact on the response were introduced prior to this question.

In 2005, this new self-efficacy question was asked:

If someone offered a lot of money to motivate you to quit and stay quit for 6 months, how sure are you that you would win this money? (B26a_1)

This additional question increased the length of time abstaining from smoking (to the minimum criteria for successful quitting) and introduced the possibility of a significant financial incentive. The responses from both self-efficacy questions were combined into an index. Respondents who were very sure that they would be successful on both questions were categorized as having high self-efficacy. Those who were very sure on at least one of the questions were categorized with an intermediate level of self-efficacy, and those who were not “very sure” on either question were categorized as having a low level of self-efficacy. Using these criteria, 41.4 ± 3.5% of 2005 current smokers had high self-efficacy for successful quitting, 30.0 ± 4.2% had an intermediate level, and 28.6 ± 2.6% had a low level of self-efficacy.

Table 3.3 presents the 2005 self-efficacy data by the major sociodemographic categories of the population. Only the proportion of those who were identified as having a high level of self-efficacy for quitting are discussed here. Males and younger age groups had higher self-efficacy than females or older age groups. Self-efficacy was slightly lower among the Non-Hispanic White population compared to the other ethnic groups. Higher education and higher income smokers reported higher self-efficacy rates (approximately 30% higher) compared to lower education and lower income smokers.

	High Efficacy %	Intermediate Efficacy %	Low Efficacy %
Overall	41.4 (±3.5)	30.0 (±4.2)	28.6 (±2.6)
Gender			
Male	46.1 (±5.2)	30.7 (±6.4)	23.1 (±3.5)
Female	34.1 (±3.9)	28.8 (±3.8)	37.1 (±4.3)
Age			
18-24	48.9 (±5.9)	31.8 (±7.3)	19.3 (±5.8)
25-44	46.7 (±4.6)	28.2 (±4.5)	25.1 (±3.0)
45-64	32.4 (±7.1)	33.4 (±11.2)	34.2 (±6.3)
65+	29.2 (±6.2)	24.4 (±7.0)	46.4 (±7.5)
Race/Ethnicity			
African-American	41.8 (±19.0)	34.6 (±14.9)	23.6 (±11.4)
Asian/PI	42.4 (±11.2)	23.4 (±8.2)	34.2 (±10.7)
Hispanic	44.1 (±8.7)	33.7 (±12.3)	22.3 (±6.5)
Non-Hispanic White	39.6 (±3.0)	27.5 (±2.6)	32.9 (±2.8)
Education			
Less than 12 years	36.8 (±10.3)	37.5 (±13.1)	25.7 (±7.0)
High school graduate	37.7 (±5.2)	30.3 (±5.6)	32.0 (±4.3)
Some college	43.5 (±4.8)	27.2 (±3.8)	29.3 (±4.2)
College graduate	52.5 (±6.1)	21.5 (±4.3)	26.1 (±6.7)
Income			
\$10,000 or less	32.0 (±10.5)	38.4 (±10.4)	29.6 (±7.3)
\$10,001 to \$20,000	37.1 (±10.4)	27.1 (±8.0)	35.8 (±7.7)
\$20,001 to \$30,000	34.1 (±18.4)	38.3 (±23.3)	27.6 (±11.9)
\$30,001 to \$50,000	38.9 (±6.2)	29.5 (±6.0)	31.6 (±6.5)
\$50,001 to \$75,000	46.9 (±6.9)	21.7 (±3.8)	31.4 (±6.3)
Over \$75,000	48.5 (±6.4)	27.0 (±5.0)	24.5 (±5.1)
Missing	46.0 (±10.7)	33.3 (±12.2)	20.8 (±5.7)
Smoking status			
Nondaily, never daily (N=360)	65.3 (±9.9)	23.9 (±11.1)	10.9 (±6.6)
Nondaily, once daily (N=547)	64.2 (±6.8)	24.3 (±6.4)	11.5 (±5.2)
Daily, < 15 (N=1357)	38.0 (±5.7)	33.7 (±4.4)	28.3 (±4.9)
Daily, 15+ (N=1531)	26.3 (±5.2)	30.8 (±9.5)	42.8 (±6.5)
Quit attempts			
No attempt in last year	40.4 (±5.4)	29.0 (±6.1)	30.6 (±3.8)
Attempt, < 1 week	34.7 (±6.2)	34.8 (±6.4)	30.5 (±5.2)
Attempt, 7-29 days	41.3 (±7.5)	31.9 (±7.3)	26.8 (±7.5)
Attempt, 30+ days	56.3 (±9.2)	25.2 (±6.7)	18.5 (±8.5)
Daily 15+ smokers who attempted a quit			
Using NRT	26.7 (±11.2)	28.0 (±11.3)	45.3 (±12.3)
Not using NRT	38.3 (±7.3)	28.8 (±9.1)	33.0 (±9.6)

As expected, there was a significant difference by consumption level, with only $26.3 \pm 5.2\%$ of moderate and heavy smokers having a high self-efficacy level compared to $38.0 \pm 5.7\%$ of light daily smokers. Somewhat surprising was the lack of difference between non-daily smokers who had never smoked daily, compared to those who were previously daily smokers. For both of these groups of occasional smokers, about 65% were assessed with a high level of self-efficacy and 11% were assessed with a low level.

Self-efficacy also varied with success on the last quit attempt. A high self-efficacy level was noted for $40.4 \pm 5.4\%$ of smokers who did not report an attempt in the past year. This also varied with the length of the quit attempt; only one third of those who were unable to abstain from smoking for a week on the last quit attempt had high self-efficacy levels. This increased to $56.3 \pm 9.2\%$ among those who were able to quit for at least one month.

Use of Formal Assistance to Successfully Quit

Meta-analyses have shown that pharmaceutical aids and behavioral counseling can significantly increase the chances of quitting success (Stead et al., 2006). Nevertheless, it seems that most smokers who are trying to quit do not use any cessation aids. Since the publication of the clinical guideline for treating nicotine dependence (Fiore et al., 1997), there has been much effort to encourage physicians to prescribe medications to help smokers quit or recommend over-the-counter aids or behavioral counseling such as state quit lines. Pharmaceutical companies have had very large direct advertising campaigns to encourage smokers intending to quit to use either NRT or the antidepressants Wellbutrin[®] and Zyban[®]. Tobacco control communities have also increased their emphasis on providing formal assistance to smokers (Biener 2006; Cummins et al., 2006; TERO, 2006).

Adult respondents in the CTS who are current smokers who reported trying to quit in the previous 12 months, as well as recent former smokers (those who quit less than 1 year before the time of the survey) are asked the following:

*Did you use counseling advice or self-help materials to adjust to life without cigarettes?
(C8d)*

For [your most recent] quit attempt, did you use a nicotine substitute such as nicotine patch, gum, or inhalant... ? (C8f)

For [your most recent] quit attempt, did you use an antidepressant prescribed by your physician to help you quit such as Zyban, Prozac, other... ? (C8i)

There has been a steady increase in the use of formal cessation assistance.

A positive response to the latter two questions triggered an additional question on how long the pharmaceutical aid was used.

Figure 3.11 shows the percentage of current smokers and recent former smokers using any of the above forms of cessation assistance during a quit attempt in the year before the survey. There was a steady increase in the use of formal assistance, from $20.4 \pm 1.2\%$ in 1996 to $26.1 \pm 3.1\%$ in 2005.

Figure 3.11: Use of Assistance for the Most Recent Quit among All Smokers in the Past Year, 1996-2005

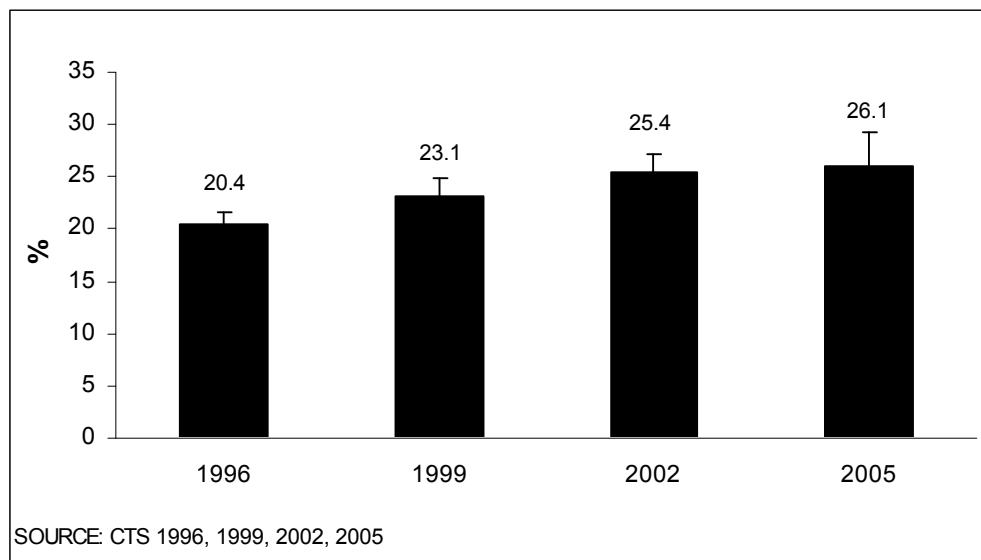
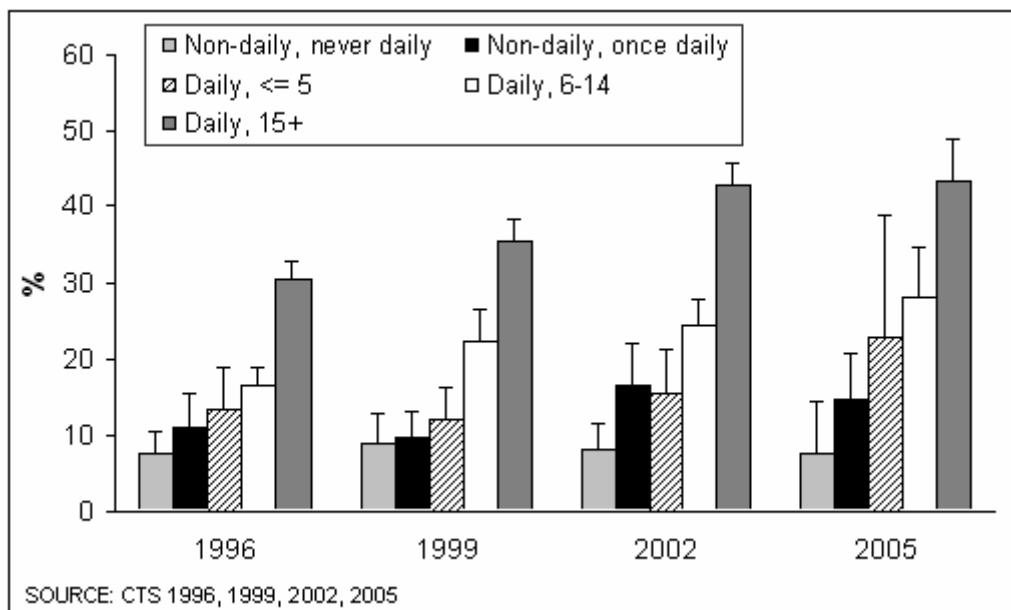


Figure 3.12 further shows that the increase in the use of formal assistance took place mostly among the more dependent smokers. This figure separates current smokers into five groups: always occasional smokers (non-daily, never daily), previously daily occasional smokers, low-rate smokers (those who smoke five cigarettes per day or less), light smokers (6–14 cigarettes per day), and moderate-heavy smokers (15+ cigarettes per day). The first three categories of smokers are generally considered non-dependent smokers because they do not smoke enough cigarettes to maintain a constant plasma nicotine level (Shiffman et al., 1990; Benowitz and Jacob, 1985). Therefore, it is not surprising that the vast majority of these smokers do not use assistance in their quit attempts, because most forms of NRT would provide a higher and more consistent nicotine supply than they usually get from smoking.

Among moderate to heavy smokers, there has been a steady and significant increase in the use of formal assistance over time. In 1996, $30.4 \pm 2.2\%$ of these smokers used formal assistance in their most recent quit attempt; by 2005, it had increased to $43.6 \pm 5.3\%$.

Figure 3.12: Use of Any Formal Cessation Assistance for the Most Recent Quit According to Consumption Level of Smokers in the Past Year, 1996-2005



	1996	1999	2002	2005
Non-daily, never daily	7.7	8.8	8.2	7.5
Non-daily, once daily	10.9	9.6	16.6	14.8
Daily, <= 5	13.4	11.9	15.5	22.8
Daily, 6-14	16.5	22.3	24.4	28.1
Daily, 15+	30.4	35.5	42.7	43.6

NRT was the most common method of assistance reported by smokers who attempted to quit in the year prior to the 2005 survey ($18.8 \pm 3.0\%$). A total of $6.2 \pm 1.5\%$ reported using an anti-depressant and $12.1 \pm 2.0\%$ reported using counseling or self-help. There were many combinations of assistance used (**Figure 3.13**).

It has been reported that relapse rates following cessation were higher for those who used NRT (Pierce et al., 1995; Pierce and Gilpin, 2002). This finding was recently confirmed in the national Tobacco Use Supplement of the Current Population Survey (TUS-CPS) (Hartman, 2006) and in longitudinal surveys of population samples of Massachusetts residents, where NRT use alone resulted in much higher relapse rates than not using any assistance (Biener, 2006). These findings are also supported in the CTS.

Figure 3.13: Percent Use of Type of Assistance by Smokers in the Last Year who Attempted a Quit, 1999-2005

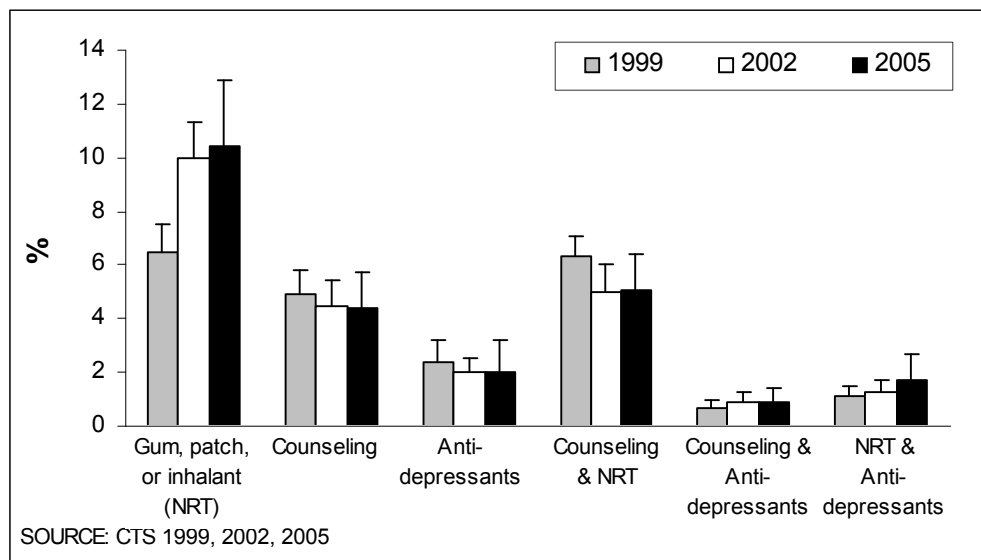
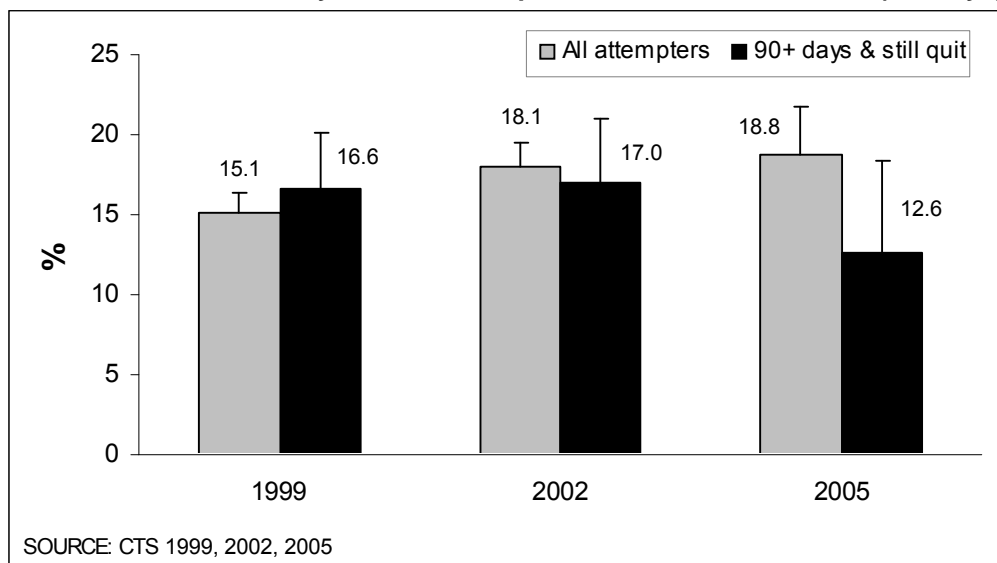


Figure 3.14 presents NRT use by all quitters in the previous year for the 1999, 2002, and 2005 CTS and by quitters who reported currently not smoking for at least three months prior to the survey. NRT use among all quitters increased from 15.1 ± 1.4% in 1999, then stabilized at just over 18% between 2002 and 2005. However, among those with a recent record of extended cessation, NRT use declined, from 17.0 ± 4.0% in 1999 and 2002, to 12.6 ± 5.7% in 2005. This suggests that NRT may not be related to successful cessation for three or more months.

	1999	2002	2005
Gum, Patch or Inhalant (NRT)	6.5	10	10.4
Counseling	4.9	4.5	4.4
Antidepressants	2.4	2.0	2.0
Counseling and NRT	6.3	5.0	5.1
Counseling and Antidepressants	0.7	0.9	0.9
NRT and Antidepressants	1.1	1.3	1.7

Figure 3.14: Percent of NRT Use by All Quit Attempters v. Successful Quitters (90+Days)



	1999	2002	2005
All attempters	15.1	18.1	18.8
90+ days & still quit	16.6	17.0	12.6

NRT use and self-efficacy levels were considered for moderate to heavy smokers who made a quit attempt in the past year to determine if NRT use is detrimental to future successful quitting. Among those smoking 15+ cigarettes per day who made a quit attempt in the past year and used NRT, only $26.7 \pm 11.2\%$ had high self-efficacy, and $45.3 \pm 12.3\%$ had the lowest level of self-efficacy (Table 3.3). However, smokers who made a quit attempt in the previous year without using NRT had a 40% higher level of high self-efficacy ($38.3 \pm 7.3\%$) and a 27% lower level of low self-efficacy than those who used NRT.

4. Vulnerability to Cigarette Price Promotions

The tobacco control program is not the only group that is trying to influence smoking behavior in California. As described in Chapter 1, the tobacco industry is outspending the tobacco control program by at least 28-fold. The tobacco industry advertising and promotional expenditures have been heavily weighted to price subsidies for cigarettes in recent years. It is possible that such expenditures are effective in encouraging smokers to delay or postpone their quit attempt.

To examine the possible influence of cigarette promotional expenditures on quit attempts in smokers and to seek evidence that prospective quitters were attentive and receptive to price-subsidization practices, all smokers were asked:

There are often price specials on cigarettes such as a dollar off or two for the price of one. If they are your brand, how often do you buy more than you normally would?
(B21cc_1b)

Smokers interested in quitting are susceptible to point-of-sale promotions.

There was not strong evidence that such price subsidization could encourage smokers to change brands: $47.0 \pm 4.0\%$ of smokers said they would buy a greater quantity than usual of their regular brand in response to such price subsidization (**Table 3.4**). Those who were most vulnerable to this advertising and promotional strategy were the youngest smokers (ages 18–24 years): over half ($57.6 \pm 7.2\%$) indicated that they would increase their purchase. In older smokers, this proportion was less than one third (29.2 ± 5.8). The pattern of influence of this price subsidization was similar to that of all advertising and promotions, with college graduates being much less likely to be influenced than those who had not graduated from high school ($37.0 \pm 7.9\%$ versus $51.6 \pm 13.5\%$). This suggests that the tobacco industry's large expenditures on price subsidization are well targeted at young people, and it may be effective in keeping them as smokers. Further study of the effect of such price subsidization is very important if the tobacco control program is to counteract this influence.

Table 3.4
Interest in Tobacco Industry Price Subsidies

If the cigarettes on special are your brand, how often do you buy more than you normally would?

	Never %	Very rarely %	Sometimes/ Every time %
Overall	30.4 (±3.4)	22.6 (±2.4)	47.0 (±4.0)
Gender			
Male	29.8 (±4.6)	23.4 (±3.7)	46.8 (±6.2)
Female	31.3 (±3.7)	21.5 (±3.4)	47.2 (±4.1)
Age			
18-24	21.5 (±6.2)	21.0 (±6.0)	57.6 (±7.2)
25-44	26.6 (±4.9)	25.0 (±4.3)	48.4 (±4.9)
45-64	36.4 (±6.9)	18.4 (±4.6)	45.2 (±10.2)
65+	41.7 (±8.9)	29.1 (±9.8)	29.2 (±5.8)
Race/Ethnicity			
African-American	27.2 (±9.2)	20.0 (±10.7)	52.8 (±11.2)
Asian/PI	29.9 (±9.8)	23.0 (±9.8)	47.1 (±11.3)
Hispanic	29.8 (±10.0)	25.3 (±8.3)	44.8 (±14.0)
Non-Hispanic White	31.8 (±3.2)	21.1 (±2.6)	47.1 (±3.1)
Education			
Less than 12 years	26.8 (±8.7)	21.7 (±7.5)	51.6 (±13.5)
High school graduate	31.7 (±5.0)	22.3 (±4.6)	45.9 (±5.1)
Some college	30.2 (±3.7)	20.7 (±3.2)	49.2 (±4.2)
College graduate	34.5 (±6.9)	28.5 (±8.6)	37.0 (±7.9)
Income			
\$10,000 or less	28.0 (±8.5)	26.5 (±11.2)	45.5 (±11.2)
\$10,001 to \$20,000	30.9 (±8.4)	27.8 (±9.6)	41.3 (±8.1)
\$20,001 to \$30,000	25.3 (±12.6)	15.3 (±8.3)	59.4 (±19.6)
\$30,001 to \$50,000	28.1 (±6.0)	20.6 (±4.8)	51.4 (±6.8)
\$50,001 to \$75,000	34.0 (±6.1)	24.6 (±5.7)	41.5 (±6.4)
Over \$75,000	32.5 (±5.2)	24.3 (±5.6)	43.3 (±7.6)
Missing	33.7 (±9.6)	19.7 (±6.6)	46.6 (±8.8)
Quit Attempt			
Never expect to quit	35.8 (±7.8)	24.9 (±7.6)	39.3 (±6.9)
May quit, not in next 6 months	27.5 (±3.5)	21.7 (±3.2)	50.9 (±4.3)
Will quit within 6 months	29.8 (±5.7)	23.4 (±4.9)	46.8 (±8.3)

Summary

Most indices of quitting show signs of improvement. The average number of cigarettes smoked per day is decreasing. Incidence of home bans is rising, as is smokers' self-efficacy for quitting, their exposure to physician advice to quit, and their use of formal cessation assistance. These factors have been associated with maintenance of the high level of quit attempts that were initiated by the 1999 major price increase.

There has been no observable increase in successful quitting, even though there has been an increase in the use of pharmaceutical assistance products by smokers. The evidence suggests that use of NRT by itself is associated with low self-efficacy among smokers who relapse, confirming the results from the Massachusetts longitudinal survey.

The much higher promotional and advertising expenditure by the tobacco industry compared to the expenditure on tobacco control may be influencing smokers (particularly young smokers) who intend to quit to delay quit attempts as a result of the sales promotions and lower prices. However, this hypothesis needs to be investigated further.

APPENDIX

Chapter 3

Smoking Cessation

The tables below present in detail the main chapter results for demographic groups. The predictors of quitting, which include the percentage of light smokers, self-efficacy, presence of smoking bans in homes of current smokers, NRT use, and physician advice to quit are presented in detail according to age, gender, race/ethnicity, education level, and income. Additional tables are more specific to a subpopulation such as heavy smokers' intentions to never quit. In addition, those who quit for at least two weeks are presented in a separate table with details of their sociodemographic characteristics.

1. Trends in Predictors of Successful Cessation

Table A.3.1 shows the percentage of current smokers who were light smokers (<15 cigarettes per day) for each demographic subgroup. Overall, there has been a significant increase in the percentage of smokers who were light smokers, from $51.8 \pm 1.4\%$ in 1996 to $60.0 \pm 4.0\%$ in 2005 (a change of 16.0%). Both men and women have shown an increase in light smoking since 1996. Across surveys, a larger percentage of women have been light smokers compared to men ($64.8 \pm 4.0\%$ versus $56.9 \pm 6.2\%$ in 2005).

Appendix Table A.3.1 Percent of Current California Smokers Smoking Fewer than 15 Cigarettes/Day						
	1990 %	1996 %	1999 %	2002 %	2005 %	Factor Change 1996-2005 %
Overall	41.4 (±1.8)	51.8 (±1.4)	55.9 (±1.9)	58.0 (±1.6)	60.0 (±4.0)	16.0
Gender						
Male	37.7 (±2.0)	49.4 (±2.0)	54.9 (±2.2)	55.8 (±2.6)	56.9 (±6.2)	15.2
Female	46.1 (±2.4)	54.9 (±1.9)	57.3 (±2.8)	61.3 (±2.1)	64.8 (±4.0)	18.1
Age						
18-24	56.6 (±4.2)	71.6 (±3.1)	73.0 (±3.5)	70.6 (±3.8)	76.0 (±6.4)	6.0
25-44	42.2 (±2.3)	54.7 (±1.8)	58.9 (±2.6)	62.5 (±2.6)	67.9 (±4.8)	24.1
45-64	33.0 (±3.1)	40.0 (±2.8)	42.8 (±3.6)	45.3 (±3.0)	45.5 (±9.3)	13.9
65+	36.7 (±4.6)	38.7 (±4.4)	48.7 (±8.1)	50.8 (±7.2)	49.3 (±7.9)	27.3
Race/Ethnicity						
African American	65.1 (±7.4)	69.0 (±4.6)	75.9 (±5.2)	70.9 (±5.0)	79.6 (±8.0)	15.4
Asian/PI	56.1 (±11.0)	64.6 (±6.1)	70.5 (±6.9)	71.8 (±6.2)	75.9 (±9.0)	17.6
Hispanic	71.2 (±3.5)	78.3 (±3.4)	78.3 (±3.0)	79.0 (±3.6)	72.4 (±16.7)	-7.5
Non-Hispanic White	30.1 (±1.5)	39.5 (±1.6)	43.5 (±2.4)	46.3 (±2.0)	48.7 (±3.8)	23.3
Education						
Less than 12 years	45.4 (±4.7)	55.7 (±3.7)	61.8 (±4.6)	59.5 (±4.5)	58.8 (±15.2)	5.6
High school graduate	38.6 (±2.6)	46.9 (±2.0)	49.8 (±3.3)	53.3 (±3.1)	56.5 (±4.7)	20.5
Some college	40.8 (±2.6)	51.6 (±2.8)	55.8 (±2.4)	57.8 (±2.4)	59.3 (±3.8)	15.0
College graduate	42.0 (±3.6)	56.0 (±3.0)	60.2 (±4.0)	65.1 (±3.8)	70.3 (±7.0)	25.4
Income						
\$10,000 or less	50.1 (±6.3)	53.3 (±3.7)	52.3 (±4.7)	61.1 (±5.8)	67.2 (±11.0)	26.2
\$10,001 to \$20,000	44.4 (±4.8)	54.4 (±3.7)	62.6 (±4.7)	62.4 (±4.1)	59.0 (±7.8)	8.5
\$20,001 to \$30,000	41.2 (±3.9)	53.0 (±3.9)	56.0 (±4.7)	56.7 (±5.0)	53.7 (±26.9)	1.4
\$30,001 to \$50,000	36.4 (±3.8)	50.3 (±3.3)	53.3 (±4.3)	55.2 (±3.9)	57.6 (±7.3)	14.4
\$50,001 to \$75,000	36.3 (±3.5)	50.3 (±3.3)	51.8 (±3.3)	56.6 (±4.3)	59.9 (±6.4)	19.0
Over \$75,000	39.9 (±4.9)	50.4 (±4.0)	55.6 (±4.1)	56.8 (±3.3)	63.2 (±5.2)	25.5
Missing	44.2 (±4.9)	50.6 (±4.8)	63.8 (±6.7)	61.8 (±6.0)	60.6 (±7.7)	19.6

All age groups showed an increase in light smoking from 1996 to 2005. A large majority of current smokers in the 18-24-year-old and 25-44-year-old age groups were light smokers ($76.0 \pm 6.4\%$ and $67.9 \pm 4.8\%$ respectively). Among racial/ethnic groups, Non-Hispanic Whites were significantly less likely than other groups to be light smokers, although the percentage of light smokers in this group has increased by 23.3% since 1996. By education level, college graduates had a higher percentage of light smokers than other groups with less education.

Table A.3.2 shows the percentage of smokers who abstained from cigarettes for at least two weeks in their longest quit attempt in the last year. Since 1996, there has been a slight increase in all smokers with a quit attempt of 2 weeks or longer, from $26.7 \pm 1.4\%$ of smokers in 1996 to $29.6 \pm 2.8\%$ in 2005 (a 10.8% factor change). Across surveys, there has been no significant gender difference.

In 2005, as in past surveys, the youngest adult smokers (18–24 years old) were more likely than those in older age groups to have abstained from cigarettes for two weeks or longer. Hispanic smokers continued to be more likely than other racial/ethnic groups to have made a quit attempt of at least two

weeks, although these findings are limited due to small sample sizes. Across survey years, except for 1999, college graduates were more likely than those in other educational groups to quit smoking for two weeks or more.

Appendix Table A.3.2 Smokers in the Last Year Whose Most Recent Quit Attempt Lasted 2 Weeks or More						
	1990 %	1996 %	1999 %	2002 %	2005 %	Factor Change 1996-2005 %
Overall	10.7 (±1.0)	26.7 (±1.4)	29.4 (±1.6)	28.9 (±1.3)	29.6 (±2.8)	10.8
Gender						
Male	9.3 (±1.0)	26.7 (±1.8)	29.6 (±2.2)	30.0 (±2.2)	28.9 (±3.7)	8.2
Female	12.3 (±1.8)	26.7 (±1.5)	29.2 (±2.1)	27.2 (±2.0)	30.5 (±4.1)	14.6
Age						
18-24	15.4 (±3.4)	42.9 (±4.1)	38.5 (±4.8)	40.7 (±4.0)	40.1 (±6.4)	-6.6
25-44	9.7 (±0.9)	26.2 (±1.8)	30.2 (±2.1)	28.9 (±2.2)	31.3 (±4.3)	19.6
45-64	10.0 (±2.0)	20.0 (±1.9)	24.2 (±2.8)	23.2 (±2.9)	23.8 (±5.5)	18.6
65+	10.2 (±2.8)	23.9 (±4.0)	22.9 (±4.4)	24.2 (±4.9)	25.7 (±6.6)	7.8
Race/Ethnicity						
African-American	9.0 (±5.4)	21.3 (±3.7)	32.1 (±6.3)	25.4 (±4.5)	31.3 (±9.9)	46.9
Asian/PI	12.0 (±4.2)	30.3 (±6.3)	32.2 (±6.9)	28.9 (±5.2)	25.6 (±10.9)	-15.7
Hispanic	14.5 (±3.6)	37.4 (±3.9)	34.1 (±4.1)	38.1 (±3.9)	36.8 (±8.7)	-1.6
Non-Hispanic White	9.9 (±0.9)	23.6 (±1.2)	27.3 (±1.6)	26.3 (±1.4)	27.1 (±3.2)	15.2
Education						
Less than 12 years	9.6 (±2.6)	27.4 (±3.4)	30.3 (±4.4)	29.1 (±4.0)	28.9 (±9.7)	5.4
High school graduate	10.2 (±1.6)	24.7 (±2.0)	29.1 (±2.2)	25.6 (±2.5)	27.2 (±4.7)	10.0
Some college	11.8 (±1.9)	26.3 (±2.2)	29.7 (±2.8)	30.7 (±2.4)	29.3 (±3.9)	11.5
College graduate	12.2 (±2.3)	30.1 (±2.7)	28.3 (±2.9)	32.0 (±3.1)	35.4 (±6.4)	17.4
Income						
\$10,000 or less	10.3 (±4.1)	23.5 (±3.2)	30.6 (±6.3)	30.8 (±5.5)	25.8 (±8.5)	10.0
\$10,001 to \$20,000	9.5 (±2.6)	29.5 (±3.8)	26.9 (±3.1)	28.7 (±4.4)	34.1 (±8.6)	15.7
\$20,001 to \$30,000	10.5 (±2.2)	27.4 (±4.3)	27.0 (±4.0)	27.9 (±3.8)	28.2 (±14.6)	2.7
\$30,001 to \$50,000	10.3 (±1.6)	26.4 (±2.9)	31.2 (±4.1)	29.0 (±3.7)	27.1 (±5.4)	3.0
\$50,001 to \$75,000	12.3 (±2.7)	24.2 (±3.3)	28.8 (±3.2)	29.7 (±3.4)	30.7 (±6.5)	26.9
Over \$75,000	14.9 (±4.4)	29.5 (±4.0)	31.5 (±3.0)	28.7 (±2.0)	30.7 (±5.2)	3.8
Missing	8.5 (±2.6)	26.1 (±3.4)	29.3 (±4.3)	27.7 (±7.3)	29.1 (±7.4)	11.8

Table A.3.3 gives the percentage of current smokers who are very sure they could refrain from smoking for at least one month, a measure of high self-efficacy. As discussed in the chapter, the percentage increased significantly from $41.7 \pm 1.8\%$ of smokers in 2002 to $50.8 \pm 3.2\%$ in 2005. Across surveys, a significantly higher percentage of male smokers had high self-efficacy compared to female smokers. In general, high self-efficacy was also more common in Hispanic smokers compared to other racial/ethnic groups, college graduates and those with household incomes greater than \$75,000. See Section 3 of this chapter for more details.

Appendix Table A.3.3 Percentage of Current Smokers Who are Very Sure They Could Refrain from Smoking for at Least One Month					
	1996 %	1999 %	2002 %	2005 %	Factor Change 1996-2005 %
Overall	40.8 (± 1.4)	41.9 (± 2.2)	41.7 (± 1.8)	50.8 (± 3.2)	24.6
Gender					
Male	44.7 (± 1.8)	45.4 (± 2.9)	45.7 (± 2.8)	57.1 (± 4.4)	27.9
Female	35.6 (± 1.9)	37.0 (± 3.4)	35.6 (± 2.1)	41.1 (± 3.9)	15.3
Age					
18-24	47.1 (± 4.4)	45.7 (± 4.6)	48.2 (± 4.1)	54.5 (± 6.2)	15.6
25-44	42.3 (± 2.1)	43.9 (± 2.7)	45.1 (± 2.5)	53.2 (± 4.0)	25.7
45-64	35.3 (± 2.4)	38.1 (± 3.8)	35.2 (± 3.1)	47.7 (± 8.3)	35.1
65+	36.2 (± 5.6)	34.1 (± 8.2)	27.6 (± 4.7)	41.4 (± 7.6)	14.6
Race/Ethnicity					
African-American	39.2 (± 4.5)	45.0 (± 5.5)	42.8 (± 5.2)	45.9 (± 17.2)	17.2
Asian/PI	34.4 (± 6.4)	41.8 (± 7.7)	38.5 (± 7.5)	48.8 (± 11.9)	42.0
Hispanic	50.3 (± 3.1)	49.1 (± 4.3)	49.5 (± 4.3)	61.0 (± 9.4)	21.3
Non-Hispanic White	38.1 (± 1.6)	39.1 (± 2.3)	39.1 (± 2.1)	46.1 (± 2.8)	20.9
Education					
Less than 12 years	38.8 (± 3.3)	36.0 (± 4.8)	36.2 (± 4.4)	51.8 (± 10.5)	33.7
High school graduate	38.7 (± 2.4)	40.8 (± 3.3)	38.7 (± 2.5)	47.3 (± 4.6)	22.3
Some college	42.2 (± 2.2)	44.1 (± 2.8)	43.9 (± 3.2)	48.9 (± 4.7)	15.8
College graduate	45.6 (± 3.1)	49.4 (± 3.3)	51.2 (± 4.0)	58.8 (± 6.3)	29.1
Income					
\$10,000 or less	34.5 (± 3.9)	33.9 (± 5.9)	36.9 (± 5.4)	42.4 (± 9.7)	23.1
\$10,001 to \$20,000	40.9 (± 3.6)	39.2 (± 5.0)	34.6 (± 4.9)	42.8 (± 9.4)	4.7
\$20,001 to \$30,000	41.3 (± 3.7)	39.7 (± 4.7)	39.5 (± 4.1)	55.0 (± 17.5)	33.2
\$30,001 to \$50,000	40.9 (± 2.6)	42.2 (± 4.3)	41.9 (± 3.6)	46.6 (± 6.9)	14.0
\$50,001 to \$75,000	41.7 (± 3.7)	41.3 (± 3.4)	44.7 (± 4.7)	52.4 (± 6.3)	25.6
Over \$75,000	45.8 (± 4.0)	49.9 (± 3.7)	46.3 (± 3.2)	54.8 (± 6.1)	19.6
Missing	40.4 (± 5.0)	45.0 (± 6.6)	44.0 (± 7.4)	58.2 (± 9.1)	43.9

2. Smokers Who May Never Quit

Table A.3.4 presents the percentage of current smokers over 25 years old who never expect to quit smoking. Overall, there was a significant decline in the percentage of smokers who never expect to quit, from $10.3 \pm 1.0\%$ of smokers in 1996 to $7.8 \pm 1.3\%$ of smokers in 2005 (24.5% factor decline). Although males started with a higher percentage of smokers who never expect to quit, between 1996 and 2005 males had a greater rate of decline than females (-34.1% compared to -8.5%) so the gender difference was minimal in 2005.

The oldest age group (65+ years old) and Non-Hispanic Whites have consistently reported the highest percentage of smokers who never expect to quit. The second oldest age group (45-64 year-olds) showed a significant decline (-39.7%) from 1996 to 2005 in those who never expect to quit. Significant declines were also seen in smokers that had graduated from college, those with household incomes \$10,000 or less, and those with household incomes over \$75,000.

Appendix Table A.3.4 Percentage of Hard-Core Smokers (Current smokers > 25 Years Old with No Recent Quit who Never Expect to Quit Smoking) by Demographics					
	1996 %	1999 %	2002 %	2005 %	Factor Change 1996-2005 %
Overall	10.3 (± 1.0)	9.4 (± 1.2)	8.1 (± 1.1)	7.8 (± 1.3)	-24.5
Gender					
Male	11.4 (± 1.3)	10.3 (± 1.7)	8.2 (± 1.6)	7.5 (± 1.6)	-34.1
Female	8.9 (± 1.2)	8.2 (± 1.4)	8.0 (± 1.6)	8.2 (± 2.1)	-8.5
Age					
26-44	6.3 (± 1.0)	5.5 (± 1.1)	5.1 (± 0.9)	4.4 (± 1.5)	-30.0
45-64	13.3 (± 1.7)	12.9 (± 2.3)	9.5 (± 2.0)	8.0 (± 1.6)	-39.7
65+	26.8 (± 3.6)	22.3 (± 5.4)	24.0 (± 6.4)	26.7 (± 7.6)	-0.2
Race/Ethnicity					
African-American	4.7 (± 1.8)	3.0 (± 2.2)	3.3 (± 2.2)	2.2 (± 1.9)	-52.4
Asian/PI	7.3 (± 3.1)	8.6 (± 3.4)	7.9 (± 4.3)	9.3 (± 6.4)	26.8
Hispanic	8.0 (± 1.7)	7.3 (± 2.2)	5.6 (± 1.7)	5.2 (± 3.0)	-35.5
Non-Hispanic White	11.9 (± 1.1)	11.2 (± 1.4)	9.6 (± 1.4)	9.7 (± 1.6)	-19.0
Education					
Less than 12 years	11.4 (± 2.8)	10.0 (± 3.2)	10.0 (± 3.3)	8.0 (± 3.2)	-29.7
High school graduate	10.9 (± 1.7)	9.2 (± 2.0)	9.4 (± 1.8)	8.7 (± 2.5)	-20.5
Some college	8.3 (± 1.1)	9.4 (± 1.5)	6.7 (± 1.3)	8.5 (± 2.6)	1.7
College graduate	10.9 (± 2.1)	9.2 (± 2.1)	5.6 (± 1.6)	4.8 (± 1.8)	-55.5
Income					
\$10,000 or less	14.1 (± 3.8)	10.8 (± 3.9)	11.1 (± 4.1)	5.1 (± 2.5)	-63.6
\$10,001 to \$20,000	9.2 (± 1.6)	10.3 (± 3.4)	7.6 (± 3.4)	8.8 (± 4.9)	-4.1
\$20,001 to \$30,000	10.4 (± 2.3)	9.2 (± 2.5)	8.2 (± 3.5)	6.9 (± 3.0)	-34.3
\$30,001 to \$50,000	10.1 (± 1.8)	10.3 (± 2.4)	6.8 (± 2.1)	6.1 (± 2.4)	-40.1
\$50,001 to \$75,000	6.8 (± 1.7)	7.9 (± 2.2)	6.9 (± 2.3)	9.3 (± 4.0)	36.7
Over \$75,000	9.6 (± 2.5)	7.4 (± 1.8)	7.1 (± 2.2)	5.2 (± 1.8)	-45.6
Missing	13.7 (± 4.0)	11.5 (± 5.3)	13.4 (± 5.5)	16.1 (± 7.5)	17.1

3. The Role of Home Smoking Bans

Table A.3.5 shows the percentage of smokers with complete smoking bans at home. From 1996 to 2005, there was a significant 61.0% increase in the percent of smokers with home smoking bans. Since the last survey in 2002, there was an 11.4% increase from 51.9 ± 1.9% of smokers to 57.8 ± 3.6% of smokers with a home smoking ban. This increase in home bans was seen across gender, age groups, racial/ethnic groups, education levels, and household income levels. The percentage of smokers with a home ban more than doubled in both the 45-64-year-old age group and the 65+ age group.

Appendix Table A.3.5 Current Smokers with a Total Home Ban on Smoking						
	1992 %	1996 %	1999 %	2002 %	2005 %	Factor Change 1996-2005 %
Overall	19.4 (±1.8)	35.9 (±1.2)	46.8 (±1.8)	51.9 (±1.9)	57.8 (±3.6)	61.0
Gender						
Male	24.6 (±2.7)	41.7 (±1.8)	50.5 (±2.6)	54.2 (±2.6)	59.6 (±5.0)	42.9
Female	12.9 (±2.1)	28.3 (±2.1)	41.5 (±2.5)	48.4 (±2.7)	55.1 (±4.1)	94.9
Age						
18-24	30.0 (±6.9)	47.8 (±3.8)	54.1 (±4.6)	54.9 (±3.1)	63.8 (±7.5)	33.6
25-44	19.6 (±3.2)	39.9 (±1.6)	51.6 (±2.5)	57.6 (±2.7)	61.8 (±5.0)	54.8
45-64	14.7 (±2.0)	25.9 (±2.4)	38.1 (±2.7)	43.3 (±3.5)	52.6 (±8.3)	102.7
65+	10.6 (±3.2)	18.2 (±3.5)	28.9 (±5.1)	39.2 (±6.4)	42.8 (±6.3)	135.6
Race/Ethnicity						
African-American	9.3 (±3.9)	23.0 (±4.4)	36.4 (±6.5)	41.3 (±4.9)	41.8 (±15.6)	82.2
Asian/PI	19.6 (±7.8)	42.0 (±5.8)	57.0 (±7.3)	63.6 (±6.2)	61.1 (±11.1)	45.7
Hispanic	30.4 (±6.5)	55.6 (±3.4)	64.2 (±3.6)	59.8 (±3.8)	66.4 (±9.6)	19.4
Non-Hispanic White	18.0 (±2.1)	30.5 (±1.3)	40.4 (±1.7)	48.2 (±2.0)	55.8 (±3.2)	82.7
Education						
Less than 12 years	23.2 (±4.4)	42.7 (±3.6)	53.9 (±5.0)	51.0 (±4.4)	57.0 (±10.3)	33.7
High school graduate	16.2 (±2.3)	32.5 (±2.3)	45.2 (±2.9)	48.5 (±2.6)	59.5 (±4.7)	83.1
Some college	19.8 (±2.9)	34.8 (±2.4)	43.0 (±2.3)	53.3 (±2.5)	55.9 (±4.4)	60.4
College graduate	20.9 (±3.6)	34.2 (±2.7)	45.7 (±3.8)	57.4 (±3.4)	59.2 (±6.4)	73.1
Income						
\$10,000 or less		28.5 (±3.0)	36.1 (±6.2)	41.1 (±6.6)	45.6 (±9.3)	60.3
\$10,001 to \$20,000		36.6 (±3.7)	50.4 (±5.3)	50.2 (±4.3)	60.4 (±10.1)	65.0
\$20,001 to \$30,000		32.1 (±3.3)	46.3 (±5.1)	49.0 (±3.8)	54.6 (±18.6)	69.9
\$30,001 to \$50,000		34.7 (±2.3)	41.4 (±4.2)	50.8 (±3.8)	50.6 (±6.7)	45.7
\$50,001 to \$75,000		38.4 (±4.1)	44.8 (±3.1)	54.7 (±4.4)	62.2 (±5.3)	61.8
Over \$75,000		42.3 (±4.3)	57.2 (±3.5)	57.9 (±3.3)	67.2 (±5.0)	58.8
Missing		41.5 (±4.4)	51.1 (±6.5)	53.7 (±6.8)	55.7 (±10.2)	34.3

4. Smoking Cessation Assistance

Table A.3.6 presents the percentages of smokers in the past year that used NRT on their last quit attempt by demographic subgroup. As discussed in the chapter, since 1996 there has been an overall increase in the use of NRT although there was essentially no change between 2002 and 2005. From 1996 to 2005, use of NRT increased from $12.2 \pm 1.3\%$ to $17.4 \pm 3.7\%$ in males and from $15.8 \pm 2.0\%$ to $20.9 \pm 4.4\%$ in females. The rate of increase in males (42.4%) was greater than females (32.3%) over that period, although the percentage of females using NRT remained greater than the percentage of males using NRT. Across survey years, use of NRT on their last quit

attempt was more common in the older age groups, among Non-Hispanic Whites, those with more education, and those with higher household incomes.

	1996 %	1999 %	2002 %	2005 %	Factor Change 1996-2005 %
Overall	13.7 (± 1.2)	15.1 (± 1.4)	18.1 (± 1.5)	18.8 (± 3.0)	36.9
Gender					
Male	12.2 (± 1.3)	13.7 (± 1.6)	16.6 (± 1.9)	17.4 (± 3.7)	42.2
Female	15.8 (± 2.0)	17.2 (± 2.2)	20.4 (± 2.8)	20.9 (± 4.4)	32.3
Age					
18-24	3.3 (± 1.2)	6.5 (± 2.0)	8.2 (± 1.8)	6.0 (± 3.6)	79.9
25-44	13.8 (± 1.7)	15.8 (± 2.3)	19.2 (± 2.3)	17.5 (± 5.2)	26.9
45-64	19.5 (± 2.7)	20.5 (± 3.1)	23.3 (± 4.2)	27.0 (± 5.4)	38.6
65+	24.8 (± 6.1)	20.5 (± 6.4)	23.8 (± 7.4)	26.1 (± 14.0)	5.0
Race/Ethnicity					
African-American	8.8 (± 3.8)	9.7 (± 4.1)	17.7 (± 6.1)	19.5 (± 12.1)	121.9
Asian/PI	11.9 (± 6.6)	7.1 (± 3.3)	19.4 (± 9.0)	5.6 (± 4.4)	-52.8
Hispanic	6.0 (± 1.9)	7.6 (± 2.5)	6.7 (± 1.9)	9.7 (± 4.4)	60.1
Non-Hispanic White	17.8 (± 1.5)	20.4 (± 1.9)	23.9 (± 2.1)	25.5 (± 3.8)	43.0
Education					
Less than 12 years	9.4 (± 2.5)	10.8 (± 2.6)	13.2 (± 3.8)	13.3 (± 5.6)	41.5
High school graduate	14.4 (± 2.1)	15.5 (± 2.1)	19.5 (± 3.2)	14.6 (± 3.0)	1.0
Some college	13.6 (± 2.2)	17.1 (± 2.7)	21.5 (± 2.8)	23.4 (± 4.7)	72.4
College graduate	19.0 (± 3.4)	17.1 (± 2.8)	16.0 (± 3.4)	25.2 (± 8.8)	32.3
Income					
\$10,000 or less	9.7 (± 2.8)	9.7 (± 3.4)	12.7 (± 5.4)	17.5 (± 8.9)	81.1
\$10,001 to \$20,000	12.6 (± 3.2)	13.6 (± 4.3)	14.8 (± 4.4)	13.4 (± 5.0)	6.4
\$20,001 to \$30,000	9.3 (± 2.3)	15.2 (± 4.3)	15.6 (± 4.6)	14.0 (± 6.1)	50.4
\$30,001 to \$50,000	14.6 (± 2.8)	18.1 (± 3.5)	19.1 (± 4.0)	16.4 (± 5.3)	12.2
\$50,001 to \$75,000	16.6 (± 3.2)	18.8 (± 3.1)	24.2 (± 5.3)	19.5 (± 7.5)	17.8
Over \$75,000	19.7 (± 3.8)	14.0 (± 2.7)	18.6 (± 2.9)	25.4 (± 6.9)	29.0
Missing	13.8 (± 3.3)	12.5 (± 3.8)	16.7 (± 5.3)	19.3 (± 9.0)	39.8

5. Physician Advice to Quit Smoking

Table A.3.7 provides the percentage of smokers who were advised by their physicians to quit smoking during the last year or in the year before they quit. Overall, there has been a 20.6% increase in the percent of smokers receiving physician advice to quit, from 51.9 ± 1.7% of smokers in 1996 to 62.6 ± 3.5% of smokers in 2005. Across surveys, female smokers were more likely than male smokers to receive advice, although this gender difference was only significant in 1996 and 2002.

Between 1996 and 2005, there was an increase in the percent of smokers receiving physician advice across all age groups and all racial/ethnic groups. However, the youngest age group (18-24 years old) was less likely to receive physician advice to quit compared to the older age groups. Among racial/ethnic groups, Hispanic smokers were less likely to receive physician advice compared to other racial/ethnic groups. There was no consistent pattern of physician advice by education level or by income level.

	1996 %	1999 %	2002 %	2005 %	Factor Change 1996-2005 %
Overall	51.9 (±1.7)	55.3 (±2.2)	59.3 (±1.9)	62.6 (±3.5)	20.6
Gender					
Male	48.8 (±2.6)	52.8 (±3.2)	56.6 (±3.1)	61.1 (±5.4)	25.1
Female	55.1 (±2.1)	58.1 (±2.7)	62.5 (±2.4)	64.4 (±4.3)	16.9
Age					
18-24	39.9 (±4.7)	46.9 (±4.4)	46.4 (±4.4)	52.5 (±8.7)	31.6
25-44	49.0 (±2.1)	52.5 (±3.2)	56.6 (±3.1)	58.5 (±6.4)	19.3
45-64	60.4 (±3.3)	61.4 (±3.3)	69.2 (±3.4)	70.9 (±4.8)	17.3
65+	59.7 (±4.6)	65.6 (±6.2)	63.4 (±6.7)	66.7 (±8.0)	11.8
Race/Ethnicity					
African-American	58.4 (±6.3)	56.5 (±6.8)	64.6 (±6.2)	65.4 (±10.1)	12.0
Asian/PI	50.3 (±8.7)	52.6 (±9.3)	60.8 (±8.3)	67.2 (±11.5)	33.7
Hispanic	40.0 (±3.9)	46.5 (±4.6)	50.4 (±4.8)	52.3 (±9.7)	30.5
Non-Hispanic White	54.5 (±1.7)	58.3 (±2.0)	61.3 (±2.3)	64.6 (±3.4)	18.5
Education					
Less than 12 years	49.3 (±4.5)	56.8 (±6.2)	58.4 (±6.0)	61.5 (±8.7)	24.6
High school graduate	51.8 (±2.8)	55.9 (±3.5)	62.4 (±3.1)	65.8 (±5.5)	27.1
Some college	53.1 (±2.6)	56.6 (±2.8)	59.4 (±3.3)	64.8 (±3.5)	22.0
College graduate	53.4 (±3.3)	49.3 (±3.9)	54.9 (±3.7)	55.3 (±7.2)	3.6
Income					
\$10,000 or less	50.5 (±5.4)	54.7 (±7.7)	58.5 (±7.3)	74.6 (±10.3)	47.8
\$10,001 to \$20,000	54.1 (±4.6)	59.0 (±5.1)	59.6 (±6.1)	57.8 (±9.5)	6.9
\$20,001 to \$30,000	49.2 (±3.9)	54.4 (±5.5)	61.6 (±5.3)	56.1 (±12.5)	13.9
\$30,001 to \$50,000	51.7 (±3.3)	57.3 (±4.4)	60.0 (±4.5)	65.8 (±6.4)	27.2
\$50,001 to \$75,000	53.6 (±4.2)	54.7 (±4.5)	59.8 (±4.6)	59.2 (±7.1)	10.4
Over \$75,000	53.4 (±4.0)	52.7 (±5.2)	58.2 (±3.6)	63.9 (±6.1)	19.5
Missing	51.0 (±6.4)	52.6 (±6.6)	56.1 (±6.6)	63.8 (±10.7)	25.2

References

- Bandura, A. 1997. *Self-Efficacy: The Exercise of Self-Control*. New York: W.H. Freeman & Co.
- Bandura, A. 1977. *Social Learning Theory*. Englewood Cliffs, NJ: Prentice Hall.
- Benowitz, N. L., and P. Jacob. 1985. Nicotine renal excretion rate influences nicotine intake during cigarette smoking. *J Pharmacol Exp Ther* 234:153-5.
- Biener, L. 2006. Population impact of nicotine replacement therapy. *The 13th World Conference on Tobacco or Health (WCTOC)*, July 12-15, 2006. Washington, D. C.
- Borland, R., N. Owen, D. Hill, and P. Schofield. 1991. Predicting attempts and sustained cessation of smoking after the introduction of workplace smoking bans. *Health Psychol* 10:336-43.
- Centers for Disease Control and Prevention. August 1999. *Best Practices for Comprehensive Tobacco Control Programs—August 1999*. Atlanta GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
- Chaloupka, F. J. 1999. Macro-social influences: the effects of prices and tobacco-control policies on the demand for tobacco products. *Nic Tob Res* 1 Suppl 1:S105-9.
- Cummins, S., S. H. Zhu, L. Baily, and R. Van Der Meer. 2006. Range of quitline practice in North America and Europe. *The 13th World Conference on Tobacco or Health (WCTOC)*, July 12-15, 2006. Washington, D. C.
- Fagerstrom, K. O. 1978. Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. *Addict Behav* 3:235-241.
- Farkas, A. J., E. A. Gilpin, M. M. White, and J. P. Pierce. 2000. Association between household and workplace smoking restrictions and adolescent smoking. *J Am Med Assoc* 284:717-722.
- Farkas, A. J. 1999. When does cigarette fading increase the likelihood of future cessation? *Ann Behav Med* 21:71-76.
- Fiore, M. C., D. E. Jorenby, and T. B. Baker. 1997. Smoking cessation: principles and practice based upon the AHCPR Guideline, 1996. *Ann Behav Med* 19:213-9.
- Gilpin, E. A., K. Messer, M. M. White, and J. P. Pierce. 2006. What contributed to the major decline in per capita cigarette consumption during California's comprehensive tobacco control program? *Tob Control* 15:308-316.
- Gilpin, E. A., and J. P. Pierce. 1994. Measuring smoking cessation: Problems with recall in the 1990 California Tobacco Survey. *Cancer Epidem Biomar* 4; 3:613-617.
- Gilpin, E. A., J. P. Pierce, and A. J. Farkas. 1997. Duration of smoking abstinence and success in quitting. *J Natl Cancer I* 89:572-576.

Gilpin, E. A., M. M. White, A. J. Farkas, and J. P. Pierce. 1999. Home smoking restrictions: Which smokers have them and how they are associated with smoking behavior? *Nic Tob Res* 1:153-162.

Gilpin, E. A., M. M. White, V. M. White, J. M. Distefan, D. R. Trinidad, L. James, L. Lee, J. Major, S. Kealey, and J. P. Pierce. 2004. *Tobacco Control Successes in California: A Focus on Young People, Results from the California Tobacco Surveys, 1990-2002*. La Jolla, CA: University of California, San Diego.

Hartman, A. M. 2006. What does U.S. national population survey data reveal about effectiveness of nicotine replacement therapy? *The 13th World Conference on Tobacco or Health (WCTOC)*, July 12-15, 2006. Washington, D. C.

Lancaster, T., and L. F. Stead. 2004. Physician advice for smoking cessation (Cochrane Review). *The Cochrane Database of Systematic Reviews* Issue 4. Art. No.: CD000165.

National Cancer Institute. 1993. *Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders. Smoking and Tobacco Control Monograph 4*. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute, NIH Pub. No. 99-4645.

Pierce, J. P., A. J. Farkas, and E. A. Gilpin. 1998. Beyond stages of change: The quitting continuum measures progress toward successful smoking cessation. *Addiction* 93:277-286.

Pierce, J. P., E. Gilpin, and A. J. Farkas. 1995. Nicotine patch use in the general population: Results from the 1993 California Tobacco Survey. *J Natl Cancer I* 87(2):87-93.

Pierce, J. P., E. A. Gilpin, and A. J. Farkas. 1998. Can strategies used by statewide tobacco control programs help smokers make progress in quitting? *Cancer Epidem Biomar* 7:459-64.

Pierce, J. P., and E. A. Gilpin. 2002. Impact of over-the-counter sales on effectiveness of pharmaceutical aids for smoking cessation. *J Am Med Assoc* 288:1260-1264.

Shiffman, S., L. B. Fischer, M. Zettler-Segal, and N. L. Benowitz. 1990. Nicotine exposure among nondependent smokers. *Arch Gen Psychiatry* 47:333-6.

Silagy, C., T. Lancaster, L. Stead, D. Mant, and G. Fowler. 2004. Nicotine replacement therapy for smoking cessation (Cochrane Review). *The Cochrane Database of Systematic Reviews* Issue 3. Art. No.: CD000146.

Stead, L. F., R. Perera, and T. Lancaster. 2006. Telephone counselling for smoking cessation. *The Cochrane Database of Systematic Reviews* Issue 3. Art. No.: CD002850.

The Tobacco Use and Dependence Clinical Practice Guideline Panel, Staff, and Consortium Representatives. 2000. A clinical practice guideline for treating tobacco use and dependence: A U.S. Public Health Service report. *J Am Med Assoc* 283:3244-54.

Tobacco Education and Research Oversight Committee for California (TEROC). March, 2006. *Confronting a Relentless Adversary. A Plan for Success*. (Master Plan 2006-2008). Sacramento, CA: California Department of Health Services.

Zhang, X., D. W. Cowling, and H. Tang. 2006. Confirmation of a Social Norm Change Paradigm for the California Tobacco Control Program. Submitted to *J Epidemiol Commun*.

Zhu, S. H., C. M. Anderson, G. J. Tedeschi, B. Rosbrook, C. E. Johnson, M. Byrd, and E. Gutierrez-Terrell. 2002. Evidence of real-world effectiveness of a telephone quitline for smokers. *New Engl J Med* 347:1087-93.

Zhu, S. H. 2006. Increasing cessation in the population: quit attempts vs. successful quit attempts. *The 13th World Conference on Tobacco or Health (WCTOC)*, July 12-15, 2006. Washington, D. C.

Chapter 4

Price, Taxes, and Purchasing Behavior

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Chapter 4

Price, Taxes, and Purchasing Behavior

KEY FINDINGS

- Price remains an important factor in cigarette consumption and smoking prevalence. Price elasticity of demand for cigarettes in California is estimated at -0.42. This means that for a 10% price increase, cigarette sales will fall by 4.2%. About half of the decline is expected to result from reduced smoking prevalence and about half from reduced consumption among smokers.
- Moderate to heavy smokers displayed little change in purchasing behaviors in response to the price increases associated with Proposition 10 and the Master Settlement Agreement (MSA).
- The percentage of smokers engaging in individual tax avoidance activities is small and steady, averaging 5.2% over the three years between 2002 and 2005.
- Analyses of consumption, tax-paid sales, and reported pack prices in California show no increase in tax evasion activities and no impact of tax evasion activities on consumer prices in the years following implementation of Proposition 10 and the MSA.
- Tax evasion activities are estimated to comprise only 1% of tobacco sales.

Chapter 4

Price, Taxes, and Purchasing Behavior

Introduction

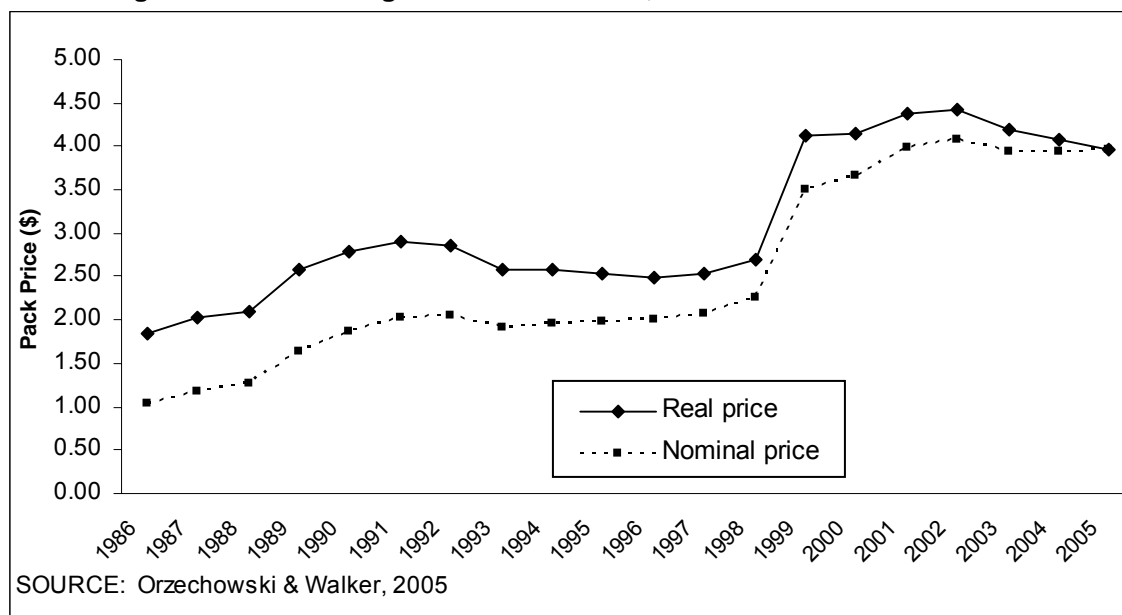
California has a history of using the initiative process to apply tobacco excise taxes with the concurrent goals of reducing smoking prevalence and raising revenues for specific public health programs. Proposition 99 was enacted in 1989; and provided a \$0.25 per pack tax that funded the comprehensive California Tobacco Control Program (CTCP). The initiative mandated funding for mass media anti-tobacco campaigns, local health agencies to provide technical support and monitor adherence to antismoking laws, community-based interventions selected by a competitive grant process, and enhancement of school-based prevention programs (Pierce et al., 1998). In June 1993, the California Breast Cancer Act raised the tax by \$0.02 per pack to raise funds for breast cancer research and for early detection services for uninsured and underinsured women.

Proposition 10, which was enacted on January 1, 1999, added a \$0.50 per pack tax to cigarettes and a comparable tax to other tobacco products. Revenues from Proposition 10 were used to finance the California Children and Families Commission, which provides funding for community health care, child care, and education programs for young children and families, and provides assistance to pregnant women and parents of young children who want to quit smoking (www.cafc.ca.gov/prop10facts.htm). Concurrent with the implementation of the excise tax under Proposition 10, the tobacco industry raised prices by \$0.70 per pack, attributing it to the need to fund the Master Settlement Agreement (MSA) negotiated between the Attorneys General of 46 states and the leading tobacco companies to recover health care costs {Meier and Licari, 1997}. Adjusted to 2005 prices using the Consumer Price Index (CPI), these tax increases were equivalent to \$0.39, \$0.03, and \$0.59 (or \$1.41 including the MSA), respectively.

1. Price Trends and Price Elasticity of Demand

Figure 4.1 shows the average price per pack of cigarettes in California from 1986-2005 in both nominal and real prices adjusted to 2005 dollars using the Consumer Price Index (CPI). This figure shows both the impact of excise taxes on price levels as well as the steady erosion in the value of nominal taxes resulting from general price inflation. Real prices rose steadily from \$2.09 per pack in 1986 to \$2.90 per pack in 1991. After 1991, prices declined to \$2.53 in 1997, largely as the result of increases in the CPI, but then jumped to \$4.12 in 1999 just after implementation of Proposition 10 and the MSA. Prices peaked at \$4.43 in 2002, and then declined to \$3.95 in 2005, due to the eroding power of inflation on the real value of nominally set excise taxes and price cuts on some major cigarette brands.

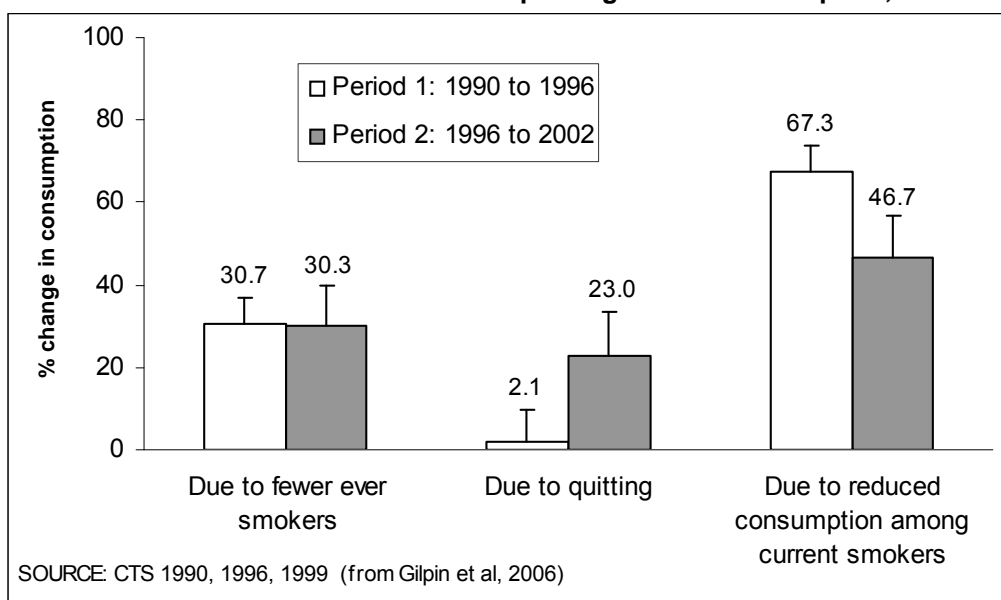
Fig 4.1: Average Price/ Pack of Cigarettes in California, 1986-2005



In Chapter 1, Figure 1.1 shows the 25-year trend in monthly per-capita taxed cigarette pack sales in California. Two effects are evident: first there is a consistent, nearly-linear decline in per-capita pack sales; second, there are obvious, permanent declines in pack sales associated with Propositions 99 and 10. Sung et al. (2005) examined similar quarterly sales data from 1984-2002 using time-series analysis to estimate the effects of the excise tax increases, adjusting for federal taxes and seasonal effects. The authors provided estimates of price elasticity (the percentage reduction in cigarette sales associated with a 1% increase in price) associated with Propositions 99 and 10. The price elasticity in the Proposition 99 period was estimated to be -0.60. The price elasticity in the period of Proposition 10 and the MSA was -0.44. In a paper examining the price effects of Proposition 10 and the MSA using survey data from the BRFSS, Sheu et al. (2004) found no change in the probability of smoking, but found reductions in amounts smoked among smokers and estimated an elasticity of -0.46.

The claim that the price increases associated with Proposition 10 and the MSA did not affect smoking prevalence was inconsistent with epidemiological data from the California Tobacco Survey (CTS). Gilpin et al. (2006) examined the contributions to the major decline in per capita cigarette consumption during 1990-2002, corresponding to the tenure of CTCP. They studied two periods, 1990-1996 and 1996-2002, using data from the CTS to allocate declines in consumption to (1) declines in ever smokers, (2) quitting among smokers, and (3) reduced smoking among current smokers (**Figure 4.2**).

Figure 4.2: Contributions to the Decline in Per-Capita Cigarettes Consumption, 1990-2002



They found that the majority of the decline in consumption was among current smokers smoking less (67.3% in the first period, 46.7% in the second) followed by declines in persons initiating smoking (approximately 30% in both periods). Although negligible in the first period, quitting accounted for 23.0% of the decline in consumption in the second period. The larger decline in smoking prevalence in the latter period was likely to be partly the result of the price increases under Proposition 10 and the MSA.

The relationship between changes in price, smoking prevalence, and cigarette consumption of smokers was further investigated using data from the Tobacco Use Supplements from the Current Population Survey (TUS-CPS). Data was combined from September, 1992 and January and May, 1993 (to provide a 1993 estimate); September, 1995 and January and May, 1996 (to provide a 1996 estimate); September, 1998 and January and May, 1999 (to provide estimates just prior to and just after the start of Proposition 10); June and November, 2001 and February, 2002 (to provide a 2001 estimate); and February, June, and November, 2003 (to provide a 2003 estimate). Analysis was limited to persons age 30 and over, in order to avoid influence from cohort effects driven by the reduction in smoking initiation among youth that resulted from CTCP.

A two-part model was used to analyze cigarette consumption. The two-part model estimates the effect of prices and other factors separately on the probability of smoking and on the amount of smoking conditional on being a smoker. The probability of smoking was estimated first using logistic regression, and the amount of cigarette consumption among smokers was then estimated using a gamma regression model with a log link function.² Data were analyzed at the person-level controlling for standard socioeconomic and demographic variables (age, gender, race/ethnicity, marital status, and education), family income, and a time trend. Because the TUS-CPS only provides data by income ranges, family income was estimated as the mean income of families with incomes in each range in the March Annual Demographic Supplements to the CPS for the corresponding years. Average cigarette pack prices were obtained from "The

² The two-part model was used rather than the hurdle (count-based) alternative because the data on smoking levels is in cigarettes per day, rather than a coarser quantity of packs or half-packs per day.

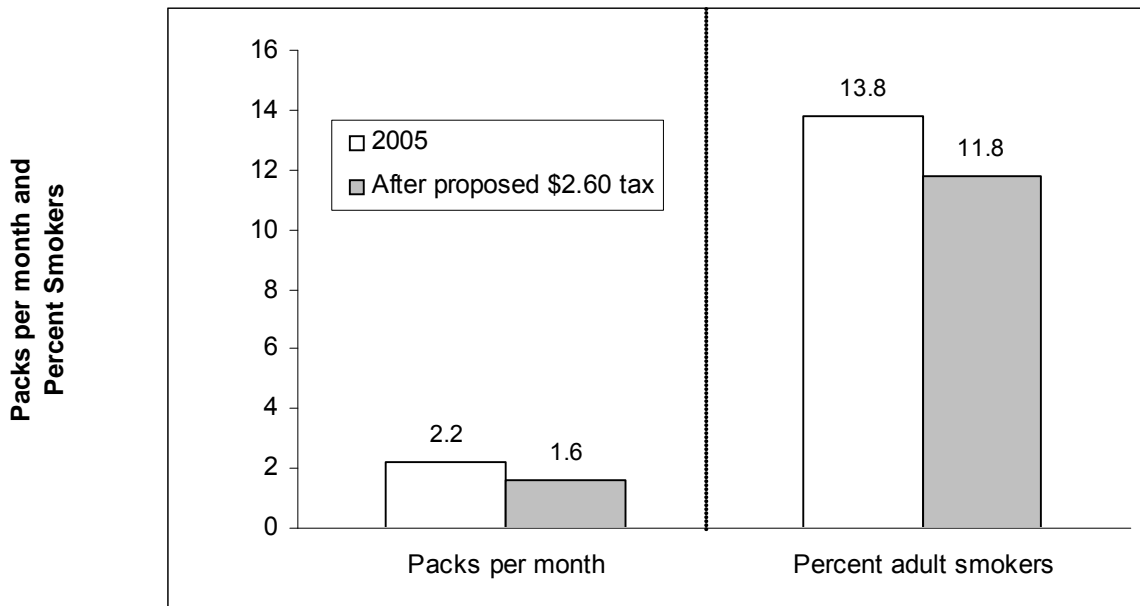
Tax Burden on Tobacco (Orzechowski and Walker, 2005)". Family income and cigarette prices were normalized to 2005 values using the CPI. A linear time trend was employed with an additional year indicator covariate for the two months just past the price increase on January 1, 1999. This indicator was included for January and May of that year to allow time for smokers to adjust their consumption patterns to the increased prices. All analyses were re-weighted to reflect the differential sampling probabilities in the survey and inferences corrected accordingly.

Under the proposed cigarette tax of \$2.60, smoking prevalence is expected to decline 14% and cigarette sales by 28%.

The full set of regression coefficients is shown in the Appendix Table A.4.1. An overall population price elasticity of -0.42 was estimated from the model, with about half the estimated response resulting from reduced smoking prevalence and about half from reduced consumption among smokers. Thus, assuming a baseline prevalence of adult smoking of 13.7%, per capita consumption of 3.8 packs per person per month (estimated from the 2005 CTS), and a 67% increase in real prices – 2.60 divided by 3.89, the self-reported price in the 2005 CTS, per capita cigarette consumption is expected to decline by 28% (or 1.1 packs) to 2.7 packs per person per month within 12 months of implementation of the proposed excise tax increase (Figure 4.3). This calculation assumes, conservatively, that the

tobacco industry passes on the excise tax without any additional price increases; previous price increases have been as much as twice the amount required to pay the tax. Assuming that one half of the decline in consumption is derived from reduced smoking prevalence, the percent of adults who are smokers is expected to decline by 1.9 percentage points to 11.8%. Analyses of interactions of price changes were conducted with demographic characteristics including age, gender, race/ethnicity, and education; those with less education were found to be more responsive to prices. Thus, it is expected that a larger proportion of the decline in prevalence will occur among persons with a high school education or less. As shown in Chapter 2, this group of individuals with the lowest education levels had a higher prevalence of smoking, compared to individuals in the other education level groups.

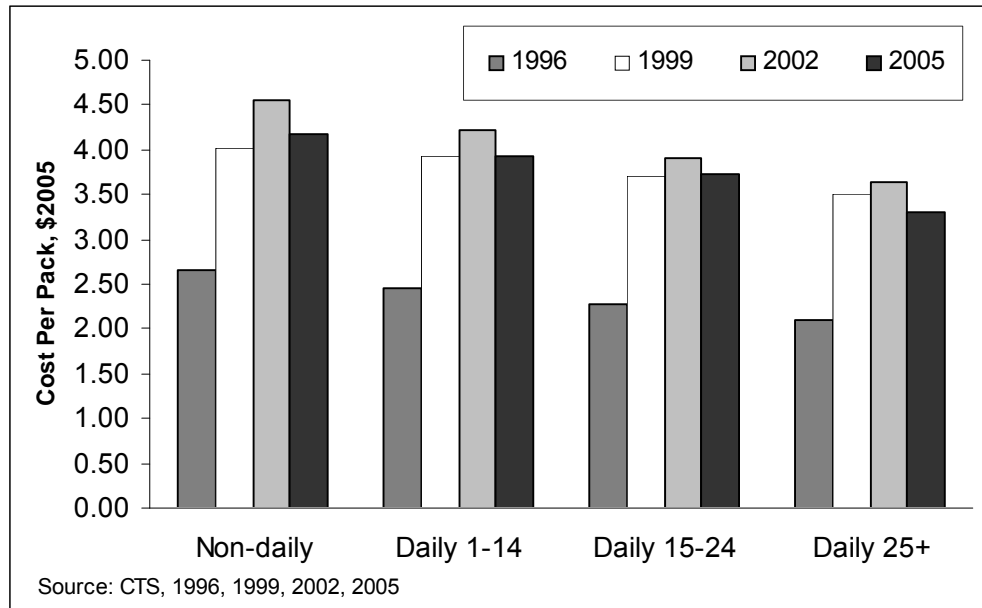
Figure 4.3: Expected Decline in Cigarette Consumption and Smoking Prevalence among Adults Resulting from the Proposed \$2.60 Excise Tax



2. Cigarette Prices and Purchasing Behaviors

In this section, data from smokers' reports of what they pay for cigarettes and where and how they purchase is reviewed. **Figure 4.4** shows the average reported cost per pack (in 2005 dollars) by type of smoker and consumption level: non-daily, daily 1–14 cigarettes, daily 15–24 cigarettes, and daily 25+ cigarettes.

Figure 4.4: Average Reported Cost per Pack in 2005 Dollars by Level of Cigarette Consumption



Overall prices in 2005 dollars were \$2.39, \$3.83, \$4.15, and \$3.89, in 1996, 1999, 2002, and 2005, respectively. The price increase in 1999 is clearly evident, as is the fact that heavier smokers pay less per pack than lighter smokers. However, an interesting fact is that heavier smokers are paying increasingly less than lighter smokers. For example, in 1996, smokers consuming 1–14, 15–24, and 25+ cigarettes daily paid \$.20, \$.37, and \$.55 less per pack, respectively, than non-daily smokers. This differential increased to \$.24, \$.45, and \$.87 in 2005. The reasons for this increasing differential between the heaviest smokers and lighter smokers are examined below.

	Non-Daily	Daily 1-14	Daily 15-24	Daily 25+
1996	2.7	2.5	2.3	2.1
1999	4.0	3.9	3.7	3.5
2002	4.5	4.2	3.9	3.6
2005	4.2	3.9	3.7	3.3

Smokers have several options for reducing the price they pay for cigarettes, including purchasing at lower priced outlets, purchasing by the carton, purchasing less expensive cigarettes, and taking advantage of promotional offers. **Figure 4.5** shows the average reported cost per pack (in 2005 dollars) by usual place of purchase.

Costs were approximately \$4.00 per pack in convenience stores, supermarkets, and liquor/drug stores; \$3.55 in tobacco discount stores and \$3.34 in other discount stores; and \$3.16 or less among untaxed/lower taxed sources (military commissaries, out of state, Internet purchases, and Indian reservations). These price differentials were due in part to pack purchases versus carton purchases. In 2005, 12.9% of persons purchasing at convenience stores, supermarkets, and liquor/drug stores purchased by the carton, compared to 57.3% at

tobacco and other discount stores, and 69.5% among untaxed/lower taxed sources. However, less expensive sources for cigarettes tend to be less convenient points of purchase.

Figure 4.5: Average Reported Cost per Pack by Usual Place of Purchase in 2005

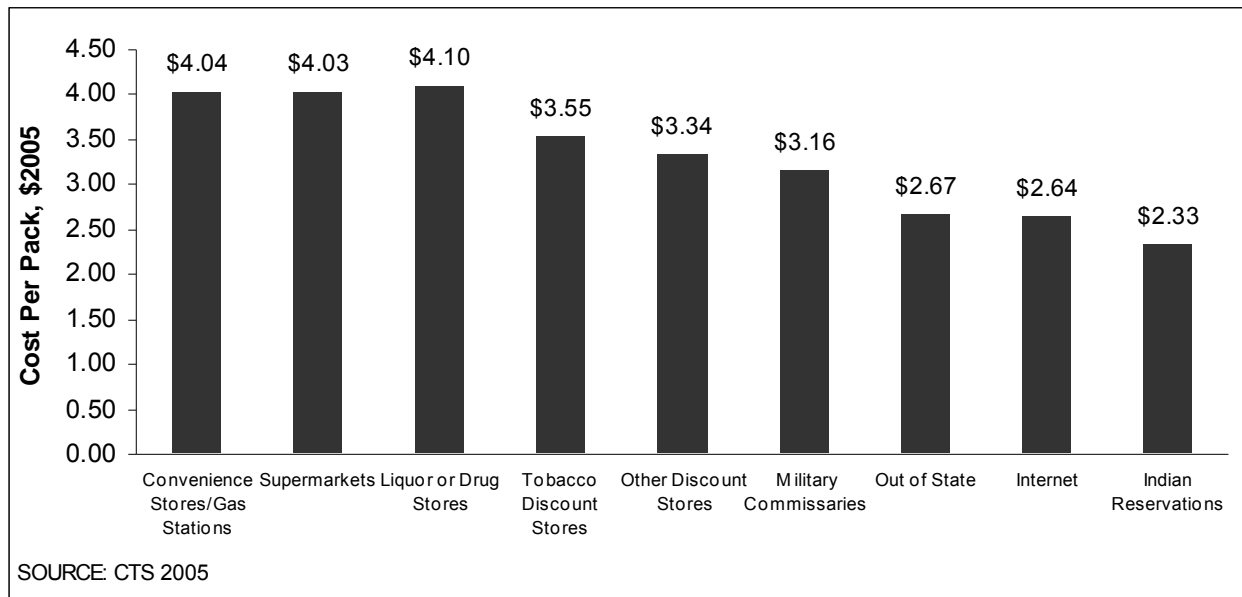
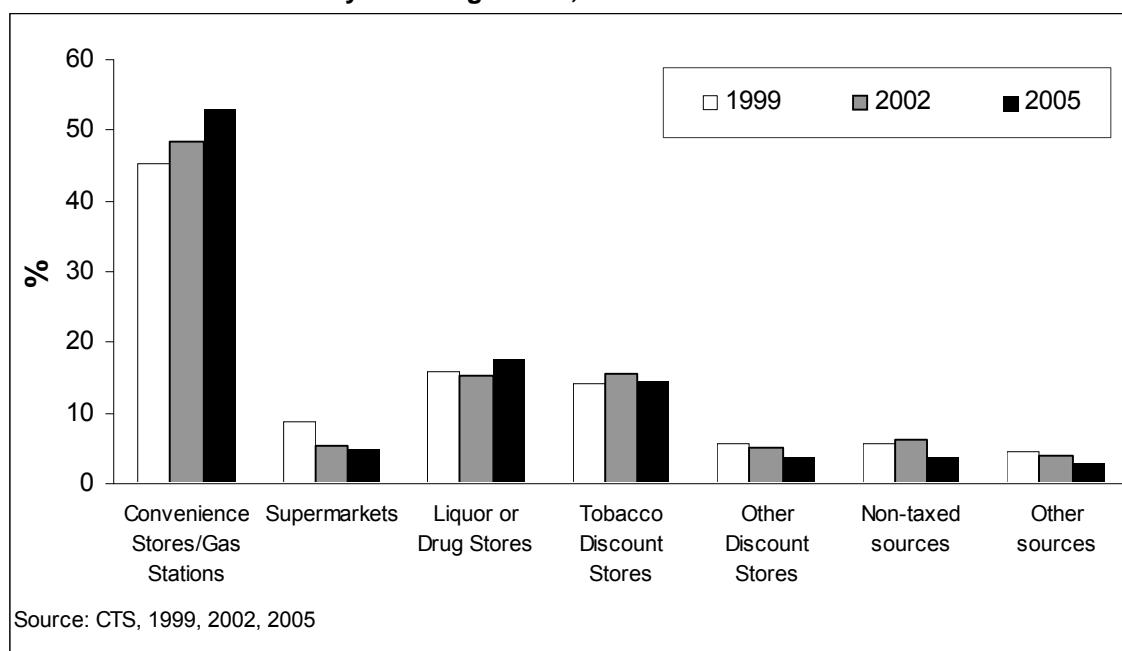


Figure 4.6 illustrates where smokers bought their cigarettes by year. In 2005, 75% usually purchased cigarettes from the most expensive sources: convenience stores, supermarkets, and liquor/drug stores. As shown in the figure, place of purchase has seen little change since this question was first asked in 1999, with the possible exception of a shift towards more convenient (and more expensive) places of purchase.

Moderate to heavy smokers (daily, 15+ cigarettes) employ several strategies to reduce cigarette costs, compared to lighter smokers (daily, <14). In 2005, moderate to heavy smokers were more likely to purchase from less expensive sources: 65% purchased from convenience stores, supermarkets, and liquor/drug stores, 26% from tobacco and other discount stores, and 5.9% from untaxed/lower taxed sources; compared to 81%, 14%, and 3% among lighter smokers. Forty % of moderate to heavier smokers usually purchased by the carton compared to 14% of light smokers.

However, these differences do not necessarily account for the increasing differential between the prices paid by moderate to heavy versus lighter smokers. Therefore, changes in purchasing behaviors among moderate to heavy and lighter smokers between 1999 and 2002/2005 combined were compared (the change occurred between 1999 and 2002 and place of purchase data are unavailable for previous years) using difference in difference (DID) estimates. The DID is the change (or difference) in behaviors from 1999 to 2002/2005 among moderate to heavy smokers minus the change (or difference) in behaviors among lighter smokers. The DID was calculated for each purchasing strategy (place of purchase and pack versus carton) by subtracting the percentage point change among light smokers from the percentage point change among moderate to heavy smokers. Two types of DID estimates were calculated: one with standard population weighting and another with the population weight multiplied by the number of cigarettes smoked per day. The second approach places more weight on the behaviors of heavier smokers. Differences between the estimates illustrate behaviors where heavier smokers differ from those who smoke less.

Figure 4.6: Where Smokers Buy Their Cigarettes, 1999-2005

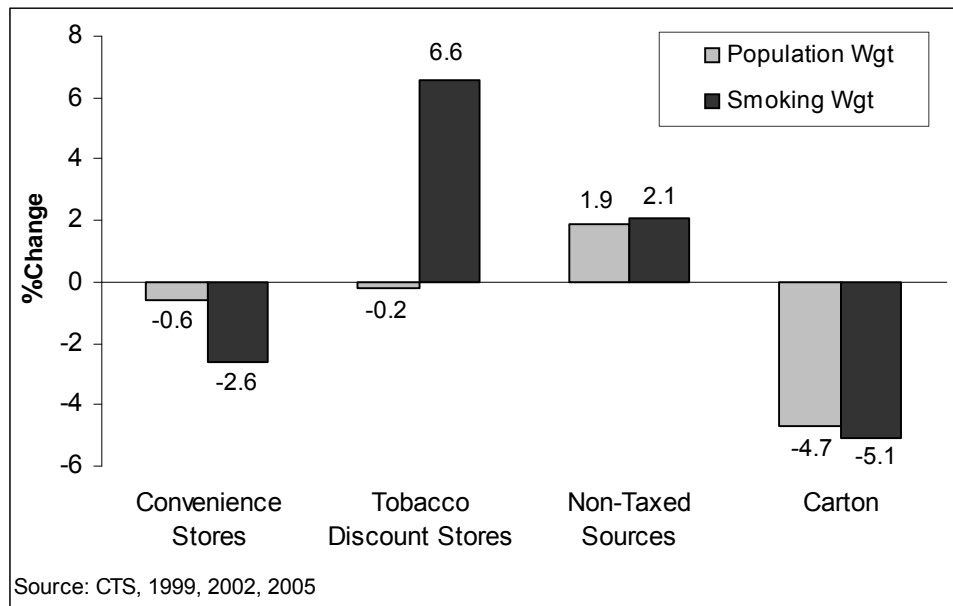


	Convenience Store/Gas Stations	Supermarkets	Liquor or Drug Store	Tobacco Discount Store	Other Discount Stores	Non-taxed sources	Other sources
1999	45.3	8.9	15.8	14.1	5.7	5.6	4.6
2002	48.4	5.4	15.2	15.6	5.1	6.2	4.1
2005	52.9	4.9	17.5	14.5	3.7	3.8	2.8

Figure 4.7 shows that moderate to heavy smokers made small adjustments in their purchasing behaviors relative to lighter smokers. Smoking intensity weighted DID estimates showed a 2.6 percentage point decline in heavy to moderate smokers' purchases from convenience stores, supermarkets, and liquor/drug stores, and a 6.6 percentage point increase for tobacco and other discount stores compared to the difference among light smokers. Population weighted DID estimates were small for these categories. Population weighted and population and smoking intensity weighted DID estimates were similar for use of non-taxed sources and purchasing by the carton: use of non-taxed sources increased by about 2 percentage points while purchasing by the carton decreased by about 5 percentage points relative to lighter smokers.³ There were no detectable changes in brand preferences.

³ The decline in carton purchasing may be due to attempts to self-regulate behavior. When asked why they purchase by the pack instead of by the carton, 39.6% of pack buyers state that they would smoke too much if they purchased by the carton (CTS 2002).

Figure 4.7: Difference in Difference Estimates of Changes in Purchasing Behaviors between Light and Moderate-to-Heavy Smokers, in 1999 and 2002/2005



In summary, while smokers have many purchasing strategies to reduce their expenditures on cigarettes, overall there were only minor changes in purchasing behaviors among moderate to heavy smokers in response to the price increases associated with Proposition 10 and the MSA. The heaviest smokers became less likely to purchase at convenience stores and other high-priced outlets and more likely to purchase at lower-priced tobacco discount stores and from non-taxed sources, although these effects were smaller for this group than for lighter smokers and were partially offset by the reduction in purchasing by the carton. It seems reasonable to expect similar, small adjustments in place of purchase and purchasing by the carton versus pack in response to the latest proposed increase in the tobacco excise tax.

3. Tax Avoidance and Tax Evasion

The use of additional excise taxes to further reduce cigarette consumption raises concerns that increasing state-to-state differentials in excise taxes will also increase the incentive for tax avoidance and tax evasion. Tax avoidance involves legal activities by individuals to reduce the price of their cigarettes. Thus, tax avoidance will not be affected by increased enforcement efforts. Tax evasion involves illegal efforts, such as smuggling to profit from the price differentials introduced by taxes. Smuggling is problematic, both because it reduces tax receipts and because it may provide a revenue base for illicit and undesirable activities. Potential policy solutions to the smuggling problem include making manufacturers responsible for delivery to the final point of sale, or in the specific case of interstate smuggling, substituting federal for state taxes. This section considers the issues of tax avoidance and tax evasion, including organized smuggling, and presents estimates of tax avoidance and evasion activities in California.

Tax Avoidance

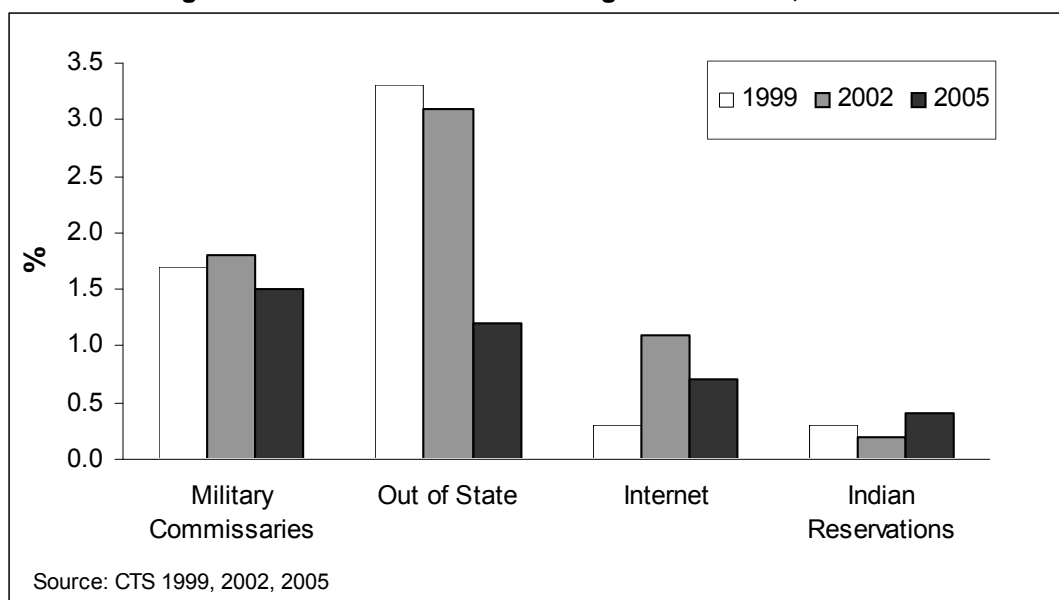
Individual tax avoidance involves legally sanctioned activities by individuals to minimize their cost of consumption by purchasing cigarettes that are not subject to the full amount of California state and federal excise taxes. In California, individual tax avoidance activities include

purchasing cigarettes in another state, from military commissaries or Indian reservations, or over the Internet. The potential for out-of-state purchases by residents in California is limited by its geography; most urban areas are along the Pacific coast, which implies that travel by most residents to surrounding states often requires a long drive through the desert or long waits at the U.S.-Mexico border. Currently, the only adjacent state with lower excise taxes is Nevada (Los Angeles is 270 miles from Las Vegas), where the tax differential is only \$0.07.

The current excise tax proposal would raise this differential to \$2.67 with Nevada and would create \$2.29 differentials with Oregon and Arizona. Thus, the incentives for cross-state purchase by individual smokers would increase, although the high costs of travel will remain as an offsetting disincentive. Commissaries will become a more attractive option for purchasing cigarettes for military personnel and their families, as they are exempt from federal and state taxes. Indian reservations are also exempt from federal and state taxes. Note that none of these avenues of purchase is illegal, unless purchases are made for resale to other persons. Internet sales are legal as long as state excise taxes are paid. Internet sales are subject to shipping costs, therefore large quantities need to be purchased in order to make this avenue cost effective.

An updated analysis of the work of Emery et al. (2002) examining individuals' usual source of purchase among non-taxed sources in 1999, 2002, and 2005 is presented in **Figure 4.8**. The percentage of smokers engaging in such activities is small, averaging 5.2% over the three years. There do not appear to be any significant changes in trends, with the possible exception of a sharp decline in out-of-state purchases in 2005.

Figure 4.8: Percentage of California Smokers Avoiding Excise Taxes, 1999-2005

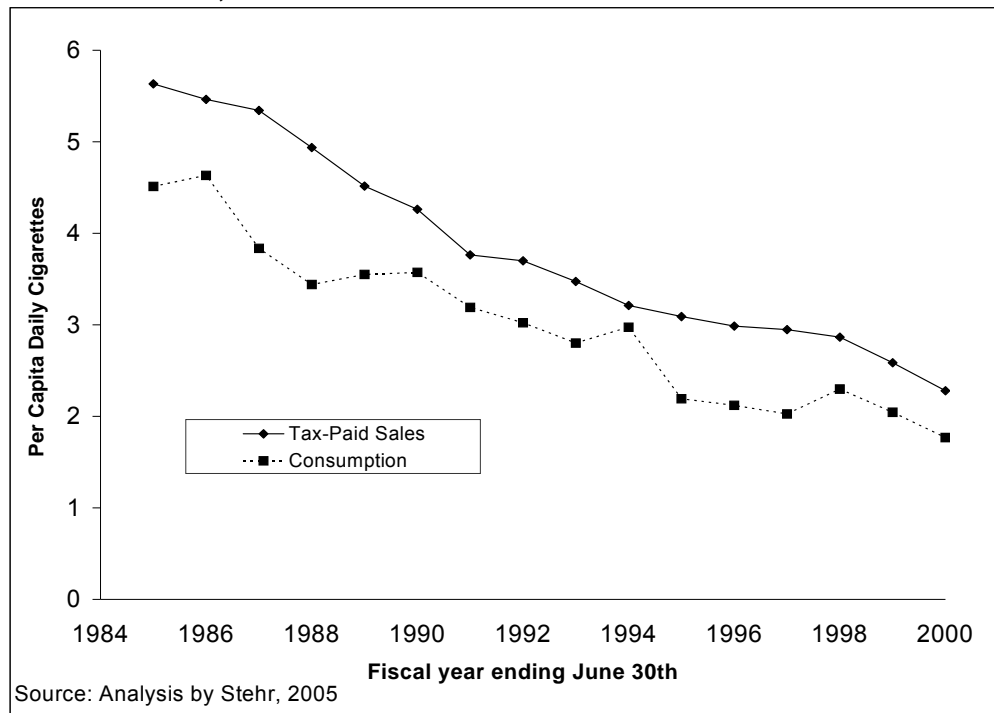


	Military Commissaries	Out of State	Internet	Indian Reservation
1999	1.7	3.3	0.3	0.3
2002	1.8	3.1	1.1	0.2
2005	1.5	1.2	0.7	0.4

Tax Evasion: Organized Interstate Smuggling

Organized interstate (domestic) smuggling includes purchase of cigarettes in bulk from low-tax states, such as North Carolina, South Carolina, and Virginia, and shipping them across the country for sale (fraudulently) in higher tax states. Thursby and Thursby (2000) and Yurekli and Zhang (2000) used panel-data methods to examine smuggling by comparing changes in tax-paid sales over time to changes in tax rates; they estimated that combined interstate tax avoidance (out of state purchasing) and tax evasion in the United States accounted for 7.2% of sales in 1990 and 7.5% of sales in 1995. It can safely be assumed that this rate is lower for California because of the relatively long distances to most parts of the California border. Stehr (2005) compared changes in survey-based consumption data from the Behavioral Risk Factor Surveillance System (BRFSS) to changes in tax-paid sales and estimated that interstate tax avoidance and evasion accounted for 9.6% of sales between 1985 and 2001. Stehr used state-level plots to illustrate possible tax avoidance activities including New Hampshire retailers catering to residents of Massachusetts, the rise of South Carolina as a source of smuggled cigarettes, and long-distance interstate smuggling of cigarettes into Michigan. **Figure 4.9**, showing the plot of consumption and tax-paid sales in California, yields little evidence of changes in tax evasion activities over time.

Figure 4.9: Comparison of Per Capita Tax-Paid Sales and BRFSS Reported Average Cigarette Consumption in California, 1985-2000



Tax Evasion: International Smuggling

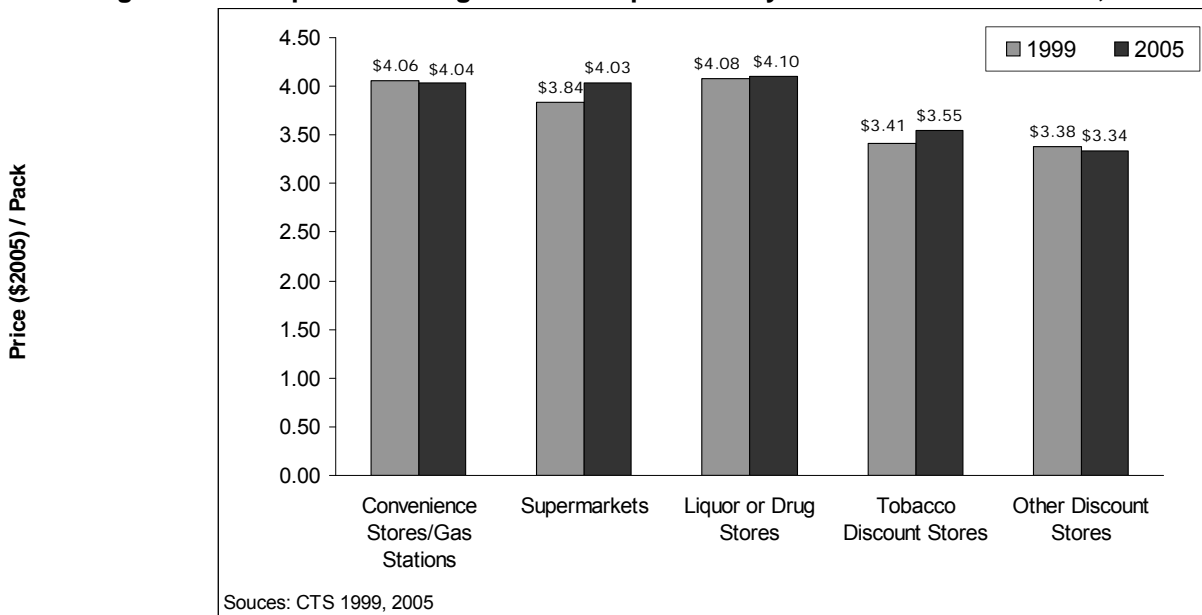
The potential for international smuggling of cigarettes into California includes the importation of non-taxed cigarettes overland from Mexico and the arrival of illegally manufactured cigarettes in California's ports. The most significant example of international smuggling of cigarettes in North America involved shipments from Canadian operations of multinational tobacco companies to

distributors on the U.S.-Canadian border, who then illegally re-imported the cigarettes to Canada (Sweanor, 2003). Similar arrangements may exist with distributors in Mexico. Alternatively, cigarettes may be illegally manufactured and imported overland from Mexico, or they may be manufactured overseas, for example in Asia, and shipped into U.S. ports for sale in California and other states.

One consequence of interstate or international smuggling might be a lowering of prices to the consumer. We investigated whether the prices that consumers reported paying for cigarettes declined from 1999 to 2005. **Figure 4.10** shows the reported price per pack of cigarettes in 2005 dollars stratified by usual place of purchase for the five most common places of purchase: convenience stores/gas stations, supermarkets, liquor or drug stores, tobacco discount stores, and other stores. If smuggling had become pervasive in the years following the price increases associated with Proposition 10 and the MSA, one might expect an increasing differential in prices in outlets more likely to accept smuggled cigarettes: independent convenience stores/gas stations, and independent liquor, drug, tobacco, and other discount stores. The selling of smuggled cigarettes is less likely in chains including most supermarkets that use designated distributors.

We find little change in average reported price per pack between 1999 and 2005, suggesting that interstate or international smuggling has not had an increasing impact on consumer prices in the years following implementation of Proposition 10 and the MSA.

Figure 4.10: Reported Average Price Paid per Pack by Usual Place of Purchase, 1999-2005



Tax Evasion: Analysis of Board of Equalization Investigations Data

The California State Board of Equalization (BOE) administers property taxes, sales taxes, special taxes and fees, and the tax appellate program. Special taxes include excise taxes for cigarettes and tobacco products (comprised of the cigarette tax and the cigarette and tobacco products surtax). The cigarette tax and surtax are paid by distributors through the use of tax stamps, which are purchased from banks and affixed to each package of cigarettes before distribution. The 2003 Cigarette and Tobacco Licensing Act imposed new licensing requirements on retailers, wholesalers, distributors, manufacturers, and importers of cigarettes, including provisions for new recordkeeping requirements and for inspection and seizure of untaxed cigarettes or tobacco products, and imposes civil and criminal penalties for violations (California BOE, 2006).

The BOE employs both random and referral inspections of retail outlets for cigarette and tobacco products using handheld scanners to determine the authenticity of cigarette tax stamps. The BOE also conducts large-scale sweeps of wholesale distributors. Data was used from BOE retail inspections in combination with data from the CTS in order to provide an estimate of tax evasion in California in 2005. This approach entailed using BOE data to estimate tax evasion activities by type of establishment, and then adding CTS data to apply these estimates to the distribution of consumption-based sales. Data limitations required making several assumptions, which are described below.

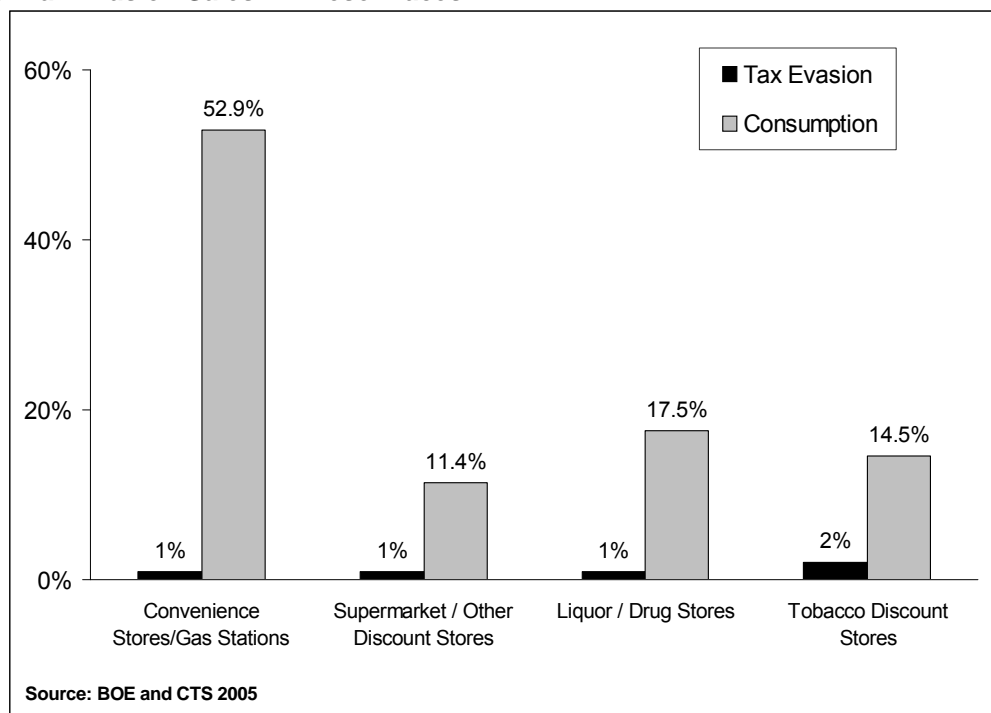
	Convenience Store / Gas Stations		Liquor/Drug Stores		Tobacco Discount Stores
	Convenience Stores	Gas Stations	Liquor Store	Drug Store	
Cigarette inspections	1809	842	816	9	408
Cigarette seizures	201	37	88	0	113
Reasons for seizure					
Unstamped	83	24	17	0	35
Counterfeit stamp	149	25	55	0	61
Other state stamp	17	5	6	0	8
Non-participatory in the Master Settlement Agreement	87	10	57	0	80
Stamp-related seizures	129	28	42	0	53
MSA Seizures	52	6	37	0	49
Store tax evasion prevalence (STEP)	8.4%	3.8%	6.5%	0.0%	15.1%
Estimated purchasing distribution	60%	40%	80%	20%	100%
Combined STEP	6.6%		5.2%		17.8%
Average seized packs per seizure	232		242		462
Estimated percentage of total inventory that is illegal in stores with seizures	15%		16%		15%
Overall tax evasion estimate	1%		1%		3%

The derivation of tax avoidance estimates is detailed in **Table 4.1**. As shown in Figure 4.6, 84.9% of smokers indicated that their usual places of purchase for cigarettes were one of three places: convenience stores/gas stations, liquor/drug stores, and tobacco discount stores. Therefore, BOE establishment codes were linked to these three major places of purchase as reported in the CTS data. The closest match to convenience stores was grocery stores with beer and wine or liquor licenses, and the closest match for tobacco discount stores was cigar stores and stands. Liquor stores and drug stores were both represented, although there were very few (9) inspections of drug stores. For each category, BOE provided the number of cigarette inspections; the number of inspections that resulted in seizures; reasons for seizures, with multiple responses available for each type of seizure; and numbers of cigarettes seized.

A common reason for seizure was that the cigarette manufacturers had not certified their compliance with the MSA with the State Attorney General. While the sale of these cigarettes is illegal in California, they do not represent tax evasion if the tax stamps have been purchased and affixed.⁴ Although many BOE inspections are random inspections, some are based on referrals, and others are repeat inspections of retailers who had cigarette stock seized. Including referrals may result in upwardly-biased estimates, since these referrals are most likely based on some expectation of tax evasion. Repeat inspections may increase or decrease the overall estimate, depending on retailers' responses to previous seizures. Tax evasion prevalence was calculated as the number of tax stamp-related seizures divided by the number of inspections that were not referrals and did not result in MSA seizures. Combined tax evasion prevalence was calculated as the average tax evasion prevalence weighted by the estimated purchasing distribution. Only a portion of an outlet's inventory is collected in any given seizure of cigarettes. The average number of seized packs was divided by the average inventory (estimated at 150 cartons for most outlets using a convenience sample of San Diego businesses, and estimated at 300 cartons for tobacco discount stores) in order to calculate the proportion of a tax evader's inventory that is unstamped, or that is stamped with counterfeit stamps or stamps from other states. The product of combined tax evasion prevalence and proportion of illegal inventory provide the estimates of tax evasion by place of purchase.

⁴ A portion of seizures was excluded as MSA-related seizures through calculating the MSA fraction of seizure. For example, it was calculated that 26% (=87/336) or 52 (26%*201) of convenience store seizures were MSA-related only.

Figure 4.11: A Comparison of the Proportion of Smokers and Their Usual Place of Purchase with Percent of Tax Evasion Sales in These Places



Tax evasion activities comprise no more than 1% of sales.

Estimates of tax evasion and consumption of cigarettes by place of purchase are shown in **Figure 4.11**. A limitation of the CTS survey is that it does not ask the amount of cigarettes purchased from each source. For example, individuals who usually purchase at convenience stores/gas stations may occasionally purchase cigarettes at supermarkets, and those who usually purchase at supermarkets may also occasionally purchase cigarettes at liquor/drug stores, tobacco discount stores, other stores, or non-taxed sources. Because the

distribution of usual sources of purchase was heavily weighted to a few categories, and because other site purchases would potentially cancel each other out, a necessary assumption was made that all reported consumption was for cigarettes obtained from the usual place of purchase. Based on reported prices paid for cigarettes, the tax evasion estimate was applied for convenience store/gas stations, supermarkets/other discount stores, liquor/drug stores, and tobacco discount stores. The overall estimate of tax evasion is 1% of sales, resulting in a \$10 million loss in cigarette tax revenues (1% of \$1 billion) during Fiscal Year 2004-2005.

Summary

Price remains an important factor in determining cigarette consumption and smoking prevalence. Using data from the TUS-CPS 1992-2003, a price elasticity of demand for cigarettes in California was estimated to be -0.42, with about half the fall in sales in response to a price increase due to a reduction in the prevalence of smoking, and half due to smokers cutting back the amount they smoke. Using data from various sources, a relatively low amount of cigarette smuggling in California was found, which was estimated to account for 1% of cigarettes consumed.

APPENDIX

Chapter 4

Price, Taxes, and Purchasing Behavior

1. Tax Avoidance and Tax Evasion

	Probability of Smoking (logistic regression model)			Cigarettes Among Smokers (gamma regression model)		
	Coefficient	SE	P-value	Coefficient	SE	P-value
Log (price) *†	-0.232	0.111	0.037	-0.184	0.071	0.009
Yearly time trend *‡	-0.022	0.007	0.002	-0.019	0.005	0.000
Year 1999 indicator	0.048	0.040	0.235	0.079	0.026	0.002
Constant	2.928	0.644	0.000	4.079	0.409	0.000
Age						
30-34 (reference)						
35-44	0.091	0.035	0.010	0.169	0.024	0.000
45-54	0.047	0.038	0.217	0.286	0.025	0.000
55-64	-0.140	0.043	0.001	0.336	0.028	0.000
65+	-1.000	0.050	0.000	0.221	0.033	0.000
Gender						
Male (reference)						
Female	-0.578	0.024	0.000	-0.168	0.015	0.000
Race/Ethnicity						
Non-Hispanic White (reference)						
African American	-0.113	0.046	0.014	-0.323	0.028	0.000
Asian/PI	-0.519	0.043	0.000	-0.270	0.028	0.000
Hispanic	-0.866	0.036	0.000	-0.618	0.025	0.000
Native American	0.117	0.122	0.338	-0.084	0.074	0.255
Marital Status						
Married (reference)						
Divorced/Separated	0.736	0.031	0.000	0.017	0.019	0.373
Never Married	0.383	0.035	0.000	-0.016	0.023	0.474
Widowed	0.363	0.054	0.000	-0.042	0.035	0.233
Education						
Less than 12 years (reference)						
High school graduate	0.010	0.036	0.779	0.002	0.023	0.926
Some college	-0.302	0.039	0.000	-0.063	0.023	0.007
College graduate	-1.064	0.045	0.000	-0.195	0.028	0.000
Income						
Income unknown *	-0.143	0.044	0.001	0.043	0.027	0.119
Log (family income) *§	-0.234	0.014	0.000	-0.038	0.009	0.000

* Continuous variable
†Log (price): is the log of the average cigarette pack price in 2005 dollars
‡The yearly time trend: is the year of the survey minus 1998
§ Log (family income): is the log of family income in 2005 dollars

Source: Tobacco Use Supplements from the Current Population Surveys, 1993-2003

References

- California Board of Equalization (CBOE). 2006. *Preliminary Estimates of California Cigarette Tax Evasion*. Available at <http://www.boe.ca.gov/invest/cigtobtax.htm> (Accessed August 24, 2006).
- Emery, S., M. M. White, E. A. Gilpin, and J. P. Pierce. 2002. Was there significant tax evasion after the 1999 50 cent per pack cigarette tax increase in California? *Tob Control* 11:130-4.
- Gilpin, E., M. Messer, M. White, and J. P. Pierce. 2006. What contributed to the major decline in per capita cigarette consumption during California's comprehensive tobacco control program? *Tob Control* 15:308-316.
- Meier, K. J., and M. J. Licari. 1997. The effect of cigarette taxes on cigarette consumption, 1955 through 1994. *Am J Public Health* 87:1126-30.
- Orzechowski, W., and R. C. Walker. 2005. *The Tax Burden on Tobacco. Historical Compilation*. Volume 40. Arlington, VA: Orzechowski & Walker.
- Pierce, J. P., E. A. Gilpin, S. L. Emery, M. M. White, A. J. Farkas, B. Rosbrook, and C. C. Berry. 1998. Has the California Tobacco Control Program reduced smoking? *J Am Med Assoc* 280:893-899.
- Sheu, M. L., T. W. Hu, T. E. Keeler, M. Ong, and H. Y. Sung. 2004. The effect of a major cigarette price change on smoking behavior in California: a zero-inflated negative binomial model. *Health Econ* 13:781-91.
- Stehr, M. 2005. Cigarette tax avoidance and evasion. *J Health Econ* 24:277-97.
- Sung, H. Y., T. W. Hu, M. Ong, T. E. Keeler, and M. L. Sheu. 2005. A major state tobacco tax increase, the master settlement agreement, and cigarette consumption: the California experience. *Am J Public Health* 95:1030-5.
- Sweanor, David. 2003. Testimony by David Sweanor, Senior Legal Counsel. http://www.nsra-adnf.ca/cms/index.cfm?group_id=1202 (Accessed August 29, 2006).
- Thursby J., and M. Thursby. 2000. Interstate cigarette bootlegging: extent, revenue losses, and effects of Federal intervention. *Natl Tax J* 35:59-77.
- Yurekli A., and P. Zhang. 2000. The impact of clean indoor-air laws and cigarette smuggling on demand for cigarettes: an empirical model. *Health Econ* 9:159-70.

Glossary

Adolescents

Current smoker – has smoked a cigarette on at least one day in the past month.

Adults

Current non-daily, never daily – has smoked at least 100 cigarettes in his or her lifetime and has never smoked on a daily basis.

Current smoker – has smoked at least 100 cigarettes in his or her lifetime and smokes now either everyday or some days.

Daily smoker – a *current smoker* who has smoked on every day of the past month.

Ever daily, current non-daily – has smoked at least 100 cigarettes in his or her lifetime and has smoked on a daily basis for at least 6 months but now smokes only some days.

Ever smoker – has smoked at least 100 cigarettes in his or her lifetime.

Experimenter – has smoked a cigarette, but has not smoked at least 100 cigarettes in his or her lifetime.

Former smoker – has smoked at least 100 cigarettes in his or her lifetime, but does not smoke now (old question) or now smokes not at all (new question).

Heavy daily smoker – a *current smoker* who now smokes 'everyday' and reports consuming 25 or more cigarettes/day.

Light daily smoker – a *current smoker* who now smokes 'everyday' and reports consuming fewer than 15 cigarettes/day.

Light smoker – a *current smoker* who smokes fewer than 15 cigarettes a day.

Moderate daily smoker – a *current smoker* who now smokes 'everyday' and reports consuming 15–24 cigarettes/day.

Moderate-to-heavy smoker – a *current smoker* who smokes 15 or more cigarettes a day.

Never smoker – has smoked fewer than 100 cigarettes in his or her lifetime.

Non-daily smoker – a *current smoker* who smokes some days.

Smoker in the last year – either a *current smoker* or a *former smoker* who smoked regularly a year before the survey.